

is no evidence that plants respire or reject any portion of the hydrogen of the ammonia which they absorb; and the reason must be that they appropriate it entirely: they require it all for the fabrication of their own substance, and hence their avidity for the ammonia which supplies it. It is not for the element, much of which is respired and rejected, and at best only appropriated in limited quantity, and in partial instances, but for that which is universally and entirely appropriated, and converted to structural use, that Nature has made ammonia so necessary to the nutrition and well-being of plants. In fine, there is a close analogy between the functions and processes performed by the leaves and roots of plants in building up their substance from the products of animal respiration and the decomposition of animal refuse. As carbonic acid, derived from the first source, is absorbed by their leaves, the carbon retained and the oxygen respired; so ammonia, resulting from the second, is absorbed by the roots, and the hydrogen retained and the nitrogen respired, except so much as the peculiar organisation and wants of particular plants may enable them to appropriate and utilise. The carbon and hydrogen unite and go to form the substance of the plant; and the oxygen and nitrogen are restored to the atmosphere. As we justly regard the carbon and not the oxygen as the essential element of vegetable nutrition in the one process, so I think we are equally entitled to regard the hydrogen, and not the nitrogen, as the essential element in the other. *J. H. H., Edinburgh.*

Propagation of Eels.—The eel, like the viper question, is a very curious instance of the firmness with which many popular opinions are maintained, although when the grounds of them are examined, no satisfactory proof of their truth can be produced. In this view, I think the discussion of both these points in your paper has been very useful—not merely as an inquiry into two very curious and interesting points of natural history, but as a caution to distinguish between facts and appearances; in short, as instruction in that most useful lesson, “how to observe.”—the event of which leaves us still in the dark respecting a more interesting animal—that which was supposed to be a sea-serpent. With respect to the eel, I believe the first person who treated the subject scientifically was Sir H. Davy; who has, I believe, exhausted it, as far as negative proof goes. For those who hold that eels are ever bred in fresh water, they ought to be able to prove—1st, that eels are ever found there in spawn—2nd, that such spawn has ever been hatched there. It is no proof to say that small eels have been found in ponds having no communication with rivers—the proof required is “ab ovo.” There is also room for inquiry into a rather curious subject, and that is—do eels, after having gone to the sea for spawning, ever return to fresh water? *T. G.* asks whether I have caught eels the size of crow's quill. We have caught them the size of a common tobacco-pipe, and from 3 to 4 inches in length. Our surplus water flows indirectly into the river Nene, from our sluice. It supplies some stews where we have been in the habit of keeping reserve fish; and, passing over several waterfalls, it enters a ditch, which is about 3 quarters of a mile long, and then reaches the river I have just named. The greatest take of eels I have had, was on the 23d of December; but the time of year is of little consequence with us, provided the water is thick and muddy, and the weather rather warm, which, of course, only occurs during very heavy rains. If I were to draw all the water out of the pond in a clear state, I should not catch a fish. The variety is the silver eel. Our pond is upwards of 50 miles from where the river Nene flows into the sea; therefore, how is it that those little eels had got no larger during their long journey, interrupted as it is by numerous and almost insurmountable obstacles, before they could reach the little ditch 3 quarters of a mile long, that would conduct them to our pond? And, last of all, after this long and tedious journey, within 100 yards of their destination, they would have to climb four waterfalls and a perpendicular sluice board. It appears to me that they should have grown much larger than a common tobacco-pipe, and longer than from 3 to 4 inches during that time; but I will leave this point for “*T. G.*” to explain. The “*Naturalist's Library*,” Vol. II, p. 258, speaking of the silver eel, says, that it abounds throughout Europe, except in the Arctic regions, and is, strictly speaking, a fresh water fish; can subsist permanently in fresh water, and, there can be little doubt, breeds best there. *G. H., Finedon Hall.*

Koordish Method of Blanching and Hardening Honey.—This should always be done in winter, when the weather is frosty. Put 60 or 70 lbs. of honey, with the comb, in a cauldron, over a slow fire; stir in about a pint of cold water, and let the whole simmer, but not boil, until the wax be quite dissolved, when remove from the fire. Skim off the wax and impurities, and strain through a fine sieve. Then pour the honey into a convenient vessel, and whip it for an hour or so each day for a fortnight, keeping in a cold place. If the operation of whipping be continued for a longer period, so much the better, as the honey will be harder and whiter. The honey that is imported from Bitlis to Erzeroom in winter is so hard as to offer some resistance to a knife. It is more manageable to eat in this form than in its usual liquid state, and is much more convenient for transport. Never having seen this prepared honey in summer, I am unable to say whether it will remain solid throughout the hot weather, but will certainly last so during the winter, if kept in a cool place. *H. H. C., Erzeroom.*

