

THE PAVING QUESTION.

AN ENLIGHTENED REVIEW OF THE DIFFERENT KINDS.

The Milwaukee Council Appoint a Committee of Experts to Investigate—The Experience of Buffalo, Cleveland, Washington, Fort Wayne, Detroit and Chicago.

St. Paul is in its infancy on the street paving question, and if mistakes have been, or are likely to be made, it is better to ascertain them as soon as possible, and apply the remedy. The probability is that one, and perhaps two streets, will be paved the present season, and before anything further in that line is done, the experience of other cities will be a good thing to consider. The Milwaukee committee state that they have in use in that city the following:

There are three blocks (about one-fourth of a mile) of Telford macadam pavements, poorly laid.

All the remaining streets that are improved are what are called gravelled streets. These gravelled streets are paved by spreading from eight to twelve inches of gravel (generally not very carefully selected) over the surface after it has been graded to the subgrade. This top dressing of gravel is intended to bring the surface to the finished grade. It is not rolled or compacted to form a hard and unyielding surface for travel, nor is there any foundation laid for the gravel surface.

About one and one-fourth miles (6,476 feet) of the wooden pavements are laid with blocks prepared by the Thilmann process. About two miles (10,166 feet) are paved with blocks laid directly upon the sand (from two to four inches in depth) without the plank foundation and the strips ordinarily used under the old Nicholson pavement.

The remaining twelve and one-half miles are laid with the foundation plank under the blocks.

The cities whose pavements we propose to speak of specially are Buffalo, Cleveland, Washington, Fort Wayne, Detroit and Chicago.

The data and conclusions are, as you will observe, conflicting, but the merits and demerits of the different kinds of pavement are fully stated, and will greatly help toward right conclusions.

BUFFALO.

The following is from George Vorn Berge, city engineer of Buffalo, dated February 5, 1878.

The paving of streets is exclusively under the charge of this office. Common rubble stone pavements were the first kind used in this city as early as 1845; since that time the quality of the stone pavement has gradually improved; square stone pavements are now in general use; the old fashioned paved gutters are now more used, and flat gutters six inches wide, generally used. On account of the good quality of Medina sand stone so near by, stone pavements have the preference for durability and cheapness.

There are specimens of first class stone pavements in this city that were never disturbed for making connections with sewers, gas or water pipes, and have been in use for over eight years; they are good and perfect and will last ten years longer. The average cost per square yard of first class stone pavement was \$2.25 including curbing and gutter stones till 1876, since that time the price for labor has been materially reduced, and first class stone pavement may be furnished now at \$1.45 to \$1.62 per square yard, and second class stone pavements at \$1.08 to \$1.26 per square yard.

I enclose specifications for first and second class stone pavements.

Wooden pavements (Nicholson, Ballard, Wykoff, and Roberts patent) have been tried here since 1859, but with no success; they have proved a failure; the cost being about the same as for the first class stone pavements, while it only lasted from three to five years. There are only six and three-tenths miles of streets paved with wood, against eighty-three and thirteen-hundredths miles of streets paved with stone.

A trial will be made this year with an asphalt pavement, the main questions is how it will stand in our climate, its cost will be about \$2.43 per square yard. I would not express my opinion on it until I have seen the asphalt pavement, and until it stands a fair and good trial.

CLEVELAND.

The next two letters are from Cleveland, the first from Chas. H. Strong, formerly city engineer, who says under date of Feb. 1, 1878:

"The use of wood for street paving purposes has been thoroughly tested in this city with varying results."

The Nicholson with coal tar coating was the first used, but it soon became apparent that coal tar did not in anyway add to the durability of the pavement.

A number of processes for the preservation of wood were investigated in 1870 by a committee of the city council and myself, as city engineer, with a view to adopting the process that apparently would give the best results.

After a careful examination it was decided to try the rosin process on St. Clair street, from Erie street to Wilson avenue. Accordingly in 1870 and 1871 that street was paved with pine blocks, treated with the rosin process, except the block between Minnesota and Alabama streets, which, as an experiment, was paved with elm blocks treated by the Thilmann process.

In 1872 Perry street, and 1873 Gardner, and a portion of Franklin street, were paved with pine blocks, treated by the Thilmann process. The balance of Franklin street was paved with pine, treated by the tar or coal oil process. A sufficient time has now elapsed to determine the relative value of the processes used.

