

A SKETCH

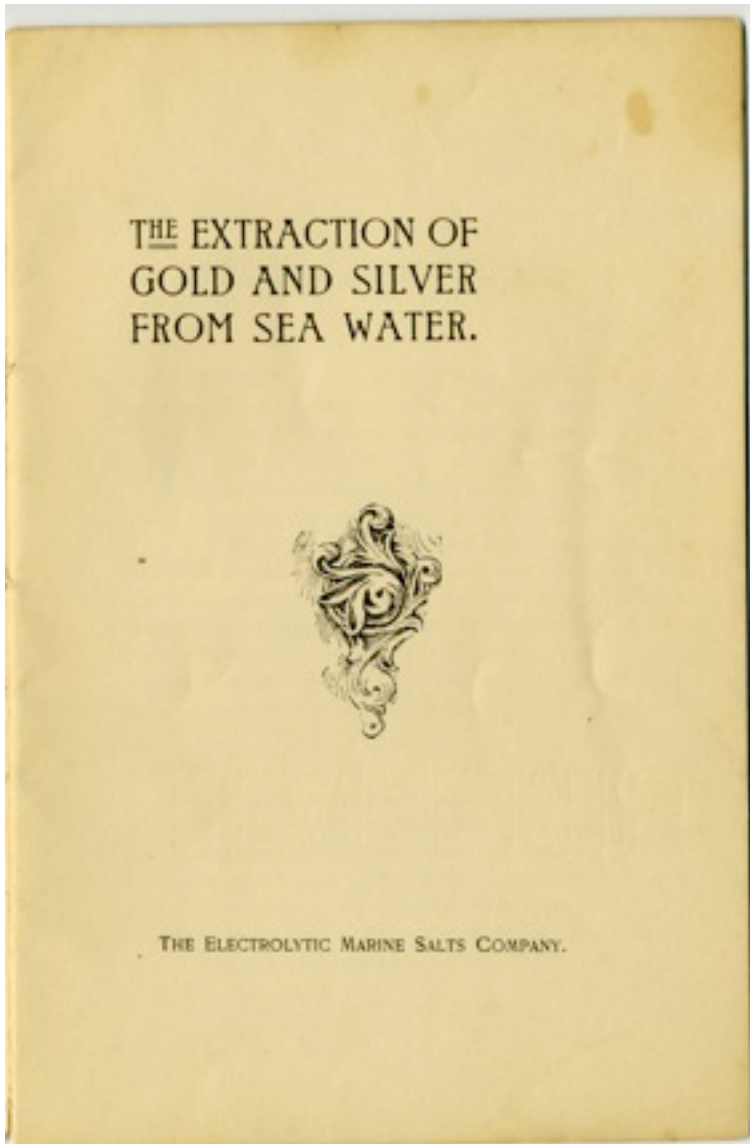
OF THE DISCOVERY
OF A COMMERCIALY
PROFITABLE PROCESS
FOR THE EXTRACTION
OF GOLD AND SILVER
FROM SEA WATER.

SERIES ONE.

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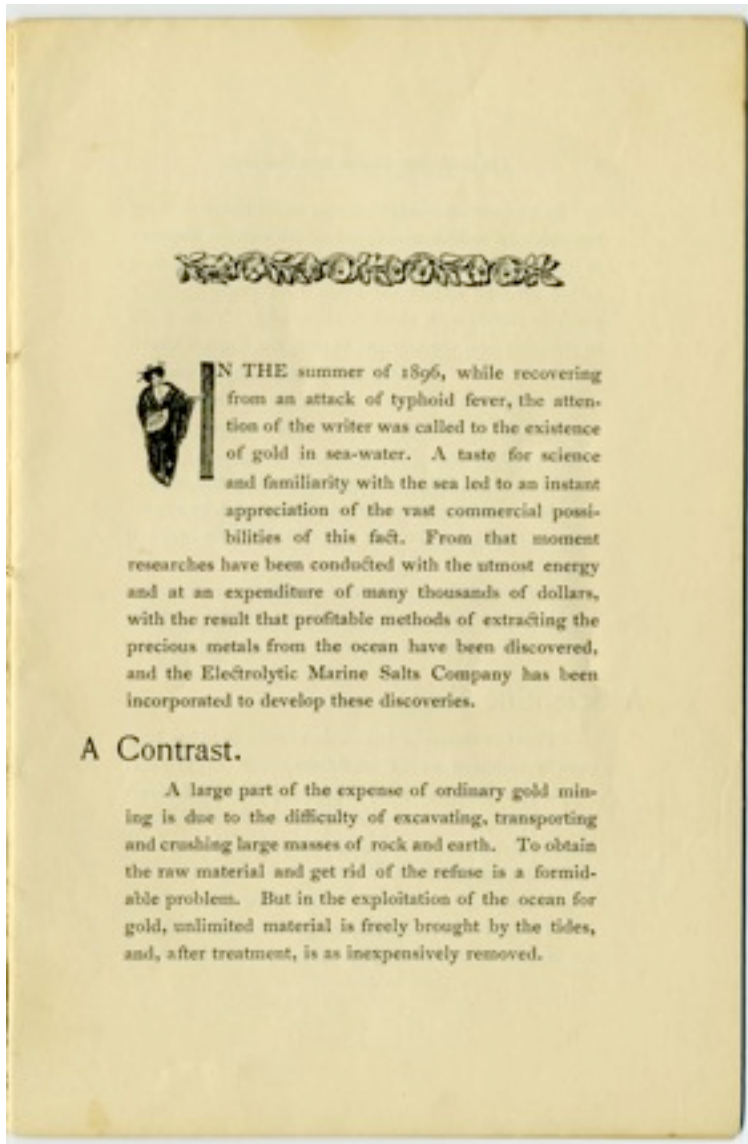
Date: 1898

Description: Prospectus for investors for the Electrolytic Marine Salts Company.



