

made to cause these nerves to "vibrate" (to use the original Helmholtzian term) the sensation communicated to consciousness would still be red. But this doctrine, which has strong reasons in its favor, as regards the sense of hearing, had never much support in the sense of smell and taste, and has now been totally disproved for the sense of sight.

A few years ago Holmgren announced a remarkable discovery, and at the same time a remarkable confirmation of the original theory of Helmholtz. He caused a very minute image of a point of light to fall upon the retina, so minute as to be smaller in diameter than the diameter of the rods and cones. If this image was of white light, it felt to the observer sometimes red, sometimes green and sometimes blue, as it moved about the retina; if it was of yellow light, it looked sometimes red and sometimes green; and the primary colors were at times altogether invisible. If this observation had been confirmed by other investigators, it would have proved conclusively that each minutest fibre of the optic nerve responds only to a limited range of vibration-periods of light, and that, as Helmholtz at first was inclined to suppose (he says explicitly in the first edition of his *Physiological Optics* that the three effects *may* all be capable of being transmitted by a single nerve), three adjacent fibres must participate in conveying a sensation of grey to the brain. But this observation of Holmgren has *not* been confirmed. The experiments have been repeated by Hering with quite opposite results, and he has also detected the probable source of Holmgren's error; and Hering's results have been confirmed in Helmholtz's laboratory. Hering's paper on the subject was published in *Pflüger's Archiv* some four years ago; I am unable to look up the exact date, as the admirable free public library of Duluth as yet lacks scientific books of a non-popular character. In view of these experiments, no writer on physiological optics (not even Helmholtz) at present expresses himself in any other language than that which implies that all the physiological processes essential to the production of grey-sensations and of color sensations may go on in a single cone (if not in a single rod).

C. L. FRANKLIN.

Duluth, Aug. 2, 1893.

CURRENT NOTES ON ANTHROPOLOGY.—NO. XXXII.

[Edited by D. G. Brinton, M. D., LL. D., D. Sc.]

RECENTLY PUBLISHED AMERICAN CODICES.

So rare are the documents which escaped the fanatic iconoclasm of the early missionaries, that it is a most agreeable duty to chronicle the discovery and publication of hitherto unknown Codices, or native manuscripts, of the Mexican and Central American peoples.

Last year, the American Philosophical Society published in admirable style the Codex Poinsett, the fragment of a pre-Columbian book relating to the collection of taxes in the ancient empire of Anahuac (a term entirely proper, in spite of Dr. Seler's onslaught upon it). Its name was given to it after Mr. Poinsett, formerly minister of the United States to Mexico, who brought it from that country and presented it to the Society, which has at considerable cost had it carefully chromo-lithographed and incorporated in its Transactions.

With not less praiseworthy zeal the Royal Library of Berlin has within the present year issued fac-similes of sixteen fragments of native Mexican MSS., brought from that country by Alexander von Humboldt, accompanying them with a small volume (pp. 136) of explanatory text from the pen of Dr. Seler, whose knowledge of the subject places him in the very front rank of Mexicanists. A few of these fragments, three or four of them, date anterior to the conquest; but the majority are subsequent to

it, though none probably later than 1571. They are all of value in the study of the hieroglyphic script.

A third Codex of remarkable interest, and unquestionably ancient, has been published at Geneva by M. Henry de Saussure under the title of "Le Manuscrit du Cacique." It contains sixteen pages or plates, in colors, and tolerably well preserved. According to the statements about it, it is not of Nahuatl, but of Mistecan origin, which would increase its value, as this tribe is one of whom we have few monuments, though we know its culture ranked high, and dated from remote antiquity. It is said to contain the biography of a certain powerful Cacique, by name Sar Ho, whence the name given it.

The great libraries of our country should not delay to secure copies of these three ancient documents, as they are all published in limited editions, and they should be placed within reach of those in this country who devote some of their time to the fascinating problem of American hieroglyphic writing.

ETHNOLOGIC JURISPRUDENCE.

The first volume of a work, which will certainly be an epoch-making one, has appeared in Germany. It is Dr. Albert Hermann Post's "Grundriss der Ethnologischen Jurisprudenz" (A. Schwartz, Leipzig). It will be followed by a second volume, which will not be long delayed.

The author is already well known as a leading student in this department of ethnology, and also as a profound thinker on the fundamental problems of the social relations of man. In his present work he sets out in the first volume to exhibit all the primitive forms of law, custom and procedure, so that from them the fundamental and universal principles of the jurisprudence of all nations can be deduced. The second volume will indicate the development of these general principles in special fields of human law.

