

A GREAT LABOR PROBLEM

IT RECEIVES ATTENTION FROM THE SCIENTISTS.

THEY DEVOTE ATTENTION, TOO, TO A BEAUTIFUL ADZE AND A MYSTERIOUS CRYSTAL SKULL.

The morning of the third day's session of the American Association for the Advancement of Science found not only an increased number of professional scientists in attendance, but a creditable representation from the laity as well. With the general objects of the association they were in active sympathy, and by their presence they desired to show it. It therefore made no material difference to them that but few of the addresses or papers read were of a popular character, or to the average layman anything more than technical terms and phrases; they came and beamed their approbation like suns of opulence upon anthropologist, biologist, and economist with equal favor, stopping only on their rounds when they happened upon some discussion that fell within their comprehension. It was early discovered that a large proportion of the scientists in attendance upon this meeting were young men, unmarried men, explicable, possibly, by the circumstance that a fair proportion, the fair proportion, in fact—of yesterday's visitors were young unmarried ladies.

The programmes prepared for the various sections were early found to include too much, and but two of them were able to finish their tasks. The section on geology and geography gave up the whole of the day to a discussion of the report of the American Committee of the International Congress of Geologists. This was a task of greater or less limitations, as the section chose to make it, and they found time to pretty thoroughly go over the work of the International Congress at its Berlin session last year, criticising some parts of it with severity and giving some of it their hearty commendation. Many suggestions were advanced as to what should be done at the next session, which will occur in London, and the members found not only time to complete their programme, but to attend in considerable numbers the trip around the harbor that had been arranged for them by Mrs. J. S. T. Stranahan, of Brooklyn, on the ferryboat Brooklyn.

The section devoted to economic science and statistics has thus far testified to the fitness of its title by the exercise of a wise economy in the number of its papers and in the manner of treating them. Wednesday was given up to the consideration of the food question, two papers by Prof. Atwater forming the basis of the discussion. Yesterday's session was devoted to statistical and financial questions, three papers being read. The first, "The Testimony of Statistics as to our National Progress," was by Prof. E. J. James, of the University of Pennsylvania; the second, "The Wealth of the Republic," was by Dr. C. S. Hill, and the third, "On the Rates of Interest Realized to Investors in the Bonded Securities of the United States Government," was by Prof. E. B. Elliott. Being of an economic character, they aroused a considerable interest, and were well attended by both scientists and laymen.

Prof. James said he desired to express his sense of personal obligation to Mr. Atkinson for the exceedingly valuable work which he had done and was still doing in the way of exciting public attention to the great interest and importance of statistics. He did not believe that any very satisfactory work could be done in that department without assistance from the Government, beginning with the city and ending with the Federal branch. Public attention must be aroused to the possibilities of the work.

"I should like to state briefly," he said, "where I differ from the party which Mr. Atkinson represents. If I understand their position, it is in brief this: As a nation we are increasing our wealth at an enormous rate, at such a rate, indeed, that we have every reason to be satisfied with our progress. This wealth has been and is being distributed among the various factors in production in what is so nearly a perfect system by the mere force of competition that we have every reason to congratulate ourselves as to the result. I dissent most emphatically from these conclusions. I have at least as thorough a confidence in the future of my country as that which Mr. Atkinson displays, but I base it on the belief that we shall at many points make radical departures from our present way of doing things. If I did not believe that the country will do so I should certainly despair of the Republic. Mr. Atkinson's statement about our progress in wealth being entirely unparalleled may be true. It is certainly cheering information; but it must be remarked that the whole case rests so far on a statement of one side of the matter, based on incomplete returns and faulty deductions. In his recent discussion of foreign systems of taxation several serious oversights vitiate his whole conclusions. We have to a large extent devoted the savings of our industry in the East, not to developing our resources, but to carrying grain for Western farmers to London markets at a figure far below cost, and now we quote the enormous amount of wheat which we have thus presented to the English consumer as an evidence of the mighty wealth we are accumulating. It does undoubtedly prove that we have a great margin of saving, but it certainly does not prove that this is a policy which in the long run will make and keep us wealthy.

