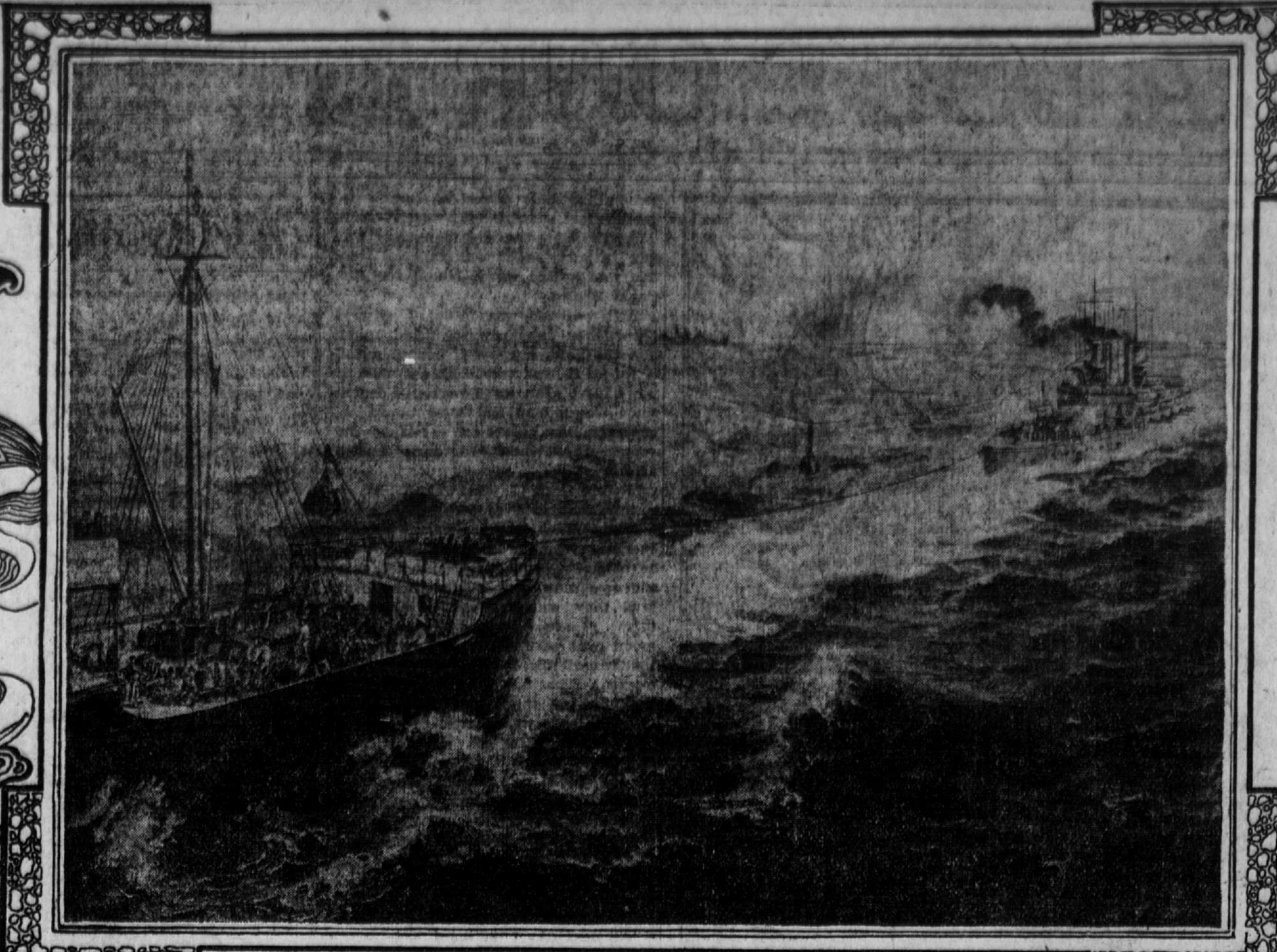
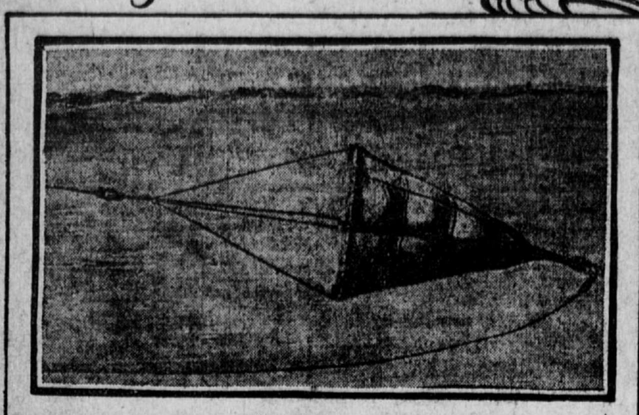
COALING BATTLE-SHIPS AT SEA