On St. Clair street the rosin process has proved a total failure, while the elm blocks treated by the Thilmann process are on all appearances as sound as when laid. On Perry street the paving is in excellent condition. That portion of Franklin street on which the Thilmann process was used is in a much better condition than the other.

There is, however, one all important thing that must be looked after if you would have a durable pavement, and that important point is sound lumber cut from live timber. You might as reasonably expect a dead man to continue his previous business pursuits as to expect that lumber cut from dead trees can be restored to its former soundness by any preserving process.

Good sound lumber of any kind properly treated by the Thilmann process will in my opinion make a pavement that will not decay, and will also wear a great deal longer than the same lumber untreated. I am the more thoroughly convinced of this by the showing of the Elm block on St. Clair street, and also the condition of a number of railroad ties in the track of the Cleveland and Pittsburgh railway at Euclid avenue crossing.

These ties were cut from the most perishable woods, such as beech, maple, elm, etc., were treated and placed in the track in 1860, and are to-day perfectly sound and in fact are harder than the wood in its natural state even.

Do not understand me that all pavements here treated by the Thilmann process have proved a success, for they have not, but in all cases of failure it has been traced to the use of unsound timber. From my experience and observation and for economy of process I think the Thilmann the best wood preserving process in use.

During the eight years I was city engineer I gave a great deal of time and study in examining and experimenting on the different wood preserving processes, and for the last three years I have been watching the results of those experiments, and have come to the conclusion before stated."

The following is from B. F. Morse, city civil engineer of Cleveland.

"The date is February 16, 1878. There are three kinds of pavement laid in Cleveland, the most durable and cheapest is Medina New York sand stone, brought here by canal and lake. This kind of stone has been used here more or less for the last fifteen years. There were paved here last year two streets with this stone."

There has also been laid here during the last five years several miles of wood pavement treated with the Thilmann preserving process; it will take four or five years more time to test it thoroughly as to its durability.

We have also paved several streets with Abbots concrete, and have covered old Nicholson pavement with it. The kind of pavement has been down from two to three years, some of it has done very well, while other parts have been repaired.

Wood and concrete pavements are luxuries that but few streets can afford in the long run, yet they will pay in some instances.

We find by experience here that where two streets run out of the city nearly parallel, one of which is paved with wood or concrete and the other with stone, that people almost universally shun the stone and go out of their way to drive on the smooth pavement.

In some such cases it may pay to lay patent pavements as the increased traffic and consequent increase of business, during a number of years would enhance the value of the property to pay the difference in the cost and frequent renewal. But generally a good Medina stone pavement is the cheapest and will last twenty-five or thirty years or more if put down properly.

WASHINGTON.

The information here following is from R. L. Hoxie, Lieutenant of Engineers, U. S. A. Engineer of the District of Columbia.

WASHINGTON, Feb. 4, 1878.—The experience of this city with wood pavements has shown that the round block cedar is more durable than any other. It has been laid with sand and gravel foundation, interstices being filled with the same material. It has also been laid with a foundation of about two inches in depth of coal tar concrete, interstices being filled with the same material. The latter method seems to give the better pavement, but neither affords a sufficient foundation to prevent unequal depressions.

These pavements are wearing out as anticipated in my annual report of 1878. It is now proposed to use the best of these pavements as a foundation for a wearing surface of some variety of bituminous pavement, to be put on about two inches in thickness.

The following extract is from the report of Lieutenant Hoxie, referred to in his letter. The report is dated District of Columbia, Nov. 30, 1875.

"In order to thoroughly repair the wooden pavements, it was necessary to get rid of them. To this end it was decided to take up all the defective work, to select the sound blocks and relay them, and to put down upon the remaining space a pavement of stone blocks, or of concrete, whose cost should not exceed that of the wood pavement. Where the original pavement was not too far gone, patching was resorted to, but where the decay was universal, the entire pavement was taken up. In order to avoid the intermingling of wood with concrete, or stone, in alternate patches, a section of the old pavement in the worst condition, was selected for removal, to furnish the requisite number of sound blocks for repairing the balance of the work, and to be replaced by a section of new materials. Further on in the same report, after quoting from the report of a Committee of the Board of Health, condemning the wooden pavements, which extract concludes with the following recommendation: "That the Health Officer be instructed to examine wood pavements from time to time, and report their sanitary condition, with a view to condemn, as quickly as necessary, those that, in the opinion of the Board, may be considered injurious to health." Lieut. Hoxie closes his report on pavements, as follows:

"It would be unjust, however, to apply this general condemnation of the wooden pavements without discrimination. The round block cedar pavement, untreated, has been laid at less than half the cost of the patent block pavements, and is still in fair condition. It has had in general the advantage of being laid upon a good slope, which threw off the water rapidly, and upon streets not used for horse traffic, the shape of the block, when excepted to transversely to the direction, may assist in prolonging the life of this excellent wood. Where this pavement is out of order the sawpud has given way under travel, while the heart remains comparatively firm, and the blocks have worn into a conical shape. This seems to indicate the manner in which it will ultimately wear out, but the present condition of most of it argues a pretty long life if spared hard usage. None of this pavement has yet been repaired by the commissioners. The Flanigan pavement, made of round blocks of any sound wood, laid upon a foundation of bituminous concrete and flooded with the same, has been put down upon some of the worst drained streets in the district and is all in good condition at present. The cost, however, is equal to that of a concrete pavement.

The experience of the District, with the mass of its wood pavements, has been so disastrous that the merits of particular varieties are clouded by the prejudice against their class. It is hardly possible to give them any cordial praise, and even strict justice is accorded with a latent apprehension."

FORT WAYNE.

The following is an extract from the letter of John Ryall, City Engineer of Fort Wayne, Ind.:

"We have some oak pavements laid here ten years still comparatively sound. We find, however, in tearing up for repairs that the foundation plank is always the soundest, and generally in a good state of preservation. In some instances blocks coated with tar were laid, when taken up are found with a showing that the tar had caused dry rot. The preservation of foundation plank should contribute to contact with the moist gravel and sand, the rotting of the blocks to their separation from the same, and I believe if the blocks were laid on their ends directly in

contact with the sand, there would not be so much decay, and that tar is useless expense in the laying of wooden pavements.

I believe also that the preservation of wooden pavements attributed to a coating of tar has been really caused by moisture held there by the intervention of tar.

As I was in the city in examining given wooden pavements and found they were given up everything but cedar block pavement, I saw there a short street paved with cedar which had borne the concentrated hauling from the warehouses for five years and appeared as good as new.

Cedar block pavement is laid by forming the street bed to the proper form of the finished street, upon this is laid six inches of sand which is well rolled, then the cedar pavers from four to ten inches in diameter are packed and rammed, in two years the blocks are laid on the consolidated sand and well rammed down with hand rammers. It is also top-dressed with sand, and wedges are driven into the openings between the blocks twelve inches in length.

Our Nicholson pavement at Fort Wayne is laid on six inches of sand, first, a sheeting of pine boards lengthwise of the street, then blocks four inches wide and five inches deep laid one inch apart, the spaces between the blocks are packed with a screened gravel, tar packed and rammed, in two years the blocks have worn one-eighth of an inch. The timber was white oak, no strips were used between the blocks."

CHICAGO.

The following are from a paper on the wooden pavement of Chicago, by E. A. Fox, C. E.:

"I think no stone pavement has been laid in Chicago for nearly twenty years, except a very little macadam, and consequently the great bulk of our pavement, embracing over one hundred and one lineal miles, consists of pine or hemlock blocks, and with more or less modification upon the Nicholson plan."

Scarcely any of these streets are less than sixty-six feet wide, and fully one-half are eighty feet, the former having a roadway of thirty-eight feet, and the latter of forty-eight feet, and when it is remembered that these streets have to bear the brunt of the heavy travel, which notoriously turns off from all other streets, the wooden pavement, it will be seen that Chicago has had an extensive experience, and while we still grumble about them, as the people of all cities do about their pavements, the fact that we continually lay more, and replace those worn out, shows that it is not, perhaps, the best pavement in the world, but that so far, all things considered, we have not yet found a better one.

