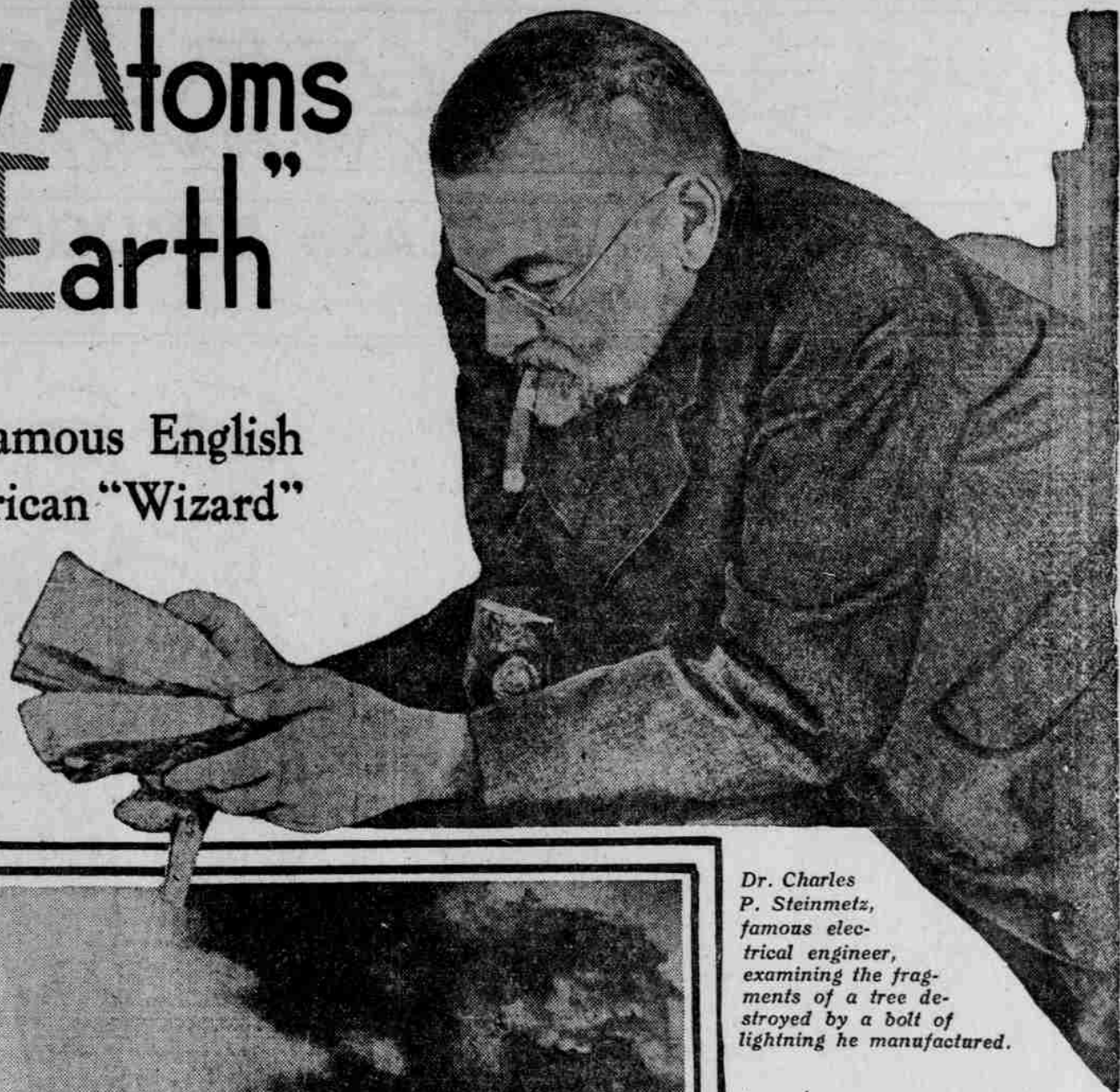
