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## STATISTICS OF FENCES IN THE UNITED STATES.

It has been a mooted point, in the past, whether fences were intended to avert the destruction of corn by the cattle of neighbors, or to restrain one's own stock from similar depredations. For a long time the popular idea, logically interpreted, appeared to be that corn should be restrained to prevent depredations upon cattle. Another question, of which a solution has been desired, is whether the money invested in farm-stock or that in farm-fences is the greater sum. It is certain that the fence investment is a large one, and strongly suspected that much of it is avoidable and unprofitable. While rapidly paying the national debt, it is possible that the American people may discover a means of reducing another of almost equal proportions. In the one case the annual tax is a fixed sum, which is less than legal interest upon the entire principal; in the other, it is legal interest on the whole amount, and a still larger tax for depreciation of the principal, thus more than doubling the tax, and rendering the fence debt a heavier burden than the war debt.

It is beginning to be seen that our fence laws are inequitable in a greater degree than is required by the principle of yielding something of personal right, when necessary, for the general good. When a score of young farmers "go West," with strong hands and little cash in them, but a munificent promise to each of a homestead worth \$200 now, and \$2,000 in the future, for less than \$20 in land-office fees, they often find that \$1,000 will be required to fence scantily each farm, with little benefit to themselves, but mainly for mutual protection against a single stock-grower, rich in cattle, and becoming richer by feeding them without cost upon the unpurchased prairie. This little community of twenty families cannot see the justice of the requirement which compels the expenditure of \$20,000 to protect their crops from injury by the nomadic cattle of their unsettled neighbor, which may not be worth \$10,000 altogether. There is also inequality in the tax which fencing levies upon the farmers, the rate of which increases with the decrease of the area; for example, a farmer inclosing a section of land, 640 acres, with a cheap fence costing but \$1 per rod, pays \$1,280 for as many rods of fence, or \$2 per acre; another, with a quarter section, 160 acres, pays \$640, or \$4 per acre; while a third, who is only able to hold 40 acres, must pay \$320, or \$8 per acre. Thus the fencing system is one of differential mortgages, the poor man in this case being burdened with an extra mortgage of \$6 per acre which his richer neighbor is not compelled to bear. All these acres are of equal intrinsic and productive value, but those of the larger farm have each but a fourth of the annual burden thrown upon the smaller homestead, and the whole expense may be for protection against trespassing cattle owned by others.

But it is not proposed to discuss the fence question. It is necessary, first, to obtain possession of its facts, ascertain what kinds of fence are used, the number of rods of each, and the cost of each. The census furnishes no light upon it, and local collections of these essential facts are few and imperfect. The best that can be done at present is to seek county estimates of kind, amount, and cost, from careful analysis of ascertained facts. As a preliminary effort in this direction, in the absence of a thorough census, the following series of questions was addressed to the regular statistical correspondents of this Department:

1. What descriptions of farm-fences are made in your county; if of



more than one kind, the proportions of each, expressed as percentages of the total quantity?

2. What is the average height and prevailing mode of construction of each kind?

3. What is your estimate, for the farms of your county, of the average number of rods of fence to each one hundred acres of farm-lands, including together improved and unimproved lands?

4. What is your estimate, for the whole county, of the average size (number of acres) of inclosures or fields?

5. Average price of boards used for fences, per thousand?

6. Average price of rails per thousand?

7. What proportion of openings have bars and what proportion gates; style and cost of gates?

8. Average cost per rod of worm-fence; of post and rails; of board-fence; of stone wall; of other kinds?

9. Average cost per hundred rods of annual repairs of all farm-fences?

10. What kinds of wood are used as fence material, and what the relative cost of each?

11. What is the comparative durability of each kind?

Returns were made from 846 counties, nearly all answering every question, some very fully. As a sample of the most exhaustive, the following, from Hon. John M. Millikin, of Butler County, Ohio, is given in full:

1. Our farm-fences consist of common worm rail fence, and (what can hardly be called a fence) of osage-orange hedge. There are no data by which to determine accurately the proportion of each. My estimate is 80 per cent. rail-fence, 15 per cent. board-fence, and 5 per cent. hedge-fence.

2. Our worm rail fence varies in height. They are from seven to nine rails high, including riders. Our board-fence is usually made of 16-foot boards, 1 inch thick and 6 inches wide. Posts 8 feet apart. Black locust posts always preferred. Red cedar, white cedar, and oak posts all used, and esteemed for durability, in the order named. Most people make their board-fence five boards high, and then cap it. Recently many are only using four boards, and capping with the fifth.

3. In 1857 I made a very careful estimate of the number of rods of fence in this county, and the cost of the same. I also estimated the annual interest on the same, and the annual expense of keeping the same in repair. These estimates were made for the purpose of showing the necessity of having a law enacted to prevent cattle from running at large. I presented my statement to the State Agricultural Convention, and the ultimate result was the passage of a very valuable law restraining cattle from running at large. As yet, it is not generally enforced, but is accomplishing good results. My data, then used, I cannot find, and must, therefore, hastily make another estimate. So much preliminary. Our farms, of 100 acres each, will average from 875 to 950 rods of fence—say fully 900 rods.

4. We have in this county about 4,000 farms, varying in size from 30 acres to 400 acres. Of the latter we have some thirty or forty. Each farm, on an average, will have about eight fields, and we have, therefore, "of inclosures or fields," at least 32,000. This estimate does not include numerous small lots which every farmer has in immediate connection with the barn-yard.

5. The average price for fencing-boards is about \$22 per thousand.

6. Good oak rails are worth \$70 per thousand.

7. Nearly all inclosures are now provided with gates. There are scarcely more than one pair bars to fifteen gates. In some neighborhoods bars have been entirely superseded by gates. Gates are usually made with common fencing-boards, one inch thick and six inches wide; a post 3 by 4 at one end and 2 by 3 at the other end. Braces of boards of like size, extending from bottom of the larger post to the top of the smaller. Cost about \$3.

8. New worm-fence will cost about \$1.75 per rod. Post and rail fence has almost gone out of use. I have seen none made within the last twenty years, with the exception of one string. It would cost per panel of ten feet, about \$1.80. Board-fence per rod, good lumber, and locust or red cedar post, will cost about \$2 four boards high, and \$2.15 to \$2.20 five boards high. Stone walls are not constructed and used as fences in this county.

9. I know of no way of answering this question satisfactorily, as the annual repairs will so much depend upon the age, material, &c., of the fence. From the investiga-



tions I have made, I am satisfied that it will take 15 per cent. per annum of the original cost of the fence to pay interest and keep up repairs.

10. Farmers prefer oak and walnut rails. The latter would probably cost \$120 per thousand, and are not now used. Where rails are used now, farmers are willing to make them out of almost any kind of timber. Where board-fence is made, pine boards are preferred. Locust and red cedar posts are preferred, costing about 35 cents each. Oak posts are somewhat cheaper but less durable.

11. Locust posts are believed not only to be stronger than cedar, but they hold nails better and are more durable.

Permit me to add further. We have in this county 293,000 acres of land, all inclosed. We have at least 2,600,000 rods of fencing, some costing largely more, yes, four-fold the price at which I have estimated our fences per rod. But for the purpose of estimating the annual cost of maintaining our fences, including interest, let me put the average at \$2 per rod; 2,600,000 rods of fence, at \$2, will cost \$5,200,000. Annual cost of maintaining same, (including interest,) at 15 per cent. on original cost, \$780,000. These figures are astounding, and yet I believe that they are not too high. Material for rail-fences will soon be out of the question, and lumber of every kind is annually becoming scarcer, and necessarily will increase in price. Is it not, therefore, highly important that laws restraining stock from running at large should meet with more favor; that fields should be enlarged; that soiling should be more practiced, and that farmers should thereby be relieved from the great burden of paying such immense sums for fencing?