THE EXTRACTION OF
GOLD AND SILVER
FROM SEA WATER.

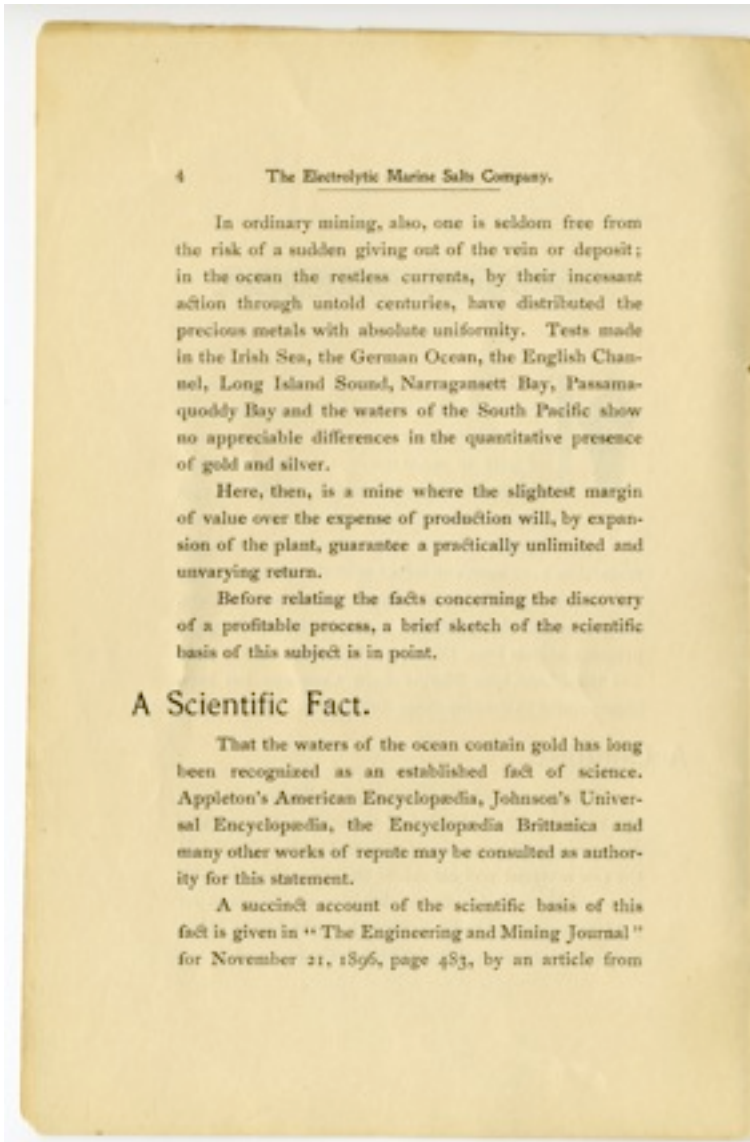
THE ELECTROLYTIC MARINE SALTS COMPANY



In the summer of 1896, while recovering from an attack of typhoid fever, the attention of the writer was called to the existence of gold in sea-water. A taste for science and familiarity with the sea led to an instant appreciation of the vast commercial possibilities of this fact. From that moment researches have been conducted with the utmost energy and at an expenditure of many thousands of dollars, with the result that profitable methods of extracting the precious metals from the ocean have been discovered, and the Electrolytic Marine Salts Company has been incorporated to develop these discoveries.

A Contrast.

A large part of the expense of ordinary gold mining is due to the difficulty of excavating, transporting and crushing large masses of rock and earth. To obtain the raw material and get rid of the refuse is a formidable problem. But in the exploitation of the ocean for gold, unlimited material is freely brought by the tides, and, after treatment, is as inexpensively removed.



In ordinary mining, also, one is seldom free from the risk of a sudden giving out of the vein or deposit; in the ocean the restless currents, by their incessant action through untold centuries, have distributed the precious metals with absolute uniformity. Tests made in the Irish Sea, the German Ocean, the English Channel, Long Island Sound, Narragansett Bay, Passamaquoddy Bay and the waters of the South Pacific show no appreciable differences in the quantitative presence of gold and silver.

Here, then, is a mine where the slightest margin of value over the expense of production will, by expansion of the plant, guarantee a practically unlimited and unvarying return.

Before relating the facts concerning the discovery of a profitable process, a brief sketch of the scientific basis of this subject is in point.

A Scientific Fact.

That the waters of the ocean contain gold has long been recognized as an established fact of science. Appleton's American Encyclopaedia, Johnson's Universal Encyclopaedia, the Encyclopaedia Britannica and many other works of repute may be consulted as authority for this statement.

A succinct account of the scientific basis of this fact is given in "The Engineering and Mining Journal" for November 21, 1896, page 483, by an article from

