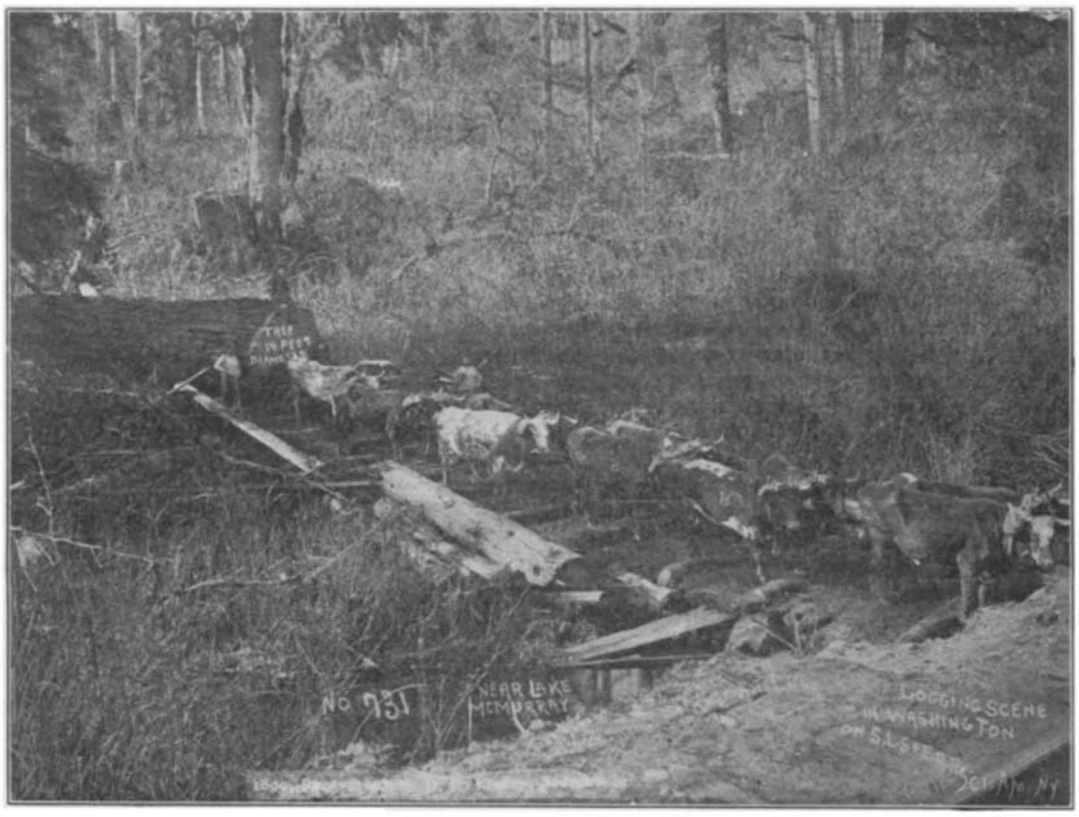
LOGGING IN THE NORTHWEST.

BY D. A. WILLEY.

As the forests of Oregon and Washington are being more thoroughly explored by lumbermen and prospectors, the size and extent of the tracts of timber are becoming more appreciated. For many years California has enjoyed the principal reputation for being the location of groves of the great redwoods. The species of fir found in the valleys of Oregon and Washington on the western side of the mountains are believed to be the largest of their kind in the world, and really rival the redwoods in girth and height.

Of recent years lumbering has been carried on extensively in the forests referred to, as the size of the timber and the many purposes for which this kind can be used have been strong incentives to the organization of companies and the building of sawmills. As yet, however, the operations of the timbermen have been confined to a comparatively small area, owing partly to the lack of transportation facilities and partly to the difficulty attending the work of getting the logs conveyed to market. The ordinary portable sawmills so commonly used in the Southern States, Maine and Canada are not large enough to utilize in the larger growths of Oregon firs, as they are frequently found of a diameter ranging from 12 to 15 feet near the ground, and with trunks which are available for cutting into logs to an extent of 350 to 375 feet. The measurements taken of some of the largest specimens show that they actually grow to a height of over 400 feet, including the topmost branches. This is over two-thirds of the height of the famous Washington Monument. Like the redwoods, the branches are not reached until one has scaled the trunk to a distance of sometimes 50 and 60 feet above the roots. As to the latter, they necessarily extend into the earth a great distance, and some of the stumps which have been removed have had roots which were 2 feet in diameter, reaching a distance of 40 feet from the tree proper.