#### KIND OF FENCES AND MODE OF CONSTRUCTION.

The replies are necessarily monotonous from their repetition of details; they show that the common forms of fencing are substantially alike in all parts of the country, yet varied everywhere to accommodate the differences in kind, quality, comparative scarcity, and cost of timber; and present the Virginia rail-fence as the pioneer in all timbered districts, from the simplicity of its construction, not even requiring nails, but rails only. The tendency to supersede this form with a fence requiring less timber and occupying less space, while presenting to the eye more artistic features, is manifestly growing. The following extract from the returns of our correspondent in Rutherford County, Tennessee, shows that this tendency is already pervading a State which has yet half its farm-lands in forest:

There can be no objection to the red cedar rail-fence on the score of first cost or durability; but there is a most serious objection to all worm-fences. The writer has, upon a farm of 475 acres, about five and a half miles of worm-fence and one mile of plank-fence; also one-fourth mile of good stone fence. The stone and plank fences occupy only the ground they stand on. The five and a half miles of worm-fence occupy five acres of land, and keep out of cultivation nearly if not quite eleven acres of land. The cost of keeping down weeds, briars, &c., along these five and a half miles of fence—eleven miles of fence-corners—is a tax greater than my State and county tax for this year, and was poorly done at that.

A description in detail of the minute differences in construction, even as reported from the counties of any single large State, would require a score of printed pages; and the additional information in drawings and descriptions necessary to a thorough understanding of the peculiarities and variations of each kind of fence would fill a volume. Only a brief classification of the more essential facts embraced in these returns will therefore be given at present, with the hope of approximating the total amount and cost of the fences of the United States.

The fences of Maine are of many kinds and of various construction. Stone-wall is more generally distributed than any other substantial fence, about one-fifth of the inclosures being walled in, York County reporting 30 per cent., Hancock 29, Waldo 25, and other counties a smaller proportion. The post and rail style is next in prominence, especially in Somerset and Hancock, surrounding nearly three-fourths of the inclosures of those counties. Board-fence is used for four-tenths of



the fields of Cumberland; for one-fifth of those of York and Oxford; and one-fourth of the farms of Waldo. Brush-fence predominates in Oxford, being used for three-fourths of all inclosures. The height of Maine fences ranges from 4 to 4½ feet. There are structures which pass as fences that are still lower. The board-fences are of various patterns. In Oxford a desirable style is made of 8-inch boards, nailed to posts 8 feet apart, and battened with a perpendicular strip upon each post. In York, except near buildings, the boards are confined with withes. In Sagadahoc, where timber is getting scarce, three or four boards to each length are used, and posts are set on stone, iron dowels entering the wood 8 inches. A "cap and bunk" fence of cedar is the style in Aroostook; the rails cut 18 feet long, and lapped to make each length a rod; a "bunk," or block, about 4 feet long, laid under the end of each length, and a cap at the top, holds the stakes together. "Hedge-fence" is made of fallen trees. In Waldo half the inclosures have worm-fences. As material for fencing, cedar is used wherever it can be obtained, and hemlock, spruce, oak, pine, poplar, and other woods.

A similar variety is found in New Hampshire. The worm-fence (Virginia) surrounds one-fourth of the fields of Coos. Board-fences predominate in Coos and Strafford, half of all being of that sort. The post and rail is largely used in all parts of the State; and brush, stump, pole, log, &c., are common. Stone-wall is largely used in all rocky districts, both single and double, of all widths, from 2 feet to 6 or more, according to the quantity of stone for which no other disposition is so convenient. In Hillsborough it constitutes three-fourths of the fence; in Strafford, one-half; and a large proportion in all other counties.

Worm-fence is common in several counties in Vermont, the proportion being 90 per cent. in Grand Isle, 65 in Addison, 25 in Washington. In the latter county the rails generally rest on stone 8 inches high, and six rails to the panel are used. Boards are used for half the fences of Washington and Essex, and are largely employed in Orleans and Windsor. One-fifth of Addison fences are made of stumps, standing about 5 feet high, roots upward. About one-fourth of the fencing of the State is made with stone, the proportion in Essex and Windsor being fully 50 per cent., and 25 in Washington, 20 in Orleans, and in Addison and Grand Isle scarcely more than 5 per cent. Stone at bottom, with stakes and rails above, is used to some extent. Cedar rails are common in Orleans.

Stone-wall is the main fence in Massachusetts, its proportion reaching to 75 per cent. in Essex, 67 in Norfolk, 40 in Dukes and Bristol, in Plymouth 60 per cent. stone and wood combined, and 10 per cent. of stone alone. Nearly half the fences are of stone, or stone and wood combined; fully one-third post and rail fence, 3½ to 4½ feet high, of which Dukes has 60 per cent., Hampden and Bristol 40, Norfolk 33, Plymouth 30, and Essex 20. In Hampden stone-walls are very substantial, many being 4 feet wide at bottom, and 3 at top.

Rhode Island is mainly fenced with stone, scarcely any other material being known in Newport, Bristol having 75 per cent., and Washington 60; height, about 4½ feet. A foundation two feet deep is sometimes laid with small stone. The rail-fence is 4½ feet high, of 5 rails; and the posts of board-fence are set 2½ to 3 feet in the ground, 8 feet apart. All fences and gates are comparatively substantial and thorough in construction.

Stone is the material for one-third of the fences of Connecticut, New London having 70 per cent. of wall, Fairfield 50, and other counties a



smaller proportion. Post and rail fence incloses three-tenths of the fields; worm-fence nearly one-fourth; board-fence one-eighth; height,  $3\frac{1}{2}$  to  $4\frac{1}{2}$  feet. In Middlesex, where a poor quality of stone is available, walls 3 feet high are common, with stakes and rails above. In New Haven similar fences are made, the wall  $2\frac{1}{2}$  feet high. These walls are preferred to the regular stone-wall for sheep-pastures. Six rails are said to make a legal worm-fence; heavy rocks are often placed under the corners; and a fence built with  $1\frac{1}{2}$  to 2 feet of stone, with 3 rails above, is deemed a good fence.