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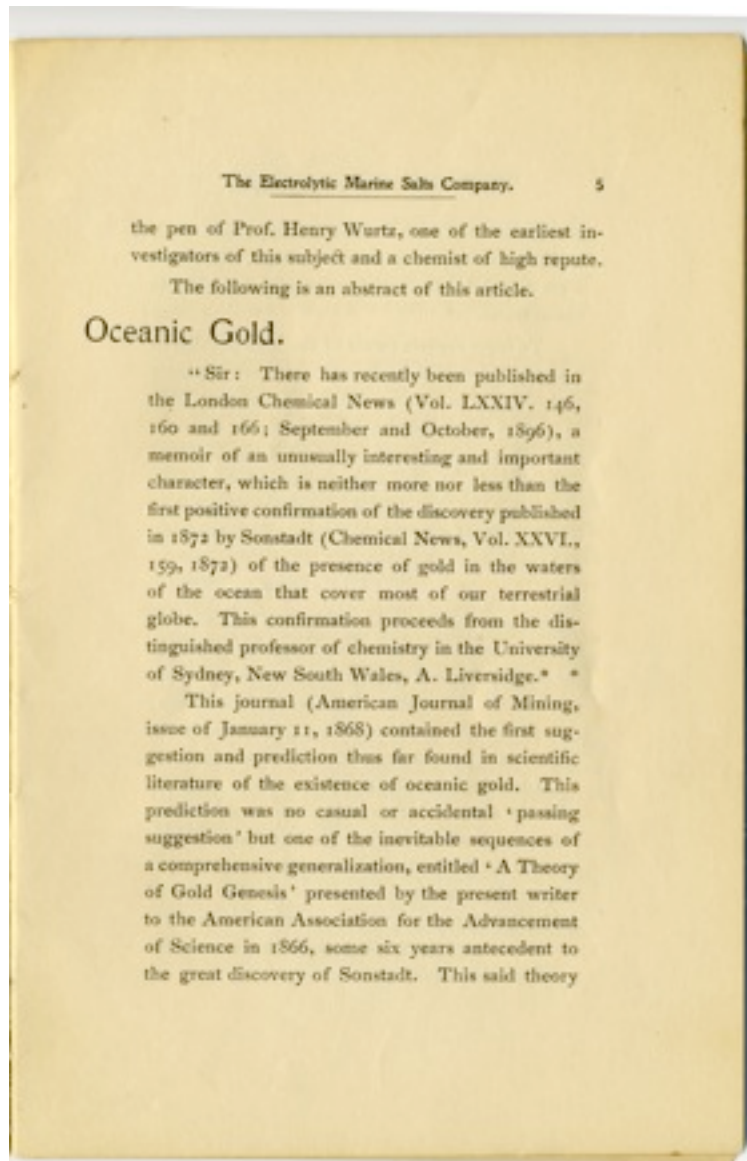
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The Electrolytic Marine Salts Company. 5

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The following is an abstract of this article.

Oceanic Gold.

“Sir: There has recently been published in the London Chemical News (Vol. LXXIV. 146, 160 and 166; September and October, 1896), a memoir of an unusually interesting and important character, which is neither more nor less than the first positive confirmation of the discovery published in 1872 by Sonstadt (Chemical News, Vol. XXVI., 159, 1872) of the presence of gold in the waters of the ocean that cover most of our terrestrial globe. This confirmation proceeds from the distinguished professor of chemistry in the University of Sydney, New South Wales, A. Liversidge.* *

This journal (American Journal of Mining, issue of January 11, 1868) contained the first suggestion and prediction thus far found in scientific literature of the existence of oceanic gold. This prediction was no casual or accidental 'passing suggestion' but one of the inevitable sequences of a comprehensive generalization, entitled 'A Theory of Gold Genesis' presented by the present writer to the American Association for the Advancement of Science in 1866, some six years antecedent to the great discovery of Sonstadt. This said theory

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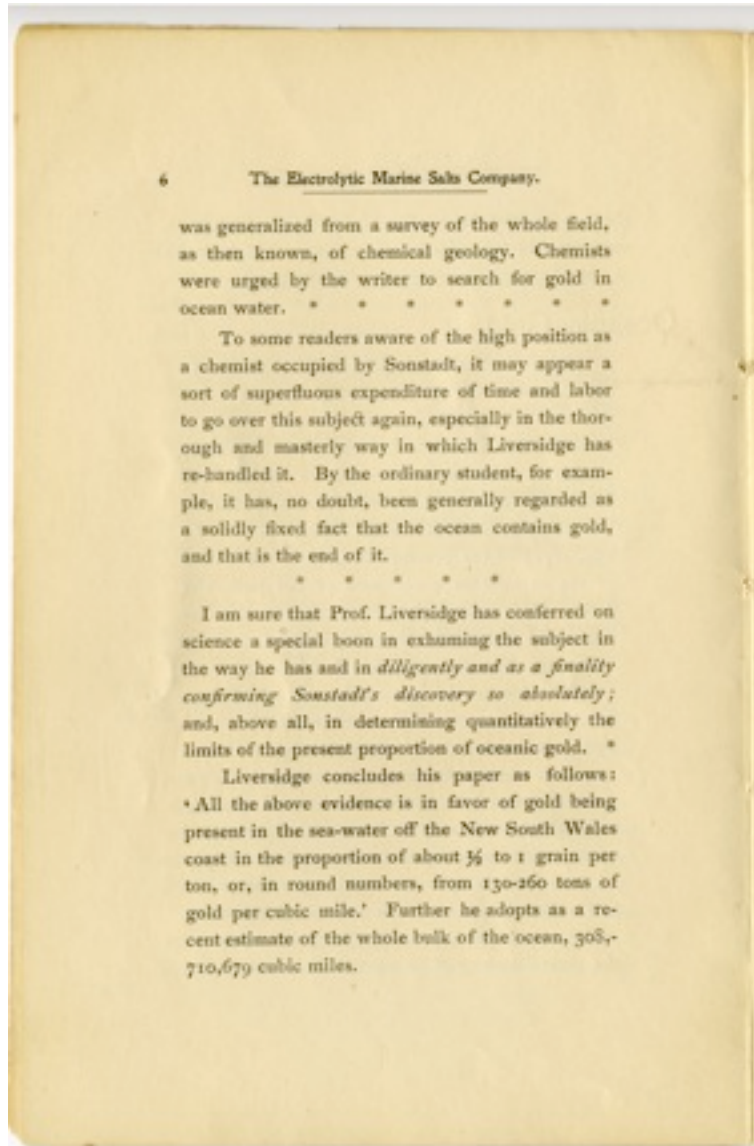
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was generalized from a survey of the whole field, as then known, of chemical geology. Chemists were urged by the writer to search for gold in ocean water. * * * * *

To some readers aware of the high position as a chemist occupied by Sonstadt, it may appear a sort of superfluous expenditure of time and labor to go over this subject again, especially in the thorough and masterly way in which Liversidge has re-handled it. By the ordinary student, for example, it has, no doubt, been generally regarded as a solidly fixed fact that the ocean contains gold, and that is the end of it.

