Grasses and Forage Crops.

Novel Mode of Irrigating Grass Lands.

Irrigation, practised from time immemorial in Oriental countries, exposed to long summer droughts, may well attract attention here, in view of the fact that our climate has of late years developed a very droughty tendency. Many Canadian farms are naturally provided with means of irrigation, so that the process, were it a paying operation, would not be very expensive. How well artificial watering pays, may be seen in the agriculture of Utah, which is mainly dependent on this system. But the plan has been subjected to a novel and crucial test in England recently. The *Times* of Tuesday, Aug. 5, contains a report of what is styled, "The Stoke Park Irrigation System," by means of which artificial showers are produced. We reproduce the article in full, confident that it will be read with great interest, and hopeful that it may set many readers of it seriously thinking whether they cannot do something in the way of artificial watering. There are vast areas of grass land that might easily be trebled or quadrupled in their yield, by means of a water supply not far away, and capable of easy application. Says the *Times*:—

On Saturday a select party, including the Duke of Somerset, K. G., Lord Chesham, Sir Erskine Perry, Sir Henry Montgomery and son, Captain the Hon. Alexander Ruthven, Mr. Macfie, M P, Horace Chaplin, Mr. James Adams, Mr C S. Cantrell, Mr. Henry Cantrell, Mr. Oxley, Mr Phillips, Mr. Geo. Botham, Mr. John Algernon Clarke, Mr. J Robb, &c., assembled at Stoke Park, near Slough, by invitation of Mr. Edward John Coleman, to inspect a novel system of management applied to pasture land. This embraces, first, an increased production of grass, and, secondly, an improved and more economical method of consumption.

Mr. Coleman has devoted some 40 acres of his park to a trial of the new irrigation with artificial showers, invented by Mr. Isaac Brown, of the British River Irrigation Company, India-buildings, Edinburgh. A 12 horse power steam engine, working a Tangye force pump, draws water from the ornamental lake, and waters the whole area with jets of "artificial rain" squirted from small perforations in lead pipes, which are laid down in parallel lines 16 yards apart. With a pressure of 60lb to 70lb. per square inch, or a head of 120 or more feet, the engine maintains a shower upon a plot of about an acre and a half in extent, applying 10 tons of water in 15 minutes. And plot after plot is taken in rotation until the whole is thus irrigated, the work proceeding for the most part in the night, so as to avoid any ill effect upon the herbage from watering under a hot sun. Six acres, parted off for the present experiment, are watered every night. Mr Coleman, requiring hay, has hitherto used the system chiefly for promoting the growth of hay crops, and thus the natural herbage has been injured for grazing purposes. Nevertheless, the appearance of the full green aftermath, from which an enormous bulk of hay 3ft. high was taken in June, is surprising when compared with the adjacent ground now lying withered and bare on its dry, loamy soil The 6 acres portion was dressed with 5 cwt. per acre of the patentee's artificial manure, and then watered; the grass, where only a fortnight old, being now a fine deep bullock pasture, and here is being conducted a remarkably novel experiment—designed to secure in sheep-grazing the economy found in the well-known Jersey system of tethering cows ' Two hundred fatling sheep (tegs of the Leicester and Cheviot cross) are inclosed in a fold which reaches across the whole breadth of the field—namely, 300 yards, but with only seven yards' space between the two rows of hurdles, so that the area occupied by the sheep at one time is less than half an acre Instead of confining the sheep to this plot until it is quite exhausted, and then shifting to another plot of high grass, as in ordinary folding, the new plan is to remove both rows of hurdles one yard forward at least four times per day. Thus the animals have always access to a strip of strong, fresh succulent herbage, they never foul their food, they walk and lie only upon what they have already cropped short; they leave not a blade of grass, or a stem shooting up into seed as a "bent," and yet they have ample room for their natural ranging up and down in search of new mouthfuls or special grasses. To ease the labor that would otherwise attach to this rational process, Mr. Brown has constructed a hurdle in the form of a *chevaux de frise*, consisting of a horizontal central bar, with spells or bars at right angles, in cross section like the multiplication sign, each side of the square being 3ft. across, and the hurdle 9ft long. Made of Norway fir, these military-looking fences are light and yet very durable, particularly if creosoted wood were used; and the process of shifting by rolling each hurdle one-fourth of a rotation, or on to its next face, is so easy and expeditious that the shepherd on Saturday turned by himself 100 hurdles, being a length of 300 yards, in seven minutes. Ordinarily, the labor would occupy about 20 minutes four times a day; and would therefore go into the time of the necessary attendant upon the fold. The sheep graze by putting their heads between the upright bars or slats of the hurdles, and after ten days of the folding are evidently doing exceedingly well. Indeed, Lord Chesham, who is pre-eminent as a breeder and feeder of Shropshires, expressed his high approval of these hurdles as the very things most suitable for grazing sheep. The fold had advanced in ten days about 40 yards, leaving the grass uncropped and untrodden in the portion behind to grow up rapidly under the stimulus of the diurnal showers, in readiness for a repeated visit of the flock. The earliest eaten grass is already a fair sheep bite; and it is plain that it will be ready for re-folding long before the expiration of the 14 more days which are required to complete the first course. The present stock amounts to 33 fatting sheep per acre, and the land, under the daily showers, will not only carry them on, but would feed a considerably larger number. The height and luxuriance of the grass in the rear of the fold and now only ten days old, shows this, but it is affirmed that, with "growing weather," always at command by means of the steam pump, a growth of half an inch to one inch per day can be obtained, and that, with a proper attention to the watering, the six acres in Stoke Park are able to feed double the present number of sheep, or 66 per acre This would be done with two folds, each traversing over half the ground every fortnight, and always having at the end of that time a fresh crop of grass of that age again to begin upon. At this rate the six acres would carry about 400 sheep for six months, from April to October; and the summer stocking for the whole 40 acres under the system would be no less than a flock of 2,600 tegs, shearlings, or other fatting sheep. Without the watering, manuring, and hurdling it would probably be overdone with 260.

