

mention one only. From my personal experience I am utterly unable to discover any distinction at the time of perception between a visual image in waking life and one in a vivid dream. It may be that afterwards I recognise that the latter were only baseless visions, but not, as a rule, from any quality or deficiency in the visual percept itself. I am aware that it has been suggested that even in dream images the retina is in some obscure way concerned, but this assumption seems to me quite gratuitous; it is not, so far as I know, supported by any evidence, and ought to be cut off by the razor of Occam.

EDWARD T. DIXON.

The Hard, Hythe, Southampton, December 5.

The Coloration of Birds' Eggs.

WITHOUT wishing to trespass further than I can help upon the space at disposal for discussing this topic, I may just explain that in my reply to Mr. Leslie, June 11, 1908, I distinctly gave it as my opinion that coloration had no connection with Mendelian principles. I concluded that coloration often depended on habitat, and was now useful as a means of protection; but the habitats (and nesting sites) of birds change, hence the anomalies met with which are cited as difficulties.

As to the colour-changes of the chameleon, Mr. Leslie ought to remember that this is an act of the animal itself, and a distinctly psychic act, in no way connected with reproduction. The coloration of the bird's egg is primarily the application of a pigment—depending in intensity on health and age—by the bird upon a *product* which has already ceased to form an integral part of the animal before the pigment is applied; and the bird's egg is not—like the mollusc's shell—an organic complement of the animal producing it. One might as well try to trace the evolution of a bird from the track of its foot in the sand as from the coloration of its egg!

So the parallel is inadmissible for this simple reason alone, apart from many others. Moreover, if number, form, size, texture in the shell itself have some morphological significance in relation to the bird's oviduct and secretory sacs, being also determined earlier in the phylogeny (as in the individual's ontogeny) of the group, coloration has little, except upon the selection and store of pigment; and the saurian and early avian eggs, furthermore, were uncoloured.

Thus coloration is a recent acquisition, which, as I have already pointed out, is intimately related—just as eggs and classification are, to some extent—to *habitat*, allied species (even genera or groups) laying allied types of eggs, adopting the same mode of life and nesting site. Thus it is a *physiological* adaptation, and as such cannot explain morphological origins, though as cause and effect we may compare coloration and protection from enemies, &c. In a word, coloration exists for concealment, and markings (e.g. the black blotch on the cuckoo's egg) for identification.

A. R. HORWOOD.

Leicester Corporation Museum, December 20.

THE CAPTURE AND TRAINING OF WILD ANIMALS.¹

THE name of Carl Hagenbeck has attained such world-wide celebrity that a volume from the pen of the great animal-dealer and animal-tamer must surely receive a hearty welcome from the reading public. The publishers have therefore been well advised in bringing out an English edition of the original German work, although they might have taken care that it bore on the title-page some indication of its being from the pen of Mr. Hagenbeck himself. Whether the title is an exact translation of the German one we are unable to say, but if it be so, a slight modification would have been advisable, as it certainly does not read well in English. Neither, in spite of Dr.

¹ "Beasts and Men, being Carl Hagenbeck's Experiences for Half a Century among Wild Animals." An abridged translation by H. S. R. Elliot and A. G. Thacker, with an introduction by P. Chalmers Mitchell. Pp. xiii+299; illustrated. (London: Longmans, Green and Co., 1909.) Price 12s. 6d. net.

NO. 2096, VOL. 82]

Mitchell's testimony as to the accuracy of their rendering, can we congratulate the translators on their style. "The menagerie owner Malforteiner" (p. 226) is not, for instance, elegant English; while a sentence on p. 153 conveys the astounding statement that Mr. Hagenbeck walked off with the fore-leg of a live elephant. On p. 157, as in many other places, we find "which" repeated in the first half of a very short sentence; and on p. 168 we find it stated that "this species is often captured, but in captivity they are very liable to die." On p. 58 the word "lime," in place of "bird-lime," completely spoils a sentence.

Mr. Hagenbeck commences his narrative with an account of his early life, in the course of which he tells his readers how he was initiated into the business of buying and exhibiting animals by his father, who took it up as a kind of supplement to his own proper trade late in life. When he once felt his feet, the author of the present volume forthwith proceeded to organise the trade of wild-beast catching on thoroughly business lines; and as he is the only man that has done so, the consequence is that he has practically monopolised the whole trade. Although it at times



Young Walrus at Stellingen. From Hagenbeck's "Beasts and Men."

undoubtedly yields large profits, and is always full of interest to a man of enterprise and resource, the trade is full of risk, and demands great stability of character and perseverance in the face of losses on the part of those by whom it is conducted. We hear, for instance, of a loss of 10,000*l.* owing to disease seizing a collection of animals at the Crystal Palace for which that sum had been offered; while a sum of 5000*l.* was lost in two unsuccessful expeditions dispatched to Central Asia for the purpose of capturing argali sheep. The sheep were, indeed, captured right enough, but all died on the way home.

One of Mr. Hagenbeck's periods of great prosperity took place in the middle 'sixties and up to 1876, when an enormous number of live animals was brought out of the Egyptian Sudan. The menageries of the world were, however, overstocked, and about the year 1877 the author had almost to give away giraffes: this state of affairs induced him to take up the exhibition and training of animals in an establishment of his own—a branch of his business which culminated in the inauguration of the present animal-park at Stellingen. One of his earliest experiments in this direction was