

## OUR BOOK SHELF.

*British Moths.* By J. W. Tutt. Pp. xii + 368. Illustrated. (London: George Routledge and Sons, 1896.)

THE last of the many recent additions, superficial and profound, to the stock of books on British Lepidoptera, is essentially a book for the beginner, but one which challenges consideration as an attempt "to deal with our moths on lines which the study of the last twenty-five years has convinced all true naturalists are the correct ones." The points by which this claim is redeemed consist mainly in the substitution of an arrangement based on Dr. Chapman's division of the Lepidoptera by pupal characters for the old order so long accepted, and by numerous statements of phylogenetic relationship. Supported as they are by very little in the way of explanation to make them intelligible, these innovations are not so much an improvement as a snare; it is of no use to talk glibly in a beginner's book about "Obtectæ and Incompletæ," "offshoots from a *Pyralid stirps*," and the like, unless these things are fully and clearly explained. Much of the phylogeny so confidently put forward is not that accepted by other recent writers on Lepidoptera and is unfit matter for dogmatic assertion, especially as first impressions thus acquired are hard to unlearn. Neither is the writer consistent, for the *Hepialidæ*, *Micropterygidæ*, and *Eriocephalidæ* are separated from each other by numerous families, although the position, remote from all other Lepidoptera, that has been assigned to the three is one of the most important and widely-accepted of recent changes. Turning to those parts of the book which have no special claim to novelty of treatment, we find, as is to be expected from so competent a lepidopterist, that his statements are accurate and often valuable. But far too much space is taken up, particularly in the *Noctuæ*, with brief remarks on species which convey no real information. In spite of another claim put forward in the preface, it is only here and there that a species is described in recognisable terms. If all perfunctory mention of species had been excluded, and the work confined, as a book of limited scope may well be, to such moths only as are common and of wide distribution, space could have been gained for an adequately-full treatment of the species retained. The coloured illustrations are fairly good; there is but one diagram of neurulation, and that is incorrect. W. F. H. B.

*Moorland Idylls.* By Grant Allen. Pp. 257. (London: Chatto and Windus, 1896.)

*By Tangled Paths.* By H. Mead Briggs. Pp. 203. (London: Frederick Warne and Co, 1896.)

THE descriptions of scenes of pastoral life contained in the first of these volumes have, we believe, already appeared in one of the monthly magazines, though no reference is made to that fact. They may be regarded as science diluted with sentiment, and that is the kind of literature which the average man and woman will sometimes read. Nevertheless, if Mr. Allen's idylls lead people to observe and think about the habits and characteristics of common plants and animals, they will accomplish a useful purpose. The sympathetic spirit in which they are written will attract lovers of nature, and will do much to foster a feeling for the preservation of our native fauna.

Mr. Briggs's dainty volume is much the same in character as that of Mr. Grant Allen's, the chief differences being that it is a little more poetical, and a little less instructive. The contents furnish suitable reading for persons who muse over the poetry of nature; and judging from the abundance of literature of a similar character, there must be many who like to engage their minds on natural things.

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## LETTERS TO THE EDITOR.

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## Sun Columns at Night.

A REMARKABLE phenomenon, similar to that which I described in 1888 (*NATURE*, vol. xxxviii. p. 414), was witnessed by me on the evening of March 13. At 7h. 7m. p.m. I saw on the western sky five silvery white columns coming evidently from the sun, which set at 6h. 1m. The columns extended over the whole sky, and, like meridians on a globe, converged to a point in the eastern sky, which was about as high above the eastern horizon as the sun was below the western horizon. The sky was full of stars, a powerful wind having swept it clear; and at 7h. 25m., fifteen minutes before complete night had set in, the rays still reached the zenith. The rays cannot be *straight* sun rays, for the calculation of the height of the atmosphere by Alhazen's method would yield an abnormally high value, and they could not meet in the east, like meridians, but they must be *curved* and pass *along* the upper strata of the atmosphere. This is either due to reflection, or, more probably, the phenomenon is one of an electrical nature, similar to that described in *NATURE* of March 12 (p. 437), which has just reached me, by Dr. O'Reilly.

The remarkable fact that at 7h. 25m., when the sun was about 14° below the horizon, the perpendicular arc reached the zenith, whereas that passing along the equator extended to about Cancer, appears to prove that the equatorial diameter of the atmosphere greatly exceeds the polar diameter. The phenomenon disappeared at 7h. 28m. BOHUSLAV BRAUNER.

Bohemian University, Prague, March 16.

## Kathode Rays or X-Rays?

To the reader of the numerous papers that have recently been communicated from various sources on the subject of Dr. Röntgen's great discovery, considerable obscurity is caused by the confusion of the above terms. Until quite recently what has been meant by "kathode rays" or "the cathodic discharge" has been that discharge of matter from the negative electrode in a highly-exhausted vacuum tube, which can be deflected by a magnet, produce heat, mechanical energy, and phosphorescence, can be brought to a focus by using a curved kathode, and in this case will project an inverted image of the kathode upon either the inside walls of the tube, or upon a phosphorescent screen placed inside the tube to receive it. As is well known, this discharge has been very thoroughly investigated abroad by Hittorf, Pulu, and others, and in England by Crookes, and has been called by him the discharge of "radiant matter." The X-rays of Dr. Röntgen are said to be generated at the spot where the cathodic discharge of radiant matter impinges upon an obstacle, be it the phosphorescent walls of the vacuum tube, or a plate of metal similarly placed to receive it. The distinction is perfectly clear in Dr. Röntgen's paper, as the following extracts from the translation, published in this journal on January 23, show.

"In general, other bodies behave like air; they are more transparent for the X-rays than for the kathode rays. A further distinction, and a noteworthy one, results from the action of a magnet. I have not succeeded in observing any deviation of the X-rays even in very strong magnetic fields. The deviation of kathode rays by the magnet is one of their peculiar characteristics."

"Hence I conclude that the X-rays are not identical with the kathode rays, but are produced from the kathode rays at the glass surface of the tube."

"I have obtained them in an apparatus closed by an aluminium plate 2 mm. thick."

It will therefore surely be better to retain the term proposed by their discoverer, X-rays, or else to call them Röntgen rays, and thus avoid the confusion that must result from calling them "kathode rays."

JAMES H. GARDINER.

## A Remarkable Meteor.

THE slow-moving meteor of March 1, 8h. 31m., described by Mr. J. E. Clark at York (*NATURE*, March 12, p. 437), was observed by Mr. T. W. Backhouse at Sunderland, and he noted