There are many instances in which a farmer, who has obtained permission to break up a field of Grass, has taken crops of Wheat after Wheat off it, until the land would not carry it any more, and then having laid it down for a series of years, till it is refreshed sufficiently, has broken it up again to give it the same treatment. The general rotation on the lias is a three-year course—Wheat, Beans, fallow. The kind of Wheat sown is the Blue Cone or Red-straw Lammas; generally the former, which seems to be well suited for a stiff clay. Eighteen or twenty bushels per acre is an average produce. This is a very low one for a clayey soil, but it is owing to the extreme state of wetness in which the land lies during six months of the year. If the land should get worn out with this treatment, it is laid down for several years; a very small crop of seeds is, however, obtained. Occasionally a portion of the land in fallow is sown to Vetches, which are cut for the stock. In some districts a crop of Oats is taken between the Beans, and the fallow, or Vetches. The crops then come round once in four years; viz., 1st, Wheat; 2d, Beans; 3d, Oats; 4th, Vetches, or fallow. This formation, when compared with the others in an uncultivated state, is certainly one of the lowest in the scale of fertility. This is well seen in Wickwar and Yate Commons. The land is covered with brambles and briers, the scanty pasturage being nothing but Sedges and Rushes. The Sloe and the Thorn, indeed, are not confined to the commons; it is hard to keep them out of the pasture lands. This aptitude to grow Thorns may almost be made a means of laying down the boundaries of the formation. Thus, on going from Alveston to Itchington, the Thorns disappear entirely as soon as we step off the clay of the lias on to the rock of the mountain limestone. The lias joins on to the gravel and the marlstone, by which it is covered, and to the new red sandstone, the mountain limestone, and old red sandstone, which it covers. In none of these cases but that of the gravel, which has been already mentioned, is that increased fertility consequent on a mixture of the two rocks observable. At its junction with the mountain limestone, the soil on the lias is benefited, or otherwise, according as the clay thins off abruptly or gradually from the rock. In the latter case the nearness of the rock to the surface acts as a drain. The improvement, which in some instances, I was told, existed in the nature of the soil just at the junction of these two rocks, is due more, I think, to this drainage than to any mixture of the clay and the limestone. The lias is the first formation we have mentioned, on which, within this district, the use of lime is sanctioned by experience. On most of the arable land on this formation, lime is used to the extent of about 70 or 80 bushels per acre. It is laid generally along the headland of the field on which it is to be spread, and being covered with earth is allowed to slack perfectly, after which it is carted or wheeled over the ground. The expense of liming, and all the chief expenses of cultivation, are made to precede the Wheat-crop, on which principally the farmer depends for his return. I met on this soil, near Frampton, with a curious instance of the extent to which long experience and observation may teach the same lessons as a knowledge of the science of geology would lead to. It was observed by a farmer, over whose farm I had been walking, that a good soil never existed where those shells (pointing to a number of fossil shells in the soil) were found in it. The shell was a graphite characteristic of the lias. The experience of the agriculturist had led him to connect the faults of the soil in some way with the existence in it of these shells. The geologist would at once know the nature of the subsoil from their presence in such abundance; and, throughout this district at any rate, the soil over that subsoil is bad.

Home Correspondence.

Woes of Farming.—I am a little man, with a little land, no experience, very little money, and a very great demand for it. I wanted to make my capital of 1000*l.* work a farm so as to keep myself and family in comfort, my daughters playing their piano, my horse having his groom, and I some good old port in the cellar for myself and friends. This was, I think, a very natural desire; and an old friend of my father's who had been a farmer in 1810, and had made a fortune, told me that I might be sure to do well, if I was but attentive to my business. Well, sir, I took a farm of 100 acres two years ago, and I paid great attention to it for a twelvemonth; but at the end of the year I found my capital all gone, although I took all the care I could of my money. Seeing that affairs had taken such a bad turn, I borrowed another 1000*l.* of my brother-in-law, discharged my bailiff, and took to farming scientifically. I bought guano, nitrate of soda, Potter, Poittevin, and Humphrey; but one turned out clay and brickdust, another salt, while chalk, charcoal, and sawdust was all I could make out of the others. They seemed to be no good, but I was told they were scientific, believed, and tried them. And now I am worse off than ever; I have wasted my own money, I have spent my brother's, and what is worse, I am deeply in debt. What am I to do? It seems to me that the friend who recommended me to take to so beggarly a trade as farming ought to pay my losses. But he will not; in fact, he says I am a lunatic, and fit for nothing but a strait waistcoat. I answer, I have straits enough without that, and I hope you will advise me what I should turn to next.—*Edward Pinthorn, Barkinfield.*

