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P L A N

PROPOSED BY

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AND

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FOR ESTABLISHING

STEAM CARRIAGES,

FOR THE CONVEYANCE OF

GOODS AND PASSENGERS

ON THE

MAIL COACH ROADS OF IRELAND;

ALSO A PROPOSED SYSTEM FOR

REPAIR OF THE ROADS,

BY MEANS OF

A ROAD POLICE,

AND FOR

TELEGRAPHING.

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BY JASPER W. ROGERS.  
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Houses of the Oireachtas

PLAN

FOR ROAD AND STEAM COMMUNICATION.

The establishment of the best means to facilitate conveyance and render communication cheap, should be one of the leading objects of all nations; but in agricultural countries the obligation is paramount:—First, because the produce of the land, and the best means of raising that produce—*manure*, being, from their bulk, difficult of transport, the wealth and comfort of the inhabitants must be in the ratio of the facility which exists for such transport; and next, because as labour should be free, to be beneficial and effective, the labouring class should have facility of transit from county to county, or province to province, as the demand for labour might rise or fall—thus making labour what it should be—*marketable*, and open to the highest bidder—not *what it is*, governed entirely by local circumstances.

There is no country to which these observations more fully apply than to Ireland; blest with the most luxuriant soil, thousands of those who attempt its cultivation, struggle for a bare existence, *for want of facility of carriage*. Broad tracts of its richest acres lie untilled, because produce would be valueless *for want of roads to carry it away*, and many of the inhabitants eke out a miserable life, surrounded by the ignorance and

prejudices of centuries, without a gleam of encouragement or hope, because the main avenues towards civilization and comfort—namely, *good roads and cheap conveyances*, have been, and still are, unsupplied.

To this cause many of the evils of Ireland may be traced. Where roads are few and bad, and the means of conveyance scarce and expensive, the labourer receives a pittance scarcely equal to preserve existence; his commonest wants are unsupplied, though, perhaps, within a day's journey (if communication were as it should be), of adequate employment. Hence those feelings of discontent which exist—he cannot be worse—and has no ambition to be better, isolated and cut off as he is from all but those within his little circle, each similar to himself. On the other hand, where facility of intercourse is cheap and good, those feelings have comparatively ceased, simply because labour has its just reward, and the produce of land a fair and open market.

So strongly are these facts felt by those best acquainted with Ireland, that the establishment of Railways has been strenuously urged, even against the most incontrovertible proof that they will not return the bare Interest on the Capital to be outlaid; and although 1000 miles of Railway would barely provide leading lines from the Capital, and entail an outlay of at least Twenty Millions upon the country, taking the average expenditure at the minimum of £20,000 per mile, it has been most anxiously desired that Railways should be laid

down. No one can for a moment doubt that advantages would accrue to the country from these grand lines of communication, but *many evils* must ensue.

First,—20,000,000 of pounds would be drawn from the resources of a country already almost pauperised. Of this sum above £15,000,000 must necessarily be expended *out of Ireland* in the purchase of iron and machinery, and thus that amount be taken for ever from the country without any circulating return. *Next*—These lines of communication must, of necessity, pass, in most instances, remote from the towns and villages now in existence, thus deeply injuring, in place of conferring a benefit—while the fare on a Railway can never be reduced to such an amount as to allow the transit of agricultural requisites or produce, which is almost all that Ireland has now to depend upon; nor would the varied natural positions of upland tillages, or valley farms, *allow* of Railway aid, unless the common roads were still kept in repair, and the use of common road conveyances still continued.

In such a country as Ireland, the loss of the circulation of £15,000,000 would leave but little surplus to increase or repair the common roads; and in towns deserted by the Railways, property, now barely upholding itself, would become valueless; in short, all existing interests would suffer, while the good conferred must be remote and doubtful; and the advantage to any particular position would not warrant an expenditure necessary to

rear up new towns or villages at the points favored by the line. Hence the necessity for a less expensive and more general means of intercourse.

To accomplish this, we propose—The establishment of Locomotive Steam Carriages on the existing mail coach roads of the country ; and the extension of these roads throughout the entire kingdom, the cost to be provided for by means of a moderate toll. The repairs of the whole to be accomplished by an organized body of “Labouring Road Police,” stationed at convenient distances along all the lines, and resident in station houses to be erected for the purpose. These station houses to be provided with telegraphs according to the plan which we shall submit. The road police to be available for the preservation of the peace in case of need, and to be made the means of telegraphing, and communicating from one end of the kingdom to the other.

