VALUE OF POULTRY MANURE.

The following report to Mr. L. Wright by Dr. A. Voelcker, F. R. S., appears in the London *Live Stock Journal:* Enclosed you will find analyses of the two samples of chicken manure which Mr. O. E. Cresswell, of Hereford, sent me on March 19, 1880:

	Fresh Manure.	Partially dried Manure.
Moisture	61.03	41.06
*Organic matter and salts of ammonia	20.19	38.19
Tribasic phosphate of lime (bone phosphate)	2.97	5.13
Magnesia, alkaline salts, etc.	2.63	3.13
Insoluble silicious matter (sand)	12.58	12.49
	100.00	100.00
*Containing nitrogen	1.71	3.78
Equal to ammonia	2.09	4.59

You will notice that in a fresh condition the sample of chicken manure analyzed by me contained 61½% of water in round numbers, and 12½% of sand, while the sample of partially dried manure contained 41% of water, and about the same proportion of sand as the fresh dung. Judging from the appearance of the manure, the greater proportion of the sand, it appears to me, arises from earthy matter which the fowls picked up with their food, and is not due to sand merely adhering to the excrements externally.

I need hardly say that the large proportion of moisture and the considerable amount of useless silicious matter in fresh chickens' dung, detract much from its value as a manure. However, chicken dung, although greatly inferior to Peruvian guano, is a much more concentrated fertilizer than the best description of ordinary farmyard manure, which seldom yields more than three-fourths per cent. of ammonia, whereas the sample of fresh chicken manure analyzed by me contained an amount of nitrogenous organic matter and salts of ammonia, capable of yielding, on final decomposition, 2% of ammonia. The agricultural and commercial value of the dung of horses, cows, sheep, pigs, pigeons, fowls, and of concentrated artificial manures, such as Peruvian and other varieties of ammoniacal guanos, depend mainly upon the percentage of phosphate of lime and of nitrogen, or its equivalent of ammonia, which these various fertilizers contain.

In former years, when Peruvian guano was exclusively imported into England from the Chincha islands, in the north of the Peruvian coast, the guano deposited on these islands in a rainless country and rapidly dried by a boiling sun heat, generally yielded from 16% to 18% of ammonia. The southern Peruvian guano deposits, from which our supplies have been drawn for the last few years, vary much in composition. The best cargoes of Peruvian guano at present seldom contain more than 10% or 11% of ammonia; those of a medium quality from 6% to 8%, and cargoes selling at about £8 per ton, from 3% to 4%. The latter, however, are much richer in phosphate of lime than high ammoniacal Peruvian guanos, and not unfrequently contain over 40% of phosphate of lime.

Compared with Peruvian guano, and adopting the same rates by which the official price of different cargoes of Peruvian guano is regulated, I find fresh chicken manure of the quality of the sample analyzed by me is worth, in round numbers, about £2 a ton, and the sample of partially dried manure about £4 4s. per ton. Pigeon dung, I find, is rather more valuable than fowls' dung.

With regard to the application of chicken manure, I would observe that the least expensive, and probably the best way of using it is to make it with dry earth, burnt clay, wood ashes, and such like matters, into a compost. Mixed with about twice its weight of dry earthy matters of this kind, it will soon be reduced into a fairly dry and powdery state, in which it may be readily spread broadcast on the land, or be sown by the manure drill, and be found a useful general manure for every kind of garden produce.

For root crops—turnips, carrots, kohl rabi, mangels—chicken manure, reduced into a dry and powdery state, should be mixed with an equal weight of superphosphate of lime, and the mixture be drilled in with the seed at the rate of 5 cwt. per acre. In making the earth compost, quicklime, in my judgment, should not be mixed with the chicken dung, for the effect of quicklime upon fowls' excrement is to liberate ammonia, which would escape and be lost in a great measure. On the other hand, there is no harm, but every advantage, in mixing good soot with chicken dung, for unadulterated soot generally contains from 3½% to 4% of ammonia, or nearly twice as much as I found in the sample of fresh chicken dung which Mr. Cresswell sent me.

Soot, when it can be procured, is a good drier for chicken manure, and at the same time adds ammonia to it. In the absence of soot, I would recommend to mix the fresh chicken manure with some burnt gypsum, to which a small quantity of superphosphate of lime may be added, the free acid of which will effectually prevent the escape of ammonia from the chicken dung. A mixture of two parts of burnt gypsum and one part of mineral superphosphate may be kept ready for the purpose of absorbing the excess of moisture in fresh chicken dung, and facilitating its reduction into a fairly dry and friable manure. Three parts of fresh chicken manure and one part of the preceding mixture of burnt gypsum and superphosphate, when kept for a short time under cover, and turned over once or twice, and finally passed through a screen or sieve, I believe will be found a useful and good manure for most crops, when used at the rate of 8 or 10 cwt. per acre.

PREPARATION OF MANURE.