"In his estimate of the earnings of laborers, Mr. Atkinson secures a certain number of returns, in which the rate of wages per day or per week are given, and, comparing them with reports of earlier years, comes to the conclusion that the wages of laborers have risen very considerably. In all his estimates he gives not what the laborer actually receives, but what he would have received if he had worked 300 days in the year. It is, of course, plain that such results give us no idea whatever as to the relative condition of the laborer. It is well known that one of the most distinctive features of our modern industrial system, which is really becoming more and more noticeable every day, is the uncertainty of employment from many different causes. According to the last report of the Bureau of Statistics, out of the 98 chief industries enumerated, only 29, or less than 30 per cent. of the whole number, kept their men employed 300 days. The coal industry, which occupied nearly one-third of all the laborers of the State, kept them employed less than 200 days. One industry kept them only 133 days, employing, on the average, 11,000 laborers. Woolen goods, employing 7,000 laborers, kept them busy only 250 days. Rolling mills, employing 32,000, could pay them only for 226 days. Indeed, it would appear from returns of the employers themselves, that the works were closed up to more than half the laborers for about 75 days more than Mr. Atkinson allows. This means the reduction of wages received by at least one-fourth. The reports of the employees do not agree with those of the employers, as the latter give the number of days on which the work was actually going on, while the former also notice the days lost from sickness. In New-Jersey, where coal miners do not abound, the story is not very different. In some industries it is the regular thing to lie idle for at least two months, like glassmaking, in which July and August are vacation months.

"The estimates of the cost of living made by Mr. Atkinson are, it must be admitted, very moderate in amount, and yet the sums of money which it is necessary to have at command in order for a laborer to attain the average degree of consumption is away beyond what the majority of our laborers actually earn under existing conditions. His estimate of the cost of the raw material of food for a family of five, counting three children as one and one-half grown persons, amounts to \$350. It is hardly necessary to say that the allowance is not very liberal at this rate in any of the great centres of population. But taking it at what he puts it, and adding the average rates of consumption of clothing, boots, shoes, and fuel, the total amount of money required for the bare necessities of life amounts to over \$600 per year. In this there is no estimate for expenses for school, for books, for recreations of any kind, for any of those items which distinguish the man and citizen from the serf or bondman. And yet in an examination of the long series of wage receivers whose wages are quoted in the New-Jersey statement I fail to find more than a comparatively small per cent., counting in the whole number of laborers who actually attained the figure of \$600 in their income. Six hundred dollars per year means \$2 a day for the days of the working year. There must be no days of sickness or leave of absence or vacation or strike, if the sum is to be accumulated by working at \$2 a day. Now, \$2 per day is very much more than the average unskilled laborer can earn, and if skilled mechanics often earn much more we must remember that their working season is often very short. The amount of comfort or elegance which can be obtained from \$2 per day if one has to support five persons out of it you can easily reckon out for yourselves. The average earnings of all the laborers reported in the Pennsylvania statistics was less than \$400 per annum. The average weekly wage in the coal trade was only \$6.20, or \$325 per annum. The average weekly wage in foundries employing 17,000 men was less than \$9; in the Bessemer Steel Works less than \$8.50; in hosiery and knit goods less than \$5.

"We believe that this is a grave social problem which will require the most careful investigation and cautious action, if it is to be solved without seriously disturbing our social order. The conditions of life are becoming more severe as the years roll on. The prizes open to the successful one are growing larger, but the number of blanks is also rapidly increasing. I can remember quite distinctly—and I am not very old yet—when it was possible for a farm hand in Central Illinois to save enough from his wages in the course of a few years to buy and stock a 50-acre farm. That is no longer possible to-day in the same neighborhood. The number of laborers who live by daily wages is rapidly increasing. The hope that laborers as a whole can become anything else than laborers is wanting wherever manufacturing is introduced on a large scale. Even in the country a class of agricultural laborers is growing up which has no outlook toward anything better than being dependent wage receivers. If he can become nothing but a laborer, he must devote all his powers to bettering the condition of the laborers as a class; hence the conviction that high and even higher wages must be demanded in

order to secure his interest. There is no doubt that we have here the basis of a bitter and long-continued struggle, and that the crisis calls for all our wisdom and all our forbearance. It will not do to say in answer to this that wealth is increasing, for it might increase as fast again, and make things rather worse than better.

