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The inventor of that nonsensical phrase "sweet girl graduates" has much to answer for just about this season of the year.—Roseburg Review

SOUTHERN CALIFORNIA'S prune crop will be a failure this year. This will be a big year for Oregon prunes, cultivated in a country where crops never fail.—Astorian.

THE Missouri river plays queer pranks when the spirit of the spring flood is upon it; but it never did anything so extraordinary as that which it threatens now. The river, swollen with the June rise from the mountains, is cutting a new channel near St. Joseph, which threatens to leave that city, wharves, warehouses, steamboats and all, two miles from the water, with a \$1,000,000 railroad bridge spanning a mile or more of dry land. This is what may happen when a great river runs between mud-banks. Fancy the Columbia trying to cut a new channel through its bulwarks of basalt.—Oregonian.

IMPROVEMENT OF THE UPPER WILLAMETTE.

The agitation of the question of the improvement of the Columbia river has for the past few years caused that of the improvement of the Willamette above this city to be pushed into the background. It is a not unusual illustration of the greater interest absorbing the less, and the exponents of the lesser interest in this instance have shown remarkable patience and forbearance. While it is true that railroads have in a great degree succeeded steamboats as the common carriers of the Willamette valley, the fact remains that many farmers and shippers are loyal to the river and find it both to their profit and convenience to use nature's highway in transporting their products to market and their wares to the interior.

An unobstructed waterway, from the fact that no man or corporation can monopolize its privileges, is the producing element's safeguard against monopoly in the carrying trade. The farmers and tradespeople along the river are the main persons who look back upon the steamboat era of the Willamette valley as a season of prosperity. It succeeded the stage coach, freight wagon and pack horse era naturally and completely. As naturally, but for obvious reasons not as fully, the railroad era has succeeded, that of the steamboat, and with this the great majority of travelers and shippers are well content.

There remains, however, an element representing valuable and growing interests along the river that clings to the steamboat as a means of transportation from the simple fact that it is cheaper and more convenient to ship by water than by rail. They desire, and, with reason, demand that the Willamette river shall receive such attention from the general government and its engineers as will keep it in fair boating stage during the greater portion of the year as high up as Corvallis. That this can be done without any great outlay of public funds has been fully demonstrated. That it should be done is clear. The policy of the government so far as the Willamette river is concerned has been a most niggardly one, and, like all niggardly efforts in connection with the expenditure of money on waterways, it has been expensive and unsatisfactory. A few wing-dams have been constructed in summer to help boats over sand-bars for the season; there has been some snag pulling and dyking sufficient to get the grain surplus along the river to market for a single year, after which, the money giving out, the government force has been withdrawn and the uncompleted work abandoned to the devastations of the next winter's floods. It is no wonder that this policy pursued from year to year has left the river in a crippled condition and made steamboating upon it anything but satisfactory.

Major Handbury, after careful inspection, is of the opinion that the river could be put in a good boating

stage for a low water river and maintained at this point for a reasonable outlay of money, but he says that with the present appropriation it will not be possible to more than pursue the old plan of temporary work. The present is a good time to impress our congressional delegation with the folly of the policy pursued in the improvement of the Upper Willamette—or more properly speaking, perhaps, to recall it to their minds, since it is not possible that they are ignorant of the wasteful and insufficient method heretofore pursued in the improvement of this section of a valuable waterway. An appropriation of a few thousand dollars for this purpose is better than nothing, since it relieves present stress, but it is easy in a few years to absorb a large sum of money by following such a policy as this without having anything in the end to show for it.—Oregonian.

COUNTY ROADS.

(Graduating essay read at the O. A. C., by Joe F. Alexander, class of 1891.)

The roads of a country are of more benefit to the people than is generally supposed. They belong to that unappreciated class of blessings, the value and importance of which are not fully felt—their uses being so varied as to render them indispensable, and to cause their origin to be forgotten. But for one moment imagine our condition without them. With no means of communication our condition would be but little better than that of the savage; to the condition of our roads we owe advancement in education, industry wealth and science. Upon the number of county roads in a community rests the development of people and their lands. Most farmers are not aware of the fact that they are in a great measure dependent upon the roads for their prosperity. If the roads are good, coupled with other circumstances, the farmers will be prosperous; if not, he will be unsuccessful. Why is this? Simply because the benefits from them are so great. By them we are benefitted both directly and indirectly. Directly, for the reason that everything taken to and from market has to be hauled over them. To reap the fullest benefit, this must be done at the minimum cost, and this can only be attained by the improvement of the roads, which saves the wear and tear on horses and wagons, and greatly reduces the cost of carriage. Indirectly, by being brought into easy reach of cities and towns that afford a ready market for their produce, and decreases the cost of their supplies. Good roads are also of great social importance. In a country where the roads are few and bad, the people do not have much intercourse with one another. In fact, they become like a pond of water without an outlet, soon becoming stagnant. To prevent this condition of affairs, good roads are a necessity as they bring the people into intercourse with one another and encourage them to exchange ideas with, and introduce improvements from the outside world. The farmers of Oregon do not seem much interested in the subject of their county roads, and I venture to say, that if they would spend less time in discussing politics, free trade, protection, national finance, etc., and pay more attention to the improvement of their roads and highways, that their neighborhood would be greatly benefitted. The farmer who has to take his produce to market over bad roads, cannot compete with him who has the advantage of good road facilities. The price of all commodities at the market being fixed by the markets of the world, the farmer gets the same for what he sells, and pays the same for what he buys whether he has to haul over bad roads or good, whether he lives one mile or ten from the station. So the whole cost of hauling comes out of his pocket, and to make this as small as possible, the roads should be improved.

