

to be seen in old pastures on surface soils that appear to be identical.

The mineral constituents in a state of solution are brought up by the water from considerable depths, and by this means, amongst others, the geological stratum asserts its influence upon the herbage growing on the surface. It is a great mistake to suppose that the rainfall goes direct to the drains and is at once expelled from the land. On the contrary, the rain sinks into the land until it meets and mixes with the subsoil water, and the drains do not begin to run until the water rises above their level; and while water, however small the quantity, is flowing in a drain, and probably long after it has ceased to flow, it may be taken for granted that the subsoil is saturated with moisture up to the level of the drains. (1) The rise and fall of the subsoil water are therefore determined by the level of the drain rather than by the surface of the soil, as it would be in an undrained state. Thus, in well drained land, the atmosphere is being continually carried into the soil by rain, and forced into it by atmospheric pressure as the subsoil water falls to a lower level, and the air is expelled when the water rises.

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(To be continued.)

### THE CARE AND MANAGEMENT OF GRAZING LAND.

**When to begin pasturing—What stock to put on the grass—When to take cattle off pasture  
Spreading manure—Water; Shade and shelter.**

To graze land properly needs a good deal more thought and care than is generally given. Two main objects should always be kept in view (1) the constant progress of the stock, and (2) the maintenance of fertility in the pasture. Young cattle and sheep must always be kept growing, and the grass should be so fed off as to avoid waste and yet ensure continuous herbage. Allowances have also to be made for differences in seasons. In dry summers what little grass there may be is extremely valuable for its high quality and sustaining power; but when vegetation is rank and sodden with moisture a much larger quantity may

fail to put on flesh. There is an old saying that "the farmer's eye makes the beast fat."

No precise date can be given for beginning to graze pastures in the spring. For instance, cattle will be turned out earlier this year than they were last, the season is much more forward. Cattle should not be turned out until there is enough feed to keep them without too much help from hay, etc., nor until the ground is firm enough to prevent their hoofs from damaging the young shoots of the grasses. On the other hand, if the grass gets too old before the animals are turned out on it, they will refuse much of it and it will not be properly fed down. Even after cattle have made a start, late spring frosts or a persistent cold wind may upset the grazier's calculations, and the stock may begin to go back through scarcity of food. Then a supply of hay, mangels or ensilage will prove a great boon. When sheep begin to graze in mixed pastures they will probably keep the plant down close; but as herbage grows more rapidly, young horned stock should be added, so as to feed down the long grass stems and flower stalks which the sheep pass over.

In temporary pastures, where there is much cocksfoot or orchard grass, neither cattle nor sheep will eat all the stems. When this is the case it is necessary to run the mower over the pasture to prevent a copious seeding of this grass, which, however valuable in suitable proportions, is quite a pest on certain soils when allowed to predominate. It is a good plan to allow cattle to graze in one pasture by day and turn them into a different field at night.

A pasture specially adapted for fattening bullocks should not, as a rule, have a sheep upon it, (1) and a perfect sheep pasture should never have the grass long enough to feed a bullock; but for an ordinary pasture, devoted to mixed stock, probably the aggregate produce will not be used except by a judicious combination of horned stock, horses and sheep. (2)

Nothing evidences a successful grazier more clearly than the skill displayed in taking advantage of the special characteristics of different fields. By so proportioning the stock as to feed the crop down evenly, the pasture is benefited, and by changing the animals from field to field a differ-

(1) Except after the bullocks are sent to market. All the great English graziers put sheep in their pastures in winter. Ed.

(1) Very good and true. Ed.

(2) Horses and sheep both bite close to the ground. Ed.