1882.

NEW ZEALAND.

AGRICULTURAL COLLEGE, CANTERBURY

(PAPERS RELATIVE TO).

Return to an Order of the House of Representatives, dated 1st June, 1882.

"That there be laid upon the table a return (1) of all sales of the Agricultural College reserves, in the Canterbury Provincial District, of all rents received up to date for the unsold portions thereof, and of the amount of the annual rent of such portions; (2) of all capital expenditure in connection with the establishment of a college, for the purchase of land, erection of buildings, procuring of machinery, &c., respectively, and all liabilities incurred up to the 1st May under these heads; (3) of the whole annual income and expenditure for each year since its foundation in the working of the farm and general maintenance of the institution; (4) of the number resident as pupils for each year; (5) of the results obtained from the different agricultural experiments made at the farm; (6) of the number of official visits made by the Board of Governors to inspect the College, the names of the Governors attending on each occasion, and the dates on which such visits were made."—(*Mr. O'Callaghan.*)

No. 1.

RETURN of all Sales of the Reserves of the School of Agriculture, in the Canterbury Provincial District, up to 1st May, 1882.

A.	R.	P.		£	s.	d.
40,532	0	19	were sold before survey out of reserves;			
Less 984	3	8	refund on deficient acreage after survey;			
39,547	1	11	... ...	79,094	12	9
			Less charge made by Surveyor-General for surveys ...	1,759	0	4
			Net amount	£77,335	12	5

RENTS received for Unsold Portions of above, and the Amount of the Annual Rent of such Portions.

			£	s.	d.	£	s.	d.
Total amount of rents received						4,766	14	4
Amount of annual rents,	1876	... ...	750	0	0			
,, ,,	1877	... ...	888	14	0			
,, ,,	1878	... ...	638	10	0			
,, ,,	1879	... ...	546	18	7			
,, ,,	1880	... ...	968	5	1			
,, ,,	1881	... ...	974	6	8			
,, ,,	to 1st May, 1882	... ...		...				

No. 2.

CAPITAL EXPENDITURE in connection with the Establishment of the School of Agriculture, Purchase of Land, Erection of Buildings, Procuring of Machinery, &c., respectively, and all Liabilities incurred up to 1st May, 1882.

Expenditure.

	£	s.	d.
Purchase of land for farm	17,711	16	8
Erection of buildings and fittings	30,550	3	10
Machinery and implements	1,650	6	5
	£49,912	6	11

Liabilities.

	£	s.	d.
Land	Nil		
Buildings and fittings	1,605	18	11
Machinery and implements	135	16	0
	£1,741	14	11

NOTE.—The amount for the purchase of land is an investment of capital received from the sale of reserves. The amounts expended for the purchase of buildings and fittings, and machinery and implements, was obtained partly from balance at credit of the Annual Maintenance Account, and partly from money borrowed on security of the endowment.

No. 3.

THE whole Annual Income and Expenditure for each Year in the Working of the Farm and General Maintenance.

Income.

	£	s.	d.	£	s.	d.
1876—Rents from reserves	750	0	0			
				750	0	0
1877—Rents from reserves	888	14	0			
Interest	773	4	10			
				1,661	18	10
1878—Rents from reserves	638	10	0			
Interest	3,957	18	4			
Rent from portion of farm	7	14	0			
				4,604	2	4
1879—Rents from reserves	546	18	7			
Rents from portion of farm	136	5	3			
Interest	4,407	13	0			
Grain and produce	131	17	6			
				5,222	14	4
1880—Rents from reserves	968	5	1			
Rents from portion of farm	38	2	6			
Interest	5,121	15	6			
Grain and produce	766	5	10			
Live stock	522	12	10			
Students' fees	320	0	0			
				7,737	1	9
1881—Rents from reserves	974	6	8			
Interest	3,973	7	7			
Grain and produce	874	2	2			
Live stock	490	5	10			
Students' fees	1,300	0	0			
Refund of students' travelling expenses	7	5	3			
				7,619	7	6
1882—Interest	1,748	0	0			
Grain and produce	59	16	4			
Live stock	268	12	1			
Students' fees	360	0	0			
Students, for books	2	1	2			
				2,438	9	7
				£30,033	14	4

Expenditure.