We find in the *American Cultivator* the following account of experience:

I took my shovel and spread a thin layer of the manure on the barn floor and thoroughly wet it; then another in the same way on top of that, until I had the whole in a compact pile, and, as I thought, perfectly wet. The next morning I began to turn it over to see the result. I found a great part of it dry, but I liked the way it was working, so put on more water. After working it over three or four times, and applying water as needed, I had a pile of as nice looking fertilizer as you would wish to see, almost as fine as powder. In 48 hours it was very hot, requiring to be turned over every 12 hours until used. I dropped a large handful in each hill for corn, covering it with a hoe as I would corn, then planted the corn in the hill thus made. Not one hill on the piece failed to come up, and it is growing the best of any corn I ever had.

You may ask the use of the water. Why not put the manure in the hill dry and cover the same? The reason is, it won't accomplish its object. I have tried it and know. The corn will come up all right, but after a little time it ceases to grow. Dig to the root and you will find it completely eaten up by the manure. The reason everyone can understand by a few moments of thought. I used some mixed with meadow mud, about three parts mud to one manure, using a little more to each hill, and dropping the corn upon it without covering it (the manure). The result was that nearly one-half of the seed never came up.

CONDITIONS INJURIOUS TO SIGHT IN SCHOOL CHILDREN.—Prof. Raux mentions the following: Air vitiated by animal emanations, vegetable or mineral dust, the smoke of various combustibles, especially tobacco, in which nicotine exists. Temperature too high or too low, and sudden changes or drafts. Clothing too tight, particularly at the neck or waist. Position with the head and body too much bent forward during labor with the eyes. Premature study, excess of reading, etc. Alcoholic excesses. Use of the eyes and brain immediately after eating. Habitual constipation, cold feet, and everything which tends to produce congestion of the head. Immorality, especially during childhood and youth. We might assign a cause still more potent than any of the foregoing, viz: a deficiency of light.—*Detroit Lancet.*

NEW INVENTIONS.

We publish descriptions of the following new inventions, obtained through Dewey & Co., *Mining and Scientific Press* Patent Agency, San Francisco:

BREECH LOADING FIREARM.—Wm. B. Finch, Eureka, Cal. Patented June 22, 1880. No. 229,035. This invention relates to certain improvements in the construction of magazine fire-arms of that class in which a vertically-running breech-block is operated by a lever and serves as a carrier to transport the cartridge from the magazine to the rear open end of the barrel, into which it is forced by mechanism for the purpose. It consists in a novel construction and combination of a solid breech-block which is moved vertically in the frame at the rear of the barrel with a swinging arm, by which the cartridge is forced into the barrel, so that the breech-block is allowed to move up and close the breech. The whole is operated by a single lever beneath the gun, and the same action cocks the gun and locks the breech-block when closed, so that it cannot be opened.

BALING PRESS.—John Cook, Healdsburg, Sonoma Co., Cal. Patented June 8, 1880. No. 228,515. This press consists in the employment of a horizontal box having a follower operated by a peculiar windlass or capstan and ropes and pulley, which are placed along the sides of the box; and it also consists in a novel method of holding and tightening the baling ropes while the follower is moving up, so that they are all ready to be tied when the bale is pressed. A lever is fitted to the press by which the bale may be ejected as soon as finished. This press is economically built and operated, and material is easily introduced, and bales removed without supplemental doors or severe labor.

MAGAZINE FIREARM.—A. Schneider, 24 Erie St., S. F. Patented June 8, 1880. No. 228,560. This invention relates to certain improvements in breech-loading magazine firearms, and it is especially adapted to be used in cases where the magazine extends beneath and parallel with the barrel of the arm. And it consists in a vertically-moving breech-block in combination with an operating lever, provided with means for giving the block an intermittent movement, whereby the breech-block is made to pause when opposite the barrel while the cartridge is forced home, the operating lever moving continuously.

GRAFTING TOOL.—Charles W. Hoit, Petaluma, Sonoma Co., Cal. Patented June 22, 1880. No. 229,040. This device consists in the employment of a pair of pivoted handles, one of which is fitted to receive a curved wooden block or bed with an elastic surface, upon which the cutter acts, while the other operating arm moves the cutter which is pivoted to it. The upper end of the cutter is also pivoted to the end of a supplemental arm which extends back and unites with the handle upon the opposite side of the pivot, so as to produce a parallel motion of the cutter, which insures its making a straight clean cut whatever the thickness of the scion or stock to be operated upon.

TURBINE WATER WHEEL.—Wm. Hacheney, S. F. The wheel is made in a frame so as to be easily portable, and is intended particularly for running with a small head of water, so as to utilize all the supply without waste of power. It has peculiarly-operating gates for controlling the admission of the water to the scrolls, and in a peculiar construction of the step or bearing for the reduction of wear.

HORSESHOE TOE-WEIGHT.—Wm. H. Hulings, Menlo Park, San Mateo Co., Cal. Patented June 8, 1880. No. 228,533. The shoe has a weight attached by means of a dovetailed shank, fitting in a correspondingly shaped slot in the shoe and secured by a screw. When this weight is removed the shoe becomes a plain, ordinary shoe, with no projection or addition to interfere with the horse's action.