

specific for living organisms and without analogues in inanimate nature," are both shown to be susceptible of a physico-chemical analysis.

The question of adaptation is next dealt with. "In the answer to this question, the metaphysician finds an opportunity to put above purely chemical and physical processes something specific which is characteristic of life only." But the phenomena of adaptation only cause apparent difficulties because "we rarely or never become aware of the numerous faultily constructed organisms which appear in nature." "The number of species existing to-day is only an infinitely small fraction of those which can, and possibly do, originate," but which "cannot live and reproduce." "Disharmonies and faulty attempts in nature are the rule, the harmonically developed systems the rare exception. But, since we only perceive the latter, we gain the erroneous impression that the "adaptation of the parts to the plan of the whole" is a general and specific characteristic of animate nature." "Nobody doubts that the durable chemical elements are only the product of blind forces. There is no reason for considering otherwise the durable systems in living nature."

Lastly, the author discusses the question whether what he terms the "contents of life" or "inner life" (psychical life)—"our wishes and hopes, disappointments and sufferings"—are also amenable to a physico-chemical analysis. In spite of the gulf which separates us to-day from such an aim, he believes that it is attainable. "As long as a life-phenomenon has not yet found a physico-chemical explanation, it usually appears inexplicable." But that in the case of one's inner life such an explanation is possible is shown by the fact that we are able to explain the phenomena of animal tropisms, which are cases of simple manifestations of animal instinct and will, on a physico-chemical basis. Thus, to take as an example the tendency of certain animals—some of them by no means low in the scale of organisation—to be attracted to a source of light. This appears to be explicable by the law of Bunsen and Roscoe for photochemical effects in inanimate nature, which states that within wide limits the effect equals the product of the intensity of light into the duration of illumination; although the direct measurements in regard to the applicability of the law to animal heliotropism have still to be made. "But we may already safely state that the apparent 'will' or instinct of these animals resolves itself into a modification of the action of the muscles under the action of light; and for the metaphysical term 'will' we may in these instances safely substitute the chemical term 'photochemical action of light.'"

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But the point will naturally be raised: "If we are only chemical mechanisms, how can there be an ethics for us?" The answer is that our instincts are the root of our ethics, and that these instincts are hereditary. The mother loves and cares for her children, not because metaphysicians had the idea that this was desirable, but because the instinct of taking care of the young is inherited. We seek and enjoy the fellowship of human beings because we have a hereditary impulse so to do. "Not only is the mechanistic conception of life compatible with ethics: it seems the only conception of life which can lead to an understanding of the source of ethics."

The above quotations will suffice to show that, with regard to the nature of living processes, Prof. Loeb speaks with no uncertain sound, and it would be well for biologists of the arm-chair and rostrum variety to bear in mind that he also speaks with the authority of personal experimentation and first-hand observation. E. A. SCHÄFER.

#### THE FRENCH ARTHURIAN ROMANCES.

*The Vulgate Version of the Arthurian Romances.*

Edited from manuscripts in the British Museum by H. Oskar Sommer. Vol. i., "Lestoire del Saint Graal." Pp. xxxii + 296. (1909.) Vol. ii., "Lestoire de Merlin." Pp. 446. (1908.) Vol. iii., "Le Livre de Lancelot del Lac." Part i. Pp. ii + 430. (1910.) Vol. iv., ditto. Part ii. Pp. 399. (1911.) Vol. v., ditto. Part iii. Pp. 474. (1912.) (Washington: Carnegie Institution.)

THESE sumptuous volumes are priceless gifts to the world of scholarship by the Carnegie Institution of Washington. No one knows better than the erudite editor, whose studies of the sources available are well known, "both from a physical and from a pecuniary point of view, that no single scholar was equal to the task of producing a critical text of the vulgate cycle, even if he devoted the better part of his life to the work, and that it could be achieved, within a measurable space of time, only by the united efforts of many, all working on a common basis."

