Breeder and Grazier.

Comparative Feeding Properties of Green Fodder and Hay.

The practical experience of every stockholder, says R. W, in the *Agricultural Gazette*, has probably taught him that green fodder is far more nutritive than hay. In the main this opinion is undoubtedly correct; the question is, however, a somewhat complicated one. Green crops are fed or cut for fodder in all stages of their growth, the mowing or pasturing being entirely regulated by the requirements of the stock. Hay, on the other hand, is never made till the green crop has reached the point of its maximum growth. An animal fed on green food thus generally consumes the forage plant in a younger and less mature condition when it feeds on the same plant in the form of hay. Now chemists have shown that the difference in the age of a plant generally implies a considerable difference in its composition, and that with fodder crops there is a rapid increase of hard vegetable fibre as the plant approaches maturity, and a corresponding decrease of albuminoids (muscle formers), and of sugar, and other soluble matters. We will illustrate this by giving two analyses of lucerne used in some feeding experiments we are about to describe. The two samples of lucerne were taken from the same field in the early part of June, one 11 days later than the other. The analyses refer to the perfectly dry plant.

	Earlier Sample.	Later Sample.
Albuminoids	18·31	17·81
Fat	3·18	2·37
Extractive matter	43·02	39·46
Woody fibre	25·84	32·39
Ash	9·65	7·97

We might easily have selected analyses which would have compared more strikingly than the above, but these show sufficiently what an important change in the composition of a fodder crop may take place even in eleven days. The practical lesson from these facts has been often enforced. it is that crops intended for hay should be cut as soon as blossoming has fairly set in. To allow the blossom to get old before cutting is to pass the period at which the maximum amount of digestible food is obtainable.

The facts just stated have an important bearing on the comparison of green fodder and hay. It is evident that these can only be fairly compared when both are obtained from a crop of the same age. Professor G. Kuhn, of Moekern, has conducted two series of experiments on this principle, the earlier experiments with red clover, the latter with lucerne. Two oxen were gradually brought to a diet consisting of green clover only; they each received 100 lb. per day. As soon as the clover in the field came into bloom the scientific part of the experiment commenced, and hay was henceforward made each day in the field. At the end of fifteen days the feeding with green clover was stopped, and the same oxen then received the hay which had been made at the time that the green food was cut, the quantity of hay given to each ox being regulated so as to contain the same weight of dry matter as the green fodder of the previous period. By comparing the analysis of the food with the analysis of the excrement during the last week of both diets, when the animals had become accustomed to the foods, the proportion digested was ascertained. The figures in the following table show the amount digested of each constituent for 100 supplied:—

	Green Clover.	Clover Hay.
Albuminoids	72·5	69·7
Fat	75·1	72·3
Extractive matter	79·0	74·3
Woody fibre	58·2	52·0
Total dry matter	66·4	64·0

The experiments with lucerne were also made on oxen, and were conducted in a similar manner; the results were as under:—

	Green Lucerne.	Lucerne Hay.
Albuminoids	81·2	78·4
Extractive matter	76·0	70·6
Woody fibre	44·6	38·9
Total dry matter	64·0	59·1

It will be seen that in both experiments the results are slightly in favor of the green fodder; the differences, however, are not greater than are often observed in the same animal fed with the same food at different times. Moreover, the oxen had really a slightly better diet with the green food than with the dry, notwithstanding the care taken to make the experiments uniform, for the animals rejected some of the coarse stalks in the green food, but could not do this with the hay, which was supplied as chaff. The author, therefore, concludes that the feeding value of hay is sensibly the same as that of the green food it is made from, assuming, of course, that the hay is well made, and neither loses its more delicate parts by too much knocking about in the field nor suffers injury from rain.

If fodder of the same age has practically the same feeding power, whether green or dry, the result is very different when fodder of different ages is compared. Professor Wolff fed sheep with green clover during the four weeks in which the clover was in blossom. The proportion of the clover digested at the commencement and end of this period was as follows:—

	Clover commencing Blooming.	Clover ending Blooming.
Albuminoids	75	68
Fat	66	44
Extractive matter	78	70
Woody fibre	50	38
Total dry matter	69	56

The age of the plant thus makes a wonderful difference in its digestibility. It will be noticed that the fibre, fat, and albuminoids suffered most in digestibility with advancing age, and the soluble extractive matter suffered least.

We see from these results that the feeding value of albuminoids, or fat, or any other constituent of fodder, may be very different in different foods. Chemical analysis, in telling us how much fat or albumin a food contains, does not therefore determine its nutritive power, the analysis is of considerable use, but we must at the same time take into consideration the nature of the food. As a general rule, the ingredients of seeds have a higher nutritive value than the ingredients of green fodder, and these again a higher value than the same ingredients contained in straw. Analyses should, therefore, mainly be used for comparing a food with others of the same class, as seeds with seeds, straw with straw; analysis cannot safely determine without experiment that a sample of straw is more nutritive than a sample of hay. We will illustrate these facts by some recent experiments of F. Heidepriem. This investigator fed merino sheep on various diets of lupine straw, lupine hay, and lupine seed. Lupine is probably not very familiar to the British farmer as a fodder crop, we will therefore give the composition of the food before giving the results obtained by feeding:—

	Lupine Straw.	Lupine Hay.	Lupine Seeds.
Water	10·34	9·11	10·07
Albuminoids	6·23	23·53	43·35
Fat	1·10	1·99	3·87
Extractive matter	35·63	29·43	25·85
Woody fibre	43·46	25·56	13·33
Ash	3·24	*10·33	3·53

*Containing 6·26 of sand.

