

dent—amusing to us, but by no means so to the principal—connected with the construction of one of the first ditches taken into the gravel mines of Smartsville. This was at the time when claims were small and owned by many individuals, long before the era of huge mining corporations. A large number of miners united for the purpose of bringing the water of Deer creek into their claims, and employed a surveyor to locate a ditch. They then began digging along the grade stakes, each man turning in his labor as a contribution to the capital stock. After several miles had been constructed they discovered the astounding fact that the grade was running up hill, instead of down. They immediately pounced upon the unlucky surveyor, and proceeded to hang him, affirming that he had done this wicked thing "with malice aforethought," and in the interests of a rival ditch company. It was with the greatest difficulty they were persuaded to forego their purpose and release their victim, who immediately shook the red dirt of that locality off his boots. It would have taken far more persuasive eloquence to have induced him to remain, than it did to effect his release from the clutches of his angry employers.

One of the most expensive features of this mining system, and one which seldom falls beneath the eyes of visitors, is the storage reservoir. In winter, the rainfall, being conducted into the ditches all along the route, is sufficient to supply them with water; but in the summer, when the rivers and creeks run low, and when, because of favorable weather, the mines run long hours, perhaps through the entire night, the ditches must be supplied from storage reservoirs, located high up among the summit peaks. The usual way of constructing such a reservoir, is to build a solid wall of masonry across some narrow canyon, at the

head of which is a valley. This backs the water up, and converts the valley into a lake, with the ditch as its only outlet. The North Bloomfield company has such a reservoir covering five hundred and thirty acres of ground, and containing nine hundred and thirty million cubic feet of water, the solid stone wall at the outlet being sixty-five feet high and costing \$250,000 to construct. The Eureka Lake & Yuba Canal Co. owns two hundred and nineteen miles of ditch, and four reservoirs formed by damming up the outlets to natural lakes, and thus increasing their depth; their joint capacity is one billion cubic feet, and they are located at an altitude of six thousand feet. The Milton Mining & Water Co. has a huge reservoir at the head of the south fork of the Middle Yuba, which is formed by three costly dams, one of them one hundred and thirty-five feet high. The South Yuba Canal Co. owns two hundred and seventy-five miles of ditch and seven large storage reservoirs, with a total capacity of a billion cubic feet of water. One of these, the Fordyce has a dam of solid masonry six hundred and forty-five feet long and seventy-five feet in height.

The capacity of mining ditches varies from five hundred to ten thousand inches of water. To the uninitiated this is but a vague statement. An inch of water varies in quantity in different localities, but the usual standard is the quantity that will flow in twenty-four hours through an aperture one inch square, with the water six inches above the point of discharge. This is equal to two thousand two hundred and thirty cubic feet, or sixteen thousand seven hundred and twenty-five gallons. The standard of the Eureka Lake & Yuba Canal Co. is slightly greater. The delivery from one of the measuring boxes of that company, through an aperture fifty inch-