

permit, put together in a straight line, and the sections driven home by placing a board across the end and striking it with a sledge-hammer. Tar, as a preservative, is applied outside, and, when practicable, inside also, before the piping is buried in the ground. At Feather River, the case I have already referred to, the water is carried down the side of a gully 950 feet on the decline, and up the other side a distance of 900 feet; the total depth, as stated, being 800 feet. By this plan the water is conveyed across a gully at Placerville 1,700 feet wide and 200 feet deep, at a cost of about £400; whereas the cost of fluming the distance would not have been less than five or six times that amount. The Manager of the Vulcan Foundry, in this city, informed me that piping of this description, 11 inches in diameter, and made of No. 20 sheet-iron, costs 1 dollar 5 cents the foot. It will carry 95 "miner's inches" of water, and sustain a span of 220 feet. At 190 feet, the pressure is 88 lbs. to the cubic inch.

Measurement of Water.

Throughout the Mining States of the Union, the inch measurement is used in dealing with water; and by this inch measurement is meant the quantity of water which escapes through an opening an inch square, with a pressure of water usually 6 inches in height above the opening. This is called the 6-inch pressure; but in this latter particular the measurement varies, the pressure in some localities being as high as nine and even ten inches. Some time since a Bill was introduced into the State Legislature, for the purpose of preventing disputes arising as to the meaning of a "miner's inch of water," and providing that it shall be held to mean $2\frac{2}{3}$ cubic feet of water, or $145\frac{1}{2}$ lbs. or $7\frac{2}{3}$ gallons passing a given point in a minute of time. To this an amendment was proposed, declaring that "a legal inch of water sold for mining, agricultural, or other purposes, shall mean the quantity of water that escapes through an opening an inch square, through a plank one inch thick, with the pressure of seven inches measured from the centre of the orifice to the surface of the water." But the further settlement of the question was postponed, nor do I think that any further effort at legislation was made respecting it.

I.—System of Water Rights.

Briefly stated, the supply of water on the gold fields is governed by the following leading principles.

The water of any creek, stream, or river, may be diverted from its natural bed, and never again returned to it.

The water becomes the property of the first claimant, but it so becomes only for the purposes for which he claimed it, and to the extent to which he appropriated it.

The holder of water has a right to its use without any obstructions from later claimants; but other persons may use the water, provided it is returned clear and uninjured above the point from which the first occupant took his supply.

If a miner, after claiming and using water, abandons it, allowing it to run into any channel or race used by another, then the latter becomes the owner.

If a race is cut for drainage alone, another may claim the water for mining or other purposes.

When the waters of a race are turned into a natural stream, with the intention of being taken out again in the same quantity at a point lower down the stream, they may be so taken out, even though the stream is being used at the time by another person.

No one has a right to take any water from the bed of a stream in which there is a mining claim of prior standing, and that cannot be worked without this water.

The Right to Water, upon what based.

The common law with regard to water-rights having been found unworkable in this state, the Courts, by their decisions, have built up a system of water-rights based upon "the wants of the community," to quote the words of Chief Justice Murray, "and the peculiar condition of things in this State, for which there is no precedent, rather than an absolute law, governing such cases." The reason stated for this departure from the law is, that at common law the right to running water was founded upon the title to the land upon the banks of the stream; whereas in this State the settlers upon the public lands, mineral and agricultural, could claim no such right, because they were not the owners of the land. Then the broad principle was announced, "That the right to an unlimited supply of water in a running stream vested in the first appropriator, whether a riparian owner or not, with the right to divert for any purpose, mining or agricultural, for sale or otherwise, and to any extent; and that subsequent locators could only acquire an interest in the water subordinate to the rights of the first appropriator." This is the broad principle laid down by the Californian Courts, and upon this principle the right to water is based.

Legislation.

The general legislation upon water-rights is very brief, being contained in the 9th section of the Act of Congress, 1866. It enacts, "That whenever, by priority of possession, rights to the use of water for mining, agricultural, manufacturing, or other purposes have vested and accrued, and the same are acknowledged by the local customs, laws, and decisions of the Courts, the possessors and owners of such vested rights shall be maintained and protected in the same, and the right of way for the construction of ditches and canals for the purposes aforesaid is hereby acknowledged and confirmed: Provided, however, that whenever, after the passing of this Act, any person or persons shall, in the construction of any ditch or canal, injure or damage the possession of any settler on the public domain, the party committing such injury or damage shall be liable to the party injured for such injury or damage."

By the section just quoted, as will be seen, the title of the raceholder takes precedence of the title of the claimholder; and consequently, if a race is injured in any way by a miner, he becomes liable for the damage. The Water Race Company, in fact, acquires a title to the land on which the race is made, and to as much more on either side as may be necessary for its safety and proper working. Here, as in New Zealand, the rights to water and the rights to mining claims are based upon the same principle—that he who first uses and takes up either is entitled to its possession. But there is this difference, that in California the size of the claim is definitely fixed by the laws of the district in which it is situated; whereas the quantity of water used is really unlimited, or limited only by the purpose for