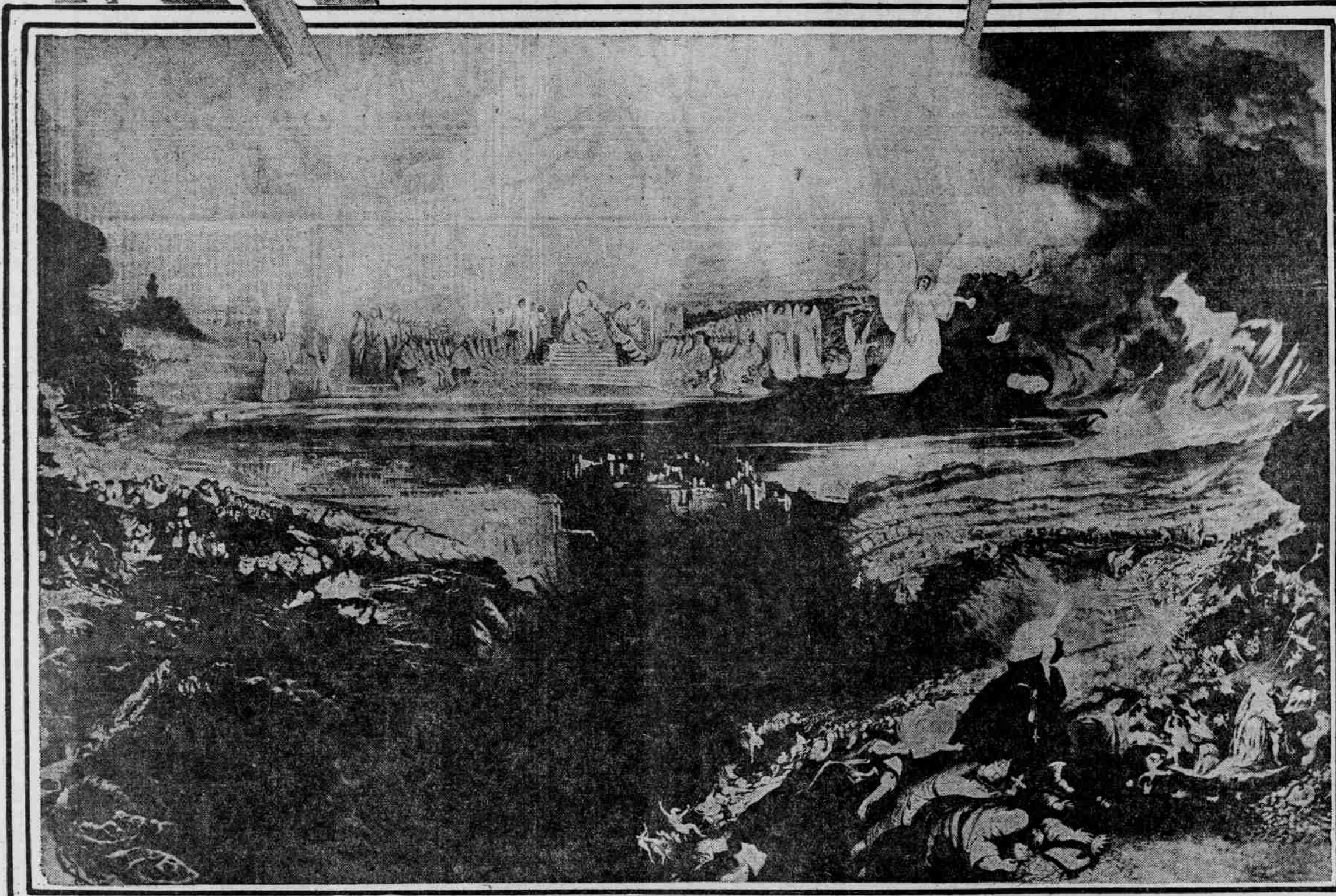