* * * * *

I am sure that Prof. Liversidge has conferred on science a special boon in exhuming the subject in the way he has and in *diligently and as a finality confirming Sonstadt's discovery so absolutely*; and, above all, in determining quantitatively the limits of the present proportion of oceanic gold. *

Liversidge concludes his paper as follows: 'All the above evidence is in favor of gold being present in the sea-water off the New South Wales coast in the proportion of about $\frac{3}{8}$ to 1 grain per ton, or, in round numbers, from 130-260 tons of gold per cubic mile.' Further he adopts as a recent estimate of the whole bulk of the ocean, 308,-710,679 cubic miles.

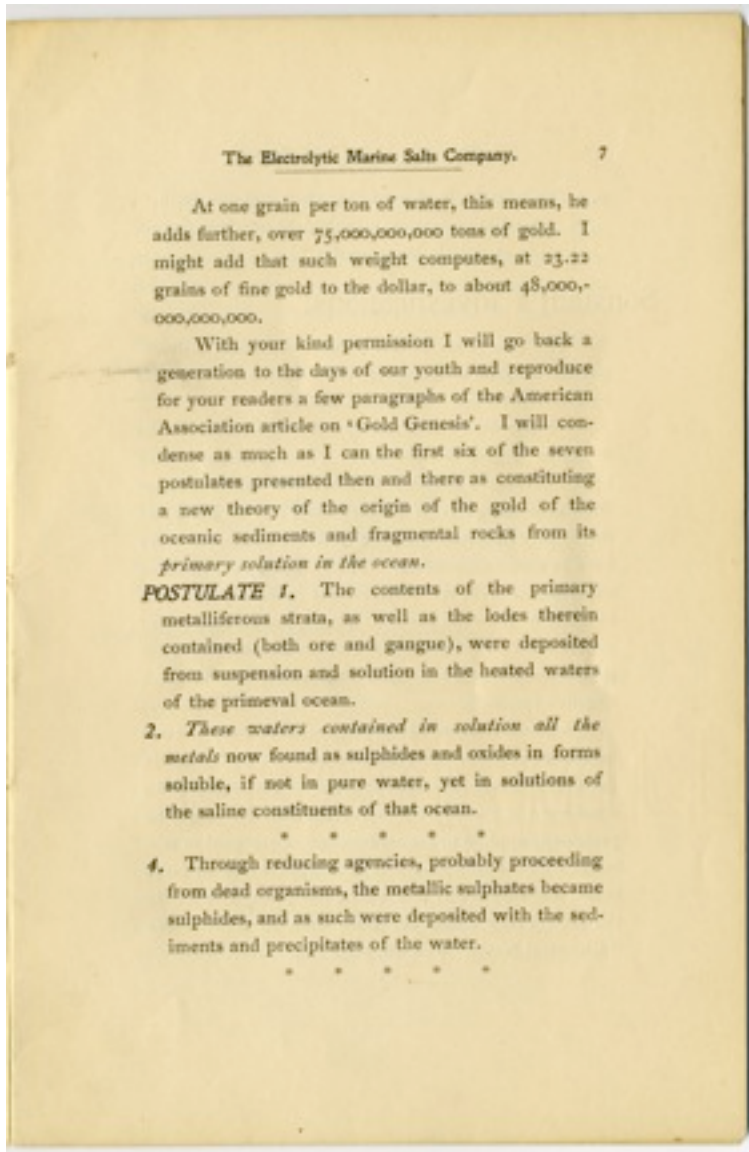
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Liversidge concludes his paper as follows: 'All the above evidence is in favor of gold being present in the sea-water off the New South Wales coast in the proportion of about $\frac{1}{2}$ to 1 grain per ton, or, in round numbers, from 130-260 tons of gold per cubic mile.' Further he adopts as a recent estimate of the whole bulk of the ocean, 308,-710,679 cubic miles.



At one grain per ton of water, this means, he adds further, over 75,000,000,000 tons of gold. I might add that such weight computes, at 23.22 grains of fine gold to the dollar, to about 48,000,000,000,000.

With your kind permission I will go back a generation to the days of our youth and reproduce for your readers a few paragraphs of the American Association article on 'Gold Genesis'. I will condense as much as I can the first six of the seven postulates presented then and there as constituting a new theory of the origin of the gold of the oceanic sediments and fragmental rocks from its primary solution in the ocean.

