

battle. One of the best  
the County lies along the  
le and Merrickville, just  
y of Carleton. The day,  
lieu of a wider excursion  
previous visits, we sought  
Kemptville Agricultural  
actical and enthusiastic  
intendent, a real start  
p of a valuable education-  
mers of Eastern Ontario,  
ature of the farm, and in  
d swine very creditable  
oward the upbuilding of  
institution.

as a pasture crop, and  
satisfaction. An experi-  
of a field cut for hay to  
be induced to grow later  
erience gained last year  
we would be led to think  
e varieties of oats are  
side by side, the varieties  
d Alaska. The season,  
the results, although the  
e inches above the other  
-acre sheep, pasture of  
there are large acreages  
Ontario, is being experi-  
rough to hold the plow  
red with King Devil, a  
Mr. Bell is trying to  
d grasses after merely  
seeding is just showing  
e meantime, however,  
run over both the new  
ass. The hope is that  
dowed out and replaced  
e.

Bell, are growing very  
se of a scarcity of labor  
itions as well as any  
to keep down. Noticing  
in some of the spring  
should be so prevalent  
d received in reply some  
advisability of purchas-  
ties to use on the farm.  
re were very few thistles  
ct, but, due to the wet  
se of the fact that the  
e quantity necessary to  
the necessary amount was  
result that manure full  
urce of manure had to be  
advocate of clover, and  
combined with a short  
to grow clover on almost  
lds on the farm are in  
ve were informed, the  
anure to well-cultivated

## M MACHINERY OTORS.

## oubles.

ension ignition troubles  
spark plug which are  
the surface of the plug  
in the cylinder, or  
deposit a coating of  
e plug and then the  
ing the first symptom  
result, if the deposit is  
fres examine the plugs  
the ignition apparatus.  
ductor for high tension  
s resistance than the  
y other things follows  
akes a short cut through  
ng the gap and causing  
removed from a spark  
d a tooth brush. To  
w the bushing and re-  
w from the metal shell.  
ation, which should be  
ghly over its entire  
examine the porcelain  
found, no matter how  
wn away and another  
porcelain will always  
on will be deposited  
ugh surface of which  
the soot. Soot does  
oth surface.

it remove it from the  
lay the plug on some  
such a way that only  
with the engine frame.  
or wire to touch the  
s, make sure that the  
s are passing between  
e sparks appear at the  
ar are thin and weak,  
ect the wire from the  
gh tension wire one-  
e frame and close the  
bright sparks occurs  
the frame, the trouble  
it or replace broken

insulation. Sometimes the soot or oil deposit is not heavy enough to entirely short circuit the spark gap and only part of the current will flow through the carbon film. This is known as a "partial short circuit." If a partial short circuit exists, the spark at the gap will be weak and without heat; the result will be intermittent, or misfiring with a loss of power. Moisture in the cylinder is a common cause of plug short circuits, the moisture coming from leaks in the water jacket or from the condensation of gases in a cold cylinder. A drop of water may bridge the spark gap, allowing the current to flow from one electrode to the other without causing a spark.

If a cloud of bluish-white smoke has been issuing from the exhaust pipe before the misfiring started, you will probably find that the trouble is due to a sooted or short circuited plug. The remedy is to decrease the amount of lubricating oil fed to the cylinder. If the smoke is black adjust the amount of fuel fed to the engine until the exhaust is clear. If misfiring still persists the trouble will be found in the plug.

When a magneto is used the intense heat of the spark causes minute particles of metal to be torn from the electrodes and deposited on the insulation as a fine metallic dust. This will, of course, cause a short circuit and must be removed. Short circuits are sometimes caused by the magneto current melting the electrodes and dropping small beads of the metal between the conductors. All metallic particles should be removed from the plug. While a spark plug may show a fair spark in the open air test, it will not always produce a satisfactory spark in the cylinder on account of the increased resistance of the spark gap due to compression. Compression increases the resistance of the spark gap enormously and thin, highly resisting carbon films that would cause very little leakage in the open air will entirely short circuit the gap under high pressure, the current taking the easiest path which in the latter case is the carbon deposit.

In order to produce conditions in the open air test similar to those in the cylinder we must devise some method of increasing the resistance of the spark gap in the open air above any possible resistance that could be offered by the carbon film. Placing a sheet of mica or hard rubber between the electrodes, or in the spark gap, will increase the resistance to the required degree. If the spark plug is in good condition the spark will jump from the insulated terminal to the shell when the mica is in the spark gap, but if a short circuit exists the current will go through it without causing a spark. It is assumed that the battery and coil are in good condition when making the above test. If the electrodes or spark points are dirty they should be cleaned with fine sand paper, special attention being paid to the surfaces from which the spark issues. When reassembling plug after cleaning, be careful that all gaskets and washers are replaced in their original positions and that the length of the spark gap has not been changed. A little change in the length of the spark gap may make a great difference in results.

