THE HOUSEHOLD.

The Water We Drink.

(From Good Health.)

What shall we eat, and what shall we drink? This is a question asked by all alike—rich and poor. The philosopher cannot live on his philosophy any more than the student can upon his study. There are hours when the merchant leaves his desk, the scientific man his laboratory, the politician his papers, the physician his consulting room, the tradesman his counter, the mechanic his workshop, the laborer his hod and spade—and all alike ask one question, however different in each case the answer may be (sadly different we know too well):—"What shall we eat, and what shall we drink?" I presume there is no one article of greater importance in this question of meat and drink than water; and the extreme interest that has been excited during the last few years respecting its relationship to health and disease, must be our apology for bringing the subject before our readers. Some years ago it was hard to convince the public of the dangerous character of the water of some of our pumps, and of the probability that they were the cause of several serious outbreaks of fever, and the like; but now-a-days the tables are turned, and the slightest appearance of any malady, from cholera down to a whitlow, is immediately supposed to arise from some impurity in the water. Indeed, people seem to have gone watermad, heaping sins by cartloads on its back, of which, there is scarcely a doubt, it is entirely innocent.

Water itself is a curious substance, and nature seems to have designed its peculiarities for great and important purposes. It is peculiar in respect to its contraction and expansion, for whilst most liquids expand on being heated at all temperatures, water (although it does not stand quite alone in this peculiarity) at certain temperatures contracts when heat is applied; and it is owing to this strange property that our rivers and lakes are prevented from becoming mere masses of ice during an intense frost.

Then, again, it is peculiar as regards its *specific heat*. The cook knows very well the length of time that is required for a large saucepan of water to become even warm, let alone to boil. Had it been full of alcohol or ether, it would not have taken anything like so long to rise ten degrees as when full of water. It is this peculiarity that maintains water in the liquid condition, and, indeed, renders impossible its existing long in any other form. I need scarcely stay to point out the importance of this peculiarity in the maintenance of animal and vegetable life.

Once again, I would note that water, of all liquids with which we are acquainted, possesses the greatest power of holding substances in solution. And this solvent power is not confined to its action on solids, but extends also to gaseous matter, the solution being mechanical in some case, and chemical in others. The powers that water possesses in taking up some gasses is extraordinary. In the case of ammonia gas, seven hundred and eighty volumes are soluble in one volume of water; and, bearing in mind its vast solvent powers, there is nothing very extraordinary in the fact that absolutely chemically pure water is an unknown thing in nature. Rain water is contaminated with the ammonia and other gaseous elements with which it meets in its downward progress. Even snow, as Liebig has shown, contains a considerable quanty of ammonia. In using the word "contaminated" I merely intend to imply that rain water is not chemically pure, because there can be but very doubt that the presence of ammonia is not altogether unimportant in its influence on vegetable life; nor is it unlikely but that the excessively invigorating effect produced on vegetation by a shower of rain, may, to a certain extent, be due to its presence. I may just remark here that plants seem to revive more rapidly when sprinkled with water to which you have added a trace of ammonia solution, then when common water has been employed.

Then, again, as the water passes through the various strata, it takes up the several solid matters it meets with in its course. In some cases the amount of these solid matters will of necessity be somewhat great, owing to the solubility of the substances with which it meets. In other cases the amount will be very small, owing to their non-solubility. For example, Professor Brazier, of Aberdeen, Scotland, reports that the water of that town only contains between 3 gr. and 4 gr. of solid matter per gallon. In London water it varies from 17.0 gr. to 17.5 gr. per gallon in the summer, and from 21 gr. to 23 gr. in the winter. We often find 30, 40, and 50 gr. per gallon, whilst in sea water the quantity is very much increased, until at last we find (in the water of the Dead Sea) above 2,500 gr. per gallon, the whole of which is held in solution by the water.

