Again, on p. 127, the author commences to explain the "sleeping" of a top, but stops short after briefly indicating that the effect is due to friction. It would require considerable mathematical ability to prove the phenomenon by actually integrating the equations of motion, taking account of friction in the manner suggested.

Most people find it easier and quite as effectual to explain the observed results from general principles.

Such difficulties would mostly disappear in the hands of an accomplished teacher. Moreover, the volume is exceedingly rich in examples, both illustrative and otherwise, and, in addition to those contained in the text, there is a collection of 300 problems at the end. As a class-book, or for use in the lecture-room, Mr. Loudon's treatise may therefore be safely recommended. G. H. B.

OUR BOOK SHELF.

Our Country's Butterflies and Moths, and how to know them. A Guide to the Lepidoptera of Great Britain. By W. J. Gordon, author of "Our Country's Birds," "Our Country's Flowers," &c. With a thousand examples in colour by H. Lynn, and many original diagrams. Crown 8vo, pp. vii + 150, plates 32. (London: Day and Son, 1896.)

ONE remarkable circumstance noticeable in the present plethora of works on British butterflies and moths, is that almost every new one is composed on a different plan. The present book reminds us a little of Wood's "Index Entomologicus," except that the figures are not reduced; and it will be very useful to schoolboys commencing a collection. All the *Macro-Lepidoptera* are figured, to the *Geometridæ* inclusive, and all the genera of *Micro-Lepidoptera*, except in the *Tineæ*, where the selection is limited to typical specimens of each family. The execution, though unequal, is fairly good on the whole, and most of the species figured will be easily recognised, though the want of figures of undersides, and of both sexes in the butterflies will be severely felt in many cases. One or two of the figures are, however, so unlike the insects they are supposed to represent, that our first impression on opening the book was that they were intended to represent some foreign species. We may specially instance the figure of *Sphinx pinastri* on plate 7, while that of *Smerinthus populi* is not much better. But this matters less in the case of conspicuous and easily identified species; and where accuracy is really needed, as in the smaller *Geometridæ*, the execution is much better. The letter-press largely consists of indices and tables, and contains much useful information relating to *Lepidoptera*, and even to insects in general. The main characteristics of the families, genera and species are briefly noticed, as well as their sizes and times of appearance, but nothing is said about localities or comparative rarity. Notices of the larvæ are limited to those of the butterflies; English as well as Latin names are used throughout. It is only fair to the author to say that we have rarely seen a book in which so much information was compressed into so small a space.

Handbook for the Bio-Chemical Laboratory. By Prof. John A. Mandel. Pp. 101. (New York: John Wiley and Sons. London: Chapman and Hall, Limited, 1896.)

IN this handbook will be found detailed descriptions of the methods of preparation of the most important substances which enter into the composition of the fluids and tissues of the animal body, and a synopsis of the tests for such substances, arranged in alphabetical order. Students of physiological chemistry will find the volume a handy laboratory manual.

LETTERS TO THE EDITOR.

[*The Editor does not hold himself responsible for opinions expressed by his correspondents. Neither can he undertake to return, or to correspond with the writers of, rejected manuscripts intended for this or any other part of* NATURE. *No notice is taken of anonymous communications.*]

Buried Celluloid.

IT has occurred to many people, that perhaps celluloid migh be useful as an insulator for electric cables. I feared it migh deteriorate. I have made an experiment of 4½ years duration which may be of use in connection with the subject. On August 15, 1891, I took four photographic quarter-plate celluloid plates, with the gelatine removed, and treated them as follows:—

No. 1 was nailed to an outhouse, and became rotten in a year.

No. 2 was 1 foot deep in garden soil.

No. 3, 1 foot deep in gravel.

No. 4, 1 foot deep in a rubbish heap.

The last three were dug up on April 6, 1896. Nos. 2 and 4 were in as perfect condition as ever. No. 3 has some sand rubbed in, but is perfectly sound.

The experiment was made at Pitlochry, N.B. The specimens can be seen at my office. GEORGE FORBES.

34 Great George Street, Westminster, S.W., April 16.

Suggested Photography by Transmitted Heat Rays.

I AM no chemist, and may be mistaken, and what I propose would be more curious than useful; but I believe it would be possible to get a visible shadow of a small object which was concealed from sight by being enclosed within an opaque material. There are substances opaque to light, but which transmit the rays of heat; most readily, I suppose, those from the sun, and these are substances on which such heat rays inpinging would cause some visible change.

If the heat-transmitting substance allows the rays to pass without dispersion, preserving their rectilinear direction, then these rays falling upon a duly prepared screen would cause a visible change upon a portion of its surface; and any ordinary opaque object placed within the heat-transmitting substance would cast a shadow, dark, or bright, as the case may be.

Penzance. REGINALD COURTENAY.

Influence of Terrestrial Disturbances on the Growth of Trees.

As the subject of forestry has recently been much under discussion, and appears to be exciting more interest in this country than it was, I trust I shall not be trespassing upon your space in calling attention to a peculiar case of timber growth which I have noticed, and in soliciting the opinions of those of your readers who are likely to be well-informed upon foreign woods, as to its true cause.

There is in the British Museum of Natural History the cross-section of a large Douglas fir grown in British Columbia, and stated to be more than 500 years old at the time it was felled, which was, I believe, in 1885. An attractive feature in the section is that the annual rings have been marked off chronologically, and some historical event, contemporaneous with the growth of the ring to which the date is attached, is given.

A glance, however, at one part of the surface of the wood, which is polished, reveals a very remarkable modification of the annual rings, which appears to have taken place towards the close of the first century of the tree's existence. About twenty of the rings are there crowded so closely together as to present, at a short distance, the appearance of a zone about three-quarters of an inch wide running round the trunk, and differently coloured from the rest of the wood. It is also to be particularly observed that the change to ordinary growth on either side of the zone is abrupt; and, further, that no such phenomenon is afterwards presented during the many centuries of the tree's subsequent development.

The suddenness of the changes puts out of court the idea that the check to growth might have been due to overcrowding in the forest during the period of the struggle for supremacy over its fellows, which the tree would undergo, because any effect from this cause would only come on gradually, and diminish in the same manner.

The supposition that twenty bad seasons occurred in succession, is unlikely under any climatic conditions with which we are