tion must be left open.' Questions arising in connection with the migratory habit are left in a similar way.

Professor Morgan now lays special stress upon consciousness as a cooperating factor in organic development. In the earlier chapters it was assumed, for the sake of simplicity, that mental evolution might be concomitant with, rather than a factor of, organic evolution. His presentation of the difference between organic evolution as a result of the elimination of the unfit, and of organic evolution as a result of conscious choice, through the elevation of the fit, is extremely ingenious, and the part that the latter may play in the struggle for existence is clearly shown. "In so far as conscious adjustment aids in the struggle for existence, in so far through it the animal is better able to escape danger, to secure a more favorable habitat, to gain a mate and beget progeny; the animal possessed of intelligence will escape elimination, transmit his power of conscious adjustment, and contribute to the propagation of his race. Without fully subscribing to the doctrine of the all-sufficiency of natural selection, we may yet say that natural selection will exercise a determining influence in deciding the course which conscious adjustment must take."

The question of the inheritance of acquired habits is many times raised, but receives no partisan treatment in the first three hundred pages. In the latter part of the book the author instinctively holds to his earlier belief, while admitting, as a result of his experience, certain intelligent modifications of his views. We quote from page 305:

"If pressed to summarize my own opinion on this question, I should say: First, that there is but little satisfactiory and convincing evidence in favor of transmission, but that variation does seem in some cases to have followed the lines of adaptive modification, so as to suggest some sort of connection between them; secondly, that there are many instincts relatively definite and stable which may fairly be regarded as directly due to natural selection, though here again, if we could accept the view that adaptive modification marked out the lines in which congenital variation should run, our conception of the process of their evolution would be so far simplified; thirdly, that there are some peculiar traits, also seemingly definite and stable, which can only be attributed to the indirect effects of natural selection."

In the discussion of *modifications* and *variations* the author follows Mark Baldwin in defining the former as acquisitions which occur in the course of individual life, and the latter as those changes in the individual which are the result of some disturbance in the germinal substance. Mental phenomena are laid aside for a time and the more easily apprehended arguments and illustrations from structure adopted. The author dwells at considerable length upon the claims of the extreme Neo-Darwinians, on the one hand, and the extreme Neo-Lamarckians, on the other, and concludes that "all this is very interesting, and affords considerable scope for ingenuity. But it does not touch the question at issue, and this is, not which method is apparently the most advantageous; not which method we should have adopted had the work of creation been entrusted to our care, but which has been adopted by nature." Weismann's principles of *germinal* and *intra-selection*, Baldwin's *organic selection* and the author's *innate plasticity* indicate the neutral ground where selectionists may meet transmissionists; where fortuitous variations may finally take the place of mere temporary adaptive modifications.

Professor Morgan's entertaining style, his originality of experiment, his quick interpretation, his rare quality of explanation and the comparative novelty of his subject will give 'Habit and Instinct' a place beside 'Animal Life and Intelligence' in the library of every working biologist. HERMON C. BUMPUS.

Das Nördliche Mittel-Amerika, nebst einen Ausflug nach den Hochland von Anahuac. Von DR. CARL SAPPER. Braunschweig, Vieweg und Sohn. 1897. With maps and illustrations. Pp. 436.

The studies of Central American geography and ethnography which Dr. Sapper has contributed to *Petermann's Mittheilungen*, *Globus* and other periodicals, from time to time during the last ten years, have made his name familiar to all interested in the products and history of that portion of our continent. In the volume

before us he has gathered many of these articles together, added others not heretofore published, and appended thirty pages of vocabularies of the native tongues, specimens of Indian music and various statistical matter (rainfall, culture products, etc.).

The descriptions of travel and of the manners of the present inhabitants are vivid and well told, but for scientific purposes the articles on the native population will have the higher interest. These embrace a discussion on the independent native States in Yucatan, the commercial relations of the Indian tribes in northern Central America, the present Indian geographical names in the same area, the ruins of aboriginal towns and fortresses there found, the music and dances of the existing tribes, and special articles on the Lacandons and Kekchis, two branches of the Maya family which Dr. Sapper had unusual opportunities to observe.

The information he gives on all these subjects is abundant and drawn from his own studies. Especially his article on the architectural principles indicated in the ancient ruins, and the connection of the culture areas which they indicate, is replete with new and instructive suggestions. It is amply illustrated by a number of designs in the text.

The maps are eight in number and show respectively the location of volcanoes, the distribution of vegetation forms, the elevation of land, the cultivation of commercial plants, the extension of languages, the independent Indian tribes, the native names and the ancient ruins of northern Central America.

In the final paper of the volume the author ventures on the important question as to the original seat of the Mayan culture and language. He gives substantial reasons for saying it was *not* Yucatan, which peninsula he thinks was first occupied by the Mayas about the fifth century of our era; nor was it Guatemala, Tabasco, or the territory of the Huastecas, north of Vera Cruz; but most likely the highlands of Chiapas (in which he agrees with Dr. Schellhas). He considers the adoption by the Mayas of a sedentary and agricultural life to date from a remote antiquity, and conclusively disproves the prevalent notion that it was originated or deeply modified by either 'Toltecs' or Nahuas.

The extended vocabularies include a large number of 'culture words' from the Mayan dialects, and were in great part collected by himself. They add considerably to the value of this excellent work.

D. G. BRINTON.
UNIVERSITY OF PENNSYLVANIA.

Wild Neighbors. By ERNEST INGERSOLL. New York, The Macmillan Co. 8vo. Pp. xii+301. 29 illustrations. $1.50.

Mr. Ingersoll's 'Wild Neighbors' are some of our native mammals, the red and gray squirrels, panther, coyote, badger, porcupine, skunk, woodchuck, raccoon, and incidentally many others, with which the author endeavors to make us better acquainted through interesting accounts of their habits. The biography of each species contains some descriptive notes and extended life histories, covering general habits, distribution, economic importance, and comparison with other species. The skunks of the genus *Mephitis* are compared with the mink, the European polecat, the stinking badger of East India, the honey badgers of South Africa, and our more closely related genera, *Conepatus* and *Spilogale*. One chapter is devoted to 'the service of tails, their use and importance to various creatures,' and is extended to include birds, reptiles, insects and crustaceans, as well as mammals. One is given to animal training and animal intelligence and deals mainly with domesticated species and those of the menagerie, discussing their capacity for learning.

The work brings together many interesting facts from the lives of our best known mammals in a popular style, with technicalities carefully omitted. To those who have had little to do with mammals or mammal literature it will prove new and interesting, a great part being taken by direct or indirect quotation from the works of Audubon and Bachman, Kennicott, Lord, Goode, Thoreau, Burroughs, Coues, Allen, Roosevelt, Merriam, Hornaday, Bicknell and many other well known authors. Unfortunately, however, less reliable sources have been drawn upon also and many misleading statements are made. The reader is told that the Eastern chipmunk (*Tamias striatus*) is now conceded to be the only species ranging between the Atlantic and