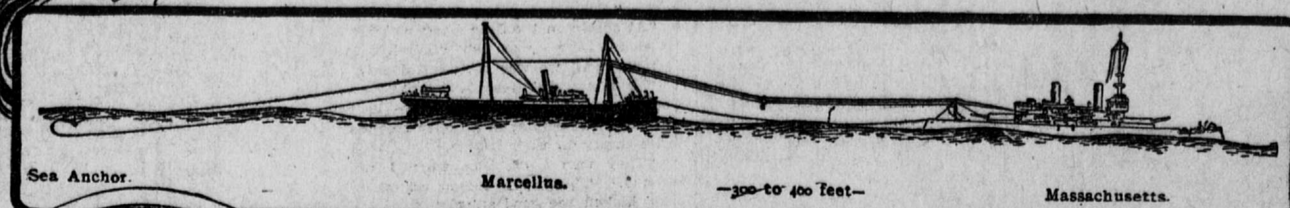
Progress in the difficult naval problem of feeding the bunkers of a moving fleet.



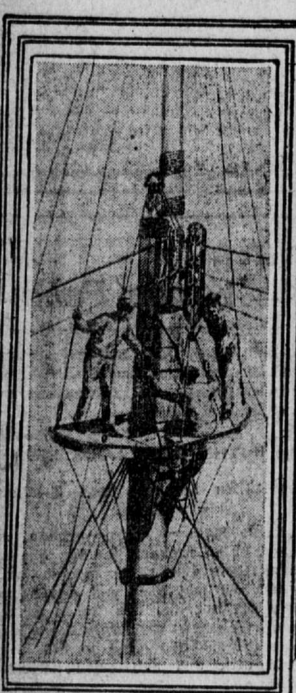
Second Marine Cableway, Coaling H.M.S Trafalgar at Sea from the Collier Muriel.



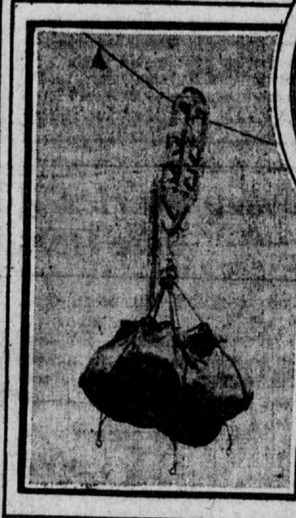
The Compensating Sea-Cone.



U.S.S. Collier Marcellus Delivering Coal at Sea to the U.S.S. Massachusetts.

