THE GLEANER:

AND NORTHUMBERLAND, KENT, GLOUCESTER AND RESTIGOUCHE

COMMERCIAL AND AGRICULTURAL JOURNAL.

OLD SERIES] *Nec aranearum sane textus ideo melior, quia ex se fila gignunt, nec noster vilior quia ex alienis libamus ut apes.* [COMPRISED 13 VOLUMES.

NEW SERIES, VOL. IV:] MIRAMICHI, SATURDAY MORNING, MAY 2, 1846. [NUMBER 30.

Agricultural Journal.

From the Albany Cultivator.

CULTURE OF WHEAT.

RUST—SUITABLE MANURES

L. Tucker, Esq.—In the January number of the Cultivator, (present vol.) there is a communication by "A Farmer of Tompkins County," upon *rust on wheat*, upon which I offer a few remarks. In 1838, Mr. Colman, (then Ag. Commissioner of Mass.,) by order of the Senate, prepared a report on the cultivation of spring wheat. Mr. C., in speaking of the "situation and aspect," says:—The aspect of lands, whether high and airy, or low and confined, is of considerable moment. Various theories have been suggested in regard to the origin of rust and mildew in wheat. The prevalent opinion of the French naturalists of the present day, is, that they, like smut consist of small parasitical plants designed to be nourished upon the wheat plant. Whatever may be the fact, the appearance of these diseases bears as near a relation to certain states of the weather at the time the wheat is maturing its seed, as the courses of the tides to the changes of the moon. These diseases usually occur in the damp, hot, steamy foggy weather of July. In low and confined situations, wheat is much oftener blighted than in situations, which are elevated, and where the air circulates freely."

Mr. C. forwarded me a copy of his report when published, and I was particularly interested in the above extract. Sometime in the following July, we had for two or three days frequent light showers with bright sunshine between them, and the weather was what we call close and muggy. Soon as the sun appeared between the showers a light fog would be seen arising from the plowed fields. I then several times observed to the persons in my employ, that this would test Mr. C.'s theory of rust or mildew upon wheat. There was within sight three fields of wheat, and on different farms; two of them were sown about the 20th of May, the other just one week later—(sown thus late to escape the ravages of the weevil,) soil similar—previous crop, corn—elevation of the several fields above the river about the same. Within four days after this "spell of weather," the two first sown fields were brown with rust, and at harvest the straw was brittle, and rusted from top to bottom, the grain light and shrivelled, and not more than half a crop. The third, field, sown a week later, was uninjured, and at harvest the straw was bright, and the berry plump and full.

Had this showery weather happened a week or ten days later, my belief is, that the first two pieces would have escaped, and the other would have suffered, for I have witnessed similar results since that time.

It seems to be the critical time when the wheat is in the milk, and such weather occurs.

Your correspondent says, "My (his) belief is that the rust plant or fungus, whatever it may be, always exists on the stalks of the wheat, but its growth is not such as to injure the plant unless warm weather and moisture unite at a particular period during the growth of the plant and prior to that period it is not visible to the naked eye.

Others entertain a different opinion from the above. In the Canadian Ag. Journal for July, 1845, there is an article on mildew in which it is said, "Mildew in wheat has been shown by naturalists to be a minute fungus, *whose germs are floating in the atmosphere*, and only require for their development, a particular condition *the surface* of whatever plant they attack. Thus, their growth is, doubtless, favored—perhaps insured—by the exudation of sap from the ruptured vessels of the wheat plant, on which they may alight. This rupture may be caused by a plethoric state of those vessels—perhaps, also, by deficiency of *silex* in the epidermis of the straw; and this condition is brought on by whatever occasions a great flow of sap, or causes it to continue too long; and the indications of it are a deep green color in the leaves and straw, and the continuance of this dark green color a few inches below the ear after the chaff has begun to turn off. When this symptom appears, a bad case of mildew is inevitable."

It is an important question to farmers whether they have it in their power in any degree to guard against the great losses that frequently occur by the mildew or rust upon their wheat crops.

Your correspondent from Tompkins county, "believes he has discovered a remedy for the rust, plant or no plant. He is preparing to make the experiment next season, and if successful the result will be communicated." I cannot but hope this experiment will be successful—and that he will report the experiment whether it proves so or not. And in the meantime I will offer a few suggestions and facts that may possibly have some bearing upon the subject.

