

THREE DAYS' FOREST FESTIVAL ON THE BILTMORE ESTATE.

Continuation of the Story of the Unique Forest Fair—Object Lessons in Conservative Forestry—A Radical Idea in Tree Pruning—Some Costs of Starting Young Plantations—Amateur Foresters at Work—Inspection of the Grounds of Biltmore House—Sketch of the Career of Forester C. A. Schenck.

CHAPTER XIII—INSECT FOES AND TRANSPORTATION.

The preceding two issues of the AMERICAN LUMBERMAN published installments of a report of a three days' "forest fair" held in the last week of November last on the Biltmore estate of George W. Vanderbilt, near Asheville, N. C., under the initiative and guidance of Dr. C. A. Schenck, forester of the estate. It related the eager following of Dr. Schenck by foresters and professional and business men as he lectured upon the object lessons in conservative forestry afforded by his work on the estate.

The last previous installment of the great forest festival on the Biltmore estate left the participants eager listeners to the lectures of Dr. Carl A. Schenck at tip No. 7. The report is resumed here at that point.

"This shows how a wood lot looks after heavy thinning. Let us go on a little farther. Here you see another thinning, a very heavy thinning, of the pines, all of the pines having been taken off. Why? The pines were all dead. [Laughter.]

"The stand was a poor stand, but a wretched little bark beetle, millions of them, capable of chewing down half an acre at a time of yellow pine, invaded this group. Our fight against these beetles is continuous. Were it not for my good



SHOWING DR. SCHENCK'S METHOD OF PRUNING HARDWOODS ON THE BILTMORE ESTATE.

transportation I could not make such stuff into money, but as it is wherever the beetle worked I made the pines into money at once.

The Importance of Good Roads.

"One of the best, one of the most vital, means of resource that we have is competent transportation with a steady market. I told Mr. Defebaugh yesterday that it is my conviction that the difference between German forestry conditions and American forestry conditions lies in the absence of silviculture here and the presence of it there and the presence of good means of transportation in Germany and its absence in America. Here on the Biltmore estate we have these German conditions because we have spent a few thousand dollars to build these roads. Where the general conditions are like those here I am sure you would do the same thing because it pays the best.

"In the last fourteen years the hardwoods have developed well here. I want to reestablish on this plateau the equivalent of what was the original forest. I think by imitating nature we are safest in our investments. We do not want only a high rate of interest of our investments but safe investments at the same time, and these are obtainable by profiting by the lessons of nature.

"Here is a thinning that has just been made. After the trees

are cleaned about to log lengths I give the most promising of the trees the advantage of room and at the same time I get money by cutting the trees into firewood. This is a thinning in progress. We are taking out per acre about five cords of pine and leaving about, say, fifteen of pine and making a net revenue of about \$6 by the sale of this little firewood stuff. The idea is to give each of the pines full ground space so that when swaying in the wind they do not rub each other and they get room to develop. After ten years we repeat the thinning, taking out the least promising to the extent perhaps of about one-fourth.

"The hardwood undergrowth I do not touch because these hardwoods are subservient to the pines and contribute to their food supply. The hardwoods contribute to their food supply. The hardwoods contribute to the fertility of the soil, but the pines are dominant because they are prospectively of more value. I leave the slash for fertility."

CHAPTER XIV—WORK OF THE BARK BEETLE.

Arriving at Tip No. 8, Dr. Schenck said:

"This is a tract killed by insects. The stumpage value of this crippled tree is \$3 for firewood; for lumber it would have been \$10. It is more difficult to find out the workings of these beetles than you imagine. They kill only those trees in which they are breeding. They invade them only for breeding purposes. They attack the butt apparently ten feet above the ground. This beetle breeds in the yellow pine almost entirely. In the mountains we have 3,000 acres which have been destroyed by this beetle."

In answer to a question Dr. Schenck said:

"It costs to get firewood 60 cents a cord for the cutting only. My crews make three loads a day to Asheville. Every tree is marked before being cut.

