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THE MOVEMENT
FOR
BETTER ROADS.

AN ADDRESS

BY COL. ALBERT A. POPE, OF BOSTON,

BEFORE THE BOARD OF TRADE AT HARTFORD, CONN., FEBRUARY 11, 1890.

AN OPEN LETTER
TO THE
PEOPLE OF THE UNITED STATES.

Relating to a Department of Road Construction and Maintenance
at the World's Columbian Exposition.

WIDTH OF TIRES.

EXTRACTS FROM RECENT SPECIAL CONSULAR REPORTS ON
STREETS AND HIGHWAYS IN FOREIGN COUNTRIES.

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MR. PRESIDENT AND GENTLEMEN :

The construction of the public road is eminently a matter of the first and highest importance to any people.

The first evidence of habitation looked for in a newly-discovered land is the trace of the footprint of a human being, whether in the scattered tracks of some casual explorers who have gone away again, or the beaten paths of those who have made it their home, and already have their established settlements with regular routes between them.

Communication between one point and another is the idea standing first in the mind of the settler, after that of the building of his home, and we see the progress of the idea developing with the country from the "blazed" line through the otherwise trackless forest, then the bridle path over the roughly cleared way; following this, the gradual stages of growth of the road proper, from that unregenerate condition which probably gave rise to the theory of

the "survival of the fittest," because it would kill any ordinary mortal to ride over it, to McAdam's perfected road, and the splendid sheet asphalt which it is the privilege of some of us to enjoy to-day.

The establishment of communities and of intercourse between them come before the formation of government.

A prime function of government is the protection of the life and property of the citizen, and I maintain that very high among the duties of a general government should come the construction and maintenance of roads which shall serve in the best possible way the interests and welfare of the general public.

It is an unfortunate fact that our own general government has thus far taken little advantage of even that authority distinctly given it under the Constitution, for the construction of post-roads. Still less has it used its right to go beyond this in the establishment of national thoroughfares, which could afford as good opportunities for military and all other movements, and would redound in all ways to the credit of the country, as do the magnificent roads of European countries.

Constituted as our government is, covering the infinite necessities of so great and prosperous a country, and necessarily a complicated one with its system of State organizations below it, it can, per-

haps, hardly be expected that every duty should have been fulfilled thus far, nor that even now a matter which has had so little attention as this question which is of importance to us, can be brought before our national Congress with such prompt success as to bring us within a reasonable time such improvements as thinking people are demanding to-day.

LEGISLATIVE ACTION.

The pressing needs of the country, and the increasing demands of the public, are such that it does seem by all means desirable to bring it up in proper form in each State, and by legislative acts secure such provisions and organizations as shall result in the greatest possible amount of good.

No small amount of work is already being done in this direction in several of our States, and the good results are already making themselves felt in many directions.

NEW YORK STATE BILL.

A bill has already been introduced in the New York Legislature, relating to the construction, maintenance, and repair of the highways and roads of that State, and which provides for the creation of a Board of Highway Commissioners, three in number, whose duty it shall be to take charge of the highway

systems of the State, and particularly to provide for the construction and maintenance of an improved system of highways in its several counties, outside of the great cities, building them up, and perfecting them upon the road beds of such existing highways as may be selected by the supervisors of the various counties.

By the concurrent action of the highway commissioners and the county supervisors, such a general system of improved roads over the whole State shall be determined upon as will afford credit to the greatest number of the citizens of the State.

It is provided that the work necessary to be done shall be put through under contract in regular form, under the charge of the county supervisors, and the whole under the general direction of the State commissioners.

The expenses of these improvements are to be met by the issuance of bonds by each county, to an extent not exceeding in any case one twentieth of one per cent. of the total valuation of the property within the county.

This bill will, if passed, insure the construction of several hundred miles of superior highways within the State of New York, and provide for the extension of improved highways from time to time, as they may be needed.

MASSACHUSETTS HIGHWAY BILL.

A somewhat simpler plan than this is provided for by a bill prepared for my own State, Massachusetts, and one, perhaps, less likely to meet with the usual opposition from the many voters of the farming districts, who are too apt to look only at the expense of any reform or progressive movement without stopping to calculate the greater return it will bear them.

It is proposed in this, that a commissioner of roads and bridges shall be appointed, who shall be a civil engineer, and receive a salary of \$3,000 per annum and be allowed \$2,000 for expenses.

