phosphoric acid, and probably with the more available part of these substances. The exhaustion of potash, soda and phosphates, is, in truth, the cause of its present sterility; and when we consider that the straw and grain of thirty crops of wheat have been taken from it without return, we have sufficient reason for the change.

The third soil, No. 4, characterised as of light quality, is, in comparison with No. 2, poor in lime, phosphates, alkalies, and soluble silica, but it has nearly twice as much phosphoric acid as the worn out soil, No. 4, and is not behind it in soluble silica. An equal quantity of ordinary manure would probably produce more effect on it than on the exhausted soil, No. 4.

Another term of comparison is afforded by a soil from the farm of Major Campbell, at St. Hilaire, which is said to have been reclaimed from comparative exhaustion, by manuring and draining. It is a heavy clay, and afforded, on analysis, in 100 parts:

Alumina	12.420
Oxyd of Iron	7.320
Lime	.697
Magnesia	1.490
Potash	.591
Soda	.231
Phosphoric Acid	.390
Sulphuric Acid	.022
Soluble Silica	.105

This soil, it will be observed, rises very nearly to the level of the exhausted soil from Chambly; and the difference between it and the exhausted soil, No. 3, is, no doubt, due to the manures added by the proprietor, and to the admixture of unexhausted subsoil by draining and deeper ploughing.

That this last cause had some share in the result, is indicated by an analysis of subsoil, taken from the same field, but at a depth of thirty inches from the surface. No manures penetrate to such a depth as this, so that this analysis gives the natural quality of the soil. It shows in 100 parts:

Alumina	4.380
Oxyd of Iron	6.245
Lime	.980
Magnesia	1.080
Potash	.753
Soda	.355
Phosphoric Acid	474
Sulphuric Acid	.024
Soluble Silica	.210

It appears that the subsoil is far richer than the improved surface soil in alkalies, phosphates, and soluble silica. The subsoil is a vast store of mineral manure, ready to be applied to use by under-draining and subsoil ploughing. It seems that this applies very generally to the exhausted clay soils of Canada, which, have been under-drained, ploughed in a shallow manner, and cropped by plants which feed in these circumstances only on the surface soil, might be renovated by tile draining and the use of the subsoil plough more easily than by the application of manurial substances. This is a fact which affords a ray of hope, and indicates a line of successful improvement in many an impoverished farm in the older districts. It would be unwise, however, for the holder of one of these farms hastily to bring the subsoil to the surface without first ascertaining its character. In those cases in which the subsoil is like that noticed above, it is probable that tillage and exposure to atmospheric influences for a time, would be required to make its constituents available for plant food. It ought therefore to be sparingly mingled with the surface soil. The addition of some organic matter such as peat or bog mud would also be necessary.

Professor Dawson remarks concerning the above noticed Canadian soils, that even the richest of them are rather poor in sulphuric acid, and would therefore probably be benefitted by the use of gypsum. Providence has furnished us with large beds of this fertilizing agent and its more extensive use is gradually to be desired, and recommended.

Whitchurch Township Agricultural Society.

JUDGES' REPORT OF ROOT CROP FOR 1865.

We have much pleasure in directing the attention of our readers to the carefully tabulated Report which we herewith append. By comparing it with the Report of the same Society, which appeared in Vol. II, p. 82 of The Canada Farmer, the careful reader may evolve some instructive facts. It will be observed that, as compared with the crops of 1865, those of 1864 were more uniform in their yield—the lowest and highest yields of 1864 being respectively 607 and 1,464 bushels per acre, while those of 1865 were respectively 367 and 1467 bushels. The same irregularity is observable in the quantities of manures applied to the crop during the two years. Another point well deserving attention is prominently exhibited in both reports, the superiority of the Carrot and Mangold crops—other things being equal—when the seed was early sown.