"The woodpeckers feed on the larvae of these beetles, and if we had watched the woodpeckers we might have done better with these trees than we have. What we lose is the difference between the prospective value of the tree and the present market value."

CHAPTER XV—IN RAPID REVIEW.

Here Dr. Schenck called to his aid Capt. Cyrus T. Rankin, superintendent of the saw mill plant at Pisgah forest station, who has been an employee of the estate for nearly twenty years and who is one of its most expert woodsmen. He gave a demonstration in the practical work of marking trees for felling. Dr. Schenck darted ahead from tree to tree, designating the doomed individuals so rapidly as almost to deceive the eye, and in his footsteps followed Captain Rankin with a forester's huge clasp knife blazing the trees designated.

The lectures last recorded included in effect the object lessons afforded at Tip No. 9, where was passed an admixture of pines and oaks in which a number of improvement cutting had been made; Tip No. 10, a plantation of white pines planted 4,000 to the acre in 1900 on farm land covering twenty-two acres and on which stood a small saw mill now in disuse; Tip No. 11, a plantation of 20-year-old white pines declared to be objectionable on the ground that they are allowed too much growing space to their individual specimens and that early returns could not be obtained before thinning; Tip No. 12, at which was illustrated a feature of the character of the Biltmore estate which prevails throughout its extent: Dr. Schenck's department is allowed full sway over the forestal growth of the entire estate except upon the improved portion, where macadamized roads have been built, to the extent of 100 feet each side of the roads, which are under the care and command of the landscape gardeners of the estate. This point affords views of some of the most beautiful scenery on the estate. At Tip No. 13 was found a plantation of 20-year-old white pines which had been planted at two years of age from seed, standing about 170 trees to the acre on average.

Dr. Schenck advised his hearers that the land was aban-

doned farm land and secured the earliest planting under Mr. Vanderbilt's personal direction. The hemlock, Douglas fir and black cherry were planted at the same time. No trimming had been done at this point in five years. The Douglas fir were found to be of poor character, the only value of the timber on this tract being its influence on the soil and the protective companionship which it afforded the admixture of yellow poplar.

"This," said Dr. Schenck, "was a washed out gully some time ago, but after my pines quieted the gully down, stopping the erosion, the yellow poplars found their way in and formed a regular row."

A walk mostly up hill of about one mile brought the party to Tip No. 14, where was afforded an object lesson in the prevention or arrest of erosion by a growth of poplar and yellow pine, the latter about 25 to 35 years old. Some black cherry found at this point was planted during the last seven years.

CHAPTER XVI—IN RETROSPECT.

Although passed over in rapid succession above, Tips Nos. 10 to 14 inclusive are entitled to further comment in line with the pamphlet descriptive of them.

In the spring of 1900 at Tip no. 10 twenty-two acres of fairly good farm land were planted with white pines 3 years old a yellow pines 1 year old. The seedlings were



YOUNG WHITE ASH ON THE BROWNTOWN PLANTATION ON THE BILTMORE ESTATE.

planted 2½ feet apart in rows 4½ feet apart. The expense was: For plants \$332; for planting, \$180.79.

Quoting the pamphlet further, it says, in the language of Dr. Schenck:

In the planting expense are included two items spent (that is my present opinion) unnecessarily, to wit:

I have spent \$51.16 putting a few handfuls of forest soil into each planting hole;

I have spent \$17 putting a stone over each hole when the act of planting was finished.

At Tip no. 11 were found plantations of white pine which, while attractive from an aesthetical point of view, Forester Schenck objected to on the grounds, first, that the growing space of the individual specimen has been and still is too large; second, that early returns cannot be obtained through thinning. The plantations were made on contract in 1890 by northern nurserymen and the estate contains several hundred acres of this type of white pine forest.

Quoting the pamphlet again, in Dr. Schenck's language, the following is noted:

Tip No. 12: Along the macadamized roads the landscape department of the estate rules supreme. Thus, for two miles of road, you may enjoy the landscapes, the sweeping views over the mountains; and you may take a nap, also, preparatory for a walk of one mile beginning at station No. 13.