Bucket Ropes for Wells.—I suffer from the serious misfortune of a well 325 feet deep. It is worked by two

buckets, and a chain, which, from its great length, is necessarily very heavy. Would a wire rope (galvanised) answer? This, I presume, might be tight and thin; it would have to carry, at each end, a strong and heavy bucket, holding 12 gallons. The rope would have to work over, and, I presume, once quite round, a wheel only 14 inches in diameter. Would any of your correspondents have the charity to give the result of any actual experience of light wire rope; such would be of value, probably to others, as well as to myself. *C. R. D.*

Rain.—The quantity which fell here in the past year is as follows:—

	Inches.		Inches.
January	2.55	August	2.08
February	0.80	September	0.27
March	4.34	October	2.00
April	2.14	November	1.32
May	0.96	December	0.84
June	0.69		
July	1.92		19.91

Henry Dixon, Dorwards Hall, Witham, Essex, Jan. 5.

How to Crop a Small Kitchen Garden.—The following is the plan I pursue in growing Strawberries, so as to obtain a great weight of fruit of the finest quality, and at the same time economise space. I divide a south border into six equal parts, and plant one part every year. After they have borne three years they are destroyed, and the ground is cropped with vegetables. Thus the parts come in regular succession, three years Strawberries—three years vegetables. I well manure with well rotted dung, and trench two spades deep about the beginning of August, and plant 15 inches apart each way the following year. After they have done bearing I take out every alternate row, and fork in a little well rotted dung, and plant a row of Endive. After they have borne the next season I take out every alternate plant, and again crop with Endive. After bearing the following year they are destroyed. Thus it will be seen that I have one part of my border under Strawberries 15 inches apart; another part, 30 inches row from row, and 15 inches plant from plant in the rows; a third part 30 inches apart each way, and three parts under vegetables. I keep all runners cut away (except what I require for new plantations), and all dead leaves, but no more. As many of your readers, however, may not possess sufficient border, so as to keep up a supply, to such I would recommend the following plan. Mark out one or more beds 6 feet wide (ranging east and west); put on some well rotted dung and dig them; let the alleys be 18 inches wide; take out the soil to the depth of 1 foot, and place it on the beds, observing to raise the north side 3 inches higher than the south, to go down with a regular slope, plant at the same distances, and manage in the same way as recommended above. *J. Steel, Clitheroe.*

The Weather.—The mean temperature of December has been nearly 2° above the average of the last nine years. The most remarkable features of the past month have been the continued drought and the absence of any gales from the westward, which usually occur when the temperature of the month exceeds the average. Upon reference to the records of the fall of rain since the year 1727, it has frequently occurred that when November has been very dry, December has been wet, and vice versa; but the following are the only instances of continued drought, during the consecutive months of November and December, throughout this long period.

FALL OF RAIN IN INCHES.		1756.	1762.	1767.	1788.	1812.	1829.	1851.
November97	.92	.92	.45	.18	.63	.81	
December94	.23	.40	.89	.77	.66	.50	
		1.91	1.15	1.32	1.34	.95	1.29	1.81

January 1763 and 1813 were also very dry months; and, if from the records of the past, we may be allowed to judge of the future, the drought may continue throughout January, 1852. The scarcity of water in this district has now become a very serious inconvenience, not only to the farmers and millers, but the supply for domestic purposes is very scanty, and in some of the adjoining villages it can only be purchased by the pailful. It is a very interesting subject for enquiry, why the scarcity of water should be greater in 1851 than in 1847, for not only was the latter year the driest in the present century, but the fall of rain in each of the years 1844, 1845, 1846, was below; and in the years 1848, 1849, 1850, was above the average of the last nine years, more particularly in 1848, when the quantity of rain was more than double the amount which fell in 1847.—The fall of rain in 1847 was, 17.58 in.; in 1851, 24.36 in.; the average of 9 years being, 26.85 in. *C. Leeson Prince, Uckfield, Sussex, Jan. 5.*

Ice Stacks.—Among the papers which have recently appeared on this mode of stacking ice, I consider that by Mr. Ingram the most rational. My own experience in the matter is this: I began it several years ago, with a view to supplement the contents of our old ice-house, which is, as most old ice-houses are, a deep well the shape of an inverted cone, and provided with space enough to receive about 45 or 50 cart loads of ice. Previous to commencing the stacking system, I had never seen one made; but there being in the vicinity of our ice-house, a deepish “gill” of broken ground terminating in a point, I set some men to work to widen a portion at the point and raise a bank or dam across, with the earth they removed, and thus formed a sort of irregular parabolic shaped hole, not very deep, into which I put 70 cart loads of ice, when the frost came, pounding it well, and raising it above the surface in the shape of a blunt-pointed irregular cone. This was covered over about a foot thick, perhaps a little more, with litter—any litter we happened to have, old thatch frequently from the barn-yard. We have followed this

