ulverised charcoal dust, which he then thurst in a well-prepared hot bed: in 24 hours it had grown one inch; other grains he soaked 25 minutes, and killed the vital principle of the kernel. So strong were the fumes of the ammonia, that it destroyed a bed of cucumbers in 20 minutes, placed in a saucer in the midst of the vines under glass. The object in putting it there was to kill insects, which it did most effectually in three minutes: and had it been then removed, the probability is the plants would have been improved by the gas—there were cucumbers on them at the time six inches long.

Charcoal as manure will be found invaluable: it is pure and incorruptible, absorbs from the atmosphere 90 volumes of ammoniacal gas, 55 of sulphuretted hydrogen, and 35 of carbonic acid gas. By uniting with oxygen, it forms carbonic acid gas, and constitutes about 42 per cent. in sugar, 41 per cent. in gum, 43 per cent. in wheat stareb, 52 in oak wood, 51 in beech wood, 46 in pure vinegar, 36 in tartaric acid, and 41 in citric acid; as carbonic acid gas, it is found in all cultivated soils, in all waters, and in the atmosphere. It is absorbed by every plant that grows, the carbonic acid gas being composed of oxygen and hydrogen; it will therefore be readily conceded, that being necessary to plants, in all stages of their growth, there cannot be applied to them a substance more requisite. Charcoal from pine wood is the best for agricultural purposes, on account of its fine texture, which enables it to absorb moisture, together with the other gases before enumerated, more rapidly, and may be easily incorporated with the soil, where it protects plants, not only from decay, but worms. It insures them without cessation, all the elements most required, and essentially necessary to their healthy growth, and gives them a beautiful green appearance, and luxuriance, not obtained by the use of any other substance as a manure.

All farmers are familiar with the fact that coal-beds, where pits have been formed for the purpose of preparing charcoal, produce a most luxuriant growth of vegetable substances or weeds. It has been generally supposd by those who have witnessed the fact, that it was caused by the ashes remaining on the bed, which is not so. It is owing to the hydrogen, oxygen, nitrogen, azote, &c. absorbed by the carbon. If the coal were even deprived of all the qualities specified, its black color alone would make it valuable, if only to attract the sun's rays, and thereby warm the soil.

ROBERT L. PELL.

[From the Genesee Farmer.]

CHARCOAL AND AMMONIA.

I clip the following from the March number of the New Genesee Farmer:—

"Is 'D. L.' quite sure that the charcoal in a filtering cistern will absorb the ammonia to any perceptible extent? The only use that can be made of it there is, to stop the impurities contained in the water—not to absorb the ammonia; for if D.L. ever noticed it, the amount of ammonia contained in rain-water does not unfit it for culinary purposes, any more than the lime held in solution in hard water. "P."

Allow me to suggest, that the above is in bad taste. If "P" knew of any error in the remarks of your correspondent "D. L." he should have pointed it out, or at least given *one reason* for so flat a contradiction.

But waving the discourtesy, how does "P." know that "The only use of charcoal in a filtering cistern is to stop the impurities contained in the water, not to absorb the ammonia? Beside ammonia, and other analogous gasses contained in rain-water, what "impurities" does it hold in solution when it falls from the clouds? And if the coal acts merely as a strainer, to "stop impurities" mechanically, how could matters held in perfect solution be arrested in their progress through such a filter? Unrectified whiskey holds volatile elements in solution—"impurities" which coal will separate by its chemical affinity, although such affinity is less than it has for ammonia. Speaking of wood coals, Professor Johnston, of Edinburgh, in the first volume of his valuable work on Agricultural Chemistry, says, "They have the power of absorbing, in *large quantity*, decayed animal matters held in solution in water: hence their use in filters, in purifying impure river, rain, and spring water. This action is so powerful, that port wine is rendered perfectly colorless, by filtering through well prepared charcoal." He adds, in a note, that coal will absorb 95 times its bulk of ammonia, 55 times its bulk of sulphuretted hydrogen, &c. Will "P." tell us what sort of mechanical action that is, which enables one body to "stop" the further progress of a liquid, or moving gas, *ninety-five times its own bulk?*

Again we are told, "If D L ever noticed it, the amount of ammonia contained in rain water does not unfit it for culinary purposes, any more than the lime held in solution in hard water." A great discovery, this! I had been silly enough to believe, that the experience of ages had induced all civilized nations to use well and spring water, "hard" as it might be, "for culinary purposes," rather than use rain-water, containing as it does, before it is filtered, ammonia, sulphuretted hydrogen, and other deleterious gasses, that rise into the air from rotting vegetables, and millions of dead animals undergoing decomposition. I had supposed, that an infinitely wise and benevolent Creator had made the soil a vast filtering apparatus, for separating the organic matters held in solution in falling rains, that such organic ingredients might again become living plants and animals. A little of the ammonia thrown so profusely into the atmosphere from putrid animal matter might not, in warm weather, render rain-water unfit to make tea for Mr. "P.;" but I submit to the reader, if the entire separation of this offensive animal matter, by the aid of a charcoal filter, would not be desirable, especially when coal thus saturated would become manure of great value.

