The same fields were kept in sod during 1887 -the driest season in Ontario for many years. As part of good management in continuing temporary pasture, as well as permanent, under heavy stocking for three years, we applied \$22 value of manures per acre, in preparation for 1887, hence we must debit with \$10 per acre as a proportion for that year, in addition to the extra cost of seeding As this is our closing point at present, take the following statement :

	104.
Milk per acre in 1885. Milk per acre in 1886. Milk per acre in 1837	. 7,8 0,5 4,0
Yearly average	6,10
Value of milk per acre Manures Extra cost of seeding Allowance for extra management	\$ 3 50 10 00 3 00 3 00 516 6
Net revenue for three years Ordinary pastures for same period	\$139 6
Difference in favor of improved nature	Stof 4

Or \$35 50 hetter, per acre per annum.

The account is now closed, and sod may be broken for a crop of peas or oats.

What more need be advanced meantime " If it is ne cessary that a sample of the soil, the pasture, the cow the milk and the manure should be submitted to all our farmers in order to convince and convert, then our national future in dairying will be a slow and third rate one indeed.

Were the average farm of 150 acres in Ontario in possession of ten acres of such improved temporary pasture the annual difference would amount to about \$350, and consequently to about \$15,000,000 for the Province.

It is a pertinent fact in nearly all civilized agricul ture everywhere-in older times as well as now-that propitious conditions in nature make men indifferent and unprogressive . in other words, they are too well off. Unquestionably of Pr vince is full of many fat things, and while it may be somewhat uncharita ble to draw ar inference in this connection, and know ing how easy it is to find fault, I desire most seriously to say to our farmers that individual and Provincial co-operation and emulation are as much desirable as the wider lines of international union. For the sake of self, then, let us have something approaching to 6,000 lbs. of milk per acre, in place of the 17.14 lbs. by the per cos per day and the 900 lbs. per acre per annum. (See Mr. Blue's paper to Dairymen's Associations, 1886.7).

## The Grain Crop of Ontario for 1887.

The following bulletin summarizes the November report of this Bureau on the principal cereal crops of of Ontario for the current year.

A. BLUE, Sec'y.

Bureau of Industrie<sup>2</sup>, 1 Toronto, Nov. 4, 1887. J

The yield of fall wheat is 14,440,611, being 3,630, 531 bushels less that last year and 5,162,609 bushels less than the average of six years. The berry is small, but hard ; and while some correspondents say it is below the standard weight, others claim that the hardness and soundness of the grain fully compensate for its lack of size. The average yield per acre is 16 bushels.

Spring wheat may be set down as a general failure, for while a tew good fields are reported, the common result is a small yield of inferior quality. The esti-mated yield is 5,633.117 bushels, against 9,518,553 last year, and 9,713,879 for the average of six years.

The barley crop was saved with scarcely any injury from discoloration, but while the grain is bright it is light in weight and the yield per acre is less than for any harrest of the last six years. The total product is 17,134,830 bushels, which is 2,377,448 less than last year and 2,031,583 less than the average of six

years. Owing to the hot, dry summer the oat crop is be low the average in yield, and it is also light in the The accounts are given. The estimated produce is 40.848, tot bushels from 1,082,463 acres, against

conditions the pods filled imperfectly, and in some lo-calities the crop was nearly a total failure. The esti-mated yield is 12,173.332 bushels from 726,756 acres, against 16,043.734 bushels from 703,936 acres last

year. The following table gives the acreage, produce and yield per acre of the several crops for 1887, 1886, and the averages for the six years 1882 7.

Grops.	Acres.	Bushels.	Yield per acre.
Fall wheat :	1	1	ľ
1887 .	897.743	14,440,611	1 16.1
1886	886,402	18,071,142	20.4
1882-7	963,292	19,603,301	1 20 2
Spring wheat .		1	1
1887	484.821	5,631,217	. 11 6
1886 .	577.465	9,518,553	165
1852-7	626,104	9,713,879,	15.5
Harley:			i
1887	767. +6	, 17,134,530	22.3
1886	735,778	19,512,278	20 5
1852-7	734,540	19,166,413	20 1
Oats :		1	
1887	1,652,463	49,848,101	29.0
1885	1,021,001	58,665,608	30 2
1882-7	. 1,527,622	54,419,177	35.7
Pease :			1
1 1887	720,750	1 12,173,332	1 10.8
1580	کولارد ک	(5,043.)34	24 2
1002-7	625,207	12,932,450	207

The Manitoba estimates of 1st October give 12,-351,724 hushels of wheat, and 7,265,231 barley; while estimates of the same date give for the United states a yield of 450,000,000 bushels of wheat, 000,-000,000 of oats, and 55,000,000 of barley.

## **Romaine's Modern Steam Farmer.**

(Continued from November.)

OBJECTIONS ANTICIPATED AND ANSWERED.

