

Near to it, and a little to the left, the anal tube is situated, at a considerable distance from the centre of the Star-fish.

In *Pteraster militaris* the larval mouth only presents itself upon the back near the margin of two arms, in the most advanced larval state; and the anal orifice is situated here, as in *Bipinnaria asterigera*, excentrically. In *Bipinnaria asterigera*, in which the Star-fish only communicates with the larva by the œsophagus and the skin which passes from the larva to the Star-fish, the larva detaches itself from the latter by the œsophagus becoming constricted with strong contractions, whilst the detached larva dies in six or eight days. We have also observed that the whole intestinal canal disappears, and that a new anal orifice is formed; it is only the stomach that remains of the larva. This takes place somewhat differently in *Pteraster militaris*, for the entire larva passes into the Star-fish, although the latter receives a new mouth, intestinal canal, and anus. J. Müller has indicated that *Bipinnaria asterigera* is perhaps a stage in the development of *Solaster furcifer*. It is now some years since we expressed the same opinion on this subject to MM. Sars and Bockdaleck.

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#### BIBLIOGRAPHICAL NOTICES.

*System der Ornithologie West Afrika's von Dr. G. HARTLAUB.*  
Bremen, 1857, 1 vol. 8vo.

UNTIL the local faunæ of the different parts of the earth's surface have been worked out to a much greater extent than has as yet been accomplished, it is almost hopeless to attempt with any certainty to enunciate general laws on the geographical distribution of animal life, one of the most interesting and by no means one of the least important subjects of natural science. It is with great pleasure, therefore, that we welcome every successive attempt to form an accurate account of the whole or any part of the animated nature of particular countries. Africa is a zoological kingdom to which the naturalists of Germany have of late years devoted no small degree of attention. Since Dr. Rüppell completed his great contributions towards our knowledge of the zoology of North-eastern Africa, Vieillot, A. Brehm, Von Müller, and Prince Paul of Wurtemberg, have made further explorations into more remote portions of the same country, and have reaped a rich harvest of results; and Dr. Peters, returned from the little-known region of the Mozambique, has commenced the publication of his numerous discoveries in every branch of zoology. To the ornithology of Africa, Dr. G. Hartlaub of Bremen has for several years devoted much of his attention; many papers in the Transactions of the Natural History Society of Hamburg, and in Cabanis' 'Journal für Ornithologie,' bearing witness to his untiring



application to this subject. In Dr. Hartlaub's most recent publication, the 'System der Ornithologie West-Afrika's,' we have in a connected form a complete summary of all that is known concerning West African ornithology up to the latest date, and this given in a manner that may well serve as a model for naturalists who are desirous of writing similar essays upon any branch of natural history.

A very interesting and copious introduction (in which a complete review of African ornithology generally is given, together with many remarkable facts concerning the geographic extension of the different forms, and a summary of all that is known about the nidification and propagation of the species) leads us to the main part of the volume, which consists of an enumeration of all the birds which are known to occur in Western Africa. Concise specific characters in Latin are assigned to every species; the more important synonyms and numerous references to the works in which each has been noticed by former writers are given, and, what is also important, as being a point much too generally neglected by naturalists, the exact localities in which each species has been found, together with the authority for such locality. The amount of labour which it must have cost to accomplish this result cannot be easily estimated. It is no light task to draw up specific characters for seven or eight hundred animals when they are all ready before one's eyes; but, when many of the types are scattered about in the different museums of Leyden, Paris, Basle, London, and Philadelphia, all of which must be formally visited, or seen by the eyes of correspondents (who have to be kept up to their work of replying to numerous interrogatories by thrice the corresponding number of applications), it is no small praise to say, that the whole has been finished in a manner which must be highly satisfactory to every one who takes an interest in the progress of natural history.

