

For the Scientific American.

THE MANATEE: THE HUMAN FISH.

[BY L. CANTINI.]

To believers in the Darwin theory it will be of interest to know that in the quiet bays and rivers on the eastern coast of Central and South America there lives an animal, which might be rightfully considered as the connecting link between men and fish. It is the manatee, the water siren, the sea-calf, or sea-cow, as this strange animal is sometimes called. It belongs to the order of the Cetacea, and is altogether herbivorous; living on grass which grows under water, or on herbs which it seeks on shore.

The body is pisciform, and measures some fourteen or more feet in length; the skin being very thick, without hair, and of a dark color. The upper part of the body, especially of the females, much resembles that of a woman, the breasts being of the same form. In place of the fins of the ordinary fish, the manatee has a short arm of only one joint, which terminates in a sort of hand, on which the nails are distinctly visible, and which the animal uses with much dexterity, in moving about when on land, and in carrying its young. This limb has caused this animal to be called manatee, from the Latin word "*manus*" the hand.

The writer, who for several years resided in those countries where these animals abound, has seen the animal, and has been told repeatedly by the natives, that the female holds her cub to suckle as the mother does her babe.

The tail of the manatee is shaped like an open fan, and the close observer will perceive ten divisions, which mark the ten toes.

Manatees swim by the help of this broad tail, which moves up and down, and not from right to left like that of the fish. This limb, which at first sight appears to be a mere fin or nerve, melts almost entirely into butter when fried in a pan, and is highly prized by the natives for ointments and for other medicinal purposes.

The animal weighs from a thousand to fifteen hundred pounds, and the meat is considered a great relish. It looks and tastes much like pork, and needs a good deal of cooking. It is a strange fact that the flesh keeps longer from decay than any other, and it is therefore salted and preserved like pork.

They are caught with harpoons by the Indians, who know their haunts and customs, and it seems as if they were becoming more scarce every year.

Much has been fabled about these water sirens, that needs corroboration from scientific men, who seem to have taken but little interest in these strange animals. Some have assured me that their voice resembles the bellowing of an ox, others that it was perfect music. I am induced to believe the latter, as they are well known under the name of "sirenia," or "sirens," which appellative they could only derive from their charming voice. Whether this be so or not, remains yet to be confirmed, like the harmonious song of the dying swan.

HOW TRAINS ARE MOVED BY TELEGRAPHIC SIGNALS.

From the Evening Post.

The importance of the telegraph in connection with railways, was recognized many years ago; but the first practical application of telegraphic signals in moving trains was made on the Erie line in 1850. Previous to that time, locomotive engineers and conductors were distrustful, and there are several instances on record of their positive refusal to obey telegraphic orders, especially when their trains were directed to proceed beyond stations, to meet and pass trains going in opposite directions, except in cases where such orders were plainly expressed in printed orders upon their regular timetables. In 1850, however, when the Erie road had but a single track between Piermont and Elmira, it was plainly demonstrated to the superintendent (the late Charles Minot) that the telegraph would be a great assistance to the road, and it became plainly evident that the telegraphic service must eventually be adopted upon all main trunk lines.

When the first telegraphic message was sent over the Erie wires a train filled with western bound passengers was lying at Turner's Station, awaiting the arrival of an eastern-bound train, which, by the time-table, should meet and pass at that point; but owing to an accident two hundred miles west, it could not possibly arrive until five or six hours later. Mr. Minot was a passenger upon the train lying at Turner's. He immediately decided to test the accuracy of the telegraph, and make a beginning of the plan of ordering trains to proceed to points further in advance, and not further delay the stationary train when the track was known to be clear as far as Port Jervis, a distance of one hundred and fifty miles further west. Orders were accordingly sent over the wire to the station agent at Port Jervis to hold all easterly-bound trains until the arrival of the western train. This order was given in order to make all safe, and prevent a collision in case the former should arrive at Port Jervis before the latter. An answer was immediately given by the station agent, announcing that he fully understood the order and would do as directed. All appeared safe, and the engineer was ordered to start west; but, to the astonishment of Mr. Minot, he positively refused to move the train from Turner's upon any such arrangement. Mr. Minot immediately mounted the locomotive, pulled out the throttle valve and ran the train himself, assisted by the fireman, and reached Port Jervis according to programme.

The ice was broken, and since that time the telegraph has been acknowledged as a positive necessity on all long railroad lines in this country. The form of giving the necessary directions, however, has been somewhat changed; and now the con-

ductors and engineers of each train who receive telegraphic directions are telegraphed the name of the particular point at which they are to meet, and answers are required from them to ascertain whether they understood orders, before any movement is made.