process annually ever since we began it. When it was first done, all my hands opined it might last till Midsummer. The result was that it held out till well into September, although attacked daily without much delicacy. One season, owing to the absence of the family, very little was wanted; the old ice-house, though well filled, was never opened at all, and on the approach of winter I sent some men to clear out both, preparatory to refilling. There was found about an equal quantity of ice (about a good wheelbarrowful) in each. My stack or pile has no artificial underdrainage whatever, but is laid on the earth bottom, and the meltings soak off as they best can. The situation is partially shaded with large trees. Before concluding, allow me to say that were I to construct a new ice-house, I would by no means adopt the deep well plan. I remember reading in your paper a description of a Chinese ice-house sent home by Mr. Fortune, the principle of which I much approved, and which, with perhaps some modification, might be advantageously adopted in England. After all, one grand advantage in keeping ice is, to get it pure, and to put plenty of it together. *Querous.*

Blinds for Glass Houses.—Your late leading article on “the burning of Vine-leaves, &c.,” was admirable, as also your remarks concerning the covering for Vineries. Perhaps you will allow me to trouble you with a few remarks on that subject. The plan I have adopted for the last three years for covering my greenhouses, conservatories, forcing-pits, and cold-pits, is this:—I have had a canvas covering made the size of the roof, which is dressed over with a composition of boiled oil and litharge (one covering was dressed with boiled oil litharge, and yellow ochre); but the first composition is the best, I find, because it is more transparent; this is nailed on to the rafters, as close as possible to the upper part of the roof; the other end of the canvas is nailed on to a roller, which rests on the lower ends of the rafters, and is kept in its proper place by two hooked irons fixed to the rafters. At one end of the roller is a wheel fixed, the outside diameter about 14 inches, with a groove for the cord to run in, about 1½ inch wide and the same in depth; there is an iron pulley fixed in the wall above the roof, exactly in a straight line with the wheel, and about 6 inches above the roof; the cord is fixed into the groove of the wheel by a nail, just slipped through the pulley on the top; and thus the roller, with the covering attached, is drawn up and down with the greatest ease. To prevent the wind from lifting it up, I have two or three brass knobs fastened into the sides of the roof, about 4 feet apart, and a corresponding strip of leather sewed on to the covering, with a button-hole to each. Supposing the roof to be too high to reach from the ground, to button these strips, you have merely to use a short ladder. I have found these coverings to answer admirably, and without any trouble. When you wish to remove them in the spring, you have only to draw out the nails which attach the covering to the rafters. I ought to have said, that when the covering is let down, the roller, as a matter of course, rests on the irons at the bottom of the roof. I use the same sort of rollers and the thinnest calico for shading the conservatories, &c., in summer. The upright fronts and sides of the houses are so easily covered up, that it is not worth naming. I am a bad hand at describing a thing of this kind, but I hope you will be able to understand it; and unless any other correspondent can recommend anything more simple and better, I strongly advise a trial of this plan. I remember reading somewhere, that Sir William Burnett had patented some composition for preserving canvass, &c., from damp and mildew, and that a trial had been made with it on some sails belonging to the Navy. The sails were dipped in the composition, and were afterwards placed in some damp vaults (I think of Somerset House), together with some other sails that were not dipped. There they remained some considerable time, and when taken out, the undipped sails were quite rotten, but the others were quite sound and uninjured, and were afterwards used in the Navy. Could you inform me where this composition is to be obtained? I fancy it is the solution of chloride of zinc. *J. W. South Perrott, near Crewkerne.* [It is what you suppose, and may be had of any dealers in such articles.]

Societies.

ENTOMOLOGICAL, Jan. 5.—*J. O. WESTWOOD, Esq., F.L.S.* President, in the chair. Donations of Entomological works from the Natural History Societies of Moscow, Munich, Professors Bohemann, Roth, and Gemminger &c., were announced. Mr. A. White exhibited a specimen of *Anarta richardsoni*, of Curtis, a moth brought from Baffin's Bay by Mr. Ede; and, also, a variety of rare Coleoptera and Lepidoptera collected in Borneo by Mr. Low, intended for the Society's collection; many of the species being identical with those of Tenasserim Coast and Assam. These exhibitions led to an extended discussion on the geographical range of insects, in which Messrs. White, Curtis, J. E. Gray, and the President took part. Mr. S. Stevens exhibited a beautiful variety of *Argynnis Paphia*, taken at Darent Wood; the upper surface of the wings of which was almost suffused with black. Mr. Curtis exhibited a beautiful species of Cicada, which he believed to be a native of Central America, but which he had captured alive in one of the hothouses at the Horticultural Society's gardens at Chiswick, in August last, where it had probably been imported with American plants; also, the nest of *Epeira zebra*, a beautiful species of spider, which he had taken at Nice, in spring. It was globular, and about an inch in diameter; but M. Guerin had informed him that it