Let us now briefly discuss the essential qualifications of good roads. If practicable a road should be made straight, as an unnecessary excess of length involves a great amount of time, labor and capital in building and keeping in repair the unnecessary length. Very frequently this general rule cannot be adhered to, for obstacles often necessitate various degrees of curvature, as it is sometimes necessary to curve them on account of economy in construction; such as to avoid swampy or dangerous locations or large excavations or to reach points on streams better suited for bridges. Again, it is often necessary to curve them in order to avoid hills, as this is generally cheaper. Amongst the early settlers safety and health were considered of much more importance than good road facilities, and consequently the rules of road making were not generally complied with.

The houses were usually built on hill tops to escape the poisonous miasma and the scalping knives of hostile savages. The first roads were merely foot paths, being traveled only by men and pack horses, and therefore followed the shortest, though steepest routes. These paths were next turned into roads for wagons, and finally these random tracks became the legal highways. Another reason given for the poor location of some of our roads, is that farmers will not allow them to run through their farms in a winding line. They attach more importance to the squareness of their fields than to the improvement of their roads. They do not seem to be aware of the fact that more labor is wasted in traveling over steep roads and around unnecessary corners than there would be in cultivating an awkward corner of a field. In our own state this is carried to such an extent that the roads have to be run along the section and sub-section lines, so that if the farmer wishes to pay his neighbor a social

or business visit, he has to travel in rectangular zigzags, after going two or three miles out of his way. Such a method should not be perpetuated, but should be dropped as soon as possible.

Secondly, other things being equal, every road should be nearly level. If not, the load will have to be greatly diminished, as a great part of the strength of the animal is exerted in overcoming the hill. Inclinations being always injurious are especially so where a single slope occurs in a long line of comparatively level road, because the load has to be reduced to what can be hauled over this hill. It is generally deemed cheaper to go half a mile around a hill than to go over one one hundred feet high. If possible to avoid it, a road should never have a grade of more than one foot in thirty-five, or less than one in one hundred and twenty-five, as without the latter we cannot have perfect drainage.

Third; we will consider roads as to their cross section. Very few roads in this country are properly shaped, and it is seldom that any attempt is made to shape them at all. But when an effort is made the cross section is generally that of convex curve, approaching a segment of a circle, which is an improper form, it being impossible to obtain perfect drainage in this way. The best cross section is that of two inclined planes, meeting in the center of the road, the degree of inclination depending upon the surface of the road, it being always greatest where it is rough. This does not apply to roads on hill sides. They should be higher on the outside, and lower on the inside, the ditch being next the hill. With this exception, all roads should have two ditches, as it is an indisputable fact, that without good drainage we cannot have good roads. The proper width of a road depends upon its importance and the amount of travel over it, its minimum being sixteen feet, which is sufficient to enable two wagons to pass with ease. A width of thirty feet is sufficient for any road, except one which forms the approach to a large city or town, which of course should be greater. A common road wider than this is not simply a waste of land, but also the time and labor necessary to keep it in repair. Hardness and smoothness of surface are the next requirements of a good road, and without some artificial covering, these essentials cannot be attained.

Another object of this covering is to protect the road from the action of the weather, and not to act as an arch to bear the weight of the vehicle. Among the substances used for this purpose are gravel, broken stone, including McAdam and Telford roads, pavements, and roads of wood, which include corduroy, plank and charcoal. Of all these the plank road is generally considered the best, because it renders transportation so easy, enables such large loads to be handled with the minimum amount of horse power, etc., that in some places it has received the name "the farmers railroad." In presenting to you this imperfect sketch of the important principles of road making, it has not been my intention to go into the many details, as this would require more time than has been given me. But I have simply endeavored by impressing upon you a few of the more important principles, to arouse some interest in this important though greatly neglected subject. As so much of the well-being of a country depends upon its roads, more interest should therefore be taken in the subject by all classes of people, and this can only be effected by a discussion of such subjects.

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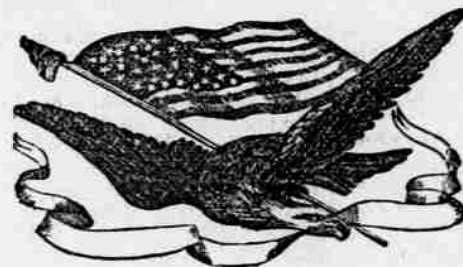
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