	£	s.	d.	£	s.	d.
1877—Inspection of reserves (maintenance)	3	6	8			
Contribution to Canterbury College	525	0	0			
				528	6	8
1878—Inspection of reserves (maintenance)	6	13	4			
Contribution to Canterbury College	500	0	0			
Live stock	318	0	0			
Maintenance	1,573	7	0			
				2,398	0	4
1879—Contribution to Canterbury College	500	0	0			
Live stock	1,188	12	4			
Maintenance	3,090	6	7			
				4,778	18	11
1880—Contribution to Canterbury College	500	0	0			
Live stock	371	4	2			
Maintenance	4,109	10	11			
				4,980	15	1
1881—Contribution to Canterbury College	500	0	0			
Live stock	359	0	0			
Maintenance	6,001	1	11			
				6,860	1	11
1882—Live stock	113	11	0			
Maintenance	2,900	5	2			
				3,013	16	2
Balance				7,473	15	3
				£30,033	14	4

NOTE.—This balance has been absorbed in the erection of buildings and fittings and the purchase of machinery and implements, and is included in the amounts under the head of "Capital Expenditure" in answer to Question No. 2.

No. 4.

RETURN of the Number resident as Pupils for each Year.

The school was opened the 19th July, 1880. Number of pupils during the two terms ... 21
1881—Number of pupils during the three terms 47
1882—Number of pupils entered for the present term (the first) 38

NOTE.—Of these students, 1 comes from the West Coast, 2 from Otago, 5 from Napier, 2 from Nelson, 4 from Auckland, 2 from Wellington, 2 from Gisborne, 1 from Picton, 1 from Invercargill.

No. 5.

RETURN of Nature and Results of Experiments made at the Farm.

Name.	From whence introduced.	Result of Cultivation.
	(*a.*) INTRODUCED PLANTS, OR VARIETIES OF PLANTS.	
Red clover ...	Illinois ...	Plant stands well; is still in cultivation; no seed.
„ ...	Alexandria ...	Too tender—killed first winter.
Alfalfa (lucerne) ...	California ...	Earlier than the common lucerne; plants still growing. A further supply of seed sent for this year.
Lucerne ...	Italy ...	Failure.
„ ...	Russia ...	„
Melilotus, sp. ...	Egypt ...	Apparently a very promising plant of strong growth. Further trials being made.
Spergula maxima ...	Denmark ...	The cultivated spurreys. Highly recommended; but, though useful in their native country and grow well here, are not equal to other fodder plants in cultivation.
„ arvensis ...	„	
Rape ...	Russia ...	Not so valuable as English—coarser and less succulent.
Lentils ...	Egypt ...	Grew well; but not adapted to New Zealand, at least at present.
Lupine (white) ...	Egypt ...	Grew and bore well; may be useful on light lands; experiment was not continued for fear of effect of alkaloid "lupuline" on stock.
Vetches (spring) ...	Illinois ...	Heavy-yielding variety.
„ (grey) ...	Montreal ...	Fair-yielding.
„ (black) ...	Canada ...	„
„ „ ...	Russia ...	Failure. These vetches have been grown a second year, but, as the vetch is not a much-valued crop in Canterbury, the cultivation has been discontinued.
Mustard (white) ...	Egypt ...	These grew well. The English is valuable either for its seed, for sheep, or for green manuring. The cultivation will be continued regularly.
„ „ ...	England	
„ (black) ...	Italy ...	The difficulty of harvesting this crop, where birds are so thick, is against it; otherwise it promises well. Cultivation of the English will be continued.
„ „ ...	Iowa	
„ „ ...	England	
Millet ...	Russia ...	Failure.
„ ...	Illinois ...	This millet grew fairly well for two years. The climate is, however, rather cold for it, and it did not very well hold its own against grasses and weeds. It seeded well—plenty of seed on hand.
Hungarian grass ...	...	These came, but not so strongly as the above. They are similar in habit, and not to be recommended.
Russian mohair		
Broom-corn ...	Kansas ...	Climate apparently too cold.
Peas ...	South Australia	Samples of dun peas, not better than those grown here.
„ ...	Victoria	
„ ...	Kentucky	
„ ...	Victoria ...	Partridge pea; very large, but not so saleable here as other sorts. Cultivation discontinued.
Linseed ...	Russia, 3 samples	These yielded seed of no better quality than that ordinarily grown, nor was there anything noticeable in the straw.
„ ...	Italy	
„ ...	U.S.A.	
„ (large-seeded) ...	„ ...	Grown for three years; much attacked by birds; less straw, and therefore fibre, than yielded by ordinary kind.
Hemp ...	Chili ...	Failure.
„ ...	Russia ...	„
Buckwheat ...	U.S.A. ...	Like all kinds of Polygonum, these grew well; but their value is questionable.
„ mammoth ...	„	
Castor-oil ...	...	For the growth of these oil-yielding plants the climate is too cold.
Sesame		
Sunflower		