The unsolved problem of a perfect pavement does not depend for its solution so much upon its top stratum, or pavement, as upon a secure foundation. Every sensible man must see that stone, iron, asphalt or wood alike become irregular, and go to destruction if not properly supported. Yet the principal part of the criticism, and of plans for improvement, is directed to the upper stratum or finishing part. Every hole in our wooden pavement has been attributed to rotten blocks, when perhaps it might be found that a single dry clod or lump of clay that had propped up the pavement while hard, and afterward crumbled and settled down upon its top stratum, or pavement, as upon a secure foundation. It might as well attribute it to the shingles, or slates that covered it, and instead of finding fault with the rafters, trusses or foundation of supporting walls, propose a remedy by substituting tiles or tin for shingles. But this is what is done by changes from wood to stone, from stone to iron, from iron to asphalt, when all will be equally bad if placed on a bad foundation.

The feature in the wooden pavement most unaccountable to those who attribute all defects to rotten blocks is not the absolute decay of the material within a reasonable time, which of course is to be expected, but the great supposed irregularity in the decay; every hole in the streets being attributed to the decay of the blocks, and these defects appearing in many cases a few weeks or months after the paving is done.

Whatever may be the effect of climate in Washington, or in other cities, where decay is said to be such a prominent cause of the defect of wooden pavements, I am convinced it is among the smallest in this city, at least on the heavily traveled streets, where I think the blocks are settled into holes, split and battered out of existence, before they have time to decay. I have seen old pavements taken up, notably that of South Water street, some five or six years ago, where the blocks were worn down from six inches to less than two by the immense travel on that street, and nearly all perfectly sound.

The progress of the art of paving with wood in the city of Chicago, as made by the contractors, has developed considerable proficiency in the art of "how not to do it."

It is, however, has been particularly counteracted by the skill and watchfulness of the engineers and inspectors, but the result of turning loose these old and experienced pavers upon the unsophisticated officials of Washington must have developed ability in the art above mentioned, unknown in this city.

WHAT THE WASHINGTON BOARD OF HEALTH SAYS.

The board of health of Washington reports of the pavements laid by Chicago contractors: That within three years from the time they were laid, every one of them gave more or less evidence of very rapid decomposition, and some of them have decayed so rapidly as to give rise to a mass of dangerous putrefaction.

This may be the effect of climate or of the antiseptics with which the blocks were treated, for no one can say that such horrible pavements can be found in Chicago, even after ten years of use. That the recently laid specimens of wooden pavement in Chicago stand as well as they do is remarkable, for they are not much more akin to the Nicholson process than the play of Hamlet with Hamlet left out, would be to the original.

The Nicholson specifications were as follows: Six inches of sand on top of grading, well packed and brought to the shape of the finished work; upon this two layers of one inch boards, swabbed on both sides with coal tar; then six-inch blocks, kept apart by two-inch strips of inch stuff, the four inch space above these strips and between the blocks, filled with pebbles well rammed in and treated to a liberal dose of coal tar poured in hot, and the surface of the pavement also tarred and top dressed with gravel.

The "improvements" have been, first, one layer of boards, dispensed with; second, the tar swab, laid aside; third, the inch strip dispensed with, the blocks being kept apart by the pebbles above; fourth, the other layer of boards abandoned, the blocks resting directly on the sand, and fifth, the use of tar given up.

We have now left the sand, the blocks and the gravel, and no further reduction can well be made, and retain a wooden pavement. These successive reductions certainly diminish the expense very much, whether the merit of the pavement has been much lessened has been a disputed point. I think if the expense saved had been devoted to preparing as perfectly as possible, the road-bed beneath the pavement, by puddling, rolling, etc., to bring it to the condition of a good gravel road, that we should have but

little more complaint of holes caused by rotten blocks, at least upon recently laid pavements.

It seems pretty well settled that pine or hemlock will last from seven to eight years, without much damage from decay alone, and in locations where it will inevitably wear out in less than that time, it seems unnecessary to substitute cedar, a softer and more brittle wood. The latter may be excellent on lightly traveled streets, and, perhaps, would do good service for fifteen years in such locations."

I regard the discontinuance of the use of the tar, as the worst omission of all. Much paving has been laid in Chicago without any tar, and with a top dressing of two or three inches of gravel, much mixed with sand and loam, which, being swept off with the first street cleaning, left the blocks bare and unprotected, to be softened by the rain and battered by the wheels. On the other hand, the Nicholson plan, the sand is necessary to bring the road bed to exact shape, and correct minor defects of grading.

