

mer location. This water may be conveyed to any distance and be disposed of as the owner may see fit, there being no obligation upon him to return it to the original stream. This doctrine has been found a necessary one in such agricultural districts as depend upon irrigation for moisture. The doctrine of riparian rights finds but little in the industrial conditions of this region to bolster it up, and our courts and legislatures have done wisely in reversing that principle of common law, which became established through generations of usage in times long past, and under conditions radically different from those which exist around us to-day. In many things we have clung too long to those old legal axioms, which, had our present status then existed, would never have been made.

The mining ditch, like the hydraulic system, has been a growth of years. Little ditches hardly larger than an ear-trough have expanded into canals of several thousand inches of water, and little reservoirs scarcely large enough to tempt a goose to swim, have been transformed into huge storage reservoirs with solid masonry dams, holding a billion cubic feet of water. A sample of the initial ditch enterprises is that of the first one at Nevada City. Early in the spring of 1850 a ditch one and a half miles long was dug from Mosquito creek to Coyote hill, through which flowed a little rill of water sufficient to run a few "long toms." Little branches scattered the water through the claims, the clean liquid being sold at \$4.00 per day for one "tom." From this it ran to another, which paid \$3.00, the third one \$2.00, and the fourth one used the now muddy water at the rate of \$1.00 per day. Crude as was this method, and diminutive the enterprise, such ditches were the progenitors of the huge canal systems of the present day.

During the next few years, ditches were constructed in nearly every mining camp in California, and upon the introduction of hydraulic mining these increased rapidly in size, length and number, until the mining regions became one vast network of water ditches, running in all directions and reaching every available locality. Their privileges are not, however, enjoyed by all, as there are many acres of good gravel hills which can not now, and probably will not for years, be worked, because all the available water is owned by some company which requires it elsewhere. The feats of engineering in the construction of these canals, are similar to those required by the building of railroads in a mountainous country. In some respects the canal is the more difficult of the two, since the grade must be uniform, or nearly so, throughout. A railroad may vary its grade, but water will not run up hill, so the grade of a ditch must be a constantly and uniformly descending one. This renders high flumes,\* and in some instances long tunnels, necessary. At one portion of the South Yuba canal, the water passes through a flume seven miles in length, one and one-half miles of which rest on a solid shelf of rock, blasted from the precipitous wall of the South Yuba canyon. This shelf is, in some places, one hundred feet high, the workmen being lowered from the top with ropes, in order to make a foothold for themselves to begin the work of blasting. At another point the canal runs through a tunnel nearly four thousand feet in length, which cost \$112,000 to construct. There is an amusing inci-

\* A flume is a large wooden trough, by means of which water is carried across gorges and canyons, or for long distances down valleys, where it is cheaper to thus take a short cut than to follow the contour of the hills at the proper elevation. These flumes are often a hundred or more feet high, with roadways running beneath them, and having a plank walk along the top for the inspector who makes daily trips of observation along the course of the ditch.