His duties shall be, to visit annually the cities and towns of the State, inspect the roads and bridges thereof, and advise the local authorities in relation to the same.

He shall have general advisory oversight over the roads and bridges of the State, can be consulted at all reasonable times without charge by officials, and advise them as to construction and maintenance.

He shall make an annual report to the Legislature of his doings, and all facts collected, together with suggestions regarding the improvement of the condition of roads and bridges.

The advantage of this plan is seen in the fact that no increase of taxation is called for beyond the

\$5,000 annual expenses, but it provides particularly for the judicious use of every dollar already expended on the roads, and aims at making such use of the materials and opportunities already at hand, under the guidance of well-qualified and competent officials, so that without an increase of expense, roads which are now a disgrace to so thickly populated a community shall become a credit to the commonwealth, and shall increase the value of the property of every citizen, and add vastly to the comfort and welfare of all who have occasion to travel upon them.

EVILS OF PRESENT SYSTEM.

Under the old plan, still in vogue in many States, of permitting anyone to work out a part or all of his road tax, too often more harm is done than good to the roads, and certainly it is safe to say that less than one half of the amount of the tax is seen in actual effective results, so that the effect of the Massachusetts bill should be to secure a saving rather than an extra expense to the State, with rapidly-improving roads as a result.

Says one of your own citizens of the good old Nutmeg State, who is already thoroughly interested in the road question, "What we complain of, under the present condition of affairs, is that all four of

the wheels of our wagons are often running on different grades. This kind of a road, if a body tries to trot any, is apt to throw a child out of its mother's arms. We let our road-menders shake us enough to the mile to furnish assault-and-battery cases for a thousand police courts."

It is clearly recognized by the framers of both these bills, that better roads benefit every one who rides, drives, or walks over them, bring farmers nearer to market and to railroads, increase value of taxable property by inviting the best people to settle in town, are of incalculable benefit to the general public, and save wear and tear on vehicles.

PENNSYLVANIA'S WORK.

In Pennsylvania, where the importance of the matter has already been recognized and provided for to the extent of the levying of a special State tax for road purposes, a plan has been adopted, which, while intermediate in itself, may result in reaching the end aimed at even more quickly.

In April last, the Legislature adopted a concurrent resolution providing for the appointment of three Senators by the President of the Senate, five Representatives by the Speaker of the House, and five competent citizens by the Governor, as a commission to revise and consolidate the laws relating

to the construction and improvement of the roads and public highways of the commonwealth, and to consider the advisability and practicability of the State assisting in the construction of the same, with power to prepare and present a bill providing for the construction and maintenance of high-class roads.

The commission was appointed, composed of men of high standing in the State and noted for their practical ideas, and many of them for the broadest possible experience in just such works and matters as their special duties will bring before them, and they are now in session at Harrisburg in the prosecution of their work.

RHODE ISLAND, MARYLAND, AND OHIO.

In Maryland, and Ohio as well, measures are already being entered upon, and your small neighbor on the east is making most commendable efforts in the proper direction, under the impetus and guidance of some of the most prominent men in the State.

Not only such movements as this are being pressed, but the educators of the country are doing no small amount for the furtherance of the movement.

In Vanderbilt University, Nashville, Tenn., for instance, a course has lately been established for the instruction, without charge, of a class in road engineering, to which is admitted one highway official

from every county in the State. This course consists of lectures and work upon the principles and science of the proper location, construction, reconstruction, and maintenance of roads and a thorough study of systems of highway ministration.

A valuable lecture delivered at Brown University, and a course of twelve lectures now being delivered in the Lowell Institute course in Boston are among the notable efforts being made by speakers and educators to do their share in the good work and to educate the public up to an appreciation of what their rights and necessities are in this direction.

CONNECTICUT'S NEEDS.

Surely it is time for the good State of Connecticut to wheel into line in this great movement. From personal experience, we all know that her roads are not so good as to remove from her the necessity of "mending her ways."

To quote again from your good citizen to whom I have already referred, for he seems to have come pretty close to the gist of the matter, — "How can we expect civil service reform in high places, while with outrageously false pretences we are continually taking the people's money in these mud holes? It was settled at Springfield, last summer, and with wisdom, I think, that future probation is dubious.