The planking, which has been for some years generally discontinued, is essential, to give a uniform bearing to the blocks, and, if it is true, as objected by some, that one-inch boards cannot support a pavement over a hole, still less could the blocks be supported in such a place without any boards, the fact being that the hole ought not to be there, but the boards should be supported at every point, and only needed to bridge over such small and unavoidable defects as might cause the settling of a single block. The City Council has just passed an ordinance requiring that all the wooden paving hereafter laid, shall have a flooring of from one to three inches in thickness.

The strips between the blocks are not of much importance; the blocks can easily be kept apart till the gravel is put in. The only real use of the strips is to prevent the gravel from working under the bottom of any loose block, and raising it above the rest of the paving.

It has been claimed that the business portion of the city should be paved with stone, leaving the wood to the residence streets. In my estimation the valuable business property, on the busiest street is the best able to afford, and appreciate the luxury of this style of pavement. I think no one will deny that the Nicholson, at the best, is the most agreeable, and for those travelling upon it, the most economical ever invented, not excepting the famous asphalt. The question then how long can it be kept at its best, or so nearly so as not to appreciably differ from it?

I believe that by being properly laid and seasonably repaired, it will be better for five years than a stone pavement ever is, on our most heavily travelled street.

The present cost of paving with six inch blocks, one inch board flooring, and top dressing of tar and gravel is about \$1.25 per square yard.

The Nicholson pavement is cheap and of perishable materials, and too much has been expected of it. It should be promptly replaced in advance of its total decay.

The general practice heretofore has been to lay it carelessly, neglect it entirely, use it for about three years after it was worn out, and abuse it for that time for its badness, forgetting the good service it did during the first five or six years, and finally take it up and put down another of the same kind.

It is certainly reasonable to anticipate that, with the more settled condition of the streets, and with the reaction which already seems to be taking place from the careless and slovenly modes of construction and neglect from which it has suffered, that we may yet enjoy the smooth, elastic and noiseless presence of our old friend, the Nicholson pavement.

WHAT THE MILWAUKEE COMMITTEE RECOMMEND.

We now state our conclusions and recommendations concisely and without discussion.

We think the condition of the paved streets in this city does not greatly differ from that of other cities where the wood pavement has been almost exclusively used.

The extreme cheapness of the material here has apparently led to a disregard of the expense of frequent renewals and repairs.

The necessary annual outlay for repairs of wooden pavement is seldom thought of by those who find fault with its condition in the streets.

The life of the common wood pavement does not usually exceed seven or eight years. The annual expense for renewals and repairs must therefore in that time equal the original cost of the whole pavement.

It will readily be seen that this city with sixteen miles of wooden pavement now laid must annually renew or entirely relay over two miles of the pavement, and continue to keep doing so every year, without adding any length to its paved streets, or materially improving their condition.

When this city has, as Buffalo and Chicago now have, one hundred miles of paved streets, if these pavements are of wood, their entire renewal will be required every seven or eight years, which will amount to relaying twelve or fourteen miles of new pavement annually to keep the streets in ordinary repair.

If the average width of the paved streets between curbs is forty-five feet, and the cost of relaying with the cheapest kind of wood pavement, sixty-two cents per square yard, the cost would be sixteen thousand five hundred dollars per mile. This makes the average annual expenditure on the present length of wooden pavements in the city about thirty-four thousand dollars, to keep them renewed and in good condition.

With one hundred miles of such paved streets this annual expenditure would reach about two hundred thousand dollars at the present prices of lumber.

The principal faults of the pavements as now laid here, we think are in their foundations.

The earth is not sufficiently compacted before the sand is put on. The layer of sand is too shallow; it should be at least six inches deep. It would be better where practicable to have six inches of gravel instead of sand, and have this thoroughly rolled and then covered with a layer of sand one or two inches thick.

We think it would be better and would last quite as long to have a foundation of plank under the blocks. We esteem it utterly impracticable to do the necessary ramming of gravel between the blocks if laid without the plank foundation. It is true the pavement can be more easily taken up and repaired if so laid; but if properly laid with the plank foundation there would not be the necessity of so frequent repairs.

The strips between the rows of blocks should not be omitted; they should be nailed to the blocks.

The gravel generally used is not clean enough. It should be thoroughly screened lake gravel such as was formerly used with the Nicholson pavement; and should be solidly and firmly swaged in between the blocks.