[It seems to us that the friend is right, and that advice is wasted upon one whose ignorance is even greater than his folly.]

Allotments.—A stranger hearing that I let land near the Seahouses, Eastbourne, at 1*s.* a rod, which is 8*l.* an acre, including rates, tithes, and taxes, blamed me, supposing the rent unreasonably high. When Benjamin King, who receives the rent of upwards of 400 allotments for me, was called in, he said not one farthing rent had been deficient in ten years, and that he had more applications for allotments at 8*l.* an acre near the fishermen's houses, than at 4*l.* near the church, though before the little tenants broke up the old turf it was called poor, sour land; and B. King said this land at 160*s.* an acre was more coveted than land at 6*s.* an acre on Beechy Head, also including rates, tithes, and taxes, though this last land had at that rent yielded the tenant at the rate of forty-eight bushels per acre of Wheat—I think the 7th year after breaking up the turf, which as a sheep-walk does not keep one ewe per acre. The land on the Down was not equally coveted, because it was two miles off, and up an ascent of 500 feet, which could not be accomplished at the odd hours which the land near at hand profitably employed. I presented, as dessert, to the stranger who objected to 160*s.* per acre, rent, rates, tithes, and taxes, a Cabbage—one the tenants had just given me—which weighed 22 lbs., produced by means of the manure his fish afforded. If gentlemen would oblige their neighbours by accepting the high rents their neighbours would gladly tender them, all parties would be served. Near Penzance, in Cornwall, about 20 years ago, 1000 acres of land were let for 10,000*l.* a-year; and Mr. Cuthbert Johnson's pamphlet on liquid manure, sold by Ridgway, says, the Grass lands round Edinburgh, watered by the town drainage, are yearly let in small portions by auction, at from 20*l.* to 30*l.* per acre; 130 acres belong to W. Miller, Esq., and the rest to the Earls of Moray and Haddington.—*M. A. G.*

Wide Drilling.—In the *Gazette* of 6th July, "Home Correspondence," this subject is treated of by "Lusor," referring to your article on the subject in p. 413. Having referred to it, I now send you an experiment of my own, made last year on Wheat. In farming my own land for the last eight years, I had always used a Suffolk drill for grain crops at 10 inches apart. Last year I had convinced myself that 12 inches would be better, and from 5 to 6 pecks of seed per acre instead of 3 bushels, usually applied; being of the same opinion on this head with Mr. Hewit Davies, who has written on this point. I was, however, induced to make a practical experiment on a wider drill, through my becoming acquainted with the results of a crop of Wheat—Golden Drop—which a neighbour had harvested the year before, put in at 2 feet apart in loamy brush land; he reaped a most abundant crop. Not having had all the results of his experiment, which I found had been carelessly carried out, until January last year, I had not time to try a similar one at my autumn sowing, so I determined to make a spring experiment of it, on a close of land that had been part of a coppice wood which I had grubbed up four years previously, but had not had Wheat in it before, and was then preparing for Beans, being heavy rich land, shallow, brush sub-soil. I, however, marked out two plots of 10 perches each, adjoining each other, and had the seed hoed in drills, north and south, one at 1 foot, and the other at 2 feet, as follows. It came up well, and progressed admirably. There were no weeds;—it was hoed at the commencement twice.

No. I.—Seed, Red-straw Lammas—the Wheat which suits this neighbourhood best. Hoed in on the 18th Feb., 1843, at the rate of 5 pecks per acre, in drills 1 foot apart, in a direction north and south, on 10 perches of rich heavy land; harvested September following, threshed, cleaned, winnowed, and weighed immediately:—

Produce of grain	2 bushels
Weight	124 lbs.
Straw	270 lbs.

