

by molluscan and foraminiferal shells are then discussed and from this to a consideration of the form of horns and tusks the passage is easy. A brief discussion of phyllotaxis follows and is succeeded by a chapter on the shapes of eggs and other hollow structures, after which one finds an interesting description of the mechanical principles illustrated by the structure of individual bones and by the skeleton as a whole. The concluding chapter is an exposition of Professor Thompson's method of comparing the form of different organisms, or of their parts, by inscribing, for example, the outline of the skull of *Hyracotherium* in a system of Cartesian coordinates and then determining the deformation of the system necessary for a similar inscription of the outline of the skull of a horse. A graphic representation is thus obtained of the manner of growth characteristic of this particular line of evolution, and the method may thus serve in certain cases as a test of phylogenetic affinity.

This brief outline may give some idea of the scope of the book, but it altogether fails to indicate the interesting and suggestive manner in which the various topics are treated. Professor Thompson's style is marked by a clearness of expression which makes every page of interest and his book is one that may well be recommended as revealing food for thought and fields for investigation which have been too much neglected by students of morphology.

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Tsimshian Mythology. By FRANZ BOAS. Based on Texts recorded by HENRY W. TATE. Paper accompanying the Thirty-first Annual Report of the Bureau of American Ethnology, 1909-1910. Washington, Government Printing Office, 1916. Pp. 1037; 3 plates; 24 text figures.

The core of this paper consists of English versions of sixty-four Tsimshian myths and three war tales, written down for the author by Mr. Henry W. Tate, a Tsimshian Indian of Port Simpson, B. C., in his own language, between 1902 and the year of his death, 1914. The translations were made by Professor Boas

on the basis of "a free interlinear rendering by Mr. Tate."

However, unlike most ethnologists who have published Indian stories, Professor Boas has not rested satisfied with the mere printing of "material," important as such publication undoubtedly is, nor even with the addition of comparative footnotes. He has made this work the occasion and the basis for studies of several different aspects of Tsimshian ethnology, and for what is by all odds the best investigation of the distribution of American myths and mythic elements which has so far appeared, one which goes a long way toward satisfying the often-voiced demand for a concordance of American myths. Besides the usual tables of contents, bibliography and alphabet explanatory of the characters representing native sounds used in the work, it contains an introductory description of the Tsimshian, and, best of all, a summary of the comparisons and a detailed index to the references used in the comparison, the latter prepared with the assistance of Dr. H. K. Haeberlin. In appendices III. and IV. students of American Indian languages will find useful material regarding the speech of the people among whom these myths were current. The work is also used as a medium for the publication of seven Bellabella and ten Nootka tales, by Dr. Livingston Farrand and Mr. George Hunt respectively.

The longer studies to which reference has been made are "A Description of the Tsimshian, Based on Their Mythology" (pp. 393-477), a treatise on "Tsimshian Society" (pp. 478-564), and finally the "Comparative Study of Tsimshian Mythology" (pp. 565-871), already mentioned as the crowning feature of this work.

While the value of myths as sources of information regarding the general ethnology of the tribe from which they were collected has frequently been commented upon, so far as I am aware we have here the first attempt to write an ethnological description based entirely upon them. For this reason, if for no other, the result is of interest. It shows that Tsimshian stories contain an incomplete, but upon

the whole trustworthy, picture of native life and thought. On the one hand this must be supplemented by the introduction of matters too well known among his people to be explained by the storyteller, and on the other by determining in how far the conception of what ought to be in the social and religious lives of the people conformed to things as they actually were.

The discussion of Tsimshian society derives a large part of its importance from the fact that it concerns one of the two areas over the data from which controversies regarding "the origin of totemism" have raged most violently. Evidence of the entire absence of such a thing as totemic taboos and of the importance of the father's as well as the mother's clan in the life of the individual are therefore of interest, as also the comparative study of the distribution of crests among the matrilineally organized peoples of this region. The general discussion of totemism on pages 515 to 519 should be read carefully by all interested in that subject.

In his treatment of the evolution of the north Pacific clan systems Professor Boas follows his usual cautious method. He criticizes adversely the reviewer's theory regarding a former extension of the Tlingit over what was later the Tsimshian coast, as also his suggestion that Haida moieties have arisen as the result of the amalgamation of two distinct peoples. The evidence for the former view was, however, not entirely traditional, being based partly on the presence of a considerable number of animal names in Haida identical with those in Tlingit, and the comparative lack of similar Tsimshian names, although in historic times relations between the Haida and Tsimshian were much more intimate than between the Haida and Tlingit.