The successful and lasting construction of *Locomotive Carriages* for use on common roads, being the ground work of this plan, it is but just that we who propose it should not only *prove* this capability so far as possible, in the first instance, but prove our own full reliance in the continuation of that capability. We, therefore, are ready to contract for the supply of these carriages at a stipulated price, providing them with sufficient power to carry at least 20 passengers and luggage, at a rate of 10 to 12 miles per hour, and *keep them in repair at a mileage*—thus taking all risk upon ourselves.

We propose, that even in the existing state of the leading roads through Ireland, these carriages shall be at once set to work, if subjected to the following regulations :—That each line of 100 miles of the present mail coach road (and in proportion other lengths of line), be supplied with 6 Steam Drags—3 to work the line up, and 3 down, each drag running 25 to 30 miles; that 3 passenger carriages, capable of containing 20 passengers and luggage be provided for each line—one to go the whole length each way, one being in reserve under examination—and that supplies of water and fuel be prepared at each 10 or 12 miles. We are satisfied that no farther arrangements are necessary to set the measure in operation, the drags and carriages being capable of being brought to the same places as the present conveyances, and nothing further being required at the water stations than a tank to contain, say 200 gallons of water, and storage for a few bags of fuel.

But, as in proportion to the *state* of the road to be travelled, speed and cost will advance or recede; and in the same proportion the proposed advantages to the country be facilitated or retarded, we put forward the following suggestions for *the general preparation and care of the roads through Ireland*; assuming the fact, that no line of communication can be so properly preserved through a country, as that which gives equal open for every description of conveyance which the means or convenience of its general inhabitants may enable them to use.

At present the mail coach roads may be averaged at about 1000 miles in length, and 50 to 70 feet in breadth, from fence to fence.— We propose that these roads shall be divided into two parts: *One* for the general purposes of the country; *the other* for the use of Steam Carriages, say, 20 feet for the latter. The two to be separated by a wall about 4 feet high, according to the plan, section and report annexed of the eminent engineer Mr. BALD, which is grounded upon the experience had in the construction of the best roads laid down by TELFORD, M'ADAM and M'NEILL. At the entrance to all towns and villages the separations in the roads would cease, in order to allow a free access for steam as well as horse conveyance to every street; and the road for the general purposes of the country should be kept in repair, and be under the same care and superintendence as the other.

We propose, that at each mile along the whole line of road, as established, a convenient lodge or cottage shall be erected, sufficiently large for the residence of three "*Road Police*." The lodge to have at top a *telegraphing* apparatus, according to the plan of which we give the leading particulars.

The repair of one mile of road to be placed under the care of each three men, two being at work and one in charge of the station house and telegraph, taking the duty in turn.

A *chief officer* should reside at each ten miles, to act as supervisor for that length of road, also

as paymaster. He should be empowered to pass free in all public conveyances along his line of controul, and be bound to visit the whole, daily.

In order to give every facility for repair of roads, and at the same time to benefit the labouring population—particularly the aged, decrepid and young, who at all times find difficulty in obtaining occupation—we would recommend that the peasantry be invited to supply broken stone in accordance to sample; delivering same in any quantity not less than 1 cwt. at any station on the line. By this means an unlimited supply would be always had without the extra expense of carriage. Each station should be supplied with two "*Stone Receivers*," open at top, and to contain a certain quantity—one to be under lock, and in which the broken stone as received should be deposited, the parties delivering it receiving a ticket for the weight from the police-man in charge of the station; thus the quantity in the "*Receiver*," when full, would be checked by the quantity appearing to have been received per the tickets. This "*Receiver*" should then be opened for use, while the other could be locked by the chief officer until filled and checked in like manner. The payment for the stone to be made weekly or monthly, by the chief officer or paymaster.

The supply of material being thus provided at each station, the labour of keeping in repair would be trifling, and the roads would consequently be speedily placed in a state requiring but little attention to preserve them; and thus ample scope would be given for the effective service of

the force as a means of internal communication, by telegraph, &c. and as conservators of the peace.

