

The Economy of Good Roads

BY COL. ALBERT A. POPE.

Wild animals travel through the jungles and forests in paths which lead to their pasturing fields and places of safe retreat. The Indians of America and the other savage tribes of the world follow this example, going from place to place on trails which in some instances are so slightly marked that the eye of civilized man might overlook them.

Men in their simplest existence, depending for subsistence upon the skill which they develop in capturing game, need no other means for transportation than that furnished by their own sturdy limbs. As we ascend the scale, however, as man improves and broadens, the means of communication and the manner of transporting articles of necessity and comfort, multiply in number and increase in practical utility. The trail of the savages gives place to the ways over which bands of pack-laden men and caravans of animals convey the commodities of the interior to the nearest point of distribution. Then came the ruder forms of highways, with the log-wheeled conveyances as seen today in parts of Mexico and South Africa, and later to the scientifically constructed roads of the Macadam and Telford type, which are co-existent with, and effectual contributors to, the highest forms of civilization.

The great system of Roman roads was originally designed and executed to aid rapid military movements; these roads were one of the strongest ties that held the old Empire together for so many generations, and in later years were of great benefit to the commercial interests of Rome.

Napoleon did more for France than any other ruler by extending the public highways, which have been, and will ever continue to be, a pride of that country. He spent about six millions of dollars on bridges, over ten millions on canals, some fifteen millions on roads, and twenty millions on forts and harbors, and the French people of today are enjoying the benefits of these liberal and wise investments. Later on the French engineer Tresaguet on the Continent, and Macadam and Telford on the British Isles, continued the good work and improved the method of road construction.

There is a striking lesson to be learned from a comparative study of the Roman roads and those constructed by the last-named engineers. Rome spent with a prodigal hand and failed to take into consideration the higher question of engineering which studies the exact relation of strength and strain, and builds accordingly. It has been estimated that the Roman military roads cost, in terms of our own labor, from thirty to one hundred thousand dollars a mile, and were many times stronger than their use demanded. These later engineers built many miles of good and lasting roadways at far less expense, by using large stones for foundation and several coats of smaller broken stone for the surface.

To Macadam is usually attributed the discovery that broken stone of moderate size placed upon the road surface would, in the course of ordinary wear, coalesce and form a compact mass strong enough to resist the impact of hoof and wheel. He built some roads on top of brush and peat bog, and the broken stone, with the aid of its adhesive dust, soon formed a complete shell, which would support the weight of ordinary vehicles. The difficulty in such a structure was that its foundation, being short-lived, soon failed to support the surface, which, sinking gradually and irregularly with the foundation, crumbled to pieces and became useless.

The welding together of broken stone, according to the best authorities, depends on the adhesive quality of the dust formed by the constant grinding of wagon-wheels. Professor Nathaniel Southgate Shaler, one of the Massachusetts Highway Commissioners, and one of the Lawrence Scientific School at Harvard University, has in his laboratory tests of road materials clearly demonstrated the fact that the value of a rock for the top-dressing of a roadway depends not only upon its toughness, but upon this adhesive quality of its dust, and that the best road dust must have the power, when moistened, to adhere a second time, and thus cement together a surface which may have been broken up in seasons of great drought.

The renewed agitation for the betterment of our highways has caused a widespread interest in the subject, and led political economists, scientists, and business men to look upon the advantages of road reform from their various points of view. As a result, it may be safely said that we to-day know what a good road is, and how to build it, and we comprehend at least some of the many advantages that would accrue to all classes of our citizens from free intercourse and uninterrupted traffic.

We have built and put into operation in the United States in the neighborhood of 200,000 miles of railroads—an enterprise which has been pushed through largely upon bonded indebtedness, and has enabled us in the East to purchase at a reasonable price the food products which, but for this cheap transportation, could not have been furnished

ed from the great wheat-fields of our Western plateau.

Mr. Edward Atkinson, the well-known statistician, recently stated that in the year 1895 10 1/2 tons of food, fuel, fibers, and fabrics were moved 126 miles over the railways of this country for every man, woman, and child in the Nation, numbering that year about 71,000,000. This ought to give one a realization of what a slight saving of transportation amounts to when aggregated for the entire population; and as the most costly freight traffic is over country roads from the producing farms to the shipping centers, we must conclude that the maximum saving on railway freight represents but a fraction of what could be saved on road-hauling if the public ways were kept in passable condition throughout the year.

