

## ON THE EFFECTS OF SOAKING SEEDS IN CHEMICAL SOLUTIONS.

(Abridged from the Scottish Journal of Agriculture.)

There was perhaps no object in the exhibition of oats in the society's show, at Dundee, in August, 1843, which attracted such general attention as the remarkably strong and vigorous oats growing in soil, exhibited by Mr. James Cambell, of the Educational Seminars of that town. The soil on which they grew possessed no peculiar property, except that it had not been manured for eleven years. The vigour of the plants, according to Mr. Cambell, was entirely to be ascribed to their seed having been subjected to a process by which they were soaked in certain chemical solutions. Mr. Cambell has, since the show, in the most liberal and disinterested manner, placed the particulars of his process in the hands of the society, for the benefit of agriculturists generally, and to further his good intentions, the society has thought it proper to publish his own explanation of the method of conducting the process of preparing the seed as it is given in a letter to the secretary.

"I steeped the seeds of the various specimens exhibited in sulphate of ammonia, in nitrate of soda and potash, and in combinations of these; and in all cases the result was highly favourable. For example—seeds of wheat steeped in sulphate of ammonia on the 5th of July, had by the 10th of August, the last day of the show, tillered into nine, ten, and even eleven stems of nearly equal vigour; while seeds of the same sample, unprepared, and sown at the same time, in the same soil, had not tillered more than two, three, and four stems.

"I prepared the various mixtures from the above specified salts exactly neutralized, and then added from eight to twelve measures of water. The time of steeping varied from fifty to ninety four hours, at a temperature of about 60 degrees Fahrenheit. I found, however, that barley does not succeed so well if steeped beyond sixty hours.

"Rye-grass and other gramineous seeds do with steeping from sixteen to twenty hours, and clovers from eight to ten, but not more; for, being bilobate, they are apt to swell too much and burst.

"The very superior specimens of tall oats, averaging one hundred and sixty grains on each stem, and eight available stems from each seed, were prepared from sulphate of ammonia. The specimens of bulky and low were prepared from nitrate of ammonia; the former had an average of ten available stems, and each stems an average of thirty four grains in the ear; and the latter an average of also ten available stems, with seventy-two grains in the ear.

"The other specimens of oats which were next the most prolific, were from nitrate of ammonia; and the promiscuous specimens of oats were from nitrate of soda and potash—strong, numerous in stems (some having not less than fifty-two), and not so tall as either the preparation from the sulphate or nitrate of ammonia.

"It was objected by some that the tallest oats were too rank, and would break down before coming to seed; but have not at all of that, as they were strong in proportion to their height, and I am confident that a combination of sulphates of ammonia and soda, or potash, would rectify the excess of height, and render the grain equally productive.

"I have at present a series of experiments going on in the country, with seed prepared in 7 different ways, and sown in pure sand, and in a tilly subsoil taken six feet under the surface, and in which there is no humus or organic matter of any kind. Along with the prepared seeds are also some unprepared and I expect to be able to form a comparative estimate of their growth by visiting the place in October.

"At all events, from the experiments which I have already tried, I am quite satisfied that, even without the application of manures, double

crops, at least, may thus be raised; and under the application of the ordinary manures, crops tenfold greater than the usual.

"The various salts were prepared by me from their carbonates.—I am, &c."

From the Albany Cultivator.

## FOOD FOR WORK-HORSES. TREATMENT FOR "HEAVES."

Mr. E. H. Northrup, of Shoreham, Vermont, inquires "What is the best mode of feeding the roadster and work horse?" "Is there any cure for heaves?"

We do not find the disease here called "heaves" described by that name in the English Works. The disease described under the terms *chronic cough, thick wind, broken wind, wheeze, roaring, &c.*, we are inclined to think are in this country frequently confounded under the term "heaves." They are all in a greater or less degree, affections of the lungs. The best food for horses so affected, is that which is nutritious, rather succulent, and condensed into a small compass. Dry food, and especially a large quantity of poor or dusty hay, is very bad for them. Vegetables such as potatoes, ruta-baga, carrots, &c., are very good. The preference is by some persons given to carrots, but we have tested the good effects of potatoes in such cases, and would recommend their use where carrots cannot well be had. The horse's stomach should not be crowded, and he should be only moderately exercised, especially soon after eating. We have known horses that were said to have the heaves, or to be broken-winded, perform a great deal of labour, with proper feeding and use, for several years, but a radical cure is not to be expected.

In reference to the inquiry about feeding, we remark, that the practice of "chaffing" or cutting the fodder and mixing with it the grain, (the latter in a ground state,) is highly approved, and is daily coming to be more adopted. Hay and straw may be cut together, if desired and if the horse is not hard worked, a great saving may in this way be made.