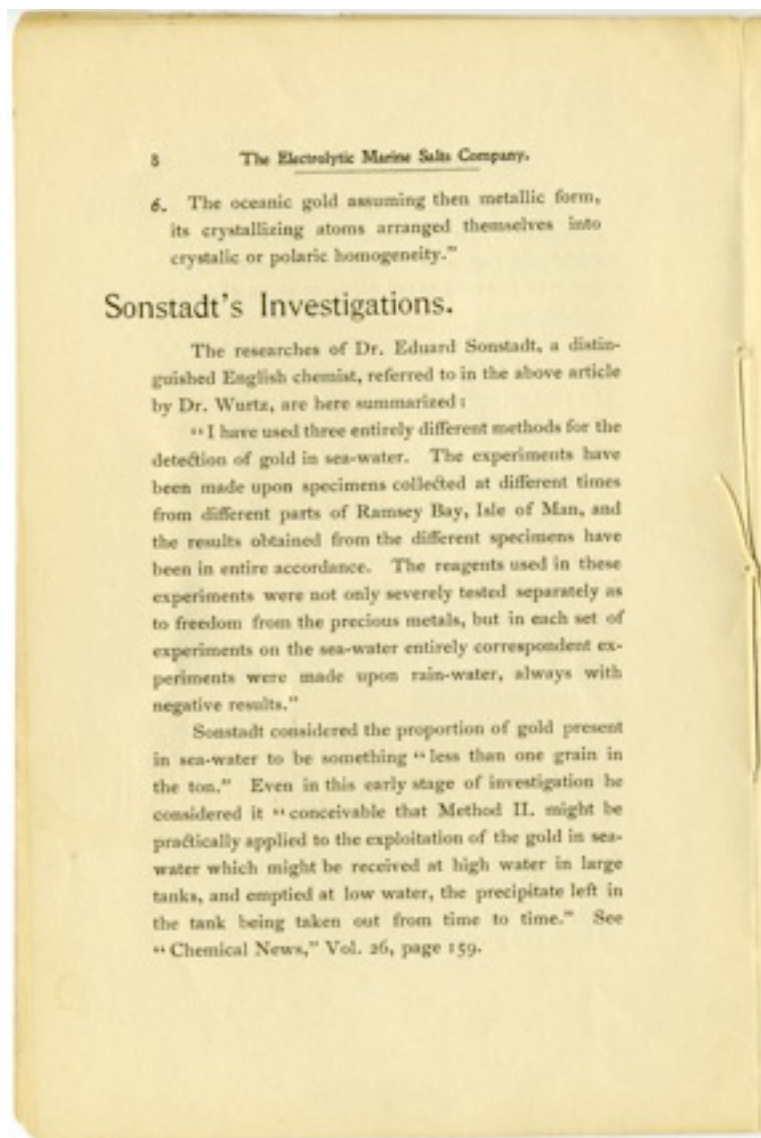
POSTULATE 1. The contents of the primary metalliferous strata, as well as the lodes therein contained (both ore and gangue), were deposited from suspension and solution in the heated waters of the primeval ocean.

2. These waters contained in solution all the metals now found as sulphides and oxides in forms soluble, if not in pure water, yet in solutions of the saline constituents of that ocean.

* * * * *

4. Through reducing agencies, probably proceeding from dead organisms, the metallic sulphates became sulphides, and as such were deposited with the sediments and precipitates of the water.

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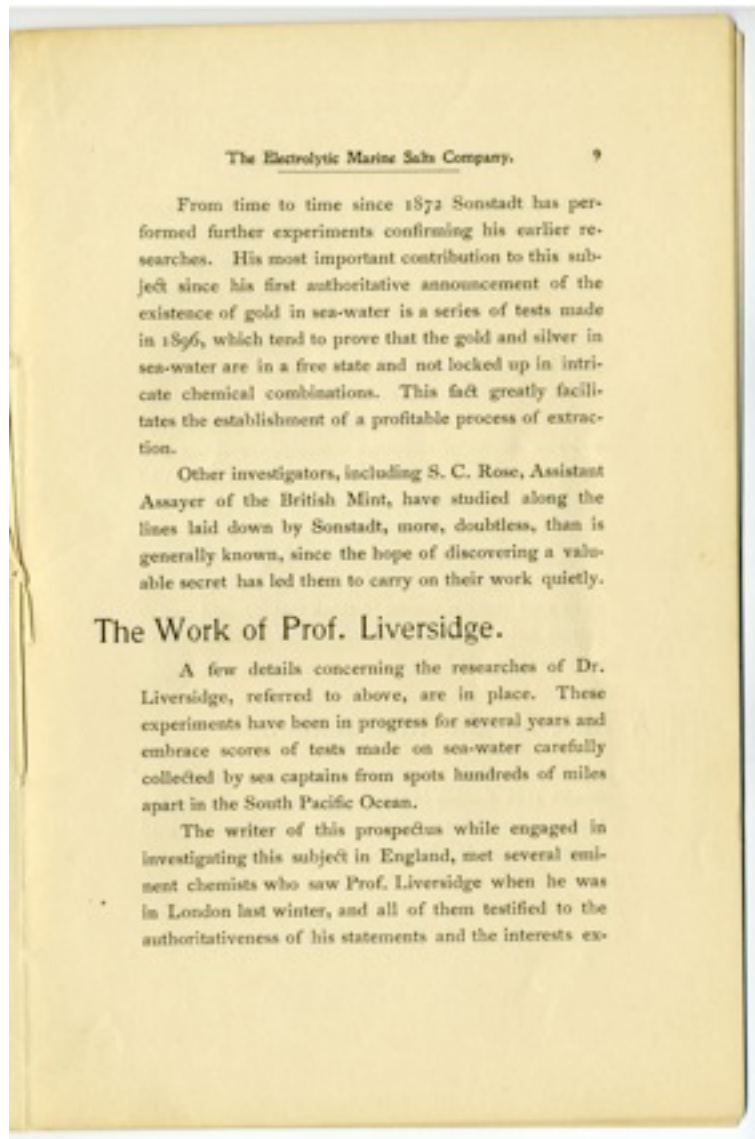
6. The oceanic gold assuming then metallic form, its crystallizing atoms arranged themselves into crystallic or polaric homogeneity."

Sonstadt's Investigations.