An averaging of thirty-three reports from New York indicate a predominance of worm-fence, of which there appears to be 45 per cent.; 18 per cent. of post and rail, and 19 of board; 18 per cent. being stone-wall and other kinds, including a small amount of wire, picket, hedge, &c. Orange has 80 per cent. of wall; Putnam 75, and Greene, Dutchess, Columbia, and Delaware, 50 per cent. each. Of post and rail, Kings has 95 per cent., Warren, 80, Cattaraugus, 70, Saint Lawrence, 67, Steuben, 65, Saratoga, 50. Worm-fence is found in large proportion in the following counties: Orleans, 90 per cent.; Yates, 85; Niagara, Jefferson, Monroe, 80; Wayne, Genesee, Schuyler, Otsego, Livingston, Ontario, Lewis, 75; Wyoming, 70; Chenango, 60; Seneca, 55; Onondaga, Cortland, Queens, Greene, 50 per cent. Madison reports 80 per cent. of board-fence; Schenectady, 50; Tioga, 45; Fulton, 33; Cattaraugus, 30; Saratoga, Washington, and Onondaga, 25 each. A part of the worm-fence is staked and ridged, and some is wired, and varies from 4 to  $5\frac{1}{2}$  feet high, the latter only in Livingston. Post and rail is usually 4 to 5 feet high, averaging about  $4\frac{1}{2}$  feet; breadth of worm, usually 4 feet. Where poor stone prevails rived sticks are used in stone-wall, to bind it. Stone-wall is built entirely of stone, or is combined with rails or boards for the upper portion of the fence. In Seneca, wire and picket fence meets with general commendation for cheapness and durability. Board-fences differ considerably in length of panel and number and quality of boards. Hemlock is much used, in the scarcity of other material. In Erie, "a beginning has been made to dispense with fences." A large proportion, not less than 60 per cent., of New Jersey fences, are of the post and rail style; the posts of white oak, chestnut, white and red cedar, and "fat" pine, 6 or 7 feet long, round or sawed, set  $2\frac{1}{2}$  feet in the ground, 11 feet apart, some having three or four mortises for the rails, (which are cut 12 feet long, and sharpened,) and others are nailed to the posts. About 30 per cent. of inclosures are surrounded by the worm-fence, of chestnut or cedar rails chiefly, which are laid in angles of 25 degrees, with stakes set in the ground, and double ridged.

The post and board fence is found in Hunterdon, Ocean, Morris, and other counties, being used in the former for one-fifth of the inclosures. The osage-orange hedge is employed to some extent. A few stone-walls may be seen, and brush, turf, and other modes of fencing. In Bergen and Union all the fence is reported to be of posts and rails, and 90 per cent. in Essex and Hudson, and 60 in Morris.

Two-thirds of the fences reported in thirty counties in Pennsylvania are of the zigzag "Virginia" style, one-sixth are of post and rail variety, one-eighth constructed of boards, and the remainder stone-wall, osage-hedge, stump, pole, or other kinds. Most of them are  $4\frac{1}{2}$  feet high, some 4 feet, some 5. In Luzerne worm fence is  $5\frac{1}{2}$  feet, and in Westmoreland it is 6 feet. In Beaver there is no other fence reported; little else in Butler, in Warren, or in Somerset; 90 per cent. in Crawford, Armstrong, and Elk; 85 in Westmoreland and Lehigh; 80 in



Cambria and Clearfield; 75 in Berks, Snyder, and Washington; 65 in Lawrence and York; 60 in Clinton and Susquehanna. Montgomery claims 70 per cent. of post and rail; Sullivan, 67; Dauphin, 50; Union, 42; Clinton, Huntingdon, and York, 30. Bradford reports 90 per cent. of board-fence, Lycoming 50, Clearfield and Luzerne 20, and others declining to 2 per cent. Wayne has 50 per cent. of stone-wall, Susquehanna 35, Sullivan 16, Tioga 15. There is a small amount of osage-hedge in Chester, Bucks, Northumberland, Montgomery, Washington, York, and other counties. There is a style of fence known as "rough and ready," used in some counties, made by setting rough posts dressed with an ax on both sides, upon which rails about 9 feet long are nailed alternately on either side; in Fayette 18 per cent. is of this kind. The stone-fence is usually quite substantial, rarely less than  $2\frac{1}{2}$  or 3 feet wide at bottom, and  $4\frac{1}{2}$  to 5 feet high, though some is lower. The material is various as the kinds of wood in the Pennsylvania forests. Locust and cedar are preferred for posts, and for rails much use is made of chestnut, white-oak, cherry, cucumber, pine, ash, and basswood. The growing scarcity of timber tends to decrease the amount of worm-fence, which is often replaced with post and rail, and with board-fence in districts of greater scarcity of timber; and still more substantial forms, as the stone-fence, or osage or other hedge, are growing in favor.

The farms of Delaware are inclosed with worm and post and rail fence, with a small proportion of osage-hedges and other modes of fencing. Kent County reports 60 per cent. of post and rail fence. White oak or chestnut posts, with cedar rails, are much used; and osage-hedges are popular and of thrifty growth.

The zigzag rail-fence surrounds nearly two-thirds of the inclosures of Maryland; post and rail one-sixth; board-fence, stone-wall, pole-fence, and other styles making up the remainder. Chestnut rails and locust posts are largely used. In Kent the osage-hedge is plashed and wattled upon stakes until well grown.

As indicated by returns from forty-one counties, four-fifths of the fence of Virginia is that to which her name is commonly given. Few counties report more than a small proportion of other kinds. Albemarle, Fauquier, and Culpeper have 20 per cent. of post and rail, which is the largest percentage reported. Chesterfield has 60 per cent. of post and board, and Botetourt and Culpeper 20. Rappahannock, Scott, Albemarle, and Fauquier, among other counties, return a fair proportion of stone-wall. In King George the wattling or brush-weaving style is extensively employed, being used for one-fifth of the inclosures. In Scott County black-walnut rails are still used, costing \$15 per thousand. Among the material used are found locust, cedar, several kinds of oak, chestnut, poplar, walnut, cucumber, pine, ash, and nearly all other woods of the forest. The legislature of the State has enacted a no-fence law, subject to acceptance by each county, and many have ratified it, and find no inconvenience in the exemption from fences, but the change is received with great satisfaction by the people. The correspondent in Buckingham says of those counties which have no fences that "more crops are raised, and nearly as much stock as before." One correspondent in King George County thus describes the lawful fence of that State:

A lawful fence must be 4 feet high if made with stone, and 5 feet high if made with any other material, and so close that the beast breaking into the same could not creep through; or with an hedge 2 feet high upon a ditch 3 feet deep and 3 feet broad; or, instead of such hedge, a rail-fence of  $2\frac{1}{2}$  feet high, the hedge or fence being so close that none of the creatures aforesaid can creep through.



Throughout the Southern States, a section in every State of which more than one-half of the farm area is woodland, the worm-fence is almost the exclusive mode, except in the vicinity of the better class of buildings. Garden fences are usually of palings. In returns from thirty-seven counties in North Carolina, there is only one record of post and rail fence, 10 per cent. in Sampson County; and in Chowan one-half is board-fence. In Caldwell the "Van Buren" fence is coming into use; the worm 3 feet in width, panels 5 to 10 feet long. A very little of stone-wall and of other kinds appears in a few of the reports. The proportion of worm-fence is 96 per cent. In South Carolina the proportion of crooked-rail fence rises to 98; it is 95 in Georgia and 94 in Florida. In the latter State, stone is placed at 10 per cent. in Gwinnett, and hedge of Cherokee rose is reported in Wilkes and Monroe. The reported height varies from 4 to 6 feet in South Carolina; in most of the counties  $4\frac{1}{2}$  and 5, and more reports place the height of North Carolina fences at 5 to  $5\frac{1}{2}$  feet than from 4 to 5. Georgia, which represents fairly all this section, makes the average height 5 feet in nineteen counties,  $5\frac{1}{2}$  feet in six counties, 6 feet in six counties  $4\frac{1}{2}$  feet in four counties, and 4 feet in two counties. Five feet is the legal height fixed for fences in most if not all of the cotton States. The proportion of worm-fence in Alabama is 90 per cent., 10 per cent. representing many kinds, no one of which has much prominence in any locality, except board-fence in Colbert, 20 per cent., and post and rail in Montgomery, 15 per cent. Osage-hedge is marked 10 per cent. in Montgomery. The height of fences is placed quite uniformly at  $4\frac{1}{2}$  and 5 feet in this State. For posts, chestnut, oak, and heart-pine are much used.