We think the tar should not be dispensed with.

By laying carefully wooden pavement in accordance with the suggestions, and carefully selecting the lumber, we think it would last without any repairs ten or twelve years,

unless worn out by very heavy and constant travel.

We are informed that the company which prepares the blocks in this city by the Thilmann process are willing to warrant them to last twelve years without decay.

If wooden pavements of whatever kind could be made to last twelve years, instead of seven or eight, the cost of their annual repairs would be diminished by more than one-third.

We recommend the laying of at least one mile of the Medina sand stone pavement the present year, that our citizens may see a sample of the kind of stone pavement considered wherever it has been used, the best. The Medina stone is a hard sand stone, does not wear smooth, is about as durable as granite, and has this advantage over granite, that it does not become slippery. It is obtained in the State of New York, near Buffalo, and owing to the low freights and low price of labor at the quarries, could be delivered here as cheaply as in Cleveland, Toledo or Detroit, where it is extensively used as a paving stone.

We also recommend the paving of one mile of streets the present year, with the Telford macadam. As good a street as any to try this on would be Muskegon avenue. The Medina stone pavement could be laid on Fowler street. We understand that the board of public works would recommend these pavements in these streets.

We recommend the purchase by the city of a steam road roller. We will not lengthen this report with arguments in favor of its purchase. A first-class Telford macadam pavement cannot be laid, and have it immediately fit for use as soon as built without having one of these heavy rollers to compact it. We can hardly build a gravel road properly without a heavy roller. It should be used to prepare the foundation of all pavements.

The principal defects in the two or three blocks of Telford macadam now laid in this city, arise from their not having been rolled by a heavy roller, and finished into shape when they were first laid.

We recommend the thorough and systematic raking, cleaning and rolling the surface of all the gravel streets, this work to be done as rapidly as due regard to the interests of the public will allow. The surface of all these gravel streets should be so well made, and so hard and unyielding, that they would be in all weather pleasant to drive on, and could be cleaned as readily as streets paved with stone or wood.

If we are to have good road surfaces on our streets, fitted alike for light trees and heavy, and wish to preserve these surfaces at as little expense for repairs as possible, your honorable body will see the propriety of a proper ordinance relative to the width of tire for heavily loaded vehicles, and the strict enforcement of it.

We think the practice of narrowing the roadway between curbs, some five or six feet, as recently adopted in Van Buren street and some others, is to be commended. It lessens the number of yards to be laid and kept in repair and also adds to the beauty of the street by the correspondingly increased width of sidewalk. By this we do not wish to be understood as recommending the narrowing of the roadway in business streets.

We think the practice of paving the gutters with stone and the driveways with wood should be discontinued. One kind of pavement should be used for the whole width between curbs.

Since the public, on account of the many advantages of the wood pavements, such as their freedom from noise, their merits as a drive, and the quietness with which they can be laid and repaired, seem to prefer them, notwithstanding the objections of their frequent renewals adding considerably to the rate of taxation, and their hygienic defects, they being universally admitted to be deleterious to the health of cities where used, we recommend that where used they be laid on streets in the business part of the city, where their freedom from noise and other merits overbalance their demerits.

An Easter Poem.

BY MRS. L. C. WHITON.

Bursting from earth in air of early spring,
I found a lily growing sweet and wild;
And plucked the blossom, snowy fair, to bring,
As a type of resurrection, to my child;

How out of death divinely life might grow,
I told her then what Easter meant, and why
There seemed such gladness in the world to right;

Why clear-voiced choirs sang so exultantly
The joyful anthem "Christ is risen again!"
That, dying, He
Had taken from the grave its victory.

"Because 'He died and rose again,'" I said,
"The dark and shadowy valley none need fear;
The little brother on you seemed dead,
Was only on Christ's bosom heavenly near."

There is no tomb
Can prison or hide the soul's immortal bloom."
O! impotence of words! Who can explain
This wonderful mystery? And yet, perchance,
Through one white lily on God's altar laid
My child may grasp the flower's significance.

And, kneeling, say,
"A little child doth yield her heart to-day!"
—Walt Whitman.

The Madman of the Woods.