Now there are few things, perhaps, that have excited the interest of water-drinkers more than the animalcules found in water, and about which so much has been written, and so many sensational stories told. It is of course easy enough to terrify children and weak-minded people with a microscopic view of a drop of bad water, or by throwing upon a screen by an oxyhydrogen microscope some huge ugly creatures floundering about with strange uncanniness, and consuming with giant appetites their weaker and smaller brethren; assuring them at the same time that these are present unnumbered millions in every glass of water they drink, whatever caution may have been used to get rid of them. We all know how some popular scientific books supply a pretty circular drawing, said to represent the animalcules in a single drop of water, an assertion that is utterly erroneous, and most sadly liable to mislead the public as to the real facts of the case. This pretty drawing is, we need scarcely say, too often the production of an artist's fancy rather than the truthful sketchings of the cautious investigator. It is such sensationalism and exaggeration that have so often led the public (as those who have given their attention to sanitary medicine are constantly reminded) from sources of real danger to fix their attention on purely imaginary ones. Let me not be misunderstood. Unquestionably, animalcules are to be seen in waters containing animal and vegetable life in a state of decay; but it is a pure myth to suppose that any ordinary microscope will exhibit, as so many imagine, a world of creatures in every drop of water that you take from your cistern or well.

And, further, admitting their existence in some waters, we must not condemn them off-hand. Their presence in water is, perhaps, after all an advantage, for they must live, and to live they must eat, and so they feed on the organic matter which the water contains; and their work being finished, it is only to give place to a new generation that shall fulfil similarly important duties. But though, regarding their presence from a physiological point of view, it is impossible to say that they are injurious to health; still there can be no doubt that it is desirable, as it is certainly more agreeable, to remove them before the water is employed for drinking purposes.

Fortunately they are never found in any water which has undergone careful filtration. It is right to say that if the water is kept in a vessel, and the slight deposit formed after several days is carefully collected, and examined under the microscope, numerous small animalcules will no doubt be found, moving about with wonderful rapidity. It may of course be argued from this that, though filtration keeps the animals themselves back, it still allows the ova to pass. This may be true; but surely it is not difficult to suggest other causes to explain their presence in such cases.

Water, as everybody knows, is a compound of two gases—oxygen and hydrogen. Nothing more than these are necessary to form it; and what is more, anything in addition, if present, must be regarded as extraneous matter. This may be proved in two ways—analytically, i. e., by splitting the water up into these two gases, and synthetically, by uniting them, and forming water again. The one is a process of pulling down—the other of building up.

(To be Continued.)

AGRICULTURAL.

How to Have a Good Garden.

BY "WALKS AND TALKS."

(From the American Agriculturist.)

A correspondent asks me how he shall go to work to have a good garden. If he had asked me last fall, I could have told him. To have a really good garden it is necessary to prepare the land the summer or autumn previous. But even without this preparation a good degree of success may be attained the first season.

The first thing to be done—and it should not be delayed a moment—is to prepare the manure. Select the richest manure you have, and that which is the shortest and most thouroughly rotted. Throw it up into a large, loose, conical heap, the wider and broader and deeper, the better. If it is too dry, throw on some liquid from the stables. In a few days, if it is horse or sheep manure, it will commence to heat, and in the course of a week or ten days, it may be turned over. In the meantime order half a ton or a ton of pure bone-dust. I would calculate to put on at the rate of twenty-five tons of manure and half a ton of bone-dust per acre. Turn the heap of manure, and while doing so, scatter a sprinkling of bone-dust on each layer, say a bushel to a ton at first, and then as the heap ascends, not quite so much, or it will not hold out. And if it does not, it will be none the worse, as the ammonia, generated from the lower layers, will be more likely to be retained by the upper portion. If it is not moist enough, water it with the drainage from the stables or yards, or if this cannot be had, with water. Or throw on soapsuds, and if they are warm, all the better. Hot water, or any thing that will warm the heap, will accelerate fermentation and reduce the manure.