In Mississippi 95 per cent. are worm-fences, the remainder osage and rose hedges, wire, board, and post and rail; Claiborne County having 28 per cent. of the latter. Half of the counties report all worm-fences. In Claiborne, post and rail fence is made by setting two posts, dropping the rails between, and fastening with caps; wire-fence, by stretching wire upon posts eight feet apart, with a rail or slab-cap from post to post.

Only about two-thirds of the inclosures of Louisiana are surrounded with the Virginia fence. In the parish of La Fayette all fences are post and rail. There are many hedges of Cherokee and McCartney rose, and of osage-orange. In the Creole section, a fence made of cypress, and known as *Pieux* fence, is the prevailing style, as in Iberia, where no other is known, and in Saint Landry it amounts to 60 per cent. of the aggregate fencing. It is 5 to  $5\frac{1}{2}$  feet high. Slabs of cypress, 9 feet in length, are split from the circumference of the log, in size about 10 by 2 inches, one of which is mortised as a post, for every four tenoned, to be used as boards, making a rough but strong and durable board-fence. In West Feliciana, nearly all inclosures were surrounded by Cherokee-rose hedges; and they were so effectual and popular that most planters cut down all wood except what they reserved for fires and plantation repairs. They died out during the war, probably from frost, and now poles and other make-shifts are common, and every year the destruction of a portion of the crops results. Sugar-planters on the river often fence only on the levee.

Worm-fence constitutes three-fourths of all fencing in Texas. Rail, board, brush, and picket are styles frequently employed, and osage-orange, or *Bois d'Arc*, (from its employment in making bows,) is used in many portions of the State as live fence. Cedar, live-oak, and mesquite are used for posts. The latter, *Prosopis* (*Algarobia*) *glandulosa*, is used extensively in brush-fence. Ditches, 5 feet deep, 6 feet wide at top, and 3 feet at bottom, the earth thrown up on the side of the field inclosed,



are made where timber for fencing cannot be obtained readily. In some counties there is only a small area inclosed; "not one rod to one hundred acres" in Hardin. There are sections where stone is obtainable for walls; one-fifth of the fences of Lampasas being made of that material. In De Witt a Mexican fence is built, constructed of logs and brush, piled together 18 inches in thickness, between parallel rows of posts, 7 feet long, set 18 inches in the ground, and 3 feet apart. A citizen of Williamson County proposes the present season to fence five thousand acres with wire, for pasturage.

The worm is almost the exclusive fence of Arkansas, not more than 2 per cent. of other kinds being used, generally 5 feet high; in some cases less, very rarely more. Tennessee has 95 per cent. of the prevailing style; Giles has 15 per cent. of post and rail, and 10 per cent. of stone-wall; Haywood 20 per cent. of lath and orange-hedge, and a small proportion of other kinds is found scattered through the State.

In West Virginia the worm-fence amounts to 85 per cent., the remainder being of almost all kinds in use; some having but seven to nine rails to the panel; in Kentucky about the same proportion, from 4 to 5½ feet high, with post and rail, board, and stone; 4 or 5 per cent. of each. Worm-fences, of eight to ten rails to the panel, are common.

In forty-seven counties in Ohio, the percentage of worm-fence is also about 85, board-fence about 10 per cent., post and rail, stone, picket hedge, and patent fences making the remainder. The height in most localities is from 4½ to 5 feet. The proportion of worm-fence in Michigan is about four-fifths, board being also used quite generally, with a small amount of stone, brush, log, and other structures, and some hedging. The height is in most counties 4½ feet. Indiana, which is well wooded, uses the Virginia style for four-fifths of all fencing. In Lake County there is little else than board-fence; 50 per cent. in Newton, 40 in Warren, and 20 in Switzerland, Fountain, Jefferson, and Vanderburgh. Small quantities of osage-hedge are found in all sections of the State. Worm-fences vary in height from seven to eleven rails to the panel, being highest in the cattle-farms of the southwestern part of the State.

In the prairie States the worm-fence has less prominence. The scarcity of timber limits the use of rails, except for a fence of three or four rails to the panel, with posts, where native wood is to be obtained at all, from margins of streams or artificial plantations of forest-trees. The open prairies, having railroad communication, are fenced with boards from the northern pineries, with cedar and locust posts, if obtainable without great cost, otherwise with oak and sometimes chestnut. In Southern Illinois timber is abundant, and the old-fashioned rail-fence is largely used. From fifty-six counties of Illinois, which may be assumed to represent the State quite fairly, returns make a percentage of 43 for worm-fence and 32 for board, osage-hedge standing next in prominence. Some counties already have a very large proportion of this hedge, viz: Kankakee, 75 per cent.; Henderson and Stark, 50; Marshall, 40; Macoupin, 33; Knox, 30; Rock Island, Warren, Lee, Adams, Madison, Whiteside, 25; and Bureau, Fulton, Peoria, Crawford, 20. It is coming into general use with great rapidity. In Richland osage-hedge is not popular, the expense of trimming being deemed greater than repairs of other fences. In thirty-four counties in which osage-hedges are particularly mentioned, the average percentage is about 20.

Worm-fence constitutes 54 per cent. of the reported fencing of Wisconsin, and board fence 32 per cent. Post and pole, log, brush, stone, ditch, "Shanghai," and various fancy styles, are made. Ingenuity is exercised in prairie regions for the invention and building of fences



requiring the smallest possible amount of material. A hurdle-fence is popular in Rock, supported by short stakes which reach to the third rail, which is longer than the others, thus lapping over and connecting one panel with another.

In Minnesota the proportions of the principal kinds are as follows: worm, 33 per cent.; post and rail, 27; board, 26; and 14 per cent. of other kinds, including (tamarack,) pole, wire, "leaning," and other fences. Average height, about  $4\frac{1}{2}$  feet. Oak and pine are used in construction of board fence, while walnut, ash, cottonwood, tamarack, elm, linn, and other woods are used for rails.

No greater variety of fencing exists in any State, than is found in Iowa. An average of 48 county returns indicates 24 per cent. of worm, 23 of board, 14 of post and rail, and 39 of a miscellaneous list of styles, among which osage-hedge is most prominent, reaching 60 per cent. in Cedar, 33 per cent. in Clinton, 25 in Scott, and smaller proportions in many other counties. In Muscatine the proportion of board is 90 per cent., 80 in Harrison, 75 in Scott, and 50 in Henry and Jasper. In Mitchell 63 per cent. is post and rail, and 50 in Carroll and Floyd. The "Shanghai" fence is made of rails, three to five to the panel, laid on the crotches of forked stakes driven into the ground, staked and surmounted with riders. In Mahaska, as in other counties, some inclosures include a dozen farms in a tract of 2,000 acres or more. A "leaning" fence is used in some places, the posts set at an angle of  $40^\circ$ . The "Bloomer" is made with three rails and stakes to the panel. Several counties have no fences, animals being prohibited by law from running at large. Five wires, 8 inches apart, stretched upon posts 8 feet apart, with one stay midway, makes a popular fence in some places.

The worm-fence again predominates in Missouri, amounting to 74 per cent., while there is 26 per cent. of board-fence, and "corduroy" (poles nailed to posts) hedge, post and slat, stone, palings, "rough and ready," and fancy styles. There is 30 per cent. of osage-hedge in Henry, 20 in Greene, and a large amount of growing hedges in different part of the State. From seven to twelve rails to the panel are used in worm-fences. Post and rail fence is often made with three rails for cattle and six for hogs, and board-fence with three or five boards.

