

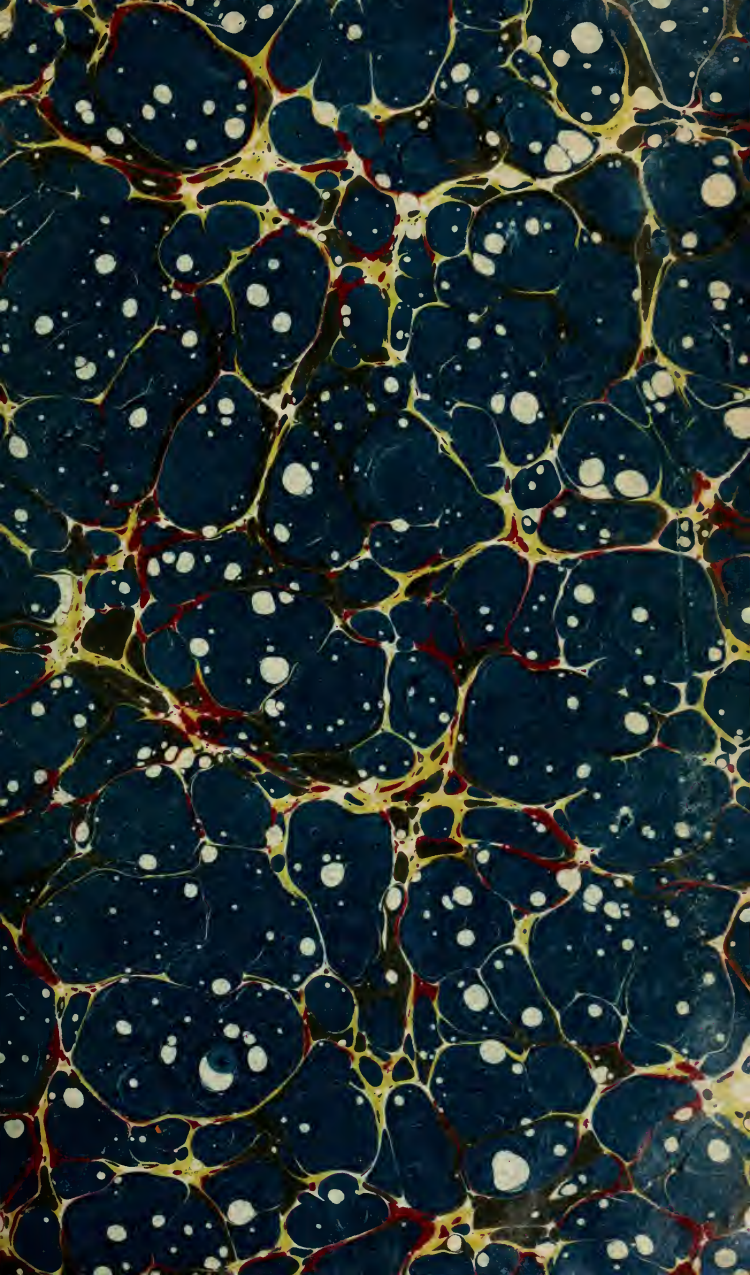


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NEW
HYDRAULIC POWER



INCONVENIENCES OF EXISTING AND OLD-TIME MOTOR WHEELS



PRODUCTION OF NEW PATENT WHEELS AND A NEW SYSTEM
WHICH WILL MULTIPLY A HUNDRED-FOLD THE
INITIAL MOTIVE POWER WITH THE SAME
QUANTITY OF WATER.

BY

E. DERBEC



SAN FRANCISCO
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INTRODUCTION.

These unpretending pages are very few in number, but they are capable of being made rich in results. Their title will best describe their object. They are, however, only the herald of the future, and I am pleased to hope that they will be welcomed as tending to open a new era of progress, of labor and of wealth for the country.

I have always thought that, if a man's life is to be useful, he must place it at the service of his fellow-citizens. He must devote it to progress, or rather to all the progressive measures which are instrumental in advancing humanity towards a higher sphere. And that man ought to be held in the highest honor who has done the most for his native country or for his adopted country, and yet more for the great human family.

Such are the ideas and principles which have governed my whole life, and these are the ideas which have inspired me in this undertaking. But it is only a commencement, a sort of material entry through the great gate of progress. To day it is the starting point. I lay down my premises. The details will be given hereafter. This, then, is the aim :

I wish to see established a new industry, of which the country stands greatly in need, an industry which shall insure its well-being by giving value to its dead wealth, which shall bring to light its hidden treasures, and which, after having revealed their origin, shall procure them by new economical means, and shall thus develop them for the welfare of all.

