

**THE HYDRAULIC  
GOLD  
MINER'S MANUAL**

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The Hydraulic Gold Miner's Manual by T. S. G. Kirkpatrick

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HYDRAULIC  
GOLD MINER'S MANUAL

BY

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*WITH ILLUSTRATIONS*

SECOND EDITION, REVISED AND ENLARGED



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## PREFACE

TO

THE SECOND EDITION.

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THIS work was originally intended for Mining Elevated Banks by means of Hydraulic Pressure, but as of late so much attention has been attracted to River and Placer Mining, some few pages have been added giving hints which will be found useful to those who embark on these latter experiences; and also a short table of the gems and precious stones which commonly accompany gold in river beds, and which from ignorance on the part of the worker are often overlooked. The main facts, modified by circumstances, remain the same for the treatment of the auriferous sands from whatever source they are derived.

July 20, 1897.

PREFACE

TO

THE FIRST EDITION.

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THE following pages are intended to serve as a practical handbook of reference for the Hydraulic Miner.

Sufficient data are given to enable any one who has a competent knowledge of pick-and-shovel work, and of the use of carpenter's tools, to construct the necessary plant for successful Hydraulic Mining.

The ditches and sluices are laid out on a scale sufficient to move from 2000 to 5000 tons of "pay dirt" in the 24 hours, and are the result of experience gained in the management of very successful undertakings.

The measurements and estimates are furnished by Mr. W. S. Welton, the engineer who laid out the "Colombian Hydraulic" gold mine.

The illustrations are from photographs taken by Mr. Welton. The plans and sections are to scale.

The chemical and other notes are compiled from the highest authorities on the subject, and have been practically tested by the Author.

LONDON, *April* 1896.



THE  
HYDRAULIC GOLD-MINER'S MANUAL.

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THE cheapest form of gold-mining is that in which the precious metal can be removed from its associated impurities—such as clay, gravel, sandstone and iron—and collected, entirely by the agency of water and mercury, with a minimum of manual labour.

This can be done where there occur high banks of gravel on to which water can be brought to play with great force, so that by undermining the bank it falls of its own weight, and is then washed into properly constructed "sluices," where the mass becoming disintegrated, allows the gold to assert its specific gravity and deposit itself in the "riffles" of the sluice.

Although the fauna and flora throughout the globe vary owing to climatic influences, the geological types are constant; and the usual occurrence of "payable" auriferous gravel is in the channels of antediluvian rivers, long since "dead," and which have been upheaved, often many thousands of feet, above their ancient level; the modern watercourses in most instances taking an entirely different direction, and



frequently discovering the ancient channels by cross-cutting, and denuding and exposing them in their course.

Further than their existence as "channel-gravel," science has failed to penetrate the mystery of their origin; but it may be taken as an axiom that wherever red (oxidised) gravel occurs within a measurable distance of volcanic action, *that* gravel is auriferous.

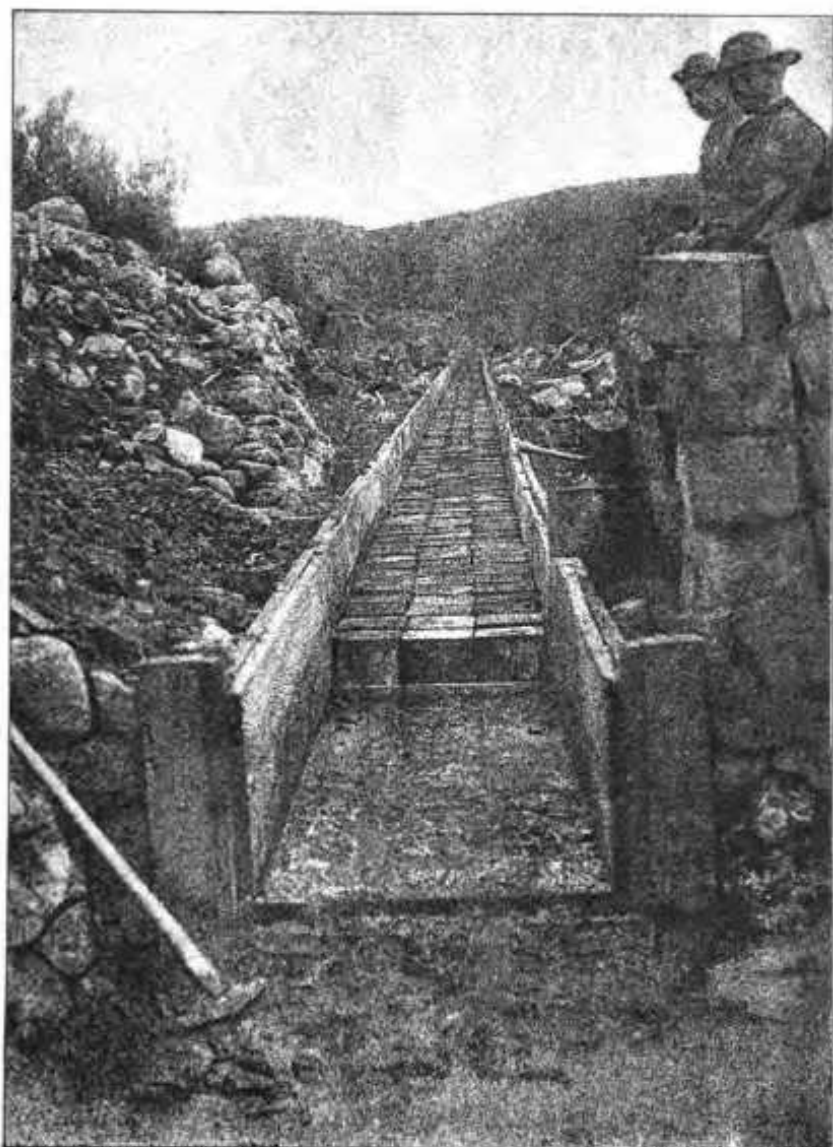
The four essentials for successful hydraulic mining are:—

1. Abundance of auriferous gravel.
2. Abundance of water.
3. A good dump.
4. A properly constructed sluice.

Gravel containing no more than 3*d.* or 4*d.* per ton of gold will pay large profits.

**Water.**—This must be brought to the top of the bank at an elevation considerably above the height of the bank, by means of an open ditch, and delivered into a reservoir or "bulkhead," from which it passes down in a close-riveted iron pipe of boiler plate of 2 feet or more diameter (according to the quantity of the supply), tapering down to say 18 inches before it arrives at the "monitor" or distributing machine by which it is thrown (exactly as in the case of a fire engine) against the bank.

**Sluice.**—The sluice must be constructed on the "bed-rock" on which the gravel deposit rests; and be brought as close to the bank as is safe, having regard to the "fall of bank," which may endanger the machine and those directing it.



*E. & F. N. Spon, London & New York.*

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### SLUICE.

Showing how the false bottom of blocks is put in:

