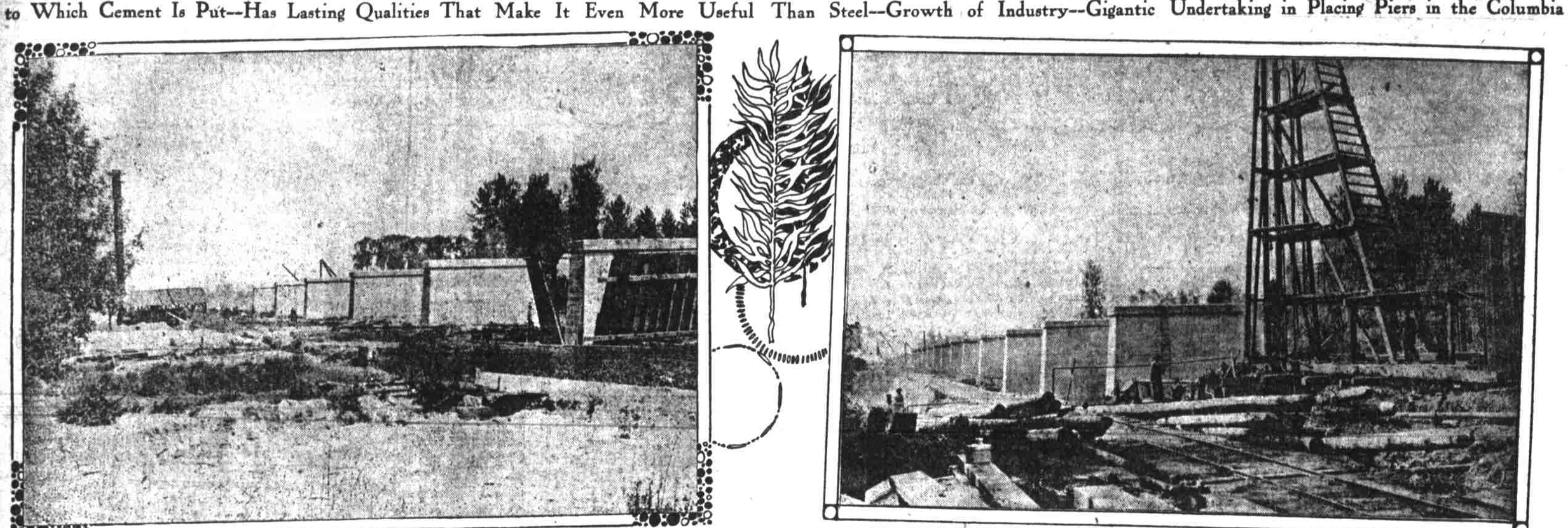


CONCRETE AND ITS MANY USES

Description of Methods Employed in Preparing Material for the Market --Concrete Piling Now Used to a Large Extent--All Manner of Uses to Which Cement Is Put--Has Lasting Qualities That Make It Even More Useful Than Steel--Growth of Industry--Gigantic Undertaking in Placing Piers in the Columbia



REMOVING FORMS FROM CONCRETE PIERS AFTER THE CEMENT HAS SET

THE use of cement dates backward 30 centuries and more, and works of which it was a component part then, are still in good preservation. Poor quality though it was, aqueducts in which it was built still conduct water into the Imperial City. These have been years of improvements, new uses have been added, even a more permanent cement has been invented, until today it enters into, as a prime factor, all permanent structures both above and below ground. The cement used by the Romans in their hydraulic masonry constructions was made by mixing volcanic ashes with lime in the proper proportions—in a measure we are still making in the same manner, though along absolute scientific lines and by artificial rather than by natural means. This is the age of concrete and steel. Everywhere they are being used conjointly for the benefit and betterment of the race and time. The United States is not only the largest manufacturer of Portland cement, but it also produces that of the best quality. There are three kinds of cement in general use—namely, Portland, natural rock and slag or puzzolan. The development of the cement industry has been accompanied by the growth of various industries dependent upon it, as, for example, the manufacture of concrete mixing machinery, concrete block machinery, and special concrete pile formers. Portland cement gets its name from the fact of its similarity in appearance to the noted lime stone of that now famous district.