We need to behave, you see, so that we can be forgiven in this world for what we do, but I'm afraid some of our road-menders rely too much on the future. The church has a deep interest in Connecticut roads — much too deep between country churches.”

Well, the old ways are the prevailing ways yet, and what we want to do as citizens of to-day is to bring the public into a keen realization of the need of new road laws.

LEGISLATION NEEDED.

It has become the manifest duty of every State to provide by legislative act for the making and improving of the highways. The form of organization best adapted for your own State can be more readily determined upon by yourselves than by any outsider, but it would appear that between the establishment of a board of commissioners and the creation of a professional and practical State superintendent of roads the latter would seem the more desirable plan. Under the charge of this head, an effort should be made at once in the direction of improving certain of your main thoroughfares already in existence.

NATURAL ADVANTAGES.

The material for doing this kind of work is abundant in all parts of your State. Once provided with

stone-crushers for every road district, you have use-
less stone walls enough in Connecticut to thoroughly
macadamize every road, and still enough left to loan
to less fortunate neighbors.

Stone walls take up a great deal of room, and on
either side encourage a growth of bushes, weeds,
briars, vines, etc., oftentimes making hiding-places
for snakes and skunks, while a wire fence costs much
less, takes up very little room, so that the farmer
can plant his fields closer, thereby saving valuable
land for cultivation. We can learn much from the
old world in this matter.

BROAD TIRES.*

Your Legislature should enact a law, compelling
the use of broad tires, from three to six inches in
width, on all wagons built to carry heavy loads.
These broad tires would serve as rollers to compact
the road instead of cutting it up and destroying it,
as is now the case with narrow tires.

Sufficient time could be given to enable the change
to be made, and, after that time, all wagons with
narrow tires should be taxed.

Governor Hill, of New York State, in his annual
message for 1890, has dwelt with much emphasis on
the needs of the State in this direction, and he has
recommended the passage of such an act as shall pro-

*See extracts from Consular Reports pages 30 and 31.

vide eventually two improved roads, north and south, through each county, so connected and running together as to form a network of roads as nearly perfect as possible over the whole State.

While this degree of confidence as to what may be done is most commendable, it may be better here to undertake less at the outset; but if one road should be perfected, running south, following in general the line of the consolidated road from Springfield to New Haven, and thence to the New York line, connecting all the great towns along the line by a magnificent carriage way, and then another following in a general way the course of the New England road, certainly this would be a good beginning, and an example and incentive for every part of the State.

STATE TAXATION.

For the creation of these new roads, it is my firm conviction that the whole State should bear the burden, a bonded loan being negotiated, and that by the use of sufficient money without waste, these should be made model roads which shall redound to the credit of the State, add to its prosperity, and unquestionably increase the total valuation of its property. So much for the needs and the duties of the State.

I have dwelt upon this feature of the question here, because I am addressing what I believe to be the most influential organized body of Connecticut's business men, the backbone and the brains of her great body.

I believe that it is to such men as you that we must look for the instituting of practical reforms, and that it must be you who shall shoulder the responsibility of starting a legislative movement, and that yourselves shall be the guiding heads and hands which shall see it through to a right and proper determination; but it is of more especial interest and importance to remind you of what your requirements and duties are as citizens of this splendid capital, a city already noted well-nigh throughout the civilized world for the commercial prosperity and sagacity of her business men, for her advantageous location, wealth, and beauty.

HIGHWAY IMPROVEMENT.

Whether the State undertakes its duties or not, it will devolve upon you as an incorporated city to take care of your own thoroughfares; whether or not such a system of State highways is provided for as I have suggested, it is manifestly *your* duty to yourselves, and to the public who visit Hartford for whatever

purposes, to provide such highways as shall be appropriate to every other condition of the city.

You have your magnificent blocks, your extensive factories, your beautiful residences, your splendid old trees, your parks, and your public works, and you have, in general, well-located streets of good dimensions; but for the surfaces, their wearing capacity, and their condition for the most economical uses, one cannot say so much. Surely there is chance for improvement. Why not have the best when it will cost no more in the long run?

It is in your hands to inaugurate a system of streets and highways in this fair town, which shall speedily become a model for every one of your American sister cities, and you are not the wise, keen, progressive men that I take you to be if you do not take advantage of the opportunity before you.