Tip No. 13: Another white pine plantation twenty years old, with a few hemlocks, Douglas firs (poor) and black cherries. The soil is covered with humus. If this plantation were denser I would like it better.

By this tie you long to see some fine chestnut trees, or poplars of white oaks.

There are none left, near Biltmore; they were removed before you were born; I can show you the stumps only of big trees along our route; and I show you, in this booklet, some trees standing in my forests some fifteen miles from here. We shall actually see them on Saturday next; here is one of the finest; and a fine girl, standing at its base on a log, holds her hat on a stick, so as to give you a chance to measure the size of the tree.

The illustration shows a typical scene in the woods. The tall tree is a "yellow poplar," worth about \$120 when converted into lumber. I shall cut it and saw it up within less than five years. If you want it saved I shall save it upon receipt from you of \$120.



EIGHTY-EIGHT PARTICIPANTS STARTING FROM BILTMORE VILLAGE FOR THE FIRST DAY'S INSPECTION OF THE ESTATE.

Of Tip No. 15 the pamphlet says:

This grove is produced by nature alone, absolutely without help, on an abandoned field. It is yellow pine, some 25 to 35 years old. Within twenty years we shall obtain, by way of thinning, as much money from it as we have paid for the land originally.

A slope of this character should not be cleared and used—as this one was—agriculturally. Look at these frightful gullies.

Erosion was rank in this lot prior to the time at which the slope was left alone—left unburned, unpastured, unused!

We want conservatism, and we want conservation!

CHAPTER XVII—BROWNTOWN PLANTATION.

Tip No. 15 was entered in the afternoon and dominated the Browntown plantation, which was planted in 1905 at the following expense for work per acre:

Lifting plants to nursery.....	\$1.50
Hauling plants to plantation.....	1.00
Healing in25
Demarcation of rows.....	.15
Making holes and planting.....	5.90
Total.....	\$8.80

Prior to planting in order to stop erosion \$66.98 was spent. The entire area was subdivided into lots lettered A, B, C etc. and, eliminating lot D, the details of planting are shown by the following table:

Lot.	Acres.	Kind.	Age.	No.	Kind.
A	10.8	P. echinata	2	30,000	P. strobus
B	5.5	P. strobus	2	8,000	Sugar maple
C	0.8	P. strobus	2	1,400	Tulip tree
E	0.9	P. strobus	2	2,000	Tulip tree
		Oregon ash	1	1,000	Oregon maple
F	1.5	P. strobus	2	2,300	Cherry
G	3.3	White ash	5	4,000	
H	8.5	P. echinata	2	38,000	P. strobus
I	6.3	P. echinata	2	19,000	Sugar maple
J	3	P. echinata	2	13,000	P. strobus
K	4.2	P. strobus	2	10,000	Sugar maple
L	5.8	P. strobus	2	13,000	P. echinata
M	3.9	White ash	5	20,000	
O	1.5	P. strobus	2	3,400	P. echinata
Na	3	Coccinea	1	2,200	Prinus
Nb	5	P. strobus	2	7,500	P. echinata

At this point, among other things, Dr. Schenck said: "In the springtime ash was planted in these boundaries. A little higher up the ash has done remarkably poor. In the same ground with the same species but as soon as the ash has reached 1½ to 2 inches in the ground it will strike the soil that will put it on a parity with the better growing ash. The rabbits do not bother the ash.

"I can not state now definitely whether forty to fifty years from this time the white pine or the yellow pine will be the more valuable. If there should be a difference then commercially between knotty trees and those without knots the yellow pine will be worth the more. White pine contains more resin than any other and it may be that North Carolina pine will in time be worth more than the other growths."

Pushing on across a little valley from this point the tired and thirsty party found a living spring, where all refreshed themselves gratefully.