Good sample and very little tailing.

No. II.—Seed, same as No. I. Hoed in same day, but with little more than half the quantity of seed, viz., at the rate of 3 pecks per acre, at 2 feet apart, on 10 perches of same land, and adjoining No. I.; harvested the same day:—

Produce of grain	1 bushel 3¼ pecks
Weight	114 lbs.
Straw	234 lbs.

Sample better than No. I.

The Red-straw Lammas is essentially a winter Wheat; the crop, therefore, would have been greater had it been put in in November instead of February; or, if I had used a spring Wheat instead; and it being close to the wood the birds attacked it greatly. I have not thought it worth while to make another experiment as to 2 feet-drilling, because I am convinced that such a distance could never answer as a universal method, it being too far apart to support itself in exposed situations. The above results of No. II. would have been greater had it not been partly laid: the sheltered situation saved it from being more so. This experiment has, however, been a useful one. It clearly demonstrates that Wheat requires space to expand its roots in; therefore, broadcast or narrow drilling cannot be a correct method. My crops of Wheat this year, just harvested, being very fine and abundant, all drilled in at 1 foot, with 5 pecks of seed only, there will be very little tailing. As the above experiment may be worthy of your notice when making a comparison with the others, I understand from the *Gazette* to be in progress, I have thought it well to send it you.—*Henry T. Davis, Waterhouse, near Bath.*

Wide Drilling and Dibbling.—Having recently observed in your Paper, and in others, several paragraphs on the advantages of dibbling seed-corn, and of sowing a much smaller quantity of seed than is usually done, it occurs to me that the result of a small experiment I made on a patch of ground adjoining my garden might not be uninteresting, and, by confirming previous statements, might lead others to make experiments on a somewhat larger scale. The following Tables will furnish you with the particulars of my experiment:—1st. As to produce of a single grain of three kinds of Wheat. 2dly. The total produce of 50 grains of the same description; and 3dly. The quantities per acre.

TABLE No. I.

Time of Sowing.	Sort of Wheat.	Quantity Sown.	No. of Ears Produced.	No. of Grains.
Nov. 18, 1843 ..	Red Lammas.	One Grain	39	1207
Ditto	Creeping Red.	Ditto	34	928
Ditto	Prolific.	Ditto	31	1040

TABLE No. II.

Time of Sowing.	Description of Wheat.	Quantity Sown.	No. of Grains destroyed.	No. that produced Corn.	No. of Ears produced.	Average No. of Ears to each Corn.	Total No. of Grains.	Measure of Grain.	When Cut.	Quantity of Ground.	Mode of Planting.
1843, Nov. 18	Red Lammas.	50 Grains.	16	34	642	19	19,128 or 562 to each grain.	3½ Half Pints.	Aug. 1st, 1844.	18 square feet.	Dibbled 6 in. apart
Ditto.	Smith's Creeping Red.	50	15	35	765	21	19,925 or 569 to each grain.	3¾ Half-pints.	Ditto.	Ditto.	Ditto.
Ditto.	Smith's Prolific Red.	50	12	38	637	16	19,711 or 518 to each grain.	3¼ Half-Pints.	Ditto.	Ditto.	Ditto.

TABLE No. III.—PRODUCE PER ACRE.

Description of Wheat.	Quantity of Seed.	Quantity Produced.	Weight per Bush.	Quantity of Straw.
Red Lammas.	121,000 grains or six 4-5th quarts.	66 Bshls.	60 lbs.	65 cwt.
Smith's Creeping Red.	Ditto.	70¾ Bshls.	62 lbs.	49 cwt.
Smith's Prolific Red.	Ditto.	66 Bshls.	60¼ lbs.	63 cwt.