Lumbering amid these forests differs in many respects from the industry as carried on in other portions of the country. The task of felling a tree of the size mentioned is attended with much difficulty, and great care must be used not only to prevent accidents, but to avoid the splitting or injury of the trunk in other ways. The direction in which it is to be cut down is, of course, first selected, and advantage taken of the character of the surface. If the ground is soft by reason of being marsh land, or is overgrown with saplings or heavy underbrush, this favors the lumberman, who is not obliged to prepare an artificial bed of piles of branches and leaves. In case the tree grows from a slope, it is generally cut with the crown pointing up so as to fall aginst the slope, thus lessening the distance of its descent. The larger ones are sometimes felled in such a direction as to strike against a smaller tree of no value, which will break the force of the fall and allow the trunk to be lowered slowly to the ground. In cutting a tree 300 feet in length, calculations must be made of its great weight and its length. There is little comparison between this work and that of felling a pine 100 feet high and but 3 or 4 feet in diameter at the base.



LOGGING SCENE IN WASHINGTON.

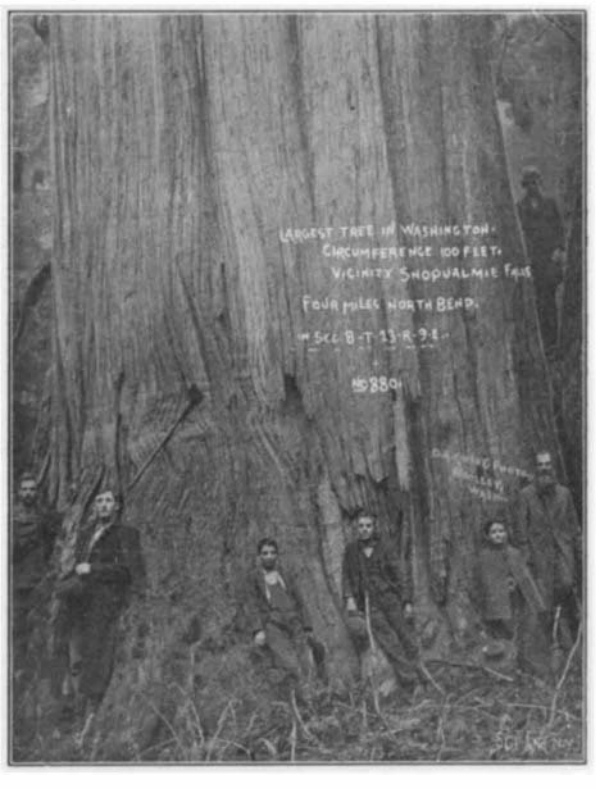
With the bed prepared, the axmen begin work, usually four in number, two on each side. In cutting they follow lines marked on the bark, which indicate the width and depth of the fissure to be made. When a tree is 10 feet in diameter, about 3 feet will be cut away on the side on which it is to fall and 2 feet on the opposite side, leaving the balance for the sawyers.

FELLING A LARGE FIR TREE.

