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Apparatus for Receiving and Delivering Mail Bags with the Train in Motion.

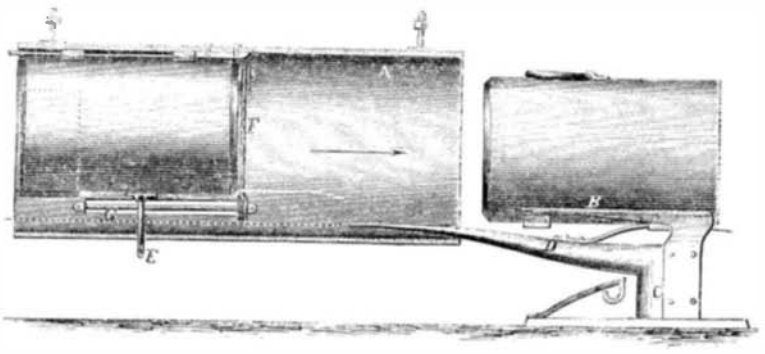
In many parts of the country the post offices are some distance from the railroad, and the stoppage of trains merely to deliver the mails is a costly piece of business. Not only are three or four hundred persons detained on their journey, but the pecuniary loss involved arising from the waste of power in checking the momentum and then overcoming the inertia of a heavy train on starting, soon reaches a considerable figure.

In order to avoid this continual expense it has been suggested that the mail bags might be caught, or snatched in a twinkling, as the train thundered on without pausing in its passage. In some parts of England, we are given to understand, this scheme has been carried out in the following manner—our informant did not observe the arrangement very closely and does not vouch for its accuracy:

By the side of the track a substantial post is erected with a projecting arm; from this the mail bag is suspended at the proper hight. On the train is another arm which can be lowered down. At all other times it is safely housed. When the mail is to be caught, this arm on the train has a stout net on it which is so adjusted with reference to the bag that when the two come in contact the bag will be caught and detached from its position; remaining in the net both by its own weight and the pressure exerted on it by the air.

A plan similar to this is here given, but it is much more certain in its operation. The details are shown in the small figure, while the position of it when in operation is shown in the perspective.

A cylinder, open at both ends, is connected horizontally to the side of the mail or post-office carriage of the train. The mail to be delivered from the train is placed in a cylindrical case, A, or mail bag; this mail bag is placed in the rear end of the cylinder, and is supported therein by loops on its exterior, being slid on to a rod fixed to the top of the cylinder, A. The forward end only of the rod is fixed to the cylinder, so that the loops by which the mail bag is suspended may slip freely off its rear end, and permit the mail bag to pass out the rear of the cylinder.



The mail bag to be picked up by the train is placed in a similar bag or case to that which contains the mail to be delivered, and the bag rests, or is supported on parallel rods, B, carried by the arm, C, which stands at the side of the line of rails. The arm is placed in such a position that the mail bag supported by it will be raised into the cylinder carried by the mail carriage as the train passes. The cylinder for this purpose is made of sufficient internal diameter to allow of the mail bag or case entering the cylinder in spite of any rocking motion there may be in the carriage. A slot is also formed through the bottom of the cylinder from one end to the other, so that the bottom of the cylinder may not come in contact with the arm which supports the mail bag to be picked up. When the latter enters the cylinder, the mail bag to be delivered (which has previously been placed in the cylinder) strikes against the mail bag to be picked up, and imparts its momentum to it, so that the bag to be delivered passes out of the rear end of the cylinder, while the other remains in the cylinder and is carried on within it. The mail bag which passes out of the cylinder is received on a rod, D, which passes through a ring, E (see Fig 2), on the under side of the bag. This rod is supported by the arm which carries the bag to be picked up.

To insure that the mail bag to be picked up by the cylinder shall not pass out at the rear end, a net work or partition of tarred ropes, F, is placed across the center of the cylinder. This net work is connected to the cylinder by rings or eyes which run on rods, G, within it, so that the net work may be capable of sliding backward a distance toward the rear end of the cylinder.

Each of the mail bags is furnished with a buffer or pad at its end so as to lessen the blow of the two bags when striking against each other, and in order,

that the contents of them may be preserved from the violent action which would otherwise occur.

These are the main points, and the operation of them is readily understood.

It was patented through the Scientific American Patent Agency, by Andre Chavanne of Paris, France, on July 25, 1865. For further information address Seyton & Wainwright. 30 Wall street, New York.

WHAT I SAW OF THE PEARL FISHERY.

