for example—the characteristic of which may roughly be said to be that the whole determines its parts—is a species of relation which is unreal, in that it cannot be represented as a fact in space and time. For *quid* space and time what we call and must think of as an organised whole, is merely a mechanical aggregate of parts which are external to, and independent of each other. Yet the knowledge of nature implies that the conceptions of organisation are real in the sense that experience suggests and forces them upon us, and without them nature would not only seem quite different from what it is, but could not be a connected whole at all. In other words, while an aggregate of purely mechanical relations is logically conceivable, such an aggregate would necessarily be quite different from the universe as known to us. The recognition of nature as beautiful and as organised is essential to its existence as nature, and these aspects cannot be got rid of although they are not real in the sense that the mechanical aspects are real. There are thus different phases in, or kinds of knowledge, all arising out of the ultimate constitution of intelligence. This result carries with it the solution for Kant of a number of difficulties. To ask, for example, how that which is organised springs out of an environment which is not organised, is to mistake a problem of knowledge for a problem of the relation of the objects of knowledge. For there is no line of demarcation which separates the organism from its environment. We speak as if there were such a line, because, for the purposes of advancing the limited knowledge of the individuals (which, because it is conditioned by space and time, cannot comprehend the whole universe *sub specie aternitatis*), it is convenient to abstract now from one sort of relations, now from another, and to talk of things as if they presented the aspects *only* of mechanism, or *only* of organisation. Kant declared that the twofold aspect was everywhere potentially present, because of the twofold operation of thought in the constitution of things.

Whether Kant was right in his conclusion that there were different *kinds* of knowledge, or whether he ought not to have taught that there were rather different stages than kinds, this is no place to inquire. When the systems of the late German philosophical writers have been stripped of what is at the same time most prominent and most useless in them, it will be found that they contain much valuable and detailed suggestion upon this point. It may be that Kant's theory of knowledge is imperfect, and that his distinctions are in many cases artificial and unwarrantable. But his criticism forms the basis of a new departure in investigation, and it cannot be understood without being to a great extent assented to. Not the least of his achievements is that he has sifted to their foundation and placed in a new light such metaphysical abstractions of science as matter, cause, organisation and mind, and has shown why and in what sense they give rise to problems which appear insoluble. His method was intrinsically the same as that of science generally, and to him belongs the credit of having brought science and philosophy into a definite connection. Those who have best followed his teaching have most clearly understood that the future of philosophy is to be looked for, not in a slavish adhesion to Kant's or any other system, but in the detailed application of his principles, to the

critical investigation of the methods of particular branches of empirical inquiry. Already the effect of such an application has been shown in the new conception of history which has resulted from it, and there are indications that the time is not far away when men of science will begin to consider the position of their special departments in the light of the theory of knowledge.

It remains to be considered how far Professors Max Müller and Noire have succeeded in making Kant intelligible to an English-speaking public. One cannot help feeling how much better the work would have been had it consisted simply of one volume containing the translation of the first edition of the "*Kritik*," with that of the passages from the second edition printed in the first volume. Of Prof. Noire's Introduction it is difficult to speak with any satisfaction. It presents just such a view of the history of philosophy previous to Kant's time as used to be current in the days of Sir William Hamilton. The author's study of philosophy has apparently been the work of his leisure moments. To suppose, as both he and Prof. Müller seem to suppose, that a further development of the theory of knowledge is to be looked for from philology, is simply to ignore Kant's distinction between knowledge as a fact of experience and as that which is constitutive of experience. As has already been pointed out, it is in the former sense only that thought can be treated as dependent upon a particular organism, and consequently as related to language. In the latter sense alone, on the other hand, is it that which is the subject of Kantian investigation. Those who desire an historical introduction to German philosophy will do well to consult the pages of Prof. Caird rather than of Prof. Noire.

As regards the translation, the comparison of what has been recently published by Dr. Hutchison Stirling with the work of Prof. Müller is not to the advantage of the latter. No doubt the work is grammatically excellent, and the style and accuracy by far superior to that of the old translations, but it lacks that grasp of the subject which enables Dr. Stirling, in translating the first part of the "*Kritik*," to reproduce not merely German words by English words, but German ideas by English ideas. Yet while it may be that the "*Kritik der reinen Vernunft*" remains yet to be translated, this is because the reproduction in the English language of such a work must fulfil ideal requirements before it can be accepted as satisfactory. Prof. Müller has given to students of philosophy much that they did not possess before, and that is far superior to the ordinary work of this sort. His offering is indeed what he intended it to be, a fitting commemoration of the centenary of the date on which was published the treatise which was destined to revolutionise philosophy. A faithful and literal translation of that treatise is a boon for which he will not find the public ungrateful to him.

R. B. HALDANE

OUR BOOK SHELF

Insects Injurious to Forest and Shade Trees. By A. S. Packard, jun., M.D. Bulletin No. 7, United States Entomological Commission, pp. 275, 8vo. (Washington: Government Printing Office, 1881.)