Knowing that we must have good roads, and that proper highways are an excellent investment for ourselves and our posterity, the important question of the day is, How shall we secure the best roads at the least expense?

From the experience which we of the Old Bay State have gained in handling this question, it seems fair for us to claim that the best method of procedure is to establish a permanent highway commission of men suited to and trained in this kind of work. The idea of State aid in supervision and highway construction is gaining headway. Sixteen States have since 1892 passed laws for the betterment of their roads. The important work of the immediate future is to influence legislation in those States where action has not already been taken, so that the movement may in all places be in skilled hands, and thus insure the best results from the minimum expenditure of money.

(Concluded in our next issue.)

Woman's Idea of Excellence.

The economical and wise woman, who has the management of a home, knows from experience that when the "excellence" of any home necessity is established and guaranteed, money and time are saved when such goods are used.

The Diamond Dyes for home dyeing have a world-wide reputation, and stand first in purity, strength, fastness and simplicity of use. When the Diamond Dyes are used, old, faded and dingy garments are made to look as good as new at an exceedingly small cost.

Diamond Dyes, like all other popular and perfect goods, are largely imitated. Do not allow your dealer to sell you some inferior make of dye; ask for the "Diamond" and see that you get them.

Send to Wells & Richardson Co., Montreal, P. Q., for valuable book of directions and sample card of colors; sent free to any address.

Queer Facts About Money.

There are 190,900,000 old copper pennies somewhere. Nobody knows what has become of them, except that once in a while a single specimen turns up in change. A few years ago 4,500,000 bronze 2-cent pieces were set afloat. Three million of them are still outstanding. Three million 3-cent copper pieces are scattered over the United States, but it is very rarely that one is seen.

Of 800,000 half cents, which correspond in value to English farthings, not one has been returned to the government for coinage or is held by the treasury. Congress appropriates about 100,000 yearly for recoining the silver coins now in possession of the treasury. These are mostly half-dollars, and are not circulated, because there is no demand for them.

Not long ago the stock of them amounted to over \$2,500,000, but it is only about half that now. The money set aside for recoining is not intended to pay for the cost of minting, but it is required to reimburse the treasury of the United States on account of the loss of weight which silver pieces have suffered by abrasion. The loss amounts to \$30 on every \$1000, and it has to be made good in order to set the treasurer's account straight.

DON'T GO ON!

Don't go on suffering from nervous troubles that make strong men weak, impotent, and unable to do the right thing at the right time, all because the system is tobacco poisoned. We urge you to test MILBURN'S HEART AND NERVE PILLS, they will make the blood pure and rich, tingling with life and energy, and the man who feels old they make young and happy again.

The Halifax Chronicle sounds a note of warning in regard to the pulp wood resources of Nova Scotia. The province, it points out, has many tracts covered with the right kind of timber for the manufacture of mechanical and chemical pulp. These the Chronicle advises the owners to husband and foster. It urges that the cutting of the trees be kept under control, that the small ones be preserved, and that due measures for fire protection be taken. In this way, it adds, the necessity for reforestation, to which so many parts of the continent have come, will be avoided.

Yonge St. Fire Hall.

(Toronto, March 18th, 1891.)
Gentlemen,—I have used Dr. Chase's Kidney-Liver Pills for Biliousness and Constipation, and have proved them the best that I have ever used—will use nothing else as long as they are obtainable.—Remaining yours, respectfully,
E. C. SWEETMAN.

A MOTHER SPEAKS.

Tells how Dr. Chase Saved her Boy.

His Syrup of Linseed and Turpentine a Precious Boon.

MRS. A. T. STEWART, Folgar, Ont., says: "From the 7th of January to the 30th, we were up night and day with our two little boys, employing doctors and trying every kind of patent medicine we ever heard of. At this time we did not know of Dr. Chase's Linseed and Turpentine until after the 30th, when our youngest darling died in spite of all we could do. Sometime in February the doctor told us our other boy couldn't live till spring. We were about discouraged, when I got my eye on an advertisement of Dr. Chase's Syrup.

"I tried at once to get some, but none of the dealers here had it. A neighbor who was in Kingston managed to purchase two bottles which he brought straight to us, and I believe it was the means of saving our only boy.

"One teaspoonful of the Syrup stopped the cough so he could sleep till morning. Our boy is perfectly well now, and I would not be without Dr. Chase's Syrup of Linseed and Turpentine in the house."

PRICE 25c. AT ALL DEALERS, or Edmanson, Bates & Co., Toronto, Ont.