Tips Nos. 16 and 17 were passed with slight mention, the former a thicket of yellow pine ground on what had been an abandoned field in 1880 and which obviously needed thin-



REPAIRING A BROKEN BRIDGE, AFTER PASSAGE OF PART OF THE CAVALCADE ON THE FIRST DAY OF THE FAIR.

ning, for which purpose the "wolves," as objectional growth is denominated by Dr. Schenck, were blazed for destruction. No. 17 was a plantation of white pine 20 years old and considered a remarkably fine exhibit. With it were mixed some alder trees of doubtful value.

Tip No. 18 was the remnants of an oak nursery abandoned in 1905.

Tip No. 19 was also an abandoned nursery, its value lying chiefly in the fact that it afforded a lane of protection against fires.

Tip No. 20 was a stand of yellow pine of about pole size, with an admixture of hardwoods which had been recklessly logged as far back as 1880.

CHAPTER XVIII—IMPROVEMENT CUTTINGS AND THE OAKS.

At tip No. 21 Dr. Schenck showed the effects of three improvement cuttings; one on the right and two on the left. Here the forester said:

"All of this here is natural regeneration of North Carolina pine; all is planted by nature, free of charge. The primeval forest was cut here in 1886 and you will notice a number of American flags that mark the stumps of the North Carolina pine cut at that time. The man who owns the land has told me that prior to that cutting the stand of pine and hardwoods

was such that he could not see his milch cow one-half mile distant; today he could not see her fifty yards distant.

"I have done nothing here but make money by cutting away the undesirable, low grade, misshapen, decayed hardwood in the last fifteen years. We have made here from cuttings per acre \$20 and are making more now. I could not plant as densely or as well as nature has planted yellow pine here. We have about 1,000 acres of this type, all cut in 1886 at the same time, and by improvement the timber has been transformed into North Carolina pine, with an undergrowth of hardwoods instead of an overgrowth. We have cut here about twelve cords per acre."

According to the records, at Tip No. 23 a field that had been used for farm land up to 1894 had been planted in the winter of 1895 and 1896 at an expense of \$43.34—

4 bushels red oaks;
4 bushels white oaks;
10 bushels chestnut oaks;
4 bushels black walnuts;
5 bushels white walnuts;
8 bushels chestnuts;

In March, 1897, were planted in the middle section near the old cabin, in rows three feet apart—

5.8 bushels red oak;
4.5 bushels white oak.

CHAPTER XIX.—EXPERIMENTAL PRUNING.

In a fairly well thinned growth at about this section Dr.

Age.	No.	Kind.	Age.	No.
4	14,000			
1	16,000	Cherry	1	8,000
1	2,000			
1	2,150			
1	500			
1	2,000	Cucumber	1	2,000
4	3,000			
1	19,000	P. strobus	4	2,000
4	1,500			
1	10,000	Chestnut	1	10,000
2	13,000			
2	3,400			
1	4,500	P. echinata	2	9,000
2	7,500	Hard maple	1	15,000

Schenck said: "Here I have done a little experimental pruning. I had here, the other day, the pleasure of a visit of three of our good foresters, some of the best in the whole country, and they were taken over this identical route, and when they returned to my office they said: 'You may know one thing or two but you do not know just one particular thing, because, how can a man prune successfully the trees and leave the stumps eleven inches long? What is the use of it? I will tell you. We prune out in this way so as to avoid the little scars, resulting from the pruning, appearing in the bole. When the heavy branch breaks off it tears knots in the stem unless you leave a stub I have come to the conclusion that it is best to prune the dead limbs out about to that length from the stem so as to prevent affecting the tree bole itself, and after two years I can come back and clean up right here—at the bole—and then we have a smooth scar, which in time will heal over.

"The expense of pruning has been 3 cents a tree. To take the stumps off here will make 6 cents and by the time all of it is done the expense will be about 20 cents a tree. Where we plant close together the pruning is done mostly by nature. That is one of the reasons why I plant close together, our hard maples or black gum or something of that kind with white pine acting as a natural pruner. Very large scars indicate diseases. That explains these fresh stumps, and I think if we do prune it is the way to do it. It is expensive, but whether it is better to spend that money and get \$20 back I do not know. I am in favor of pruning judiciously. What the future will show about it I do not know. We are blind as to that, and I may make mistakes here, but I try to avoid them. I leave the brush on the ground because it makes good humus."

