

"The American Dredging Company, desirous of learning all the newest improvements in dredging, sent to Europe their secretary, Mr. F. C. Prindle, an eminent civil engineer, who held for years the highest professional position in the service of the Government of the United States.

"Having been favoured with a perusal of several of the letters of Mr. Prindle to his Board of Directors, I begged that I might be furnished with such extracts as would be useful to the various Australian Governments. Since I left Philadelphia Mr. Prindle has returned, and condensed his letters into the form of a report, and from that report, which is not for publication, I have received the enclosed extracts, which convey verifiable information, and substantially in accordance with that sent by Mr. Robinson and myself.

"This American type of dredge can be readily built in this and the other colonies, and by its economy would enable very desirable and much-needed improvements to be accomplished.

"I have, &c.,

"AUGUSTUS MORRIS."

"EXTRACT from the Report, 1877, of Franklin C. Prindle, C.E., and Secretary of the American Dredging Company, on Excavating Dredges of England, Scotland, &c.

"Philadelphia, 15th June, 1877.

"The excavating dredges employed in England and Scotland, and also in France, Belgium, and Holland, which I saw during my recent visit, are of the old-fashioned, endless-chain type; generally very strongly built, with iron hulls, and operated by large condensing engines, and fitted with very heavy and powerful dredging machinery.

"The following table gives the most important data pertaining to the most powerful and efficient dredges employed by the Mersey Dock and Harbour Board, at Liverpool, England; the Furness Railway Company, at Barrow, in Furness; the Clyde Trust, at Glasgow, Scotland; and the American Dredging Company, at Philadelphia, Penn., U.S.A.

Place.	No. of Dredge.	Original Cost.	Length.	Breadth.	Depth.	Draught.	Greatest Depth can dredge.	Height above Water necessary to lift Material for Discharge.	Capacity per Engine, hour.	Kind of Material lifted.	Coal, per hour.	No. of Crew required to operate.	Remarks.
		£	Feet	Feet	Feet	Feet	Feet	Feet	Cubic Yards.		lb.		
Liverpool...	6	12,000	100	40	10	...	34	17-5	100	Mud and sand...	300	12	Double reel of buckets.
Barrow ...	4	20,000	165	27	10-6	7	40	28	140	Hard gravel and sand	600	12	Single ditto, new machinery, coal, and capacity estimated.
Glasgow ...	1	7,923	157-5	32-3	10	7	32	37	67	Silt of sand and sewage	600	12	Double reel of buckets.
	{ 8 9	{ 17,653 17,653	{ 161 161	{ 29 29	{ 10 10	{ 6 to 7 6 to 7	{ 28 30	{ 30 30	{ 178 129	{ Sand, silt, till, and gravel; ditto, ditto, and mud Sand, clay, and mud	{ 600 450	{ 12 7	{ Single ditto. Single grapple bucket of five cubic yards capacity.
Philadelphia	4	5,500	99-6	35	9-6	5-5	50	4 to 8	{ 150 300				

"By reference to the above it will be seen that in point of first cost, capacity per engine hour, consumption of fuel, and number of crew required to operate, the grapple dredge of the American dredging system is considerably superior to the endless-chain dredges named, and which are believed to be the best of the kind in Europe.

"Owing to the greater simplicity of the machinery of the grapple dredges and the fewer parts exposed to wear, the cost of repair, wear and tear, and maintenance is also much less. Upon this point the engineer of the Clyde Trust, in his official report, says: 'Repairs form a heavy item in the working expenses of a dredge. About an hour each day on the average is consumed in replacing pins, links, and buckets and nearly every year each dredger is laid up for several weeks to undergo a thorough overhaul.'

"For the repair of its dredging plant, consisting of six steam dredgers, with the necessary barges, tug-boats, &c., he says: 'The trustees in 1857 erected on the side of the river at Dalmuir, eight miles below Glasgow, an extensive range of works, at a cost of £25,000.'

"They give employment to 140 hands. In the smiths' department, three heavy steam hammers are constantly employed forging the heavy links, pins, &c., required for the various dredgers.

"Place beside this statement the fact that for the repairs and maintenance of the fourteen dredgers of all kinds, owned and operated by the American Dredging Company, the employment of a single steam hammer in the smiths' department, and a force of fifty mechanics and labourers in all its shops, are found amply sufficient.

"Aside from the actual cost of repairs, it will, from the table, be easy to form comparative estimates of the cost of operating these several dredgers in any given locality.

"The cost of the American Dredging Company's No. 4 grapple, as given in the table, is the actual cost of production with wooden hull here, in currency. The cost of a similar one, with an iron hull, and fitted for salt-water service to compare with the iron hull dredgers named, would be about 36,000 dollars, or say about £6,500 if built in England.

"The best performance of the Clyde dredgers, according to the engineer's report, is 'Where good lifting sand was being dredged, one of the two most powerful of the trustees' dredgers lifted on each of five consecutive days in the month of August last 2,240 cubic yards, or about 2,800 tons, the engine