The importance of the novel system here described is obvious. For, if we are to fatten sheep (and the present 200 are improving fast upon the succulent grass, without a taste of cake or corn) upon a tenth part of the area of grass land hitherto required, the supply of mutton may become wonderfully increased. And there is this merit in the plan, and while requiring a concentration of large numbers of fatting sheep upon a small area, it leaves nine times as much grass land to be added to the area used for breeding flocks. The system, instead of demanding an increased supply of store sheep which can never be produced, provides a surplus of pasture upon which the additional stock of lambs may be raised. As to cost the estimate put before us reckons the rent at 30s. per acre; the manual labor, 5s per acre; coal 10s. per acre; artificial manure, 120s. per acre; interest and maintenance upon permanent plant, machinery, and engine power, 40s per acre, interest and maintenance upon hurdles, 20s. per acre, total, 11*l.* 5s. per acre, for the season The return is, the keep of 66 sheep for 28 weeks, which, at 6d per head per week, would amount to 14s per sheep, or 46*l.* 4s. per acre. Mr Coleman's 200 head, only half as thick on the land, ought to be realizing 23*l.* per acre, or just double the total outlay, with the exception, of course, of the interest upon the cost price of the animals. Looked at another way, the sheep may reasonably be expected to make one pound weight of mutton per head every week for 28 weeks; and this, at say 8d. per lb., will be 18s. 8d per head for the season, giving at Mr. Coleman's rate of stocking 30*l.*, or at the rate calculated upon in future, 60*l.* per acre.

The working and results up to this time certainly warrant extended trial of the shower-watering and hurdling system by some man of business, anxious to determine how much can be done with it The meat consumers of the kingdom will wish the enterprise every success. Probably there are water-courses sufficient for the purpose in a majority of the pasture valleys of Britain, and in drier localities rainfall may be stored, as often proposed, by hydraulic engineers.

Value of Corn Fodder.

Dr. Nicholls, in the *Journal of Chemistry*, says:—The opinion we have always held upon the question of the value of green corn fodder for milch cows has been that when raised from broadcast sowing it is nearly worthless, but when sown in hills or in drills and cultivated, with access of air and sunlight, it is of high value During the present season we have made some experiments to test the correctness of these views. Stalks were collected from a field where the seed was sown broadcast, and also stalks growing in drills upon the same field, and they were dried in a drying closet to expel the moisture. Both specimens were planted at the same time (the 6th of May), and it was found that the broadcast sowing contained ninety-two per cent. of water; those from drills, eighty-three per cent. of water Thus it was shown that the difference of solid matter in the two was relatively as eight to seventeen per cent. The solid matter was composed of starch, gum, sugar, and woody fibres. There was an almost entire absence of sugar and gum in the stalks from the broadcast sowing, while the stalks that had grown under the influence of light and air held these nutrient principles in considerable quantities. The stalks were collected at the period of growth just before the ear begins to form, a period when farmers begin to cut the fodder for their cows.

Our experiments upon corn fodder have afforded us important information upon other points. We find that the stalks cut before they reach a certain stage of growth are deficient in nutrient matter, and therefore it is a waste to feed them too early. The corn plant, like all other vegetable structures, has but one object or aim in its growth, and that is to produce seed. It is engaged during its whole life in storing up large quantities of starch, which is to be used when the pressing occasion arrives, or the seed vessels mature, to form some subtle, mysterious changes, the rich nutrient principles which are found in seeds. As soon as this struggle is over, the corn plant, like all annuals, dies a natural death It is not necessary for frost to strike it; it dies from simple exhaustion The proper time to cut and feed cornstalks is during the four or five weeks succeeding inflorescence, or in other words, they should not be cut until the flower is fairly developed, and the ear commences to form; and any corn that is so planted that the ear cannot form and mature, is practically worthless as fodder Farmers may learn from these facts that corn designed to be cut for fodder should be planted at two or three periods during the season; some fields quite early, others somewhat later, and still others as late as is safe. In this way, when the hot, dry months of July and August are reached, and the pastures fail, a supply of fodder is secured at a proper stage of growth to afford the largest amount of nutriment.

Horse Forage.

THE evidence given before the Select Committee on Horses, which has just been published, is interesting in many points. We will take an early opportunity of going into the more important portions of the evidence, but may be permitted to refer here to some very practical advice to horse-owners which was given by Mr Church, the General Manager and Secretary of the London General Omnibus Company While under examination, Mr Church stated that the Company which he superintends have altogether discarded oats as forage for horses These animals are fed entirely on maize and chaff, each horse receiving as its daily ration about 17 lb of the former and 10 lb. of the latter The maize is just broken sufficiently to enable the horses to eat it without difficulty, and they thrive better on this fodder than they ever did upon oats On the ground of economy also, maize is preferable to oats as forage, its price being much lower, and the saving effected being about 3s. or 4s. a qr. These facts, Mr Church went on to observe, have long been known to many owners of horses, but gentlemen with private stables find great difficulty in substituting bruised maize and chaff for the old-fashioned forage of oats and trusses of hay Coachmen and corndealers resolutely oppose the innovation, for the reason that it enables the owners of horses to exercise a control over supplies for their stables and prevent waste and fraud Maize, we may add, is a very valuable flesh-forming substance, and has been recommended by veterinarians for many years past as food for horses, on the ground not only of its economy, but also from its great nourishing properties.—*The Farmer.*