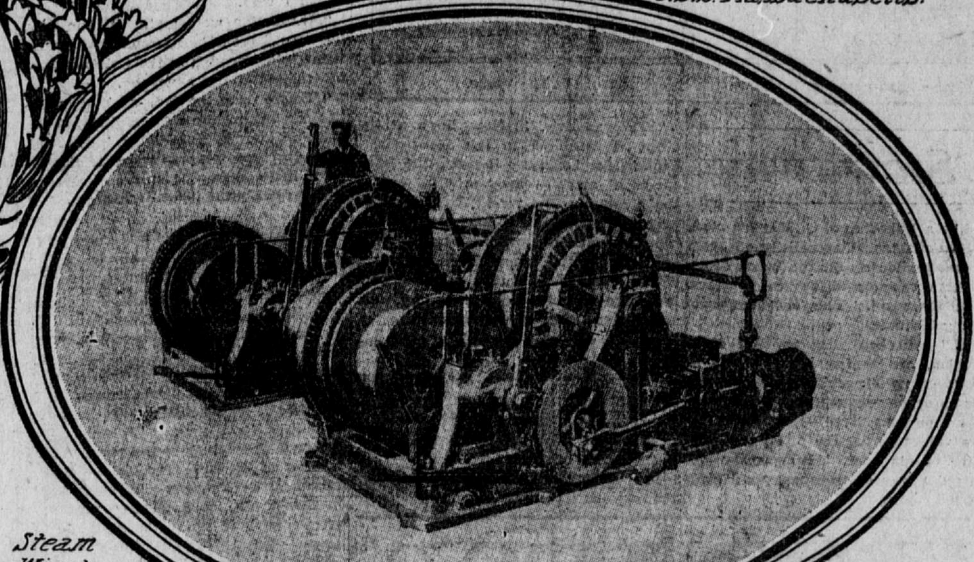


Delivering men by Cableway from Warship to Foremast of Collier.



Conveying 1000 Pound Bags of Coal from Collier to Warship.

Mr. Spencer Miller Inventor of the Marine Cableway for Coaling Ships at Sea.



Steam Winches for the Imperial Russian Coal Transport Kamchatka

Receiving the Coal on Warship

By A. Frederick Collins.

IF the Russian and Japanese fleets ever cross projectiles again it will be due to the ingenuity of a New Yorker.

With the sailing of the Baltic fleet for the avowed purpose of engaging in deadly combat the one so successfully commanded by Admiral Togo there has been none of the pathetic laxity displayed that characterized the Russian preparations at the beginning of the great conflict, for each of the remaining war ships has been equipped with every device known to modern naval science, from wireless telegraphy to cableways for coaling ships at sea.

In the art of warfare on the high seas, in its present highly developed state, there are a thousand and one vital factors that go with the imposing battleships, the gigantic guns and the armor piercing projectiles, but of all these none is more important than the matter of coaling the ships, and the truth of this statement is readily shown, since it has been proven in every naval engagement since the time fighting craft were first fitted out with apparatus for steam propulsion, and the dire need of obtaining a supply of coal during a crisis was rendered painfully obvious during the Spanish-American war, when Admiral (then Commodore) Schley sent to Sampson the following telegram:

"Coaling off Cienfuegos is very uncertain. Having ascertained that the Spanish fleet is not here I will move eastward tomorrow, communicating with you at Nicholas mole. On account of short coal supply in ships cannot blockade them if in Santiago. I shall proceed tomorrow, 25th, for Santiago, being embarrassed by Texas' short coal supply and our inability to coal in the open sea. I shall not be able to remain off that port on account of general short coal supply of squadron, so will proceed to vicinity of Nicholas mole, where the water is smooth and I can coal the Texas and other ships with what coal may remain in collier."

Fear of Empty Bunkers

Here Admiral Schley's fleet was in American waters, on the very threshold of the home coaling station; but there was little use in trying to bottle up the enemy if there was no coal in the bunkers of his ships. But suppose the flying squadron had been ordered to the coast of Spain and had arrived there with empty coal bunkers! What then? The glory in the case might not have been all ours, for at that time, though only a few years ago, there was no system by which they could have coaled at sea, for it must be understood, of course, that ships cannot be brought together broadside to even in a moderate sea.