I inaugurate this publication, then, to-day in making known a new and patented principle, which shall increase ten-fold, and even centuple, not only the resources of man but the strength of machinery in those countries where its application is possible. And this I do, looking for even better things. Every stage of progress will come in its turn. And as a first consequence of the creation of the new motive power I will shortly publish a new work, whose title and summaries speak for themselves:

NEW INDUSTRY

THE MARCH OF PROGRESS

New, Economical, Patented and Perfect

SYSTEM OF MINING

FOR GOLD, SILVER AND OTHER METALS

Molecular Disintegration.—Working ores and washing gravels.—Roasting, reducing, disintegrating ores, cements, gravels and auriferous cemented minerals.
Tunneling, drifting, separating, breaking, crushing, pulverizing, gravels, quartz, schists, boulders, ores of any kind and stones.
Dredging, excavating, ditching, hoisting, ditching, drilling, pounding, pumping, blowing, lighting, preserving life.
Concentrating, amalgamating, reducing, saving, catching invisible gold, combined lost golds, precipitated gold, float gold, and all non-amalgamable lost golds.
Saving the finest particles of precious metals, and also the lost amalgamated quick-silver.
Avoiding losses of gold under all their forms, saving all of them.
Useful employ of the débris—and getting rid of the tailings, miner's débris, mining residues without filling the streams or the rivers.

It may appear presumptuous to put forth such a programme, but it is the result of a whole life of incessant toil, which has conducted me to such progress in the different branches of the metallurgy of the precious metals, that it would be a crime to allow it to remain unpublished.

After having succeeded in doubling and even increasing a hundred-fold the resources of man, and the power of machinery, and in producing wealth where no one supposed that it could exist, I have wished to complete my work. I have desired to inquire into the source of this wealth, whence it originated, and by what circuitous means it reached us; what were the companions that accompanied it in its secret ways; and I have followed them like a pointer; what were the friendly or inimical combinations which favored or hindered their production, or which caused loss; how both of these combinations acted during their long journey, from their issuance from the primal fire to their appearance on the flowery plains of this beautiful land.

And, once engaged in these researches, I have found so much pleasure that I have been, so to speak, buried in them up to the moment when I believed myself to have discovered the secret of their creation.

But this was not enough. After having recognized the origin of these riches it was necessary to show how to recognize the conditions of their presence when surrounded by incongruous foreign matter.

And after having found them, it was necessary to seek economic means for extracting them, for making the labor profitable, for extracting the entire valuable element without loss; in short, to refine them up to the point when the gold and the silver, those two greatest agents of civilization, could be circulated on the globe in fiscal form.

This will be the third part of the work, and its title will be, "*The Origin of Gold.*" Its title will indicate its object. I have thought that the metallurgy of the precious metals will be always incomplete and imperfect if the fundamental principles of the law creating metals be ignored. It is a scientific principle, thoroughly established, that to cure a disease it is necessary to recognize it. It is the same with precious metals. To obtain them in their full and entire abundance one must know their origin, the causes which have produced them, the manner in which they comport themselves in the veins, how they combine, how their combinations become irreducible, and the reasons for their too frequent loss, in order to be able to avoid them. All these questions have not yet been broached, or so little as it is scarcely worth the trouble of recording them. It is a pity, for without a thorough knowledge of these essential questions, metallurgical operations will never yield what they ought to yield.

I take up the pen then in the name of great results to be accomplished in the most important branch of human industry—the abundant and economical production of gold.

The few pages which follow are only a pioneer company to clear the way, and I place them under the vigilant protection of the public in view of the great end to be attained.

E. D.

NEW HYDRAULIC POWER.

INCONVENIENCES OF EXISTING AND OLD-TIME MOTOR WHEELS.

PRODUCTION OF NEW PATENT WHEELS AND A NEW SYSTEM WHICH
WILL MULTIPLY A HUNDRED-FOLD THE INITIAL MOTIVE
FORCE WITH THE SAME QUANTITY OF WATER.

The motive wheels actually in use are far from being perfect. More than three-fourths of them render little service to industry. All the old systems require much water, and their force is limited. They cannot count in operations on a grand scale. For some time improvements have been effected in the wheels known under the name of *Hurdy-Gurdy*, by operating them with the aid of a hydraulic jet at high pressure. The best models of this class are known under the name of Pelton wheels, and Knight wheels, and yet they are far from being perfect. A motor wheel which should answer all the requirements of operations on the large and the small scale, as well as the requirements of the public, is still a desideratum. Its creation, then, would be welcome, and would have such valuable consequences for the whole country, that I have not hesitated in attempting to improve so precious an engine, and to make of it a mechanical instrument of great public utility.