RETURN of Experiments—*continued.*

Name.	From whence introduced.	Result of Cultivation.
	(*a.*) INTRODUCED PLANTS, OR VARIETIES OF PLANTS—*continued.*	
GRASSES.		
Ramieh ...	Spain ...	The seed of these and of many other kinds has been sown, but without result, owing to want of germinating power.
Red-top ...	U.S.A.	
Bluegrass ...	„	
Festuca duriuscula ...	...	Seed of the fescues and other European grasses was sown twice, the seed being each spring bought from different seedsmen, but without result.
„ rubra		
„ pratensis		
Bromus patulus, var. nanus	Europe ...	A dwarf compact grass, recently brought into cultivation.
Panicum (allied to the true broom-corn)	North America	Sown rather late, but has flowered. The climate is perhaps not sufficiently favourable to allow of its profitable cultivation.
	(*b.*) NATIVE GRASSES AND FORAGE PLANTS UNDER EXPERIMENTAL CULTURE.	
Microlæna stipoides ...	North Island ...	Of quick growth.
„ avenacea ...	...	Well adapted for orchard and forest growth.
Alopecurus geniculatus	South Island ...	Of small value for cultivation.
Dichelachne crinita ...	...	Of easy cultivation, and affords a considerable yield.
Speplachne ramosissima	Nelson ...	Apparently only adapted for ornamental cultivation, although it is stated that horses feed upon it in the Takaka ranges
Apera arundinacea ...	Banks Peninsula	An elegant grass for decorative purposes, but of little value to the agriculturist, although it is frequently eaten by horses and cattle.
Agrostis canina ...	Waimakariri ...	A valuable mountain grass; adapts itself to cultivation with rye-grass and other introduced kinds.
„ æmula ...	...	Apparently of but little value.
Arundo conspicua (toi-toi).		
Danthonia raoulii, var. aristala	Southland ...	One of the "snow-grasses;" of greatest value during winter. Not adapted for cultivation.
Danthonia semiannularis	...	A common New Zealand grass, now becoming mixed with introduced kinds under cultivation.
„ sp. ...	Lake Forsyth ...	A small species found in shingle or gravel; remarkable for its deep-rooted habit.
Triodia exigua ...	Thomas River ...	A small nutritious grass, forming a compact sward; a favourite grass with horses, but apparently not adapted for cultivation.
Deschampsia cæspitosa	Springston ...	A handsome species: found in wet situations.
Trisetum antarcticum ...	Southern Alps ...	One of the most valuable kinds for cultivation; will take the place of the English oat-grass.
Glyceria stricta ...	Port Nicholson	Of no value for cultivation, except possibly in maritime situations.
Poa foliosa, α ...	Stewart Island...	This is the typical form, and yields a large quantity of succulent herbage, but is not adapted for cultivation on the plains, although it seems likely to prove a grass of high value in mountain valleys.
„ anceps, β.		
„ australis, var. lævis	...	Not adapted for general cultivation.
Festuca scoparia ...	Stewart Island.	
„ duriuscula ...	Port Nicholson ..	The lowland form; a first-class grass, adapted for all ordinary soils, and generally cultivated in Britain.
Triticum scabrum ...	...	An excellent cattle-grass, but appears to die out unless allowed to seed freely.
Gymnostichum gracile...	Bealey Gorge ...	A grass of considerable value in mountain districts.
Angelica gingidium (aniseed)	Banks Peninsula	A valuable condimental plant, greedily eaten by stock of all kinds, but now dying out. Easily cultivated.
Ligusticum aromaticum	...	Greedily eaten by sheep.
Schœnus pauciflorus ("snow-grass")	...	A slender sedge common in mountain districts, and eaten alike by sheep, horses, and cattle, but is scarcely of sufficient value for cultivation.
	(*c.*) SUNDRY DRUG-YIELDING PLANTS.	
Papaver somniferum (opium poppy)	...	Seeds imported last spring, but arrived too late to allow of a fair trial being made during the season. Young plants of each are now in stock, so that their adaptability for culture in this district may be tested under more favourable conditions.
Atropa belladonna (deadly nightshade)		
Hyoscyamus niger (henbane)		

