The Whaling Station at Ulsan, Korea. A Transport is Ready to Carry Whale Flesh and Blubber to the Japanese Markets.

Bringing in a Finback Whale at Ulsan, Korea. A "Whale Spade" is Being Used to Cut the Harpoon Rope.

A Whaling Expedition in Korea*

The California Gray Whale, Supposed by Many to be Extinct, Rediscovered in Korean Waters

By Roy C. Andrews†

THE American Museum sent an expedition to Korea in 1911 primarily to complete the study and collection of the Japanese whales upon which work had been begun in 1910; secondarily to make a zoological and geographical exploration of the country lying between the Tumen and Yalu rivers along the northeastern Korean boundary. On the previous expedition skeletons of all the large species except the humpback and California gray whales had been secured. It was especially desirable to acquire specimens of the latter because the "devilfish," as it is often called, was believed by many naturalists to be extinct and no complete specimen existed in any of the museums of Europe or America. Moreover, the California gray whale is of especial importance to systematists since it apparently represents an intermediate stage between the two great families of whalebone whales, the Balænopteridæ and the Balænidæ.

For many years this species was the object of a desultory pursuit by whalers along the southern California coast where it appeared on its annual migrations, but its numbers decreased until it was no longer commercially profitable and the hunt was abandoned. This was in the early seventies; since then the gray whale has been lost to science.

While in Japan in 1910, I heard reports from the Oriental Whaling Company that a whale called the devilfish constituted the basis of their fishery on the Korean shores during the months of December and January. I was tremendously interested in this for it seemed that possibly here was to be an opportunity of rediscovering the gray whale. At that time it was impossible to visit the Korean stations because it was already the middle of February when I arrived in Japan from a long cruise south of the equator, but after

the success of 1910 it seemed to be of paramount importance to investigate the gray whale fishery.

Cutting up a California Gray Whale. The White Markings on the Head and Flipper Were Produced by Parasites, Chiefly Small Crustaceans Called "Whale Lice." The Shape of the Flipper is Distinctive.

The Oriental Whaling Company at once invited the Museum to continue the work of the preceding season and agreed to render all assistance in its power for accomplishing the desired work. The company had already presented to the Museum skeletons of six large whales and ten porpoises which had been taken during the year 1910. The courtesies of its stations and ships had been freely extended and every help rendered in securing for us specimens of the whales desired. It was, therefore, exceedingly liberal in the president and directors of the company to continue to give their support and was indicative of the true scientific spirit with which the Japanese nation is inspired.

When I arrived in the Orient at the beginning of 1912, everything had been prepared for my reception. I left Japan immediately upon one of the company's transports for the Korean station, situated in a beautiful bay at Ulsan, on the east coast forty miles north of Fusan. The next day I had my first view of the California gray whale, for a splendid specimen was brought in by the steamship "Olga Maru." I shall never forget the excitement with which I examined the extraordinary animal and studied the skeleton as it was stripped of flesh. The resemblance to a right whale, the typical representative of the Balænidæ, is striking, and yet an examination of the bones shows many characters allying it to the fin whales of the Balænopteridæ. It was especially interesting to examine the specimen with reference to the accounts of the species which have already been published, for all are meager and full of inaccuracies. Probably no whale has more individual peculiarities than has this species: the shape of the head, of flippers and flukes, and in fact the entire body is quite unlike that of any other large cetacean.

Its habits too are distinctly individual. About the middle of December the animals begin to appear on

A Very White Humpback Whale in a Position to Show Throat, Breast and Flippers. The Circular Markings on the Throat are Probably Caused by Barnacles, Masses of Which are Seen Adhering to the Folds and on the Edges of the Fins.

Humpback Whale (Right Fin and Breast in View). This specimen was secured for the Museum on the Korean Expedition. It Measured 48 feet 8 inches in Length. The Fins in This Species are Nearly One Quarter of the Length of the Entire Body.

Killer Whales Wage a Continual Warfare Upon the Gray Whales. They Were Seen to Force Open the Mouths of the Living Gray Whales and Eat the Tongue, Sometimes Killing and Completely Devouring Their Prey.

The Harpoon Weighs 110 Pounds. Powder in the Hollow Point is Ignited by a Time Fuse. Forty Fathoms of Rope Give Slack to be Carried With the Harpoon in Its Flight.

the coast of central Korea, following the shore line closely on their migration to the islands of the south. First come a few straggling males, then the main body of females, and later males alone bringing up the rear. Almost all of the females are carrying young, soon to be born, and they head for the quiet waters among the many islands of south Korea where the birth takes place. In April the young are large enough to travel northward and accompany their parents on the long trip to the Okhotsk Sea and the icebound shores of the Arctic.

