

clover came up "as thick as hair on a dog's back," so you see if we had cut it for seed the previous fall we would have had a fair yield. It came up too thick to grow as it should have, so we used it as pasture. When we plowed the field this fall it plowed as nice and mellow as we could wish. No roots of the old stalks were to be seen. They had all decayed.

Last spring we seeded down 25 acres with this legume. It grew so fast that when the grain was cut many of the sheaves were green with sweet clover at the butts. Several farmers around here are complaining of their poor catches of timothy and red clover, and our sweet clover is just the opposite. This "weed," as many call it, sends down a long root, and by so doing it penetrated through to the moisture and grew. We would have been without pasture for our cows and horses if we hadn't sowed sweet clover.

A farmer north of us seeds down with sweet clover and lets it grow till May of the following year, and then plows it down for corn. It is then about one foot in height and it makes a good fertilizer. Farmers need not grumble any more that they have no manure for their corn land. Sweet clover has come to their rescue.

We are going to cut this 25 acres of ours early for hay and the second crop for seed. That is where a great many make a mistake in letting it grow too long a time, if they want the second crop for seed. Some have cut as high as 12 bushels to the acre. What crop pays better than sweet clover, if you get a good stand of the best of hay and say 6 or 8 bushels of seed to the acre. I believe that sweet clover is the coming hay crop.

This winter we are going to cut up the sweet

clover hay, wet it and put a little chop on it, and feed it to the brood sows.

In seeding down with sweet clover be sure your seed-bed is compact. The land doesn't need to be fertile, but the crop doesn't thrive so well on land that is sour. If it is sour give it an application of lime. It seems to do better on any land that is limed. Winter-killing, as with other clovers, does not bother it, as it sends down a long root. In feeding value it ranks as high as alfalfa. You will have no trouble in getting the cows and horses to eat it.

Care should be taken in taking off the hay crop. It should be raked up into small windrows, a couple of hours after it is cut, and then put into small coils and let stand until it is dry. If it is let stand too long after it is cut the leaves will dry up and drop off, and the best part of your hay is then left in the field.

Waterloo Co., Ont.

SUBSCRIBER.

Automobiles, Farm Machinery and Farm Motors.

More Advice for Winter.

There are very few sections of Canada, up to the time of writing, that have not received a touch or two of frost, and so practically everyone realizes that winter is just around the corner. In a moderate sort of a way we have been advising our readers of those little precautions which are necessary in the care of a motor car when the temperature falls below freezing. Every schoolboy knows that iron, when it has been heated, can be pounded and hammered without any danger of creating a break or cleavage. In fact the system of turning metal to commercial purposes has been for all time, a heat-treating method. On the contrary, it is also a well-founded fact that metal which has been allowed to become very cold, at the same time does not fail to get brittle in direct ratio to the number of degrees of frost prevalent, and so as a matter of sound advice in the winter season, let us say that your car which is largely composed of steel and iron prepared by various chemical processes, should be kept as warm as possible. By this we do not mean that a fire is necessary in any building which has been well constructed, but we do insist that an automobile, in which you have invested any considerable amount of money, should certainly not be housed in an old barn or shed or similar building, which does not provide fair protection from the weather. If you persist in allowing your motor to remain in a cold atmosphere, there is bound to be trouble, and above all things, the springs will become so brittle that should you decide to take it out there is every possibility that some of the leaves, and perhaps all of them, will crack upon the slightest provocation.

Regarding your carburetor, we must now call for a different system of operation. Do not fail, before starting your motor, to flood the carburetor by pressing down the tickler repeatedly. When we say flood, we mean that you should so fill the gas chamber that fuel can be either seen, or if you are starting your car in the dark, felt with the fingers. This action is going to save you a lot of trouble and will be economical in so far as the starter and your cranking arm are concerned.

As soon as the severe weather sets in, you should always make sure that your water pump is not freezing up. This applies especially to automobiles stored in cold places. It is not sufficient to say to yourself that you are draining the radiator, because you must know that running off cold water from a mechanism of this kind is not a complete operation, as a certain amount always remains and only a trifling supply is necessary to tie up the water pump. We have always recommended that before the radiator is drained, the engine should be started as this heats the water and furthermore, when much of the water has been drained off, the heating of the motor dries up any little balance that may have been left. If you neglect any of these details and use your starter without first following the necessary precautions, you may break your water pump. When the motor refuses to move, do not attempt to throw it over by hand as this will certainly accomplish a result you do not desire. You can readily realize that in machines that have the thermo-syphon system, there is no worry in the winter time about a pump, although do not take this to mean that we recommend the thermo-syphon as of greater value than the pump idea. In so far as the filling of a radiator is concerned, you can lay it down as a perfectly good rule, that warm water should be used at all times.

Heavy oils and thick greases have a tendency to clog and stick during cold spells, and so while it is necessary that these essentials of lubrication should be used at all times, we cannot too strongly recommend

that your machine be kept immaculately clean at all times. Heavy substances which are likely to contain foreign matter, do not conduce to easy manipulation in any mechanical contrivance. There is no reason in the world why such commonsense advice as this should be ignored. Furthermore, the greater interest you take in your car, the less trouble it is bound to give you, and the more knowledge you will gain from its tremendous possibilities. When you have an hour or two to spend, may we suggest—the use of a gas spray, or even a cloth soaked in gasoline, and thorough cleaning on the effective parts of your automobile that are easily accessible. You cannot do any harm by being a faddist for cleanliness, but you can create a large number of exasperating situations by countenancing the presence of dirt.

AUTO.

Some Facts About Electric Lighting Plants.