At this point the party returned to their carriages and horses and journeyed to the south. En route a diversion was caused by the tempting sight of a full grown rabbit resting familiarly in an old stump by the wayside. A halt was made and about eighty able bodied men endeavored to catch one rabbit, led by the colored driver of one of the teams armed with a whip, but against this mighty force bunny was too active and when he seemed within grasp of the foremost there was a sudden crack in the atmosphere, the phenomenon of one-half mile stretch of brown rabbit, and he was gone from sight. A further diversion was caused just before reaching the next tip by the breaking of a bridge over a gully, but this damage was overcome promptly and the cavalcade moved on.

CHAPTER XX.—AMATEUR FORESTERS.

At Tip No. 25, by prearrangement, a large number of young pines had been laid upon the ground and each present were invited by Dr. Schenck to plant one tree. Most of the party took advantage of the offer, a larger part of them showing more or less familiarity with the proper way in which to do it. The trees were young pines, one year transplants, now 4 years old. The tallest of them was about fifteen inches.

In response to a question from one of the party, repeated by Dr. Schenck to one of the laborers who had been assembled at this point, the latter stated that an active man doing all of the work in connection with it could plant from 500 to 600 trees in a day.

Leaving Tip No. 25 the party rode for many minutes beside the beautiful French broad river, and at the conclusion of the ride drove up on to the level of Biltmore house and all dismounted and viewed what could be seen of the magnificent immediate surroundings.

CHAPTER XXI.—BILTMORE HOUSE.

Biltmore house itself was closed and in charge of a caretaker, but the party inspected the immediate grounds for about an hour, the formal gardens, tennis and croquet grounds, the magnificent lawn reaching perhaps 500 feet to the top of a steep hill to the east, the arbor, the beautiful, smooth driveways, the large, handsome stables, the artistically placed statuary, importations from European centers; the whole forming, perhaps, by nature and by artistic adaptation, the handsomest home east of the Rocky mountains.

The view to the west was what captured most of the party. From the level of the ground floor of Biltmore house is a sheer descent into a valley perhaps 100 to 120 feet, built of solid masonry, brought from Indiana quarries. The prospect from this point was so entrancing that none left the spot willingly. To the distance in the left was the French Broad river, which landscape artist had made more picturesque by the addition of a mirror-like lagoon dotted with miniature islands, this giving the effect of a broader river. In the far west rose hill after hill, 65,000 acres of which consti-



THE "AMERICAN LUMBERMAN" CARRIAGE IN FRONT OF BILTMORE HOUSE.

tute a deer preserve. Farther to the west rose the Smoky mountains in a deep purple haze, the whole effect with the setting sun being gorgeous.

A land of vision it would seem--
A still, an everlasting dream.

The visit to Biltmore house concluded the outdoor enjoyment of the day and the party returned to Asheville in their conveyances and on horseback to await the Thanksgiving dinner scheduled for the evening.

CHAPTER XXII.—THE FORESTER OF THE BILTMORE ESTATE.

Before proceeding with the story of the Thanksgiving feast at the Battery Park hotel it will be appropriate to introduce a sketch of the host of the occasion—the host of the entire forest fair and whose personality and accomplishments made that unique festival a notable event in the history of conservative forestry.

Few if any influences of an immaterial character are so conducive to accomplishment as enthusiasm in pursuit. It may be hazarded that no other immaterial influence is as great a factor in accomplishment as pent-up enthusiasm for a desired purpose. Such enthusiasm, released, augmented by thorough ability, is a force irresistible.

The history of notable commercial, professional and artistic accomplishments is replete with examples illustrative of this force. Even the superficial observer can upon reflection cite the names of many whose forebears or early misguidance had destined them for vocations in which, had they not made marked failures, as more probably would have been the result, would at least have lived and died in obscurity but who, following their own inclinations or forced into their proper spheres by accident, achieved success that has made history. Given the antitheses of these antecedents—enthusiasm for a given pursuit and with complementary, well grounded ability -- and the subject is destined for unqualified success.