The system of telegraphing which we suggest is of the simplest arrangement :—A ten-sided hollow revolving figure, numbered from 1 to 0, is placed on the top of the station house communicating with the guard room, the same number showing below as above—a telescope set, in the usual way, upon the numbers shown, will enable it to be signalled, as quickly as the numbers can be turned from side to side, according to the system of telegraphing, and the officers only being in possession of the key, private communication may be made from end to end of the country, and acted upon almost immediately,—at night the capability will be the same; the figures being transparent and lighted from within. The means thus proposed being so simple, the telegraph cannot fail to be worked effectively even by the most ignorant, and still not interfere with the business of repair; and should it be found desirable, it may be made a source of revenue, by communicating the signals of the mercantile and other classes, who may require speedy communications; and in all instances these communications can be known only to the parties possessing the keys to their own arrangement.

In addition to the repair of the road and telegraphing, it should be the duty of the police to report all acts of impropriety coming to their knowledge—and in every instance to prevent outrage of any kind; arresting and passing persons concerned in such, either to the first constabulary, or the chief station on the road.

The expense of such a force might at the first glance be deemed objectionable; but if the present cost of road repairs be taken into account—even ineffectively done as they are, it will be found at least equal to the proposed outlay—also, that by regular and constant attention to the repair, the labour will become comparatively little, and the service of a body of 3,000 effective police (say for 1,000 miles of road) be in constant readiness—thus permitting the reduction of the present force in proportion, or dispensing with the presence of the military.

And if the effect be taken into consideration which will be produced by the action of the broad-faced wheels of the Steam Locomotives upon the road set aside for their exclusive use, the beating of horses feet no longer producing injury, it will be seen that a very short period will roll it into a hard, almost impervious mass, becoming harder and smoother in proportion to the quantity of traffic upon it; eventually producing a surface as smooth and even as a Railway, and of course, each day requiring less and less labour to keep it in order.

To carry this measure fully and effectually into operation, we propose that the entire mail coach roads of the kingdom be taken into the hands of the Government, or that a charter be granted to a public company under proper restrictions, who shall be bound to set the measure in operation within a certain period; and we are prepared at once to form an efficient company for that purpose.

The expenses should be met by a moderate toll, and payable, per mile, by steam as well as other conveyances, the telegraph being permitted to be used for public convenience at a certain moderate charge; and from these sources there can be no doubt that a revenue would arise, not only to pay the current expense of this most effective force, but sufficient to extend the roads throughout every part of the country—*the greatest boon that could be conferred upon it.*

Assuming, as we have before stated, that public roads should be public property, we conceive that if a charter be granted to a company, as suggested, it ought to be under the controul of the Government, and that the tolls should be regulated on an equitable average of those now paid throughout the kingdom; also, that after the payment to shareholders of a proper interest, proportioned to the risk, all the surplus should be applied to the extension of the roads of the kingdom. But when the immense value to Government of a force constituted, as we point out, is taken into consideration, holding within its reach almost instant communication with the remotest parts of the kingdom—possessing a full and free circulation of effective power at every point, and the means of concentrating an efficient force at any place within a few hours—carrying out, in its fullest sense, the inestimable advantages of a *preventive* police—we can scarcely suggest granting to a company that which, in the hands of the Crown, can be made to produce so great a public good, and confer such lasting blessings on the country.

Having now submitted the heads of our plan, the details of which we have ready for inspection, we beg to refer to some of the advantages which appear to us to exist, placing our proposition, and the establishment of Railways through this country, in juxtaposition.

1st—The cost of 1,000 miles of *double road*, constructed anew, would be about £2,000,000; but taking into view the present state of the mail coach roads, the actual cost of separation and repair of 1000 miles could not be above £1,000,000, *while the cost of 1000 miles of Railway would be twenty millions of money.*

2ndly—The *whole sum* to be expended in reconstruction and repair would pass into the hands of the class that most want it in the country—the *labourers*; and a market would be opened to the old and feeble in supplying the broken stone for repairs, while the land would be immeasurably benefitted by the removal of the stones from its surface.

Whilst in constructing and keeping up a Railway in Ireland, two-thirds of the cost must always leave the country (never to return to it) in payment of iron and machinery.

3rdly—The roads being continued in their present lines, existing interests will increase in value—every town and village will become of greater importance, and in no instance can loss arise or property be injured.

In the construction of a Railway whole districts, not to speak of towns and villages, become comparatively valueless, and misery and bankruptcy invariably attend its course and completion.

4thly—The roads being separated will allow of almost Railway speed, while all kinds of produce, &c., can be loaded on the Steamers, from any part of the line, most convenient to the farmer or others; and passengers can be taken up and let down any place they please.

A Railway must have its station, mayhap, miles away; while its line passes the very door of the person who wants its aid.