Next to efficient ships, good guns and trained men are bunkers full of coal or means to this end, and this was again strikingly brought out in Admiral Cervera's case, who was severely criticised for steering past Martinique when he might have steered straight for Santiago, and, the late Vice Admiral Colomb said, "he might have sent a destroyer in for intelligence and might have gone on to strike his blows. Why did he let his whereabouts be known when he might have run past at night and nobody the wiser? Why did he show himself at Curacao, and why did he pass into Santiago without attempting anything? The only plain reason we can adduce for what took place is the question of the coal supply."

This might be exactly the fate of the Baltic fleet when it finally reaches the scene of hostilities in the Orient, but the sinking of the Spanish armada, valued at millions of dollars, together with the recent losses of their own Pacific squadron in the Yellow sea, has taught some wholesome lessons to the Russian government, and one of them is that failure to coal at sea will mean absolute defeat and speedy annihilation.

Discovered by a Landsman

Having a fleet arrive in the fighting zone with bunkers full of coal and enabled to obtain more at any time is equally as necessary as a full supply of ammunition, and so closely related are these two dissimilar quantities that, taken together, their values are multiplied many fold. It is not strange then that the problem of constructing some kind of device to permit a collier to pass coal to a ship at sea should have commanded the respectiful attention of the naval authorities of the world, but what is passing strange is the fact that it remained for a landsman to show them the way it could be successfully accomplished.

But this is precisely the manner in which it was developed, and Spencer Miller of New York, who has had nearly twenty years' experience in adapting the cable to a multiplicity of purposes, devised the marine cableway, and on second thought it is evidently more logical for an expert in the building of land transmission lines to construct one that would be operative at sea than for a naval man, who knows nothing of cables and all about battleships, to have worked out the issue.

Many have been the schemes evolved for a safe and practical method for coaling at sea, but the history of these interesting attempts seems to date back only to 1883, when Lieutenant R. S. Lowry, R. N., proposed that a number of coal boxes should be built, each having a capacity of one ton. These boxes were to have air tight compartments, so that they could not sink, and were to be passed from a collier to the ships by means of a line, when they were to be hoisted to the deck, emptied and returned. This device was never tried, probably for the reason that it was deemed impracticable, its operation being too slow and complex to meet the requirements of fleets when in active service, and it would hardly be needed at any other time.

The traveling cableway has served well the industrial interests for these many years for a great variety of purposes, such as transferring earth in excavating canals from port to port, in lock and dam building, in logging operations and in conveying raw and finished materials between warehouse and factory, but in every instance the towers supporting the wire rope are stationary.

Early Devices

A marine cableway, however, presents obvious difficulties, for instead of fixed points by which the rope may be kept taut there are the constantly moving boats, the masts of which accentuate the rise and fall and various rolling motions. Lieutenant Bell of the British navy was the first to propose the transmission rope method, which he did in 1888, when he suggested that the stern mast of the warship and foremast of the collier be connected by a suspended cable just as though they were immovably fixed on land. The lieutenant had not brought into his calculations the rising and pitching of the vessels, which would have quickly parted the cable or snapped the masts.

Several other cable methods followed, but it was not until 1893 that an actual experiment was attempted to pass coal between two vessels while at sea; this was done with the apparatus designed by Philip B. Low, who improved upon Bell's idea, one end of the cable being attached to the deck of the warship Kearsarge and the other passing over a tackle block on the San Francisco, where it was fastened to a massive iron weight.

By this arrangement the motion of the vessel was counteracted to a considerable extent. When it was desired to transfer a bag of coal it was hoisted to the masthead, where it was attached to the cable, when it readily traversed the length of the latter by gravity, the rope being somewhat inclined. While this and subsequent trials with improved appliances showed that a small amount of coal could be passed in a smooth sea, yet if there was any considerable motion the device could not be operated.