In order to form a correct judgment of the above Tables, it is necessary that I should add some particulars. There is no doubt the produce would have been very much greater, had the season and other circumstances been more favourable. The loss sustained in various ways is far more than any deduction that may properly be made from the above figures, as being the result of a garden experiment. In the first place, the soil, though recently broken up, was unfavourable for the season—a stiff, dark, heavy loam (lying in a clay subsoil), full of vegetable matter and very wet; the consequence was that about one-third of the whole plant was destroyed by the slug, and the rest was much weakened; again, the long-continued dry weather, although generally favourable for the Wheat crop, in this instance was otherwise, as nearly all the outside plants were injured by the roots being so much exposed, through the very large fissures in the soil. Although the average number of ears to each grain is about 19, in many cases only 6 or 8 ripened; the remainder died away, having become loosened from the ground. Very considerable additional loss was sustained by the birds; for although I had a girl five weeks tending it, yet of so little effect was it, that in order to secure it at all, I was obliged to cut it quite green, which very much lessened the bulk—of course, not only the measure, but also the weight. I have, however, given you the exact result. The samples and quantities answering to the above Tables I have by me, and may add that I have seen to the matter entirely myself. I intend this autumn planting an acre on the same principle. I hope others (practical men), will be induced to do so, as it is by experiment alone that the comparative merits of thin and thick sowing can be ascertained.—*E. W. M.*

Potato Failures.—I quite agree with Mr. Alexander's remarks in page 596, and think the following is a further proof of the correctness of the observations as to the land being moist, so as to bring out the latent powers of vegetation. A farmer near this for some years, and with great success, has adopted the following plan:—If the season be very dry he has the manure well watered before any of it is put into the drills; this causes a great moisture to the earth in the drills; no time is lost in getting the Potatoes in and closing them up. This year he has a most abundant crop, and his neighbours a complete failure whose manure was dry when put into the drills. Where guano and manure have been used together for Potatoes, they have answered well this season, and for this reason guano, when deposited in the earth, produces a moisture similar to salt when it dissolves in the earth, or by dampness.—*M. S.*

What is the action of common Salt on Carbonate of Lime?—I should be extremely obliged if any of your chemical readers would inform me whether salt and carbonate of lime (under the form of sea-shells) would, if

slightly moistened and left in great masses long together, act in any degree on each other? It is, I believe, known that masses of the same substances will act on each other, of which smaller quantities will not. I do not ask this question for agricultural purposes (though possibly the answer might be of some interest in that point of view), but from having found in Peru a great bed of upraised recent shells, mixed with salt, which are decayed and corroded in a singular manner, so that the surfaces of the shells are scaling off and falling into powder. I may mention, as explaining one element in the value of sea-shells as manure, that they are dissolved by water with greater facility than apparently any other form of carbonate of lime: one proof of this I observed in a curious rock, from Chili, chiefly composed of small fragments of recent shells, which are all enveloped and cemented together by a pellucid calcareous deposit; but in some parts of this rock the little included fragments are in every stage of decay and disappearance; in other parts they are entirely dissolved, the little calcareous envelopes being left quite empty. Here we see that water, capable of dissolving shelly matter, has penetrated through their thin films or envelopes of carbonate of lime, without having acted on them; these films, moreover, being a deposition from water within quite recent times.—*C. Darwin.*

Potter's Guano.—I received this analysis from Mr. Mason. The sulphate of soda cost me 3*l.* 10*s.* a ton, and was very good, with a slight excess of sulphuric acid, not injurious, I think, to vegetation. I obtained the sulphate of ammonia at 17*l.* a ton, but I diminished the proportion of gypsum and salt, in order to employ a larger quantity of sulphate of ammonia. A compound resembling the manure which you have sent me for analysis, may be made as follows:—

Bones ground fine	200 parts
Sulphate of lime	100 ,,
Common salt	100 ,,
Sulphate of soda	75 ,,
Sulphate of ammonia, mixed with urine.	25 ,,
	500 parts.

