

Broad Tires and Good Roads.

Since the cost of transportation has a very important bearing upon a farmer's and particularly a dairyman's profits, the improvement of our roads is one of the live topics of the day. At the Western Ontario cheese and butter convention, reported in a late issue, Mr. A. W. Campbell, Provincial Instructor in Roadmaking, pointed out that the haulage of milk to a factory over a good road averages a cost to the producer of three-quarters of a cent per pound of cheese, and over a bad road just twice that amount. Were all our roads good it was pointed out that half a million dollars could be saved in haulage each year in this one industry. Each factory, too, could draw from a larger territory and with greater expedition, which would still further reduce the cost of manufacturing, by reason of the need for fewer factories and men. What is true in cheese factory districts applies equally well where creameries manufacture the exportable product; and also in other sections where haulage and traffic are necessary.

During the last few years considerable effort has been made to have a more generally uniform system of road building adopted. This is undoubtedly striking at the root of the evil, as one cannot but see that even a slightly different system in the many small road beats, directed by ever-changing and incompetent instructors, must result in a great lack of progress and improvement. We cannot hope, however, to see an ideal system worked out and accepted by the entire country, or even by counties or municipalities, within a short time, but while the desired change is being gradually brought about, individuals or neighborhoods can do much to preserve the condition of the roads, lanes and fields, with less draft on their horses, by the use of wider tires on their wagons. The amount of advantage has been arrived at by carefully conducted tests of the draft of wide and narrow tired wagons made at the Missouri Agricultural Experiment Station during the past two years on macadam, gravel and dirt roads in all conditions, and on meadows, pastures and plowed fields, both wet and dry. The draft has been determined by means of a self-recording dynamometer. The net load was in every trial the same, viz., 2,000 pounds. Contrary to public expectation, in a large majority of cases the draft was materially less when tires six inches in width were used than when the tests were made with tires of standard width—1½ inches. The following is a summary of the results:

1. On macadam street, as an average of the two trials made, a load of 2,518 pounds could have been hauled on the broad tires with the same draft that a load of 2,000 pounds required on the narrow tires.
2. Gravel Road.—In all conditions of the gravel road, except wet and sloppy on top, the draft of the broad tired wagon was very much less than that of the narrow tired wagon. Averaging the six trials, a load of 2,482 pounds could be hauled on the broad tires with the same draft required for a load of 2,000 pounds on the narrow tires.
3. Dirt Roads.—(a) When dry, hard, and free from ruts and dust, 2,530 pounds could have been hauled on the broad tires with the same draft required for 2,000 pounds on the narrow tires. (b) When the surface was covered with two or three inches of very dry, loose dust, the results were unfavorable to the broad tire. The dust on the road in each of these trials was unusually deep. (c) On clay road, muddy and sticky on the surface and firm underneath, the results were uniformly unfavorable to the broad tires. (d) On clay road, with mud deep, and drying on top, or dry on top and spongy underneath, a large number of tests showed uniformly favorable to the broad tire. The difference amounted to from 52 to 61 per cent., or about 3,200 pounds could have been hauled on the broad tires with the same draft required to draw 2,000 pounds on the narrow tires. In this condition of road the broad tires show to their greatest advantage. As the road dries and becomes firmer, the difference between the draft of the broad and narrow tires gradually diminishes until it reaches about 25 to 30 per cent. on dry, hard, smooth dirt, gravel or macadam road, in favor of the broad tire. On the other hand, as the mud becomes softer and deeper, the difference between the draft of the two types of wagons rapidly diminishes until the condition is reached when the mud adheres to both sets of wheels; here the advantage of the broad tires ceases entirely, and the narrow tires pull materially lighter. (e) Clay road, surface dry, with deep ruts cut by the narrow tires in the ordinary use of the road. In every trial the first run of the broad tire over the narrow tire ruts has shown a materially increased draft when compared with that of the narrow tire run in its own rut. The second run of the broad tires in the same track where the rut is not deep completely eliminated this disadvantage, and showed a lighter draft for the broad tire than the narrow tire showed in the first run. Where the ruts were eight inches deep with rigid walls, three runs of the broad tire in its own track over the ruts were required to eliminate the disadvantage. Three runs of the broad tire over this track have in all cases been sufficient, however, to so improve the road surface that both the broad and narrow tired wagons passed over the road with less draft than the narrow tires did in the original ruts. In addition to the saving of draft, the road was made very much more comfortable and pleasant for the users of light vehicles and pleasure carriages by the few runs of the six inch tire. Summing up all the tests

on dirt roads, it appears that there are but three conditions on which the broad tires draw heavier than the narrow tires, viz.: (1) When the road is sloppy, muddy or sticky on the surface and firm or hard underneath; (2) when the surface is covered with a very deep, loose dust and hard underneath; (3) when the mud is very deep and so sticky that it adheres to the wheels of both kinds of wagons. It appears that the draft must be extraordinarily deep to show a higher draft for the broad than for the narrow tires. The three conditions just named, therefore, are somewhat unusual and of comparatively short duration. Through a majority of days in the year and at times when the dirt roads are most used and when their use is most imperative, the broad tired wagons pull materially lighter than the narrow tired wagons.