The researches of Dr. Eduard Sonstadt, a distinguished English chemist, referred to in the above article by Dr. Wurtz, are here summarized:

"I have used three entirely different methods for the detection of gold in seawater. The experiments have been made upon specimens collected at different times from different parts of Ramsey Bay, Isle of Man, and the results obtained from the different specimens have been in entire accordance. The reagents used in these experiments were not only severely tested separately as to freedom from the precious metals, but in each set of experiments on the sea-water entirely correspondent experiments were made upon rain-water, always with negative results."

Sonstadt considered the proportion of gold present in sea-water to be something "less than one grain in the ton." Even in this early stage of investigation he considered it "conceivable that Method II might be practically applied to the exploitation of the gold in sea-water which might be received at high water in large tanks, and emptied at low water, the precipitate left in the tank being taken out from time to time." See "Chemical News," Vol. 26, page 159.



From time to time since 1872 Sonstadt has performed further experiments confirming his earlier researches. His most important contribution to this subject since his first authoritative announcement of the existence of gold in sea-water is a series of tests made in 1896, which tend to prove that the gold and silver in sea-water are in a free state and not locked up in intricate chemical combinations. This fact greatly facilitates the establishment of a profitable process of extraction.

Other investigators, including S. C. Rose, Assistant Assayer of the British Mint, have studied along the lines laid down by Sonstadt, more, doubtless, than is generally known, since the hope of discovering a valuable secret has led them to carry on their work quietly.

The Work of Prof. Liversidge.

A few details concerning the researches of Dr. Liversidge, referred to above, are in place. These experiments have been in progress for several years and embrace scores of tests made on sea-water carefully collected by sea captains from spots hundreds of miles apart in the South Pacific Ocean.

The writer of this prospectus while engaged in investigating this subject in England, met several eminent chemists who saw Prof. Liversidge when he was in London last winter, and all of them testified to the authoritative nature of his statements and the interests ex-

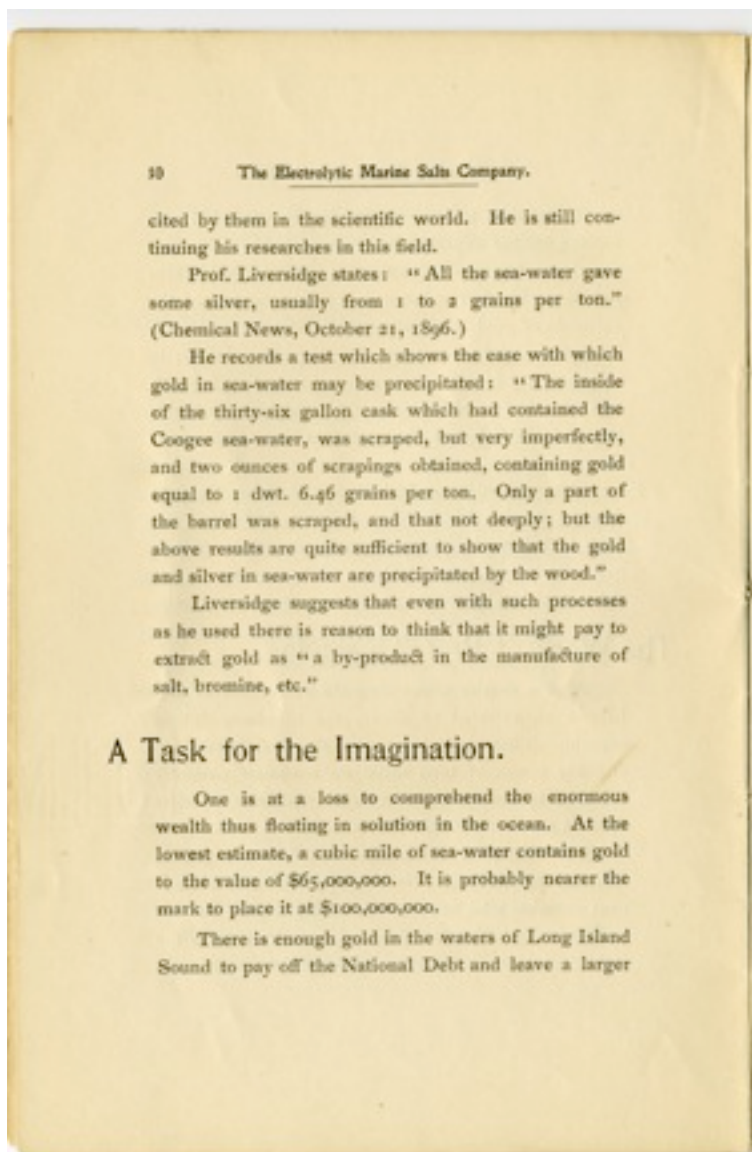
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Prof. Liversidge states: "All the sea-water gave some silver, usually from 1 to 2 grains per ton." (Chemical News, October 21, 1896.)

He records a test which shows the ease with which gold in sea-water may be precipitated: "The inside of the thirty-six gallon cask which had contained the Coogee sea-water, was scraped, but very imperfectly, and two ounces of scrapings obtained, containing gold equal to 1 dwt. 6.46 grains per ton. Only a part of the barrel was scraped, and that not deeply; but the above results are quite sufficient to show that the gold and silver in sea-water are precipitated by the wood."

Liversidge suggests that even with such processes as he used there is reason to think that it might pay to extract gold as "a by-product in the manufacture of salt, bromine, etc."

A Task for the Imagination.

One is at a loss to comprehend the enormous wealth thus floating in solution in the ocean. At the lowest estimate, a cubic mile of sea-water contains gold to the value of \$65,000,000. It is probably nearer the mark to place it at \$100,000,000.

