

buffeting with its wings the hand that captures it. The note is harsh, not unlike the croaking of a bull-frog*."

There are several closely allied species: *C. ænea*, as figured (*i. e.* the head) by Mr. G. R. Gray in his illustrated work on the 'Genera of Birds,' has a large round knob at the base of its upper mandible, of which the Indian species never presents the slightest trace; and a beautiful specimen before me, from Borneo (?), exhibiting this knob, differs also from the Indian species in several other particulars †. Another, from the same region, exactly resembles the Indian species, except in its inferior size, having the wing but 8 inches, and the rest in proportion; this is doubtless the *C. ænea* of Raffles's list, described as "exceeding 15 inches in length"; so that in Sumatra there would appear to be closely allied diminutives of both the Indian species ‡. *C. perspicillata* of Java and the Moluccas also approximates a good deal, but is readily enough distinguishable.

Of the third great genus of fruit-eating pigeons, *Ptilinopus*, also largely developed in the Eastern Archipelago and Polynesian isles, no Indian species has been discovered; the *Pt. Elphinstonii* of Sykes (seemingly) appertaining to the same group of ordinary pigeons as the British Cushat or Ring-dove.

[To be continued.]

BIBLIOGRAPHICAL NOTICES.

A Natural History of the Mammalia. By G. R. WATERHOUSE, Esq., of the British Museum. Illustrated with engravings on wood and coloured plates. London, H. Baillièrè.

THE first volume of this excellent work, in which every species in the class Mammalia will be described in detail, is now completed. The author is already favourably known to the public by various monographs, and by papers in this Journal, on the Rodentia, Marsupialia and other animals. His former connexion with the Zoological Society and his present position in the British Museum (where he is

* *C. sylvatica*. I have found these birds only in one part of my district, —in the jungles bordering on Midnapore. They were in a party of eight or ten, perching on detached trees, in a wide plain of jungle-grass. The notes are deep and ventriloquous. By the Oorias it is called *Sona Kubootra*, or Golden Pigeon; it is also termed *Burra* (or Great) *Hurrial*.—T.

† It seems to be the "Sumatran Pigeon, no. 12," of Latham.

‡ The true *Columba ænea* of Linnæus is founded on the *Palumbus moluccensis* of Brisson, whose figure and description perfectly accord with the Indian bird, though it is stated to be from the Moluccas. The knob-fronted species will stand as *C. myristicivora*, Scop. (*C. globicera*, Wagl.), founded on Sonn. Voy. Nouv. Guinée, pl. 102. Mr. Gray erroneously applies the name *myristicivora* to Sonn. pl. 103, which is the *bicolor* of Scopoli.—H.E.S.

at present chiefly employed on fossil Mammalia),—his extensive acquaintance with the works of foreign naturalists, as shown by the numerous references in this publication,—together with several visits undertaken solely from his love of science to the museums on the continent, eminently fit him for the great work here commenced. We use this expression advisedly, for it must not be supposed that we have here merely a compilation; original descriptions, and measurements generally taken from more than one specimen, are in the majority of cases given. The dental and osteological details are described with particular care, and are illustrated by distinct and careful plates: in the precision of these details, we imagine we see the effects of Mr. Waterhouse's long and ardent attachment to entomology. Although the work is not a compilation, the author has not neglected any source of information; and in this first volume, which is confined to the Marsupiata, he is much indebted to Mr. Gould's admirable labours in Australia. Mr. Waterhouse however often differs from Mr. Gould with respect to specific characters, and we rejoice to see no signs of that rage to create new species, so prevalent amongst zoologists.

A distinguishing feature in this work is the notice of all fossil species, interpolated in their proper places; hence, when the whole is completed, we shall have a comprehensive view of the entire class of Mammalia, as far as known; and the accident of extinction will not remove from the series, as is too often the case in systematic works, allied or intermediate forms. Many curious and original remarks are interspersed on the affinities of the various genera and families; but we find no trace of those fanciful speculations on analogies—such as between a mouse's nose and a snipe's beak, or between oxen and poultry—which we fear must have lowered us in the estimation of continental naturalists. In reference to affinities, we must express our regret that the Marsupiata were not ranked, in conformity with Prof. Owen's views, as a sub-class distinct from the placental mammifers. Whether we view classification as a mere contrivance to convey much information by a single word, or as something more than a *memoria technica*, and as connected with the laws of creation, we cannot doubt that where such important differences in the generative and cerebral systems, as distinguish the Marsupiata from the Placentata, run through two series of animals, they ought to be arranged under heads of equal value. We are not convinced by the ingenious remarks on this subject given at p. 17; we cannot admit that numerical differences in the number of the species in two groups, or their geographical distribution, or a somewhat hypothetical statement that the amount of difference is greatest amongst the lower forms in each class, ought to be taken into account in a system of classification; we believe that our best botanists, who may well serve as guides on this subject, eschew such considerations, and confine themselves to the strict rule of difference in structure. Should this rule be disregarded, some naturalists would admit habits (useful as they undoubtedly are)—some would admit analogies, or, as well expressed by Lamarck, adaptations in widely different

beings to similar external conditions,—some would admit the supposed order of the appearance of organic beings (as has been suggested) on the surface of the earth, as aids or bases of classification;—the result would be, that no two naturalists would agree in the same conclusion, and our system, instead of becoming a solid and simple edifice, would be a labyrinth of blind passages.