The following is the form of message required to be sent and received:

By telegraph from — station to conductor and engineer: You will run to — station regardless of train number —. 31. — Dispatches.

The numeral abbreviation means "How do you understand?"

The answer to this dispatch must read as follows:

32. (I understand I am to) run to — station regardless of train number —. — Engineer. — Conductor.

Upon receiving the announcement from the receiving operator that all is right, the trains are started without further orders.

All special orders for the movements of trains are required to be communicated in writing, and extraordinary precautions are taken against the possibility of misunderstanding directions. Not more than one person on a division at the same time has power to issue train orders. The telegraph operator is required to read the messages aloud, in the hearing of the conductor and engineer addressed. Trains when in motion must approach stopping places in the supposition that another train is there to be met. Whenever a passenger train receives orders to meet and pass a freight train at a specific station, the conductor must not leave the depot until notice is received from the conductor that his train is safe upon the side track, out of the way.

No orders are given to move a slow train in the same direction, on the time, and ahead of a faster train, unless it has started—if a passenger train—at least ten minutes; and if freight, not less than twenty-five minutes in advance of the time the faster train may be reasonably expected to arrive at the station from which the slow train is first started. In cases where a slow train is moved by telegraph the following form of order is given to the conductor of said train:

To — Conductor and — Engineer:

You will run ahead of train No. —, to — station, conditioned as follows: Should you from any cause be unable to make your running time, you must as soon as you discover such to be the case leave your flagman to warn the following train in advance of which you are running, and report your arrival at the next telegraph station, 31.

In case of an accident where orders cannot be obtained by telegraph, the station agent has power to stop trains. The speed of live-stock and freight trains is restricted to eighteen miles an hour; and extra freight trains, commonly called "wild cats," which have no time upon the regular table, are not permitted to attain a higher rate of speed than fifteen. Coal trains' time average twelve miles an hour. The latter cars being very light, cannot be kept upon the track at a high rate of speed.

Many of these orders and forms were original with Col. D. C. McCollum, formerly superintendent of the Erie road, and during the late war were in general use while he was, military superintendent of all the railroads in the United States. Vast armies were moved in this way in a very successful manner.

A chronometer in the principal depot is the standard time of the road, and the time is telegraphed to all stations at precisely twelve o'clock each day. Fresh engines and men are attached to all through trains at the end of each division.

The salaries of division superintendents average \$5,000 a year; conductors and engineers, \$100 a month; of baggage masters, \$75 a month; brakemen, \$1.75 a day; telegraphers, from \$60 to \$125 a month; station agents, from \$500 to \$2,000 a year.

The Hartford Steam Boiler Inspection and Insurance Company.

This Company makes the following report of inspections for the month of October:

During the month 540 visits of inspection have been made; 817 boilers examined, 715 externally and 156 internally; while 73 have been tested by hydrostatic pressure. The number of defects in all discovered are 280, of which 23 are regarded as especially dangerous. These defects in detail are as follows: Furnaces out of shape, 11; fractures in all, 19—3 dangerous.

One of our inspectors remarks as follows on fractures which he discovered: In the fracture marked dangerous, a rip seam occurred 36 inches long, which I attribute to three causes; first, defect in plate at rivet seam; second, blowing water out of boiler while hot; and third, bridge wall too high, allowing fire to concentrate too much at one point.

The blowing out of boilers while hot, and especially filling up directly with cold water, are not unfrequently attended serious consequences. The unequal contraction strains joints, loosens tubes and flues, preparing the way for leaks, which, in time, are the occasion of no little trouble and danger. Another inspector finds the upper tube sheet of an upright boiler badly fractured, and the boiler generally so badly strained as to be unfit for use, and hardly worth repairing.

Burned plates, 18—2 dangerous; new crown sheets were necessary; blistered plates, 43—1 dangerous. A blister was found on a crown sheet some two feet long and four inches wide, taking away nearly half the thickness of plate. Blisters are occasioned by a want of homogeneity in the iron. From various causes sheets become laminated in rolling, and the surface over the fire receiving the greatest heat, expands most, and bulges down. Sometimes these blisters are three, four, and even six-leaved. All such defects should be care-

fully examined, and the blisters trimmed off by an expert. If the portion of the plate remaining is sound, and the plate has been effected but little, it may not be dangerous; if, however, the plate is considerably reduced in thickness, it should be repaired at once.