We will not speak of the ancient hydraulic wheels; they are slow, heavy and usually produce but little power; they are also massive, costly to build, inconvenient for transport, necessitating dams and masonry often of an expensive character. They are also inconvenient in only producing the motor force at the place where they are set up.

Another inconvenience is, that after having produced a moderate force, the water is lost. It falls, its usefulness is ended. The best known of the *Hurdy-Gurdy* wheels and considered as the best wheel is the Pelton wheel, but it has a great drawback in common with all other hydraulic jet wheels.

Its jet, in contact with the saucer on which it strikes, is converted into spray; into mist, then falls; the water trickles away, there is an end of it, its usefulness is gone, its strength is spent. In spite of this, the Pelton wheel is a great improvement on the old one, and I take pleasure in doing justice to its inventor.

It is because I have been struck by these inconveniences that I have sought to avoid them. And if I could avoid them, I say to myself, it would be perfection, and a benefit to the country. I have labored to this end. And not only have I avoided these inconveniences, these losses, but I have done more, much more; I have doubled the power; not only have I doubled it, but tripled it, quadrupled, decupled, centupled it *with this same lost water.*

I have, then, constructed a wheel operating by hydraulic pressure, with conduit or tube. In the Pelton wheel, which is the best, the motive water is changed into spray at the moment of the contact which produces the force, and this water becomes inert matter which flows away. Total of the force produced by the Pelton wheel: *one (unit) force.* In my motor wheel there is no jet, no saucer, thus no spray, no mist, and no water lost; no spent water escaping to the sea after having produced the motive force.

My water continues its course and not a drop is lost. Every cubic foot of liquid, every metre is an addition of force. The great initial hydraulic force continues its work; it keeps its velocity; this force is not lost, it is stable, perpetual; it multiplies itself; it produces new motive forces wherever it passes. Not only is this force not diminished in process of multiplying, but instead of being lost and of running off to the sea like the water of other wheels, each space that it clears in falling becomes a new addition of force to the general force which is above it. And the more this water descends, the further it gets from the departure point the more it will turn machines, the more it will extend its power and its benefits. In a word, it will never stop. And when finally cast into the sea, this water will leave behind it a long luminous trail which shall bear witness to the power of industry and the genius of men. Such is the thought which has presided at the creation of this novel engine.

* * *

The following are the bases I have adopted for the departure point of my motor wheels, recently patented by the Patent Office of the United States Government at Washington. I judge by comparison, but the bases are real.

I suppose the hydraulic pipe to represent a square foot, and I say:

Twenty-seven cubic feet in length represent *one* ton, that is 2,000 pounds, equivalent to two-horse power.

If I put these 2,000 pounds on a lever or on a wheel lever at 50, I obtain a weight, or a force 50 times greater, which is 100,000 pounds or 100 horse-power.

But if I put these 2,000 pounds on a wheel lever at 100 I obtain a weight or force 100 times greater, which is 200,000 lbs. or 200 horse-power.

If I put two tons or 4,000 pounds on a wheel lever at 100 I obtain a weight of 400,000 pounds, representing 400 horse-power.

If I put three tons, or 6,000 pounds on a wheel lever at 100, I obtain a weight of 600,000 pounds, representing a force of 600 horse-power.

If I put four tons, or 8,000 pounds on a wheel lever at 100, I obtain a weight of 800,000, representing 800 horse-power.

If I put five tons or 10,000 pounds on a wheel lever at 100, I attain a weight of *one million pounds*, representing a force of 1,000 horse-power.

The length which a ton represents in cubic feet being 27 feet, a pipe 27 feet long will represent one ton; 135 feet in length will represent, therefore, five tons or 10,000 pounds, which placed on a wheel lever at 100 will represent a sheer force of 1,000 horse-power.

A tube 270 feet long representing ten tons or 20,000 pounds placed on the wheel lever at 100 would give a weight of 200,000 pounds representing 2,000 horse-power.

A tube 405 feet long representing 15 tons or 30,000 pounds placed on 100 would produce a brute force of 3,000 horses.

A tube of 540 feet, representing 20 tons, or 40,000 pounds, placed on a wheel lever at 100 would represent 400,000 pounds equal to 4,000 horses.

A tube of 675 feet, representing 25 tons, or 50,000 pounds, placed on a lever at 100 would represent a weight of 500,000 pounds, equal to a brute force of 5,000 horses.

I stop there. I may add that this enormous weight does not rest directly on the wheel, and also that there will be friction. But whatever deductions may be made, there will always remain a very great free motor power, and this power will be so much greater as the tubes are more inclined. The steam engine itself has its friction points, and it has enormous masses of iron to support, which sometimes dispose of half its force, but there always remains enough to enable it to move the most powerful machinery. In the case we are now considering it may be the same, but that need not concern us.