4. A large number of tests on meadows, pastures, stubble land, corn ground, and plowed ground in every condition, from dry, hard and firm to very wet and soft, show without a single exception a large difference in draft in favor of the broad tires. This difference ranged from 17 to 120 per cent.
5. It appears that six inches is the best width of tire for a combination farm and road wagon, and that both axles should be the same length, so that the front and hind wheels will run in same track.

Contents of Stacks.

The following rules may be considered practically accurate for ascertaining the contents of hay stacks. For circular stacks, square the average girth, multiply by .07958, multiply this by the perpendicular height—all in feet—gives the contents of the stack in cubic feet. For the conical top take area of eaves (girth at eaves squared, multiplied by .07958) and multiply by one-third the perpendicular height. For oblong stacks with perpendicular ends, multiply the length by the average width, and the product by the height from the ground to the eaves. For the top multiply the area at the eaves by half the height to the ridge.

The weight of hay per cubic yard in the stack varies from 112 pounds to 300 pounds, depending on the nature of the hay, the size of the stack and the part of the stack taken. A cubic foot of hay usually runs from seven to nine pounds. For the different conditions of hay and stacks, the number of cubic yards to a ton will approximately vary as follows:—

	Square Stack. Cubic Yards.	Round Stack. Cubic Yards.
If not well settled.....	12	13
If fairly well settled.....	10	11
If very compact.....	8	9

DAIRY.

Aid for an Algoma Dairy Enterprise.

W. H. EVOY, Bar River, Algoma, Ont., writes us as follows:—"In October we called a meeting of the inhabitants of two townships, and organized for a cheese factory; chose the site, which is all that could be desired for situation on the boundary line between Laird and McDonald townships; elected our officers for a joint stock company, with 400 shares of \$5 each (\$2,000). We sold 300 shares, and have about 275 cows signed to start with, and will have no trouble getting 500 cows in two years, but now the trouble begins. We have not found any place yet where we can get the money to build with at a reasonable rate. We are willing to pay 6 per cent.; the security is good. Now, can you tell us where we may raise the money? Amongst your many friends and acquaintances we think you have plenty of moneyed men."

Mr. Tillson's Reply to Mr. Linton.

To the Editor FARMER'S ADVOCATE:

SIR,—In answer to your correspondent, I. Linton, on page 129, FARMER'S ADVOCATE of 15th March, asking how I get the milk through a 1½-inch pipe 30 rods to the piggery without having the pipe clog. I beg to say that I have had no trouble in that way. The floor of my separator room is about five feet above the ground level, and the steam boiler room is two feet below ground level; the back end of boiler room is partitioned off for skimmed milk room, the floor of which is six feet lower than separator room. In this room there is a large double milk vat, similar to a cheese vat, holding 80 to 100 gallons, arranged for cold spring water or steam to pass through in space between the two vats so that we can cool the skimmed milk directly after separating, and when we wish to use it for feeding calves or pigs we let in the steam and heat it very quickly. This vat sits up about four feet from the floor. The milk runs from the separator in a tin trough into this vat, then into the 1½-inch pipe leading to hog house. We run live steam through this same pipe for heating and cooking feed in the hog house. There is a regular fall all the way from creamery to the hog house of one inch to the rod so that the milk all runs clean out of the pipe. At the upper or creamery end of this pipe we have a direct fall of from three to four feet from the large receiving vat into this 1½-inch pipe, which gives a small pressure to start it off rapidly, and as the milk stands some little time in this vat, after separating no froth enters the pipe to clog it, and then this pipe has a connection at the upper end with waterworks pressure, so that after passing the milk through we open a tap and let a strong force of water flush through. We have not had the least trouble with the milk clogging in the pipe or

sticking fast to the pipe from the heat of the steam, which I was most afraid of. I intend to have an arrangement whereby I can open or shut all or each of these three taps at the upper end from the hog house or lower end by having three wire cables running from the hog house to creamery and connected with each stopcock—milk, water, and steam—and worked same as a railway semaphore, all to be worked from the hog house end.

E. D. TILLSON.

Annandale Farm, Norfolk Co., Ont.

Kerosene Emulsion for Lice on Cattle—Liniment for Garget.

To the Editor FARMER'S ADVOCATE:

SIR,—In perusing the pages of the ADVOCATE I notice quite often parties asking for cures for lice on cattle. You answer the questions well. My cure is as follows: Say for 50 cows take 4 pounds hard soap (common), cut it into small pieces or shave it up into a kettle, put 2 or 3 quarts of water with it, and boil till it is all dissolved. In a pail put 6 quarts coal oil. Now pour your soap into the pail, and mix thoroughly soap and coal oil together away from the fire. Take a barrel and pour the mixture into it, and add 6 gallons of soft water, stirring all well together, and it is ready for use. With this bathe your stock well; don't be afraid to apply it liberally and thoroughly all over the animal. Then in 24 hours take curry comb and brush and brush them well. If they are bad give another bath in 2 or 3 days, as some eggs and stray lice may be missed. Then look and see how clean your stock will be. The old hair will come off freely, the scurf will be loosened up, and if you curry them well your stock will be and feel 50 per cent. better, and will then thrive and do well.

Another Recipe.—If a cow has got her udder externally hurt by being hooked, struck, or by climbing over some obstruction, as is often the case, bathe the parts well with hot water, and then dry well by rubbing with a coarse cloth, then apply goose oil, 1 part; coal oil, 1 part; spirits of turpentine, 1 part; all well mixed together; apply liberally, and rub well in twice a day. If she is a fresh cow and in high flesh she may have a good deal of fever in her udder. Feed her lightly, and give her a dose of opening medicine—1½ pounds Epsom salts and 2 ounces ginger, dissolved in 2 quarts warm water—before she calves, and one after a few days; if bad case add teaspoonful saltpeter in dose after calving. Give warm drinks for 2 or 3 days. Use liniment same as above, and your cow will come through all right in most cases.

Silver Spring Creamery, Pa.

I. LINTON.

Some Holstein-Friesian Butter Records—Canadians in It.

At the annual meeting of the Holstein-Friesian Association of America, held March, 1897, the board of officers was authorized to offer \$1,250 in prizes for authenticated weekly butter records, made under the supervision of the officer of some experiment station. In connection with the published schedule of records of the cows competing for these prizes for the official year 1897-8, it is explained that the principle which governs in the awards is similar to that which governs in handicap races, when different ages compete. The ages are placed on such a footing that all, as near as possible, have an equal chance of winning. A graduated scale of requirements, increasing with every day of increased age from two to five years, is fixed. The requirement at two years is 9 pounds, at five years 15 pounds. The increase for each day is .09 of an ounce, and each cow is credited with the percentage she makes in excess of requirement, and the total result is the equivalent record at full age in pounds of butter on the basis of 80 per cent. fat.

It is gratifying to find that in this great record of tests some Canadian cows take a very high stand: Calamity Jane, owned by A. & G. Rice, Currie's Crossing, Ont., being only surpassed by one full aged cow, which was Helena Burke, owned by Henry Stevens & Sons, Lacona, N. Y., while Inka Sylvia, owned by G. A. Gilroy, Glen Buell, Ont., a three-year-old cow, with the allowance for age, scored the highest of the 68 cows in the competition. The equivalent record for these three cows, therefore, stands as follows:

Name of Cow.	Age, Years.	Pounds of Milk.	Average Per Cent. of Fat.	Total Score.
Inka Sylvia.....	3	568½	3.69	39 lbs. 0.78 ozs.
Helena Burke.....	7	654½	3.11	25 " 7.28 "
Calamity Jane.....	6	560 15/16	3.44	24 " 2.21 "

The Essentials to Success in Dairying.

E. C. Bennett, of Iowa, writing to the American Creamery, thus summarizes the essentials to success in dairying:

"The farmers here have already learned that there are three essentials to success in these days of close margins: yea, four of them: A good flow of milk, sufficient fat contents, persistency in 'holding out,' and economical use of the food consumed. The last requirement is now seen to be the most vital one of all. What boots it if a cow gives a wash tub full of milk twice a day, testing way up in F sharp, if it takes a dollar's worth of feed to produce ninety-five cents' worth of butter? The pivotal point upon which loss and profit stand poised is the selection of cows of the type, temperament and heredity which you can train to produce the most butter-fat from a given quantity of food."