down. The lettering on the coracoid process, Fig. 108, is incorrect. The olecranon process is described on page 120 as extended beyond the elbow joint to the attachment of the extensor muscles of the lower limb. The lettering of the pancreatic duct in Fig. 242 does not correspond with that of the legend.

Kingsley's book lends itself for comparison most readily with Wiedersheim's "Comparative Anatomy of Vertebrates," especially with the English edition edited by W. N. Parker. The general field covered is similar, although there are about one hundred more pages in Wiedersheim. Wiedersheim has the advantage of having been extensively used and revised since the first edition in 1882, so that the weaker parts have been gradually strengthened and the cruder errors eliminated. On the other hand, a text-book revised from year to year over so long a period may display many points of view less satisfactorily than a text-book newly written. The relatively greater attention given by Kingsley to histology and embryology is a distinct advantage and might be satisfactorily carried out further. On the other hand, both illustrations and text descriptions are, in many phases, clearer in Wiedersheim's than in Kingsley's text-book. The bibliography given in Wiedersheim is far more extensive, but, on the other hand, that given in Kingsley is, on the whole, well selected, and, possibly, for beginning students, by being less extensive may be more useful.

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The Growth of Groups in the Animal Kingdom. By R. E. Lloyd, M.B., D.Sc. London, Longmans, Green and Co. 1912. Pp. 185, with two colored plates. Price $1.75 net.

"The aim of this small book is to lessen the belief in natural selection as a creative agency." "The word group appears in the title of this work and will be found throughout the text. It is used in place of the more usual terms species, sub-species and variety." "A group is a number of individuals (more than one), each possessing some particular character or characters which are chosen arbitrarily as the distinguishing marks of that group." "From a practical point of view species are those groups which have been described as such."

Although the idea expressed in the last quoted sentence is by no means novel, it is interesting as illustrative of a change which seems to be coming over biology. Many will still dispute both the author's and the reviewer's statements. However, it is indisputable that not only is the "method of the origin of species an open question," but it is more than ever a question as to what a species is if it be more than a mere convention. It is curious that so many well-informed taxonomists accept evolution as a principle, but stick to the independent creation of species in practise. The "splitters" are unconsciously breaking down this practise, for species are being based on fewer and less important characters than ever. The process is a *reductio ad absurdum* and can not help but end in the definition of species just given. The author seems justified in saying: "If it is true that our conception of a species has changed it is necessary to modify our opinion as to the origin of a species. Some of those who are interested in the origin of species do not know how small are the differential gaps which separate our modern species."

About half of the book is devoted to an account of the different sorts of rats found among about 100,000 killed during the work against the plague in India. Some of these have already received names differentiating them from *Mus rattus*. Other have not. As a contribution to our knowledge of the amount of readily appreciable variation in a feral "group," this work is valuable. It is the only important original thing the book contains and is followed by a lengthy résumé of some of Tower's work upon *Leptinotarsa*. Unfortunately the author did not subject the rat "mutants" to experimental tests, nor does he refer to the breeding work already done with rats. The facts collected are believed to be in harmony with that part of the mutation theory which asserts that the attributes of

organisms consist of distinct, separate and independent units.

As a practical application of the theory he suggests that many forms of insanity are merely the distinguishing characteristics of human mutants. "*Dementia præcox* is neither fatal in itself, nor curable. Were it either we could not of course regard it as the expression of a character or group of characters, or compare its victims to mutants." In addition to the punctuation, one might be inclined to object to the implication that the possessor of a new character can not be compared to a mutant if the new character be fatal to its possessor.

The author assures us that the philosophical conclusions in the last chapter were reached before reading Bergson. There is something of a similarity—at least as to the quality of indefiniteness and the appeal to the unknowable. The concluding sentence is a warning that the belief in natural selection encourages a belief in "the right of the spirit of competition which is daily invoked in order to smother those altruistic feelings that are an important part of the human mind."

The discussion of "species" is interesting and the important facts concerning the rats are well presented.

FRANK E. LUTZ

The Flowing Road; Adventuring on the Great Rivers of South America. By CASPAR WHITNEY. Philadelphia and London, J. B. Lippincott Company. 1912. Pp. 319. Illustrated.

The title of this book leads one to look for something in the way of scientific results, but the author disclaims any scientific mission (173), and it is only by much courtesy that it can be regarded as scientific in any sense. But in spite of this, it is a book full of interest for every one who knows, or wishes to know, about the ups and downs of canoe travel in the thinly populated and little-known regions of the upper Rio Negro, or for the matter of that, on any of the rivers that empty into the Amazon.

The author's preface would lead one to suppose that Humboldt and Wallace were almost the only explorers of the upper Rio Negro region, and he fails to mention Dr. Richard Spruce, who lived and labored there longer than all the others put together. Humboldt was on the upper Oronoco only two months—April and May, 1800; Wallace went up the Rio Negro in August, 1850, and returned to Manaus May 17, 1852; Spruce lived in that region from December, 1851, to December, 1854—just three years. The account of Spruce's residence is given in the "Notes of a Botanist on the Amazon and Andes by Richard Spruce, London, 1908," and his results are published in more than fifty scientific papers, mostly on South American botany and natural history, brought out by the learned societies of England and Scotland.

Likewise no mention is made of the almost incredible explorations of Henri A. Coudreau in the Amazon region, including a trip up the Uaupés in 1884, and described in his "Voyage a travers les Guyanes et l'Amazonie," Paris, 1887.

This, however, has but little to do with the book itself. In spite of the almost deadly sameness of the region and of the daily life, the author finds something or much of interest and beauty everywhere, and under all circumstances. And it is a great pleasure to follow a man who likes to see the animals without wanting to shoot them all to pieces, who accepts the weather and the fortunes of travel as they come along without complaint, who has human sympathy with the people, however humble, and who doesn't want to impose his ways of doing things upon every one he meets. This wholesome attitude of the author, even if there were nothing else in it, makes the book richly worthy of the attention of naturalists and of others who would travel in the country treated of.

Another peculiarity of the book is that the author doesn't begin in New York or London with the details of how many trunks, boxes and packages he had and what each one contained; he doesn't describe the voyage out, and the steamer, and the service, and the flying fish, and the southern cross and all the