Thus if 675 feet of pipe, containing 25 tons of liquid, or 50,000 pounds, placed on a lever at 100, can produce a gross force of 5,000 horses, 1,350 feet will produce double, that is to say a force of 10,000 horses. There would only be the friction to be deducted and the want of inclination to be taken count of. But, as the fall is very steep in mountains, there will always remain a very large free force disposable. It is well to remark that the forces obtained will be greater as the slopes are steeper.

* * *

These are the great forces which I utilize without loss of water and without loss of force by the interior arrangement of my wheel. The force and water, not being lost, continue to reproduce themselves the whole length of the traverse, setting in motion all the wheels incased in the tube. In the hydraulic wheels in actual use, the force once produced, the water stops, falls, and the little force produced remains stationary.

In my system it is quite the contrary. The water does not fall. It continues everywhere to produce force, to augment it incessantly. And the more the water increases its distance from its starting point the more its force augments, the more it produces the more it multiplies, going on from multiplication to multiplication.

The force augments for the mathematical reason that the weight of water augments, and that it goes on increasing if the water be not lost.

For example, suppose a tube 1,350 feet long, capable of producing a brute force, effective or nominal, of 10,000 horses, on starting from the 1,350th foot. The first 10,000 horse-power is then the starting point of the motive force. Then every length of pipe or tube of 1,350 feet which shall follow can also produce a force, nominal or effective, of 10,000 horse-power more. Each new length of tube of 1,350 feet will then increase by 10,000 horses the total force of the tube. Suppose that each tube of 1,350 feet can operate its latent force of 10,000 horse-power 10, 20, 30, 40, 50, 60, 70, 80 of my motor wheels and even more, which I consider feasible, but which will never be needed.

Then by reason of 100 motor wheels for each 1,350 feet of tube, that would give a force of 100 horses for each motor wheel. There is no industry in the world which necessitates such an outlay of power.

But it must be remarked that each new addition of 1,350 feet of tube brings to the whole (total effective power) a new brute force, hypothetical but possible notwithstanding, of 10,000 horses.

Let us then recapitulate the force which could, if needed, be obtained under certain circumstances, from ten lengths of tube placed end to end :

The first length of 1,350 feet would give 10,000 horse-power as the departure point.

The second length of 1,350 feet would represent 20,000 horse-power.

The third length of 1,350 feet would represent 30,000 horse-power.

The fourth length of 1,350 feet would represent 40,000 horse-power.

The fifth length 50,000 horse-power.

The sixth length 60,000 horse-power.

The seventh length 70,000 horse-power.

The eighth length 80,000 horse-power.

The ninth length 90,000 horse-power.

The tenth length 100,000 horse-power,

And so on.

It might be increased up to millions, without this gigantic force costing anything to produce outside of the price of tubes and wheels.

* * *

Let us imagine this enormous mass of water falling from lofty mountains, imprisoned in an iron envelope, descending to the plains and producing the motive power without loss and without expense wherever it passes. This force will be so powerful that it will be able to move the heaviest machine like a feather. It will be irresistible. It will confer the benefits of industry not only on the plains, but it will even create it in the most savage wastes, the most precipitous mountains, in which the mines are often situated.

The more precipitous these crags the greater will be the force produced amongst them on account of the slopes, which are generally steep. Every man can then become a power and a mechanic, having a great motor force, which will work night and day, in his workshop or in his house, always ready to

serve him, lighting him with electricity, replacing his own arms, grinding his grain, pulverizing and amalgamating his quartz, in short, supplying all the needs of industry on a large as well as a small scale.

* * *

My motor wheel differs essentially from other known wheels. Its width will be based on that of the pipe which supplies the motor fluid. It differs essentially from other wheels in this sense, that instead of receiving the liquid on the outside it receives it on the inside, and also on several indented pockets. The enormous pressure of the column of water which issues with irresistible impetuosity on the front of the wheel and strikes it squarely, and with all its might sets it in motion, *producing the first and enormous degree of power.* And this enormous pressure continues to act on the three internal walls, right, left and central, in the process of revolution, *producing a second, third and fourth great force.* Note that the great liquid force in the center retains all its original power without losing either force or velocity. Striking on the multiple indented pockets without any lateral friction, this enormous pressure, which bears on all sides, turns the wheel with irresistible force.

