

the *pros* are Adams, Struve, and Christie; among the *cons*, Newcomb, Foerster, and Auwers.

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### THE NATIVES OF AMERICA.<sup>1</sup>

THE native population (before the changes wrought by the European conquest) of the great continent of America, excluding the Eskimo, present, considering the vast extent of the country they inhabit, and the great differences of climate and other surrounding conditions, a remarkable similarity of essential characters, with much diversity of detail.

The construction of the numerous American languages, of which as many as twelve hundred have been distinguished, is said to point to unity of origin; as, though widely different in many respects, they are all, or nearly all, constructed on the same general grammatical principle, — that called polysynthesis, which differs from that of the languages of any of the old-world nations. The mental characteristics of all the American tribes have much that is in common; and the very different stages of culture to which they had attained at the time of the conquest, as that of the Incas and Aztecs, and the hunting and fishing tribes of the north and south, which have been quoted as evidence of diversities of race, were not greater than those between different nations of Europe — as Gauls and Germans on one hand, and Greeks and Romans on the other — in the time of Julius Caesar. Yet all these were Aryans; and, in treating the Americans as one race, it is not intended that they are more closely allied than the different Aryan people of Europe and Asia. The best argument that can be used for the unity of the American race, using the word in a broad sense, is the great difficulty of forming any natural divisions founded upon physical characters. The important character of the hair does not differ throughout the whole continent. It is always straight and lank, long, and abundant on the scalp, but sparse elsewhere. The color of the skin is practically uniform, notwithstanding the enormous differences of climate under which many members of the group exist. In the features and cranium certain special modifications prevail in different districts, but the same forms appear at widely separated parts of the continent. I have examined skulls from Vancouver's Island, from Peru, and from Patagonia, which were almost undistinguishable from one another.

Naturalists who have admitted but three primary types of the human species have always found a difficulty with the Americans, hesitating between placing them with the Mongolian or so-called 'yellow' races, or elevating them to the rank of a primary group. Cuvier does not seem to have been able to settle this point to his own satisfaction, and leaves it an open question. Although the large majority of Americans have in the special form of the nasal bones, leading to the characteristic high bridge of the nose of the living face, in the well-developed superciliary ridge and retreating forehead, characters which

distinguish them from the typical Asiatic Mongol, in many other respects they resemble them so much, that, although admitting the difficulties of the case, I am inclined to include them as aberrant members of the Mongolian type. It is, however, quite open to any one adopting the negro, Mongolian, and Caucasian as primary divisions, to place the American apart as a fourth.

Now that the high antiquity of man in America, perhaps as high as that which he has in Europe, has been discovered, the puzzling problem, from which part of the old world the people of America have sprung, has lost its significance. It is quite as likely that the people of Asia may have been derived from America, as the reverse. However this may be, the population of America had been, before the time of Columbus, practically isolated from the rest of the world, except at the extreme north. Such visits as those of the early Norsemen to the coasts of Greenland, Labrador, and Nova Scotia, or the possible accidental stranding of a canoe containing survivors of a voyage across the Pacific or the Atlantic, can have no appreciable effect upon the characteristics of the people. It is difficult, therefore, to look upon the anomalous and special characters of the American people as the effects of crossing, as was suggested in the case of the Australians, — a consideration which gives more weight to the view of treating them as a distinct primary division.

### CLAUS'S TEXT-BOOK OF ZOOLOGY.

It is an interesting and sad fact that England and America have not as yet produced one really good manual of zoology, while Germany has at least two of the first order. One of these, Professor Claus's 'Grundzüge der zoologie,' has reached its fourth edition, with every probability that a fifth will soon follow. The last edition contains about fourteen hundred pages. Its large size makes it unwieldy for the beginner, and, moreover, there are no figures. By shortening especially the descriptions of orders and families, and some further condensation, the book was reduced to about eight hundred pages, and space saved for about the same number of figures. The new book thus formed is the 'Lehrbuch der zoologie,' translated under the above title. In all Professor Claus's writings, one cannot fail to notice his judicial fairness. The discussion of Darwinism (vol. i. pp. 139-179) is especially remarkable for its impartiality and candor, as well as its clearness and condensation. The arrangement of material in the general part, and the descriptions of the types, show the comprehensiveness of his mind and the extensiveness of his knowledge, while his exact-

<sup>1</sup> Extract from the address of Prof. W. H. FLOWER as president of the Anthropological institute of Great Britain.