How Cement Is Made.

Portland cement is said to give the highest efficiency of any cement on the market today. It is made along the most scientific lines, being tested at all times at the works while in the process of making. The products from which it may be made are abundant in nature, they being limestone and aluminum clay, and there are three stages through which it must go before completion—first the materials are mixed or blended in the proper proportion, the lime stone is in its natural state it must first be ground and then mixed with the clay, the amount of water added, it is then stored in large vats where the water is drained off. It is then burned or calcined in long rotary kilns, some four feet in diameter and about 40

feet long, this tube is lined with fire bricks to withstand the heat which in the calcining zone reaches 2,700 degrees Fahrenheit. This temperature is maintained for about two hours. The muck or "slurry" as it is called, is put in the top end of the tube, and as the tube rotates it gradually feeds itself downward, becoming hotter and hotter until it passes through the calcining zone, then it drops out in the form of a "clinker." It is taken from there and conveyed by bucket conveyors to the storage bins from which it is taken and ground to dust in specially prepared mill.

The heat for the burning process is usually obtained by either of three methods, by the coal powder method which is accomplished by pulverizing the coal to a powder and placing it in the tube under atmospheric pressure—blown in, thus water comes in contact with the heating zone a high temperature is attained due to the combustion of the fine powdered carbon particles, aided by the oxygen contained in the air with which it is blown in. This method is used almost entirely in those districts where a first class quality of coal may be had at a low price.

Another method is the use of crude oil commonly known as petroleum. This is used by the same method as the coal, in those districts where oil is cheap and coal is expensive; the petroleum may be sprayed in either under compressed air or steam pressure. A high temperature is thus attained with very little labor expense. This is probably the least expensive of any of the burning processes, for it is the aim in all cement works to eliminate as far as possible all labor expense. The other method is to take directly from the furnace or coke ovens the heated gases and use them directly for the calcining of the "slurry" into "clinker."

Natural Cement.

Natural cement, as its name indicates, is made directly from ingredients as they are found in nature without any artificial mixing, the process of manufacture being similar to that for Portland cement. Natural cement cannot be relied upon so explicitly as can Portland cement for it is a well known fact that the products from which it is made will vary in quality from place to place in the same quarry. However, its cheapness commends itself for use very largely in those engineering undertakings where no great dependence is placed upon the met as when quantities of concrete are used en masse.

The third, or Puzzolan, is made in those countries where volcanic products are plentiful or around volcanic mountains where large quantities of slag is produced, for this is the product from which this cement is made in this country.



TONS OF PORTLAND CEMENT AWAITING THE MECHANICS ON THE PENINSULA

The slag taking the place of the "clinker," but this does not give as good a quality of cement as Portland cement.

Uses of Cement.

A few years ago concrete was used only for special purposes. The application of its usefulness has grown to such an extent that it seems to enter into all forms of engineering and architectural construction both above and below ground. Concrete is a product made by mixing cement with sand and gravel, or broken stone, in the right proportion, this depending upon the quality of work to be performed, for the better quality of concrete required necessitates a larger percentage of cement.

We now come to reinforced concrete, which is the use of steel and concrete in various proportions, and the greatest efficiency may be attained at the least possible expense, and after all that is what the engineer attains—greatest efficiency at least expense. The blending of these two materials is necessary because concrete is efficient under a compression strain while steel is particularly useful under tension, thus the combining of the two gives us a resultant product which is useful both in compression and tension. It is used for foundation work, pavements, walks and buildings, for dams and aqueducts, for drydocks and fortifications, for scrapers and barge cottages, for the sarcophagus of the rich and the headstone of the poor.