IMPROVEMENT OF STREETS.

For the details of what you can best do, you will have to turn to some one who is more of a practical engineer and road-builder than I am, and I will only suggest in a general way that for such of your streets as are narrow, and carry the heaviest traffic, you should lay such pavement as is to be found on Westminster Street, of Providence, splendid, true, cut granite blocks, laid correctly and firmly in a concrete

bed, which will hold them for ages, unless it be for the too frequent disturbances to which our city streets are so subject.

Your Asylum and State Streets should be provided with this surface.

ASPHALT PAVEMENT.

For your broader streets, Main, for instance, and many others, where much travel and the lighter transportation is to be provided for, where stores and offices are numerous, and cleanliness and freedom from dust and noise are most desirable, nothing is better than sheet asphalt, laid as it should be, and for this I can but refer you to the prosperous and progressive Buffalo, where within eight years nearly one hundred miles of the best asphalt has been put down, and thousands of whose citizens bear the most willing and eager testimony to the advantages which have accrued to them from its use.

And who has not felt a pride, as he has travelled over those splendid asphalt streets of our nation's capital, where for miles in every direction one can walk or drive with so much comfort and pleasure? And when we reflect that twenty-five years ago the streets of our Capitol City were a disgrace to any civilization, and now they are the best in the civilized world, you certainly may take courage, know-

ing how little you have to do in comparison to make this city equally well paved.

MACADAM PAVEMENT.

Your outlying residence streets can for the most part be most suitably provided with macadam, but it should be better laid than most of it in your city to-day, and it should be kept in repair. Surely in nothing is the old adage "a stitch in time" better applicable than in the case of city streets.

Once properly constructed, they are best and most cheaply kept in order by constant watchfulness and prompt repair.

The great excellence of the English and Continental roads and streets is undoubtedly due to their being properly made in the first place, but the satisfactoriness of their use, and the small percentage of cost of maintenance, is secured by their being kept constantly in order, at all times clean, and as a minor feature, by being kept moist as constantly as feasible.

The moisture of the climate in England is a great aid in keeping their splendidly constructed high-ways in order.

DISTURBANCE OF PAVEMENTS.

As I have already suggested, the curse of any pavement is the incessant disturbance to which it is sub-

For public use

jected. The water and sewer departments, the gas company, the underground conduit people, and only too many others seem to feel it their divinely constituted right to work havoc with the street surfaces at all possible times.

You experience this here, as much as any of us, and I doubt not that it is almost as much a dreaded annoyance to you in your broadest streets, as it is to those of us who have the privilege of living in the narrow and devious ways of the Hub; but there is a remedy for this which they have discovered in Europe, and now put into effect in at least three of their leading cities.

Thus far it has not been tried to my knowledge in America, and the opportunity is before you to show your countrymen the advantage of the tunnel system. You need not go into it extensively, but you have an admirable chance to try it for a few blocks at first, perhaps, in your main street.

By the construction of a proper underground way you may provide for the reception of all the pipes and wires that can possibly be needed for ages to come. You can save untold expense in future years, and you can secure an adequate remuneration by levying tolls on private parties or corporations who need to use it for their special purposes, and you will have the satisfaction of an undisturbed street pavement

for at least the length of this tunnel, and here you would have an opportunity to lay a foundation that would last for centuries and give descendants abundant cause to bless the memory of the citizens of to-day.

HARTFORD'S OPPORTUNITY.

For the perfection of the finest system of city streets in this country, you have not only unusual incentives, but exceptional facilities as well. The position and the grades of your streets cannot well be improved upon. You have everything within your grasp that is necessary for the carrying out of the most elaborate plans there is any likelihood of your being able to put through, and you have the wealth to enable you to do it; but to the economical, careful thinker, the most attractive point of all is, that you can have every one of the good things I have spoken of without paying for them more than you are paying now, and are likely to pay for years to come under the present existing circumstances.

It is clearly demonstrated by those most competent to make statements upon these matters, that given a properly constructed highway, and the proper system of care and repair, the total cost of construction and maintenance at the end of a reasonable term, say thirty years, will not materially exceed the cost of

construction and the expense of maintenance of such streets as you are riding over to-day, to say nothing of the added comfort of using the former, the diminished wear and tear of your vehicles, and upon all living creatures, brute or human, who are obliged to make use of them, nor of the very great increase in the value of property.

