

anywhere west of Central New York. The stone implements, and I believe there are none of copper, are ruder and less varied than those first mentioned and are found not only in Western Vermont, but also over the eastern portion of the State and the other New England States. The pottery, occurring chiefly in fragments, is incised and cord-marked and decorated with a great variety of patterns made up of straight lines, circles, &c. This and the stone objects, which seem to be associated with it, appear to be the work of a different and less highly cultivated people than those who made the finer specimens first mentioned, and their makers appear to have lived all over New England and Eastern New York. Thus we have evidence of the former occupation of Western Vermont by a widely spread people, of much skill in the manufacture of stone objects; a people having commenced with those living in the copper region of Lake Superior, and with those living in Florida or some portion of the South, for the shell beads are, some of them, if not all, made from Southern species of mollusks, and also of an ancient, but later occupation by a people of less wide distribution and less development in arts.

#### THE INDIAN CENSUS.\*

Colonel Garrick Mallery, U. S. A., now attached to the Bureau of Ethnology at Washington, discussed last Monday a subject of national interest. On the nine previous occasions when the census of the United States was directed to be taken, the Indians, not taxed, forming a part neither of the voting population nor of any basis of representation, were simply disregarded. The present law provides for the enumeration and the ascertainment of their statistics. This change in legislation may have arisen from the abandonment of the doctrine of necessary extinction, the *fera natura* theory combated by Colonel Mallery at the Nashville meeting of the Association in 1877, and from the probability of the early absorption of many of the Indians into the body of the taxable and voting population, which renders them of future political importance, a factor the effect of which should be estimated. It is also probable that the interest in ethnologic research, noticeable throughout the country, has influenced Congress. General Walker, the able superintendent of the census, has availed himself of an agency that never before existed. The Bureau of Ethnology, lately established by act of Congress and now under the direction of Major Powell, was entrusted with the whole of the duty in question. Without the preparation already made by the Bureau of Ethnology the work could not be done accurately, and by scientific methods. It might possibly have fallen into the hands of mere office seekers, perhaps of persons interested in the concealment if not perpetration of frauds. The enumeration of the Indians is difficult. Though restrained more or less successfully within specified limits, they are still apt to range over large regions, and to be away, for long periods from the place of their compulsory or voluntary habitation. This is especially the case in Summer, and the day of June fixed for the general census being inappropriate, the first day of October was selected instead. There are other causes interfering with accuracy. If fraud is attempted it is assisted by an enlarged paper-number of recipients of rations, and the Indians themselves are tempted to swell their lists, both for rations and annuities. Hostile or troublesome bands, under differing circumstances, seek to exaggerate or conceal their military strength. The aboriginal reluctance of each person to give his own name, and of all to speak of deceased relatives and friends is well known. These and many other obstacles require that the duty shall be in charge of persons familiar with the Indian customs, who both know what to look for and how to find it. The forms and schedules of the general census being wholly inapplicable, others have been prepared with great care. They are five in number. 1. *Population*. Each sheet is confined to one family in one dwelling, that unit being of much greater importance in savage and barbaric than in civilized life. The location of the dwelling is given by legal and natural subdivisions, also its description; if a house, whether of brick, stone, adobe, frame or log; if pueblo, whether stone or adobe; if lodge,

whether of cloth, skins, slabs, poles, brush, bark, tule, stone or earth. The head of the family, often a woman, is first designated, and the relationship of each person to that head. For each individual the Indian name is given, with the English translation of that name; also the English, Spanish, French or other name habitually used. This serves not merely for identification, but brings out the names originally designated on the system of the *gens* organization, and also the title or sobriquet generally bestowed in after-life from some achievement or circumstance often of sociologic, if not historic, interest. Mixture of blood between several tribes, and between Indians and whites and negroes, is noted, and all matters relating to advance in civilization, such as wearing citizen's dress, amount and kind of personal and real property ownership, in which is recognized cultivation of land and sources of subsistence. 2. The schedule for *vital statistics* inquires into the causes of deaths during the past year, and the prevalence of the diseases to which Indians are subject; among other interesting points obtaining in the Indian tongue a statement from the head of the family, or medicine man, of the cause of death, thus showing the aboriginal theories of diseases. 3. *Industries*, embraces every appropriate particular under that head, classified for full and mixed bloods, and adopted whites and negroes, all by tribes instead of by families and individuals, as in the "population" schedule, and with details more useful for statistical purposes. 4. *Education*, is on the same principle. Schedule 5 guides and simplifies research into the wondrous system of ramified consanguinities and affinities, on which savage society is founded and depends. The work of the present census of the Indians will be of great practical value. It will correct some popular errors which have obstructed judicious legislation, confused statesmanship and misled philanthropy, and will render frauds difficult of perpetration. The schedules also show that advantage has been taken of this opportunity to lead research into points of deep scientific interest.

#### EXPERIMENTS ON THE STRENGTH OF YELLOW PINE.\*

By PROF. R. H. THURSTON.

The elasticity of yellow pine timber as used in construction is very variable, the modulus varying from one to three millions, the average being about two millions in small sections, and a little above one and a half millions in large timber.

The highest values are as often given by green as by seasoned timber, and that, under sixteen square inches section and fifty-four inches length, at least, the magnitude of the modulus of elasticity is independent of the size of the piece.

The density of the wood does not determine the modulus; since the figure varies sometimes directly and sometimes inversely with the density, even where the wood is as nearly as possible in the same condition as to seasoning.

A high modulus usually accompanies high tenacity and great transverse strength, but it is not invariably the fact that maximum ultimate strength is accompanied by initial stiffness.

The pseudo moduli, determined by taking considerable deflections, are usually not greatly different from those determined from small deflections and light loads. The values of these moduli often decrease with increase in deflection.

An inspection of the woods tested plainly indicates, in the opinion of the writer, that the density of the pines is so considerably modified by the amount of pitch contained in the sap channels that it cannot be regarded as indicative of the strength of the timber. Where quite free from sap the wood usually exhibits increase of strength and elastic resistance to deflection, with increase of density.

The strength of timber, otherwise similar, is greatly affected by its structure, and the resistance offered to stresses applied transversely is greatest when the sections

\*Read before the A. A. A. S., Boston, 1880.

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