It is difficult to calculate the comparative prominence of styles in Kansas. Averaging the returns, the worm-fence appears to constitute but 18 per cent., board 12, and post and rail 9: leaving 61 per cent. for a great variety of fences reported somewhat indefinitely. The osage-hedge is very prominent, apparently bidding fair to be the principal fence of the State. It is reported at 100 per cent. in Cloud; 50 in Bourbon, Franklin, Linn, and Osage; 40 in Leavenworth; 33 in Douglas; 30 in Anderson. Dickinson reports 400 rods of stone-wall, built at \$2 per rod. The Shanghai fence is also found in Kansas. Cherokee county reports fences with names hitherto unheard of, "the eccentricity of whose construction language very feebly conveys."

In many counties of Nebraska few fences are to be found. About 30 per cent. of existing fences are post and rail, 25 per cent. board, and the remainder hedge, wire, Shanghai, and earth-walls  $3\frac{1}{2}$  feet high; Hall County having 25 per cent. of the latter.

Board-fence appears to predominate in California; two-fifths being of that style in the counties reported, nearly one-fourth post and rail, and the remainder brush, picket, worm, &c., including a small amount of live willow. Napa and Humboldt have a considerable proportion of worm-fence.

A large proportion, fully 90 per cent. in the returns received, of the



fencing of Oregon, is of Virginia style. The remainder is mainly constructed with boards. A few picket-fences are reported.

In Washington Territory wood is abundant; worm-fence is the prevailing style. Utah has poor material for fencing; is inclosed with poles, brush, post and rail, and inferior forms of fences. Red pine is much used for rails, and aspen poles are abundant. Fence material is scarce in Colorado, except among the mountains. In the dry atmosphere of the mountains, pines, firs, aspen, and other soft woods last well. A Utah correspondent says the aspen will last twenty years if not resting on the ground. There are few fences in New Mexico. There is a law against trespass, and each county is allowed to regulate the time when cattle may be turned loose, which is generally from November 1 to March 1. From corn-planting till harvest is finished cattle must be herded, and the owner is made responsible for any damages they may commit. The Doña Aña correspondent says there is not a rail in New Mexico. Walls are built for small inclosures of adobe, or unburned brick. A fence is sometimes built of cedar poles, set upright and close together, with a horizontal pole bound to each upright, near the top, by strips of raw-hide an inch wide. In Arizona and Nevada small poles are much used for fencing, though a small area only is inclosed.

In recapitulation it will be seen that worm-fence predominates in Vermont, New York, and in all the States west and northwest of New Jersey, except Kansas, Nebraska, California, and Nevada, and the Rocky Mountain region, though but slightly in Vermont, Minnesota, and Iowa. Its proportion in the former States exceeds that of all other kinds combined, except in Vermont, New York, Illinois, and Iowa, in the latter constituting scarcely one-fourth of the total fencing. It may fairly be ranked as the national fence, though it is temporary, giving way gradually to kinds requiring less lumber, and covering less land, as well as making a less awkward appearance not at all indicative of the straight-forwardness of the American character. Board-fence is the prevalent style in California, and next to worm in Vermont, New York, in all the Southern States south and west of Maryland, (though the percentage is still small,) and in all the Western States in which worm-fence predominates, except Minnesota and Nebraska. The post and rail style is the main fence in New Jersey, and stands second to other kinds in Maine, Massachusetts, Pennsylvania, Delaware, Maryland, Minnesota, and Nebraska. Stone-wall is the principal fence in Maine, New Hampshire, Massachusetts, Rhode Island, and Connecticut; and the next in prominence in New Hampshire, Rhode Island, and Connecticut, is board-fence. For hedges, the osage orange stands first, being already in efficient condition in Illinois, and largely planted west of the Mississippi; while it is coming gradually into use in all of the Middle and Western States south of the fortieth parallel of latitude, and, to some extent, for ornamental purposes in the Southern States. The Cherokee and McCartney rose (botanically, *Rosa laevigata* and *R. Macartnea*,) are preferred by many as hedge-plants in the States of the Gulf coast. The white willow, *Salix alba*, and other plants are employed for hedging purposes to a very limited extent. The following table shows the proportion of the principal kinds of fence in the several States, as averaged from the reports:



*Proportion of each kind of fence.*

| States.              | Worm. | Post and rail. | Board. | Other kinds. | States.                      | Worm. | Post and rail. | Board. | Other kinds. |
|----------------------|-------|----------------|--------|--------------|------------------------------|-------|----------------|--------|--------------|
| Maine .....          | 5     | 17             | 11     | 67           | Texas .....                  | 74    | .....          | 7      | 19           |
| New Hampshire .....  | 8     | 6              | 35     | 51           | Arkansas .....               | 98    | .....          | 1      | 1            |
| Vermont .....        | 30    | 11             | 27     | 32           | Tennessee .....              | 95    | 1              | 2      | 2            |
| Massachusetts .....  | 6     | 31             | 3      | 60           | West Virginia .....          | 85    | 5              | 6      | 4            |
| Rhode Island .....   | ..... | 10             | 11     | 79           | Kentucky .....               | 87    | 4              | 5      | 4            |
| Connecticut .....    | 24    | 30             | 13     | 33           | Ohio .....                   | 86    | 1              | 9      | 4            |
| New York .....       | 45    | 18             | 19     | 18           | Michigan .....               | 79    | .....          | 8      | 13           |
| New Jersey .....     | 29    | 62             | 4      | 5            | Indiana .....                | 81    | 1              | 10     | 8            |
| Pennsylvania .....   | 67    | 17             | 12     | 4            | Illinois .....               | 43    | 2              | 32     | 23           |
| Delaware .....       | 59    | 45             | .....  | 5            | Wisconsin .....              | 54    | 2              | 32     | 12           |
| Maryland .....       | 65    | 14             | 3      | 18           | Minnesota .....              | 33    | 27             | 26     | 14           |
| Virginia .....       | 79    | 2              | 4      | 15           | Iowa .....                   | 24    | 14             | 23     | 39           |
| North Carolina ..... | 96    | .....          | 3      | 1            | Missouri .....               | 74    | 2              | 10     | 14           |
| South Carolina ..... | 98    | .....          | 1      | 1            | Kansas .....                 | 18    | 9              | 12     | 61           |
| Georgia .....        | 95    | .....          | .....  | 5            | Nebraska .....               | 3     | 99             | 25     | 43           |
| Florida .....        | 94    | .....          | 3      | 3            | California .....             | 5     | 22             | 41     | 32           |
| Alabama .....        | 90    | 1              | 1      | 8            | Oregon .....                 | 92    | .....          | 8      | .....        |
| Mississippi .....    | 95    | 1              | 1      | 3            | Nevada and Territories ..... | 5     | 14             | 5      | 76           |
| Louisiana .....      | 61    | 8              | .....  | 31           |                              |       |                |        |              |

*Gates.*—Many descriptions are received of different styles of gates used, with plain drawings in many cases; but the variations are so numerous and wide, even in the same State, and the description in many instances so indefinite and incomplete, that it would be impossible to attain perfect accuracy in an exhaustive exposition. The gates of wooded regions are of a heavier pattern, and those of the settled States which have not given place to recent improvements are very clumsy in construction and movement. The common slat-gate is in very general use. The balance-pole is largely employed in nearly all sections of the country, especially in the older settlements. Gates turning upon hinges, fastened with "hook and eye," moving in a socket, those with wooden latches and every imaginable style of fastening, are found of such variety and form of material and mode of construction as almost to defy description. Lattice-gates and fancy styles are common near dwellings and in the vicinity of towns. The tendency in the new farming regions is to lightness of material, facility of movement, and cheapness, with the requisite degree of strength. Many of them are patented. Large numbers of new patterns are built in the Western States at \$1 to \$2 each. Perhaps the most popular is a slide-and-swing gate, which moves back on rollers part way, balances on a pivot in the post, and turns round at right angles. In many counties in the South, few, if any gates, are reported, while in others nearly all the openings are gates; in a few there are neither gates nor bars, but "slip-gaps." The correspondent in Henry County, Virginia, says that the fields there are entered by pulling down a corner of the fence; that it becomes less substantial every time it is taken down, until it will no longer restrain stock, when "the exasperated farmer rights it up, props it, and perhaps cuts thorn rushes to lay upon it, and finally pulls down another portion of the fence where the same experiment is repeated."