RETURN of Experiments—*continued.*

Name.	From whence introduced.	Result of Cultivation.
		(*c.*) SUNDRY DRUG-YIELDING PLANTS—*continued.*
Conium maculatum (hemlock)		
Menthapiperita (peppermint)	...	Two of the best varieties, cultivated for distilling purposes at Mitcham, have been specially imported, and promise well for the future. All that can be grown will find a ready market.
		(*d.*) CEREALS.
WHEAT.		
Purple straw ...	Victoria ...	All the Australian Tuscans were grown for three years, and the two samples mentioned below were selected as the best. All gave very fair results, quality and yield.
"		
"		
White Tuscan		
"		
Adelaide Society's ...	South Australia.	
Purple straw ...	Sydney Agricultural Exhibition	These wheats are still grown on the farm, as the best of the Tuscans tried. About 25 acres sown 1882.
"		
Fultz, Jennings, Talavera spring, Tappahannock, Clowson	U.S.A. and Victoria	These wheats were imported into Victoria from U.S.A., and grown there under the auspices of the Department of Agriculture. The samples tried here were the produce of Victoria. Samples are still on hand, and are better than any American wheat tried since, but are not thought to be equal to the Tuscan for New Zealand.
Prolific, Colorado, rust-proof, Diehle, Mediterranean, Manitoba, Chidham, frost wheat, club wheat, Michigan wick, Lammas, Russia red, amber, Muskegon, Russian golden straw, white Rogers, Herts white, silver chaff (spring), Oran early, Fife, red May, white May, little early May	U.S.A. ...	A collection of American wheats. Many of these were rejected after trial as unsuitable, others were grown a second year, and a few a third year. As more promising-looking wheats became available for trial, these dropped out of cultivation, as none of them seemed better than New Zealand and other wheats on the farm.
Fine hard wheat ...	Russia ...	These wheats belong to the class of "hard" wheats. They proved to be bearded wheats, the berry being long, thin, and translucent, but here never filling properly during the three years they were under trial.
Hard wheat ...	"	
Wheat ...	"	
" ...	"	
OATS.		
Tartarian (white) ...	Victoria ...	Light and inferior.
" " ...	"	" "
" " ...	"	" "
Adelaide Society's hull-less	...	Not thought to be valuable.
White ...	Halifax, N.S. ...	Good sample, but not better than growing on the farm.
Yellow ...	Canada ...	Light and inferior.
Surprise ...	U.S.A. ...	Small oat; apparently not calculated to stand wind.
" ...	"	" "
White Dutch ...	" ...	Failure.
Yellow ...	Canada ...	See above.
White ...	Nova Scotia ...	Fair oat.
Hull-less ...	...	See above.
Black ...	Charlotte-town, Nova Scotia	Good useful samples.
" ...		Nothing particular.
Dun ...	Russia ...	Light; of no value.
" ...	" ...	" "
Cape ...	Cape Colony ...	Dun oat much used in Mauritius. Very inferior in quality; poor yielder; of no value.
BARLEY.		
English ...	Victoria ...	Seed good sample; produce inferior.
" ...	"	" "
Cape ...	" ...	Very inferior yield.
English ...	U.S.A. ...	Grown two years. Soil of farm not well adapted to growing barley of good quality; produce not equal to seed.
Chevalier ...	"	
Four-rowed Michigan ...	"	
" ...	"	