But at least a beginning had been made, and in March, 1898, just prior to our war with Spain, J. J. Woodward, a naval constructor of the United States navy, with a prophetic insight, submitted a plan to Secretary Long, which he recommended, and that had been drawn up for him by Spencer Miller, engineer of the Lidgerwood Manufacturing company of New York, for an installation to be placed on boaord a collier and by which the vessel could coal any of the warships of our navy in the open sea.

Negotiations between the various parties interested were long continued, and not until after Admiral Schley had sent his famous telegram was the work of construction really commenced; but by this time the history of the Spanish-American war had been made and written; the lessons it had taught were vividly impressed upon not only our own naval authorities, but those abroad as well, for experiments were immediately begun in France, England and Japan. When the Spanish fleet did emerge from the bay of Santiago there were only eleven of our ships on blockade duty, while three other vessels, representing an outlay of nearly $10,000,000, were at Guantanamo, forty-five miles away, coaling ship.

Equipments Kept Up

The enthusiasm over the proposed cable way, however, did not abate, and once begun the experiments were rapidly pushed forward. It would seem that Naval Constructor Woodward realized to the fullest that which had been overlooked by his fellow officers, to wit, that the problem was one for the specialized engineer, and for this reason Mr. Miller, with his long and thorough knowledge of cableways, was instructed to design and deliver a working apparatus.

With an ability that comes not so much through the inspiration of genius, but is rather due to a highly developed technical training, this engineer evolved a system which he had every reason to believe would do the work satisfactorily, and from these plans he built a quarter size model for the purpose of actual tests, and these were subsequently made in the New York harbor, when for the first time in the history of navigation coal was successfully conveyed from ship to ship in a heavy sea, a tug towing a sloop being pressed into service for the purpose.

In the early trials shear poles were set up on the tug and tackle blocks attached to the deck of the sloop. To these an endless rope was connected, the distance between the boats being about one hundred feet. Now at this point is where the invention comes in that makes coaling at sea even in rough weather a success. It is the ingenious part of the whole scheme, for the transmission line, as the rope is called by which the bags of coal are conveyed, was held taut by a line above, clearly shown in the illustrations, and which was passed over a pulley on the collier and thence to the sea, where its end was made fast to an especially designed towing cone, this device steadying the sloop or collier to a wonderful degree.

The full sized apparatus was completed a little later, and the government designated the collier Marcellus as the vessel to be equipped for the practical demonstration, but before this was done the equipment was set up on land, where it was inspected by many higher officials of the navy, among them being the late Admiral Sampson, Commander Rogers and Naval Cinstructor Bowles.

Contract Awarded

The contract awarded y the government to the Lidgerwood company, which controls the Spencer Miller United States patents for the marine cableway, specified that it should be capable of conveying at least fifteen tons of coal per hour from the collier to a war ship in a moderate sea and weather, while the two ships were to be not less than three hundred feet apart, this being considered a safe distance. When the apparatus was installed on the Marcellus and all was in readiness the trial was made by the United States navy department. The battle ship Massachusetts then took in tow the Marcellus and headed for the open sea. The diagram shows the general arrangement of the marine cableway, the distance between the ships and the seacone for compensating the constantly rising and pitching of the vessel.

The following will make clear the details of the apparatus and its operations during the transfer of the coal. A pair of shear poles were erected on the deck of the Massachusetts to support a pulley wheel and a canvas chute to receive the bags of coal. The Marcellus had a specially constructed engine having two winding drums which was placed aft the foremast. From one of these drums a steel cable three-fourths of an inch in diameter led to a sheave or grooved pulley made fast to the top of the foremast, whence it extended across the water to a similar pulley attached to the war ship, and thence back again to the other drum of the engine.