Cases of internal corrosion and grooving, 6; external corrosion, 22—4 dangerous; incrustation and scale, 55—3 dangerous; water gages out of order, 22—1 dangerous. While water gages are very convenient boiler appliances, they should not be depended on to the exclusion of gage cocks. The first thing an engineer should do in the morning is to try his gage cocks, then proceed to unbank and start up his fires. Blow apparatus out of order, 3—1 dangerous; safety valves overloaded and inoperative, 29—5 dangerous; five of these were in such bad condition that they had to be taken entirely off, and the valve "backed out" with a bar fitted for that purpose. We have frequently referred to the neglect of safety valves. They should be raised carefully every day to see that they are in good working order. Pressure gages out of order, 52, varying from 12 to +20; improper staying, 3—all dangerous; boilers condemned as unsafe and beyond repair, 1.

The Doom of the Maories.

"As the Pakeha fly has driven out the Maori fly;
As the Pakeha grass has killed the Maori grass;
As the Pakeha rat has slain the Maori rat;
As the Pakeha clover has starved the Maori fern
So will the Pakeha destroy the Maori."

These mournful words of a well-known Maori song, are considered both by the Maories themselves, and by the Pakehas, or European settlers, as prophetic of the fate to which the native race of New Zealand is doomed. We trust the prophecy will fail in its fulfillment. We are well aware that in giving expression to our hope in regard to this matter, we are running counter to the ideas entertained by the majority of men at the present day—a majority composed of the thinking and the unthinking alike. Even intelligent travelers, like Mr. Wentworth Dilke, regard the fulfillment of the prophecy as certain. "Nature's work in New Zealand," he says, "is not the same as that which she is quickly doing in North America, in Tasmania, in Queensland. It is not merely that a hunting and fighting people is being replaced by an agricultural and pastoral people, and must farm or die. The Maori does farm; Maori chiefs own villages, build houses which they let to European settlers. We have here Maori sheep-farmers, Maori ship owners, Maori mechanics, Maori soldiers, Maori rough-riders, Maori sailors, and even Maori traders. There is nothing which the average Englishman can do which the average Maori cannot be taught to do as cheaply and as well. Nevertheless the race dies out. The Indian dies because he cannot farm; the Maori farms and dies." As a mere matter of fact, destruction has no doubt gone on to such an extent as to threaten extinction; but is the utter extinction, therefore, inevitable; if so, is it the result of a divine law, and how is it such a result? That is the question we ask.

Now, as it must surely be admitted that the extinction of any race involves a wrong, we are compelled to inquire if there be no remedy applicable before the process of wrong has reached its consummation? The ruin of races which have perished aforetime, has been owing to the unrestricted operation of what, in Bible language, is called the law of sin; in the language of civic life, vice and crime; in the language of economists, self interest; and in that of our modern savans, the law of natural selection and struggle for existence. Grant full swing to the operation of any or all of these principles of human nature or laws of human action, and the Pakeha will, as a matter of course, crush his Maori brother, just as the strong beats the weak all the world over, and as the strong have done through all ages since the day of Cain. But is there no other force than that of the strong, no other principle than that of self interest, no other law than that of a mere selfish struggle for existence? Is it in vain that Christianity has proclaimed a higher law of fraternity between man and man, rich and poor, between race and race, a law of justice or respect for equal rights, and above all a law of philanthropy or kindness towards the weak, the helpless, and the erring? Talk as they will of the lower races of humanity dying out by operation of a natural law, it would be a more scientific way of putting it to say that their destruction, whenever it does occur within the reach of Christian civilization, is owing to the violation, by a professedly Christian people, of the laws of Christian ethics. In a word, the superior race on coming in contact with the inferior, has repudiated not only fraternity and kindness, but common justice.—*Illustrated Australian News.*

A PRIZE FOR EVERYBODY.

Should some of the competitors for the first cash prize of \$300 fall short of obtaining the requisite names to entitle them to it, the second prize—\$250—will be worth striving for; and if they fall short of that, the third—\$200—will be gained by some one. And should circumstances prevent a competitor getting a sufficient number of subscribers to obtain either of the fifteen cash prizes, he will have no difficulty in obtaining names enough to entitle him to one or more of the large and elegant steel-plate engravings, containing superb likenesses of NINETEEN of the most distinguished American inventors. The lowest price these engravings are furnished, single, is \$10, and for the size and quality are the cheapest steel-plate engravings published. These engravings can only be had at this office, the plate from which they are printed (valued at \$4,000) being owned by the publishers of this paper. Send for printed prospectuses and circulars.