RETURN of Experiments—*continued.*

Name.	From whence introduced.	Result of Cultivation.
		CEREALS—*continued.*
Three samples barley ...	U.S.A. and Russia	Failures.
Black barley ...	Spain ...	Curious rather than useful; yet a plump good berry.
RYE.		
Mammoth rye ...	U.S.A. ...	Very large berry. Believe it to be a wheat.
Winter ...	Russia & Canada	Both fair samples. Cultivation not continued.
		(*e.*) SUNDRY PLANTS.
Sainfoin ...	England and Victoria	This valuable plant is still in cultivation, but the soil of the farm is unsuitable, being deficient in lime. Some seed is available for distribution.
Canary grass ...	...	Yield not large, soil being poor; but this is evidently a crop suitable to the climate and for limited cultivation.
Sugar-beet, Imperial ...	France, *viâ* Victoria	Imperial grows well. This is the first year the laboratory has been of use in determining the percentage of sugar. Three roots, pulled 12th May, gave the following results:—

No.	Weight.	Length.	Circumference.	Per cent. of Sugar.	Per cent. of Water.	—
	lb. oz.	inches.	inches.			
2	2 0	11	12½	10·36	83·92	Pale yellow colour.
3	1 10	11	11½	9·60	82·89	
4	1 8	8½	11½	7·92	84·80	
Av.	1 11	10	12	9·29	83·87	

No. 1, a coarse necky root, weighing 2 lb. 4 oz., contained 84·90 per cent. water, and yielded only 3·87 per cent. sugar.

Sugar-beet, white Silesian	Christchurch ...	Grows very well—sugar not determined.
Maize ...	U.S.A. and New Zealand	Many (15 to 20) varieties of corn have been tried. They —some of them—may be useful for fodder, but the climate on the plains is too cold and windy for the ripening of the seed, which, however, in several varieties, set very well.
Early amber sugar-cane	New York ...	The same may be said of this plant. I should recommend its being carefully tried in the North Island.
Osage orange ...	Victoria ...	The climate is apparently too cold for this American hedge-plant.
African box-thorn ...	„ ...	Have fair hedges of this. It grows rapidly in good, free, well-drained soil. Stands climate, and fruits well. Am, however, undecided as to its value for general use here.
Thousand-head kale ...	...	A very useful plant, preferable to rape on dry lands; but must be fed in the autumn, else stalks become tough, are not then eaten by stock, and cannot be covered in by the plough.
Kohl-rabi ...	...	Neither the purple nor the green variety is suitable, turnips giving more feed and being more easily grown.
Field cabbage ...	...	If seed of the "drumhead" were cheap and true, this kind—which gave the best results—might be grown with advantage on heavy lands. It is not necessary to transplant.
Linseed ...	...	Besides trials of samples, a few acres have been grown the last two years. The yield of both seed and straw has been very fair. Some of the straw has been retted; but without machinery for dressing the fibre it is useless to continue the experiment.