Wants Canadian Lumber.

Mr. Mariano Comas, of Buenos Ayres, South America, is at present on a visit to Canada. Mr. Comas represents a large shipping house in his native city, who are desirous of securing supplies of Canadian lumber. Heretofore their connection has been with Boston and New York concerns, but the new tariff of the United States having replaced the former higher duties on products of the Argentine Republic, the government of the latter country have retaliated, and in doing so they have placed a 10 per cent. preferential tariff in favor of all nations, as against the United States, and so Mr. Comas has started out to look for new markets in which to purchase the lumber supply required by his firm.

A Running Sore Pronounced Incurable by Eight Doctors—Cured by Dr. Chase.

Mr. R. D. Robbins, 148 Cowan Ave., Toronto, says: "I had a bad leg, which was simply unsightly. From below the knee to the ankle was one great sore. Eight doctors treated me without benefit. I was induced to try Dr. Chase's Ointment which cured me, and all that remains to be seen are the scars."

Antiquity of the Saw.

Pliny says that the saw was first invented by Daedalus, but according to Apollodorus, it was the invention of Talus, who used the jawbone of a crocodile to cut through a piece of wood, and then made an iron instrument in imitation of it. The saw is represented on the monuments of Egypt, from 2,500 to 3,000 years B. C. As early as A. D. 1327 sawmills driven by water power were in operation in Paris, driven by the current of Seine. The first sawmill erected in the Norway pineeries was in 1530. Sawmills were numerous in the sixteenth century. They were not introduced into England until 1663, when a native of Holland built one, but was compelled to abandon it by opposition of the populace, carpenters and other artisans who saw no good in such a new fangled contrivance.

Smiles—Isn't it strange that those old-timers didn't have any clothes they could call their own?

Giles—Why, what do you mean?
Smiles—Well, you know the Bible says that "they rent their garments."
—From the Chicago News.

FOR THE LADIES.

We make to order all kinds of Ladies' Coats, Capes, Ulsters, Mackintoshes and Outside Wraps, in the Latest Styles, and Perfect Fit guaranteed.

We make to order Ladies' Gaiters of all kinds to match costume. Ladies can furnish own cloth if they wish. Give us a call and get prices.

Hanson & Grady

Merchant Tailors,

MOULTON, MAINE.

Christmas Novelties!

We have in stock the largest and best assortment of Xmas Presents that have ever been offered in this town. Just take the trouble to come and investigate and you will be well repaid. We have a fine assortment of

BANQUET, TABLE, HANGING & PIANO LAMPS

RANGING IN PRICE FROM 40c. TO \$15.00.

We have several New Finishes in

Bronze Ornaments,

And have also added a New Line of

CUT GLASS.

We have a fine line of Buckhorn and Ivory Handle Carvers, and Ivory Handle and Silver Plated Knives and Forks. Also Genuine Acme and Wood Top Skates. Come early and make your selection before the choicest articles are sold.

W. F. DIBBLEE & SON.

Save a Penny and Lose a Dollar.

A tempting price hooks many a fish, But the fish always suffers for it.

The Double Maturity Policy of the Manufacturers' Life Insurance Co.

Is worth its cost because it guarantees More Reserve Value. Profits can be used to shorten the period and make policy payable whenever the Reserve and the Surplus amount to the sum assured. You cannot obtain this policy in any other company. LOOK OUT FOR IT.

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For further particulars enquire of GEO. ANDERSON, District Agent, Woodstock, N. B.

BETTER THAN A BANK

After July 1st, '97, the Government Saving Banks of the Dominion will reduce the rate of Interest on deposits to 3 per c.—You can get an Endowment Policy in the

Confederation Life Association,

which will net you more than 3 per c. besides carrying Life Insurance with it and the non-forfeiture provisions of the Policy admit of paid-up and extended Insurance after two years and a Cash Value or a loan after 5 years.

D. F. MERRITT, Agent. G. W. PARKER, Gen. Agent.
G. A. TAYLOR, Merchants' Bank, Special Agent.



If It Rained Rubbers

It would not be hard to have a pair when needed. However, as nature has ordered it otherwise the best thing to do is to make a selection from our large and well assorted stock. Every pair bought here saves somebody from the doctor. Damp feet and colds have more than a bowing acquaintance. We have every shape and style from low to high Rubber Boots and every size from the 2-year-old tot, to Men's No. 10. Quality and price cannot meet with your approval.

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