*Elementary text-book of zoology.* By DR. C. CLAUS and ADAM SEDGWICK, with the assistance of F. G. HEATHCOTE. 2 vols. New York, Macmillan, 1885. 8°.

ness in details is as clearly apparent in every one of the sharp and terse definitions. These present the few characteristics which apply to the whole group, and only that group, rarely extend beyond three lines, and are expressed in words as well chosen as the characteristics themselves. As the student follows them from type to family, he sees clearly that the animal kingdom is really a cosmos, not the chaos which is presented in too many of our zoologies. Under each type, class, and order, each organic system, the embryonic development, and the habits of the group are described in the same clear, brief terms. Thus one can study the fourteen hundred pages of the 'Grundzüge,' or the eight hundred of the 'Lehrbuch,' and scarcely erase five words to a page, or condense in any way the sentences, without entirely changing their meaning. How many thorns would be removed from the path of the working zoölogist if all our writers could borrow Professor Claus's sharpness of vision, and accuracy of description!

The general part of the work covers a hundred and eighty pages. Of these, a hundred and thirty are devoted to the general qualities of protoplasm, the structure and development of cells and tissues, the general anatomy and physiology of each 'compound organ,' and embryonic development. The next fifty pages contain in brief outline the history of the science, and the discussion of the theory of evolution. This is, unlike most zoologies, perhaps the most interesting and striking portion of the book, especially as in this part the genius of the author, in the choice and arrangement of material, is the plainer because of the greater liberty here possible. As specially interesting, might be noticed the author's views of parthenogenesis (p. 106) as a reproduction, on the part of agamic females by true eggs, "by no means to be relegated to the category of germ-cells,"—views quite opposed to the quotations from English writers so common in our American literature, although Professor Claus seemed to be supported by Balfour and a majority of the German school.

Under Protozoa in the special part, the Monera are disregarded as a separate group, and merged with Rhizopoda and Flagellata. Thus neither nucleus nor pulsating vesicle is considered a necessary characteristic of Rhizopoda. The Flagellata are provisionally classed under the Infusoria, with expressed doubts of their animal character. Among the Flagellata are reckoned the Astasiadae (Euglena) and the Volvocinidae, although the close alliance of the latter family to the Algae is clearly

acknowledged. In an appendix to the Protozoa, the Bacteria and Gregarinidae are briefly considered. It is an open question whether this is an improvement on the arrangement of forms in the 'Grundzüge,' where Bacteria, Flagellata, Myxomycetes, Catallacta, and Labyrinthuleae are all discussed in connection with Protozoa, but as groups of very doubtful position and affinities.

The study of the Coelenterata is introduced by a description of the three individual types, polyp, medusa, and ctenophore. The discussion of their resemblances and differences brings the different forms of this group clearly before the student at the outset, beside furnishing him a basis for their classification. The sponges are considered as merely a subgroup of Coelenterata.

On account of its embryonic development, Balanoglossus is assigned to an appendix at the end of the echinoderms.

Under Vermes the Nemertini are still retained with the Platyhelminthes. The Gephyrea are placed between the Chaetopoda and Hirudinea as the second sub-class of Annelida, while the Rotatoria form the fourth and last class of Vermes. This is certainly an extremely practical classification, even though some might prefer to consider the Rotatoria earlier in the series of worm-forms, on account of their general affinities.

The second volume contains, 1°, Mollusca; 2°, Molluscoidea, to which are reckoned only Polyzoa and Brachiopoda as possessing strong affinities to annelids as well as Mollusca; 3°, Tunicata; and, 4°, Vertebrata. Thus over five hundred pages of the two volumes are devoted to Invertebrata. The seven hundred figures are well chosen, and far above the average in beauty and clearness. Under every type and class are references to the latest and best literature on the subject. The translator has had a difficult task. It is no easy matter to translate into idiomatic English the author's condensed and pregnant sentences, where every word is important. A few cases might be noticed where the rendering of single words might be improved; but, as far as can be judged from a careful comparison of about thirty pages taken at random through the work, even such cases are rare, and in general the translation certainly gives a very just rendering of the author's ideas.

The publishers have given us a good page and paper, and clear type. Altogether, it is the only really satisfactory manual which we have in English, and one which no teacher or student of zoölogy can afford not to possess.