What the editor has accomplished, single-handed as he tells us, is the erection of a "fundamental structure" in the form of a "reliable printed edition of a manuscript which contained the whole cycle, and was provided with all the essentials for comparison and reference" (vol. i., pref. iii., iv.). That the transcript he presents us with may be depended on is well assured by the *modus operandi* used. The preparation of the transcript for press fully occupied the author's time for three years and seven months. "I have

read every line of the printed text five times, three times with the original manuscript, once with my transcript, and finally without either" (*ib.*). For checking his reading of the original manuscript, he "constructed a sliding indicator with a cardboard ruler covered with soft leather, a strong ribbon of silk attached to a small leather-bag for the reception of a lead-weight, and a clip to be attached to the stand on which the manuscript was placed; this was easily moveable from line to line, and just as easily transferable from column to column and from leaf to leaf" (pref. xxviii.).

In his introduction (vol. i.) the editor gives an outline of his studies of the vulgate cycle, as the French version of the Arthurian prose-romances is called. That version "represents the ultimate stage in a process of welding heterogeneous elements into a not very harmonious whole" (pref. vii.). In other words, the version is the furthest removed, barring still later modifications, from the original sources. Even between that version and the older strata of the Welsh Mabinogion and their Irish analogues is a great gulf fixed, and the latter again are now well proven to be late Celtic versions of pre-Celtic traditions. The French romances throw very little light on the ultimate sources. On the other hand, the evidence of deliberate adaptation to mediæval conditions is in these volumes most apparent. The Welsh and Irish extant sources are downright pagan productions, with very little to show that we are indebted for them to Christian ecclesiastics.

The French version is, or once was, popular Christian theological literature. The core of the typical tale of the conception and birth of an illustrious child of an unknown father and a king's wife or daughter appears in the Welsh and Irish versions as something separate from any moral considerations, and while it may reflect a state of society far removed from ours, it seems fairly clear that such tales were not originally intended to represent actual human relationships and conditions, but were rather symbolical representations of phenomena. We must come down to the vulgate cycle to find in such legends the element of sin. The editor has clearly discerned the essential change which ensued in the character of the legends when he remarks: "Syr Lancelot, the title-hero of the huge romance of that name, has no prototype in Celtic literature" (pref. viii.). He is simply a Frenchman of the twelfth century. One cannot compare the groups of legends referred to without being deeply impressed with the comparative worthlessness of the French romances as guides to prehistoric cults, customs, and manners.

As French literature, the materials must, of course, be seriously treated. The editor, in justly claiming recognition for the noble work he has done, expresses himself here and there rather unfortunately.

"I shall be glad if I have succeeded in pointing out the path on which others after me may advance to success, for then I shall have done more than any scholar has achieved before me in these studies" (pref. v.). "Scholars of various nationalities have devoted much time and effort during the last seventy years to the study of the origin and growth of the Arthurian romances, but the results of their labours are comparatively insignificant, and have done little to open up this vast tract of romantic literature" (pref. iii.).

In penning such sentences, the editor must have discarded his "sliding indicator." Conscious of the soundness of his weapon—his excellent transcript—and his intimate knowledge of the subject, he appears rather eager for a free all-round fight. He announces that his study of the manuscripts concerned has led him to "results considerably at variance with what has hitherto been accepted as probable and correct" (pref. vii.). He asserts that the *matière de Bretagne*, although undoubtedly the fountain-head of many episodes and adventures in Arthurian romance, has exercised an infinitesimal, if any *direct*, influence on the several branches of the vulgate cycle (*ib.*). He does not believe that Walter Map had anything to do with the French prose-romances (pref. xi., note). As transcribers form an absolutely indispensable class, we have learnt to tolerate almost anything they are pleased to say. To supply others with excellent texts, with never a chance to preach a sermon from them, would have been very hard lines indeed.

JOHN GRIFFITH.

#### GEOGRAPHICAL TEXT-BOOKS AND GUIDES.

- (1) *A First Book of General Geography*. By B. C. Wallis. Pp. viii+151. (London: Macmillan and Co., Ltd., 1912.) Price 1s. 6d. (First Books of Science.)
- (2) *Maps: How they are made; how to read them*. By Prof. H. N. Dickson. Pp. 66. (London: G. W. Bacon and Co., Ltd, 1912.) Price 6d.
- (3) *Black's Modern Guide to Harrogate*. Edited by Gordon Home. Pp. 128+12 coloured plates. (London: A. and C. Black, 1912.) Price 1s.
- (4) *Les Alpes de Provence: Guide du Touriste, du Naturaliste et de l'Archéologue*. By G. Tardieu. Pp. vi+310. (Paris: Masson et Cie., 1912.) Price 4.50 francs.