"I do not think that those are in the right who maintain that their labor disturbances are due to foreign agitators; and that, as the influence of these die away, peace and quiet will return."

Prof. T. Wesley Mills, of Montreal, read a paper before the Biological Section on "The Physiology of the Heart of the Snake." Experiments had been made on fasting but not hibernating animals, showing the heart of the snake to lie physiologically between that of the frog and of the chelonians.

Prof. A. Wanner, before the Anthropological Section, spoke on "The Relics of an Indian Hunting Ground." He said the extent to which America was occupied by the Indian was a question difficult to answer. Sufficient evidence had not been collected upon which to base conclusions. Central America and Mexico were in a measure archaeologically unexplored. Prof. Wanner's explorations were in York County, Penn. The region was highly cultivated, and farms had been tilled there for more than 100 years. He found a number of arrow heads, samples of the best workmanship of the Indian stone worker. Lance and spear heads, knives of various patterns, fragments of pottery, and axes were also found. The pottery was similar to that found along the Susquehanna.

Prof. Elias S. Rles read a paper on "The Electric Current as a Means of Increasing and Varying the Tractive Adhesion of Railway Motors and Other Rolling Contacts." He said this feature would act as an important stimulus to the practical introduction of electric railways in our city streets. In trunk line railways the use of sand and other objectionable traction-increasing appliances will be dispensed with, and locomotives will be enabled to run at greater speed with less slipping of the wheels and less danger of derailment. Traction power can be nearly doubled, enabling engines to draw heavier trains and surmount steeper grades without imposing additional weight or strain upon bridges or road-bed. Inertia of heavy trains can be more readily overcome, loss of time due to slippery tracks obviated, and the momentum of a train at full speed almost instantly checked by one and the same means.

Two objects of decidedly extraordinary appearance were exhibited before the large audience in attendance upon the discussions of the anthropologists. One of these was a gigantic jadeite votive adze, the other a marvelously beautiful crystal skull. The origin of both is such a mystery that an almost romantic interest was aroused by their exhibition and the two short descriptive papers relating to them read by Mr. George F. Kunz. He declared the adze to be of Mexican origin, and said it was the largest votive adze yet found. It was discovered 20 years ago in Oaxaca, Mexico. It is 10 13-16 inches long, 6 inches wide, and 4 3/8 inches thick, tapering off to a blunt edge. The color is a light grayish green, with streaks of an almost emerald green on its back. Originally almost wedge shaped, out of one side the features of a diety have been carved. These are decidedly of Mongolian physiognomy. The lapidarian work is probably equal to anything that has ever been found, and the polish is as fine as any produced by modern man. When the exceeding hardness of the stone is taken into consideration, resisting as it does the action of edged tools, the mystery regarding its production is deepened. The only explanation suggested was that the shaping of the stone had been accomplished by long-continued, patient scouring with sand. In reply to inquiries regarding any possible legends connected with the stone, it was said that the only one which deserved consideration was that the emerald-hued diety was originally of India, where it had been the object of worship, and that either away back in the mysterious ages of antiquity, when the Asiatic migration to America took place, it had been carried along by the tribe whose god it was, or else some casual refugee from the Orient had found his way with it in equally mysterious fashion to the western world.

After the adze had been exhibited and compared with certain uncarved adzes of jade of inferior size and beauty Mr. Kunz produced a curious cabinet made of the skin of a Mexican lizard, which, when opened, revealed a skull of nearly natural size and almost transparent. It was carved of crystal without flaw or fissure. It was discovered by a Mexican officer just before the Maximilian conquest and sold to Mr. Evans, the English collector, at whose death it passed into the hands of a French dealer in curiosities, of whom it was purchased by Mr. George H. Sisson of this city. As to its origin little or nothing more is known. Crystal of the same character is found in Calaveras County, Cal. Although similar in general appearance to many of the Chinese and Japanese crystals it was clearly not of Chinese or Japanese origin, or nature would have been more closely copied. And on the other hand if it were of European origin it would have been more carefully finished in certain minor particulars. In the Californian locality large masses of crystal have been found, and from the State of Michoacan, Valley of Mexico, small skulls of this same material, measuring rarely more than 2 inches across, have often been brought, indicating that the ancient Mexicans were acquainted with a means of carving and polishing not inferior in results to the best modern inventions. The skull is 8 3-16 inches long, 5 3/8 inches wide, and 5 11-16 inches high. The eyes are conical hollows about 1 1/2 inches deep. The line separating the upper and lower teeth is thought to have been produced by a string or bow.