Particularly where steel and timber are expensive, concrete is having great vogue. In the south where timber is cheap, concrete is increasing very rapidly in use, due to the permanency of the structure and the low insurance rates obtainable. On the other hand around Pittsburgh, where steel is cheapest, concrete construction is most popular. In the northwest where cement is most expensive of any place in the union and timber is cheapest concrete construction has a wide usage. In any climate where a permanent structure is to be built concrete must be used, for it will not rust, neither will the torrid heat it away. It is a maxim, "lay up your treasures in concrete steel, where neither rust nor rot doth corrupt." Engineers are each year becoming more enthusiastic of wooden piling, because of the large number of structures built on wooden piles, which have

settled. Upon investigating the conditions responsible for these settlements it has been found that although the heads of the wooden piles have decayed because of the lowering of the water level, due to deeper sewers, subways, or of natural causes or because the piles have been shattered, telescoped or broomed in driving, besides wooden piles are becoming poorer in quality and more expensive during the passing of the years. United States engineers have not only modernized the manufacture of natural causes or because the piles in a variety of places where heretofore the field was considered impractical for its application. The first use of concrete piling in this country was in 1901. During those six years three systems have been developed, all of which have met popular favor, enough concrete piling were placed under the building in Pittsburgh that if they were placed end to end they would reach from Baltimore to Washington.

Concrete Piling: Its Use.

When concrete piles are used, as it is not necessary to go below water level with the head of the piles, it is generally possible to save a considerable amount of excavating, sheeting, pumping, shoring and masonry, as well as time, which in these days of rush work is a very important factor.

In placing concrete piles a metal shell is driven in the ground and withdrawn, the hole thus made is filled with concrete and the superstructure built upon this foundation, which is not only secure, but will be just as permanent a century hence as it is at the time of its construction. The concrete is put under greatly varying conditions, in almost every kind of soil and for buildings of every kind, for bridge abutments, stacks and cathedrals. An interesting use to which they have recently been put was the foundation for a steel abutment tower on Coney Island, New York. This tower is designed to be 700 feet high and 300 feet in diameter, yet such much confidence is placed in concrete piles that the carrying of this great mass of steel is to be entrusted to the three patented methods for the placement of concrete piles under all conditions.

Many of the resources of the state of Oregon are yet in their infancy—all of the raw materials for the making of the best quality of Portland cement are here in abundance, and the necessary equipment to the manufacture. True, the foreign cement is expensive, but owing to the quantity required, but this is an abundance of money on hand

CONCRETE PIERS TO SUPPORT THE ROADWAY ACROSS THE PENINSULA MASSIVE BUT PERMANENT.

The present is the first season that Portland has known a reinforced concrete building, we have as yet to see our first concrete bridge, a local concrete wharf is as yet untried, of Portland has but one concrete block warehouse, and we may as well say we have no dwellings built from them. The building of these structures, and many more must take place in the near future, for but few people take into account the first cost of the concrete, if by that additional expense they are not only building for the present, but for the future as well.

The present is the first season that Portland has known a reinforced concrete building, we have as yet to see our first concrete bridge, a local concrete wharf is as yet untried, of Portland has but one concrete block warehouse, and we may as well say we have no dwellings built from them. The building of these structures, and many more must take place in the near future, for but few people take into account the first cost of the concrete, if by that additional expense they are not only building for the present, but for the future as well.

The present is the first season that Portland has known a reinforced concrete building, we have as yet to see our first concrete bridge, a local concrete wharf is as yet untried, of Portland has but one concrete block warehouse, and we may as well say we have no dwellings built from them. The building of these structures, and many more must take place in the near future, for but few people take into account the first cost of the concrete, if by that additional expense they are not only building for the present, but for the future as well.

MULLOON'S TRAINING FARM

PROFESSOR WILLIAM MULDOON—Mulloon the solid man! Muldoon the champion wrestler of the world! I have taken a few falls out of him in days gone—In a literary way—and what I will now say, I will say.

Mulloon has been pronounced by competent judges a perfect physical specimen of manhood. Not one man in a million can compare with him; and age, intellect and physique considered, he probably is without a rival on earth.