The *Leisure Hour* publishes a long communication with the above title, giving the writer's experience in the island of Ceylon, but the following extract is all that relates strictly to the subject of pearl fishing:

We found Condatchy Bay the scene of much animation; for more than one hundred and fifty boats, principally from the Coromandel and Malabar coasts, had reached the bay, and their crews were making preparations for engaging in pearl fishing, which was not to commence until the 16th of the month, three days after our arrival.

An oyster bank is divided into five parts, only one of which is fished in a year, and each in turns. This prevents the bank from being completely stripped, and gives the young oysters a chance of reaching maturity. The right of fishing on certain portions of the bank is sold at auction to the highest bidder, and purchased by speculative merchants, who generally lose money in the business. This, however, does not prevent them from engaging in it, since there is a chance of a large fortune being made at it in one season.

Each fishing boat is manned by twenty men, beside a *tindal*, or man acting as pilot, who has authority over all the others. Ten of the twenty men are divers; the others attend on them, pull the boat, and perform all other duties.

The oyster banks off Condatchy are about twenty miles from the shore; and early on the evening of the 15th more than a hundred boats were manned by men anxiously waiting for the signal for them to start for their respective fishing grounds.

At ten o'clock in the evening a gun was fired at Arippo. It was a signal that the boats might start; and setting a sail to catch the land breeze, then fairly on i s way for the sea, we started. I had consented to form one of the ten of a boat's crew, whose duty consisted in managing the boat and looking after the divers; and, on our first excursion out, Senhor Manos, who had commanded the brig, was our *tindal*, or pilot.

We reached our station a little before sunrise, and preparations were immediately commenced for business. The divers divested themselves of all clothing except a small piece of calico about the loins; and to a belt around the waist each fastened a small net to hold the oysters. Each had a piece of iron weighing about ten pounds, to which was tied a small line with a loop in which a foot could be inserted. These weights were to enable them to descend with greater rapidity to the bottom; for, as they could only remain under water from one minute and a half to two minutes, it was necessary that no time should be lost on the way down.

One end of the small line attached to the weight was retained in the boat, to enable us to recover the weight after the diver had reached the bottom and withdrawn his foot from the loop. Although there were ten divers in each boat, only five went over at a time. This enabled each to have a rest, and still kept the work constantly going on.

Each man before going over had placed around his body, under the arms, a line by which he could be pulled to the surface, the end of the line being held by one of the crew in the boat; and as an additional precaution against danger, a line was hanging from the stem of the boat, and sunk with a weight to the bottom.

With a knife in one hand, and firmly grasping the nose with the other, five of our divers went over the side, and rapidly disappeared below, while those in the boats saw that the lines attached to their bodies ran out clear, and stood ready to pull them up, should the signal be given for us to do so.

This was the first work of the kind I had ever seen performed, and the minute and a half or more in which we waited for the shaking of the lines, which was the signal for us to haul up, seemed to me a period of nearly ten minutes.

All came up within a few seconds of each other, and each had not less than one hundred oysters in the net. The diver attached to the line I was holding was the first to make an appearance, and required much more force in pulling him up than what I thought was necessary; but as he reached the surface, the reason of this was immediately seen. He was bearing in his hands a mass of oysters adhering together, which he had succeeded in detaching from a rock with his knife. The mass could not have weighed less than forty pounds.

The other five divers immediately went down; and in this way the work was carried on until noon, the divers having gone down about forty times each since the time they commenced in the morning. The sea breeze had then commenced blowing, and we started for the shore.

Thus far we had been fortunate; and yet there was a possibility that in the many bushels of oysters we had secured there might not be a pearl of the value of one shilling. But with this possibility there was another: the cargo we had procured might be worth five or ten thousand pounds.

On reaching the shore the oysters were taken from the boat, put into a pit, and then covered over with matting and some earth, there to die and decompose. The shells would then be open, when they would be picked over, and the pearls, if they contained any, would be extracted.

More than two thousand men had been at work on the banks that day, and many tuns of oysters had been taken from their homes to die.

"What," thought I, "can be the real cause of this labor, this waste of time for a substance that is of no practical use to mankind?"

To many of those I had seen employed that day an answer to this question would have been very simple. They would have told me that they were working for money; but I looked beyond this for the real cause of their toil.

The conclusion at which I arrived may be wrong, perhaps worse—ungallant; for all this wicked waste of time I ascribed to the fact that ladies have vanity. From the result of this infirmity thousands of others have to suffer. It seems that the law of nature, that from the misfortunes of a few many must suffer, applies to pearl oysters as well as human beings; for since being in the fishery I have learned that only oysters in ill health produce pearls; yet the misfortunes of the afflicted bring all from their beds in the sea to the earth pits to die.

Bolides.