Palin Baba, the Japanese, gave some reasons why the remarkable skull could not be considered of Japanese or Chinese origin, the substance of which was that it was not sufficiently true to nature in contour.

Prof. E. B. Elliott, of Washington, Actuary of the Treasury Department, read a paper "On the Rates of Interest Realized to Investors in the Bonded Securities of the United States Government," before the section on economic science and statistics. A year ago the Professor prepared an elaborate table showing the rates of interest realized to investors in United States bonds, based upon the market prices on the 1st days of January and July, from January, 1862, to July, 1886. The paper read yesterday contained a continuation of that table, showing that the actual rate of interest realized by investors in 4 1/2 per cent. bonds of 1891 on Jan. 1 of this year, at the then existing market price, to be 2.029 per cent. per annum, and upon the 4 per cents of 1907 to be 2.320 per cent. An investor on the 1st of July last in the 4 1/2s would realize 2.034 per cent., and in the 4s 2.234 per cent. interest per annum. Then the hypothetical question was asked: Assuming 110 per cent. to be the market price of 4 1/2 per cent. bonds on Sept. 1, 1887, having four years to run to maturity, what is the interest realized to investors? To this Prof. Elliott replied, 1.898 per cent., or a little less than 2 per cent.—payments being made quarterly. Again, assuming 130 per cent. to be the price of the 4 per cent. bonds of 1907 on the 1st day of July, 1887, with 20 years to run, what rate of interest would the investor realize? To this he said: 2.154 per cent., the interest being paid quarterly.

"The Eccentricities of Guessing" formed the subject of a lecture by Prof. T. C. Mendenhall in the section devoted to mathematics and astronomy. By a formula which he explained the speaker said he had arrived at a standard probability curve which could be applied to any form of guessing, and which represented the law that governed the occurrence and recurrence of purely accidental things. This standard was seldom deviated from to any great extent. Extended upon a graduated scale, he had frequently tested the accuracy of the probability curve by experiment. A large number of persons guessed at the number of nails of various sizes contained in a carboy. The lowest guess was 43, the highest between 3,000,000 and 4,000,000. Eight guessers came within one of the actual number, six coming short and two exceeding it, while the vast majority came within a few hundred of the actual number, which was 2,551. Many showed their belief in the superstitious notion that 7 was a "lucky" number by terminating their guess in this figure, then 3, then 9 came in order of preference. Odd numbers occur three-fourths of the time, and the number of the year was frequently chosen on perhaps the superstitious principle of the gamblers who play figures that have been presented to their notice in remarkable ways. Nothing ever happened by accident, but every act was controlled by some law of nature however remote it might be.

Little or nothing was accomplished at the evening session. The excursion party around the Bay returned late, in fine mettle for indulgence in creature comforts, having had nothing more substantial than ice water on the boat, and they were slow about getting down to business after supper. Although they expressed themselves as delighted with the trip itself, there was no praise wasted on the people of New-York, who have not regarded the association with the awe bestowed upon it by smaller cities.

The Torrey Botanical Club gave a reception in the evening to the botanical club of the association in the Library Hall, serving a cold collation in the Law School. Some 300 people were at the reception, which passed off very enjoyably.

To-day will be devoted by the association to pleasure. And to that end two excursions have been arranged; one up the Hudson, by the steamer New-York to West Point, will leave West Twenty-second-street pier at 9 o'clock; the other to Long Branch, by one of the Iron Steamboats, will leave Pier 1 at 10 o'clock.