In an important German city, back in the early '70s was born an heir to a distinguished name who by parental purpose was destined to bear arms in the Kaiser's service, following the traditional occupation of sons of the house of Schenck. The parental purpose was successful but in part, for while Carl Alewyn Schenck became in time an officer in a distinguished German army corps and yet retains, in enforced submission but not in lessened vigor, the martial impulses of his forebears, an absorbing love of nature and masterful scientific bent checked his career in the army whose purpose is destruction and transformed him into a military leader in that army whose purpose is production, later giving to America one whose impress upon the conservation of one of its greatest, and aesthetically and hygienically its greatest, natural resources has already made his efforts famous and whose future influence is incalculable.

For many successive generations numbering will back to the days of medieval Germany the house of Schenck has been an important one in the grand duchy of Hesse-Darmstadt, one of the twenty-six states which form the German empire, or what should be known as the German federation of states. Here Carl Alewyn Schenck was born, one of a family of five brothers and two sisters. To the dim and distant days to which the family traditions hark back all of his ancestors were government officials. His great grandfather was a framer of national constitution and is denominated today the Hesse-Darmstadt Washington, a notably wealthy man in his day, one of those who financed his country in its war with the first Napoleon and who was the father of a large family. One of his sons was a state official, minister of forests in Hesse-Darmstadt, which

accounts for early strains of forestry lore and love in his grandson. The father of Carl A. Schenck was born in 1831, a contemporary of Bismarck, and was secretary of war until 1866. In the German civil wars the southern states, including Hesse-Darmstadt, lost against the northern states, led by Prussia, and Hesse-Darmstadt, with other troubles, lost its right of maintaining an independent army, which forced the elder Schenck back on to his own resources, a not altogether unmixed evil, as among other not altogether negatively good results it enabled him to raise a large family. He took up the practice of law and incidentally was president or vice president of a number of commercial concerns, notably chemical companies, which flourished well.

Like his brothers, Dr. Schenck attended in Darmstadt the school which would correspond to the American high school, acquiring also the benefits of the gymnasiums and college. From the Darmstadt establishment he was graduated in 1886, entering the university at Tübingen, one of the three German universities at which forestry is taught, though the country supports a number of technical schools in which forestry forms part of the curriculum. At Tübingen Dr. Schenck was under the immediate instruction, in forestry, of the well known Professor Lorey and was a corps student, his career marked by those escapades, intermingled with scholastic industry, which seem inseparable from the high spirited, full blooded student; as Dr. Schenck has expressed it in later years, "We did all that the good Lord has forbidden." It was difficult to attend lectures on silviculture at 8 in the morning when one went to bed at 4.

At Tübingen the young student formed some of his most lasting friendships and was brought into touch with the best character forming influences, which he regards as of more practical importance than rough with science. Here, too, what promised grave disaster threatened to cut short his career. An accidental, sudden immersion in the river, of icy cold temperature, resulted in symptoms of tuberculosis and young Schenck was sent by medical advice to a tuberculosis asylum, one of his lungs affected. After treatment lasting about half a year he went to Geissen to study, wasting here, according to his estimate, two of his best formative years that might have been devoted to scientific study, from his eighteenth to his twentieth year "doing nothing." It was his father's idea that young Schenck should study law, his physical condition, it was feared, incapacitating him for the rigorous physical examination which precedes admission to the army, an absolutely essential precedent to joining the German forestry service, upon which young Schenck was intent. He followed the unpalatable study of the law fitfully, but at the same time determinedly pursued his studies in forestry, including botany, chemistry, mineralogy, surveying, engineering and higher mathematics. His distaste for legal lore acted as a stimulus to his other studies and he worked harder than any of the other 1,200 students. He attended fifty-five lectures each week and broke the college record for industry; incidentally he acquired a practical knowledge of shorthand, a marked advantage to him then and later in life.