An admirable feature in Mr. Waterhouse's work is the great attention paid to Geographical distribution, that noble subject of which we as yet but dimly see the full bearing. The following remarks (p. 537) give us an excellent summary on the distribution of the Mammalia on the Australian continent:—

“Australia may be conveniently divided into five principal divisions or districts, of which the east, west, north and south portions of the main land will each form one province, and Van Diemen's Land the fifth. Of these provinces, the northern one has the greatest number of species peculiar to it, since out of ten species discovered in that part of Australia, eight are not found elsewhere. The Marsupiata of the eastern district are for the most part distinct from those of the opposite side of the continent, there being but eight species, out of upwards of sixty inhabiting the two provinces, which are found in both. But if the three districts mentioned are characterized by the few species which they have in common, South Australia must be characterized by an opposite quality, that of having a comparatively large proportion of species identical with those of other districts; indeed I know of but four species which are peculiar to this district: it possesses sixteen species in common with Western Australia, and fifteen in common with Eastern Australia. Western Australia possesses one genus (*Tarsipes*) which is peculiar to it, and one sub-genus (*Macrotis*); none of the other districts of continental Australia possess any genera which are not found elsewhere. About half of the species found in Van Diemen's Land are peculiar to that island—in fact, nine out of twenty: of the remainder, the greater portion are found on the eastern part of the main land. This island, moreover, possesses one genus (*Thylacinus*) and one sub-genus (*Sarcophilus*) which are now peculiar to it. Examples of both these sections have, however, been found in a fossil state on the main land.”

Speaking strictly we have here four divisions, for South Australia does not appear from these remarks, zoologically considered, to deserve to be ranked as a subdivision. New Guinea, however, and the adjacent islands form a well-marked fifth subdivision, and an interesting table is given (at p. 3) of the ranges of the quadrupeds inhabiting them. The fact of South Australia possessing only few peculiar species, it having apparently been colonized from the eastern and western coasts, is very interesting; for we believe that Mr. Robert Brown has shown that nearly the same remark is applicable to the plants; and Mr. Gould finds that most of the birds from these opposite shores, though closely allied, are distinct. Considering these facts, together with the presence in South Australia of up-raised modern tertiary deposits and of extinct volcanos, it seems

probable that the eastern and western shores once formed two islands, separated from each other by a shallow sea, with their inhabitants generically though not specifically related, exactly as are those of New Guinea and Northern Australia, and that within a geologically recent period a series of upheavals converted the intermediate sea into those desert plains which are now known to stretch from the southern coast far northward, and which then became colonized from the regions to the east and west. We will only further point out an interesting table (p. 536) showing that in South America, Brazil is the metropolis of the Didelphidæ, a family which, as Mr. Waterhouse remarks, curiously replaces in that continent the Insectivora of the Old World.

Most of the genera are illustrated by elegant and spirited copper-plates; there are also many woodcuts; some few however of these latter are rather unfortunate works of art. The plates are printed on excellent paper, and the whole work is got up in a style creditable to the publisher. The Marsupiata, though highly interesting in their structure and affinities, yet are less so in their habits than the higher mammalia; but from some scattered notices we clearly see that this amusing part of the subject will not be neglected. To the professed naturalist we believe that this work will be almost indispensable; but we also strongly recommend it to those who do not come under this class, but yet are interested in the wide field of nature. We do not doubt that Mr. Waterhouse is conferring by this publication a real service on natural science; we therefore trust to his continued perseverance, and we heartily wish him all success.

Introduction to Zoology: for the Use of Schools. By ROBERT PATTERSON, Vice-President of the Natural History Society of Belfast. —*Invertebrate Animals.* With upwards of 170 Illustrations. London: Simpkin and Co. 1846.

The main cause of the great ignorance of Natural History in this country among all classes, not excluding even the highest, is that it forms no part of our regular system of education. Most of our youth leave school scarcely aware of the existence of such a science, and so utterly unacquainted with its merest rudiments, that to be told that whales and bats give suck to their young, would excite in them a contemptuous smile of incredulity. This is deplorable; but it is the misfortune not the fault of our youth, that they are thus ignorant of facts with which mere children in France and Germany are familiar. Fully occupied with the routine of our usual instruction at school, and thence directly transferred either to college or the active duties of commercial or professional life, they have no opportunity of repairing this great deficiency of their early education, and thus remain deprived of what may be justly called another sense—the power of seeing at every step objects of the highest interest and delight, to which the man unacquainted with natural history is blind, and of thus opening to themselves a new source of mental enjoyment, which, whether they traverse the mighty ocean