Then beyond the central point of the wheel, where the enormous column of concentrated water issues with impetuosity, one of my wheels, a foot wide, can still present three large surfaces to this enormous pressure. *Hence the plenitude of its force, which perpetuates itself naturally.*

The part in which this second, third, and fourth great force is produced is like a long chamber whose interior walls and ceiling are chamfered, and through such room passes the powerful wave, striking on these multiple indented pockets but without losing anything of its cohesion or of its force.

Thus, after the first enormous shock, direct in front, bearing with all its weight in producing the great initial impulse, there remain:

A long wall on the right, which still yields force.

A long wall on the left, which still yields force.

A long wall in front and above still yielding force.

And no internal friction. Everything counts.

Hence the terrible shocks which, besides the primitive force present, still on three sides push the wheel, drag it around, raise it by virtue of that formidable pressure which is still exerted directly on three great points, at once striking the indented pockets of these mobile walls and setting them in motion. And all this is a surplus of the initial force produced on the central point where the column of water issues.

* * *

It should be stated that in producing this enormous force the body of the liquid remains compact, solid; it is not scattered, is not weakened, is not lost, is not divided. It remains strong in the interior route of the wheel, which it traverses while turning it. Its terrible current is not slackened, it loses nothing of its force, nothing of its velocity, it remains formidable, incessantly active, and the wheel turns as if operated by a supreme, unalterable power.

But when the column of water has done its work on the first wheel, that is to say, in imparting the initial motion, this aqueous solid column, formidable under the high pressure which impels it, this colossal column does not abandon the battle-field like the other wheels, it continues the struggle. And this solid, irresistible wave sets in motion all the connected wheels on the inner route, of which it is master. In proportion as it descends this solid wave becomes stronger, because each column of new water which arrives after each other column of new water which enters into the tube, weighs more and more on the head. And this movement of force never stops, and this augmentation, this prolongation of force, will last as long as the iron tube in which the wheels are contained.

This is why I said just now that the Pelton wheel produces *one force* whilst mine, in connection with the tube, can produce *a hundred and even a thousand forces if necessary*.

And this without expending more water than in the Pelton wheel, because I utilize thus the water which the Pelton wheel loses and which all the other wheels lose.

To illustrate more clearly the excellence of the new system of motor wheel which I introduced into practice I will make a last comparison and say:

Let us take, for example, any motor wheel whatever, the best in actual use. This wheel, the best, will produce *one force, one only*.

Then, if I am given the same quantity of water which has served in the best of existing wheels to produce *a single force*, I shall produce at once *an equal and even superior force*. But, as my water has not exhausted its power, and its force and velocity remain entire in consequence of the internal arrangement of my wheel, if I add a wheel in my tube I obtain immediately a force cent per cent more than the best wheel known.

If I add two of my wheels I obtain, with the same quantity of water, 200 per cent more force than the best wheel.

If I add three of my wheels I obtain, with the same quantity of water, 300 per cent more force than the best wheel.

If I add four I obtain, with the same quantity of water, 400 per cent more force than the best wheel.

If I add five I obtain, with the same quantity of water, 500 per cent more force than the best wheel.

If I add eight I obtain 800 per cent more force.

If I add ten I obtain, with the same quantity of water, 1,000 per cent more force than the best wheel.

Now, if I add 100 of my wheels to my tube I obtain, with the same quantity of water, 10,000 per cent more force than the best wheel.

If I add 200 I obtain, with the same quantity of water 20,000 per cent more force than the best wheel.

The thing is entirely feasible, for I reckon to be easily able to connect a thousand wheels in my tubes at reasonable distances from each other, and to see them all operate.

In this case my motor force could produce, with the same quantity of water, 100,000 per cent more force than the best wheels in actual use.

So, then, the best of the known wheels can produce ONE FORCE, ONE SINGLE FORCE, *whilst with the same quantity of water I can produce up to A HUNDRED THOUSAND PER CENT MORE.*

At first sight this seems exaggerated, but I believe it feasible.

The reason is that the water of the better motor wheels becomes neutralized or entirely lost after having produced its first, its sole, its only force, while mine not only does not lose it, but remains active, powerful, and goes on multiplying, multiplying its force over the whole line which it traverses.

But if instead of a tube of a cubic foot I employ a tube of two cubic feet, *I shall then have an immense power, a power such as steam has never produced and never will produce.*

And this immense power will cost nothing to maintain, will necessitate no repairs; not a drop of oil will be needed for lubrication. And each new wheel will go on doubling its primitive force. That is inevitable. Water does not rise to its source, but produces all its power below. That is the case in this instance.

RÉSUMÉ.

Let me then briefly repeat:

In my system the current is not broken, the force is not broken, is not lost, does not slacken or become neutralized as in all other hydraulic wheels after they have produced their effect. My current is maintained, solid, homogeneous, firm, all in one body. It is like a block of liquid iron striking as with blows of a club without ever disengaging, without anything being able to stop it, diminish it, or lessen its effect. It goes, powerful as Destiny, and can multiply economically, and infinitely, its benefit in all lands which it traverses, incased in its iron prison.

