

8 c. over 17 dols. Thus, there is a loss shown of about 2½ dols. an acre. In a similar estimate for spring wheat the loss shown is 11 c. under 2 dols. About half the value of the manure put on for the crop in each case is charged against the crop.

Growth of cereals.—A very concise account of the germination, growth, and maturation of a cereal has been lately given by Professor Wagner, of Darmstadt, which I condense for the information of those of my readers who believe that a thorough acquaintance with the origin and development of the plants they cultivate, is as useful as a knowledge of the origin and development of the cattle they breed.

"There are five stages in the life of a cereal; 1. the germination, or stage in which the infant plant lives upon sugar and albuminoids, just as the young mammal lives on the milk sugar, butter-fat, and caseine of its dam's milk." These materials are derived from the starch and gluten of the seed, and this is precisely what takes place in the grains of barley in the malt ster's *couch* and *floers* after steeping; the *aerospire*, which would ultimately become the *plumule*, or green shoot, presents itself at one end of the grain, and, as if frightened at the rough aspect of affairs, turns back, pursues its way under the skin of the *pickle* until it approaches its other end, and then has its travels rudely arrested by the fire of the kiln. Were the plumule allowed to shoot out, it would consume the whole of the sugar, into which the action of the diastase had converted the starch of the grain, and the malt would be worthless. It is worth anybody's while, who desires to appreciate these changes, to spend an hour or so daily in a malthouse, for a week from the time any *steep* may be discharged, "2. as soon as the seedling has thrust down its axis or radicle, and its plumule has appeared above ground, the roots begin to develop themselves, which development," in the malt floors, begins as soon as the *aerospire* makes its appearance; "3. when the roots are fully developed, begins a rapid growth upwards, as we see in wheat, oats, &c., in the summer months, 4. next comes the period of flowering, and, last of all, that of fructification, during which the chief supplies of the plant are derived from its own leaves, its stem, and its roots. An example of this may be seen when the stored root-crops throw up their stems and leaves though entirely deprived of their roots."

Ryegrass again—Mr Gilbert Murray, a well-known land-agent of Derbyshire, England, one who, like myself, regards an ounce of practice as worth a pound of theory, has been investigating the vexed question of the permanency of ryegrass. Everywhere, he finds it an important constituent of the best pastures; one of the earliest and most prolific of all English grasses, and he especially adverts to one point which I am surprised to see Professor Wrightson neglected to notice: the great grazing farms of the midland counties are administered in a peculiarly careful manner; they are divided into several fields, each of which is fed off in turn, and special care is taken that no plant, whether weed or grass, is allowed to go to seed. Did any such tendency appear, the piece was, in my time, immediately brushed over with a scythe, though now, I presume, a mowing machine is used for the purpose. And yet, these pastures are full of ryegrass! If the plant dies out every three or four years, or, as Mr. Evans, of Montreal, believes, every year, how on earth are these fine pastures stocked with it? If you persist in treating your pastures as if they could take care of themselves, they will not serve you well, my friends; whether they be of carefully selected grasses and clovers, or only the remnants of hardly scoured timothy meadows. Level feeding of a pasture and

then letting it rest for a few weeks, is one of the most certain methods of making it last.

The block test.—We have in England no adjunct to the exhibition of fat-stock such as there is at Chicago, though it is supposed that one will be established next year. A good judge of beasts, Mr. Turner, has taken the trouble to follow several of the prize-winners at the late Smithfield Club show to their last homes, and has kindly sent notes of his observations to the English Live Stock Journal. From these notes we learn that the best butcher's beast in the exhibition was, strange to say, a Sussex steer, whose per centage of carcase to live-weight was 71.67! Next came a Shorthorn heifer with 71.61, and after her a Hereford ox—70.02. No one who, like myself, knew the Sussex cattle forty years ago, and had lost sight of them since, would expect to see the very rough beasts they were then, stand so well at the Xmas show.

The Welsh cattle show the lowest per centage of all, with only 61, 62, and 63 per cent. of carcase. And yet they used to be, and, I hear, still are, great favourites with the butchers! This may be, though, on account of the great quantity of loose fat they, like the Sussex, invariably carry.

The champion beast of the show, Mr. Wortley's Devon steer, a few days short of three years old; live weight, 1,568 lbs.; carcase 1,160—per cent. 67.79.

Sheep in the U. S.—The following letters are from the Home and Farm, a paper published at Springfield, Mass. They offer another proof that the taste for good mutton is increasing among our neighbours, though I observe a tendency to stick to the wretched merinoes, carcases of which I remember to have seen hawked about at Chambly, 30 years ago, by the sleigh-load, at \$2.00 apiece! Eugh! such miserable skeletons: only fit for stewing down in the stock-pot.

Mr. Powell's idea, that "sheep enrich and benefit the pasture even upon strictly dairy-farms," is erroneous; the flocks should be grazed by themselves, as they feed too close on ordinary grass-land. To say that they enrich pastures, from which they carry off the materials of their bones, flesh, and wool, is almost, if not quite, as great an error as the statement referred to in Mr. Barnard's letter of last month, that cheese-making tends to the improvement of a farm. But, when once the desire for mutton invades the American people, it will not be long before crops, such as rape, tares, &c., will be grown expressly for the flock, and the consumption of these within the hurdles with grain, pulse, and cake, will really enrich and benefit the land.

A shepherd, with a lad to help him to move hurdles, &c., will manage a flock of 600 sheep in an enclosed country.

An acre of good rape, with a pint of pease, or a pound of cake a day per head, will fatten 8 sheep. Our rape on the Kentish hills (chalk) in England, stands about 3 feet 6 inches high, by the 1st September. Many a dozen brace of birds (partridges) have I shot in it. Judging from memory, I should say there must have been an average of 15 tons an acre. Here, I should make the first sowing of tares, two bushels, harrowed in, and three pounds of rape-seed rolled in afterwards. The second and third sowing of eight pounds of rape-seed alone. Land to be prepared as for swedes or mangels, and the sowing to be broadcast.

Mr. Woodward, whose ideas I have often remarked to be sensible, fats "lamb and dam," a proceeding which, if he is a good buyer, must be profitable, but with the exception of the Dorsets and an Irish breed, the name of which I cannot recall, I know of no breed of sheep that can be depended upon for lambing down so early as, say, November 15th; for, in