To prepare the comparative study of Tsimshian mythology an enormous amount of painstaking work was necessary, particularly in the analysis of the various versions of the Raven legend, and future students will be saved an incalculable amount of labor. Two or three more efforts of the same kind would result in the much-desired concordance. The results of this comparison are summarized on pages 872-

881, the more important points being the following.

As forecasted in Boas's "Indianische Sagen," published in 1895, Tsimshian mythology is distinguished from the mythologies of other Pacific coast peoples by the presence of a large number of tales of inland origin. An examination of the content of the material generally shows "that there are a number of very simple plots, which have a wide distribution, and which are elaborated by a number of incidents that have a very wide distribution and occur in a variety of plots." Comparing European and North American folk-lore Professor Boas finds that "European folk-lore creates the impression that the whole stories are units and that their cohesion is strong, the whole complex very old. The analysis of American material, on the other hand, demonstrates that complex stories are new, that there is little cohesion between the component elements, and that the really old parts of tales are the incidents and a few simple plots." There is a tendency among these Indian tales to shake off many of their supernatural elements along the border of their area of distribution, but this is "counterbalanced by another tendency of tales to take on new supernatural significance." In conclusion Professor Boas has a word to say (pages 879-881) regarding the general theory of mythology, with particular reference to that widespread impression that mythic tales represent an attempt on the part of primitive man to explain the phenomena of nature. Professor Boas thinks that this belief is not justified. His conclusion is that the material presented in this work "rather emphasizes the fact that its origin must be looked for in the imaginative tales dealing with the social life of the people." Still he would probably not deny that particular applications of such tales to the explanation of natural phenomena had been attempted at a very remote period in human history.

"Tsimshian Mythology" furnishes a notable addition to the sum of myth material and to our knowledge of northwest coast ethnology, but its chief claim to distinction rests on the great advance which it registers in the com-

parative study of myths current among American Indians and in the interpretation of them.

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The Genus Phoradendron. By WILLIAM TRELEASE, Professor of Botany in the University of Illinois. Published by the University. Octavo, pp. 224, pls. 245. Price, paper, \$2.00; cloth, \$2.50.

It is fortunate for botanists that the author of this excellent treatise has made so thorough a revision of the genus *Phoradendron* instead of being content with merely attempting to straighten out the tangle existing in regard to the group of related forms hitherto known as *Phoradendron flavescens*, as he first contemplated. The author notes that Engelmann has shown too great a conservatism in his published studies of the various forms of species of the genus, by later withdrawing segregates of *P. flavescens* that he formerly had recognized, and that in continuing the work of Engelmann, also being influenced by his views, Torrey allowed a number of forms which he had designated as new species to lie unpublished in the Torrey herbarium. The author in addition to making a critical study of the abundant data and material of North American species collected by Engelmann, Torrey and others in the great herbaria of this country, visited those of Europe and extended the investigation to the collection of West Indian and South American species by Urban, Martins and others. This has enabled him to make a careful comparison of numerous types and variants of species of the genus, and to more carefully discriminate between varieties and species. He recognizes 262 differentiable forms, most of which he has classified as species. In this matter he apparently does not share the conservatism of Engelmann and Torrey. Of the species he now recognizes, 154 are listed from North America and 124 from South America. The genus is separated into two primary groups, the Boreales and the Æquatoriales, plants of the former are constantly without, and the latter constantly with cataphyls on their foli-

age shoots. Both groups contain species destitute of expanded foliage, which are well represented by *Phoradendron juniperinum* in the southwestern United States. All of our species belong to the Boreales, those of Mexico and Central America to both primary groups, and those of the West Indies and South America wholly to the Æquatoriales. These primary groups are each divided and then subdivided, making finally in all groups 55 minor subdivisions.

The book contains 224 pages of descriptive matter including very good and usable keys; these are supplemented by indexes of collectors, occurrence, and names. The illustrations, 245 full sized plates, are indeed works of art but are also true to nature. Few books of this class are so fully and beautifully illustrated.

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MECHANICAL PROPERTIES OF WOOD DETERMINED

A NUMBER of fundamental laws governing the properties of wood, such as those covering the relations between strength and specific gravity, and between strength and moisture content, are laid down in a bulletin just issued by the Department of Agriculture. In this publication are presented the results of about 130,000 strength tests, probably the largest single series ever run on one material, made by the Forest Products Laboratory of the Forest Service on 126 species of American woods. The laws derived from the tests cover the general relations existing between mechanical and physical properties of each species, and also the general relations existing between these properties irrespective of species.

The results ought to prove of great value wherever knowledge of the properties of wood is essential. They have, for example, made possible the preparation of accurate tables showing all the needed strength properties for the woods used in airplanes. With these as a basis, specifications can be drawn up to eliminate all material that does not meet the exacting requirements of this highly specialized use.