—*X.*

Guano; Superphosphate of Lime.—Last year I had some Guano sown over part of a field of Wheat, which had been manured with between thirty and forty bushels of lime per acre, in the autumn, at the time of sowing the seed. There was not more grain at the time of harvest, where the guano was sown, than where there was none, but much more straw. The expense of the guano appears to be almost thrown away. With regard to superphosphate of lime, I used about four bushels an acre, drilled with the seed; but from the strong and rank appearance of the leaves, I should think a less quantity sufficient.—*J. W.*

Transmutation of Species.—In Dodsley's "Annual Register" for 1759 (p. 381), is an account of some Oats which the second year produced in Sweden Rye, having been cut off two and three times. I sowed some in March, 1832, and cut them several times, but the roots died in the winter. The experiment was a source of great ridicule and amusement to my neighbours. Did not Bruce find Wheat apparently growing wild about the source of the Nile?—*C. M.*

New Soil.—Surely your correspondent, "Rambler," (p. 580), is incorrect in stating that Potatoes are gene rally better in a new than old soil. Every person I have conversed with on the subject, allows that the produce is larger [that is probably what he meant,] but that the quality is much inferior, being waxy. This year I had a piece of pasture double dug (the Grass sods being removed), and set with Potatoes and various manures; the quality from all the manures is bad.—*R. J.*

Clover Dodder.—I have inclosed a piece of what I believe is the Dodder plant, Cuscuta europæa, the stem being thread-like, yellowish, branched, and twining. The seed of this horrid parasitic plant I have no doubt has been introduced into our Clover in the foreign seed which is generally sold to the farmers. The havoc the Dodder has made amongst the Clover is quite astonishing; immense patches of yellow silk-like net-work may be seen all over one of the fields near this place, and in a field of my own, although I had taken the precaution to have a space cut all round the Dodder, and the plant itself cut and thrown together, yet so tenacious does it seem of vitality, that it has spread afresh and commenced blooming. I have this time had it cut and burnt, as I feared much that, should it be allowed to seed, I should have had a troublesome enemy in the land, awaiting to destroy any plant that might be brought or grown in its neighbourhood.—*Ruri rusticus.*

Failure of Hay Crop.—I do not see that your attention has been called to the serious consequences of the almost total failure of Hay in the grazing and dairy districts, where for the most part not more than 20 or 30 acres out of 100 are under the plough. In the neighbourhood of Aylesbury, the average crops of Hay have not exceeded 5 cwt. per acre, instead of from one to two tons; and many meadows have not been cut at all, from the shortness of keep in the pastures. Many have been relying on rain in July and August, to mow in September and October, but this is now out of the question. The object of this communication is to invite discussion and information as to the best mode of supplying dairy stock with food, in lieu of Hay, during the winter, in a district where green crops, and especially Turnips, are scarcely known. On my farm of 360 acres, about seven acres sown with White Carrots and Mangold Wurzel, have wholly failed; and my Turnips, although they came up abundantly, and are untouched by the fly, are dying away in the present drought.—*A Farmer.*

FARMERS' CLUBS.

Darlington Farmers' Club.—This Club held their monthly meeting on Monday last, at the offices of Mr. Thos. Dixon, Land Agent, their Honorary Secretary, when there was a pretty good attendance of members present. The subject under discussion was The most beneficial Time for Reaping Wheat and other Corn, and the profitable Mode of Cutting and Securing it. Henry Chapman, Esq., the Chairman, introduced the subject, and said, that having formerly himself been a pretty extensive farmer, for a good many years, more particularly in Derbyshire, he had had opportunities of observing the cutting and harvesting of Wheat under different circumstances, and he was decidedly in favour of cutting Wheat before being fully ripe, as by that means a finer sample is obtained, as well as having the crop cut with less waste; but although he was an advocate for reaping Wheat before being fully ripe, yet he did not recommend cutting it very raw; for although a brighter sample was by that means obtained, yet he was strongly of opinion that it yielded a less quantity of flour; not, however, having himself made any experiments in proof of this position, he merely gave it as his opinion.—The Secretary then said, that from the experience he had had, he considered it judicious to cut Wheat a little earlier than what has been generally practised, as by that means not only is a brighter and better sample obtained, but if the crop is broken down, as is sometimes the case, it could be cut up much cleaner in a raw state than if fully ripe; the straw is also of a better quality, and in a wet harvest both the corn and straw stand the weather much better than when cut ripe. And in support of this position he mentioned the circumstance of the Wheat on the farm on which he was resident in the wet and unsound harvest of 1816 being cut in a very raw state, and the consequence was, that when all the neighbouring farmers' Wheat was completely sprouted in the stook, by the long-continued wet weather, the Wheat on this farm was comparatively sound; and in the succeeding winter and spring, when other farmers of the neighbourhood sold their Wheat in Darlington Market at 22*s.* per sack, the Wheat from this farm sold for 28*s.*; and he believed that the principal, if not the only reason, was that the Wheat on this farm having been cut in a much earlier stage of ripeness than the rest of the neighbourhood, it was not so easily affected by the weather. He then read some extracts from the "Quarterly Journal of Agriculture," detailing some experiments made by Mr. J. Hannam, of North Deighton, near Wetherby, by which it was clearly shown that it was injurious to allow Wheat to stand until fully ripe before cutting, and that the best period for cutting Wheat was from 10 to 14 days before fully ripe.—An animated discussion now ensued both as to the proper period for reaping and the best mode of cutting and securing the crop, and several members considered hooding the stooks of great service in securing the Grain from the ill effects of the weather; whilst, on the other hand, several others were of opinion that, if properly stooked, it was as well without hooding. As to the best mode of reaping, it having been up to this time almost the universal practice in this neighbourhood to cut Wheat with the sickle, there was no advocate for deviating from the old practice; but as regarded the proper period for reaping, the members present were unanimous in opinion that it is best to cut Wheat in a rather raw state—perhaps a week, at least, before being fully ripe.

