23. Napanee	3,680		Lennox
24. Bowmanville	3,504		Durham
25. Petrolia	3,465		Lambton
26. St. Mary's	3,415		Perth
27. Paris	3,173		Brant
28. Whitby	3,140		Ontario
29. Prescott	2,999		Grenville
30. Picton	2,975		Prince Edward
31. Brampton	2,920		Peel
32. Orillia	2,910		Simcoe
33. Kincardine	2,876		Bruce
34. Pembroke	2,820		Renfrew
35. Orangeville	2,847		Dufferin
36. Listowel	2,688		Perth
37. Almonte	2,684		Lanark
38. Amherstburgh	2,672		Essex
39. Simcoe	2,645		Norfolk
40. Clinton	2,606		Huron
41. Walkerton	2,604		Bruce
42. Perth	2,467		Lanark
43. Thorold	2,456		Welland
44. Niagara Falls	2,347		Welland
45. Mitchell	2,284		Perth
46. Mount Forest	2,170		Wellington
47. Waterloo	2,066		Waterloo
48. Newmarket	2,006		York
49. Tilsonburg	1,939		Oxford
50. Welland	1,870		Welland
51. Meaford	1,866		Grey
52. Palmerston	1,828		Huron
53. Harriston	1,772		Wellington
54. Oakville	1,710		Halton
55. Niagara	1,440		Lincoln
56. Milton	1,302		Halton
57. Sandwich	1,143		Essex
58. Durham	1,059		Grey

Villages.

1. Yorkville	4,825		York
2. Trenton	3,042		Hastings
3. Gananoque	2,871		Leeds
4. Seaforth	2,480		Huron
5. Arnprior	2,147		Renfrew
6. Smith's Falls	2,087		Lanark
7. Dresden	1,979		Kent
8. Carleton Place	1,975		Lanark
9. Hawkesbury	1,920		Prescott
10. Wingham	1,918		Huron
11. Uxbridge	1,824		Ontario
12. Dunnville	1,808		Welland
13. Port Perry	1,800		Ontario
14. Merritton	1,798		Lincoln
15. Portsmouth	1,734		Frontenac
16. Fergus	1,733		Wellington
17. Exeter	1,725		Huron
18. Morrisburg	1,719		Dundas
19. Port Colborne	1,716		Welland
20. Deseronto	1,670		Hastings
21. Forest	1,614		Lambton
22. Renfrew	1,605		Renfrew
23. London West	1,601		Middlesex
24. Brighton	1,547		Northumberland
25. Aurora	1,540		York
26. Aylmer	1,540		Elgin
27. Parkhill	1,539		Middlesex
28. Ridgetown	1,538		Kent
29. Wallaceburg	1,525		Kent
30. Georgetown	1,471		Halton
31. Preston	1,419		Waterloo
32. Campbellford	1,418		Northumberland
33. Leamington	1,411		Essex
34. Norwich	1,411		Oxford
35. Port Elgin	1,400		Bruce
36. Elora	1,387		Wellington
37. Point Edward	1,293		Lambton
38. Ashburnham	1,266		Peterborough
39. Arthur	1,257		Wellington
40. Caledonia	1,242		Haldimand
41. New Hamburg	1,240		Waterloo
42. Blenheim	1,212		Kent
43. Kemptville	1,188		Grenville
44. Bradford	1,176		Simcoe
45. Parkdale	1,170		York
46. Lucknow	1,162		Huron
47. Fenelon Falls	1,155		Victoria
48. Paisley	1,154		Bruce
49. Millbrook	1,148		Durham
50. Port Dover	1,146		Norfolk
51. Southampton	1,141		Bruce
52. Watford	1,132		Lambton
53. Port Dalhousie	1,129		Lincoln
54. Waterford	1,118		Norfolk
55. Alliston	1,099		Simcoe
56. Midland	1,095		Simcoe
57. Penetanguishene	1,089		Simcoe
58. Colborne	1,079		Northumberland
59. Burlington	1,068		Halton
60 Madoc	1,065		Hastings
61. Newcastle	1,060		Durham
62. Stayner	1,028		Simcoe
63. Iroquois	1,001		Dundas

The only county towns with less than 1000 of a population are the villages of:

L'Orignal	858	Prescott
Cayuga	830	Haldimand

MISCELLANEOUS.

In our June number we gave the boundaries of the four new districts into which the North-west territory had just then been divided. It is now rumored that the region west of Manitoba is to be re-arranged into two new provinces, Qu'Appelle and Saskatchewan, the former extending from Manitoba to the third principal meridian, and the latter from that meridian to the Rocky Mountains.

It is further rumored that Regina, the new town located on "Pile-of-bones" creek, is to be the capital of Qu'Appelle, and Edmonton of Saskatchewan.

Mathematical Department.

INDIRECT DEMONSTRATIONS.

A well-known mathematical writer states that "Indirect demonstrations are often less esteemed than direct demonstrations." Another observes that "The indirect is, in general, less readily appreciated by the learner than the direct form of demonstration. The indirect form, however is equally satisfactory, as it excludes every assumed hypothesis as false except that which is made in the enunciation of the proposition." He then proceeds to notice that Euclid employs indirect proofs like those of I. 6, 14, etc., and indirect proofs like those of I. 19, 25, etc., in which it is shown that neither side of a possible alternative can be true, and from this the truth of the proposition is inferred.

All proofs of this kind depend on the *Principle of the Excluded Middle*, which was known to the earliest Greek logicians, and is thus enunciated by Thompson:—"Either a given judgment must be true, or its contradictory; there is no middle course. In other words if two propositions are contradictory one of them must be true, and the other false, so that the proof of a proposition forces us to abandon its contradictory, and the disproof of a proposition compels us to accept its contradictory." Or, as Mr. Mill states it, "That the premises cannot be true if the conclusion is false, is the unexceptionable foundation of the legitimate mode of reasoning called a *reductio ad absurdum*."

For example, in the sixth proposition of Euclid I. the question to be decided is whether two certain lines are *equal* or *not equal* under given conditions. The only possible suppositions are expressed by the two directly contradictory propositions: The two lines are equal; the two lines are not equal. As there is no tenable supposition intermediate between these two extremes, all middle ground is excluded. We cannot, for instance, assume the middle position: the two lines are partly equal and partly unequal. The proof then proceeds to test the truth of the second proposition by deducing conclusions from it. It is found to lead to the conclusion, a part of a line is equal to the whole of that line, and this conclusion is known to be false. Hence we infer that the second pro-