to play an air, or a typist who can operate the typewriter, and carry on a conversation at the same time.

Another interesting experiment which has been performed on the Starfish is the following. A Starfish was found to use certain arms more than others in turning itself over after it had been placed upon its back, and not to use one arm in this way at all. The arms most used where held in such a way that they could not be used, and the previously unused arm had to be brought into play if the animal was to regain its normal position. In this way it was "trained" to use that arm, and it was found that it afterwards used this arm, even when the other arms were all free, for two days. Here then we have something analagous to memory.

Passing now to the Mollusca, to which belong the clams and snails, we find that clams close valves of their shells when a shadow falls upon them, but that after frequent repetitions of this stimulus they do not react in this manner, thus showing the effect of past stimuli on subsequent actions and being, as we have seen in the case of other forms which we have considered, a sort of elementary "learning". Some interesting experiments have been carried out with Limpets, snails, which are common on the rocks between low and high tide-marks on the sea coast. Limpets have certain resting places on the rocks which are termed their scars. Out of 21 Limpets removed to a distance of 12 inches 13 returned in 24 hours and 5 more in 48 hours. Of 21 removed to 18 inches 10 returned in 24 hours, 6 in 48 hours and 2 more some days later. When Limpets move the tentacles are projected out beyond the shell and keep touching the surface of the rock, and on reaching their scar they feel round it with their tentacles and twist and turn about until they fit perfectly into it. Their course in reaching their scars is fairly direct. Here we have undoubtedly a case of locality memory, a matter which is of great importance in many of the higher groups, such as insects and birds.

There are many facts of interest in connection with the group to which the Earthworm belongs, the most important for our present consideration being the fact that experiments have shown the existence of many different "physiological states" in the Earthworm. Exactly what is meant by this term will be plain from the following summary of these states:

1. The state of rest, in which the worm does not react readily to slight stimuli, such as a touch with the tip of a glass rod.
2. A state of moderate activity, in which a touch at the posterior end causes movement forward, at the anterior end movement backward, and on the side a turning away from that side.
3. A state of excitement, in which the animal persists in the direction of movement once begun, merely stopping for a few seconds when stimulated at the end which is advancing.
4. A state of greater excitement, in which stimuli merely cause the animal to hasten its movements in the direction in which it has started.
5. A state of still greater excitement in which the worm responds to a stimulus at the anterior end by a rapid "about turn", in which the body is doubled at the middle, the two ends pointing in the same direction, and then the posterior portion whipped quickly about.
6. A state of still more intense excitement, in which the animal responds by raising the front portion of the body and waving it about in a frantic manner.

We find traces of these physiological states somewhat lower down in the scale than in the worms, but they are not exhibited with the perfection which we find here. These states are of much importance in higher forms. The condition of attention which the teacher strives to induce in the pupil is such a state, and the teacher knows that in a state of rest (a listless attitude) the pupil is far less receptive of stimuli than he is when in an alert attitude.

THE HORSE.

Conditioning Horses For Sale.

Between the first of February and the first of May a good many horses in Canada will change hands, and the three factors influencing the price most will be weight, quality and fit. In all such transactions the weight and quality are essentially the first considerations, but in order to please a buyer or to induce a prospective customer to close a deal it is necessary to have the horse in good condition, ready for the market. Buyers from across the border have been operating in Western Ontario during the past month, and they complained considerably regarding the condition of the animals offered. If a farmer has a horse and sells it to a neighbor during February to be used in spring work, the buyer has plenty of time to fit that horse and get it in proper condition for the purpose it was obtained. The neighbor probably knows the horse and will pay what it is worth even though it be thin. So far as neighborhood dealing is concerned an animal may be cashed at its approximate value but the buyer will consider the cost of putting on flesh, and besides, it leaves him a talking point which he will use to make a good deal, and he will be a poor buyer if he dosen't take advantage of it. On the other hand the majority of horses sold during the coming season will pass through the hands of a dealer. When he makes a purchase he intends to put that animal on the market. It may be taken for farm work, dray work in the cities, delivery work, or perhaps a buyer from the other side of the line may pick it up and take his chance of placing it in the United States. No matter where the horse goes the ultimate buyer will want a horse, not the promise of one. Farmers must realize that a horse may be superior with regard to conformation and quality, but thin animals cannot be handled by the trade to good advantage. It is slow business selling horses in poor condition, and the horse dealer will pay for the flesh and a few dollars besides, because he knows that he can turn a well-conditioned beast over without a previous feeding period. More than that, the fitted horse is attractive, while the thin one is passed over till the supply of good ones is exhausted. Newly made furniture without stain or varnish could be used, but what firm would think of offering it for sale? It would not be ready for the trade; neither are thin horses.

