The Farm.

Value of "Goose" Wheat.

This wheat is now pretty well known in many parts of Canada, and bears the reputation of being very prolific. It bears the various names of "Rice," "Goose," "Ironutka," "Arnautka," and "California Hard." The only drawback to the farmers has been the price, it bringing several cents less than other varieties. In our last issue it will be seen that the Toronto prices at farmers' wagons were 75 cents for "Goose" and 88 cents for fall and spring wheats.

We are constantly waging war against ignorant prejudices, but it is seldom that we run counter to one so glaring as this. Some millers have been so prejudiced against "Goose" wheat as to contend that it does not contain any element of human food. It is condemned on account of its hard, glutinous nature, which in reality is a condemnation on account of its highly nutritive properties. There are still people, millers included, so far behind the times that they regard starchiness as the prime quality of flour. We only know one argument in favor of starchy flour, containing a low percentage of gluten, and that is, it makes white bread and white is the fashionable color. In such a state of ignorance what is the sense of talking about economy, health, and nutritive properties?

A move in the right direction has been made by Mr. R C. Burdick, of St. Paul, chief inspector of grain, who sent five samples of wheat to Prof. Dodge for analysis, and the following table shows the results :

	Rice Wheat.	Ironutka Wheat.	Saskatchewan Fife.	Chicago No. 1	Scotch Fife.
	Pr ct.	Pr ct.	Pr ct.	Pr ct.	Pr ct.
Moisture exp'l'd from powder at 212°.....	8.52	8.48	11.46	11.47	9.95
Ash or mineral matter	1.64	1.47	1.72	1.95	1.82
Phosphorus in the ash	.36	.33	.41	.44	.40
Albuminoid or nitrogenous matter, chiefly gluten....	14.31	13.56	13.06	12.56	12.94
Nitrogen in the albuminoid.....	2.29	2.17	2.09	2.01	2.07
Oil or fat.....	2.04	1.89	2.08	2.21	2.14
Cellulose or fiber.....	1.78	1.23	2.04	2.39	2.11
Starch, gum and sugar	71.72	73.37	69.64	69.42	71.04
Number of kernels in cubic inch.....	330	215	360	545	458
Weight of cubic inch.	*180	*196	*193	*195	*186

*Grains.

This table shows that "Goose" wheat contains less moisture and more of all the nutritive constituents than the other varieties analyzed —ash or mineral matter excepted. The mineral matter of our foods deserves more attention than is usually devoted to it, but the difference in these analyses is very insignificant.

A further chemical test was made by Prof. Kedzie, of the Michigan Agricultural College, with the following results :

Sample No. 1 (Scotch Fife) contains 2 24 percent. of combined nitrogen, which is equivalent to 14 percent. of albuminoid.

Sample No. 2 (Rice or Goose) contains 2.31 percent. of combined nitrogen, which is equivalent to 14.42 percent. of albuminoid.

In our last issue we published the analyses of a large number of samples of wheat showing a variation in the albuminoids of 9.1 to 14.4 percent.—average 11.7, against 14.1 percent. as an average of the "Goose" wheat in the above tables. By changing the respective constituents into money values, taking the American standard as a basis, and supposing the value of the other varieties of wheat to be 88 cents per bushel, the present market price, then "Goose" wheat ought to be valued at $1.06 per bushel, and should sell for this price.

Farm Drainage.

No. IV.

In our previous articles we presented many cogent reasons as to *why* we should drain ; we have yet to consider the *when*, the *what* and the *how*. The when can be peremptorily dismissed; always commence *now*. What lands require draining takes precedence of how to drain. The importance of getting these things in their natural order is so imperative that we cannot forbear devoting a paragraph to their consideration—which principles are of the utmost concern in all farm operations.