Upon the termination of his fourth year at Geissen young Schenck made an enviable record for the examinations on forestry studies, his examiners, after noting that he had secured the highest possible credits, standing up and saying, "Mr. Candidate, never since the university's existence has a candidate passed as uniformly well in all branches as you have done."

Dr. Schenck comments upon the disadvantages of practical study of forestry in Germany. In effect, the instructions are confined to gardening and botany. He never was in a saw mill in Germany nor had he or any of his fellow students opportunity to investigate the lumber districts. One learned well about silviculture but little about actual forestry practice, and a student or instructor who actually planted a seedling would have been laughed at; personal manual labor was discountenanced.

At Geissen Dr. Schenck came into contact with one of the dominating influences of his later life. Here he met, admired and became a staunch adherent of Sir Dietrich Brandis, whom he characterizes as "the man who introduced forestry to

the English speaking nations, the founder of forestry and the noblest of men," a man at 70 years of age who "walked through the forests like a deer and was an inspiration to all." Sir Dietrich Brandis had been inspector general of forests in India, and guided through the German forests young German students passing to and from India. Young Schenck knew little English at the time but a strong friendship grew up between him and Sir Dietrich Brandis which was a big factor in the student's later career. In this association he was assistant forester for several years, having acquired governmental appointment, without salary, after graduation from Geissen, after a previous rejection due to fear of physical incapacity. As previously stated, an officer in the forestry service of Germany has also to serve as an officer in the German army and Lieutenant Schenck served one year in the horse artillery, in the guard corps of the grand duchy. Another of his instructors for whom he entertains a strong admiration was Dr. Walther, the well known writer upon forestry matters, one of Germany's chief forestry inspectors and secretary of forestry, from whom he learned the lesson of the value of personal manual labor in the forest and with whom he walked, imbibing instruction and inspiration, frequently to and from Darmstadt and the neighboring forest, a distance of fifteen miles.

Two years later young Schenck passed further governmental examinations, acquitting himself with extraordinary credit, specifically a credit of 440 marks out of a possible 450. Aside from his intense study, Dr. Schenck had had the advantage of open air instruction by the best equipped foresters in Germany. In the class room, he declares, he learned but little, as also through the instructions at the forest schools, but he acquired his practical, exhaustive equipment through his excursions with Sir Dietrich Brandis, Dr. Walther and Dr. Schlich, one of the best posted authorities on forestry, through the forests of Germany and Austria.

After passing the last government examinations recorded above young Schenck read for and later passed successfully an examination for his degree of Ph. D., his thesis on "The Financial Side of the Oak Forest" determining his status and the granting of his degree *summa cum laude*. Then he applied to Dr. Brandis for a position, as he was aware that advancement in the German forest service was discouragingly slow. At about that time George W. Vanderbilt had written Dr. Brandis applying for a forester to take charge of the Biltmore estate, and Dr. Brandis recommended Dr. Schenck, this occurring in March, 1895. Dr. Schenck was in Italy at the time and Dr. Brandis, between whom and Dr. Schenck a genuine fondness existed, was much touched when the latter telegraphed that he would accept subject to the former's approval. At Dr. Brandis' suggestion Dr. Schenck came to the Biltmore estate, expecting a short stay; he has remained, the stalwart, vigorously effective forester in charge of the vast estate, fourteen years, excepting for short visits to the fatherland. He still retains his rank in the German army but remains in America on continuous leaves of absence, the necessity for which he hopes will soon disappear. In that army two of his brothers are commissioned officers of high rank.

After his first year's residence in America Dr. Schenck returned to Germany and there married Miss Adele Bopp, daughter of the president of the Bank of Commerce and Industry in Darmstadt. In this lady he found an ideal helpmate, one with intense, intelligently directed sympathy with all his purposes and pursuits and who presides gracefully and most hospitably over his home, "Wolcote," a handsome and luxuriously furnished residence dominating one of the most beautiful views on the Biltmore estate.