He is exactly 5 feet 10, and weighs, stripped, 180 pounds. He gives you a glimpse of Greece in the time of Pericles.

He has more dignity, more repose, more poise, than any man has expressed since Phidias modeled and Praxiteles carved.

He talks but little; he listens until the other man has talked himself out—he is a waiting game.

Knowing something of the traditions of the squared circle, you expect he will speak in a husky guttural, and say, "I turned him down—see!"

But this man surprises you with a light, musical, exquisitely modulated voice that comes from resonant air chambers, and a throat without a flaw. It is a voice whose whispered words can fill a room; a voice that can ring out a cavalry command that can be heard for half a mile.

If needs be, it is a voice that could talk all day and never grow weak nor hoarse.

Mulloon has no suggestion of a foreign accent, and I will admit that a man by the name of Muldoon who has no brogue in his mind all day long.

Every action of the man implies reserve; every thing he does is well within his limit.

When he sits he does not cross his legs, play the devil's tattoo with his hands, twirl his moustache, stroke his hair, scratch his nose, adjust his necktie, nor examine his finger nails. He completes his toilet in his room.

Such control of nerves, such perfect poise, such absolute grace—such a spirit of Athens may yet to us return.

"I think," said Professor Muldoon to me, "I think my success—such as it is—as a trainer, has hinged on the fact that I have never worked for great muscular strength, simply for balance, or what you call mastery or control. Few men possess their bodies, rather the body bullies the mind all day long."

Please note the remark, and tell me if the colleges haven't something to learn from Muldoon. In fact, why doesn't Harvard hire him?

And the answer is, the services of Muldoon are not for sale, save as you go to him and become a part of his system.

Mulloon is rich, and he works now simply because he is wise and knows that no man can afford to be idle—that

relying on your laurels is death—unless you are working for new laurels. So Muldoon talks the talk he likes, and in the way that pleases him.

When a youth he began to train as a wrestler; he evolved an idea, and this was in the year 1870, when he decided to rule his body, that the body should obey the mind.

After nearly 50 years of work in physical culture, he has only one word which for him means large, and that is the word OBEY.

Mulloon made his body obey, and he became perfect. In the talk he likes, and in the way that pleases him.

When a youth he began to train as a wrestler; he evolved an idea, and this was in the year 1870, when he decided to rule his body, that the body should obey the mind.

After nearly 50 years of work in physical culture, he has only one word which for him means large, and that is the word OBEY.

Mulloon made his body obey, and he became perfect. In the talk he likes, and in the way that pleases him.

When a youth he began to train as a wrestler; he evolved an idea, and this was in the year 1870, when he decided to rule his body, that the body should obey the mind.

After nearly 50 years of work in physical culture, he has only one word which for him means large, and that is the word OBEY.

Mulloon made his body obey, and he became perfect. In the talk he likes, and in the way that pleases him.

Obedience to nature brings you every thing you need mental, spiritual, physical. Obey Muldoon and cease butting in with your stub end of a will and you succeed. The only way you can get the start of Muldoon is to obey him. To obey requires will power.

The average man's body has never learned to obey. It is slothful, lazy, willful, undisciplined, indifferent, disrespectful to his mind.

A man may have a creative intellect, and yet his body be a very wretch of a body that gorges itself with bad food, swills strange drinks, refuses to go to bed at night, and declines to get up in the morning, wading persistently the means of debility and disease.

A great poet may be awag-balled, bear-eyed and have little to a slouching, willful, undisciplined, indifferent, disrespectful to his mind.

The man has never forced his body to acquire good habits through the law of obedience, and after years of bodily back-talk things reach a point where this hoodlum of a physical cosmos is going down and dragging the mind with it.