NAME OF COMPETITOR.	Name of Crop Judged.	Kind of Soil.	Was it Fall Ploughed, and how often?	When Manured.	What kind of Manure.	How many Loads per acre.	Was it Manured in Rows.	Was it Plastered?	How often Ploughed in the Spring.	How often Cultivated.	How many lbs. of Seed sown per Acre.	What time was the Seed sown.	Rows—how many inches apart.	How many inches apart in the Row.	How many times Scuffled.	How many times Hoed.	How was the Seed prepared.	Number of bushels per Acre.	How many Acres Raised.	How did the remainder of the Crop compare with that exhibited.	JUDGES' REMARKS.
James Gormley, Esq.,	S. Turnips.	Clay	2	Fall.	Barnyard.	12	No	No	3		1½	June 15.	26	13	3	2	Dry.	691	11	Nearly average.	
Charles Brodie,	do.	do.	2	do.	do.	12		do	2		1¾	June 24.	26	12	2	2	Dry.	793	6½	Equal.	
T. Smith,	do.	Sandy Loam.	1	Spring	do.	10	Yes.	Yes.	1	4	2	June 11	22	11	2	2	Dry	867	½	Not an average.	3rd Prize.
William Swales,	do.	Sandy.	1	do.	Stable	10	Yes.	do.	2	1	1½	June 12,	22	9	2	2	Dry	841	4½	Nearly average.	
David Baker,	do.	Clay	1	do.	Barnyard.	6	No	do	2		1	June 10.	23	13		2	Dry	643	2	Equal.	
Samuel Johnson,	do.																				
John Irwin,	do.																				
Robert Hanners,	do.	Clay	1	Spring.	Barnyard.	6	No.		2		1	June 17.	23	12		2	Dry	723	½	Nearly average.	
John Randall,	do.	Sandy Loam.	1	do.	do.	10	Yes.	Yes.	2	2	1½	June 17.	24	11	2	2	Dry	801	4	Nearly average.	1st Prize.
P. W. Playter,	do.	do.	1	Fall.			No.	do	2	1			26	11	2	3	Dry.	803	2	Nearly average.	
J. S. Wilkin,	do.	do.	Yes.	Never	None				2	1	2	June 18.	23	12	1	2	Dry	712	1½	Nearly average.	
J. W. Collins,	do.	Clay	1	Fall.	Stable	12	Yes.		2		2	June 10.	24	12	3	3	Damp.	809	1¾	Equal.	2nd Prize.
William Swales,	W. Turnips.	Sandy.	1	Fall.	Barnyard.	[illegible]	No.	Yes.	2	1		June 21.	22	11	1	1	Wet.	678	½	Nearly average.	1st Prize.
David Baker,	do.		1	Spring.	do.	10	No	do.	2		1	July 2.	23	11		1	Dry.	867	½	Nearly average.	2nd Prize.
F. Smith,	do.	Sandy Loam.	2	Fall.			No.	do.	1	2	1	June 15.	21	11	2	2	Dry.	562	2		
David Baker,	Carrots.	Clay						Yes.			2	May 1	13	Close.		1	Dry.	914	¼	Broken.	
Samuel Johnson, Sr.	do.	Sandy.		To	busy thresh	ing	to an	swer.			4		16	4				1406		Equal.	1st Prize.
John Irwin,	do.	Sandy Loam.		Spring.					2			May 1.	20	Close.		2	Wet.	1467		Broken.	3rd Prize.
Jonathan Baker,	do.	do.		do.	Barnyard.	10	No.	Yes.	1			May 2	12	4		1	Dry.	1320	½	Nearly average.	Too close to use
Joel Baker,	do.	Clay	Spring.	do.	do		Nc.	do.	1		3		17			2	Dry.	730		Broken.	Scuffler [2nd P
John Jamieson,	do.	do.	1	Fall	do	10			1			May 8.	11	Close.	2	2	Wet.	979	¼	Nearly average.	
Joseph Collins,	do.	do.	1					Yes.	2	1	3	May 1	24	Close.	3	2	Wet.	1034	1	Equal.	Superior in Size.
David Baker,	Wurzels.	do.	1					do.	1		2	May 1.	16	12		2	Dry.	940	¼	Broken.	2nd Prize.
Jonathan Baker,	do.	Sandy.	1	Fall	Barnyard.	10	No	do	1	1	3	May 24.	16	14		1	Wet.	648	½	Very small.	
Joel Baker,	do.	Clay		Spring.	Stable.	16	No.	do.	1		3	May 5.	18			3	Dry	792	½	Broken.	3rd Prize
J. W. Collins,	do.	do.		Fall.	do.	10	No.	No.	1	1	8	May 1.	24	12	2	2	½	1188	1	Broken.	1st Prize.

