THE GIANT REDWOOD TREES OF CALIFORNIA.

An interesting story attaches to the huge slab of wood which is shown in the engraving suspended between two railroad cars ready for shipment to England. At a dinner recently given by an American millionaire to a party of English friends in London, the guests had expressed their incredulity at the account given by the host of the mammoth trees of California. To prove his assertions, he offered to wager that he could procure from one cross section of a big tree a table large enough to accommodate all of the forty guests then assembled. The wager was accepted and an order was promptly given which resulted in the shipment of a cut from a redwood log, which was two feet thick and over fifteen feet in diameter.

The engraving shows the novel method of transportation. The possibility of the slab splitting in two, or of a section of it becoming detached, was guarded against by passing two one-inch rods entirely around the circumference and drawing them tight with screw bolts. Two large chains were then slung beneath the slab and made fast to two heavy timbers, one on each side of it, the ends of the timbers resting upon two railroad cars. The lower edge of the slab was a few inches clear of the rails, and the method of supporting it allowed the cars to swing freely in passing round the curves. Before shipping it was dressed down to the required size, and it finally left San Francisco for London by the German ship Maria Hackfield.

The slab was cut by the John Vance Mill and Lumber Company, of Eureka, California, and for the photo graph we are indebted to Mr. A. W. Ericson, of Arcata, in the same State.

In felling these giant redwoods the tree is usually cut at a point a few feet above the ground, so as to avoid the great thickness which occurs at the bottom of the stump. Notches are cut in the tree just below the line at which it is to be cut through and planks are inserted in the notches, to form a platform for the two axmen. The tree is then "undercut" on the side toward which it is to be felled. The undercut is V shaped and generally reaches about half way through the tree, the lower face of the cut being horizontal and the upper face sloping to meet it at a steep angle. When the undercutting is complete, the tree is cut through from the opposite side with large crosscut saws, the fall of the tree being guided and hastened somewhat by driving wedges into the cut behind the saw. The tree gives warning of its fall by the cracking of the remaining fibers, and if proper precaution is taken, there is no danger attending the incredibly swift descent of a falling tree, though accidents do occasionally happen, due to the carelessness of the lumbermen.

SLAB OF REDWOOD FOR A LONDON DINING TABLE DESIGNED TO SEAT FORTY GUESTS—DIAMETER 15 FEET.

Water Power and Momentous Changes.

The purposes, says a writer in The Spectator, for which water power is being utilized are exceedingly varied. It is used directly as electrical energy for lighting purposes and for chemical and metallurgical operations. Transformed again into mechanical energy by means of the electric motor, it is used for working tramway systems, for producing wood pulp for paper making, and for driving machinery of all kinds at the mines or in engineering and other workshops. The significance of this new step forward in the application of water power to industrial purposes is startling. On the one hand, it signifies that man has at last learned how to effectually master and utilize one of the mightiest natural forces of the earth.

Coal is an exhaustible possession, and the day must come when the coal fields of the earth will be worked out. Our rivers and falls offer, on the other hand, an inexhaustible supply of energy; for so long as the heat of the sun evaporates the water of the sea, and causes it to fall again as rain upon the hills or as snow upon the mountains, this source will be available for the supply of man's wants, and the arrival of the time when the earth's coal fields will be exhausted need no longer be awaited with misgivings. But there is another aspect of this development which is less cheerful for contemplation by three of the nations of Europe. The position which England, Germany and Belgium occupy to-day as the leading manufacturing countries of Europe has resulted chiefly from their possession of extensive coal fields capable of cheap development, coal having been in the past the chief factor in determining the industrial progress of any country. The progress of electrical science has, however, apparently changed the conditions of industrial supremacy, and it appears as though the possession, not of coal fields, but of water power, will be the determining factor in the future.

Whether the check to the natural growth and expansion of industry in the older manufacturing countries of Europe, that may already be observed as one result of the increased use of water power in countries hitherto of little or no account in the industrial struggle, will be followed by the gradual migration of the staple industries to the cheaper centers of power remains for the future to disclose, but it is a question of tremendous significance for the prosperity of the countries concerned.

"The American Educator—A Library of Universal Knowledge."

The above is the comprehensive title of a splendid work now being issued in six large quarto volumes, with nearly 4,000 illustrations, by the Syndicate Publishing Company, 230–238 South Eighth Street, Philadelphia, Pa. It is an entirely new and up-to-date publication, giving a carefully summarized compendium of the most valuable encyclopædic information, prepared with great judgment and discrimination, and combining therewith a dictionary and library of biography, atlas and statistical gazetteer, while presenting also an ample resumé of the progress of science and the arts, and the facts that go to the making of history right up to the present year. Those who have only the large, old-time encyclopædias, with their absence of information about the striking progress in the arts and sciences for a generation back, will take up these volumes with a keen appreciation of the advance that has been made. The up-to-date character of the work is well illustrated by its large official map of the Klondike region; its account of the life and recent sudden death of Henry George; its explanation of the acetylene lamp, and Maxim's and other flying machines; its fine illustrations and descriptions of Roentgen ray experiments and appliances, and in fact in almost every direction where the reader desires the latest and freshest information. A large corps of editors has been employed upon the work, and the publishers acknowledge their indebtedness to the SCIENTIFIC AMERICAN for many illustrations of late inventions and mechanical processes, the descriptions in many cases having been collated from our columns. The fact that, for a limited period, subscriptions may be made for this new and splendid work at a very low figure, payable in small installments, will probably not be lost sight of by thousands who will be anxious to obtain it, but do not feel able to pay at once the full purchase price.