THE industry and energy displayed by the United States official entomologists is astonishing, and the amount of the literature of economic entomology issued by them

would, if collected, form in itself a goodly library. One of these most valuable reports forms the subject of the present notice, closely printed, teeming with information, and illustrated by a multitude of excellent woodcuts. The amount of sound biological teaching is very great, and put forward in a manner that renders it intelligible alike to the "scientist" and to those for whose benefit it is more particularly intended. The author notices all the insects (mostly in great detail) feeding on particular trees, such as oak, elm, hickory, willow, pine, &c., &c., without special reference, in the first instance, to the particular *species* of these trees. This is a good plan, for it is only occasionally that certain insects are attached particularly to certain species in a *genus* of trees: these are specially indicated under the larger headings. We have often found ourselves in a dilemma in attempting a notice of these American reports, and this condition is strikingly in force with regard to this one in particular. Almost without exception, they are sound and lasting additions to the scientific literature of entomology; this one is especially so. But then there is the economic side of the question to be considered, and that is the most difficult. Naturally every insect that is attached to a particular species of plant, by feeding upon it, may in a certain sense be said to be "injurious" to that plant. Thus, in this present Report, under "Willow" we find even the "Camberwell Beauty" (*Vanessa antiopa*) included in the list of enemies; but we are quite sure that no one (not even the author) seriously imagines that it (with myriads of other species mentioned) is an "injurious insect" from an economic point of view. Certain insects feed on certain plants, and will eat no other; if the plant is exterminated, the insect disappears, and to keep up the balance of nature, it is quite possible that if the insect were exterminated in the first instance, some more destructive enemy (or disease) might eventually attack the plant. But the greater part of the enemies to trees commit their ravages by attacking the wood or bark, and here especially we think economic entomologists keep too much in the background the fact that many insects (and many of those here under consideration) act mainly the rôle of scavengers. Undoubtedly a leaf-feeder often attacks the most healthy trees, and as a rule it only becomes really injurious when present in extraordinary numbers; but with regard to what may be termed lignivorous insects, we strongly incline to refuse to see in the insect itself (in the majority of instances) the initial cause of the unhealthy condition; on the contrary we regard it as only stepping in to hasten decay commenced by causes quite unconnected with its presence. Our author, apparently unconsciously, virtually acknowledges this in his suggestions of remedies with regard to a beetle infesting the spruce (p. 277), and also elsewhere, by recommending, above all, preventive measures, these consisting in destroying all dead and dying trees, in which the insects especially abound. An unhealthy condition of the tree is the most favourable for the development of the beetle; but we are not of those who suppose a prescience in the latter which induces it to attack healthy trees for the benefit of prospectively remote generations of its descendants.

We wish Dr. Packard had not gone out of his way to coin worse than useless "*English*" names, many of which must prove more difficult to the class for whose benefit they are intended than are the scientific ones. With this exception, we thank him heartily for having produced a most valuable report. R. MCLACHLAN

The Law of Kosmic Order: An Investigation of the Physical Aspect of Time. By Robt. Brown, jun. (London: Longmans, Green, and Co.).

A SHORT while ago we gave an account of the origin of the zodiacal signs so far as recent Assyrian researches enable us to determine it. Mr. Robert Brown has now

published a little book on almost the same subject, the object of which is to trace the mythological conceptions to which the names given to the signs by the Accadians were due. He comes to the conclusion that the year was regarded by them as an extended nycthemeron, half the signs being diurnal or relating to the deities of day, and the other half being nocturnal, concerned with myths of the night. Early man thus recognised that there was one and the same law of "Kosmic Order" pervading all conceptions of time. In the course of his investigation Mr. Brown draws upon Egyptian and Iranian sources, but his chief materials are necessarily derived from the monuments of ancient Babylonia. Unfortunately the progressive nature of Assyrian study often renders what was written on the subject a few years ago more or less obsolete, and hence it happens that some of the statements on which he relies have been corrected or modified by subsequent research. Thus the name of the second zodiacal sign, as has already been mentioned in NATURE, meant "the directing Bull" in Accadian rather than "the propitious Bull," as Mr. Brown gives it. It is true that the word had both significations, but the signification of "propitious" was a later and derivative one. The name of the seventh sign again was "illustrious mound," not "illustrious altar," and seems to have referred to the story of the Tower of Babel, whose building was placed at the autumnal equinox, while the builder himself was called "the king of the illustrious mound." Such corrections, however, seldom, if ever, touch Mr. Brown's arguments or diminish the value of his interesting book. We can thoroughly recommend it to those who care to study a curious chapter in primitive astronomy.

Uganda and the Egyptian Sudan. By the Rev. C. T. Wilson, M.A., F.R.G.S., and R. W. Felkin, F.R.G.S. Two vols. (London: Sampson Low and Co., 1882.)

THIS double narrative is one of great interest. Mr. Wilson was one of the Church Missionary Society's missionaries sent out to King Mtesa on account of the favourable report of Mr. Stanley with regard to the eagerness of the Uganda potentate for instruction. Uganda, our readers will remember, is a district on the north and north-west of Victoria Nyanza, visited long ago by Speke, when Mtesa was quite a youth. Mr. Wilson's stay extended over two years, 1877-79. During that time, he had excellent opportunities of becoming acquainted with Uganda and the Victoria Nyanza and the districts on its south shores. He reached his destination by travelling west and north from Zanzibar, and was favourably received by Mtesa. He had much intercourse with that monarch, and gives a very rational estimate of his character, not by any means so enthusiastic as that of Mr. Stanley. Mr. Wilson's notes of his journey contain many additions to our knowledge of the region he traversed. The most important part of his narrative is that which relates to the country and people of Uganda. His chapters on Life in Uganda, on Uganda and the Waganda, and on the government and language of the Waganda, are full of fresh and interesting information, and will be valued both by ethnologists and geologists. Mr. Wilson is a favourable type of the missionary, thoroughly practical, a good observer, and a hard worker. He collected many specimens of plants, a list of which is given in the appendix, with vocabularies, and meteorological and hypsometrical observations. Mr. Felkin reached Uganda by proceeding from Suakin to Berber on the Nile, and up that river to Uganda—the first time that the Victoria Nyanza had been reached by that route. Both he and Mr. Wilson returned to Suakin by making a circuit round by the sources of the Bahr-el-Arab, and across by Obeid to the Nile. They accompanied the ambassadors sent by Mtesa to this country. Mr. Felkin's notes on the hydrography and natural history, as well as on the social and political condition of the country