

industrious, and judicious, in the execution of the duties assigned them respectively.

I cannot close this report without tendering to you, and through you, to the Board of Directors, an expression of my thanks for the unwavering confidence you and they have reposed in my integrity and judgment, and to say that this has been, and ever will continue to be, more highly prized than any compensation of a pecuniary character which they could have made me. Respectfully submitted,

CASPAR W. WEVER.

*Extracts from J. Loudon M'Adam's Examination before a Committee of the House of Commons, in the year 1819.*

[Continued from page 641.]

Can you state what proportion that is?—I think the first year, 7231.

What is the amount of the whole debt?—The whole debt is 43,000*l.* I had said a considerable reduction of the principal debt had been made, I did not use the word proportion. I can mention that the balance in the hands of the account amounted to 2,790*l.* 0*s.* 4*d.* in the Bristol district, beside a considerable diminution of the debt, and beside alterations and improvements.

That applies only to one hundred and forty-eight miles round Bristol!—Only to the one hundred and forty-eight miles round Bristol. The Bristol district has been under one trust for twenty years, and in that period the debt has increased to 43,000*l.*

You will be kind enough to furnish the Committee with a statement similar to that which was supplied by you to the Holyhead Committee, down to the latest period?—I will. Bristol is the only district for which I can have precise figures, I have not had the finances in my own management or direction with respect to the others. As I have only advised with respect to them, I cannot give you the items; and I must say, that my information with respect to other roads, must be much more general than with respect to this road. In Sussex, the roads in nine trusts have been mended with a considerable diminution of the former expense, and the thanks of a general meeting of the trustees of the Lewes trusts were unanimously voted to Lord Chichester "for the introduction of this system, by which the roads had been so much improved, and the country was likely to derive so much benefit."

Have you found that a similar diminution of expense has taken place where the materials have been bad, as where they have been good? Yes, I have.

Do you find your mode of management equally applicable where the materials are bad as where they are good, and that the same proportionable benefit arises?—I am afraid gentlemen suppose that I have some particular mode of management, which is certainly not the case; nor can by any means be the case; and in every road I have been obliged to alter the mode of management, according to the situation of the roads, and sometimes according to the finances. At Epsom in Surrey, the roads have been put in good repair, at an expense considerably under the former annual expenditure, by which the trustees have been enabled to lower their tolls on agricultural carriages. The road between Reading and Twyford, in Berkshire, has been made solid and smooth since the beginning of July last, by persons under my directions, at an expense, including the surveyor's salary, not exceeding fifteen pounds per week; and their former expenditure, exclusive of the surveyor's salary, was twenty-two pounds per week. A great part of the road in the neighborhood of Bath, which was formed upon the plan laid down in my report to the commissioners, and with the greatest success, is made with freestone, which was always supposed impossible to make a good road of; but it will make a good road. It certainly does not last so long as one made of better materials; but it is equally good whilst it does last. One

of the roads out of Bristol towards Old Down has been made good, where it was a received opinion, that from the nature of the materials the road could not be made so; and the commissioners would not consent to my beginning it until the road was threatened to be indicted. It was put into my hands in October 1816, and at the Christmas following I was able to report that it was one of the best roads in England for the distance of eleven miles, at the expense of first outlay only of £600, and it has continued so until the present.

Please to inform the Committee, what are the means, in your opinion, the most eligible to be adopted for the amelioration of the roads throughout the kingdom?—That question, I think, divides itself into two branches: The operative part, in making the roads, and the care of the finances, and the mode of their expenditure. I should imagine the operative part of preparing roads cannot be effected without procuring a more skillful set of sub-surveyors; young men, brought up to agriculture and labor must be sought, and regularly instructed. It is a business that cannot be taught from books, but can only be acquired by a laborious practice of several months, and actual work upon the roads, under skillful road-makers.—Young men who have been accustomed to agricultural labor are fittest to be road-surveyors, as their occupations have given them opportunities of being acquainted with the value of labor both of men and horses. But I should greatly mislead the Committee if I did not inform them, that the skill in the operative part of road-making cannot alone produce a reformation of the multitude of abuses that are practised in almost every part of the country, in the management of roads and road funds. These abuses can only be put down by officers in the situation of gentlemen, who must enjoy the confidence, and have the support of commissioners, and who must exercise a constant and vigilant inspection over the expenditure made by the sub-surveyors. They must be enabled to certify to the commissioners that the public money is judiciously and usefully, as well as honestly expended; without this control and superintendance an end cannot be put to the waste of the public money, and all the various modes that are injurious to the public interest, the amount of which would appear incredible, could it be ascertained; but which, I conscientiously believe, amounts to one-eighth of the road revenue of the kingdom at large, and to a much greater proportion near London.