The following table gives the estimated percentage of openings guarded respectively by gates and bars, and the average cost of gates. A small proportion of the inclosures of certain States have neither gates nor bars. It is, of course, understood that these statistics include only farm-gates:



| States.             | Percentage of gates. | Percentage of bars. | Cost of gates. | States.                     | Percentage of gates. | Percentage of bars. | Cost of gates. |
|---------------------|----------------------|---------------------|----------------|-----------------------------|----------------------|---------------------|----------------|
| Maine.....          | 34                   | 65                  | \$2 33         | Texas.....                  | 35                   | 47                  | \$4 81         |
| New Hampshire.....  | 33                   | 66                  | 2 66           | Arkansas.....               | 29                   | 45                  | 5 22           |
| Vermont.....        | 19                   | 80                  | 3 50           | Tennessee.....              | 37                   | 36                  | 4 50           |
| Massachusetts.....  | 10                   | 90                  | 6 25           | West Virginia.....          | 33                   | 67                  | 2 71           |
| Rhode Island.....   | 31                   | 68                  | 7 66           | Kentucky.....               | 36                   | 55                  | 5 17           |
| Connecticut.....    | 22                   | 78                  | 4 12           | Ohio.....                   | 49                   | 47                  | 3 89           |
| New York.....       | 27                   | 72                  | 3 85           | Michigan.....               | 33                   | 65                  | 3 47           |
| New Jersey.....     | 24                   | 76                  | 6 25           | Indiana.....                | 52                   | 45                  | 3 60           |
| Pennsylvania.....   | 24                   | 76                  | 4 55           | Illinois.....               | 67                   | 29                  | 3 54           |
| Delaware.....       | 25                   | 75                  | 4 50           | Wisconsin.....              | 43                   | 53                  | 3 15           |
| Maryland.....       | 48                   | 51                  | 4 96           | Minnesota.....              | 29                   | 71                  | 2 66           |
| Virginia.....       | 52                   | 43                  | 4 71           | Iowa.....                   | 36                   | 62                  | 2 96           |
| North Carolina..... | 40                   | 57                  | 3 33           | Missouri.....               | 49                   | 40                  | 3 75           |
| South Carolina..... | 49                   | 45                  | 4 14           | Kansas.....                 | 43                   | 51                  | 3 60           |
| Georgia.....        | 37                   | 46                  | 3 10           | Nebraska.....               | 31                   | 68                  | 2 04           |
| Florida.....        | 47                   | 53                  | 3 25           | California.....             | 74                   | 26                  | 7 00           |
| Alabama.....        | 33                   | 61                  | 3 21           | Oregon.....                 | 40                   | 60                  | 8 00           |
| Mississippi.....    | 64                   | 35                  | 4 53           | Nevada and Territories..... | 38                   | 62                  | 4 53           |
| Louisiana.....      | 44                   | 45                  | 6 00           |                             |                      |                     |                |

The average proportion of bars, in the whole country, is about 53 per cent.; of gates, 43; leaving about 7 per cent. of openings for slip gaps or other mode of entrance.

#### COST OF FARM-FENCES.

*Cost of material.*—A great variety of material is used for board-fences. Of course, inferior qualities of lumber are taken—that which is rough and knotty, or those kinds of wood less in request for house-finishing or furniture-making. Where oak is abundant, it is often employed; hemlock and spruce are used largely in New England, New York, and elsewhere, as other timber increases in value; and the cheaper grades of pine are extensively used in the Northwest, and culls from oak, poplar, ash, and other woods.

The average cost, as reported, is given in the accompanying table, from which it appears that boards used for fences are dearest in Texas, costing \$29.53; \$28.95 in Kansas; \$27.88 in Nebraska; \$27 in Delaware, and \$25.66 in Rhode Island. The cost is least in Georgia, \$12; \$12.37 in Oregon; and \$12.85 in Florida. The cost of rails are highest in New Jersey; next in order, Nevada, Rhode Island, Massachusetts, and Connecticut. The lowest figure is \$8.12 per M, in Florida; then Georgia, Alabama, South Carolina, and Mississippi.

#### Price of material.

| States.             | Boards, per M. | Rails, per M. | States.                     | Boards, per M. | Rails, per M. |
|---------------------|----------------|---------------|-----------------------------|----------------|---------------|
| Maine.....          | \$9 80         | \$71 66       | Texas.....                  | \$29 53        | \$39 32       |
| New Hampshire.....  | 11 25          | 60 00         | Arkansas.....               | 17 78          | 15 06         |
| Vermont.....        | 12 33          | 47 50         | Tennessee.....              | 15 20          | 19 50         |
| Massachusetts.....  | 21 64          | 106 42        | West Virginia.....          | 15 86          | 22 27         |
| Rhode Island.....   | 25 66          | 120 00        | Kentucky.....               | 18 75          | 27 56         |
| Connecticut.....    | 24 61          | 102 85        | Ohio.....                   | 17 58          | 35 29         |
| New York.....       | 16 01          | 68 12         | Michigan.....               | 12 72          | 23 60         |
| New Jersey.....     | 23 00          | 130 00        | Indiana.....                | 16 50          | 30 69         |
| Pennsylvania.....   | 15 99          | 56 26         | Illinois.....               | 21 00          | 45 51         |
| Delaware.....       | 27 00          | 65 00         | Wisconsin.....              | 14 81          | 28 56         |
| Maryland.....       | 22 88          | 59 51         | Minnesota.....              | 18 88          | 37 00         |
| Virginia.....       | 15 74          | 16 51         | Iowa.....                   | 24 51          | 59 56         |
| North Carolina..... | 11 45          | 10 44         | Missouri.....               | 23 25          | 37 20         |
| South Carolina..... | 13 50          | 11 83         | Kansas.....                 | 28 95          | 67 91         |
| Georgia.....        | 12 00          | 10 95         | Nebraska.....               | 27 88          | 64 44         |
| Florida.....        | 12 85          | 8 12          | California.....             | 19 54          | 99 28         |
| Alabama.....        | 13 88          | 11 64         | Oregon.....                 | 12 37          | 48 00         |
| Mississippi.....    | 19 07          | 12 50         | Nevada and Territories..... | 53 50          | 120 00        |
| Louisiana.....      | 24 00          | 23 00         |                             |                |               |



*Cost of fences per rod.*—There is a great difficulty in estimating the cost of fences, from the variety and differing value of material used, and the many kinds of fences built, as well as the differences in their height, massiveness, and thoroughness of construction. The best built fences in the United States are in Rhode Island, if the returns are correctly made, and their average cost is the highest. The best fences are of stone, and they are also cheapest, repairs costing little, though their first cost exceeds that of any other kind.