A good spark is blue white with a faint reddish fame surrounding it; with a very short spark gap, the flame cannot be readily distinguished. When the spark discharge is intermittent or when a shower of small sparksputter out in all directions, it is probable that the plug or coil is short circuited. Try a new plug, and if the same result is obtained, test out the coil for short circuits. When testing, handle high tension plugs and wires by the insulation. If contact is made with the bare wire or metal parts, you will receive a disagreeable shock.

Do not hold your face close to any cylinder opening when conducting a test, or when using the ignition current, as the residual gas in the cylinder may become ignited and cause you serious injury. Mica plugs are often so saturated with carbonized oil that gasoline will not remove enough to clear the short circuit. If the oil has not penetrated the insulation more than one-sixty-fourth of an inch, the affected portion may be cleaned off with emery cloth, or by turning in a lathe. It is generally cheaper, however, to buy a new core or to send the old one to the maker. If the core is thoroughly oil soaked, and has loose mica washers, it is best thrown away, as no amount of cleaning will remove the dirt. It is advisable to tighten the lock nuts that hold the mica washers, occasionally, to insure against oil getting in between the layers of mica. Loose mica may cause compression leaks. The electrode ends or spark points may be burnt off by the heat of the explosions or by the action of the magneto spark and cause an open circuit. The easiest way to determine an open circuit in a plug is to disconnect the wire from close battery switch, and hold the end of the wire about one-eighth of an inch from the plug terminal. If no spark passes between the end of the wire and the terminal, the plug has an open circuit; that is, the current is prevented from reaching ground, and under these conditions no sparks will be produced. A particle of insulating material such as mica may get between the spark points and cause an open circuit. Always have a spare plug on hand.

### Adjusting the Spark Gap.

Ordinarily the length of the spark gap or the distance between the electrodes should be about one-thirty-second of an inch, but with weak batteries, a poor coil or a high coil or a high compression, it may be advisable to reduce this distance. A coil may be capable of delivering a spark one-half an inch long in the open air and yet may not be able to cause it to jump a gap of one-thirty-second of an inch under the compression of the engine. Compression greatly decreases the effective length of the spark gap and the heat of the spark. Shortening the gap increases the heat of the

spark; nothing is gained by having it over one-thirty-second of an inch in length.

If the engine misfires with a good plug that is free from soot, the trouble will be due probably to the length of the spark gap. If misfiring continues, shorten the gap slightly and note the effect. If this improves the ignition, try shortening the gap still farther until the best results are obtained.—From "Gas Engine Troubles and Installation."

### Hitching to Tractor.

An owner wrote that he could not keep the front wheel of his tractor out of the furrow. An expert was sent out at once. He found that the plow hitch was poorly made. The plows were hitched too short. Also, the hitch was made so that it added considerably to the side draft and made it necessary to run the tractors too near the furrow. The field man changed from a cross chain hitch to a swinging draw-bar hitch. He also put the plow nearly a foot farther from the engine. The owner objected seriously. "Why," he declared, "that hitch is so long that the plow can't be pulled. Besides the plow won't run straight." "We can tell better by trying," the field man replied. To the owner's great surprise the plows actually pulled easier while the tractor was much easier to steer than before. More than that, it travelled six inches farther from the edge of the furrow.

Many tractor owners have the notion that a close hitch requires less power than a long one. This comes from the fact that horses pull better with a low short hitch. But the tractor has enough weight on the ground. Hence a long hitch allows the plows to rest on its own wheels and not be partly carried by the tractor. More important is the fact that the longer hitch means less side draft and easier steering. Besides, the plows follow the furrow better. A good plan is to use a fairly long draw-bar hitch and only shorten it when plowing out the headlands when finishing a field.

## CANADA'S YOUNG FARMER'S AND FUTURE LEADERS.

### Building a Community Spirit.

Not long ago we were visiting one of the counties in Eastern Ontario, in one section of which great plans were being made for a large gathering which was to mark the beginning of a project to build a suitable Community Hall which would serve as a gathering place for the people of the community, both young and old, as well as serve as a fitting memorial to the gallant boys from the district who had served in the Canadian Expeditionary Forces overseas and lost their lives. Thinking of this idea, we could conceive of no better way by which to mark the sacrifice made by the young men of the farms during the past four years of war. The question as to why boys and girls leave the farm is so old and so much mooted as to almost incline one to pass it over, and yet it is a very serious problem in the development of agriculture. The lack of community spirit is a very serious drawback in many farming districts at the present time. It breeds a disregard for sociability, neighborliness, and all of those things which go to make for a happy existence along with the hard, strenuous work of the farm.

The young men who still remain on the farm can do a very great deal to further this spirit of sociability in the neighborhood, if they will but make the start, and as a centre for activities of this nature that will lead to a further development of social life in the homes of the neighborhood, nothing can be much better than a neat, commodious Community Hall, where farmers and their families may gather upon occasion and thoroughly enjoy themselves. Such a building should, if at all possible, and in most rural districts there is nothing to prevent it, be surrounded by grounds large enough for holding games, such as baseball, football, tennis or perhaps bowling, if there should be sufficient people in the district interested. It is not at all difficult to find games among the hundreds that are played that would be suitable and enjoyable to both old and young. If farmers could only play as hard as they work, farm life would not be half as oppressive as it is at the present time. Not long ago we witnessed a very interesting baseball game in a small town, and learned that some of the best players on either side had come as much as five or six miles in from the surrounding country to take part in the game. Even the older people will thoroughly enjoy games of this kind, and the friendly rivalry between one side and the other will serve to further the community spirit, besides making the succeeding day's work easier.