In a city noted for its insurance business, and eminent insurance men, there are surely plenty accustomed to dealing in figures who can readily make a computation of the saving in having roads built right at the start, and it is unnecessary for me to undertake to demonstrate the matter to you mathematically.

HIGHWAY IMPROVEMENT COMMITTEE.

But now to come down to the practical, I urgently recommend that you appoint a committee to give this matter their attention, to draw an order to be introduced into the city government, inaugurating a system of improvement in the city streets, and also another committee to draw a bill to be presented to your Legislature at their first sitting, which shall provide for the improvement of the highways of the State. This committee to be authorized to invite prominent citizens from other parts of the State to

act with them, both committees to report to this board for their final approval.

We boast to-day of the greatness and perfection of our railway systems, of their magnitude over those of any other country. Why do we not take as much pride in the building up and perfecting of our highways?

If we should devote a part of the great energy now given to extending our railroads to improving our highways, it would not be many years before we should have the right to take a national pride in them.

The truth is that the railroads are built and run by private enterprise and the highways by the public, and here the old adage is true that "what's everybody's business is nobody's."

This is a day of combinations, and why should you not, as public-spirited men, combine for the public good in this matter and stick to it until your city and State have highways that are second to none?

Then will you leave to those who follow after you an inheritance of more value than monumental marble or granite shaft.

An Open Letter to the People of the United States.

THE WORLD'S COLUMBIAN EXPOSITION will be attended by millions of our citizens, and no better opportunity has ever presented itself, or is likely to present itself, during the lifetime of any one now living, to teach the great lesson of the need, the construction, and the maintenance of good roads.

But under the present arrangement and classification of exhibits the opportunity will be wholly lost. Any one interested in the subject and endeavoring to learn what he can as to the best methods and machinery to be used in the building of a highway will probably consult the one hundred and twenty page Catalogue, a "Classification of the WORLD'S COLUMBIAN EXPOSITION: Chicago, U. S. A., 1893: adopted by the World's Columbian Commission," and find classified in

Department A. Agricultural Building.

(Area, with annex, thirteen acres.)

GROUP 14: CLASS 79, "Models of fences, construction of roads; literature and statistics."

GROUP 16; CLASS 84, "Ploughs and rollers." CLASS 88, "Stump extractors." CLASS 89, "Traction engines and apparatus for road making and excavating."

GROUP 19: CLASS 90, "Samples of wood for paving." CLASS 102, "Timber prepared in various ways to resist decay." CLASS 117, "Stump pulling devices."

Department E. Building of Mines and Mining.

(Area, five and six-tenths acres.)

GROUP 43: CLASS 293, "Asphaltite and asphaltic compounds."

GROUP 44: CLASS 296, "Building stones, granites for bridges."

GROUP 47: CLASS 311, "Artificial stone mixtures for pavements." CLASS 312, "Asphaltic mastics and mixtures."

GROUP 64: CLASS 392, "Rock breakers."

GROUP 65: "Sizing appliances." CLASS 398, "Sieves." CLASS 399, "Perforated plates."

Department F. Machinery Building.

(Area, with annex, fifteen and eight-tenths acres.)

GROUP 77: CLASS 488, "Street rollers, sweepers, and sprinklers."

Department G. Transportation Building.

(Area, with annex, over fourteen and four-tenths acres.)

GROUP 80: CLASS 499, "Systems of drainage."

GROUP 83: CLASS 509, "Wheelbarrows." CLASS 510, "Carts." CLASS 511, "Sprinkling carts."

Department L. Manufactures and Liberal Arts Building.

(Area, thirty and a half acres.)

GROUP 147: CLASS 829, "Conduits of water and sewerage. Drains and sewers."

GROUP 152: CLASS 879, "Construction and maintenance of roads, streets, and pavements."

GROUP 152: CLASS 880, "Bridges." CLASS 889, "Working plans for paving and draining."

In other words, he finds that he must visit *five enormous buildings having with their annexes an aggregate area of seventy-nine and three-tenths acres*. Some of these buildings are necessarily located at long distances from the others. These buildings and the pathways between them will be thronged with thousands of persons, and the great difficulty of even finding these several special exhibits is apparent to any one who has ever attended any of the great expositions.