While the ship is following a devilfish the animal will sometimes come to the surface very slowly and quietly, put just the nostrils above the water and blow so softly that no column of vapor is formed. It will then sink noiselessly without having shown more than eighteen or twenty inches of its body above the surface. It will also swim along the shore, often actually rolling in the surf, so close that the ship cannot follow; it will even slide in behind rocks and try to hide, until the men on the vessel have become tired of waiting and leave. Gray whales live in perpetual terror of the killer whale, which seems to single out this species especially for attacks. When a herd of killer whales surround a devilfish, the latter will often turn upon its back, the fins extended, and lie quietly at the surface, seemingly paralyzed by fear. The killers force open the mouth and at times eat almost the entire tongue before the gray whale escapes; or the animal may even be killed, and completely devoured.

I had always been skeptical as to just how much truth lies in the story that the killers really try to eat the tongues of living whales; it has been recorded in almost every account relating to the Orcas, but I had always considered it extremely improbable. After witnessing it in the case of the California gray whales, however, my doubts entirely disappeared.

One fine skeleton was taken for the Museum and a

Throat of a Gray Whale, Showing the Two Characteristic Furrows. Right Whales Have no Throat Grooves and Fin Whales Have Many; the Gray Whale is Apparently an Intermediate Stage Between the Two Families.

second, by arrangement, for the National Museum at Washington. Many photographs also were secured (the only ones in existence of this species), together with much alcoholic material, and three rolls of motion picture films, besides notes and measurements of the thirty individuals which were taken during my stay at Ulsan.

We wished to get also the skeleton of a humpback whale. Although humpbacks are common in many parts of the world, they have been so persistently hunted in Japan that they are now extremely rare. The humpback furnishes the most highly esteemed food of all the whales and in the Japanese markets the flesh of a single individual brings as much as 5,000 yen (\$2,500).

February came and I had almost despaired of getting a humpback in Korea, for only one had been taken during the entire season. On the thirteenth of the month, however, three specimens were brought in and the skeleton of the largest was preserved, a male forty-eight and a half feet long; the Museum is fortunate in securing such a splendid representative of this aberrant species. As soon as the bones had been cleaned and crated, I chartered a schooner and sent the whale skeletons to Shimonoseki for trans-shipment to New York.

This material makes the Museum's collection of large cetaceans the most complete in the world. It lacks only the great "bowhead" of the Arctic, and it is to be hoped that funds to secure a skeleton of this extraordinary mammal will soon be forthcoming.

Locomotives as Fire Engines

Over Six Hundred in Service on the Lines of One Company

STEAM railway locomotives as fire fighters have proved so efficacious on the Pennsylvania Railroad that that company has equipped 612 engines with special apparatus for use in case of fire.

The special fire-fighting apparatus consists of pumps and hose attached to switching engines regularly used in switching cars. The crews of these engines are systematically trained as fire fighters to put out promptly any fires that might occur in the hundreds of cars out of reach of city fire departments.

The standard equipment for each locomotive consists of 150 feet of 2½-inch unlined linen hose and a 15-inch cast-iron nozzle with a ¾-inch discharge opening, kept in a box under the running board of the engine, the hose being coiled in separate sections. With this equipment engines are enabled to throw a stream of water 70 feet.

The yards are divided into districts, numbered as are

fire alarm boxes in cities. When a fire is discovered, the nearest switch tower is notified and alarm whistles are blown throughout the yard limits. By a code of signals, engineers of locomotives within the yard can tell from the whistles just where the fire is.

Each engine is uncoupled from its draft of cars as soon as the latter can be placed where they will not obstruct main tracks. Yard masters and train directors give necessary orders to provide a clear track to the scene of the fire. Almost before the locomotives are uncoupled, signals are set indicating the routes by which to reach the fire, and by the time they arrive, their crews have pumps unlimbered ready to work and hose ready to unreel. In the fire organization the assistant yard master acts as chief, and gives general directions both in fire fighting and in drills. The conductor of each train crew acts as foreman of that crew, the flagman looks after unreeling and connecting the

hose, and the two brakemen act as nozzlemen and direct the stream.

At a fire which occurred near the gas tank under a passenger car, the first engine was coupled up ready to act within two minutes after the alarm was sounded, while within seven minutes nine engines were on hand.

The locomotives equipped for fire-fighting service are divided as follows on the lines east of Pittsburgh and Erie, New Jersey Division, 216; Eastern Pennsylvania Division, 110; Western Pennsylvania Division, 131; Northern Division, 17; Erie Division and Northern Central Railway, 35; Philadelphia, Baltimore and Washington Railroad, 30, and Philadelphia Terminal Division, 73.

Indicative of the effectiveness of locomotives as fire engines is the fact that in the past four years 153 fires on Pennsylvania Railroad property have been extinguished by them.

In the Past Four Years Such Locomotives as These Have Put Out 153 Fires.