In this first volume, Dr. Post defines the elementary forms of the social organization as all reducible to four, the consanguine, the territorial, the feudal, and the social; or, the tribal, the communal, the regal and the democratic. Each of these has its own peculiar theory of what relates to ethics, rights and laws; and though in minor details there are constant and wide variations, each is controlled in its development by obedience to certain underlying principles, which place its moral and legal codes on diverse paths of development. They are in a measure historically sequent, the consanguine organization always being that of men in the lowest stages of culture, while the true social organization is as yet chiefly ideal, and may never be fully reached in practice.

The style of the author is terse and clear, and his reading is most extensive and accurate. The field he has chosen is a comparatively new one, and the results he has reached are in the highest degree of immediate and practical importance. It has been well said by Dr. Krauss, of Vienna, in a recent publication, that it would be a fortunate chance to substitute some of Dr. Post's reflections on the rights of humanity for the wholesale murder stories which stir the heart of youth in the school readers, under the name of patriotic wars.

THE STUDY OF PREHISTORIC ARCHÆOLOGY.

Now that archæology is recognized to be the only guide where history is silent, and often the more trustworthy guide where history talks a good deal, its systematic study should interest all who occupy themselves with questions of the higher education.

Dr. Hoernes, whose work on that branch has been already mentioned in these columns, contributes to the last number of the *Zeitschrift für Ethnologie* a scheme for the instructor, which is intended to present all the science in the most favorable manner for the student. It is as follows:

Explanatory.

Relations of prehistory to history and to anthropology, both physical and ethnological.

Systematic.

1. Introductory. History of the science. Sources of information, literary and monumental, with critical estimates of their values.

2. Methodical presentation. Geographical and ethnic divisions. Factors of evolution, as discovery, borrowing, alteration, descent. Special forms, as language, religion, law, family, government, clothing, food, ornament, commerce, etc.

3. Typological presentation. Models of workshops, houses, fortresses, altars, sepulchres; also weapons, tools, utensils, etc.; their use and development.

4. Historical presentation. First, with reference to natural history, the origin, races, varieties and migrations of men; second, cultural history, as the stone, bronze and iron ages; the palæolithic and neolithic periods; proto-historic culture; dawn of civilization, etc.

This scheme appears to offer a comprehensive plan for bringing the science before a class.

MIGRATION OF THE AZTECS.

The Society of Geography and Statistics of the Republic of Mexico has just issued a second edition of a work by its first secretary, the licentiate Eustaquio Buelna, entitled "Peregrinacion de los Aztecas, y Nombres Geograficos Indigenas de Sinaloa."

The first edition was published in 1887, and received a certain measure of praise on account of the new material it offered concerning the tribes and languages of north-western Mexico. This has been added to in the present edition, and in this respect it is welcome; but that the author has seen fit to expand and illustrate his theories on the pre-historic migrations of the Aztecs, is to be regretted, as he does but disseminate under the name of the society various exploded errors.

When, for instance, shall we hear the last of the "Atlantis?" Over and over again, its existence has been disproved, but it is ever rising in the minds of those who do not know what time o' day it is in science. How often

must it be shown that the name "Atlantic" has nothing to do with "Aztlán" or "Aztalan," but is a Berber word meaning "mountain." Yet Buelna repeats and adopts these eighteenth century etymologies. Our faith in his acquirements in the Nahuatl language wanes considerably when we find him (p. 323) deriving the word *nahuatl* from *nahui*, four, and *atl*, water, for it is elementary that the terminal *tl* is dropped in composition. Of course, the "Toltecs" figure largely, although their existence as a nation has been disproved.

It cannot be said that Senor Buelna has approached this part of his subject with the requisite knowledge of its literature; and one cannot but regret that he seems unacquainted with the voluminous writings of Buschmann on the proper names and languages of Sinaloa and Sonora.

NOTE ON CROTALUS ADAMANTEUS.

February 22, students while out collecting birds shot a diamond rattlesnake, *Crotalus adamanteus*, Beau., that measured five feet ten inches in length and nine inches around the thickest portion of the body. From the glossiness of the scales it is thought that it had recently moulted. There were only five rattles and a button present, which seems quite remarkable for such a long reptile. If I am not mistaken, such large animals of this species usually have more.

These animals, though once quite abundant, are becoming quite uncommon. The demand for their skins and rattles to make into Florida has done much to destroy this venomous animal. The skin is made into belts and neckties, while the rattles are used for sets on the ties and elsewhere.

P. H. ROLFS.

Fla. Agr. Coll., Lake City, Fla.

BOOK-REVIEWS.

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