Fully realizing this, I sent the following letter to the Director-General:—

BOSTON, FEBRUARY 15, 1892.

HON. GEORGE R. DAVIS,

Director-General of the World's Columbian Exhibition.

SIR:—

I have the honor to suggest to you that strenuous efforts be made to make a comprehensive exhibit of improved roads and road-making machinery at the Exposition. To carry out this plan some of the roads adjacent to the Exposition grounds should be constructed in accordance with the most approved systems used in Europe and this country. Cross sections of these roads should be shown in some suitable place, together with the best machinery for preparing the material, making, and taking care of roads. Stone crushers, steam rollers, street sweepers, watering carts, etc., should be included in this exhibit.

I would further suggest that "Road Construction and Maintenance" be classified as a Department instead of a "class" of one of the numerous "classes" of Liberal Arts. There should be a building constructed for this Department in which road-making and road machinery could be daily shown by skilled workmen, so as to be an object lesson to every visitor.

To meet the expense of such an exhibit, and to provide the necessary building, and to attend to all the details, so as to bring it to a successful issue, it would be advisable to form an association and invite all persons interested in good roads to join and to send in subscriptions. The railroad companies, agricultural societies, carriage builders, builders of road-making machinery, furnishers of paving materials, owners and lovers of horses, and the public generally would probably be willing to contribute to such a cause.

Personally, I should be very glad to give \$1,000 to such an object, and I think there ought to be no difficulty in raising sufficient funds to erect a building and provide means for so important an enterprise. It would be well to give liberal prizes for the best methods and machines submitted. Such prizes would attract the attention of engineers and mechanics throughout the civilized world.

An exhibition of this kind would benefit this country incalculably, and its effect would last as long as roads are used. It would give a great impetus

to the movement now being made to have inter-state roads provided and maintained by national legislation.

Looking upon this matter as one of great practical importance, I cannot urge you too strongly to give it the careful consideration that it deserves, and should you give the movement your approval, I will gladly coöperate in carrying it out.

Very respectfully, your obedient servant,

ALBERT A. POPE.

The reply was as follows:—

ALBERT A. POPE, Esq., Boston, Mass.

DEAR SIR:— I am in receipt of your communication of February 15th, with reference to a comprehensive exhibit of improved roads and road-making machinery at the World's Columbian Exposition, and I have referred the same to Dr. S. H. Peabody, Chief of the Department of Liberal Arts, under whose charge exhibits in that class will be placed.

Yours very respectfully,

GEO. R. DAVIS, Director-General.

On March 11th Mr. Peabody sent the following letter:—

ALBERT A. POPE, Esq., Boston, Mass.

DEAR SIR:— Your letter of the 15th February was referred to me by the Director-General, and I have also yours of the 2d, received 7th, inquiring as to my action in the matter.

There can be no doubt that this subject is one of paramount importance to the people of this country. Whether on the gravelly soil of Massachusetts, the clays of New York and Indiana, or the prairies of the Mississippi Valley, our common roads are worse than in any other civilized country. No other material interest in the United States rests under so dense a cloud of ignorance. No improvement would so greatly aid the American farmer as that which would give him as good roads as may be found in the poorest districts, say of Ireland and Italy. I have written so much as evidence that I have some appreciation of the subject.

What can the Exposition do? How? By what department?

In Group 152, Class 879, in the Department of Liberal Arts,— Subject, Civil Engineering,— we find the title, Construction and maintenance of roads.

In Group 14, Class 79, Department of Agriculture,— Subject, Farms and farm buildings,— the title Construction of roads. The first assignment is from the engineering point of view; the second from the farmer's practical position. The latter seems the most appropriate assignment.

What can be done?

Your suggestion that some of the roads adjacent to the Exposition grounds should be examples of the most approved systems of road-construction is easily satisfied. The boulevards and parkways lately constructed have been built upon the best methods, except, perhaps, that they have not been surfaced with the hardest material. Examples of road-making, the processes of construction actually going on, will not be so easily found, as both hosts and visitors will expect that this preparatory work will have been finished before the Exposition is opened. The attempt to illustrate

such work in a large and practical way in the Fair ground will occupy considerable room, which it will be difficult to find. The same statement will apply as to the probable site for a building.