Yount, in his Treatise on the Horse says—"Chaff may be composed of equal quantities of clover, or meadow hay, and wheaten, oatens, or barley straw, cut into pieces of a quarter or half an inch in length, and mingled well together; the allowance of oats or beans is afterwards added and mixed with the chaff."

He advises the bruising or grinding of the beans and oats. In this country, Indian corn might be properly substituted for beans. Mr. Yount says the prejudice which some have evinced against bruising the oats is, "as far as the farmer's horse and the waggoner is concerned, all the chaff would do." Horses of quicker draught except they are naturally disposed to scour, will thrive better with bruised, than with whole oats; for a greater quantity of nutriment will be extracted from the food, and it will always be easy to adjust the quantity of straw or beans to the effect of the mixture on the bowels of the horse. The principal alteration that should be made on the horse of harder and more rapid work, such as the stage-coach horse, &c., is to increase the quantity of hay and diminish that of straw. Two trusses of Hay may be cut with one of straw. For the agricultural and cart horse, eight pounds of oats and two of beans should be added to every twenty pounds of chaff; and thirty-four or thirty-six pounds of the mixture will be sufficient for any moderate sized horse, with fair or even hard work. The dray and wagon horse, may require forty pounds of Hay in the rack a night is supposed to be omitted altogether.

"Horses are very fond of this provender. The majority of them, after having been accustomed to it, will leave the best oats given to them alone. For the sake of the mingled chaff and corn. We would however, caution the farmer not to set apart too much damaged hay for the manufacture of the chaff. The horse may be thus induced to eat that which he would otherwise refuse; but if the nourishing property of the hay has been impaired, or it has required an injurious principle the horse will either lose condition, or become diseased. More injury is done by the eating of damaged hay or musty oats than is generally imagined. There will be sufficient saving in the di-

minished cost of the provender by the introduction of the straw, and in the improved condition of the horse, without poisoning him with the refuse of the farm.

"While the mixture of chaff with the corn prevents the corn from being too rapidly devoured, and a portion of it swallowed whole, and therefore the stomach is not too loaded with that on which as containing the most nutriment, its chief digestive power should be exerted, yet, on the whole, a great deal of time is gained by this mode of feeding, and more is left for rest. When a horse comes in wearied at the close of the day it occupies after he has eaten his corn, two or three hours to clear his rack. On the system of manger-feeding, the chaff being already cut into small pieces, and the beans and oats bruised, he is able fully to satisfy his appetite in an hour and a half. Two additional hours therefore are devoted to rest. This is a circumstance deserving of much consideration even in the farmer's stable, and of immense consequence to the postmaster, the stage-coach proprietor, and the owner of every hard worked horse."

We have known several establishments where a considerable number of horses were kept entirely for the road, and fed wholly on cut hay with corn meal mixed with it. A sufficient quantity of hay is thrown into a large trough, wetted a little, and the due proportion of hay mixed, and stirred well together. Corn and colmeal does well.

In answer to the question of our correspondent, "What food will fatten a horse quickest?" we reply, good sweet clover hay, free from dust, cured with all the heads and leaves on, with boiled potatoes and meal, or instead of the meal boiled oats, will fatten a horse very rapidly; and where the object was merely to fatten him, he would use this food.

From the American Farmer.

## ALTERNATION OF CROPS.

This is unquestionably one of the best and most economical means of preserving fertility, and of increasing the profits of the farm. All crops exhaust the soil more or less, of the general elements of fertility, though all do not exhaust it alike of certain specific properties. It is believed that every plant requires a specific food, which other families do not stand in need of, and which they do not take up. This is evidenced by the fact, that wheat cannot be profitably grown on ordinary land, in two successive years, upon the same field, without a great falling off in the product. And is now laid down as an axiom in good husbandry, that two crops of any small grain should never be taken from the same field in successive years because they draw too largely upon the same specific food. But after an interval of four or five years, in which grass and roots intervene, the specific food of the wheat crop has so accumulated in the soil that this grain may then again profitably be grown upon it. So with all other crops, not even excepting the grasses. The law of nature's change in the products of a soil is so palpable, that in Flanders and Holland, where flax is one of the profitable staples, they do not think of cultivating this crop upon the same ground oftener than once in ten or twelve years. Our farmers, some of them, seems to appreciate these truths in reference to tillage crops, without duly reflecting that they apply as well to grass. Meadows, too, deteriorate; in a few years the finer grasses run out because the soil becomes exhausted of the particular food which affords them nourishment, coarse or innutritious plants take their place and the herbage becomes inferior in quality.

Upon an average, old established meadows would yield double their present crops, if judiciously alternated with grain and root crops. The terms "suitably divided into mowing, plough and pasture lands," which are generally employed to recommend farms for sale, are an indication of bad husbandry; and very often betray the secret which compels the owner to sell. Excepting in very stony districts, every acre of land which would produce good grasses, may by being rendered dry and rich, be made to produce good grain and roots. In this convertible system of husbandry, permanent