Dr. Schenck has usually spent some of the summer time of each year since his first visit to America on German soil, accompanied by some of the students of the Biltmore Forest School, and there the editor of the AMERICAN LUMBERMAN fraternized with him several years ago for a considerable period. He is familiar by personal visits with

out of one hundred foresters in Germany could not tell how lumber is sold, by the cubic foot, the meter, or how, though that condition is now changing for the better. The big mill proved a failure, through the fault of local conditions, as did the use of splash dams and other experiments unsuited to conservative lumbering on the Biltmore estate, by all of which failures, under Dr. Schenck's wise methods, the estate has profited vastly.

Dr. Schenck has had to contend with much that would have thoroughly discouraged the average man of even the more vigorous in his management of the Biltmore estate, from local conditions, native unwisdom and prejudice, disheartening geographical and commercial conditions to threats of personal violence—at the last of which those who know this big bodied, high couraged, virile man laugh, though the threats were made by desperate men of tried determination. He took up work under conditions most unpromising and turned a wilderness into a practical, paying enterprise, into one of the most beautiful areas on the American continent and a live lesson in conservative forestry, such as is not afforded elsewhere and which bears the enthusiastic indorsement of the state and federal governments and of colleges of agriculture and forestry without exception, as was illustrated in the late extraordinary attendance of accredited representatives of all those interests during the recent "forest festival" on the Biltmore estate, lasting three days, when under his guidance experts and authorities on forestry matters paid homage to and learned from the master forester.

As formerly intimated in this article, Dr. Schenck's impress upon the future of conservative forestry, and upon all its ramifications, is already notably considerable, and its future effects are incalculable. One of the most striking phases of this is found in the Biltmore Forest School, founded and personally conducted by Dr. Schenck. Here, after satisfying rigorous essentials precedent to admission the pick of many vigorous young men—vigorous mentally, morally and physically—are taught exhaustively the best and most practical lessons in the most approved and thoroughly proven conservative forestry and are turned loose, practical foresters and lumberjacks, upon a waiting constituency of timber owners and lumber manufacturers and the government Forest Service to spread the influence of their school and conserve, as never before the advent of this school and its graduates, the forestal growth of the country.

Dr. Schenck is president of the firm known as C. A. Schenck & Co., Biltmore, timber experts, who send their forces of estimators into all parts of the country. He also has charge of the Highland forest, a 50,000-acre tract adjoining the Biltmore estate and owned by English, German and American capitalists, of whose directorate he is president.

Dr. Schenck is in effect a king in a small kingdom, material and immaterial, 200 square miles in North Carolina and the timbered areas of the continent, and of that larger kingdom, the future of forested growth. He has administered his kingdom wisely and with present and future benefit to the country beyond calculation. This forestry enthusiast, expert and authority in his own section of North Carolina, wherever lumber and timber interests are a phase in the life of any section of America, in the founts of learning in this country and abroad, is hailed as a savant and benefactor.

(To Be Continued Next Week.)



PLANTING 4-YEAR ODL WHITE PINETREES AT "TIP NO. 25" BY PARTICIPANTS IN THE THREE DAYS' FOREST FESTIVAL.

the eastern, northeastern and southern states and longs for a chance, at first hand, at the big forestal growth of the far west. "When I have two months to spare," he declares, "I will go with Mr. Defebaugh out west." Several years ago Dr. Schenck induced his mother, now aged 68, to visit him at Biltmore. His return visits to the fatherland are influenced primarily by the prospect of seeing her, of whom, like all big men, he is enthusiastically fond. His estimate of his mother is almost a deification and most worthily bestowed.

When Dr. Schenck took charge of the Biltmore estate, that 200 square miles of North Carolina object lessons in the last possibilities in conservative forestry, he was made, against his protests, president of the Biltmore Lumber Company, a Vanderbilt enterprise that operated a huge, thoroughly equipped band saw mill. At that time he had no practical knowledge of the lumber business. The European forester is not so taught; ninety