Miscellaneous.

Cultivation of the Turnip.—The land is ploughed up as early as possible in the autumn, and receives one, two, or more ploughings, as opportunity offers. In the early part of the winter such portions as require draining are thoroughly drained with pipes of two inches' bore, having the opening heart-shaped—the widest part of which is placed downwards—upon the top of which stone is placed to about three inches in depth, consisting principally of small flints and pebbles, picked from the surface of the land; as soon as the land is sufficiently dry it receives two deep cross-ploughings early in the spring, is rolled and harrowed until a fine tilth is produced, and is then formed into ridges, or small stetches, 37 inches each in width, which is thus effected:—A straight furrow is first ploughed, and a double-breasted plough is then used, having a marking instrument attached, which consists of a small straight tough pole fixed at right angles from the beam of the plough by means of a hook, and placed as far back as possible, so that it does not derange the operation of the plough whilst working; at the end of this stick an iron is fixed exactly the width of two of the intended ridges, which is connected diagonally by a chain with the whipple-tree of the horse; this, as the plough proceeds, marks out the next furrow, occupying the space of two ridges. The work thus proceeds followed by a similar plough, or by the ploughman returning, who, by passing his plough down the middle of this space, divides the stetch of 6 feet 2 inches into two smaller ones of 37 inches each, the marker still defining the distance at which the plough should be held; the ridges being formed, are ploughed off with four furrows to each, and then every fifth ridge is drawn out to enable the manure to be carted on without injuring the form of the ridge. After the manure is carted on, at the rate of 16 loads of 40 bushels each, the ridges are then ploughed by four furrows, leaving a small baulk in the centre so as to divide the ridge into two spaces for the manure, which, from being partially decomposed, is easily spread in this double furrow; the land is then ploughed at four furrows to each ridge, and the manure being covered in, is rolled and harrowed, and is again rolled with a light roller. The Turnips are then drilled—two rows upon each ridge 11 inches apart, at the rate of 4 pints to the acre, thus standing at alternate spaces of 11 inches and 26 inches between the rows. As soon as the Turnips appear, they are singled out by boys and women at 15 inches apart, and are left standing diagonally with each other; they are then carefully and deeply hoed with a heavy hoe, and the furrows are kept clean with the horse-hoe, but the Turnips are invariably set out by hand and never by the hoe, the deep hoeing that is given being considered a main point in the system over and above that pursued with the common light Turnip-hoe; and the singling by hand is assisted by a small measured stick 15 inches in length, enabling the children employed to set the Turnips out regularly and diagonally, so that when finished they stand thus ⁘. In the months of November and December the Turnips are all pulled, avoiding the use of hooks or cutting instruments for trimming them, merely wringing off the tops and dislodging the greater portion of the earth attached to the fibres without cutting them. The Turnips are then carted to the respective fields where they will be required for winter use, and one moiety of them is left in the field for using there; those left are put into heaps of about 40 bushels each, are thatched over with straw, and the earth shovelled up and placed round the heaps to the top, which ends in a point. Those taken from the field are carted to the headlands of other fields where they will be required, which are principally those upon which Wheat was grown in the preceding year after Clover. The old hurdles used for folding are then selected for this purpose; one is placed first at the end across the space to be occupied by the Turnips, and two more are put at right angles, forming a space made by the double row of hurdles, in which the Turnips are placed, taking care to cart them when dry, and adding more hurdles lengthwise until sufficient space is obtained, and the Turnips are disposed of in rows about 7 ft. wide and 4 ft. in height. The Turnips are then protected by the earth being dug up and placed on both sides, leaving air-holes at about 4 or 5 feet distance, level with the surface of the land, which may be formed as the work proceeds by introducing small faggots tied loosely, or by any other mode, leaving the sides of the whole open so as freely to admit air, and extending across from side to side, which is of especial importance towards the preservation of the Turnips, as they might otherwise get into active fermentation, which when it takes place frequently destroys the greater part of them. The top of the heap is then covered with Barley-straw and thatched, and thus the Turnips are preserved from injury by frost and game during the most severe weather, and will remain in excellent condition until May following, very little impaired by keeping. The application of them is by feeding them upon the eddishes, and upon the land upon which they are grown by sheep in fold. The Turnips are all sliced, and the sheep are regularly fed in troughs, having a new fold every day, and with from ½ lb. to 1 lb. each of oil-cake per day. The sheep, for the most part, consist of lambs of the last year, and cost from 16*s.* to 20*s.* each—these in the following spring are shorn and sent to market, and produce from 30*s.* to 32*s.* each; the fleeces from the half-bred Leicesters weighing each about 6½ lbs., and selling from 12*d.* to 16*d.* per lb.—*Mr. Baker, on Essex Farming, in the English Agricultural Society's Journal.*

