

particularly among the larger kinds, and offers various suggestions, both as to increasing the number of domesticated forms and the conservation of wild species in reservation-areas, such as the Yellowstone Park. Valuable as many of his proposals are, it is to be feared, in the present relation of natural science to bodies politic, that they are somewhat of an utopian character. It is not easy to maintain such areas under entirely natural conditions and free from interference, administrative or otherwise. To take a small instance: it is notorious that in the New Forest, perhaps our nearest approach to such an area, the insect-population has greatly diminished during the last thirty years, and many rare and retired species are on the point of extinction.

In the artistic, though somewhat unequal, illustrations, and the excellence of printing and paper, the book is worthy of high praise.

W. F. H. B.

OUR BOOK SHELF.

A Geological Sketch Map of Africa South of the Zambesi. By E. P. T. Struben, F.R.G.S. (London: Edward Stanford, 1896.)

THE chief object of this new map, and accompanying pamphlet, of South Africa is to show that the Witwatersrand beds occur over a large portion of Africa south of the Zambesi. The band of dolomite, already described by Mr. Draper, is used by the author as a means of identifying the various scattered portions of sandstones, conglomerates, &c., occurring in South Africa, and which in many localities have proved to be auriferous. That the auriferous strata of the Rand occur outside the Transvaal is an established fact; but Mr. Struben hardly brings forward enough evidence to show that the sandstones, conglomerates and dolomites, recognised by him as identical with the Witwatersrand beds, are really all of one age.

The table of strata is very meagre in detail; the formations recognised being "Granite, Carboniferous beds, Sandstones, Shales and other stratified rocks, and Limestone." The formations are too much lumped together to be of much service, and there remains a doubt that the dolomite limestone mentioned by Mr. Struben is of various ages. A strip of crystalline limestone is represented near the coast north of the Umzimkulu River, and coloured similarly to the dolomite, but no mention is made of the cretaceous rocks of the east coast. There is no attempt made to show the relationship of the Rand beds to the Dwyka conglomerate, the Zwaartebergen quartzites, and the older rocks of the Cape. The metamorphic schists underlying the formations of South Africa are not mentioned. The relation of the Rand beds to the coal-bearing strata is also not clearly stated. In Natal the relationship is drawn as one of perfect conformity; but it is certain that in the Transvaal the coal-bearing rocks are unconformable to the Rand beds, and of much more recent date.

Mr. Struben's map, as showing the localities in which the minerals occur in South Africa, is valuable, but it does not approach in scientific value to Dunn's map of South Africa. The stratigraphy of South Africa is extremely complex, and a solution can only be arrived at by a survey, such as was commenced by Dunn, Griesbach and Stow.

Wayside and Woodland Blossoms. A Pocket Guide to British Wild Flowers for the Country Rambler. (Second Series.) By Edward Step, F.L.S. Pp. 170. (London: Frederick Warne and Co., 1896.)

WE are glad to know that the first volume published under the same title as this has met with the success it

deserves, and we hope the present pocket-book will have a similar welcome extended to it. Four hundred species of flowering plants were described and illustrated in the first series, which Mr. Step now supplements with descriptions of 325 species, 130 being represented upon coloured plates, while 23 are shown in black and white. The plates render the identification of a plant a comparatively easy matter, and the clear descriptions of the plants are worthy accompaniments to them. Mr. Thiselton-Dyer should rejoice at the opportunity which the book affords every one to learn something about botany from "wayside and woodland." It will be remembered that as president of the botanical section of the British Association last year, he condemned the system of botanical teaching followed in many schools for examination purposes, and pleaded that the subject should be developed as an educational instrument. In the course of his address he said: "The modern university student of botany puts his elders to blush by his minute knowledge of some small point in vegetable histology. But he can tell you little of the contents of a country hedge-row; and if you put an unfamiliar plant in his hands, he is pretty much at a loss how to set about recognising its affinities." Mr. Step's book provides such students with the materials to make up their deficiencies; it is a book which will develop the observant faculties in young students of natural history, and one which will make more lovers of botany than all the examination syllabuses and text-book formulas yet devised.

LETTERS TO THE EDITOR.

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A Fine Shooting-Star; and Heights of Meteors in August and November 1895.

A REMARKABLY bright shooting-star was seen here on Saturday, June 13, at 10.59 p.m., under such favourable conditions of a clear sky and warm calm air on that evening, that it may possibly have happened that other notes were kept of its appearance, in the South of England, by astronomical observers. It was not a large-sized fireball, but in its course of about 30° it increased quickly from the brightness of a 1st mag. star to that of Sirius and of Jupiter, and just before its disappearance it shone with a short white flash as bright as Venus, which lit up the sky quite distinctly to about 20° or 30° from its final bright expansion. The head was white, free from sparks, and left along the greater portion of its course a yellow streak of light, of which a portion 8° or 10° in length was visible 10 seconds, while a shorter piece, 3° or 4° long at the end of that, where the bright flash occurred, growing white and misty by degrees, remained visible for 40 seconds. Duration of the flight about 2 seconds; from 230°, + 20° to 208°, - 4°; the patch of long-enduring streak extending about from 212°, ± 0°, to 209°, - 3°.

This track is directed from the head of *Andromeda*; and albeit the meteor greatly resembled a bright August Perseid in appearance, of which shower first members have been traced as early as the beginning of July, proceeding from radiant-points in much lower R.A. than the chief centre of the system, yet the displacements of this meteor's course in time and in position from the main stream of the Perseids are too considerable to allow an explanation of its appearance of that kind to be proposed as a probable conjecture. But there are no less than four ordinary radiant points, all active at this time, as Mr. Denning has informed me, in *Cygnus*, *Lacerta*, and *Honores Frederici*, in the "List of 918 Radiant-points" which he has published in the *Astronomical Society's Monthly Notices* (vol. 50, p. 410, May 1890), at distances back along the line of flight, of 55°, 70°, 80°, and 100°, from which its flight was directed accurately; and it is from the last of these slender meteor-sources (No. 174 in his List), at 354°, + 39°, about 5° south of ι , κ *Honorum*, a centre of swift, long-pathed, streak-leaving meteors in June and