Why should you have an electric lighting plant? Because—it is the safest. Most of the fires on the farm start from an upset kerosene lamp or lantern. Electric lights in the barn, the loft and house will remove this source of danger.

It is most convenient. A turn of the switch floods every part of your building with light. No fumbling for matches in the cold. No more groping for harness in the dark.

It is healthy. No fumes, no smell, no wicks to trim, and no chimneys to clean.

A complete electric lighting plant consists of: a storage battery; a dynamo for charging; a switch board; power to run the dynamo, usually a gasoline engine.

This apparatus has been developed to such a degree that every farmer or farm hand can operate it.

How to Choose a Plant.

Storage battery. It is always advisable to get a good-sized storage battery of ample capacity: there are two kinds, one made of glass and the other of rubber.

Storage batteries in glass jars are usually shipped knocked down and assembled on the ground. They are to be recommended for plants of 35 lights and upwards.

Storage batteries in rubber jars.—The batteries are assembled and sealed in the factory and shipped ready for use. They are to be recommended for plants requiring from 10 to 35 lights.

Dynamo.—A belt-driven dynamo gives the best satisfaction. A base with belt tightener should be obtained, as new belts stretch considerably. A speed of 1,800 revolutions is the normal speed. The bearings should be made of phosphor bronze and ring oiled.

Switchboard.—It is advisable to have one large enough, and it should include the following apparatus: an automatic reverse current cut-out protecting fuses. A switch for charging and discharging, an ammeter showing the flow of current when charging.

With rubber-jar batteries it is advisable to combine this ammeter with a watt-hour meter, which registers the amount of electricity stored in the battery.

With glass-jar batteries a hydrometer is used instead of the watt-hour meter. It floats in one of the cells of the battery and always shows the amount of electricity stored.

Look for a substantial reverse current cut-out with heavy contacts. This is very important, as an ordinary reverse current cut-out used for automobiles will not give satisfaction for any length of time.

Engine.—The engine must run at a uniform speed,

and practically any gasoline, kerosene or steam engine with substantial, well-balanced fly wheels will do.

Approximate horse-power required:

10 light plants.....	1½ HP.	
14 ".....	1½ "	
20 ".....	2½ "	2 H.P.
30 ".....	2½ "	2 "
35 ".....	2½ "	2 "
50 ".....	3½ "	2 "
75 ".....	5 "	4 "
100 ".....	5 "	4 "
150 ".....	6 "	4 "
200 ".....	7 "	6 "

How Does the Plant Work?

The engine.—Nearly every farmer who would be interested in electric light knows how to run one.

The electrical part.—The power transmitted by the belt to the dynamo is transformed into electricity. The two carbon brushes on the dynamo accumulate the electricity and it is led through wires into the switchboard where it is distributed as follows: When switch is on charging position the electricity flows into the storage battery. If lights are used at the time the battery is charged a portion of the electricity is led off at the switchboard and used for lighting. When the engine is not running the switch is put on "discharge." Then the dynamo is disconnected and the electricity for the lamps is supplied by the storage battery. There should be an automatic cut-out on switchboard which prevents the electricity from flowing backwards from the battery into the dynamo.

How to Operate a Plant.

It will take from five to eight hours to charge a battery fully. One charge will supply lights for four or five days during the winter, six to ten days during the spring and fall, and 10 to 21 days during the summer.

It is not advisable to exhaust the battery completely but start charging again. A storage battery needs little attention, excepting the electrolyte or liquid, which has to be kept above the top of the plates. This is important and should be attended to at least once every three weeks. Fill up with distilled water or clean, rain water strained through a cloth. Keep excessive dust from the plant. The best place to install this equipment is in a corner of the basement—6 x 8 feet is ample space. It is advisable not to let the temperature get below zero. If there is not room for the whole outfit, keep the battery there. A 24-light plant should do the average farm, and the cost of an up-to-date, efficient plant of this size (14 lights) will run from \$270 to \$300, installed and complete. (Be sure you have skilled workmen put it in and not merely a lineman who can stretch wire.) To this we must add the cost of the engine—and there are many to choose from. Don't get an engine just large enough to run the dynamo, but have a line shaft with the dynamo and several other machines attached (the feed grinder, churn, etc.), and you can charge your batteries while doing other work.

If you look ahead and plan you will never have to run your engine for the sole purpose of getting light. There are many reliable outfits on the market, but it is not necessary to pay \$100 to have this most desirable equipment. We have not attempted to make you think that any one can install such a plant, because they can't, just for the same reason that everybody can't farm successfully.

Canada's Young Farmers and Future Leaders.

Important Notice to Young Farmers.

Since the department for Canada's Young Farmers was started in this paper we have had many expressions of appreciation and it is our desire that the young men on the land work together through these columns for the good of agriculture. We can help you but you can help one another by giving your own individual experiences for the benefit of other boys and young men facing the same problems which you have faced

and successfully solved. Accordingly we are going to assist you by suggesting some topics for discussion. We know you have had experiences and we know that it is much easier to write when you have a subject, and one about which you know through practical success or failure.

Topics For Discussion.

Here is a list of topics and we would invite you to discuss them in the order named. You are at liberty to discuss all of them, each in a separate article, or you

can discuss only one as you choose. Confine your articles to not more than 800 words each. Stick to facts learned by experience. In the competition which we recently carried on in this department, some interesting facts were brought out. Remember we pay liberally for all articles, accepted. You will not be working for nothing if you write for this column. You will get cash—not books or worthless premiums. Look over the subjects as outlined:

1. Mistakes and Difficulties of the Season. This has been a difficult season. Seeding was wet;