

CHAPTER VIII.

MISCELLANEOUS.....	FAEB 497
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A collection of illustrations received too late for classification in regular order.—The rock-fill dams of Bowman lake, Eureka lake, and Weaver lake, on the South Yuba river, Cal., types of earliest construction.—The Faucherie timber dam.—Remains of the English Lake dam, partly destroyed by flood in 1883.—A recent view of the completed Lake Frances hydraulic-fill dam, with full reservoir.—Hydraulic sluicing at Seattle, Wash., illustrated.—The Hopkirk wood-stave reinforced pipe for carrying liquid earth.—The Milner combination dam.—The Walnut Grove rock-fill dam.—The Granite Reef concrete weir.—The Hinekston Run, Pa., cinder-fill dam.—Latest view of Necaxa dam.—Four notable masonry dams in Mexico, not hitherto described.—View of the Santo Amaro hydraulic-fill dam, Brazil, with table of progress, ratios of solids carried, etc.—A remarkable illustration of stability of clay core of hydraulic-fill dam under test conditions.—A high Japanese hydraulic-fill dam.—Dixville, N. H., earth dam, with concrete core on sheet-piles.—Arrowhead dam, Cal.—A leaky core-wall.—The John Days dam, Cal., a combination of concrete and earth.—The Roland Park hydraulic-fill dam, Baltimore, Md.

APPENDIX.

Containing tabulated data of the cost of reservoir construction per acre-foot in the United States and in foreign countries on various types of dams. Also tables of the area and capacity of twelve western reservoirs, at varying levels.....	548
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RESERVOIRS FOR IRRIGATION, WATER-POWER, AND DOMESTIC WATER-SUPPLY.

CHAPTER I.

ROCK-FILL DAMS.

THE natural fertility of resource in the American people has led to many novel experiments in the construction of dams to adapt them to the materials most conveniently available, and this has resulted in the development of numerous interesting types. Among these the most conspicuous are the rock-fill dams, which may be said to have originated about the middle of the last century in the mining region of California, where dams were built in remote and almost inaccessible locations, to which the transportation of cement was impracticable. These were considered to be of a temporary nature, where dams of permanent masonry were not warranted, but where a water-supply for mining purposes needed to be impounded. They began with timber or log cribs filled with loose stone. Their next stage was an embankment of loose stone a portion of which was laid up as a dry wall, with a facing of two or more thicknesses of plank to secure water-tightness. The latter type has proven so serviceable that it is still regarded as one of the most desirable classes of dam that can be built, where economy is of prime consideration. In the attempt to secure a greater degree of durability other types have been developed as follows:

1. Rock-fill dams with a vertical central core of steel plates, protected with a coating of asphaltum and burlap, and supported by thin concrete walls on each side.
2. Rock-fill dams with a facing of steel plates riveted to I-beams laid on the inner slope of the embankment at an angle varying from about 20° off the vertical to about 45°, the wall being hand-laid to a sufficient thickness to give requisite stability.
3. Rock-fill dams, with face of masonry, built vertically or slightly inclined, backed with earth or rock, and protected on the lower slope by a covering of stone laid in mortar.
4. Rock-fill dams with facing of Portland cement-concrete, either reinforced with steel rods or expanded metal, or without such reinforcement.
5. Rock-fill dams with facing of earth.