In order to show the facility with which fruit may be grown in connection with agriculture, about three acres of land have been set apart for an orchard, and about one-third is already planted, chiefly with apples and pears. The preparation of the ground and planting have been carried out entirely by students, under the instruction of the gardener. Two objects have been kept in view: first, to secure the best kinds of blight-resisting stocks; second, to adapt the mode of cultivation to the peculiarities of the climate.

The stocks selected for apples are the Northern Spy and the Majetin, both of which possess great powers of resisting blight. The former is the better stock where dwarf specimens are required; the latter for those of larger growth, but may be used advantageously even for dwarf specimens, of kinds not making a robust growth.

As considerable difference of opinion exists amongst the local fruit-growers with regard to the respective merits of these stocks, the experiment is of public interest and valuable results may be anticipated, plants worked on the different stocks being planted side by side, and subjected to the same mode of culture.

The larger portion of the orchard will consist of apples and pears, stone fruits being represented but sparingly.

Winter Food of Small Birds.

Contents of Crop and Gizzard of Birds shot.

Date.	Kind of Bird.	Seeds of Weed.	Grain.	Insects.	Remarks.
1880.					
April 20	Greenfinch ...	160			
„ 30	„ ...	178			
May 1	Sparrow ...	150	2 wheat		
„ 3	Lark ...	132			
„ 3	Greenfinch ...	a large number			
„ 6	Sparrow ...	110			
„ 15	Greenfinch ...	190			
„ 25	„ ...	110	10 „		
„ 30	Sparrow ...	173			
June 3	Greenfinch ...	125			
„ 9	Sparrow ...	96	1 „		
„ 12	Greenfinch ...	378	26 „		
„ 12	Sparrow ...	793	...	7	
„ 15	„ ...	362	19 wheat		
„ 15	„ ...	469	14 „		
„ 15	Lark ...	79			
„ 15	Native lark ...	...	...	8	
„ 20	Lark ...	120	...	12	
„ 24	Greenfinch ...	681	...	1	
„ 24	„ ...	231			
„ 24	Sparrow ...	240	12 wheat		
„ 24	Lark ...	43			
„ 28	Sparrow ...	167			
July 6	Greenfinch ...	387	1 „		
„ 6	Lark ...	172			
„ 9	Greenfinch ...	254			
„ 10	Sparrow ...	378			
„ 10	„ ...	283			
„ 10	Lark ...	76			
„ 10	„ ...	18			
„ 16	Sparrow ...	260			
„ 16	Greenfinch ...	180			
„ 30	Lark ...	18			
„ 30	„ ...	153			
August 6	Greenfinch ...	271			
„ 7	„ ...	268			
„ 7	„ ...	5	3 oats		
„ 13	„ ...	205			
„ 13	„ ...	268	4 wheat		
„ 13	Sparrow ...	231			
„ 20	Lark ...	160			
„ 20	Sparrow ...	...	19 „		
„ 20	Greenfinch ...	...	25 „		
„ 26	Sparrow ...	184	2 „		
„ 26	Greenfinch ...	268			
„ 26	„ ...	317			
September 2	„ ...	10	14 „	...	Not seed wheat.
„ 2	Lark ...	40	8 „		
„ 8	Greenfinch ...	36			
„ 8	Sparrow ...	10			
„ 13	Lark ...	14			
„ 13	Greenfinch ...	3	6 „		
„ 13	„ ...	45			
„ 18	Lark ...	2			
„ 18	„ ...	...	...	...	Green matter.
„ 24	Greenfinch ...	64	28 wheat		
„ 24	„ ...	...	31 „		
„ 24	Lark ...	...	6 „		
„ 24	„ ...	...	...	several	
„ 30	Greenfinch ...	18			
October 8	Lark ...	8	6 wheat	2	

Twenty birds killed later contained portions of young peas, wheat, &c., &c.