Additional flesh improves the appearance of the animal; it gives him a deeper chest, a deeper flank, a wider croup, thicker thighs, and even improves in appearance the strength of coupling and slope of shoulder. It also increases the valuation, for a farm chunk can be raised to the light-draft class, and a light drafter in weight can be made to qualify for the heavy draft class. Quick fleshing and conditioning is not, of course, in the interest of the ultimate buyer, but so long as the trade prefers the fattened animal it is fair enough for the farmer to supply it. Keeping the horse in quietness while increasing the weight would be poor policy for the man who does not intend to sell but purposes using the beast in steady work later on. It is muscle that is needed most in this case, and that can be developed only through exercise and proper dieting. The recommendations which follow are for the man who intends to sell, not the one who buys; this will be quite obvious, but to the latter we shall only volunteer a few words of advice at this time—don't buy fat when it is muscle you need.

Putting on Weight.

When a horse is first put into the stall for feeding see that his teeth are right. Anyone fairly familiar with a horse can make this examination, but it may be necessary to call in a veterinarian to treat for any bad condition that exists. Perhaps the greatest gains can be made when the animal is kept absolutely quiet, or where no exercise is given expect what is unavoidable. All horsemen know what is likely to happen under such conditions, especially with heavy horses. The legs are very apt to stock and trouble with the kidneys ensue. As a safeguard purge the beast with 8 drams aloes and 2 drams ginger, or any other good purgative, at the first, and give laxative feeds. If the animal gives evidence of being run down and requires a tonic or conditioner, give a teaspoonful of the following mixture three times daily: equal parts of sulphate of iron, gentian, ginger and nux vomica.

It has been found by experiment that clover hay is superior to timothy for fattening horses, and if the former kind of hay be fed it will not be necessary to use any great amount of bran, as the two combined make a ration somewhat too laxative. The grain ration must be governed largely by the cost of different feeds, but in any case it is wise to feed a few oats at least. On full feed, horses weighing 1,500 lbs. at the start, will consume from 18 to 20 lbs. of grain per day, along with 12 to 14 lbs. of clover hay. Where corn is used, 12 parts corn and 4 parts oats make a splendid ration with clover hay; but if timothy hay is fed, one part of oil meal should be added. This latter kind of feeding stuff will advertise itself in the coat and general thrift of the horse, but at $50 per ton or more it cannot, at a profit, be fed too extensively.

The boiling of oats and barley for fattening horses is practiced to a considerable extent by dealers. One part of barley to two parts of oats is the proportion recommended, and often bran is mixed with this, after the cooking is done, to take up the excessive moisture and add variety to the ration. This should be fed to working horses at night, and, at all times, in such quantities as will not cause undue laxativeness.

The quantity of any grain to feed must be governed by the size of the horse and general character of the animal. Do not feed too heavily at first, and when on full feed do not destroy the appetite for the next meal by too liberal a ration.

Now that all kinds of grain are so high in price, much could be saved by paying considerable attention to the coat of the horse. Groom him thoroughly at least once every day, and work the comb and brush both with and against the hair. Keep the skin clean and the sweat glands open. A rug of some kind would help to keep dust out of the coat and improve its appearance. Even a well-fleshed beast will not show to good advantage if the hair stands up and the coat is rough and harsh. A little time spent each day in grooming will save many pounds of grain.

Registration in Horses by Grading up.

There are many people who are not aware that certain breeds of horses may be graded up to be pure-breds and allowed registration. The grading system is permissible in Clydesdales, Shires, Hackneys and Standard-breds, and the requirements are as follows:

Clydesdale—The female with four top crosses by sires recorded in the Clydesdale Stud Book of Canada.

Shire—The female with four top crosses by sires recorded in the Shire Stud Book of Canada.

Hackney—The female with two top crosses by sires recorded in the Hackney Stud Book.

Standard-bred—The female with two top crosses by sires recorded in the Canadian Standard-Bred Stud Book.

The breeds which do not admit of registration from the grading-up process are the Percheron, Belgian Draft, Suffolk, Thorough-bred and French Coach. A diagram showing the grading-up process and the purity of blood is as follows:

	1st cross	2nd cross	3rd cross	4th cross
Common mare x Pure-bred sire	Filly ½ pure x Pure-bred sire	Filly ¾ pure x Pure-bred sire	Filly ⅞ pure x Pure-bred sire	Filly 15/16 pure

LIVE STOCK.

Those who have their hands on the pulse of the market, now strenously assert that the hour of Canada's opportunity has come and that we should produce enough meat animals to ensure a dependable surplus so as to conduct an export trade. Canadian meats and meat products have become favorably known in France and Britain and we should do all in our power to cement the relationship between this Dominion and the Mother Country. Last year Canada exported $6,000,000 worth of frozen beef. The market is assured and our possibilities are almost unlimited.

Salting the Horses in Alberta.