Doubtless the collection would have much value if the implements and machines for road-making were assembled in such a building. They are, however, all provided for in other departments, thus: plows and harrows, Class 74; stump extractors, 88; horse-shovels, graders, ditchers, 89; stone-crushers, 329; steam-rollers, street-sweepers, watering-carts, 488; etc.

I am of the opinion that the extensive material exhibit which you propose is not practicable within the conditions that exist in Jackson Park. When it is made it will be found to be applicable only to costly roads in the vicinity of large cities, or to inter-state roads, built at state or national cost. The yet more important lesson, how to build good and cheap country roads in districts where good materials for road metal are entirely wanting, will not have been reached.

Could not a valuable and practical exhibit be made by showing—

1. Statistics of the extent and kind of improved roads made in several European countries; cost of construction and maintenance, with rates of wages, etc.
2. Diagrams and photographs of good and bad roads at home and abroad; and of larger machines used in the work.
3. Sections of good roads; gravel, Telford, macadam; plank; covered with asphalt; paved with wooden blocks, bricks, granite blocks, stone slabs, etc., etc. As the methods of construction are the important lessons, these sections need not be long; they might show the curb, gutter, the rise of the road, and the sequence of strata. All these items could be seen on a form, say 10 feet long and 3 feet wide; the length extending from the outer edge of the gutter, towards the middle of the road, and the width extending along the length of the road.
4. Printed matter illustrative of the art of road-making, for distribution to such as might wish for it.

If an exhibit of such sort could be made, I would try to find a place for it in the Liberal Arts. If that will not answer your purposes, I should have to refer you to the Department of Agriculture. I am quite confident that your proposition to make a separate department, with a house, grounds, and a collection of machinery, will not be entertained for lack of opportunity.

I shall be glad to assist in any scheme that seems to be practicable under the conditions and limitations of the Exposition, and recognize that your offer of pecuniary aid is very generous. I send you in another cover a copy of the General Classification.

Yours very truly,

SELIM H. PEABODY, Chief, Department of Liberal Arts.

The main buildings are to be dedicated Oct. 12, 1892, and the Exposition is to be opened May 1, 1893. In these intervening months there is ample time to erect a suitable building in which can be grouped all the things which would be useful

in educating the people how to build good roads. Every state ought to send cross sections of roads, showing the construction best adapted to the particular locality, taking into consideration the most available material of which to build roads. Examples of country road bridges should also be shown.

A comprehensive road exhibit at the Exposition would be the most powerful factor to bring about national and state legislation for the construction and maintenance of good roads.

It now remains largely with the representative men of the country whether or not the matter shall be agitated so as to give the people a clear and full understanding of this most momentous subject. When the importance of it is once realized, I venture to predict that it will become one of the leading issues of the time, far transcending in practical importance the tariff, silver coinage, or Republican or Democratic rule.

Very respectfully,

ALBERT A. POPE.

BOSTON, MASS., June 7, 1892.

Streets and Highways

IN

Foreign Countries.

Compiled from SPECIAL CONSULAR REPORTS to State Department, 1891.

AUSTRIA.

For loads of more than $2\frac{1}{2}$ tons, law requires (in Styria and Carintha) tires $4\frac{1}{3}$ inches wide.

For loads of more than $4\frac{1}{2}$ tons, law requires (in Styria) tires $6\frac{3}{10}$ inches.

For loads of more than $3\frac{1}{2}$ tons, law requires (in Carintha) tires $6\frac{3}{10}$ inches wide.

2 or 3 horse wagon, law requires (in Lower Austria) tires $4\frac{1}{2}$ inches wide.

2-horse wagon, law requires (in Bohemia) tires $4\frac{1}{2}$ inches wide.

JULIUS GOLDSCHMIDT, *Consul General, Vienna.*

BELGIUM.

1-horse wagon (with narrow tires), load must not weigh more than 880 lbs.

Wagon weighing 1,540 lbs. (with broad tires) may carry one ton.

JOHN B. OSBORNE, *Consul, Ghent.*

FRANCE.

Freighting and market wagons have tires from 3 to 10 inches wide; usually they are from 4 to 6 inches.

Tires on 4-wheeled freighting vehicles are rarely less than 6 inches, and having rear axles about 14 inches longer than the forward axles, 2 feet of road is rolled.

OSCAR F. WILLIAMS, *Consul, Havre.*