MANURES on CEREALS, to show the Value of Nitrogen compared with Phosphates, or Potash, or both.

No. of Plot.	Kind of Manure.	Weight per Acre.	Remarks.
1	Nothing	...	Plots=2 acres each. The whole area was, more or less, attacked by small birds; the yield of each plot was therefore not taken. Plots Nos. 2, 7, 8, 10, and 11 were, however, decidedly the best. A second trial in case of a few plots was not more successful. Such experiments can only be carried out on plots in the middle of a large field of grain. These experiments were not continued last year, but will be again taken in hand.
2	Nitrate of soda	280 lb.	
3	Superphosphate of lime—25 per cent. soluble	336 „	
4	Kainit	300 „	
5	Ground bones	336 „	
6	Nothing	...	
7	Farmyard	15 loads	
8	Nitrate of soda	280 lb.	
	Superphosphate	336 „	
9	Kainit	300 „	
	Superphosphate	336 „	
10	Nitrate of soda	280 „	
	Bones	336 „	
11	Nitrate of soda	280 „	
	Superphosphate	336 „	
	Kainit	300 „	

ON ROOTS.—Plot experiments were not successful, a plant not always being obtained. In the field, trials have been several times made to test the value of special manures. In all cases the manured land yielded better crops than the unmanured, sometimes very much so, and in more than one instance made apparently the difference between a good crop and none: *i.e.*, the drills where no manure was used produced very few small turnips, whilst those adjacent, manured, produced a large crop.

Turnips are generally sown with the water-drill—about 600 gallons of water and 2 cwt. superphosphate of lime per acre. In no instance on the farm has a crop so drilled been a failure, or even a partial failure, whilst sowing turnip-seed broadcast has failed to produce a crop, even after three sowings. So far the water-drill seems to insure a plant, whilst in broadcast sowing everything depends upon the weather. The cost of manure, of water, and extra labour in drilling amounts to something less than 20s. per acre.

EXPERIMENTS IN "PICKLING" SEED WHEAT.

Of 100 grains of wheat sown 21st August, 1880, there had germinated on the dates given the numbers following, viz.:—

—	—	—	August		September										—
			30th.	31st.	1st.	2nd.	3rd.	5th.	7th.	9th.	11th.	14th.	17th.	20th.	27th.	
A. "Purple Straw" ...	...	Not pickled	29	84	85	87	96	97	98	98	98	98	98	99	99	Seeds germinated.
	Pickled with pure sulphate of copper	2 oz. to the sack	13	40	61	83	85	88	93	93	93	93	93	94	95	,,
		4 ,, ,, ...	4	19	35	53	57	64	81	83	85	88	90	92	93	,,
		8 ,, ,, ...	2	4	7	8	8	13	27	40	48	50	56	59	59	,,
		12 ,, ,, ...	2	4	8	10	10	14	19	26	31	39	45	51	53	,,
		16 ,, ,, ...	...	3	5	8	8	11	19	31	36	40	46	49	49	,,
B. "Hunter's White" Wheat	Pickled with pure sulphate of copper	8 oz. to the sack	46	64	70	77	79	83	89	89	89	89	90	91	93	Seeds germinated.
		12 ,, ,, ...	49	60	65	74	76	79	87	88	88	88	89	92	93	,,
C. "Purple Straw" ...	...	Not pickled	86	86	87	88	90	92	95	95	95	95	95	96	96	Seeds germinated.
	Pickled with pure sulphate of copper	2 oz. to the sack	48	62	69	80	82	84	88	89	89	89	89	89	89	,,
		4 ,, ,, ...	17	34	41	48	53	60	74	75	78	80	81	82	82	,,
		8 ,, ,, ...	14	26	31	37	40	47	59	60	66	72	73	73	75	,,
		12 ,, ,, ...	13	17	20	26	28	32	41	44	47	48	50	52	55	,,
		16 ,, ,, ...	2	7	10	15	18	19	26	29	34	40	45	49	51	,,

The germinating power of the same wheats was hardly affected by solutions of sulphate of iron containing 7 per cent. sulphate of copper of the same strength as above.