In justice to himself, your correspondent "D L." feels bound to say, that in early life he had the advantage of attending four full courses of lectures upon the science of chemistry, at one of the best institutions in the Union, and having been bred to the business of farming, he has spent much time, and some money, in trying a great variety of chemical and physiological experiments, in connection with practical husbandry and the arts. He has also studied much to keep up with all the wonderful improvements of the age in agriculture, and most of the arts that appertain to productive industry. Nevertheless, he has abundant cause to deplore his ignorance, and will be happy to learn from any one who will condescend to impart instruction in kind or courteous language.

I think I am not mistaken when I say, that a very large portion of the fertilizing elements of the liquid and solid secretions of animals is needlessly, and I am tempted to say heedlessly, lost in this State, by bad management. When I stated, in the January number of the Farmer, that twenty years' experience had taught me the great value of charcoal to absorb the fertilizing ingredients in urine and manure, I published a fact of considerable importance to the practical agriculturist. Let any one take an old barrel that will hold water, fill it with pounded coal, place it under his wood shed, and empty his chambers into it until the coal is saturated with human urine. Not a particle of ammonia, or of any offensive gas, will escape till the coal is saturated. Then apply this substance in the quantity of a tea-cupfull to a hill of corn or potatoes: give some, also, to your growing wheat, and sow some with your seed, in putting in your spring wheat. Put the coal, saturated as above directed, in the hill with the corn, beans, or potatoes.

Dissolve one fourth of a pound of sal. ammoniac, which will perhaps cost 6 cents, in two quarts of hot water, and when reduced to blood heat, put two quarts of seed corn into it to soak. Let it remain eighteen hours, then plant in a row by itself, after it has been rolled in plaster. (I have soaked some in urine with good effect.)

At a meeting of the friends of agricultural improvement in Albany, a few evenings since, the Mayor, Mr. Humphrey, stated, that by the application of a few drachms of the light shavings of horns from a comb factory to each hill of corn, planted on very poor sandy soil 34 miles from this city, he had been able to harvest 60 bushels of sound shelled corn per acre. Where nothing was used, the crop was only about 18 bushels per acre. Horns contain more ammonia than almost any other known substance. Mr. Bement had tried refuse bristles, obtained from a brush factory with results lasting three years, and alike beneficial.

Professor Emmons stated, that he had lately obtained a sensible quantity of ammonia from snow. He also said, that the precise difference in the quantity of ammonia which *dry* and *wet* charcoal will absorb is not definitely settled. Prof. E. is now engaged in the analysis of soils, in connection with the geological survey.

D. L.

LIQUID MANURE.

There is but one other manure of animal origin to which it will be necessary to allude in this place, and that is urine, or as it is commonly called, liquid manure. Analysis proves that this is a substance peculiarly rich in materials required by plants, and experience enforces the results of analysis; yet not one farmer in a thousand makes an effort to convert this mine of riches to any account, but the whole is most generally lost to him. Dr. Dana gives the following as the constituents of cattle urine, which may stand as the type of all others, though human urine and that of the horse differ from this in the character and quantity of some of the salts contained in them.

Water, ...	66
Urea, ...	5
Bone dust, ...	5
Salamoniac and muriate of potash,..	18
Sulphate of potash, ...	6
Carbonate of potash and ammonia, ...	4
	100

Value of Urine.—Compared with cattle dung, it will be seen that while that gives only 2 lbs. of carbonate of ammonia to 100 lbs. of dung, the urine gives 5 lbs. of ammonia in its urea, and nearly three times that amount in the other ammoniacal salts. One third of urine is composed of salts, whose action on vegetation is of the most energetic and favorable kind; and yet there are thousands who call themselves pretty good farmers, who use all reasonable precaution to preserve the solid parts of their animal manures, that have never made an effort to save that which is of far the greatest value, the liquid part. But it must not be forgotten that soils must contain decayed organic matter or humus for these salts to act upon, otherwise liquid manure of pure urine can do no good. Where the wash of the barnyard and stalles is saved, the loss of a large part of the urine is prevented; but when, as is too often the case, this is wholly lost, not only is the urine thrown away, but a large part of the soluble humus of the manure accompanies it. It is an excellent plan, therefore, to have some reservoir for the reception of such liquid matters as would otherwise be lost. If this cannot be done, cover the bottom of your yards with muck, or even common loam, as this will absorb and retain much of the urine and liquid matters of the dung. Experience has demonstrated that a load of loam, saturated with urine, has a more powerful effect on vegetation than the same quantity of best rotted stable manure. Human urine is richer in salts useful to vegetation than any other, containing, according to Dr. Thompson, in 1,000 lbs., 42½ lbs. of salts. The slightest attention on the part of the farmer, might prevent the loss of this; and many a load of swamp muck, or loam mixed with gypsum, might, when saturated with urine, be added to his available manures. Liquid manure, or rather urine, differs much in the salts it contains, according as the food is rich or otherwise. "White turnips give a weaker urine, than the Swedish, and green grass is worse than either," according to Dr. Dana, Turner and Liebig found that the urine of fattening animals is richer in salts than that of store animals. Indeed, the law so well known with regard to solids, that the richer the food the more valuable the dung, it is probable holds good in regard to the urine also.