The portion of the African continent which Dr. Hartlaub has embraced in his present treatise consists of the whole country lying along the coast from Senegal southwards to Benguela, a distance of nearly 30 degrees of latitude. But in very few points within this region have explorers penetrated far into the mainland, and the number of species, therefore (758), included in Dr. Hartlaub's catalogue, indicates an *Avifauna* of no ordinary richness. The discoveries also which have lately been made by P. B. Du Chaillu and other collectors in Gabon (who have made some advances towards the unexplored interior), give promise of many interesting accessions to the list as time progresses.

Western Africa, as Dr. Hartlaub observes, in its general zoological aspect, shows a rich originality. The productiveness and peculiarity of the African fauna are here continually discovering new and unexpected treasures to the investigator. This is the realm of the giant *Gorilla*,—here are the haunts of the most colossal of all serpents,—this is the country whence marvellous *Goliathi* delight the vision of the entomologist,—and where amongst the birds, the peculiar African forms are met with in the greatest abundance and most characteristic species.

Of the 758 species of birds which Dr. Hartlaub includes in the



Zoology of Western Africa, no less than 400 appear to be peculiar to this part of the continent; 150 occur also in North-east Africa; 64 are also found in South Africa; the remaining 140 appear to be pretty well dispersed over the continent, since they are met with in North-eastern, Western, and Southern Africa. Of the 124 *Accipitres* which are known to occur on the African continent, 56 are met with in Western Africa; but, singularly enough, no examples of the genera *Gypogeranus*, *Polyboroides*, or *Helotarsus*, which are the three most characteristic African types of this order.

Of *Passeres* we have notice of no less than 450 species, among which are members of many remarkable genera—such as *Meropiscus*, *Parinia*, *Ixonotus*, *Striphrornis*, *Pæoptera*, *Hypergerus*, *Bias*, *Megabias*, *Elminia*, *Artomyias*, *Erythrocerus*, *Lobotos*, *Chaunonotus*, *Picathartes*, and *Onychognathus*, which, as far as is hitherto known, are all peculiar to Western Africa. Of *Columbæ* 17 species; of *Gallinæ* 19, including members of the peculiar African genera *Numida*, *Agelastus*, and *Phasidus*. The two latter forms are restricted to Western Africa. The order *Struthiones* is worthily represented by the Ostrich.

Among the 99 species of *Grallæ* contained in Dr. Hartlaub's list, the most eccentric form is perhaps Temminck's Ralline genus *Himantornis*, discovered by Pel in Ashantee. Lastly, 42 species of *Anseres* conclude the series of West African birds.

*Popular History of the Aquarium of Marine and Freshwater Animals and Plants.* By GEORGE BETTINGHAM SOWERBY, F.L.S. 12mo. London, Reeve, 1857.

If we may apply to some of our writers on science the old rule that "by their fruits ye shall know them," it would almost appear that they consider one of the great beauties of a popular work to consist in its resemblance to those complicated pieces of patchwork in which our grandmothers used to take so much pride. The prescription which they adopt in the manufacture of a book would seem to be somewhat as follows:—Take all the standard works on the subject to be treated of; transfer the choicest passages to a note-book; select those which suit you best; tack them together with as much of your own material as may be absolutely necessary; sprinkle in a few fragments of poetry (which you may easily pick up along with your other plunder); print and publish. The less trouble you take, the better, as you will the sooner be done and get your money: if the book sells, the publisher is satisfied; and as for the public, your conscience may be perfectly easy, for the matter you appropriate is far better than anything your own brains are capable of furnishing; so what right has anybody to complain? The only answer to the last question that we can think of at the moment, is that the authors of the works subjected to this shameless system of robbery may perhaps be foolishly inclined to think that it would be more to their advantage if the public would read their works in the original form, rather than in pirated extracts; but this we must leave to their consideration.





1857. "System der Ornithologie West Afrika's von Dr. G. Hartlaub. Bremen, 1857, 1 vol. 8vo." *The Annals and magazine of natural history; zoology, botany, and geology* 20, 136–138. <https://doi.org/10.1080/00222935709487889>.

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**DOI:** <https://doi.org/10.1080/00222935709487889>

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