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AND HOME MAGAZINE.

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All through the year there are little things, which, if neglected, mean a loss in hard cash. One rail would repair the fence to-day; to-morrow it may require several rails, besides the aggravation of having the stock tramp through the grain, and a few minutes to-day would destroy a new noxious weed in the field; neglected, its seed may spread over the whole farm and cause a good deal of trouble in its eradication. A weak place in the harness might be fixed with a few stitches or a rivet to-day; if put off for to-morrow, it might break and cause an accident. A worn part on one of the farm implements could be replaced to-day when the implement is not in use; if left for to-morrow, it might break and cause delay in a busy season. Time is money in every line of business. If the greatest success would be attained on the farm, every part of the farm equipment and the farmer himself must be efficient.

Now, before the rush of spring work starts, would be a good time to look over the implements and harness to see if any repairs are required. Have the seed grain in readiness, and the horses in condition to make the most of time, when seeding starts. This spring, with the scarcity of help, the work should be carefully planned that the farmer may make every move count to its utmost.

Nature's Diary

A. B. KLUGH, M.A.

The plant formation which we have now to consider is that which is made up of the Sand Plants. As was pointed out when dealing with the various habitats, sand is physically dry, consequently we find among these plants adaptations for conserving moisture. One of these adaptations is that of hairy leaves. A hair is a dead structure and is filled with air, which is a poor conductor of heat, so that the surface of the leaf is protected from the full effect of the sun's rays. The hairs also are white and reflect light, so that the intensity of the light reaching the surface of leaf is diminished. The hairs also further guard the leaf against the effect of drying winds. So numerous are the hairs on some of these plants as to give them a woolly appearance. Another adaptation is the possession of thick leaves with layers of water-storage cells. In some species of Sand Plants the reduction of leaves has gone so far that the leaves have completely disappeared, being represented only by spines, while the function of the leaves has been taken over by the thick, fleshy stems, as in the Cacti. In many of these plants the cuticle of the leaves is very heavy, thus protecting the underlying layers. A very interesting adaptation is found in the grasses of this formation, the leaves of which either fold lengthwise or roll laterally. The way in which these movements are brought about can be understood from a study of Figs. 1 and 2. In Fig. 1 we have a cross-section of a grass leaf which folds. The stomata, as indicated, are on the inner side of the leaf. Near the midrib, on the inner side of the leaf, are two sets of cells, one set on each side of the midrib, called the motor-cells. When the plant becomes dry, these cells lose water and the leaf folds along the midrib, this bringing the inner surfaces of the leaf together and protecting the stomata. In Fig. 2 we have a cross-section of a grass-leaf which rolls up. The stomata are shown in the grooves, and at the bottom of the grooves are the motor-cells, which, when they lose water, cause the sides of the grooves to close together, and consequently the leaf rolls up. As can be seen from the figure, which shows the leaf partially rolled, when the leaf is rolled up, the stomata are in little chambers and are thus protected.

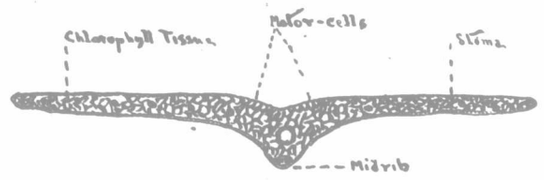

Fig. 1—A Folding Grass-leaf Expanded.

So far we have been discussing the conditions of Sand Plants as a whole, and we have seen that the habitat in which they live is unfavorable enough. But some Sand Plants live in an even more severe environment—on shifting sand dunes. In the case of sand dunes not only do we have all the conditions of a very dry substratum, exposure to intense light and to strong winds, but we have an unstable substratum. This substratum is either being eroded from round the roots and rhizomes (root-stocks) of the plants or else piled up around the plants. Which is taking place depends, of course, on whether the plants are growing in a place from which sand is being blown away or in a place to which sand is being transported.

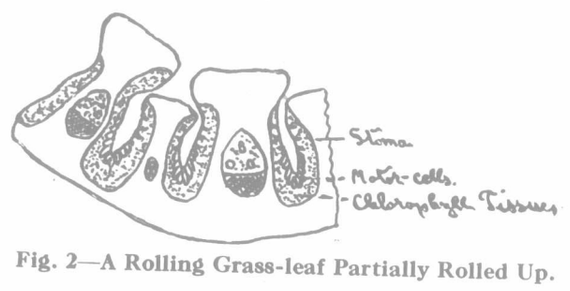

Fig. 2—A Rolling Grass-leaf Partially Rolled Up.

Among the dune plants we find not only the adaptations which we have mentioned above, and which are common to all Sand Plants, but we find the power of rapid vertical elongation of stems, long, rapidly growing rhizomes, and the perennial habit. The first adaptation, that of rapid elongation of stems, is very necessary to those dune plants which are growing in places to which sand is being caried; otherwise the plants would soon be buried by the sand. The long rhizomes give the plants a better hold on the loose and shifting substratum. The perennial habit is far more advantageous to dune plants than the annual habit because only at certain times, that is, during a rainy period, are the conditions suitable for the germination of seeds and the subsequent successful growth of the young seedlings. Also the shifting sand makes a very unfavorable bed for the development of seedlings.

THE HORSE.

Feeding the Horse.