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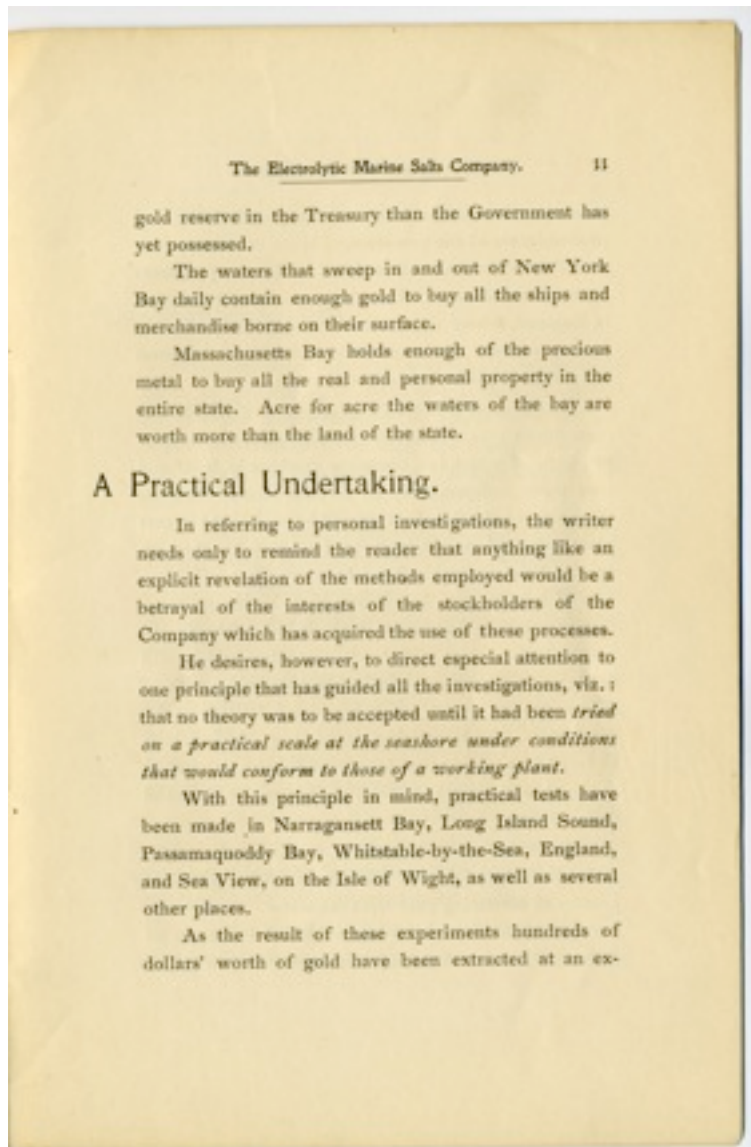
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The Electrolytic Marine Salts Company. 11

gold reserve in the Treasury than the Government has yet possessed.

The waters that sweep in and out of New York Bay daily contain enough gold to buy all the ships and merchandise borne on their surface.

Massachusetts Bay holds enough of the precious metal to buy all the real and personal property in the entire state. Acre for acre the waters of the bay are worth more than the land of the state.

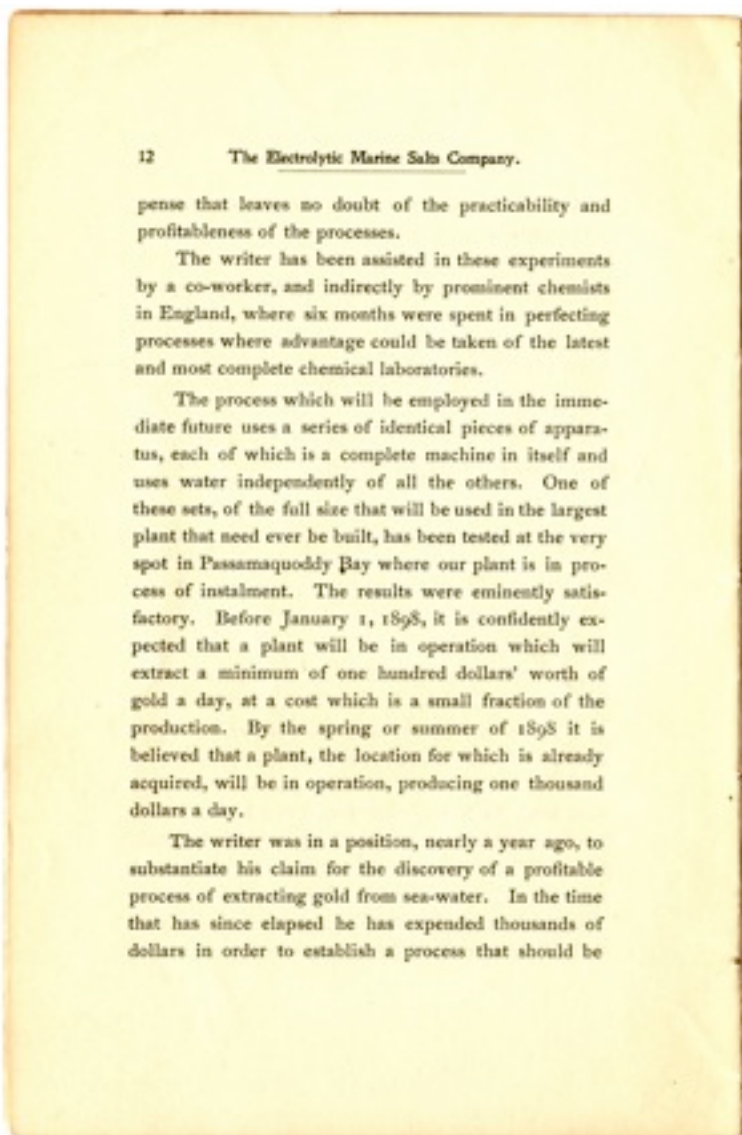
A Practical Undertaking.