The cost of fences, as stated below, is lowest in the Southern States. It is deemed best to give the averages of the figures returned for those States, though they do not adequately express the real cost. It is stated in many of these returns that the price per rod returned is simple the cost of "mauling the rails" and laying them, without counting expense of teams for hauling, and in some cases of board while doing the work. Nothing is reckoned usually for the value of timber, and the estimate is often based on the bare wages of hands employed by the month. The work is done by tenants as odd jobs, or in the winter interval between cotton-picking and cotton-planting, as one of the requirements of their contract, and so the expense is scarcely considered. While giving these averages as they are made in this table, an enlarged estimate, intended to include all the actual elements of cost, is used in calculating the total cost of farm-fences, which may be found in a subsequent table. The returns are very complete as to the cost per rod of worm, post and rail, board, and stone fences, but not so full as to the various other kinds. The estimate of average cost per rod in each State is based upon prices and proportions of each kind of fence.

*Cost per rod.*

| States.             | Worm.  | Post and rail. | Board. | Stone-wall. | States.                  | Worm.  | Post and rail. | Board. | Stone-wall. |
|---------------------|--------|----------------|--------|-------------|--------------------------|--------|----------------|--------|-------------|
| Maine.....          | \$0 66 | \$0 83         | \$0 72 | \$1 64      | Texas.....               | \$0 87 | \$0 80         | \$1 44 | \$2 47      |
| New Hampshire.....  | 65     | 82             | 86     | 1 37        | Arkansas.....            | 43     | 1 25           | 1 21   | 1 50        |
| Vermont.....        | 95     | 91             | 1 09   | 1 52        | Tennessee.....           | 59     | 77             | 1 03   | 3 27        |
| Massachusetts.....  | 1 38   | 97             | 1 31   | 2 75        | West Virginia.....       | 67     | 1 27           | 1 48   | 2 96        |
| Rhode Island.....   | 2 00   | 2 06           | 2 58   | 2 33        | Kentucky.....            | 71     | 1 71           | 1 64   | 4 22        |
| Connecticut.....    | 1 37   | 1 64           | 1 67   | 2 42        | Ohio.....                | 79     | 1 06           | 1 38   | 3 20        |
| New York.....       | 1 10   | 1 25           | 1 47   | 2 45        | Michigan.....            | 71     | 1 06           | 1 26   | 2 16        |
| New Jersey.....     | 1 61   | 1 61           | 1 61   | 2 50        | Indiana.....             | 75     | 1 07           | 1 39   | 2 95        |
| Pennsylvania.....   | 95     | 1 35           | 1 25   | 2 34        | Illinois.....            | 99     | 1 27           | 1 31   | 3 56        |
| Delaware.....       | 1 00   | 1 33           | 1 70   | .....       | Wisconsin.....           | 63     | 77             | 99     | 2 75        |
| Maryland.....       | 1 08   | 1 94           | 1 96   | 2 66        | Minnesota.....           | 65     | 72             | 99     | .....       |
| Virginia.....       | 43     | 1 17           | 1 16   | 2 13        | Iowa.....                | 91     | 94             | 1 31   | .....       |
| North Carolina..... | 33     | 44             | 93     | .....       | Missouri.....            | 88     | 1 02           | 1 43   | 2 81        |
| South Carolina..... | 35     | 43             | 76     | .....       | Kansas.....              | 1 08   | 96             | 1 27   | 2 96        |
| Georgia.....        | 31     | 49             | 99     | .....       | Nebraska.....            | 1 00   | 97             | 1 42   | .....       |
| Florida.....        | 30     | 37             | 78     | .....       | California.....          | 1 22   | 1 59           | 1 30   | 3 50        |
| Alabama.....        | 34     | 1 04           | 1 05   | .....       | Oregon.....              | 96     | .....          | 1 02   | .....       |
| Mississippi.....    | 43     | 87             | 1 57   | .....       | Nevada and Territories.. | 1 38   | 1 75           | 2 20   | .....       |
| Louisiana.....      | 60     | 1 25           | 3 00   | .....       |                          |        |                |        |             |

*Amount and cost of fencing.*—The inquiry was made for "the number of rods of fence to each one hundred acres of farm-lands, including together improved and unimproved lands." As a few in the older States, and many in the South and West, answered with reference only to the "improved" acres, it was deemed proper, in calculating the acres fenced, to avoid an exhibit erroneously large, to exclude one-fourth of the unimproved area in the New England States, (with the exception of Maine,) the Middle States, and Maryland; one-half in the unimproved portion of farms in the States of the Ohio Valley and lake region, between Kentucky and Wisconsin, and in Maine; three-fourths of unimproved lands



in the States between Virginia and the Mississippi, where only the "improved" area is usually reckoned as the farm; all of the unimproved land in Virginia, (where a no-fence law has been enacted,) Florida, and Louisiana, where water boundaries save much fencing; and in Minnesota, Iowa, Kansas, Nebraska, and California, where some improved land is unfenced, only three-fourths of the improved area was taken.

In calculating the number of rods of fencing, the estimate of the number of rods to each one hundred acres was carefully made from the returns, as follows:

| States.             | Rods to 100 acres. | Cost per rod. | States.             | Rods to 100 acres. | Cost per rod. | States.         | Rods to 100 acres. | Cost per rod. |
|---------------------|--------------------|---------------|---------------------|--------------------|---------------|-----------------|--------------------|---------------|
| Maine.....          | 713                | \$1 00        | South Carolina..... | 500                | \$0 80        | Indiana.....    | 680                | \$1 05        |
| New Hampshire.....  | 875                | 1 20          | Georgia.....        | 546                | 75            | Illinois.....   | 475                | 1 20          |
| Vermont.....        | 775                | 1 33          | Florida.....        | 464                | 72            | Wisconsin.....  | 525                | 85            |
| Massachusetts.....  | 850                | 1 75          | Alabama.....        | 610                | 80            | Minnesota.....  | 400                | 88            |
| Rhode Island.....   | 1,000              | 2 20          | Mississippi.....    | 420                | 96            | Iowa.....       | 420                | 1 10          |
| Connecticut.....    | 910                | 1 70          | Louisiana.....      | 400                | 1 00          | Missouri.....   | 525                | 1 00          |
| New York.....       | 825                | 1 35          | Texas.....          | 440                | 1 10          | Kansas.....     | 425                | 1 10          |
| New Jersey.....     | 925                | 1 60          | Arkansas.....       | 590                | 95            | Nebraska.....   | 400                | 1 05          |
| Pennsylvania.....   | 955                | 1 15          | Tennessee.....      | 655                | 95            | California..... | 425                | 1 40          |
| Delaware.....       | 625                | 1 20          | West Virginia.....  | 300                | 90            | Oregon.....     | 450                | 1 05          |
| Maryland.....       | 630                | 1 25          | Kentucky.....       | 600                | 95            | Nevada.....     | 400                | 1 50          |
| Virginia.....       | 500                | 90            | Ohio.....           | 860                | 1 00          |                 |                    |               |
| North Carolina..... | 560                | 75            | Michigan.....       | 800                | 95            |                 |                    |               |

