saving surface, and to this end room must be provided on the dredge-punt on which to erect the boxes. The boxes should run fore and aft of the dredge, not athwartship. (See Plan A.)

(*b.*) The quantity of water should be such as to allow of a constant run of a ¾ in. pipe over the whole surface of the tables, the tables having a fall of 9 in. to the 12 ft., and a break and a direct drop of 1½ in. every 6 ft.

(*c.*) The matter and water should be evenly distributed over the whole width of the boxes by means of a spreading-table, and the velocity of the water checked before reaching the tables by falling from the spreading-table on to the return run (see Plan A). The pump should never be run from the shaft of the main engine, for the reason that when buckets are lifting to their full capacity the engine slows down, and the water-supply is reduced, whereas when the buckets are but partially full the speed of the pump is increased; thus the water-supply is reduced when it should be increased, and increased when it should be reduced. The pump, therefore, should be run from an auxiliary engine apart from the main engine.

(*d.*) The usual breadth of a run is 3 ft. but for fine gold plush should be used, and 2 ft. width gives the handiest cloth; the length should not exceed 2 ft. 6 in., if too long they soon wear out.

(*e.*) Washing up the runs separately is a most essential feature on all dredges dealing with fine gold, and not only should the cloths on each run be capable of lifting while the dredge is at work, but means should be provided to allow of their being cleansed from sand (consequent on the stoppage) when in full work. It will be noticed on plan A that the run-divisions appear at the lower end of the spreading-tables. A movable cover is made to fit and stop the run, the water-trap in the auxiliary water-supply tank is then lighter, and the required amount of water allowed to pass into the run. When the cloths are sufficiently cleared from the useless *débris* the water-trap is shut down, the cloths lifted, washed, and when replaced the cover is lifted and the run is at once at work.

(*f.*) The present system of letting the saving-tables look out for themselves is not desirable. It will be found that the money paid in wages for an extra hand will soon be repaid, more especially on dredges dealing with fine gold associated with black sand.

The boxes suggested will require more deck-room and the adjustment of the position of the boiler, and the tailings-elevator gearing and belt, matters of no consideration as compared with effective saving appliances.

The plan marked B illustrates a very valuable addition to saving-tables, especially if dealing with magnetite and black sand, which is apt to clog the cloths. The perforated pipes are arranged above the runs at the required height to allow of the sprays falling upon the water running in the boxes, and causing a disturbance down the cloths.

In conclusion, thorough and reliable prospecting is absolutely necessary as the primary steps to the successful result of a dredging company, for upon the reports of the prospecting and boring the engineer should calculate his length of ladder, size of buckets, water-supply, and tables."

Particulars of New Dredges, illustrated by Drawings.

Earnscleugh, No. 3 Dredge.—The Earnscleugh Dredging and Electric Power Company's dredge has been designed by Mr. Leslie H. Reynolds, C.E., of Dunedin, to work this company's claim, which is of 100 acres extent, situated at Earnscleugh Flat, near Alexandra South, and Clyde, Otago. The dredge is the largest of her particular type yet constructed, being driven by electro-motors, which are supplied with current generated at the power-house situated on the Fraser River, nearly four miles from the claim. In the construction of the pontoons Mr. Reynolds has adopted the well-known truss system, which with the minimum of timber a maximum of rigidity is obtained. The materials are of kauri, ironbark, and Oregon pine. The principal dimensions are as follows: Length over all, 132 ft.; width at stern, 35 ft., tapering to 25 ft. at the bows; with a depth of 6 ft. forward and 7 ft. 6 in. aft. The ladder is of a length sufficient for a dredging depth of 50 ft. below water-line, and is fitted with buckets of 6-cubic-feet capacity, to run at a speed of eleven per minute, equal to 145 pards per hour. The revolving-screen is 30 ft. long and 7 ft. diameter, driven by flat friction gearing. The elevator is 118 ft. long between centres, and capable of stacking the tailings to a height of 70 ft. above water-line, thus giving a total lift of 120 ft. from the bottom. For lifting the silt discharged from the tables a silt-wheel is fitted which discharges into the main elevator, thus preventing any accumulation under the stern of the dredge. Water is supplied by a 12 in. Tangye centrifugal pump driven from the main gearing, and capable of delivering over 2,000 gallons per minute. The winch is of Mr. Reynolds's special worm design, fitted with six barrels for head, ladder, and four side lines respectively, and is driven by an independent 20 b.h.p. electro-motor. The main motor is of 100 b.h.p. capacity, there being a full equipment of transforming and controlling apparatus, together with a complete system of electric lighting and telephones. The whole of the electrical plant is by Brown, Boveri, and Co., Switzerland, supplied and fitted by their New Zealand agents, Messrs. Turnbull and Jones.

Kohinoor Dredge.—This dredge has been designed by Mr. James Bishop, of Wellington, to work the company's claim on the Mikonui River, Ross. The pontoons are 104 ft. long by 32 ft. beam and 7 ft. deep, with a forward well 6 ft. wide for ladder, and a short stern well for elevator tumbler. The buckets are 5½-cubic-feet capacity, capable of lifting 140 cubic yards per hour. The ladder is 60 ft. long, capable of dredging to a depth of 40 ft. The screen, which is driven by friction-rollers from the bottom end, is 26 ft. long by 6 ft. in diameter, with a long discharge-shoot fitted up with ripples for catching any gold that may be too large to pass through the holes in screen. The elevator is 60 ft. long, capable of stacking to a height of 32 ft. The boiler is 30-horse power, designed to burn either wood or coal; this is being constructed by Messrs. Luke and Co., of Wellington, who have the contract for constructing and erecting the machinery. The engine is