These figures, however, may vary a foot or two according to the size of the tree. The axes used are about the size of the ordinary felling ax common to Southern lumbermen. The metal part weighs from 4 to 6 pounds, and is sharpened on both sides to the finest cutting edge. Experienced axmen will make a cut into the trunk which is almost as clean as if it had been sawed. That part of the work done, a cross-cut saw is inserted in the side on which the tree is to be felled. This is considerably larger than the average used in the pineries. It has the M-shaped tooth and is of cast steel from 5 to 8 inches in breadth, being widest in the middle and tapering toward the end. It ranges from 7 to 10 feet in length, and is sometimes operated by two, but oftener by four men, where the tree is of extra large size. The balance of the cutting is done by the saw, and it is removed when the foreman of the gang deems that it is unsafe to proceed further. Possibly a foot of the solid heart may be left untouched, or in other words the tree is supported by this much. Frequently wedges are driven in each side to furnish an artificial support, which allows the sawyers to cut away more of the timber. Then the saw is withdrawn and the wedges on the side where the tree is to fall are knocked away, the operation being something like the launching of a vessel. Another form of completing the work is to take away the saw while the tree is still firm, and chop away enough from the side on which it is to fall to overcome the equilibrium. Then a crack is heard, and as the lumbermen hasten to a safe place the great mass comes down with a force which presses it sometimes several feet in the soft ground or crushes the piles of branches forming its artificial bed literally into kindling wood. Occasionally steel wedges with sharp points are used to finish the work instead of axes. After the saw is taken out, they are driven in on the proper side until the tree begins to bend. On account of the large number of branches and their length, one of these trees, if isolated any distance from the others, feels the force of the air currents, and sometimes advantage is taken of a strong wind to cut down the tree so it will fall in the direction which the wind is blowing. Judgment must also be exercised in cutting during gales of wind, as serious accidents have happened on account of the force of the air throwing the tree in the wrong direction.

With the tree felled, the next step is to transport it to the mill, either entirely or in sections. As the mill may be 50 or 100 miles distant, streams with a sufficient depth of water are utilized when possible. The tramroad also plays an important part in the operations. In a forest containing a heavy growth of fir, a line is built to the nearest railway or rafting stream. It is equipped with the usual logging locomotives and flat cars, each capable of carrying a 30-foot log. A portable steam engine is then carried to the end of the tramroad and set up. It operates a drum on which is

LOADING FIR LOGS.



THE LARGEST TREE IN WASHINGTON.

wound several thousand feet of wire rope, sometimes hemp rope. It furnishes the power for a cable-way which can be used to great advantage in transferring the trunks or logs to different points within a radius of a half mile or so. The cable is run over a series of pulleys attached to convenient supports; to one end are fastened steel hooks or grips large enough to haul the great bulk. If it is decided to carry the tree from its resting place to a position where it can be cut to better advantage, the cable is secured to one end and a path prepared over which it can be pulled or slid by laying down round pieces of wood and pouring grease or water upon the surface. In this way a trunk 200 feet in length can be pulled a distance of 1,500 or 2,000 feet, if desired, by steam power. The more common way of carrying the larger trees in these forests, however, is to cut them with cross-cut saws into 20, 25 and 30-foot lengths and then pull them to the tramroad. By means of the cable-way they are placed upon the cars in the usual manner. If the tramroad terminates at the water's edge, a raft is made of the logs in the usual manner, although but a few can be placed together, on account of their unwieldy size and the danger of guiding them, especially in streams where the current is very swift. They are then taken to the mill, and stored in the "boom" or reservoir, until ready for the saw table.

Advantage is taken of the winter season in lumbering in these forests, as the snow forms a slippery surface on which to haul or shoot the logs. Consequently, much of the cutting is done in the fall season, and then all hands give up this work and turn their energy to getting the cut trees to the mill. Where steam power is not used, teams of oxen are substituted, as they are found to answer the purpose much better than horses, and have more endurance. A "string" of 25 or 30 oxen will haul a trunk from 150 to 200 feet in length without difficulty, if the grade of the road is not too steep and a pathway has been properly prepared. In winter, as already stated, the snow can be used to great advantage; but at other seasons of the year the road is made through the forest by laying limbs of trees, from which the bark has been peeled, closely together and throwing leaves and dried grass upon these, the plan employed being very similar to that in making a corduroy road. This is made slippery with either grease or water, and the trunk or logs pulled by the oxen to their destination in the usual manner. Some of these roads in Oregon are nearly 50 miles in length, and reach from the cutting district to the mill.