Do you mean the frauds amount to one-eighth?—No, not direct frauds, I call it mis-application: it must not be concealed that the temptations with which even a superior officer will be assailed, the facility of yielding to them, and the impunity with which transgression may be committed, require great delicacy in the selection of persons to fill the situation: and encouragement to make this a profession must be in proportion to the quality of the person required.

Do you not consider one of these mis-applications to be the injudicious use of the labor of horses, instead of that of men, women and children?—I do consider that to be a great mis-application of the labor of horses. I am afraid that gentlemen may understand, from what I said, that frauds are committed to the amount of one-eighth, but I meant no such thing; I meant the loss arising from mis-application generally. I have in general found a great deal more materials put upon the road than are necessary, and I am of opinion that is one of the chief causes of the waste of the public money.

Do you think the loss arises, in most instances, from mistake, or from any abuse in regard to the power and patronage which the situation confers?—I think it proceeds from mistakes and ignorance mostly.

Please to explain to the Committee in what way you think the labor of men, women and children, may be substituted for that of horses?—I have generally found that a much greater

quantity of materials have been carted to the roads than are necessary, and therefore the increase of horse-labor has been beyond any useful purpose, and that generally the roads of the kingdom contain a supply of materials sufficient for their use for several years, if they were properly lifted and applied; this is to be entirely done by men, women, and children, men lifting the roads, and women and boys, and men past labor, breaking the stones which were lifted up.

By lifting the road, you mean turning it up with the pickaxe?—Yes; that I consider as man's work; taking up the materials and breaking stones, I consider the work of women and children, and which indeed ought to have been done before those materials had been laid down.

How deep do you go in lifting the roads?—That depends upon circumstances, but I have generally gone four inches deep; I take the materials up four inches deep, and having broken the larger pieces, I put them back again.

Please to explain to the Committee the mode of breaking the stones so as admit of the labor of men, women and children?—When the stones of an old road have been taken up, they are generally found of the size that women and boys can break them with small hammers, and therefore I would propose to employ these people to break those stones always before they are laid back in the roads.

Is it your plan for those people to break them standing, or in a sitting posture?—Always in a sitting posture: because I have found that persons sitting will break more stones than persons standing, and with a lighter hammer.

Does that apply to all materials?—To all materials universally.

Does the plan which you have mentioned of breaking up the roads, apply to gravel roads, or only to those roads composed of hard stones?—In gravel roads and in some other roads it would be impossible to break them up to any advantage; and in several places which I will explain, I should think it unprofitable to lift a road at all. There is a discretion of the surveyor, or the person who has the execution of the work, which must be exercised. I did not order the road in the neighborhood of Reading to be lifted, but I directed wherever a large piece of flint was seen, it should be taken up, broken, and put down again; and I directed the road to be made perfectly clean—I am speaking of a gravel road now—and I directed that additional gravel should be prepared in the pits by screening the dirt very clean from it, breaking all the large pieces and bringing that upon the road in very light coats not exceeding two inches at a time; and when those coats were settled, to bring others of very clean materials upon the road, until it settled into a solid smooth hard surface, and which the coachman in their mode of expression, say "runs true." The wheel runs hard upon it; it runs upon the nail. [To be continued.]

*To the Editor of the Railroad Journal:*

SIR,—Having been a passenger twice across the Atlantic within the last three years, I was led, during the second one,—in consequence of a passage of nearly forty days, much of which was calm weather,—strongly to the reflection upon the advantages of a *Steam-Ship*, as well during the passage as at various times since; and the result of these reflections has been a full conviction of its practicability, and to ask, in this truly enlightened age, if we may not flatter ourselves with the anticipation of looking through but a short period of time to a new and most interesting era in the progress of travelling by water: if not a greater or more useful one than that of steamboat navigation, as now exhibited in various countries, yet one that shall be of a much higher, more noble, and more astonishing kind in the estimation of the world,