As long as the man can do business he submits to being bullied by his body. All sorts of vicious habits grow unrebuked. The body demands cigars, cigarettes, stimulants, strange dishes, novel sights, smells, sounds and sensations. The body demands cigars, cigarettes, stimulants, strange dishes, novel sights, smells, sounds and sensations, being dragged hither and yon by this willful, restless beast, which often grows more gross and inefficient and full of twitchings, twinges and pains as the mind evolves, develops and refines. Thought goes on, and the man may do big work, but some day the hand that

reaches for the salt picks up the pepper and the tongue that would say "pepper!" says "salt!"

The nerve-specialist is here called in, scowls, coughs, takes on an ow-like look and explains that it is incipient locomotor ataxia, with aphasia as a side line, all caused through poisoning of the system by uric acid—say, call it Bright's disease and nervy procs.

If the patient knows enough, as he probably does not, he goes to Muldoon and is born again.

But probably he takes to dope and drugs and dies inside of two years. Or he may haunt Hot Springs and the sanitariums, and by baths and massage stand the reaper off for five years.

Tuberculosis is a disease of the will. If a stronger will can be found that will take charge of the other man's body at the critical time, and force right breathing, eating and exercise on the patient, he will get well. Left himself he succumbs to inertia or a lazy habit of body, the air cells of the lungs collapse and the man dies.

Mulloon says that all diseases are the result of lack of will. He simply takes charge of the man's body. His one request is that the man abdicate his own will and obey. So difficult to obedience to the average so-called successful man that one out of three of the patients who go to Muldoon leave him inside of two days, forfeiting their first weekly payment of \$50.

If Muldoon has an opportunity of seeing the doctor, he is disgruntled man before he goes he presents him with a card of a local undertaker at White Plains, wishes him good luck in purple

The Fat Rich Feel Helpless; Chauncey Depew Is Rebuked; Elbert Hubbard Also Yields to the Inevitable; Quiet, Stern Dignity of "The Professor"

payment being a part of the dope, a necessaryologic item in the work of regeneration.

You are given a heavy woolen sweater, a pair of felt slippers. Then you are shown to your room and told to put on this suit and go below where the professor will see you.

Your room is furnished with a little table, one chair, and a spring bed. All toilet requisites are noticeable by their absence. The room looks like a cell, save that there are two open doors, one leading to the hall that runs the length of the building. These rooms are numbered in particular, rather as if they were waiting for you. And then adds confidentially, "It's all right if you mind him, but you ought to have changed his senatorial dignity is no longer in the hands of the occupant."

You sit down on the bed and think of nothing in particular, rather enjoying the view out of the open door, listening to the drowsy hum of bees and the summer wind in the locusts.

You go downstairs and enter the gymnasium. The professor is there in gym dress, putting a class of a dozen through a course of exercises. When he sees you, then occurs exactly what occurred when Chauncey M. Depew entered the same room under like conditions six weeks before.

The senator was yellow; there were dark baggy lines under his eyes, but the gymnasium dress into which he had changed his senatorial person offered an excuse for art. He approached the professor and proffered a small piteous smile, and said, "Sit, sit down."

"Sit, sit down," in a low, clear, distinct tone.

Depew's punning proclivities vanished. He had really expected that the professor would slap his thigh and roar as people in civilization were wont when the Nectarine spoke, or at least smile and ask after things down in Washington. "Sit, sit down," and went right to work with his callisthenics.

"Right foot—left foot—right arm—left—up, back, down, over, out—neck to the left!"

The senator moved over to the window, looked out, strolled down to the end of the gym. The class was working down that way, too.

"Sit, sit down!" suddenly calls the voice of the professor; the voice is not for him, no one had ever spoken to him like that. He still strolls.

Now comes the third order with the

professor walking toward him. "Mr. Depew, sit down!" pointing to a seat along the wall.

The senator is startled, then he half laughs as it comes to him that it is a joke, and he replies, "Oh, I prefer to thank you."

The fourth time the order rings out and Depew realizes that it is no joke. He jumps, shivers and stammers; "Well, you don't know me, you know I am a gentleman, and am used to associating with gentlemen. You evidently do not know me—I am Senator Depew."