Samples of the same wheats were submitted to microscopic examination. About 60 per cent. of the grains were found to be injured, there being in the epidermis minute rifts or cracks—possibly caused by the drum, or smutter, of the threshing-machine. Twelve sound grains were sown, and all germinated; twelve unsound grains were sown, and eleven germinated; twelve unsound grains, pickled with sulphate of copper, were sown, and none germinated.

Similar experiments are now in hand; and also others to prove the efficacy of sulphate of copper in preventing smut, &c.: namely, In two fields smutty wheat has been drilled—(1) pickled with sulphate of copper; (2) pickled with sulphate of iron; (3) not pickled.

Thick and Thin Sowing.—Two fields have been experimented on in this direction, one chain of land being sown with wheat, the quantity per acre being $\frac{7}{8}$ bushel, 1 bushel, $1\frac{1}{4}$ bushels, and $1\frac{1}{2}$ bushels; variety of wheat, Hunter's white. The thickest sown was decidedly the best in both cases. The quality of the land has so much influence upon this question that experiments such as these have but little abstract value. The date of sowing and habit of growth of the variety of wheat sown must also be taken into account in deciding upon the quantity per acre to be sown,

Subsoiling, Deep and Shallow Ploughing, have been compared every year but one. The difference is hardly observable during the growth of the first crop, but the effect of deep cultivation is afterwards easily perceived in the improved mechanical condition of the soil and improved crops.

New Varieties of Wheat, 1881.

Variety.	Whence obtained.	Remarks.
American ...	Chicago ...	Said to be a picked sample of American winter wheat, but proved to be a mixture of several kinds of wheat, all of poor appearance.
White Lammas ...	Tasmania ...	These were wheats obtained from the Technological Museum, Melbourne, having been exhibited at the Melbourne Exhibition. They were all splendid samples, but, as soon as they came into ear, were attacked by birds and completely destroyed. Some of the seed, however, was left unsown, and is again under trial.
„ Tuscan ...	Victoria	
Polish ...	N.S.W.	
Purple straw ...	Victoria	
Braemar velvet ...	Tasmania	
Wheat ...	Victoria	
„ ...	„	
Cob ...	Tasmania	
Ten-rowed wheat ...	„	
Wheat ...	Victoria	
„ ...	„	

Peas for Splitting.—The Early Emperor was tried on a few acres of land last year. The experiment will be continued.

Mustard—White and Brown.—Three acres tried last year with moderate success. Harvesting the latter presents a few difficulties in this climate, and in face of the small birds. Both crops may, I think, be profitably grown.

Wheats, 1882.—Besides the above-mentioned samples, I have been enabled, through the kindness of Mr. Lovegrove, of Makikihi, to sow a few acres with red wheats, brought from England this year by that gentleman. These wheats comprise Lammas, Nursery, Essex Rough Chaff, Talavera, and others.

Beans.—Tick and winter beans have been this autumn imported from England and sown. The tick bean especially will probably prove better suited to our medium land than the larger Scotch bean generally grown in this country.

The ordinary grain crops of the farm are not included in these lists.

Until students are more advanced, it is not practicable to undertake much experimental work in which the chemical laboratory is concerned.

Completion of the buildings and of the work of organizing a new institution will leave more time for attention to the development of useful experimental schemes.

W. E. Ivey,
Director.

School of Agriculture, Lincoln.

No. 6.

"Of the number of official visits made by the Board of Governors to inspect the College, the names of the Governors attending on each occasion, and the dates on which such visits were made."

No record has been kept of the official visits of the Governors to the farm, or the names of the Governors attending on each occasion.

F. G. Stedman,
Registrar, Canterbury College.

By Authority: George Didsbury, Government Printer, Wellington.—1882.