Lupine is a highly nitrogenous plant; the hay considerably exceeds the clover in its amount of nitrogen, and the seed is the richest in nitrogen of all ordinary leguminous seeds. Out of the five diets employed by Heidepriem we will select three—lupine straw alone, lupine hay alone, and a mixture of lupine hay and seed. The proportion digested for 100 of each constituent of the food was as follows:—

	Lupine Straw.	Lupine Hay.	Lupine Hay and Seeds.
Albuminoids	37·5	74·3	77·5
Fat	30·2	30·4	39·6
Extractive matter	65·0	61·6	73·2
Woody fibre	50·6	73·4	66·2
Dry matter	55·0	67·6	70·1

Allowing for the measure of irregularity unavoidable in digestion experiments, we have here a uniform rise in the digestibility of the food as its quality improves. Thus not only did the hay supply much more albumen than the straw, but the albumen it contained was nearly twice as digestible as that in the straw. The seeds could not be used alone, but calculation from the comparative experiments without seeds shows that nearly the whole of the seed was assimilated by the sheep. The great feeding value of oilcake is in like manner due, not only to its composition, but also to its easy digestibility.—*N. B. A.*

Rules for Shearing.

We have been asked for directions as to how to shear sheep. However "at home" we may feel in the sheep barn, or on the shearing floor, we confess to feeling somewhat at "sea" when trying to impart information at so long range. Shearing a sheep is one of the things that needs to be seen to be appreciated. There is no mystery about it, but it is, nevertheless, a trade that has to be learned by practice. The novice who has determined to become a good sheep-shearer, should provide himself with: 1. A good pair of shears (avoiding cheap ones). 2. A plentiful stock of patience. 3. A pair of "overalls." 4. A smooth-cutting whetstone. If we were required to add to the above, we would say—a little more patience; for it is the nervousness and impatience of the workman that, in nine cases in every ten, lead to the cramping and crowding of the sheep, which begins struggling for relief; thus adding to the confusion and tediousness of the operation of shearing.

Even among accomplished workmen, there are different practices in the operation of shearing. Some commence work on the brisket, others on the neck; some at the top of the head; and still others lay bare the belly first—laying the sheep down on the left side; keeping its head down by drawing its right fore foot across the neck, and holding it with the left hand. Some shearers use a bench or table, fourteen to eighteen inches high, upon which the sheep is placed; though a majority prefer to keep the animal on the floor during the operation. We recommend the latter, as it is equally as easily learned, is no more tiresome, and the table or bench is not always so readily improvised. The man who learns without it is always ready for work; the one who learns to use it is often at a disadvantage.

After having acquired some skill in handling the shears, and learned how to hold a sheep in the various necessary positions without hurting it, the novitiate may try the several points we have indicated for "opening the fleece" and adopt the one that best suits him (we prefer opening on the neck), leaving the back and sides to be sheared last. The sheep must be handled so that, in its kicking, it cannot break the fleece, which should always come off whole. The shears must be held flat, and not crowded faster than the eye can follow—leaving no spot to be gone over the second time. Speed will come with practice; but should never be sought at the expense of thorough workmanship. It is an easy matter for a slouchy workman to leave the value of his wages on the sheep, by cutting too high at some points and failing to trim neatly the flanks and legs—and he generally does it.

The shearing floor is the best of all places for ascertaining the shearing qualities of the different animals of the flock; and the practical flock-master will have an eye to his interests by there deciding which animals are to make a return through the butcher, and which are to be held for breeding and shearing another season.—*National Live Stock Journal.*

A Beautiful Incident.

The intelligent horse, says the *Turf, Field and Farm*, very often sympathizes with animal distress. About a year ago, a dog was set upon by a crowd of cruel boys and pelted with sticks and stones. The poor dog had given no offence, but this mattered not. He tried to escape from his tormentors, and had nearly succeeded in doing so, when a stone hurled with great violence struck him on the fore leg, bruising the flesh and fracturing the bone. The animal howled piteously, but none of his persecutors went to his relief. Having injured him, they turned coldly away and left him to his fate. The dog limped into the stables of Mr. Kilpatrick, moaning piteously. In one of the stalls of the stable was a well-bred young horse of more than ordinary intelligence. The distress of the dog seemed to move the heart of the horse to pity. He bent his head, caressed the canine, and inspected the broken leg; then with his fore feet he pushed some clean straw into one corner of his stall, and made a soft bed on which the dog was induced to lay himself down. A close and affectionate intimacy was at once established between the horse and the dog. The horse was being largely fed on bran mash; and one day when receiving his feed, thinking the dog might be hungry, the equine bowed his head, caught the canine gently by the skin of the neck, and with his teeth lifted him into the trough or box. The dog fell to with a hearty will, which showed that his hunger was great, and gratitude was equal to his appetite. Days and weeks passed, and the dog and the horse continued to be firm friends. The bran mash fed them both, and the invalid grew strong and fat on the wholesome diet. At night the two animals thus strangely brought together slept in the most lovable manner. The horse would arrange a soft bed for the dog, and then lay down and tenderly encircle the canine form with one of his fore legs.

It is seldom that such a beautiful and authentic incident is brought to our notice. The horse showed for the unfortunate more of that feeling which we term humanity, than did the dozen youths who were presumed to walk in the image of God. Nay, it took the poor victim of man's persecution to his heart and home, and tenderly nursed the same back to health and strength.