In the fall of 186—just before our winter logging campaign vague rumors were afloat about a raving maniac, escaped from some asylum, who, it was said, had taken to the woods, and was committing depredations upon the farmers.

He was described as a very large and powerful man, armed with a huge bludgeon, said to be larger than a three-year sapling, with which he had killed several oxen, and desperately wounded one man who had had the hardihood to attack him.

The day before we started for the logging camp we were startled by the intelligence that a man answering the description of this supposed myth had been seen only ten miles distant, and the morning of our start, a messenger from our next neighbor, three miles away, summoned us to aid him in the capture of this creature, who, just at dusk, the evening before, had, in full sight of one of his men, stolen a sheep and rushed in the forest with it uttering wild yells.

A fierce mastiff had been set on him, which he instantly killed by a blow from his heavy club, and entered the thick underbrush, into which no one dared follow him. Here he uttered such terrible shrieks as startled the bravest among the men who had started in pursuit.

Although it caused a great disarrangement of our plans, we responded to the call, and twelve men, I among them, started the next morning on snow shoes (for the snow was two or three feet deep) to the aid of our afflicted neighbor.

Arrived there, we found everything in confusion, for the madman had entered the stable during the absence of the men at breakfast, and ridden off a horse at full speed up the road, which had after-

ward returned, covered with foam, and so thoroughly scared that every slight noise caused him to cover and tremble.

We all adjourned to the stable to look at the horse, and then started in the direction of the "destroyer of our peace" had taken. We each wore snow-shoes, and carried a gun, though we were strictly forbidden to use them unless it became absolutely necessary for our own safety. A supply of rope was also taken, to be used in case of his capture.

We had proceeded up the road for half a mile or more, when we came to an indentation in the soft snow by the side of the road, where the maniac had evidently been thrown from the horse.

A rail fence near had been dragged down and evidently hurled at the retreating figure of the animal.

From this place we could easily follow the trail of the man, who had sunk deep in the snow at every step, and entered the woods but a short distance from the road.

Higher we eagerly followed, and very shortly were painfully made aware of the presence of the object of our search, who had secreted himself behind a large pine stump. When the first man passed him, he sprang upon him and bore him into the snow. We all together dragged him off, but tried in vain to hold him down. He threw us all off, and, knocking two or three men down, disappeared into the thick forest.

The man whom he had so savagely attacked was not seriously hurt, but we all agreed that it would be useless to follow the wild man, as we could not effect his capture without some of us being severely injured.

We accordingly returned home and carried out the programme of the day, and by three o'clock had arrived at the lumber camp.

Here everything went well for awhile, and we were just getting well under way with our logging, when the wild man again made his presence known in an unexpected, and, as it proved, fatal way. We had thought it barely possible that he might visit our camp, but as two or three weeks had passed, and we were eight or nine miles from where he had last been seen, we had entirely given up the idea.

Our method of logging was to cut a road from our timber to the nearest creek, and haul the logs on to the ice, there to wait for the spring freshet. The snow on the sides of these roads often became six or eight feet high, and it was then impossible to turn out on either side, hence we had "switches" at regular intervals, where each empty team waited till the loaded sled passed.

It was about four o'clock, and already becoming dusk, on Thursday of our third week, that I was taking my last load down to the ice. A short distance behind came Jim Hayden with another load. I was but a few rods from the "switch" when I heard a terrible scream of boisterous laughter.

The thought that it was the madman instantly forced itself upon me, and upon looking around, I saw the six oxen of oxen teaming madly down the road towards me. (It was down grade.) They were heavily loaded, and atop the logs stood the madman, plying the whip and uttering such fearful yells as fairly made my blood run cold.

I immediately perceived that if I did not get my load into the switch before he passed, a terrible catastrophe would be the result, and I therefore hurried the oxen as much as possible; but despite my efforts, I had only succeeded in getting partly in when the twelve oxen struck the end of the logs with a heavy crash, killing the off oxen of the two middle teams instantly, and throwing my oxen down.

The madman was thrown from the sled, and struck my load on his back, where he lay groaning heavily. The oxen kept on in their mad career, carrying their dead comrades with them, and ran on to the ice where the impetuous of the heavy load forced them over some of the logs, when the "nigh for a'd" ox broke a leg. The remaining cattle tore away from the sled, and dragged their dead and wounded companions into the woods, where we afterwards found them.