

grow, and to the succession of their growth throughout the season, and to regulate the herding of the sheep and cattle accordingly.

Even on the very best sheep-pastures, knolls and shelves will be found on which the sheep prefer to pass the night. Their droppings, solid and liquid, as well as the oil exuding from their fleeces, cause such a rank growth of grass on these spots, that the sheep will not graze there, but cattle greedily devour it, and find it highly nutritious.

Cattle graze high; sheep bite, or crop, low: therefore, the two herded together will make the most thorough use of any pasture.

Top-dressing grain.—Where land is full of manure, top-dressing grain is not a wise proceeding: it may very likely produce too luxuriant a growth of straw, particularly in a season like that of 1889. But there is no danger of overdoing the root- or the corn-crop. Half a coat of dung and 2 cwt. of superphosphate for swedes; the same bulk of dung and 150 lbs. of sulphate of ammonia for mangels and corn, with, perhaps, 4 cwt. of salt to the mangels, never left anybody in the lurch yet.

Sandy land.—The following article, by Mr. Henry Stewart, extracted from the Country Gentleman, I was very glad to see. Why people shun the good sandy lands of this province, and select in preference the heavy clays, is not surprising: the clays will, unmanured, produce something; the sands, without manure, will produce nothing.

As for the ploughing in of green-crops, so strongly recommended by Mr. Stewart I cannot away with it. At present, \$2,000,000 are sent out of Montreal yearly, for the purchase of Ontario beef, and I think we can hardly spare such nutritious food as clover, tares, &c., with this fact staring us in the face! Mr. T. B. Terry boasts that "not a leaf of clover on his farm ever touches the lip of an animal". All is ploughed in, and he seems satisfied with the result!

SANDY LAND.

EDS. COUNTRY GENTLEMAN—I beg to take exception to the remarks of J. R., (page 166) and his advice to M. T. R. in regard to the management of sandy soils. As I have had several years' experience with a light sandy soil in the same county of New Jersey as J. R. has the happiness to reside in, I can assure him that he is mistaken in several points upon which he advises M. T. R. First, in regard to manure. It is all right to use it liberally but I have found 10 tons of it to the acre is more effective the first year than 20 tons on clay soils. Moreover, artificial fertilizers, lime included, are useful on the sandy lands of New-Jersey. My farm in 1875 was an abandoned one, the sheriff was the last owner, a temporary one, and I purchased it from him at a public sale. On 70 acres one horse and one cow starved. Everybody assured me that it would not hold manure, and as for fertilizers they would go down to the bottom 100 feet or more, and never be heard of again. But with artificial manure alone, which was cheaper than city manure as \$3 per ton, I made that poor soil in two years produce 80 to 100 bushels of corn shelled to the acre, 35 bushels of wheat, 1,200 bushels of mangels, 11,000 ears of sweet corn and over 400 bushels of potatoes per acre. On less than 50 acres of it in four years I fed 15 cows, as many young stock and two horses, besides selling nearly \$500 worth of market stuff, and making an income in all of \$2,500 per year. A large part of the later improvement of the land

was made by plowing in clover and using lime in the form of compost with swamp muck and manure.

J. R. takes quite a wrong view of the use of green manuring. He has adopted a recent "fad" which has got into circulation in some way from some inventive but inaccurate brain, or he misuses the word fertility. He says in green manuring you add to the land only the fertility contained in the seed sown, for farmers can not get something from nothing. Does he call the soil nothing, soil that consists of plant food that is as indestructible and as lasting as the earth? Is the atmosphere nothing which has an exhaustless store of carbon in a form that furnishes the larger portion of the food required by plants, as well as a large part of the nitrogen? These are the actual basis of plant growth, needing only development from their inert condition to a state in which they are able to supply plants with food. And a growing crop such as clover ending its roots down deep in the virgin soil, as yet never having contributed an atom to plant growth, perhaps, gathers from the reserved supply of the inert fertile matter of the soil, which is as inexhaustible as the soil itself, a quantity of organic matter upon which other crops less able to forage, for themselves may feed. A crop of rye grown on my poor soil the first year gave no more than 3 bushels per acre; the next year, with a dressing of swamp muck and lime, I got a good stand of clover, which was plowed in the second year after, and with a light application of complete manure, 150 lbs. per acre, I got 35 bushels per acre of Clawson wheat, the soil was so loose and sandy that on one windy day I could not stand in the road against the drifting sand. After the next clover crop was plowed in, three years afterwards, this drifting sand was a brown loam quite unlike the yellow sand it previously was. Did not these two clover crops add more to the land than the fertility contained in the half bushel of clover seed used at the two sowings?

We must not forget that in plowing under a green crop we add to the soil everything that came from the atmosphere, which Prof. S. W. Johnson says is 95 per cent, of the vegetation, and the other five per cent, is really new matter, for it is fertility which has been manufactured from an infertile soil, by the chemistry of the growing plant. This should not be ignored or forgotten by all farmers who have sandy land to cultivate or improve. And lime, often too much abused and maligned does the same thing in the soil. Its solvent power acts upon the mineral matter, freeing potash and other inorganic plant food from previously insoluble combinations; it decomposes organic matter containing nitrogen and sets the nitric ferment in action. Dr. Lawes said once he felt sure my poor sandy land had at least 2,000 lbs. per acre of inert nitrogen in it, and what a field for the use of lime or clover!—that is, that they may exert their chemical functions in drawing fertility from the infertile land filled with unavailable plant food previously. Properly used lime, as well as green manures, may be made of the greatest value in the improvement and culture of light sandy soil.

Sandy soil, well managed, is the best of all kinds. It absorbs the rain and holds it firmly; its porosity keeps it dry in wet weather, and moist in dry weather: it enables the air to pass in and out of it freely at every change of temperature and condition of moisture; and also exerts that active oxidizing effect upon organic matter, as manure or composts, which is well known to be a property of all porous substances, and thus such soil makes at once available an application of manure by decomposing it very rapidly and converting it into plant food it is easily, tilled, may be worked weeks in advance of clay land, and in 24 hours after a rain when the working is the most effective.

Zero-weather in England.—On the 3rd March, in what is