# "Tinkering With Angry Atoms May Blow Up the Earth"

The Solemn Warning of a Famous English Scientist Comes Just as an American "Wizard" Steals Jove's Power and Manufactures a Bolt of Great Destructive Force.



Dr. Charles P. Steinmetz, famous electrical engineer, examining the fragments of a tree destroyed by a bolt of lightning he manufactured.



Reproduction of Sir John Martin's famous painting, "Final Judgment," showing the pit between the blessed and the damned and the heavenly planes.

THAT the earth might one day go up in flames because of some mammoth internal combustion has always been considered a scientific possibility. That such a combustion might come about, either by accident or design, through the hand of man himself, was too fanciful a possibility even for the pages of imaginative fiction.

But recent speculations of physicists have not only indicated just that possibility but have indicated it so pointedly as to call forth a warning from no less a scientist than Dr. F. R. Aston, fellow of Trinity college, Cambridge, England. The danger, as Dr. Aston sees it, lies in the apparently harmless unit of matter known as the atom. The atom in general and the hydrogen atom in particular, is a reservoir of tremendous energy. So much so, in fact, that a spoonful of water is capable of being translated into 275,000 horsepower if some device for causing the sudden release of this energy could be found.

It was against the heedless and unrestricted searching for this releasing device that Dr. Aston issued his warning in a recent speech at Philadelphia.

"Should the research worker of the future discover some means of releasing this energy in a form which could be employed," he said, "the human race will have at its command powers beyond the dreams of scientific fiction. But the possibility must always be considered that the energy once liberated will be completely uncontrollable and by its intense violence detonate all neighboring substances.

"If that happens all of the hydrogen on earth might be transformed at once and this most successful experiment might be published to the rest of the universe in the form of a new star of extraordinary brilliance as the earth blew up in one vast explosion."

Dr. Aston's warning against this heedless "tinkering with angry atoms" came as a climax to his revelations regarding the composition of the hydrogen atom. According to his statements, hydrogen is capable of being transformed into a gase-

ous element known as helium. In the act of making this transformation the hydrogen atom would give off energy which would furnish mankind with limitless power if it could be controlled. But the problem of controlling that extraordinary energy would be even more difficult than the work connected with its discovery. Hence his warning.

Dr. Aston's contribution to the growing body of evidence regarding the properties of the atom follows logically the experimental work already done along that line by Sir Ernest Rutherford in England, Professor W. D. Harkins in the United States, and others.

The old conception of the atom held that it was an indivisible unit. Chemists and physicists spoke of atoms as if they were so many bricks with which matter was built up.

But along in the late '90s Sir Oliver Lodge foretold the birth of a new atomic theory in several discussions which, while speculative and philosophical, turned out to be physically sound. He spoke of the "breaking up" of atoms. In 1896, Alexandre Becquerel, the French chemist, discovered in the element known as uranium a peculiar quality which was afterward called radioactivity. This radioactivity is defined as a dynamic property found in certain bodies of high atomic weight which causes it to give off peculiarly characteristic rays invisible to the eye but capable of penetrating objects opaque to ordinary light.

**Science Explains Energy.**

In 1898, Pierre and Mme. Curie discovered radium—an element found to have an extremely high degree of radioactivity and a remarkably high energy. This discovery amounted to a final proof that the ray given off by certain substances such as uranium, thorium, radium actinium and others was a form of energy. It also consolidated and gave credence to the growing belief that this energy was caused by the breaking up of atoms. An inevitable corollary of this latter belief was that all other substances were going through a similar process of disintegration, but at different rates of speed.



This photograph of the destruction of a two-story house by lignite during New York police field games indicates the force of a comparatively small explosion.

Newspaper Feature Service, 1922.

The definite acceptance of this theory explained many phenomena which had hitherto been inexplicable. It explained how it was possible for the sun to give off heat for its hundred million years of life. It also opened up stupendous possibilities, the most terrifying of which was recently suggested by Dr. Aston. For if radium possessed its tremendous energy because of the speed with which it was breaking up, any ordinary element could be given the same power if some way could be found to make its speed of disintegration equal to

atomic energy. In the opening passages of this book Mr. Wells has Holsten listening to a classroom lecture being given by a celebrated savant. Holsten has been speculating on the theory of atomic energy for a long time, so his interest is immediately caught when the professor tells his class:

"Radium is doing noticeably and fiercely what all the other elements are doing with an imperceptible slowness. Radium is an element that is breaking up and flying to pieces." Then the professor holds up a small bottle in his hand. "This little bottle," he says, "contains about a pint of uranium oxide. And in the bottle slumbers at least as much energy as we could get by burning about 160 tons of coal. If, at a word—in one instant—I could suddenly release that energy here and now, it would blow us and everything about us to fragments."

His imagination fired by this, Holsten applied himself to experimentation. Then one day "he set up atomic disintegration in a minute particle of bismuth.