The farmer who can merely handle the spade and pick boasts of being practical. If his mind cannot grasp, or his eyes detect, why draining should be done, or what lands require draining, he becomes a slave to practice, and complains that he is always meeting with bad luck. Again, he may know what soils to drain, but unless he understands why and how they should be drained, bearing in mind the effects of all his doings, the results may be equally disastrous, and he will not be able to calculate whether or not the gain will warrant the outlay. Hence the science should always go before the practice, or rather the art ; then the why will suggest the what, and the how, so that by first understanding the principles, there will be nothing to unlearn. The practice is, then, properly called the *art*, to which the farmer should aspire in all his operations, the art being always right, whereas the *practice* may be always wrong. "There is nothing so practical as science" is therefore a proverb which is literally true, considering the ends attained ; and the ignorant saying that "An ounce of practice is worth a pound of science" is unwarrantable.

How are we to know what lands require draining? By careful perusal of the principles which we have already laid down, answers to this question will be very suggestive ; but we desire to present them in a more concise and comprehensible form. Every farmer must observe and reflect—depending more upon himself than upon the experience of others, for there are always differences of conditions to be weighed. Some soils may be dismissed from our consideration—on obvious principles already given,—such as sands, gravels, light loams and moulds, providing always that the bottom soil is as pervious as the top, and that they do not contain a surplus of ooze water from underlying springs, or the washings from the higher lands of adjacent fields. In addition to the character of these soils, the quantity of rainfall and the lay of the land must be considered; a rolling field may stand in a different relation with regard to drainage when compared with a flat field, even though both soils possess the same physical character.

We shall therefore limit the subject to clays and loams, except under circumstances n which a variety of subsoils is found. Most mistakes in drainage are made on account of the observations being too limited; an examination of the fields during one or two seasons only is as unsatisfactory as the testing of a new variety of seed, or the conducting of any other experiment, for the same length of time. The longer the time occupied by the observations or the experiments, the more reliable will be the results.

With regard to the surface soil, an examination made almost any time will reveal the drainage requirements ; but as the ever-varying subsoil is hidden from the eye, it must be grasped by the mind. Whatever the character of the subsoil may be, it reflects itself in the surface soil so far as drainage requirements are concerned. Where the sub-stratum is porous, the surface reveals all the features of a drained soil: where the conditions are different, there are at times evidence of supersaturation. These observations must be made during the wet seasons, when many fields will show symptoms of wetness and dryness in alternate patches. This condition is specially noticeable while the land is being re worked in spring. So difficult is it to procure a field of uniform subsoil, that many investigators have come to the conclusion that the hundredth part of an acre will make a more satisfactory experimental plot than the tenth part. These are conditions which should be specially weighed; for it is of great importance financially to know which fields or parts thereof should be drained first, there being no difficulty in coming to a decision when uniformity of dampness or dryness is the rule. It is also important to observe how long the damp condition of the soil lasts ; this can be determined by observing the growth of the crop as well as by observing the color of the soil. Where excessive moisture exists, germination will be retarded, if not prevented, and the growth will be feeble, spindly, curling, and of a yellowish tinge. Any sudden or extreme effects will be distinctly marked on the growth, the roots not having sufficient depth to give vitality to the plant. When the growth of the crop is farther advanced, the most accurate observations may be taken in dry weather, when large cracks will be found in the soil. The existence of aquatic plants is a valuable guide, and drainage is the cheapest and most effectual means of exterminating them.

There is another method of making drainage observatians, which may be used as a check on the methods we have just described, and is also serviceable when the period for making observations is limited to a season or two. We refer to the digging of test holes or pits. First let us suppose that a drain, open or tiled, is dug in some portion of the field ; then dig holes three or four feet deep along the sides of the drain' but at different distances from it, and, after each shower of rain, make a note of the time required for the water in each hole to empty itself into the drain. If the soil requires draining, the water will find its way into the drain more rapidly than into the subsoil—at a reasonable distance from the drain. If the bottom of the hole is lower than the bottom of the drain, then note how long the water takes to reach the drain level or a little above it ; also, how long the rest of the water remains in the hole, which will indicate the perviousness of the subsoil. This method of testing will also give the distances which the drains should be dug apart. When the is no drain or other cavity in the