A bolide is a planet in miniature: a small mass of matter, revolving round the sun in a longer or shorter elliptical orbit, obeying the same laws and governed by the same forces as the greater planets. Now, suppose the orbit described by a bolide to cross the orbit of the earth, exactly as one road crosses another; and, moreover, that the two travelers reach the point of junction or crossing at the very same time. A collision is the inevitable consequence. The bolide, which, in respect to size, is no more than a pebble thrown against a railway train, will strike the earth without her inhabitants experiencing, generally, the slightest shock. If individuals happen to be hit, the case will be different. If the earth arrive there a little before or after the bolide, but at a relatively trifling distance, she will attract it, cause it to quit its own orbit, dragging it after her, an obedient slave, to revolve around her until it falls to her surface. Or it may happen that the bolide may pass too far away for the earth to drag it into her clutches, and yet near enough to make it swerve from its course. It may even enter our atmosphere, and yet make its escape. But, in the case of its entering the atmosphere, its friction against the air will cause it to become luminous and hot, perhaps determining an explosion. Such are the meteors whose appearance an enormous hights our newspapers record from time to time.

Be it remarked that bolides are true planets, and not projectiles shot out from mountains in the moon, as has been conjectured. A projectile coming from the moon would reach the earth with a velocity of about seven miles per second. But the most sluggish bolide travels at the rate of nearly nineteen miles per second, fast goers doing their six-and-thirty miles in the same short space of time. None of the inferior planets travel so rapidly as that. Mercury, the swiftest of them all, gets over only thirty miles per second. Mr. Tyndall states that this enormous speed is certainly competent to produce the effects ascribed to it.

When a bolide, then, glances sufficiently close to our earth to pass through our atmosphere, the resulting friction makes its surface red hot, and so renders it visible to us. The sudden rise of temperature modifies its structure. The unequal expansion causes it to explode with a report which is audible. If the entire mass does not burst, it at least throws off splinters and fragments. The effect is the same as that produced by pouring boiling water upon glass. The fragments, falling to the ground, are aerolites. It is needless here to cite instances of their falling. They are of universal notoriety. Aerolites have no new substance to offer us. If the earth, therefore, be made up of atoms, we may conclude that the universe is made up of atoms.—*All the Year Round.*

Weakness of Large Flues.

An engineer of one of the English boiler insurance companies relates the following incident:—

"As an instance of the value of the hydraulic test, the following is worthy of record. A large, one-flued boiler was proposed for insurance with this company, which was in course of being generally overhauled and repaired and also enlarged by the addition of several feet to its length The old flue tube was 3 feet diameter throughout, $\frac{3}{8}$ plates, the new part of tube was gradually enlarged to about 3 feet 4 inches, the total length being about 38 feet. The proposed load on safety valve was 60 lbs. per square inch. It was suggested to the owners to strengthen the tube by angle iron hoops or cross tubes, and their attention was directed to the fact that the calculated load (per Mr. Fairbairn's formula), under which such a flue might be expected to collapse, was little over 80 lbs. per square inch. It was also recommended to apply the hydraulic test after the alterations, etc., were completed. Unfortunately the tube was not strengthened as advised, and on the test being applied, the flue collapsed almost the entire length, when the pressure had reached about 83 lbs. per square inch, thus illustrating most forcibly the correctness of the formula referred to, and the value of the hydraulic test; as, had the boiler been set to work, the flue would in all probability have failed with fearful result."

Trichina in American Pork.

The committee of scientific gentlemen appointed by the Chicago Academy of Science, have just made a very complete report on the origin, growth and disposition of trichina. Their researches show that as many as 10,000 of these insects are sometimes contained in one cubic inch of pork, and that an average of one in every 50 of the hogs in the Chicago market is more or less affected, and the comparative immunity from the disease which our own people have enjoyed, undoubtedly results from the habit of cooking meat before eating it, while in Germany it is eaten raw by the poorer classes on account of the high price of fuel. For its distruction the committee say:—"It is simply necessary to cook it thoroughly so that every portion of the meat shall have experienced a temperature of at least 160 degrees Fahrenheit. We cannot insist too strongly on this point."

PROF. NEWMAN says, contrary to the generally received opinion, birds prefer to fly against the wind. The quails of Europe almost invariably start on their passage of the Mediterranean with a head wind, and if it chops round and blows fresh from the southwest, they are drowned by thousands, and their dead bodies are washed ashore for weeks afterwards. When the wind is abaft, it gets under the bird's feathers in the most aggravating manner, and upsets his equilibrium and equanimity at the same time.

A CORK SHIP.—The Mobile papers report the arrival of a great curiosity at that city, a vessel made entirely of cork, which is lying at one of the wharves. That she will never sink may be true enough, but the other claim of the Mobilians, that "she will last forever," requires some proof.