The past season was a particularly trying one on many of the farm horses. The excessive rains, followed by a few weeks dry weather, caused the plowing to be extremely heavy work, especially in the clay districts. Consequently many horses were greatly reduced in flesh. The comparatively high price of fodder has made some farmers a little careless about putting their horses in good flesh. It may cost a little in time and feed to fit the horses, but once the flesh is put on the horse will eat no more than, if as much as, when in a poor condition. Besides, there is more satisfaction in working a well-fitted horse than a thin one; the horse has more life and does the work easier, and is in condition to command the highest price should a prospective buyer come around. Some horsemen appear to have difficulty in fitting their horses, while others find it no trouble. Possibly the difference is in the care more than the feed. The skill of the feeder enters into the very life of the animal.

The idle horse does not require heavy feeding of grain or hay in order to keep him in condition; in fact, it is believed that many horses are injured by over-feeding with hay. The amount that will be cleaned up in one hour and a half is sufficient. It is no cruelty to the animal to have him stand in the stall for several hours each forenoon and afternoon without having hay to eat. The digestive system requires a rest. The feeder must use his judgment regarding the amount of grain to feed. A rule, which appears quite safe, is to feed one quart of oats daily to each 100 pounds of horse, when on ordinary work, the amount of grain to be reduced for the idle horse. Once or twice a week boiled oats, to which has been added a handful of flax seed, may be fed quite profitably. Carrots, turnips or mangels may be fed each day and will assist in keeping the animal's system in good working order. The feeder must study and know the animal he is feeding; cater to its likes and dislikes and groom carefully.

Lameness in Horses, VIII.

SWEENEY.

Sweeney or Shoulder Slip consists in a sprain, followed by atrophy or a wasting away of the muscles of the shoulder, principally those covering the shoulder blade. In severe cases the shoulder joint (the bones of which are held together simply by a capsular ligament, there being no lateral ligaments) appears to slip out and in to a greater or less extent at each step; hence the name, shoulder slip. This lameness is noticed principally in the young horses that are put to work on soft or uneven ground, and especially in young horses that are worked in the furrow to the plow. The horse, not being accustomed to such work, will frequently place the near foot upon the land, while the off foot is placed in the furrow, and this uneven treading tends to sprain the muscles mentioned, and the bones of the joint, being practically held in position by muscles, will, when these muscles have wasted away to a considerable extent, show the slippery action noted.

Symptoms.—Lameness in the early stages is not well marked; in fact, no lameness may be noticed. The earliest symptoms noticeable are heat and swelling of the muscles, which is soon followed by a wasting or shrinking of them. In many cases there being an absence of lameness, the swelling escapes notice. The shoulder blade or scapula is a flat, triangular bone placed upon the ribs and held in place by muscular attachment. On the outer side of the bone is a ridge of bone running from above downwards, almost the whole length of the bone. This ridge is called the spine of the scapula. It divides the scapula into two unequal parts, about one-third in front of and two-thirds behind it. This spine, while easily felt just underneath the skin, in the healthy animal, is not visible, as the muscles on each side are of sufficient size to make the surface practically smooth; but when the muscles become atrophied, it is quite visible as a ridge running from above downwards, with a more or less well-marked hollow on each side. The skin appears to the touch to be quite close to the bone, but there is an absence of heat or soreness to pressure. Inflammatory action has become allayed, and as a consequence swelling has subsided, and as a result of the inflammation, the muscles have become atrophied or lessened in bulk. When the muscles passing over the joint have been involved and have become atrophied, the slipping in and out of the joint during progression is quite noticeable, but in a large percentage of cases these muscles are not involved. Lameness is not pronounced except in cases where this slipping is present. Action is defective, but it is not probable that the patient suffers pain. The lessening of muscular fibre renders the patient unable to use the limb properly. The limb is brought forward with a rotary motion of the foot, and more or less difficulty is experienced in lifting the foot over obstacles. The animal stands sound, and except in the early stages there is no heat or tenderness to pressure. As the disease progresses, the peculiarity of action and the wasting of the muscles become more marked, and in advanced cases considerable trouble in progressing is sometimes noticed. Horses affected with sweeney in an ordinary degree progress with considerable ease on the level ground, but on soft or uneven ground the defect in action is usually well marked.

Treatment is slow. It requires several months to effect a cure in a well-marked case. Treatment must be directed to cause a reproduction of muscular tissue. The muscular elements are still there, but have become so reduced in size and strength that the muscles are unable to perform their functions. It is better to give the patient absolute rest; but, at all events, he must not be used on soft or uneven ground, and should not be asked to do heavy work on ground of any nature. While a little light work on hard, level ground may be given without danger of serious results, recovery will be quicker if he be given rest. In order to cause a reproduction of the muscular elements, it is necessary to set up, and keep up, a local irritation. Different methods are followed. Some recommend seatons, extending from the top to the bottom of the shrunken muscles both in front of and behind the scapular spine. Some recommend often repeated friction with the hand or a smooth stick. Some recommend the daily application of a strong stimulating liniment and some favor repeated blistering. Probably better results are obtained from blisters than from other modes of treatment. The ordinary paste blister, made of two drams each of biniodide of mercury and catharides, mixed with two ounces vaseline or lard gives good results. The hair should be clipped off the surface of the shrunken muscles with a slight addition all around of the sound muscles and the blister well rubbed in. The effect of a blister depends greatly upon the manner of application. In order to get well-marked results it must be well rubbed in with smart friction. The animal must now be tied so that he cannot reach the blistered surface with his mouth, else he will get his nose, lips and mouth blistered, and possibly tear the skin off the blistered parts. In 24 hours the blister should be again well rubbed in, and in 24 hours longer the parts should be well rubbed with sweet oil or fresh lard. He may now