"I know," says Muldoon, with exasperating coolness, "I know you, but evidently you do not know me, I am a gentleman, and am used to associating with gentlemen. You evidently do not know me—I am Senator Depew."

"I know," says Muldoon, with exasperating coolness, "I know you, but evidently you do not know me, I am a gentleman, and am used to associating with gentlemen. You evidently do not know me—I am Senator Depew."

"I know," says Muldoon, with exasperating coolness, "I know you, but evidently you do not know me, I am a gentleman, and am used to associating with gentlemen. You evidently do not know me—I am Senator Depew."

Men in gym suits are all on an equality in the country, you know, but evidently you do not know me, I am a gentleman, and am used to associating with gentlemen. You evidently do not know me—I am Senator Depew."

"I know," says Muldoon, with exasperating coolness, "I know you, but evidently you do not know me, I am a gentleman, and am used to associating with gentlemen. You evidently do not know me—I am Senator Depew."

"I know," says Muldoon, with exasperating coolness, "I know you, but evidently you do not know me, I am a gentleman, and am used to associating with gentlemen. You evidently do not know me—I am Senator Depew."

"I know," says Muldoon, with exasperating coolness, "I know you, but evidently you do not know me, I am a gentleman, and am used to associating with gentlemen. You evidently do not know me—I am Senator Depew."

Chorus Girl Saves Operatic Situation

There was a novel operatic performance at the Theatre Royal, Sydney, recently, according to the Sydney Daily Telegraph just at hand.

The theatre was crowded to hear "The Valkyrie," and in due course the performance commenced, and the first act drew enthusiastic applause. Then Mr. Musgrove, the manager, came on the stage, and announced that Fraulein Helms, who was to have sung the important part of Brunnhilde, was too ill to appear. Brunnhilde does not make an entrance until the second act, and he had hoped to the last moment that she would be able to sing. And much noise Mr. Musgrove suggested that the evening should begin again, and that "The Flying Dutchman" should be performed in place of "The Valkyrie."

This was done, and the new opera began. Nothing unusual happened until the second act Senta appeared. It was a new Senta, an unknown artist, who carried the score. She sang remarkably well, and as the evening went on, an enthusiasm for her grew and grew,

How Wall Street is Made to Disgorge

From the New York Evening Post.

The phenomena in the financial world, now under study, are too extensive, too subtle in their interplay, for any man to be sure of all their bearings. But certain things in the nature of results may be pointed out, even if we must remain more or less in the dark, for a time, in respect to their true causation. The prolonged liquidation which we have been witnessing has all the air of an inevitable movement, something too large and involved to be attributed to a single cause or to any one man, and also seems, all things considered, a wholesome movement. The common remark, "Money is being forced out of business men," expresses, in a homely way, one consoling and even encouraging aspect of the situation. The process of providing funds for the great business of the country may have proved very hard upon top-heavy speculation, but it is difficult to see how the thing could have been done in any other way,

Roaming.

It's now we are a-roaming
Where the sun serenely shines
An' the bee's are makin' merry
In the honeysuckle vines;
Where the south wind goes a-singin'
An' a-singin' through the pines,
An' we're happy in the glory o' the mornin'!

—Atlanta Constitution.

How Wall Street is Made to Disgorge

From the New York Evening Post.

The phenomena in the financial world, now under study, are too extensive, too subtle in their interplay, for any man to be sure of all their bearings. But certain things in the nature of results may be pointed out, even if we must remain more or less in the dark, for a time, in respect to their true causation. The prolonged liquidation which we have been witnessing has all the air of an inevitable movement, something too large and involved to be attributed to a single cause or to any one man, and also seems, all things considered, a wholesome movement. The common remark, "Money is being forced out of business men," expresses, in a homely way, one consoling and even encouraging aspect of the situation. The process of providing funds for the great business of the country may have proved very hard upon top-heavy speculation, but it is difficult to see how the thing could have been done in any other way,