5thly—The cost of transit for either goods or passengers, will be at least *one-half* that on Railways,* because there is no outlay required by the proprietors of the Steam Carriages, but the simple cost of the machinery, and an immediate return is had upon the outlay.

Years must pass before any return comes from a Railway, and its outlay for repair is so great, that it has been found imperative to keep the rates nearly as high as horse conveyances.

6thly—By the plan proposed the whole community would be benefitted—the roads would be *all* kept in thorough repair—communication would become facile and easy, as well for horse conveyances as others, and a fair and just competition allowed for each.

* The fares settled upon are at the rate of £1 for 100 miles inside, and 10s. outside—goods in proportion.

The Railway monopolizes all communication, or at least withdraws so much of traffic from the common road, that it leaves no fund to keep it in repair.

7thly—Every village may have its *Steam Carriage*, or Carriages, proportioned to the wants of its inhabitants. If the traffic of the place will afford but a single ten mile journey in the day, still it can be made to pay, because when its journey is made, *its expense ceases*, except the simple interest of the cost of the machine, and that can always be in proportion to the number to be carried, or the work to be done.

In a Railway, be the traffic great or small, the expense of the RAIL is the same.

In short, to Ireland, the advantages to be derived from *the double road*, as compared with the Railway, are almost incalculable. She is too poor to expend £20,000,000 on a *chance* of 4 per cent. return, and much too poor to allow of £15,000,000 to pass out of her pocket into that of the iron masters of England; not to speak of the annual outlay for the same material. In the *double road*, every pound of outlay would benefit her starving population and herself; every town, every village, every acre of ground would become of greater value, as the general roads of the country became better; and the transit of her goods and passengers at a speed of 10 to 20 miles per hour, would bring the utmost extremities of the island within easy reach—labour would find its market—and above all, the prejudices of her

people, arising from a want of knowledge of each other, and each others capabilities and desires, would vanish, making her, what she wants but this to accomplish—an industrious, happy, and united people.

In conclusion, we admit that, in bringing forward this proposition, we do so seeking benefit to ourselves ; yet we trust we have also a higher and better motive, namely, the benefit of our country. Should Government adopt the plan, and take the roads into its own hands, we are ready by means of a company to place Steam Carriages capable of travelling with the speed and power named, upon the whole line of roads, accordingly as prepared ; merely seeking, as the Company's remuneration, the exclusive privilege of running these carriages for the period of our patents, the Company to carry the mails throughout the whole line, at a speed of 12 to 15 miles per hour, *without charge*—thus at once saving to government at least £30,000 per annum, and delivering the mails at about double their present speed. And if so adopted by the Crown, we presume to say, the plan offers the means of establishing the most efficient preventive police—the most effective bar to crime—because, hope of escape can no longer hold out its temptations—the most economical means of keeping the roads in the best repair for the use of all classes ;—and, above all, the power of making almost instantaneous communication throughout the whole country, a means invaluable in the hands of the governing power.

But should Government not desire to work the measure itself, we are ready to have it worked by a Company as already proposed, under the controul of the Board of Works, or other such body, upon the grant of equitable privileges for the advance of money by the capitalists to be engaged in it.

We are prepared to produce Steam Carriages capable of doing what we profess—and when we thus prove what can be effected, and shew a means by which the full capabilities and energies of our country may be called forth—giving it almost every advantage of a Railway, without *one* of its disadvantages—while the means of accomplishing this presents so many other benefits—we hope to enlist in our aid the support and sympathies of all classes who love our common country, and would seek for her advancement.

NOTTINGHAM-STREET,

Dublin, May, 1841.

Dear Sirs

I send you a Map of Ireland on which I have sketched in the principal roads

South of Billeo.....692 English Miles
Central Billeo.....275
North of Billeo.....455
1422 Total

This would open Ireland effectually in all directions, the expense of constructing a good road in Ireland, is about £1000 per Mile - but taking the 1422 Miles at £1200 per Mile, would be $1422 \times 1200 = £1,706,400$

This would be much better than Government buying out two Millions five hundred thousand pounds on the making of only about 220 Miles of Railway, exclusively for the South of Ireland and nothing for the West, the Centre, or the North. If you succeed in travelling on common good strong roads at a velocity of fifteen miles per hour with your Steam Carriage - I will look upon it as one of the greatest achievements of the age, and as being one of the most happy and useful applications of Steam power that has yet been brought into operation.

