

of investigators, we may trust that the museums and naturalists of India will avail themselves of it in order to advance the subject by serious work, and thus render a second edition necessary. We may point out that in such case it would be well, in the bibliographical references, to distinguish those that relate to habits and biology from those that are systematic and nomenclatorial.

D. S.

## OUR BOOK SHELF.

*A Contribution to the History of the Respiration of Man.*  
By William Marcet, M.D., F.R.C.P., F.R.S. Pp. 116;  
charts and diagrams. (London: J. and A. Churchill,  
1897.)

THE book before us comprises the subject-matter of the Croonian lectures delivered before the Royal College of Physicians in 1895, and an appendix, which latter contains a full description of the methods of investigation employed by the author. The first lecture contains a discussion of respiration from a general biological standpoint, and concludes by giving the effects of muscular exercise upon the production of  $\text{CO}_2$ , and the temperature of the body. The second lecture is devoted to human respiration; the different forms of breathing, and the absorption of oxygen in the body are considered in it. In the third lecture the effect of volition upon respiration is discussed, simple volition towards any kind of muscular exercise, *i.e.* volition without any response being attended by an increased production of  $\text{CO}_2$ , and an increased absorption of O. The question to what extent response to volition can be checked is, with regard to the author's deductions, of the greatest importance. In any case the volition exerted is not simple volition to increased breathing or muscular movement, but volition to the movement in question + volitional inhibition of the movement. The results of the author in this direction will almost certainly attract the attention of psychologists. In the fourth lecture the author discusses the changes in respiration produced by changes in the pressure of the atmosphere breathed, and concludes by showing the influence low atmospheric pressure exerts in checking volition. The appendix comprises a description of the methods used, and numerous experimental protocols.

The book must be regarded as a valuable contribution to the physiology of man. It is to be regretted that no general index, and no headings to the chapters are given. The summaries at p. 70 in the text could have been placed to much greater advantage at the head of their respective chapters. It is to be hoped that the sphere of usefulness of the book will not be curtailed by this omission.

F. W. T.

*Untersuchungen ueber den Bau der Cyanophycien und Bacterien.* Von Prof. Dr. Alfred Fischer. Mit 3 lith. Tafeln. (Jena: verlag von G. Fischer, 1897.)

THE author gives a critical and literary account of the structure of the cells of bacteria and of the blue-green algae, which possess many features in common. He comes to the conclusion, in opposition to many other investigators, that no real nucleus, or nucleus-like body is really present, but he considers that the colour of the algae is to be regarded as localised in a chromatophore.

A great part of the book is devoted to an account of the methods in vogue in connection with researches into these minute histological details, and Dr. Fischer's criticisms will be read with interest by all who remember the fine work he has already done, especially in elucidating the structure of bacteria.

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## LETTERS TO THE EDITOR.

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## A Brilliant Perseid.

IN the hope of being able to record photographically the passage through our atmosphere of some of the August meteors, I exposed during the night of August 12 three photographic plates, one towards the pole star, and the other two towards the constellations of Perseus and Lyra. On the plate exposed to the latter constellation absolutely no trace of any meteor trail can be seen, but on the other two a very definite and distinct trail, peculiar for the different degrees of condensation in it, is easily visible. From the position and similarity of the trail on the two plates, there is no doubt that the same meteor was in question. These two plates were exposed in cameras, one a  $5 \times 4$  with a Zeiss double combination lens of 224 millimetres focal length, and the other a  $7\frac{1}{2} \times 5$  with a Dallmeyer rapid rectilinear lens. The trail recorded by the latter instrument falls so near the edge of the plate that the image is somewhat out of focus; but on the other plate, although it is also near the edge, the image is very sharp and clear. From an examination of this plate, the following particulars have been obtained:—The path of the meteor extends nearly  $9^\circ$  in the constellation of Camelopardus, and a comparison with Cottam's star chart shows that the co-ordinates of the points of appearance and disappearance were, according to the photographic plate, R.A. 4h. 53m. Decl.  $+65^\circ 25'$ , and R.A. 5h. 32m. Decl.  $+66^\circ 15'$ . The actual visible length of trail must have been much longer than this, although the lens and plates used were both very rapid. It may be mentioned that the most dense part of the trail was equal in intensity to that given by the image of  $\beta$  Camelopardus (4th mag.) after an exposure of fifty-five minutes (11.20 p.m. to 12.15 a.m.).

The trail commences by being very faint, gradually increasing in density; it then fades off a little, and again becomes more dense for a short period of time. After another interval it becomes very dense, corresponding in this respect with the image of  $\beta$  Camelopardus. Again it becomes feeble for some distance on the plate with one minor condensation, and then suddenly there is an abrupt increase in density, after which it gradually fades away, and is no longer visible.

The path traversed lay nearly half-way between the stars 739 and 780, and passes a little to the south of  $\alpha$  Camelopardus. The meteor was evidently a true Perseid, the trail, when produced backwards, lying slightly to the south of  $\eta$  Persei.

In conclusion, it may be added that the camera was set so that  $\eta$  Persei should fall in the centre of the plate, the instrument being mounted on the object-glass end of the Kensington 10-inch equatorial. The exposure lasted from 11h. 20m. p.m. to 12h. 15m. a.m.

W. J. S. LOCKYER.

## X-Ray Tubes.

THESE tubes when very highly exhausted become capricious; at times they will do good work, while at other times, and without any known cause, they refuse to illuminate.

In my endeavour to learn by experiment, I found that when playing the electricity upon and round the outer surface of the cathode end of the tube, it is quite possible to obtain sparks between the cathode wire and the inner surface of the glass. With each such spark the otherwise obstinate tube is momentarily illuminated; evidently the spark is owing to charges induced on the inner surfaces of the tube.

This led me to coat the cathode end of the tube with tinfoil, leaving about a  $\frac{1}{4}$ -inch gap between the tinfoil and the cathode terminal of the tube; the behaviour of the tube is now much affected—formerly it was uncertain when used with a 6-inch spark-length—and required frequently heating. With the tinfoil coating the tubes illuminate with certainty and with a much shorter spark-length. In fact I can now easily, and well, illuminate a highly-exhausted tube with an influence machine which has 17-inch plates.

JAMES WIMSHURST.