By a chemical analysis of a plant we ascertain what the inorganic, or mineral parts are composed of. The principal part of the ash of wheat straw consists of silica; a ton of wheat straw will yield about 50 lbs. of it. Silica is the substance that gives the hard coating upon the surface, and strength to the straw of grain and the grasses. It is rendered soluble in the soil by the alkali, potash and soda. But there are many other substances, both mineral and organic, required for the perfect crop of wheat. All these substances should be in sufficient quantity, and none in very great excess. On very highly manured soils there is an excess of nitrogenous matter, which is favourable to a luxuriant growth of straw, but it is deficient in strength and it lodges; and in the warm showery weather spoken of, the flow of sap is excessive, and from the deficiency of coating upon the surface of the straw, the vessels are ruptured, the sap exudes and presents a favourable place of deposit for the vegetation of the seeds (spores) of fungi, (rust,) which, at certain seasons, are always floating in the atmospere the ascent of the sap to the ear is cut off by the ruptured state of the sap vessels; a light and shrivelled seed is the result. Instances of this kind are frequently seen in fields of wheat growing on the sites of dung-heaps, when the other parts of the field are free from it.

From some facts—or cases, that bear strong evidence of being facts, I think that a large amount of soluble silica in the soil, is the surest preventive against a weak straw, and consequent rust or mildew.

Payson Williams, Esq. of Fitzburg, Mass. has on highly cultivated land, raised over 55 bushels of wheat per acre. Mr. Coleman in his report says, 'Mr. W.'s great crop of wheat was assisted by 50 bushels of wood ashes spread to the acre, and a good crop of wheat seldom fails to be obtained on newly cleared and burnt land. The potash is here in large quantities."

One of the important offices of potash in the soil is to supply in a soluble state to the roots of grain plants, the silica which is so essential to the strength of their stems. Says Professor Johnston—'This silica exists very frequently in the soil in a state in which it is *insoluble* in pure water, and yet is more or less readily taken up by water containing carbonate of potash, or soda, and there is every reason to believe that nearly all the silica they contain is actually conveyed into circulation of plants by the agency of potash and soda. It is not unlikely that a portion of the beneficial action of these substances, especially on the grasses, and corn (grain) crops may be due to the quantity of silica they are the means of conveying into the interior of the growing plants. Silica enters the plant chiefly in the form of silicate of potash or soda."

It is said that grain never lodges or rusts upon the sites of coal hearths, or in the soil that has covered the coal-pit while burning. If that is a fact it is not unreasonable to suppose there is an abundant supply of soluble silica in such soils.

Mr. Pell has succeeded in raising very large crops of wheat on highly manured soils, by applying a large quantity of ground charcoal to the soil at the time of sowing the wheat. Perhaps, too, that may have had the effect of giving strength to the straw.

In the Farmer's Monthly Visitor for November, 1845, there is an account copied from the Genesee Farmer, detailing some experiments by Mr Haywood, of the city of Buffalo, upon the application of charcoal to the wheat crop. When there was applied 50 bushels of ground charcoal, the yield was 25 to 35 bushels of wheat per acre: same kind of soil without the charcoal produced from three to five bushels only, per acre, and badly rusted. The experiments were upon a large scale, extending to over 90 acres. It is also stated in the same article, that where twenty bushels of *unleached* ashes had been scattered over an acre at the time of seeding, it has evidently increased the crop some ten or twelve bushels per acre.

Some writers of note in the agricultural *world*, doubt the utility of the use of lime in agriculture, but notwithstanding, *some farmers*, in the middle and southern states, as well as in many parts of Europe, persevere in the use of it. By the use of lime and clover, much of the exhausted land in the southern states have been reclaimed, and now produce good crops of wheat. When a crop of clover is turned under upon land that has had a dressing of lime, one of the consequences would be to produce an increased amount of soluble solica in the soil. The decomposition of the clover would produce carbonic acid, that in turn would when aided by the moisture in the soil, decompose the corbonate of lime, and its alkali would act upon the insoluble silica in the soil, and render it available to the succeeding crop of wheat; and Professor Johnston states, that it is said, wheat is never laid (lodged) that follows a clover lay. If that is a fact, we must suppose it has a stiff straw, and that that stiffness is due to the soluble silex in the soil.

I presume, Mr Editor, you have the London Gardener's Chronicle. If so, if you will turn to that of August 9th, 1845, you will find a very interesting article of Professor Johnston on the use of silicate of soda as a manure for the wheat crop—or rather its application to the soil for the purpose of giving more strength to the straw of the wheat. Some English agricultural writers have advanced the idea of the necessity of the application of the silicate of soda in connection with guano or dissolved bones, for the purpose of giving to the crop soluble silica.