The millwork in connection with the big trees is quite similar to the industry in other parts of the country, except that special saws have to be used. Band saws of extra large size, made of the finest steel, are generally employed for cross and lengthwise cutting. Of course the saw tables must be made purposely to receive these logs, which are so high that a man standing on another's shoulders cannot look over the top of one of them. The mills are operated by water power; where it is available, although most of them have an auxiliary steam plant, ranging from 100 to 200 horse power, yet such is the quality of the equipment that logs 10 and 12 feet in diameter are cut into beams, planking, and boards as quickly as those of ordinary size. The great width of the planks requires much care to prevent them from splitting, and special carriages have been invented to take them from the saw table to the lumber pile when it is desired to utilize them in their original width. The demand for extra wide boards and planks, however, is but small, and the majority of the logs are converted into lumber of an ordinary building size. The lumber companies frequently make a good advertisement of their wares by constructing offices and small cottages of four boards cut from a single tree, one board forming a side or end, with enough cut off from the ends to supply the shingles for the roof. Some of these buildings are 10 feet high, from 12 to 16 feet in length, and 8 to 10 feet wide. The doors are formed by cutting out the required hole in the plank and fitting the piece of wood cut out with hinges, locks, and the necessary latch.

As already intimated, the size of the firs of Oregon and Washington in many cases rivals the dimensions of the famous redwoods. In fact, they are so large that dimensions are given which are scarcely credible. In going through some of the forests the traveler will see at a distance what he thinks to be the side of a cottage without windows. On nearer approach he finds that it is the uprooted stump of a large fir with the sawn side toward him. On the top of some of these stumps, 25 or 30 people could sit without difficulty and have room to move. Occasionally the timbermen find one with a decayed spot in the interior, but the great majority of the large trees are very sound, and for this reason are especially valuable for lumber. They are used for ordinary structural work, also shipbuilding to a certain extent, and for other purposes where wood which is light in weight is desired.

Copyrighted by D. R. Kinsey

SKID ROAD AMONG THE WASHINGTON CEDAR AND FIR TIMBERS.

Across Europe in a Balloon.

Count Henry de la Vaulx, a member of the Aero Club of France, who recently ascended in a balloon from Vincennes, France, for the purpose of traversing Europe as far as possible, has recently returned to Paris, a holder of the world's record for long distance ballooning. The feat accomplished by the aeronaut was a trip of 2,000 kilometers from France to Kiew, Russia, 1,300 kilometers (812½ miles) of which was made in exactly 24 hours.

The balloon in which Count Henry covered this remarkable distance in record-breaking time is known as the Centaure. During the Exposition, a wager had been posted by the owner of the Centaure that it could easily outdistance any balloon in the Aero Club. Accordingly, at exactly 20 minutes past 5 on the afternoon of the 9th of October, the Centaure rose gracefully over the roofs of Vincennes, and hung for some time suspended until the gathering twilight blurred and finally blotted out its shape altogether. Fifteen minutes later, however, the moon broke forth, and bathed the Centaure with a sheen of light, showing up the flying villages below quite distinctly to the occupants of the car.

In ascending the Centaure had reached a height of 2,000 meters. This altitude it retained for some time. Among the towns and cities traversed, Rheims was easily recognized by reason of its famous cathedral. The ancient steeple served for some time as an excellent guide. The wind forced the Centaure along toward the east, which is regarded as the most favorable direction for Continental balloon trips, and the pace was rapid and the temperature agreeably mild.

When the sun arose, little difference was noticeable in the altitude of the Centaure. In crossing the kingdom of Bavaria, recognized by its geographical peculiarities, the aeronauts descended several hundred yards in order the better to make observations. Toward 6 o'clock in the morning the balloonists were startled to perceive a second and larger balloon, which they had not before noticed, following at a respectful distance in their wake. It turned out to be another Paris balloon, by name the St. Louis, directed by M. Balzan. For almost five hours the St. Louis remained in sight. A few clouds covered the sky, and caused the Centaure to sink rapidly whenever the balloon fell within their shadow. It rapidly regained its former height, however, in the sunlight, so that it was scarcely ever necessary to throw out ballast.

