OUR BOOK SHELF.

Palaeontologie und Descendenzlehre. By E. Koken. Pp. 33; illustrated. (Jena: G. Fischer, 1902.)

IN this essay, read before the Congress of Science and Art held at Hamburg in September last, the author briefly explains in a popular manner some of the more important evidence in favour of evolution afforded by palæontological researches and discoveries. After alluding to the old belief in the separate creation and immutability of species, Dr. Koken mentions Lamarck's theory, and then passes on to the revolution in scientific thought and belief brought about by Darwin's work. With a brief reference to Waagen's investigations and theories in regard to the mutations of ammonites, and the expression of the belief that what holds good in this case will also apply to other groups, he proceeds to cite some of the most striking instances of the descent of one group from another. In regard to mammals, it is considered that the earliest forms were nearly allied to the Insectivora, and that from these were developed the Creodont Carnivora, from which subsequently branched off the placentals on the one hand and the marsupials on the other. Allusion is next made to the importance of Archæopteryx, as in some respects a connecting link between birds and reptiles. Attention is then called to the important evidence which has been obtained during the last few years as to the relationship between the anomodont reptiles and mammals on the one hand, and between the former and the labyrinthodont amphibians on the other. A wide cleft still, however, separates amphibians from fishes—a cleft which, in the author's opinion, is in no wise spanned by the lung-fishes, the amphibian resemblances of which he believes to be largely adaptive.

Having cited the foregoing and other instances of genetic relationship between various classes, Dr. Koken next proceeds to consider numerous cases of intergradation between minor groups. In the Mammalia he first of all refers to the now well-known fact that in the early Eocene it is almost impossible to distinguish between unguiculates and ungulates, and then proceeds to discuss several of the phylogenetic lines into which the latter have developed. Special mention is made of the clawed chalicotheroids of the Miocene and Pliocene, as a remarkable side-branch of ungulate development; and Kowalevsky's doctrine of the "adaptive" and "inadaptive" modifications of the artiodactyle carpus is fully explained. A very remarkable instance of the evolution of one type from another, which has not received so much attention as it deserves, is exemplified among the dinosaurian reptiles by the Liassic *Scelidosaurus* and the Upper Jurassic *Stegosaurus*, skeletons of which are figured in juxtaposition.

This excellent little sketch concludes with some remarks upon former land connections and general observations on the evolution of the surface of the globe and its inhabitants. R. L.

The Laboratory Companion to Fats and Oils Industries By Dr. J. Lewkowitsch, M.A., F.I.C. Pp. xi + 147. (London: Macmillan and Co., Ltd., 1901.) Price 6*s.* net.

THE book is essentially a collection of tables of the numerical values obtained in the analysis of oils and fats, and of tables useful in industries where oils and fats are employed; it forms a companion to the author's earlier publication on the "Chemical Analysis of Oils, Fats and Waxes." The amount of information in the book is very extensive, as may be judged from the fact that the number of oils only, for which constants are given is 111, and the number of fats 65.

The author states in his preface that "numerical values, so-called constants, and variables, have been carefully scrutinised, and only the most reliable ones have been given. In some cases the most probable values had to be decided on." As the consequence of this, we find in the majority of cases single numbers given for the iodine value, saponification value, &c., of oils and fats. This precludes reference to the results of the various observers. The arrangement of materials under the heading of separate manufactures is a very useful feature. Thus, under the heading "soap manufacture," are eight tables, including such information as the percentages of caustic soda and caustic potash in caustic lyes, the influence of temperature on the specific gravities of caustic soda solutions, and the amounts of caustic alkali solutions required to saponify fats of certain mean molecular weights.

LETTERS TO THE EDITOR.

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Colour-variation in the Guinea-fowl.

As this bird is such a recent addition to the poultry-yard (for, although known to the Romans, it went out of domestication in the Middle Ages) and has not been selectively bred by fanciers, its spontaneous variations are particularly interesting. Here, in India, where guinea-fowls are much bred, several well-defined types of coloration constantly present themselves in these birds, kept solely for the table.

There is first the normal dark-grey form, speckled with white and with white bars on the primary quills. This is the commonest; but it varies from the wild type in having more white on the naked head and neck, and generally in having the toes and shanks more or less orange instead of black.

Secondly, there is a form, marked exactly as the above, but on a lavender or French-grey background; it resembles, however, the dark normal bird in the coloration of the head and legs.

A third form is of a purplish-slate without spots, but retaining the white bars on the primary quills; the head and legs also are coloured as in the common normal form.

There are also, of course, albino birds, which have entirely orange-yellow legs and feet, and no dark purplish hue about the bare head, but only white and red.

The pied birds which occur are particularly interesting, the marking being very constant—white underparts and white primary quills. The white may invade more of the wing, and may be reduced in amount on the breast and wings until the coloured form is reached, but I have never seen a splashed or blotched bird, such as one often finds among pigeons or ducks.

All the colours, spotted-grey, spotted-lavender and slate, may be pied like this, but the normal spotted-grey oftenest, as one would naturally expect from its greater frequency. The bare dewlap of these pied birds is white when the white feathering comes as far, not blue or purple as in coloured birds.

The only unspotted-lavender bird I have seen as yet was a white-pied one.

I have not had the same opportunities of studying guinea-fowls in England as I have out here, but certainly, to the best of my recollection, all the colour-types I have described occur there, which, considering the difference of climate, shows that this factor does not determine variation in this bird.

As I have remarked above, the pied birds grade into the coloured ones; but typical specimens are more common than intermediate ones, and there is no gradation whatever between the two spotted forms, the dark-grey and lavender. The unspotted slate form does often display a few white-marked body-feathers, but by no means tends to intergrade with the normal type.

If this bird, with its uniform body-colour and barred primaries, occurred in a wild state, the markings of the quills, concealed as these are in repose, would be set down to sexual selection or claimed as "recognition marks"; and a similar cause would be