Professor J. analyzed four different soils in his labolatory, for the purpose of ascertaining the amount of soluble silica in them. The quantity he found in the soil that contained the least, amounted to 6,700 lbs. upon the acre, taking the soil twelve inches deep. Allowing 3,000 lbs. straw to the acre, the amount of silica carried off by a crop of straw, amounts to 75 lbs. per acre; ergo, the soluble silica alone in the soil, will supply silica to the crops for 900 years in succession. And the soil that contained the most—four times as much—would supply it for 3,600 crops. From the above analysis, he comes to the conclusion that it is not necessary to apply a soluble silicate to the soil. I do not doubt the accuracy of his analysis, but he is a strong advocate for the application of ashes and lime to the soil, and one of the effects of their application is to increase the quantity of soluble silex.

As observed by Mr Colman, a good crop of wheat seldom fails to be obtained on newly cleared and burnt land. Where the forest growth has been burned, and all the ashes left upon the ground, the amount of soluble silica must, I think, be many times greater in the burnt soil, than in the soils he analysed.

Dr Dana, in his Muck Manual, tells us, the soil of an acre of land six inches deep, will afford 6,726 pounds of lime, and 73,311 pounds of potash,—lime enough for an annual crop of rye for 7,400 years, and potash enough for the straw of annual crops of wheat for 3,000 years. Now this may be all correct; but farmers *think* they find it for their interest in applying both ashes and lime to their soils. In the year 1844 I prepared a large quantity of soluble silica in a compost heap, for the purpose of testing its use. When I commenced writing this article I intended to have given the process and result; but the unconscionable length of this, must be my apology.

From the American Shepherd.

BREEDING EWES.

This portion of the flock demand no especial attention beyond a full measure of food, until the approach of spring. The course of management will depend on the time of yeaning, which, if fixed for the month of April, they will require a large measure daily through March of potatoes for the assimilation of milk. In addition, nothing better can be supplied them than a half pint each of wheat shorts, mixed with a little barley or oatmeal. Oil-cake and corn meal are not so suitable, as they do not afford as much *casein*, the only nitrogenized element, as the reader has been informed, of milk. Their fodder through the winter should be of miscellaneous character. Pea and buckwheat straw are highly agreeable to them, especially the former, which, from its succluency, is well suited to their situation.

HOSPITAL FLOCK.

This is the general appellation of such sheep as are in low condition, proceeding either from poor keep, or temporary illness.

The attentive and well-ordered sheep-husbandman, will not be troubled with many of this class, for he will not overstock, neither will he permit any to remain on his hands till they have become too old; thus few will enter the poor house to reflect unskillful management. It is scarcely necessary to say, however, that every good flock master will provide a place for rhe reception of sheep under consideration, as often, in spite of his humane care, disease will make its way to some individual, which, in that event, require removal from their strong and healthy comrades, and treated accordingingly. After the disease is subdued, their diet should depend much on the character of the malady. As a general rule, their food at first should not be of an exciting nature, especially if the disease were seated in the stomach, or intestines. But all suitable advice in this regard will be found in the history of diseases. When a sheep is declining in flesh, let it be removed forthwith to the hospital, and after a few weeks perhaps, it may resume its place in the flock from whence it is taken; this is often so, if the removal is instant in the early stages of decline. Variations of the food will greatly contribute to restore invalids, as well as those in poverty of flesh.

DISEASE IN COWS.

A Dairyman Farmer writes, that in the spring and summer of 1840, his cows were attacked with a swelling about the head and jaws. The first, says he, that I observed of it, one of the cows refused to take her food, and on examining her, I found that she was so swollen about the mouth and eyes that she could scarcely see. I had her bled immediately, and in fifteen minutes she began to feed. The swelling soon went down, and the next day she appeared as well as ever. In the course of the summer, five or six others were taken in the same way, though we generally discovered it before they were as bad as the first. They were all, however, more or less swollen, and some of their bags were affected. Copious bleedings invariably cured them. I have sometimes given four or five quarts of thoroughwort (bone-set) tea, one or two quarts at a time.

STUDY OF AGRICULTURE IN SCHOOLS.

Mr Paris Barber, of Homer, writes as follows:—'The effort of Mr Woolworth, the principal of our Academy, to introduce the study of agricultural chemistry and geology, has met with great success. He has a fine class of young men—from 25 to 30—farmer's sons, from this and the adjoining counties, and I can assure you, they are deeply interested. He also