African Guano.—The guano, in the state in which it was received, formed a moist chocolate-brown powder, intermixed with numerous particles of a whitish substance. It possessed no urinous odour, but smelt strongly of ammonia. On examination under the microscope, no crystals of any kind could be detected in it; but it contained numerous remains of plants, partly in a state of decomposition, but still exhibiting a green colour, and globules of starch in the cells, likewise brown and white feathers, fragments of egg-shells and fish-bones. The aqueous solution was of a light reddish-brown colour, was strongly ammonical, and deposited on slow evaporation an abundant crop of crystals of the triple phosphate of ammonia magnesia. On adding nitric acid to the filtered liquid, an abundant flocculent brown precipitate subsided, which consisted of humic acid and extractive. The insoluble portion was of a light sandy-yellow colour. On boiling with solution of potash and precipitation of the filtered solution with hydrochloric acid, a light-brown flocculent substance subsided, which amounted to 5·50 per cent. This was first regarded as uric acid, but on further examination it proved to contain but slight traces of that ingredient, and to consist of a substance allied to humic acid. To determine the absolute amount of ammonia, one of the ingredients on which the value of guano chiefly depends, a weighed portion of the guano in its normal state was analysed according to the method described by Varrentrap and Will, and afforded 9·70 per cent. The other ingredients were determined in the usual way, and according to the results of analysis, 100 parts of the guano in question consist of—

Volatile salts, as oxalate of ammonia, chloride of ammonium, carbonate of ammonia, and combustible organic matter, containing 5·50 per cent. humic acid, uric acid and extractive . . .	32·89
Water	27·13
Ammonia	9·70
Phosphates of lime and magnesia	22·32
Insoluble residue in nitric acid, consisting of sand .	0·81
Alkaline salts, chiefly phosphates, muriates, and small quantity of small sulphates (chiefly potash) .	7·08
	100·00

From the above examination, it is evident that the African guano differs considerably from the Peruvian and Chilian, *i. e.* that it has been more exposed to the decomposing influences of atmosphere and water than either of those kinds, and tends rather to confirm the