In referring to personal investigations, the writer needs only to remind the reader that anything like an explicit revelation of the methods employed would be a betrayal of the interests of the stockholders of the Company which has acquired the use of these processes.

He desires, however, to direct especial attention to one principle that has guided all the investigations, viz.: that no theory was to be accepted until it had been tried on a practical scale at the seashore under conditions that would conform to those of a working plant.

With this principle in mind, practical tests have been made in Narragansett Bay, Long Island Sound, Passamaquoddy Bay, Whitstable-by-the-Sea, England, and Sea View, on the Isle of Wight, as well as several other places.

As the result of these experiments hundreds of dollars' worth of gold have been extracted at an ex-



pense that leaves no doubt of the practicability and profitableness of the processes.

The writer has been assisted in these experiments by a co-worker, and indirectly by prominent chemists in England, where six months were spent in perfecting processes where advantage could be taken of the latest and most complete chemical laboratories.

The process which will be employed in the immediate future uses a series of identical pieces of apparatus, each of which is a complete machine in itself and uses water independently of all the others. One of these sets, of the full size that will be used in the largest plant that need ever be built, has been tested at the very spot in Passamaquoddy Bay where our plant is in process of instalment. The results were eminently satisfactory. Before January 1, 1898, it is confidently expected that a plant will be in operation which will extract a minimum of one hundred dollars' worth of gold a day, at a cost which is a small fraction of the production. By the spring or summer of 1898 it is believed that a plant, the location for which is already acquired, will be in operation, producing one thousand dollars a day.

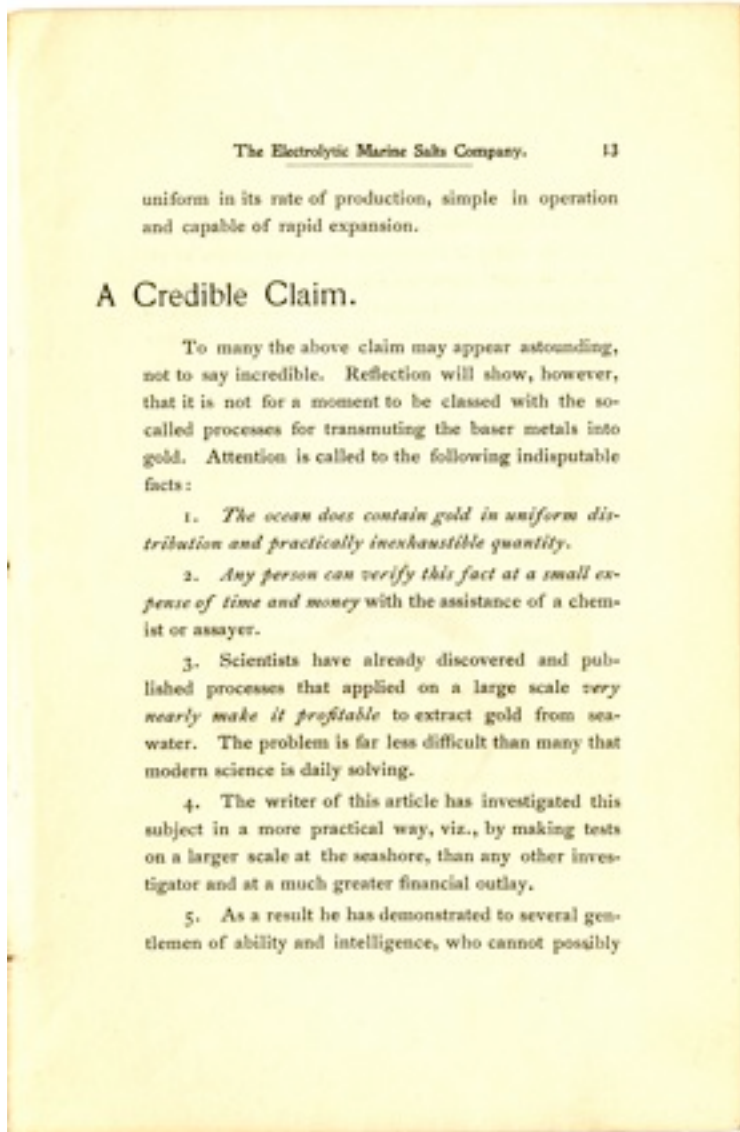
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uniform in its rate of production, simple in operation and capable of rapid expansion.

A Credible Claim.

To many the above claim may appear astounding, not to say incredible. Reflection will show, however, that it is not for a moment to be classed with the so-called processes for transmuting the baser metals into gold. Attention is called to the following indisputable facts:

1. The ocean does contain gold in uniform distribution and practically inexhaustible quantity.

2. Any Person can verify this fact at a small expense of time and money with the assistance of a chemist or assayer.

3. Scientists have already discovered and published processes that applied on a large scale very nearly make it profitable to extract gold from seawater. The problem is far less difficult than many that modern science is daily solving.

4. The writer of this article has investigated this subject in a more practical way, viz., by making tests on a larger scale at the seashore, than any other investigator and at a much greater financial outlay.

5. As a result he has demonstrated to several gentlemen of ability and intelligence, who cannot possibly

be suspected of collusion, the practicability of this process. These gentlemen have furnished their own chemicals and had the fullest liberty of access to all apparatus used, following the experiments with unremitting attention and testing the results through assayers of their own choice and the highest standing. In some cases the discoverer has not been present at the test or known even where it was being held.



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