Confusion followed the commercialization of Holsten's principle. No system for distributing and controlling the energy had been worked out. Factories shut down. Stocks went to nothing. The rich made a mad rush to possess the new atomic automobiles and atomic aeroplanes. But the poor hovered about as under a cloud, not understanding what it was all about. Finally came a world war in which the principal weapon was the atomic bomb. By means of this bomb cities could be wiped out in a very short while. And, as there was no defence against it, all of the principal cities of the world were soon in ashes.

At almost the same time that Dr. Aston was sounding his warning a mere mortal was already taking a fling at playing Jove. In his laboratory at Schenectady, N. Y., Dr. Charles P. Steinmetz, the world's most famous electrical engineer, was producing and controlling an indoor thunderstorm that had all the characteristics of the simon-pure, heaven-sent article. The forked tongue of lightning leaped through space with a crash and shattered a miniature tree from tip to base. Dr. Steinmetz's generator consisted of a high-voltage condenser of the form of 200 glass plates. These were arranged in

two rows in groups of 50 and were capable of holding 120,000 volts of electricity.

Dr. Steinmetz declares that it is entirely possible to produce an artificial lightning bolt that will be as damaging as any ever made by nature. It would involve a prohibitive expense and would be too dangerous to observe at close quarters. But it plainly lies within the power of science to destroy cities and countryside at a stroke in such a manner.

## World's Bread Supply Guarded at Source

(Continued From Page 2.)

bushels. Of this amount 69 per cent went to European points, 25 per cent to the orient and 6 per cent to South America.

The steamship Hanley was loaded under the inspection of the grain inspection department, in bulk at terminal No. 4, on October 28, 1921. The wheat was of the hard red winter (Turkey red) variety and graded No. 1 hard winter, with a test weight of 60.7 pounds to the measured bushel. Arrangements were made with the captain of the Hanley, Captain C. S. Hansen, to report the condition of the cargo upon arrival at destination.

Following is the captain's letter, dated Marseilles, Dec. 17, 1921:

The undersigned takes pleasure in reporting to you that the Hanley is completing discharging her cargo tonight. The cargo was delivered in first-class condition, no sweat, no moisture or damage of any description, all concerned are very pleased saying it is the finest cargo ever came to Marseilles.

The cargo did not settle so that it was noticeable and we had some pretty bad weather in the Caribbean sea, also in the Gulf of Lyons.

(Signed) CAPT. C. S. HANSEN.

Another interesting circumstance about the cargo to the credit of the weighing department, was that the weight checked out at a point of discharge within 300 bushels of the amount weighed in, which loss was easily accounted for in loss of grain in handling at both ends of the line.

There are 380 warehouses in the state of Oregon under the jurisdiction of the grain inspection department. Each warehouse is required by law to give bonds in proportion to the amount of grain or hay handled for the past season.

In the laboratories the scientific staff of the grain inspection department exercises the most careful supervision of all samples brought in by the staff of field men who test the cars on arrival. The grain is examined for moisture and the grades, once established, are for permanency. By their apparatus these men know, to the smallest fraction, just how much nutriment there is in each grain of wheat, its keeping qualities and by placing it in its proper grade this same knowledge becomes common property. After being warehoused or placed in elevators the exporting agents have their shipments cleaned, if necessary, and separated, the poor grain being given a lower classification and the shipments for other ports then being all of a uniform nature.

While to the most of all wheat must look alike, to the skilled inspectors there is as much variation between different grades as between day and night. Their work is a careful, important and necessary one and the results of the rigid inspection regulations established on the Columbia river have been to raise this port high in the world estimation as a primary exporting market, and Portland now wants this recognition established in every sense.

## Big Business Indicated.

A westerner came on to spend his vacation at Loblolly Cove, near Rockport. He had never seen the ocean before. The first morning of his arrival he appeared at the little fish house and general store kept by a native named Haskins and announced that he wanted two pails full of sea water, which the storekeeper obligingly dipped up for him from the wharf, it being high tide.

"How much?" the Westerner asked.

Haskins, who never overlooked a bargain, replied:

"Ten cents."

The new arrival paid it cheerfully and that afternoon he turned up with his pails again.

"My doctor out home told me to bathe in sea water twice a day," he explained; then, observing the distant beach line at low tide, added: "Gosh! You've had a big business today, haven't you, mister?"