M. Balzan in the St. Louis endeavored to avoid the constant falling by ascending to a greater height, but the depth of the clouds was too great to permit the experiment, and the latter cost the unfortunate balloon the greater part of its ballast. Shortly afterward the occupants of the Centaure's car saw the St. Louis slowly approaching earth. The Centaure, on the other hand, rapidly climbed to a height of 4,000 meters, where intense coldness prevailed. The thermometer dropped at an alarming rate as the ship continued to rise until 6,000 meters of space separated it from solid ground.

When the sun appeared on the following morning, the Centaure still kept in an easterly direction, but the aeronauts had completely lost their bearings. Instead of closely grouped villages, huge level plains and widespreading forests made up the entire landscape. At length a village appeared under foot, and a Byzantine church told the travelers that they had crossed the German borders and were rapidly traversing the domains of the Czar. A large city loomed up in the distance, and preparations were made to end the long journey.

The descent was made slowly and safely, and the aeronauts found themselves near a wood cutters' camp, whose inhabitants, with amazement written all over their faces, dropped work and crowded round the strange apparition. The travelers were piloted to the home of a nearby estate owner, who understood French, and from whom Count Henry ascertained that he had sailed straight to the city of Kiew, a distance of 2,000 kilometers, 1,300 of which had been made in the record-breaking time of 24 hours, in addition to breaking the record for long distances by about 700 kilometers.

Gathmann Gun Appropriations.

There is a bill before Congress for the granting of an appropriation of $115,000 (making, with a previous appropriation for this gun, a total of about $200,000), for further experiment with the Gathmann gun, for the throwing of high explosives. If this money is voted, it will be wasted in endeavoring to establish certain theories, the falsity of which has been abundantly proved in the past. The Gathmann gun, the Zalinsky gun, the Maxim aerial torpedo gun, and all weapons of this class, are designed upon the theory that if a sufficiently large amount of high explosive can be detonated against or in close proximity to a battleship, the battleship will be, to use the pet term of promoters, annihilated. As a matter of fact, experiments undertaken by the United States government expressly to test this theory have proved that it is absolutely false. On one occasion a Harveyized steel plate, representing the side armor of the United States battleship "Kearsarge," was tested by the detonation of 307 pounds of gun-cotton, which was suspended for the purpose immediately in front of the plate. Instead of being blown into the theoretical "thousands of fragments," the plate was undisturbed, and a slight and harmless scoring on the face of the plate was the only evidence, as far as the armor was concerned, of the explosion. Of four chickens placed either immediately behind the plate, or within from 25 to 50 feet of the gun-cotton, two survived without the slightest sign of being injured; one was killed by a flying fragment of shell (a result which does not affect the argument); and only one appeared to have died from shock. Prof. Alger, the greatest expert in this country, or probably in any country, on this very question, says: "This experiment would seem to completely dispose of the theory that a high-explosive shell of very large capacity will blow in the side of an armored vessel if it exploded against it;" and he further says that "The velocity of the shell would add materially nothing to the effect of a detonation, the rush of whose gases is determined by a pressure of hundreds of tons per square inch."

It is the opinion of Prof. Alger and every ordnance expert the world over, that for a high explosive to be effective it must be carried by the shell through the armor, and burst within the hull of the ship itself. This conclusion was strikingly borne out by the experiments on the "Belleisle," made early in the present year. The high-explosive shells were burst upon contact with the armor, and left no further trace than a harmless star-splash on the outside of the ship.

The system being thus discredited by previous costly experiments made at the expense of the United States government, by what legal or moral right is the country to be asked to provide over one hundred thousand dollars more for the purpose of carrying out further experiments in this direction? If the person or persons who wish to promote this type of weapon have the courage of their convictions, and can interest the necessary capital for prosecuting their researches indefinitely, well and good; but to ask the United States government to distribute public funds for such a purely private enterprise as this, is a procedure which cannot be too strongly condemned.

Prizes for Sugar Machinery.

In our issue for December 8 we called attention to prizes offered by the Honolulu Planters' Association. Our readers will be pleased to know that its officers are located in Honolulu and that its secretary is Mr. C. Bolte. A representative of the association, Mr. Hayward, will arrive in Washington the latter part of January, and from him all the required information can be obtained.