In concluding I really see nothing to hinder Steam being as triumphant on a good Macadamized Road, as on the Sea, or on Iron Bars -

Wishing you my dear Sirs all the success that your great devotion to this subject so justly deserves

Yours ever faithfully,
and sincerely,
William Bald

Sir James Anderson Baronet
and Jasper W. Rogers, Esq.
be be be

Report

If the steam carriage possesses those advantages which has been set forth in the prospectus for the conveyance of goods and passengers through out England, by the Steam Carriage and Wagon Company, it might be worth while, to enquire into the cost of the construction in Ireland, of such roads as might be necessary to run these carriages upon, or of such improvements as common roads might require in level and strength to make them suitable to sustain the weight of such machines and loads as might require to be carried along them.

I am not aware that any experiments have been yet made that would give an accurate idea of what may be the amount of weight which the best roads would carry formed with a bottom pavement and covered with six inches of broken stones such as Mr. Telford, had constructed through North Wales, for the government, or those which had been made according to the principles of the late Mr. M. Adam. Having no such experiments to refer to regarding the strength of roads, but looking to the weight of the English Stage Coaches, loaded with passengers and luggage as being from two to two & a half tons, and the loaded Waggon, ranging from four to six tons, I should think that a road constructed on a firm subsoil properly drained with a bottom pavement ten inches deep well rammed home and then covered over to a depth of nine inches with small broken granite, or whin stones, would be quite sufficient to sustain four wheeled Waggon carrying five and six tons weight, if the waggon wheels be six inches broad, and that they carry six tons, this will be pressure of 30 cwt on each wheel, or 5 cwt on each inch of breadth of Wheel.

On the common roads in Ireland two wheeled carts generally

carry about one ton, taking the breadth of the bearing of each wheel at 2 1/2 inches this will be a load of 10 cwt on each wheel, or 4 cwt on each inch of breadth of wheel.

A Road twenty four feet wide, paved in the bottom with stones ten inches deep, and covered with broken road metal nine inches deep, with drains and fences might in general be executed in Ireland, for about £1100 per English Mile, and if there be a second road constructed in a similar manner parallel with it for the general traffic of the country as drawn in the transverse section, it might be taken at about £1200 per English Mile, total expense per Mile £2300

The bores through Ireland are such, that these lines of road could all be constructed upon gradients not greater than one in a hundred, without involving considerable expense either in deep excavations or heavy embankments.

The Mail Coach roads in Ireland, were generally constructed with a characteristic gradient of one in thirty five, and cost about £1000 per Irish Mile, taking the length of the lines of Mail Coach roads throughout Ireland at 1000 English Miles, and suppose the whole to be reconstructed upon better levels not exceeding one in a hundred as described in the transverse section, at £2300 per Mile would be £2,300,000.0.0

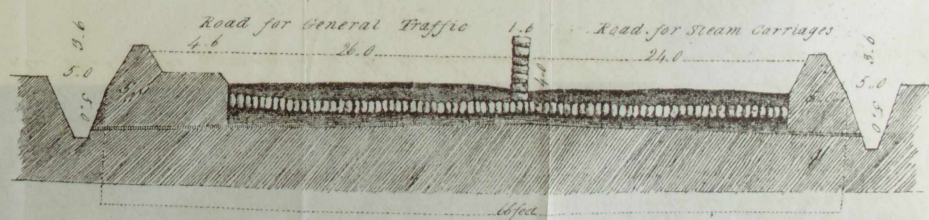
But if Steam Carriage roads were only to be constructed for 1000 miles 24 feet wide, at £1100 per Mile the expense would only be £1,100,000.0.0

While the making of 1000 miles of Railway, at the lowest cost of construction would be £10,000 per Mile or £10,000,000.0.0

And if taken at an average expenditure of £20,000 per Mile, which Railroads have actually cost in England at 1000 Miles would be £20,000,000.0.0

If Steam Carriages can run on hard smooth substantial & straight roads whose gradients shall not exceed one in a 100 at a mean rate of fifteen Miles per hour, this system of road making for Steam Carriages & traffic at £2300 per Mile, might perhaps be more suited to the funds of the country and consequently more likely to be remunerative for such an expenditure than a system of Railroads costing from ten to twenty thousand pounds Sterling per Mile. Looking at the state of trade & commercial intercourse in Ireland, and at the abundance of excellent material for the formation of such road works, this subject is well worthy of claiming national consideration, and also that of the government of the Country, where so vast a sum is proposed to be expended.

William Bald
Civil Engineer.



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