Ordinarily, it would be better to take a longer time and let the fermentation proceed more moderately. But now we cannot afford to wait. We shall soon need the manure. But no matter, a little skill and judgment will prevent waste. Water has a strong attraction for ammonia, and if the heap is kept almost to the saturing point, little or no ammonia will escape. But you must not put on *too* much, or it will cool the heap so much that fermentation will be arrested. It is here that judgment is required. If you have any genuine superphosphate on hand, you *may* have an opportunity of using it to good advantage. That is to say, the bone-dust and the manure, if both are good, will ferment very rapidly, and possibly ammonia may escape (though if due precautions are observed, it is not likely). In this case, put a pound or so of superphosphate in a pail of water, stir it up, and throw it all over the top of the heap, or where the steam is escaping the most rapidly. The acid phosphate will instantly arrest the ammonia. Plaster, *in solution*, will do the same thing—the only trouble being that only a very little of it can be dissolved. But it is worth while putting a little plaster in all the water that is thrown on the heap—say a tablespoonful in each pail of water. More than this will not be dissolved, though if more is added it will do no harm.

When fermentation begins to slacken, turn the heap again, and break up all the lumps. The finer you can make it the better. Be sure to keep it moist enough. If it ferments slowly, mix some sandy soil with it. Clay soil will arrest fermentation; sand will accelerate it. This treatment should give you as good and rich a heap of well-rotted fine manure as ever was put on a garden.

In applying manure, the gacat aim should be to incorporate it as compleatly as possible with the soil. It is not easy to do this unless the manure is thoroughly reduced before it is applied to the soil. If it is plowed in be very careful in spreading it to break the lumps. And it would be well, if it can be done, to harrow it after it is spread. If the harrow pulls it into little heaps, spread them out again and knock them to pieces before plowing them under.

The first thing I do in the garden is to sow peas. I want peas every day from the middle of June to the first of August—and I have them; and so may you and every other farmer. I think I have heard an occasional whisper in the kitchen to the effect that it is a good deal of work to pick the peas and shell them—but I am a little deaf at such seasons. And I believe if you will grow the peas, they will not be allowed to go to waste, or if they are not used, they will be good for seed. As soon as the frost is out of the surface-soil, three or four inches deep, I sow a quart of Carter's First Crop, a quart of Waite's Caractacus, and half a peck of Early Kent, or Daniel O'Rourke. I make the rows four feet apart, and set out some young cabbage plants, wintered over in cold-frame, between the rows. I make the rows four inches deep, but do not cover the seed more than an inch deep with soil, but I put on three or four inches of horse manure on top. If the soil is not very rich, I would work in a good dressing of the well-rotted manure, prepared as above directed. Early peas want rich land, and they should also be sown very thick—say a quart to a row fifty or sixty feet long.

On warm, sunny days, rake off the mauure and let the sun warm the light, covering of soil on the peas, and warm the manure at the same time. Towards evening, rake back the manure on the rows to protect them in case of frost. When the peas begin to sprout, rake a little light, warm soil on the top of them, mixed with a little manure, and keep doing this as the peas grow, until the soil and manure covers them an inch or so higher than the surface of the ground. Then hoe the soil up on each side the row, two or three inches higher than the peas. This will afford considerable protection from cold winds. When the peas get three or four inches high, draw up the soil on each side of the row in a broad ridge leaving a wide space between, and then pole the peas. A farmer can get the nicest kind of pea-brush from the woods, which, if properly taken care of, will last two or three years. The more side branches on the poles, and the nearer the ground, the fewer poles will be required. Trim them up, fan-shaped, and sharpen the ends so that they will go easily into the ground. Put them on each side of the row, and let them be narrower at the bottom than at the top. The sun can then get among the vines and they will pod better and ripen earlier.

(To be continued.)

The Best Ale Jug.

The old farmer sat down to his supper tired and hungry. His joint of meat was before him, which would relish all the better, he thought, with a drink of ale to wash it down.

'Go, my boy,' he said, 'and fetch me home a jug of ale from Dick's.'

Thomas went. The shop was full of idle fellows, and among them his older brother, who lived more in the beer-shop than he lived at home; more on beer than on bread; more on others than on himself; so that all he was good for was good-for-nothing, which is a sorry sort of excellence, you know. Drink, *strong* drink, made him quarrelsome, and the sight of Thomas with his mug, and especially his mug full of foaming ale, as it soon was, quickly excited him.