Without a doubt, the advent of the Modern Steam Farmer upon its perilous work of overturning the time-honored methods of agricultural practice will be the signal for the springing into resurrection life of a host of objections to be marshalled against it in battle array. Some of these we have anticipated, as we have been fore-warned of their coming, which to the wise means simply to be fore-armed. Uspection r.-The first cost will be so great that the

ordinary farmer will be unable to bear it. Answer (a) several farmers living adjacent can combine in the purchase, where the land is suitable ; (b) this objection will not apply in the case of large land-holders and extensive market gardeners near the large towns and cities, or of planters either in the Southern States or East and West Indies.

Objection 2. There is no overlurning or inversion of the soil. Answer. We admit that this would be a serious objection where the tillage might be imperfect, but where it is so thorough that all existing weeds must soon perish and no intruders can get a footing, it loses its force.

Objection 3 .- It does not bring the subsoil to the surface, and therefore will not encourage that deepen-ing of the soil so essential to a high state of cultivation. Answer. It is true, it does not bring the sub-soil to the surface, but it does what is far better-it cuts to the required depth the subsoil into a fine tilth and lifts it up a few inches. Unless the subsoil is brought to the surface in very small quantities at one time, it will render the surface useless for the pur-poses of agriculture, as many a rash experimenter has found to his cost.

Objection 4 .- It throws workhands idle in winter. Answer, (a) not necessarily so more than other modes of unmixed farming. Mixed farming may be carried on with the aid of this machine as well as without, by keeping one portion of the farm in grass, and alternating for periods of shorter or longer duration ; (b) large quantities of flax may be grown, caring for which during the winter would provide a good deal of labor, assisted by the Steam farmer.

THE RESULT OF LONG YEARS OF STUDY.

The Modern Steam Farmer is not the realization of measure. For a lew localities, where the land was low and new, or where local showers prevailed, bet-ter accounts are given. The estimated produce is 49,848,101 bushels from 1,052,403 acres, against 58,665,608 bushels from 1,052,403 acres, against The Alodern Steam Parmer is not the realization of any other crop. Where sown early and favored by local showers a fair yield is reported, but under other

twelve inches, and completely pulverizing and inverting it. But it did not sow the seed, in the process of which the subsequent treading sank much of it so deeply that it perished. This it was that prevented Mr. Romaine from triumphantly capturing the five hundred pound prize offered by the Royal Agricul-tural Society of England in 1862, "for the best appli-cation of steam power to the cultivation of the soil."

References are made to this machine in the Illustrated London News of October 3rd, 1857, p. 350, and The Engineer of July 19, 1861, quoting from the Mark Lane Express, where the statement is made in referring to the award of the Royal Agricultural Soci-ety, that "insufficient j.stice has been done 'o Mr. Romaine, the work performed by his rotatory cultiva-tor being the neffection of crade hutbandw." tor being the perfection of spade husbandry." But excellent as was the work done by the machine, the amount of horse and manual labor required to follow it was so great that the inventor laid it aside, prosecuting his labors with a determination that brooks no denial, the reward being the completion of the Mod-ern Steam Farmer, ready to satisfy the desires of the land-holder who may have the enterprise to secure it.

## INVESTIGATION INVITED.

Romaine's Modern Steam Farmer is now placed before the agricultural world with the full assurance on the part of the inventor that its use will revolutionize to a very great extent existing systems of tillage, and introduce a new epoch in the march of agricul-tural progress. He is well aware of the opposition that such an introduction as this is sure to produce, or the history of the past will cease to repeat itself, and of the keen criticism to which it will be subjected, before it will be given that place on the farm which it is expected to occupy at no distant day. And all this is not profitless, but a necessary crucible, as it were, in which new introductions must be tried to determine between the true and the false, the useful and the useless.

It is just this criticism that will be most warmly welcomed. It is not the criticism of public-spirited men of large means, and of legislators, who had it in their power to help, that has well nigh crushed the spirit of the struggling inventor, nearly forty years of the best of whose life, the writer feels quite safe in saying, has been placed on the world's altar of agricultural advancement ; but it is their indifference. Hence it is not impossible that the mistake of the dead centuries may be repeated once again-that of allowing a benefactor of his race to struggle unassisted in life, and building a costly monument over his unconscious ashes.

Any further information that may be desired will be cheerfully furnished on application to Robert Ro-maine, House of Commons, Ottawa, Canada.

## The Crane Fly: Tipula Oleracca, Order Diptera.

J. HOYES PANTON, M.A., P.G.S., PROFESSOR OF NATURAL' HISTORY AND GEOLOGY AT THE ONT. AG. COLLEGE.

Some time ago there was brought to my notice an insect which has on different occasions proved injurious in the low lying districts on the western side of our province. A farmer who had suffered consider able loss from the larval form of the insect wrote, asking information regarding its nature, and suggestions for its destruction. On being requested to send some of the grabs for identification and study, he forward ed several, which in the course of time developed into the perfect insect, and I was enabled to suggest a course of action which resulted in a good crop, where, had the seed been sown as formerly, it is likely the grain would have been completely destroyed, as it had been some time before. On ploughing the field he observed the grub that had destroyed his former crop, and thus was led to seek information, feeling that he must pursue a different course, if he desired satisfactory results.

The cause of this trouble is an insect called the Crane Fly, or Daddy Long Legs. It seems to be confined chiefly to our low-lying land in the west, but is very common in England, and often proves very