The Use of Salt in Agriculture.

In all ages of the world, and under all conditions of civilization, the economical use of salt (chloride of sodium) has been more or less understood. As a condiment in the food of animals, its value has been more generally seen and appreciated than as a constituent of soils and plants. The instinct which impels animals living in a wild state to traverse long distances *in search of "salt licks" as they are termed on this* continent, affords indisputable proof how essential the article is to their health and enjoyment. In a state of domestication especially, the artificial supply of salt becomes imperative, as it tends in a powerful degree to purify the blood and protect the system against febrile diseases, and assists the digestion and assimilation of food. It is no less indispensable to human beings, whose food being of a more mixed and complicated character, this valuable condiment tends to moderate the fermentation, and sustain generally a healthy action of the system. In families where salt, from whatever cause, is deficient and irregular in amount and supply, the evil effects soon become painfully manifest in the sickly appearance of the inmates, the faint unpleasant smell that emanates from their breathing and perspiration, and the symptoms of febrile and scrofulous diseases. Beneficial and indeed essential as this article is in proper quantities, *to both vegetable and animal life, its* effects are exceedingly prejudicial when administered to either in excess. Mr. Falk, in his recent admirable prize essay awarded by the Northwich Chamber of Salt, (England) observes:

"There will be far less difference of opinion with reference to its application to land; and any one the least sceptical as to the positive necessity of salt to animal life, will soon arrive at a different conclusion by abstaining only a few days from the use of salt, not only in its direct form, but in the numerous indirect ways it is taken in food and drink. A healthy action of the organs of animal life cannot exist without salt being introduced into the system, whilst the proper quantities will tend to keep all the functions of the body in a healthy state. *In the human frame* there is in the blood, in its fluid normal state, nearly one half per cent of common salt (in the ashes of the blood not less than 57½ per cent), and it is a curious fact, that whether a person takes more or less salt, the per centage of salt will not vary in the blood, but will be added to or taken from other parts of the frame, in all of which there is salt, present, showing clearly that the blood must retain this per centage. In the human bile there is more than one third per cent of common salt in its fluid state (34 per cent in the ashes); in the human body, three fifths per cent (70 per cent in the ashes); in the urine one third per cent (23 per cent in the ashes); and the gastric juice of the stomach contains, as its most essential part free chloride of sodium. With all our domestic animals their blood and other juices contain at the least an equal proportion of salt, and the older the animal the more salt in its blood. In its fluid state there *is in the blood of the horse 51 (in the ashes 57) per cent;* goat and sheep, 49 per cent; pig and dog, 43; fowl, 54; goose 42 per cent of common salt, and as from its functions the blood continually changes, it is necessary, if the animals are to remain in health, to supply them, either in the food or direct, with the necessary quantity of salt to keep the blood and juices in their proper state. Without the control of man, and being able to roam large tracts of country, the wild animals find no difficulty in satisfying this necessity; their never failing instinct tells them where to look for the springs of water containing more than the ordinary quantity of salt, or for those plants with large proportions of salt in their juices or construction. We find in the South American pampas the wild horses, cattle, and sheep travelling many a weary mile to their favourite salt-licks; and so do the buffaloes and deer of North American prairies. But with one domesticated animal the case is different; we keep them