An Ingenious Carriage

This engine gives a reciprocating or to and fro motion to the transmission rope, and the one to which the carriage is secured is kept at a tension or strained so that the load easily clears the intervening water as it passes to and from the war ship; the carriage, as a reference to the photographs will show, is so designed that the wheels roll on the lower part of the conveying cable, at the same time gripping the upper part of the cable to sufficiently carry it along, but should the carriage strike either terminus it slips on the rope. The carriage will easily carry a 1000-pound bag of coal, the latter being held by a pivoted hook at the lower part of the carriage, and which is fastened there during its transit by a latch; this is released when the carriage comes in contact with the pulley block on the war ship and the bag of coal is dumped automatically into the chute.

Immediately this is done the motion of the cable is reversed and the carriage is started on its way to the collier, and by the time it reaches it other bags of coal have been hoisted from the hold of the ship to the foremast, where they are hooked on and the direction of the conveying rope again reversed, when the load is started on its way to the war ship.

One of the peculiarities of the engine used for the cableway is that it always runs in the same direction regardless of the direction of the conveyer rope. One of the drums upon which the rope is wound is provided with a friction clutch and by this means the rope may be drawn very tight, as from 1000 to 4000 pounds strain may be applied to it.

The second drum is also constructed so that any strain over three thousand pounds will cause it to slip, but by proper adjustment, which may be made while the system is doing its work, the loads may be made to sag as much or as little as desired.

When in operation the engine causes both drums to draw in both ropes, one exerting a pull of three thousand pounds and the other of four thousand pounds. The effect of this action is that the one overcomes the resistance of the other and it is this difference in pull that sustains the load in transit; likewise it is the mutual effect of these drums on each other that equalizes the ever varying distance between the two masts. While this process is going on the war ship is constantly dragging the collier and the sea cone after it, thus keeping the ships separated the proper distance.

The question of the ability to coal at any place and at any time increases in importance as the advent of a naval battle becomes more certain, but coaling stations around the world, though as numerous as those of England, do not by any means solve the problem, for a fleet, whether on blockade duty or on the fighting line, to be effective must continuously remain at its post. Hence the statement of Rear Admiral Pluddeman, I. G. N., who said: "It will be absolutely necessary in the future to take coal from a collier at sea."

WOMEN AS GAMBLERS

There is much consternation among religious circles over reports that women in high life are becoming gamblers in playing bridge whist. Whether these reports are exaggerated or not there is certainly much truth in the statement that the gaming instinct is being fostered by this modern game. Two hundred years ago women of fashion lost thousands nightly at the card table and no comment was made. Pepys, that delightful gossip of Stuart days, wrote in his diary in 1667:—"I was told tonight that my Lady Castlemaine is so great a gamester as to have won 15,000 pounds in one night and lost 25,000 pounds another night at play." Accustomed as he was to strange doings in that dissolute age, Pepys was amazed at the gambling mania which possessed the royal ladies. He writes:—"This evening going to the queen's side to see the ladies, I did find the queen, the duchess of York and one other lady at cards, with the room full of ladies and great men, the which I was amazed to see on a Sunday." Many of those grand dames thought nothing of sitting at the card tables from Saturday night till Monday morning and winning and losing thousands of pounds.

Charles II, on the last Sunday which he passed on earth, spent the time playing cards with his three favorite duchesses. Marie Antoinette was a slave to cards and was known to play for thirty-six hours at a sitting. "The play at the queen's table," wrote the Emperor Joseph II., "was like that in a common gambling house. People of all kinds were there and mingled without decorum. Great scandal was caused by the fact that several of the ladies cheated." Anne Boleyn was never so happy as when she was playing for high stakes, and the records of the privy purse are full of her winnings from her royal spouse. Even the staid and pious Mary was not proof against the allurements of the card table, and then "to counterbalance these vanities she paid for the education of a poor child and the expense of binding an apprentice."

Very discouraging accounts are reaching Berlin of the difficulties encountered by the troops operating against the Hereros. There is no forage for the horses, food for the men is very scarce and the ravages of typhoid ever continue.