From all this data, the calculation of amount and cost of fences in the United States leads to the following result:

| States.             | Acres fenced. | Rods of fencing. | Total cost of fencing. |
|---------------------|---------------|------------------|------------------------|
| Maine.....          | 4,377,925     | 31,214,605       | \$31,214,605           |
| New Hampshire.....  | 3,288,117     | 28,771,023       | 34,525,227             |
| Vermont.....        | 4,164,917     | 32,278,106       | 42,929,880             |
| Massachusetts.....  | 2,481,767     | 21,095,019       | 36,916,223             |
| Rhode Island.....   | 448,988       | 4,489,880        | 9,877,736              |
| Connecticut.....    | 2,185,099     | 19,883,590       | 39,801,950             |
| New York.....       | 20,549,909    | 169,536,749      | 228,874,611            |
| New Jersey.....     | 2,736,251     | 25,310,321       | 40,496,513             |
| Pennsylvania.....   | 16,374,641    | 156,377,821      | 179,834,494            |
| Delaware.....       | 963,770       | 6,023,562        | 7,228,274              |
| Maryland.....       | 4,112,936     | 25,911,496       | 32,369,370             |
| Virginia.....       | 8,165,040     | 40,825,200       | 36,742,680             |
| North Carolina..... | 8,902,909     | 49,856,290       | 37,392,217             |
| South Carolina..... | 5,284,224     | 26,421,120       | 21,136,896             |
| Georgia.....        | 11,035,877    | 60,255,888       | 45,191,916             |
| Florida.....        | 736,172       | 3,415,838        | 2,459,403              |
| Alabama.....        | 7,536,947     | 45,975,376       | 36,780,300             |
| Mississippi.....    | 6,437,137     | 27,035,975       | 25,954,536             |
| Louisiana.....      | 2,045,640     | 8,182,560        | 8,182,560              |
| Texas.....          | 6,822,757     | 30,029,130       | 33,022,143             |
| Arkansas.....       | 3,294,189     | 19,435,715       | 18,463,929             |
| Tennessee.....      | 10,027,762    | 65,681,841       | 62,397,748             |
| West Virginia.....  | 4,067,289     | 36,605,601       | 32,945,040             |
| Kentucky.....       | 13,381,978    | 80,291,868       | 76,277,274             |
| Ohio.....           | 18,090,776    | 155,580,673      | 155,580,673            |
| Michigan.....       | 7,558,040     | 60,464,320       | 57,441,104             |
| Indiana.....        | 14,111,963    | 95,961,348       | 100,759,415            |
| Illinois.....       | 22,606,406    | 107,380,428      | 128,856,513            |
| Wisconsin.....      | 8,807,332     | 46,238,493       | 39,302,719             |
| Minnesota.....      | 1,857,681     | 7,430,724        | 6,539,037              |
| Iowa.....           | 7,517,173     | 31,572,126       | 34,729,338             |
| Missouri.....       | 12,274,766    | 64,442,521       | 64,442,521             |
| Kansas.....         | 1,576,802     | 6,701,408        | 7,371,548              |
| Nebraska.....       | 517,624       | 2,070,496        | 2,174,020              |
| California.....     | 4,974,504     | 21,141,642       | 29,598,298             |
| Oregon.....         | 1,116,290     | 5,023,305        | 5,274,470              |
| Nevada.....         | 74,115        | 296,460          | 444,690                |
| Total.....          | 250,505,614   | 1,619,199,428    | 1,747,549,931          |

Average rods per acre, 6.46. Average cost per acre, \$1.08.



*Cost of repairs.*—The annual cost of repairs of fences varies with the cost of material of which they are constructed, and the durability of that material. It is comparatively low in the New England States, on account of the large proportion of stone-wall in that section; and low in the South because of the abundance and cheapness of material. It is undoubtedly too low in that section, few of the reports recognizing any value whatever in the wood used for rail-splitting. The cost is relatively high in the older States, where timber is becoming scarce, and in the prairie States, which are nearly destitute of home supplies. In the Rocky Mountain section the cost is increased in consequence of the perishable nature of the material employed, much of it being brush or poles of soft woods. The true average, as nearly as possible, of the figures received from the several counties reporting in each State, have been taken as a basis of the calculation, and the resulting total cost of repairs for all the States, (not including Territories,) is \$93,963,187—a total which may be accepted at a low estimate. A proper allowance for low estimates in the Southern and some of the Western States, would make it fully equal to the annual interest on the cost.

| States.              | Cost per 100 rods. | Total cost. | States.  | Cost per 100 rods. | Total cost. |
|----------------------|--------------------|-------------|--|--------------------|-------------|
| Maine .....          | \$3 06             | \$955,166   | Kentucky .....                                       | \$5 15             | \$4,635,031 |
| New Hampshire .....  | 3 80               | 1,093,298   | Ohio .....   | 3 25               | 8,167,985   |
| Vermont .....        | 4 00               | 1,291,124   | Michigan .....                                       | 4 00               | 2,418,572   |
| Massachusetts .....  | 4 50               | 949,275     | Indiana .....  | 5 40               | 5,181,912   |
| Rhode Island .....   | 5 75               | 258,158     | Illinois .....                                       | 9 50               | 19,201,140  |
| Connecticut .....    | 7 50               | 1,491,262   | Wisconsin .....                                      | 4 55               | 2,103,851   |
| New York .....       | 7 06               | 11,969,294  | Minnesota .....                                      | 5 10               | 378,966     |
| New Jersey .....     | 9 80               | 2,480,411   | Iowa .....   | 9 80               | 3,094,063   |
| Pennsylvania .....   | 6 32               | 9,883,078   | Missouri .....                                       | 4 90               | 3,157,683   |
| Delaware .....       | 7 50               | 451,767     | Kansas .....   | 6 75               | 452,345     |
| Maryland .....       | 7 80               | 2,021,096   | Nebraska .....                                       | 8 50               | 175,992     |
| Virginia .....       | 3 51               | 1,432,964   | California .....                                     | 8 50               | 1,797,039   |
| North Carolina ..... | 3 40               | 1,695,113   | Oregon .....   | 7 50               | 376,747     |
| South Carolina ..... | 4 00               | 1,056,844   | Nevada .....   | 9 00               | 26,681      |
| Georgia .....        | 4 00               | 2,410,235   |  |                    |             |
| Florida .....        | 3 80               | 129,801     | Total cost of annual repairs .....                   |                    | 93,963,187  |
| Alabama .....        | 4 65               | 2,137,853   | Interest on the original cost at 6 per cent .....    |                    | 104,852,995 |
| Mississippi .....    | 5 26               | 1,422,092   |  |                    |             |
| Louisiana .....      | 6 51               | 532,684     | Grand total, exclusive of rebuilding of fences ..... |                    | 198,806,182 |
| Texas .....          | 8 50               | 2,551,712   |  |                    |             |
| Arkansas .....       | 5 92               | 1,150,594   |  |                    |             |
| Tennessee .....      | 5 00               | 3,234,092   |  |                    |             |
| West Virginia .....  | 4 50               | 1,647,252   |  |                    |             |

This exhibit makes the cost of fences nearly equal to the total amount of the national debt on which interest is paid, and about the same as the estimated value of all the farm animals in the United States. For every dollar invested in live stock, another dollar is required for the construction of defenses to resist their attacks on farm production. Experiment has proved that at least half this expense is unnecessary. Wherever it has been tried, wherever farm-animals are restrained, and their owners are placed under (fence) bonds for the good behavior of their restless dependents, the system is regarded with general and growing satisfaction, capital is released from unprofitable investment and made available for farm improvement, soiling is encouraged, the manurial resources of stock husbanded, and the way prepared for larger production and higher profit. Even where a herd law of some sort has not been enacted, the tendency is strong, as many correspondents assert, toward the reduction of the amount of fencing; as repairs are needed, division fences are taken down and the material