* * *

Now let us cast a glance at the multiple role of my new hydraulic wheels in their application to mining :

Stationed along the whole extent of factories, of mines, of workshops, of mills, of reduction houses and of mining establishments of every kind, these wheels, by the intervention of their motive power, will throw down auriferous gravels, will wash them, will separate them, crush them, concentrate them

amalgamate them, and extract the gold contained in their different gangues. They (the wheels) will have the further advantage of being able to operate in the deepest mines and of working all the engines there.

They will shatter the quartz rocks, powder them, amalgamate them, concentrate them;

They will operate the largest reduction tubes, pans, and " arastras;"

They will pump the water from the mines;

They will draw minerals to the surface;

They will hoist up the tailings;

They will send pure air into the depths and tunnels of the mines;

They will light them by electricity;

They will furnish wind for reduction furnaces;

They will set in motion cars loaded with quartz, rock and gravels;

They will transport men by a system of surface cable cars; they will transport machines, wood, tools, provisions and engines of every description;

They will saw wood; they will compress in moulds the residue of the washings to form supporting pillars and columns;

And all this will be done with the powers produced by the same water; that is to say, by the waters hitherto lost.

In short they will simplify labor, will render it easy, prompt and economical in every underground spot which man can reach. In regard to their use in other industries they can be applied with very great advantage to all mechanism which requires motor power. In short, they will be a great benefit to all the towns and villages of the interior, especially in the mountains.

* * *

It is useless to describe here the benefits of every kind which the country will derive from the introduction of the new motor force. They are self-evident. There will come a day when men will utilize all those lost forces which descend from the mountains; a day when good use will be made of those grand masses of water which in high latitudes evaporate or descend in impetuous ways and pass on to the sea without profit to anybody. We know that the evaporation of water is enormous in elevated regions, whether from the effects of heat or especially from the rarefaction of the air and the lack of atmospheric pressure. The water of our great lakes, so abundant on the summits of the Sierra Nevada, is vaporized night and day into the atmosphere, and is carried into the Eastern States by our constant winds from the Northwest to the detriment of the Californian soil, which remains dry. It also happens that the water of our elevated lakes which is not vaporized or carried off by the west winds passes off to the sea and is lost to this country which so sorely needs it. Even on the way down it still loses much by evaporation and by suction into the earth.

These are the great lost liquid riches which it concerns us to stop on the road; to utilize them and make them all conduce to the general prosperity. And the sooner that is done the

better it will be. This country has received every gift from the Almighty with one exception, the water from the sky. That fails us. But this water is at our feet; beneath our hands or above our heads on the summits of the Nevada. It offers itself to us. There is more than the country will ever need. It is only a question of knowing how to utilize it; of being willing. With its water supply well directed California would soon be the first of the States in the American Union. Chained at the starting point of its thousand different springs this water would everywhere work wonders on its passage. By the constant motor force which it would produce it could create all kinds of industry. By capture of numerous forces in the main-pipes it will extend the ramifications of its power in all directions without loss of its strength, thanks to the new motor wheel. Then after having worked wonders in all industries, in mines, the turn of agriculture will come.

Instead of letting this water pass away to the sea after it has accomplished its great industrial work, it will be brought to accomplish another great task, that of soil-cultivation.

It will give, then, abundant harvests where it is often impossible to make a blade of grass spring up or thrive. Then, after the scientific motor force, which shall fecundate all industries and enrich mechanics, will come the scientific irrigation, which shall render the fields fruitful and enrich the farmer. The miner, with new means and new machines, will be able to produce more gold with poor and mediocre ores than with rich ores under the old style. He will incessantly put new millions in circulation, and, thanks to his means, he will be enriched by poor ores, whilst his rich ores have sometimes ruined him.

Do you see these captures of force effected everywhere in these parent tubes? These main pipes reproducing force ceaselessly, and carrying everywhere life, labor, fortune, ease, happiness under every roof, under that of the poor as well as that of the rich? I say poor; I am wrong, for in such a country there should be no more poor people. The tube which will bring the new water motor power will be the precursor; the tube which will fertilize the fields will be the consequence: a blessing of God. Both will march side by side, mutually aiding, creating, producing, enriching men, increasing commerce, fecundating barren lands, sowing industry everywhere on the small as well as on the large scale; developing the mines to a high degree of perfection; in a word, preparing great destinies for this noble country and its noble people.

This will be the true Land of Promise.

San Francisco, April 20, 1889.