'Give me a swallow!' he cried roughly.

'No, you don't,' said Thomas; 'no, you don't; this is father's;' and he was hastening out of the door, when Jed caught him by the arm; a tussle followed, ending not only in spilling the ale, but in spilling the jug also, which fell on the floor and cracked its bottom out. Thomas caught it up, and hurried home with the story to his father. 'Bottom out, is it?' said the old man, after a moment's thinking,—'well,' he said, bringing down his hard fist with a bang upon the table, as if he meant something—'well. then, that's the best ale-jug for me. Put it down.'

'Yes, father, but it will not hold anything.'

'Thomas, that makes it the very best ale-jug for me, I say. If it had been the kind I had always used, your brother might never have been the poor creature he now is.'

That is so. And if this is the best ale-jug it is the best whiskey-jug; and if it is the right pattern for a whiskey-jug, is it not the best pattern for a gin-bottle, and a brandy bottle, and wine bottle? Perhaps it is not exactly in style; but why not let reason and conscience, and health, and industry, and Scripture sometimes set the fashion? I think they could be trusted, and in this matter we should, I doubt not, find them on the side of the old farmer's jug; do you not?—*Children's Paper.*

Degradation of Intemperance.

What sight is sadder, and at the same time more revolting, than that of a drunken man. Sputtering idiocies, and staggering in imbecility; with bleared eyes and stupid face,—it would seem that the fair spirit of manhood had forsaken its polluted shrine, and, by some dreadful transmigration, been succeeded by a beastial essence. We have contrasted the dignity and intelligence of some horse and dog, with this pitiable wreck, and wondered at the possible depths of man's degradation. Bishop Taylor says: Every drunkard clothes his head with a mighty scorn. . . . So cheaply does he part with his honor for drink or loads of meat; for which honor he is ready to die rather than hear disparaged by another; when himself destroys it as bubbles perish with the breath of children. . . . But, good God! what an intolerable sorrow hath seized upon great portions of mankind that this folly, and madness should possess the greatest spirits and wittiest men, the best company, the most sensible of the word *honor*, and the most careless of the *thing!* Is it not a horrid thing, that a wise or a crafty, a learned or a noble person should dishonor himself as a fool, destroy his body as a murderer, lessen his estate as a prodigal, disgrace every good cause that he can pretend to by his relation, and become an appellative of scorn, a scene of laughter or derision—*and all* for the reward of the forgetfulness of madness?

How The Wife Felt.

A man at whose house I was a guest, told me that he had been a hard drinker and a cruel husband; had beaten his poor wife till she had almost become used to it. 'But,' said he, 'the very moment I signed the pledge I thought of my wife—what will my wife say to this? Strange that I should think of my wife the first thing, but I did; and as I was going home, I said to myself: 'Now if I go home and tell her all of a sudden that I have signed the pledge, she'll faint away or she'll up and do something; and I must break it to her by degrees.' Only think of it; why, the night before, I'd have knocked her down, just as like as not, if she hadn't *looked* to please me; and now I am planing to break good news to her, for fear it would upset her.'

As near as I could gather from what he told me, he found his wife sitting over the embers, waiting for him. As he came into the house, he said:

'Nancy, I think that——'

'Well, Ned, what is it?'

'Why I think I shall—that is—I mean to—to—Nancy, I mean——'

'What's the matter, Ned? Anything the matter?'

'Yes,' said he, 'the matter's just this—I have signed the temperance pledge, and, so help me God, I'll keep it!

'She started to her feet, and she *did* faint away. I was just in time to catch her; and as she laid in my arms, her eyes shut, and her face so pale, thinks I she's dead, and I have done it now. But she wasn't dead; she opened her eyes, and then she put her arms around my neck; and I didn't know she was so strong, as she pulled and pulled till she got me down where I had not been before for thirty years—on my knees. Then she said: 'O God! help him!' and I said, 'Amen!' and she said, 'O God! help my poor Ned, and strengthen him to keep his pledge,' and I hollered 'Amen!' just as loud as I could holler. That was the first time we ever knelt together, but it was not the last.