

ENGINEERING DEPARTMENT.

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Meters.

There is a fallacious idea entertained by many, that with abundance of water supply all restriction on the use and waste of water should be withdrawn. The experience of many years has demonstrated, that with the many modern appliances for drawing and using water in houses, a withdrawal of all restrictions would be followed by such enormous waste either through neglect, thoughtlessness or want on lavishness, that even a larger supply than our water shed could furnish, would be so crippled that the honest consumer would soon suffer through insufficient supply. The evil effect would be general, as well as local. In many cases the local effects of water are brought to the attention of the department by the complaint of tenants on the upper stories of houses, that they are unable to get a fair water supply or any water at all. In a large majority of these cases the cause is found to be excessive waste on the lower floors. In like manner, excessive waste in one building or a group of buildings deprives the immediate neighborhood of its full supply. Leaks in defective plumbing in houses are a greater cause of waste than all other causes combined. Many a house owner and tenant has discovered that, to his sorrow on the presentation of bills at meter measurement and meter rates. The water meter thus becomes the most efficient detective and preventive of waste. The house owner who from false economy, penuriousness, or neglect, uses cheap and flimsy plumbing, or lets his plumbing become and remain in leaky condition is rightfully subjected to the penalty of paying for the water wasted. The honest and careful householder who provides good plumbing, looks after it and uses proper precaution against waste, finds that his meter bill runs no higher than the bills which he had to pay before he was compelled to have a meter.

Good Road Pointers.

Do a little to your roads each year, but do that little well.

Ditching and draining to dispose of water, the persistent enemy of good roads, ought to have careful and vigilant attention.

Road overseers, who have charge of making our roads, are too often inexperienced in making plans or in directing road construction and road repairs.

Trained roadbuilders, working from definite plans, will eventually educate the farmers to be competent roadmakers.

Too much care cannot be bestowed on the foundation of roads.

Pumping Machinery

The work required in a pumping station is of necessity, severe and exacting to an extreme, inasmuch as the safety convenience and comfort of the entire community depends upon it. It is therefore important that the pumping machinery should not only be durable, simple and accessible, but that it should be so constructed as to best merit all the requirements, including greatest efficiency, economy in operation and a reasonable first cost.

There are many types of pumping machinery in the market, so that with the proper adoption of a pumping engine to its work, a selection can be made that will assure the most satisfactory results. Costly errors often if not always follow such attempts as are frequently made to reach excessive results, which a very moderate extent of information would have convinced purchasers were entirely unattainable within the scope of practical steam engineering.

The first and most important duty of a pumping engine is to pump water, and to do so continuously, steadily and with certainty. The cost of the pumping machinery alone, generally does not exceed ten per cent. of the total cost of the water-works plant; therefore it logically follows, that the first cost of such machinery is of considerable less importance than its quality; it also follows with equal logic, that after putting ninety per cent. of a certain sum of money into pipes, hydrants, valves, etc., it is folly to allow the remaining ten per cent. to represent anything less than the very best pumping machinery.

Coming directly into contact with the pumping engine problem the first question is reliability. That settled within reasonable limits, that engine is to be preferred which in the course of several year's experience represents the least money expended in proportion to useful work done. In making up this statement of account the principal items are repairs, fuel required for the pumping, interest on cost of engine, and first cost of the machinery and appurtenances, their relative importance being in the order stated. The reliability of the engines being conceded equal, the engine representing the lowest total sum expended for the indicated years is the cheapest. In considering this matter there is a very natural tendency to attach the most importance to those that are the easiest seen, although something equally important or still more vital may lie under the surface unobserved except by an experienced eye. Men are liable to ride hobbies in one direction only, instead of considering the question in all its bearings and for the best general results. Of all the factors which come in for consideration, there is no single one which attracts as much attention as the item of fuel consumed, or in other words as the economic duty of the engine; that is the quantity of water pumped for a given amount of fuel.

The Perfect Road.—Showers Blessings
Right and Left as it Wends
Its Silent Way.

The following extract is from a speech delivered at the Minnesota good roads convention :

Every one's income is divided into two parts. One of these he is compelled to make use of in supporting existence; the second part is disposed of in the way which his judgement tells him will be best. This leads to the inquiry whether our surplus is judiciously spent. Are we buying the greatest amount of comfort and permanent good with the portion left at our disposal? Would not model roads be of greater benefit than our tobacco, liquor, tea, circus and other show moneys bring? Would they not more than balance the good times we have hauling our produce through rough miles of mud, at such fearful cost, in extra labor, repairs, horses, oats, in wear and tear of conscience and damages to character?

It is certain that bad roads make weak, struggling churches and poor, ill attended, lifeless schools. They necessitate a life of seclusion which walls the path of social progress.

To sum up, a perfect highway is a thing of beauty and a joy forever. It blesses every home by which it passes. It brings into pleasant communion people who otherwise would have remained at a perpetual distance. It awakens emulation, cements friendship and adds new charm to social life. It makes the region it traverses more attractive, the residences more delightful. It stimulates a spirit of general improvement. Fields begin to look tidier, shabby fences disappear, gardens show fewer weeds, lawns are better kept, the houses seem cozier, trees are planted along its borders, birds fill the air with music, the world seems brighter, the atmosphere purer. The country is awake, patriotism revives, philanthropy blossoms as selfishness fades and slinks from view. The schoolhouse and the church feel the magic influence—the wand of progress has touched even them, the old are young again, the young see something now to live for, and to all life seems worth the living. The daily mail reaches each each home. The rural cosmopolitan "feels the daily pulse of the world."

That was a good rebuke which an English bachelor is accredited with giving his sister, who wrote asking him to look up a governess for her daughters, enumerating the list of talents and virtues she would require, on a salary of \$400 a year: "I'll look out for one, certainly," he wrote in reply, "but if I find a lady all that you describe, I shall marry her, if she will have me."