For the purpose of arriving at a fair comparison of the two plans, the special requirements of each may be distinguished in the following manner:—

I.—THE DEPARTMENTAL PLAN

Requires twenty-four locks of 12 and 14 feet lifts, but as the whole fall to be overcome between Thorald and Port Dalhousie is 320 feet the average of the lifts is 13⅓ feet. This plan requires more than necessary.

(*a*) Four locks with four sets of lock gates and their machinery.

(*b*) One pair guard gates.

(*c*) Four waste-weirs with four channels for them around the locks.

(*d*) The shifting of the line of the Welland Railway into deep side cutting.

(*e*) Extensive retaining walls for the canal and water-courses, owing to the necessity of crowding into the narrow gorge the railway, the canal, and the artificial channel to be formed for the Ten Mile Creek.

(*f*) Heavy cutting in rock and clay through the ridge dividing the Ten and Twelve Mile Creeks, instead of enlarging the old line.

(*g*) The annual cost of four sets of lock attendants for day and night service for all time.

(*h*) The annual cost of repairing and maintaining four locks, four waste weirs and one pair of guard gates.

(*i*) And finally this plan involves loss of time, with increased cost of wear and tear for every vessel that passes through the canal hereafter, from the existence of four unnecessary locks, of 20 per cent. This is a very serious loss to which it is hardly possible to assign any money value, but the amount of all previous items can be approximately determined.

II. The plan suggested by the Board of Engineers requires twenty locks of the uniform lift of sixteen feet to overcome the same fall.

(*k*) For such uniform lifts the average increase in the height of the walls all round is 2⅔ feet, requiring an addition of about 1,200 cubic yards of masonry for each lock.

(*l*) The tunnel system for the locks, as before stated, does not increase the quantity of masonry, because it is disposed of more advantageously; but it requires a better class of it in the lower part of the work. The quantity affected by the change is about 1,167 cubic yards in each lock, the value of which is about fifty per cent. more than the other masonry.

(*m*) Four additional wicket gates to each lock for the tunnels.

(*n*) The purchase of two mills in Thorold, and the alteration of the machinery of three more to suit the new levels, changing part of the line of the main street so as to have the swing bridge at the foot of the second lock; also, purchase of village lots, and damage to property on the line diverted.

III. Difference of cost for locks.

According to the prices at which the contracts for the new works on the Welland Canal have been let, the average cost of a lock on the present plan, including masonry, foundations, excavation, filling about walls, lock gates and machinery, waste weirs, sluices, and channels around locks, will be about	$123,000
The probable cost of the re-arrangement of the locks for uniform lifts (*k*) will be, each lock	14,400
The probable increased cost of masonry for the tunnel system (*l*) will be each lock	7,000
The cost of additional wickets (*m*) each lock	1,000
Probable cost of lock, w. weir, &c., on plan suggested	$145,400

These elements afford the means of arriving at a fair approximation to the real difference of cost between the two rival plans.

The official plan requires 24 locks, waste weirs, &c., at an average cost, as above stated, of $123,000	$2,952,000
The plan suggested by the Board of Engineers requires only 20 locks, waste weirs, &c., at an average cost of $145,400 each	2,908,000