E. DERBEC.

**Will appear shortly, by the same Author,
the French and English editions, pamph-**

lets in octavo, of which the title and summary of chapters are as follows:

NEW INDUSTRY.

THE MARCH OF PROGRESS.

New, Economical, Patented and Perfect

SYSTEM OF MINING.

FOR GOLD, SILVER AND OTHER METALS.

Molecular Disintegration.—Working ores and washing gravels.
—Roasting, reducing, disintegrating ores, cements, gravels, and auriferous cemented minerals.

Tunneling, drifting, separating, breaking, crushing, pulverizing gravels, quartz, schists, boulders, ores of any kind and stones.

Dredging, excavating, digging, hoisting, ditching, drilling, pounding, pumping, blowing, lighting, preserving life.

Concentrating, amalgamating, reducing, saving, catching invisible gold, combined lost golds, precipitated gold, float gold, and all non-amalgamable lost golds.

Saving the finest particles of precious metals, and also the lost amalgamated quicksilver.

Avoiding losses of gold under all their forms, saving all of them.

Useful employ of the *débris*—and getting rid of the tailings, miner's *débris*, mining residues without filling the streams or the rivers.

SUMMARY OF CHAPTERS.

PREFACE.

CHAPTER I.—The new industry which the author proposes to create.—Its future.—Economic production of gold.—Its abundance.—Its loss.—Résumé of the new system.—Recovery of washings.—Resuscitation of California mining.

CHAP. II.—The inconveniences of the Great Hydraulic.—Its defects.—Its losses.—Boulders charged with gold.—Replaced by a better system.—The whole coast in danger.

CHAP. III.—Greatness of the work done by the Great Hydraulic.—Mines run by the Little Hydraulic.—Mines of drift gravel.—Progress in course of accomplishment.

- CHAP. IV. — *The New Patented System of Mining.*—Extracts from specifications contained in the letters patent granted to the Author by the Patent Office at Washington.
- CHAP. V. — The new wheels which can harness the waters of the Falls of Niagara, and multiply indefinitely the initial motor force with the same quantity of water, without loss of water and without loss of force.
- CHAP. VI. — Losses in gold in the different metallurgical processes.—My first experience in the volatilization of gold.—Chemical losses.—Mechanical losses.—Losses in silver.
- CHAP. VII.—Interesting document by M. F. Craveri.—Fine gold.—Invisible gold.—Non-amalgamable gold.
- CHAP. VIII.—Experiences on the volatilization of silver.—Certain auriferous pyrites of California.
- CHAP. IX. — Losses in amalgamation.—Gold and silver floating in the air.—Gold, silver and mercury floating in water.
- CHAP. X. — Enormous losses.—How gold escapes.—The “Fellows.”—Other great losses of gold in the washings.
- CHAP. XI. — Experiences gained in Russia and Germany.—Introduction of the processes of lixiviation for gold and silver in California and Nevada.—Aqueous liquefaction of all minerals accomplished by the author.
- CHAP. XII.—Improvements effected by *the Author's New System of Mining.*—Sluices, reservoirs and disintegrating basins in the washings.—Permanent batteries of disintegrating jets. —Disintegrating movable-cascade-wheels.—Débris as a motive power and disintegrator.
- CHAP. XIII.—Breaching batteries composed of batteries of rotatory drills, and batteries of dredgers (isolated or combined) to cut down, reduce and work economically the great ledges of auriferous gravels.—Able to replace Great and Little Hydraulics, and saving all the gold which these two systems lose.—Multiplication of the labor of man by 100, 500, 1,000, 10,000, according to the circumstances and the land conditions.—Allowing gravels and soils of extremely poor quality to be profitably worked, even sometime those in which the miners have not been able to discern the color of gold.—Introduction by the Author of concentration of the washings, promising new harvests of gold, at present lost.—Our giant drills.—Our giant concentrators.—Our giant pulverizing batteries and amalgamators combined without changing the mercury into powder.—Our giant electric batteries of natural amalgamation in washings and crushed ores.—Our giant tubes of electro-chemical amalgamation for gold and for silver, each of a capacity of 100 tons a day.

CHAP. XIV. — Molecular disintegration—Our movable disintegrating furnace.—Barrels for electro-chemical disintegration.—Our disintegrating mill.—Surprising results obtained by the Author's system of operations.—Solution of the problem of gold losses.—Our giant Quartz Rollers Mill.—Combined with our new motor wheels, which multiply indefinitely the initial force with the same quantity of water, this kind of mill gives us the hope that they will be able to crush and amalgamate several thousand tons of quartz, gravel or cement in twenty-four hours.