Not all boys and girls can be kept on the farm, and as far as the growing farm boy is concerned it would be the greatest folly to prejudice, in any special way, his mind for or against any particular calling. At the same time it is of the utmost importance that the farm boy should be allowed to appreciate to the fullest extent the very great part which agriculture plays in the life of the nation. Boys are often inclined to think their fathers' business inferior to some other, but with regard to farming this is more often because the boy has not been allowed or encouraged to see what great scope there is for all his ability and ingenuity. An over dose of hard work often determines the farm boy against farm life but he will not mind hard work nearly as much if opportunities for good, healthy play are not too far apart. Moreover, he needs the comradeship of the other

boys in the neighborhood to make him enjoy himself thoroughly. Loneliness is not a state of existence in which most of us like to find ourselves for long, and when boys are kept too close to their work they naturally acquire a distaste for that particular kind of work.

Farming has for a long time been suffering from certain disabilities which make farm life somewhat unpleasant to contemplate. There is no real reason why this should be so, and greater happiness, far more contentment, and perhaps greater material prosperity would be the result of a development of community spirit. As stated before, the older farm boy himself, and perhaps the younger too, can do a great deal in this way merely by starting the ball rolling. Most of the older folk will be found sympathetic and only too glad to assist in any way possible to make farm life more pleasant for their sons and daughters. Try them out on their Community Hall, or some other neighborhood project. Junior farmers' improvement associations can well take the lead.

## THE DAIRY.

Now is the time to begin fitting the cows for the shows. To show a cow in poor condition is almost like courting defeat in the show-ring.

That scrub bull running in the pasture with the heifers may get them in calf all right, but he is a losing investment. Put some fat on him and sell him for what he is worth—the market price per pound.

Many dairymen are milking fewer cows now than a year or two ago. If only the average production of those left is higher than the average of the herd two years ago, conditions in dairying are improving.

It pays to screen the barns well to keep out the flies. Doors and windows should be darkened during the daytime, and burlap hung from the stable doors will brush many flies from the cows' backs as they go in.

One of the surest ways to bring about increased milk production and greater profit in dairying is to eliminate the scrub bull. His time is coming and strong moves on the part of county pure-bred associations will hasten it.

The price of feed is still high, but so is the price of cheese and butter. One successful dairyman remarked not long ago that the most profitable milk he ever produced was from grain-fed cows on pasture. A little goes a long way.

It is considered a good practice by many to bring the cows in the stable about noon, away from the flies and the hot sun. Only a few days ago we were told by a man who follows this practice that one of his best cows dropped about 10 pounds of milk per day because he was away and she was left out in the fields all day for three or four days.

### Treatment for Caked Udders.

EDITOR "THE FARMER'S ADVOCATE":

Since I have never had a cow lose a quarter from caked udder during the twenty-four years I have been farming, I think that my method of treatment for the trouble may quite fairly be called successful. I have from six to eight cows freshen every year, some of them heavy milkers, so I have had considerable experience. To begin with, I believe there is as much in trying to prevent the trouble as in curing it after it develops. Any cow showing over-much swelling in the udder before calving is put in a roomy box-stall and fed lightly, but not starved, for at least a week before the calf is due. If cake develops after the cow has calved, I try hand-rubbing first. About a-half or three-quarters of an hour will show whether the trouble will yield to hand-rubbing alone, or not. If bathing is necessary I use as hot water as the cow will endure, and this will generally be found to be much hotter than the operator cares to put his hand in, but the heat is absolutely necessary, and I should like to emphasize the fact that I do not consider that bathing a caked udder consists in a ten or fifteen-minute sopping around with luke-warm water and any old rag. I have often found an hour at a time none too long a treatment when the udder was much swollen and caked. When just ready to get at work, about a tablespoonful of liquid ammonia is added to the pailful of hot water, and I always use woolen rags, old blanket or an old woolen sock. I bathe and rub the udder until the cow allows the milk to flow freely, then rub dry with a woolen cloth and draw the milk, and when the udder is soft and pliable an ointment is applied. This ointment is made of any good clean grease, with a teaspoonful of liquid ammonia well worked into a cupful of grease. This treatment is kept up three times a day if necessary, and in bad cases in older cows, I give a midnight treatment too. I have never had a case that didn't yield in about three days, and have often had the trouble controlled in an day and a-half, so that a five-minutes' hand-rubbing after milking, for two or three days, kept the udder in good condition.

For swelling in the udder, where there is soreness, but very little or no cake, a good treatment is to bathe twice or three times a day for half an hour, and then rub dry and apply a liniment made by shaking an egg with a cupful or a cup and a-half of rather mild vinegar in a bottle. When these are thoroughly mixed, a few