CHAP. XV. — Sluices of electro-magnetic discharge saving the imponderable portions of the metals as well as the fine particles of amalgam.—Protection of life under ground—Utilization of miners' débris.

CHAP. XVI. — Necessity of an act of Congress granting miners the right of way for men, animals, carriages, telephones, electric wires.

Also right of way for water and tailings, whether on the soil, in the air, or under ground, for everything implied in the working of mines.

Necessity of a law reserving and granting to miners in the mining zone special grounds for dumping their débris.

Rights of water and wood reserved to miners in the mining zone when such wood and water are required for strictly mining purposes.

Rights for the miners and proprietors of mines to have all their gold and silver struck in the United States mint, on paying the expenses of coining.

Withdrawal of paper currency from circulation, in view of replacing it by the solid metals, gold and by silver, as best conforming to the general interests of the country.

Greatness of the benefits produced by gold and silver money.

Greatness of the disasters of every kind produced by paper money in all countries and at all times.

Duty of true statesmen to prevent the recurrence of similar catastrophes.

CHAP. XVII. — Conclusion.

POSTSCRIPT.

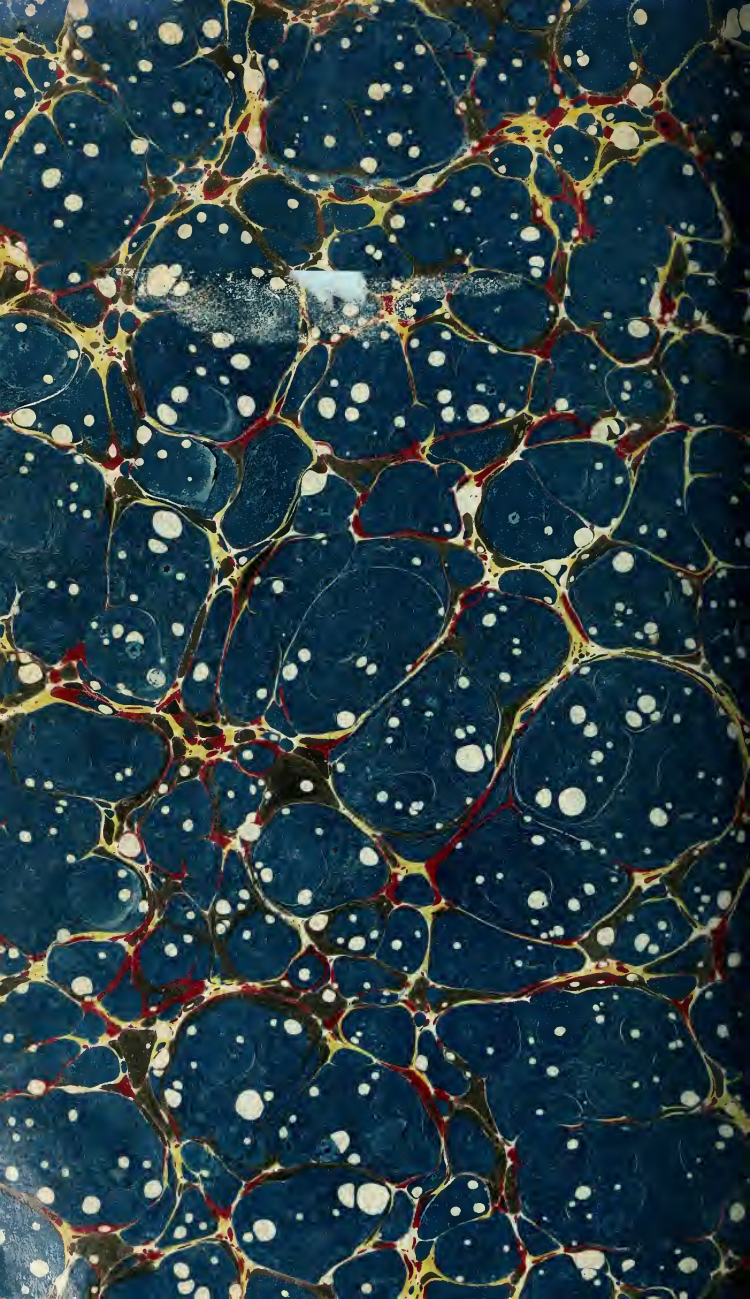
In order to prepare for the new and important industrial step which the author proposes to inaugurate, he intends to issue bonds for a sum of \$10,000 dollars, bearing interest at the rate of 12 per cent. per annum, interest payable every six months, and the capital repayable at the end of ten years. These bonds will be of \$200 each.

Subscriptions can now be received at the office of the undersigned.

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321 Montgomery Street, San Francisco.





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