

Game Laws for World's Largest Beasts

Zoology

By MARJORIE MACDILL

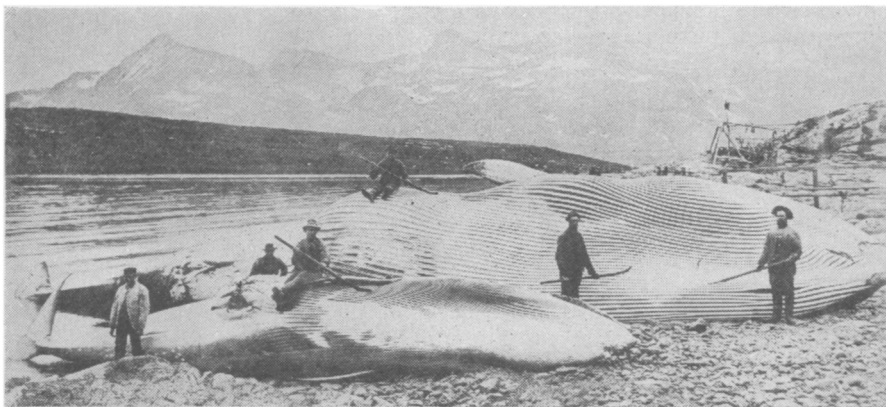
Suppose some seasoned explorer, trekking through the vegetative labyrinth of tropical South America, should penetrate a little deeper into an overlooked corner of the Amazonian jungle and actually find that fondest, most talked-of dream of modern naturalists, a lost world of prehistoric animals.

It is easy to picture the scramble of dignified scientific powers-that-be to raise funds to equip expeditions, and their efforts to secure by treaties and legislation an area of reserved territory where the monsters of the ancient world would be preserved for posterity. There would naturally follow the erection of field stations where members of the research staffs of biological institutions could study the great beasts at close range. Then a clamor would rise up from the zoos of Europe and America demanding a thirty-five ton brontosaurus for exhibition purposes, or at least a second choice of a stegosaurus, whose frill of three-foot armored plates down his spine would compensate in novelty to the Sunday crowds for his lack of brontosaurian bulk.

Unhappily the lost world remains the dream of a few visionary biologists and the actuality only of an imaginative movie director. But down at the lower end of the world there splash playfully about today in the Antarctic seas larger and more curiously complex monsters than any dinosaur that ever lolled in Mesozoic slime. And yet only within the last year have constructive steps been taken to save them from rapidly approaching extinction.

These marine mammals, that the lay world knows as whales, are being killed today in numbers that exceed the wildest dreams of any whaler of New Bedford, even under the influence of the liquor of his period. An important factor in the annual haul is the blue whale, the largest animal, so far as is known, that ever lived. None of the dinosaurs could rival in magnitude this giant, which attains a length of 87 feet and a weight of 75 tons.

Whaling in the Antarctic is an excellent example, going on in our own time, of what happened to the bison and the zebra, or of what takes place in the unrestricted hunting of any game that can readily be converted into cash money. The whale



FINBACK WHALES being cut up in Norway. Courtesy of National Geographic Society

is fair game to all nations, with no bar to the use of any invention that will deliver him up a speedy victim. The harpoon gun, pursuit by fast motor boats and steam trawlers, information by radio about herd movements, and airplane scouting have combined to run the kill up to 30,000 in a single year. The last word in efficient slaughter is a device which, by means of a light cable attached to a harpoon, electrocutes a whale as soon as he is hit.

Since whales produce only one offspring a year, it is not surprising that naturalists are beginning to wonder how long there will be any left, at the rapid rate they are going. Within the last year several prominent American scientists, realizing that something must be done, set about the organization of a council for the preservation of whales, under the auspices of the American Society of Mammalogists. This council will have as its immediate object the working out of a program of treaties between nations, and a set of regulations whereby it is hoped the killing of whales will be reduced below the danger point.

Some regulation is imperative, the scientists pointed out, if the very substantial revenue from the whaling industry is to be preserved at all. For it seems probable that it will only exterminate itself if the present short-sighted policy of indiscriminate killing is continued.

From the scientific point of view, the world could ill afford to lose these monumental beasts that have fled to the Antarctic in vain hope of escaping man's persecutions. Originally land animals, their adaptations to a sea-going existence are among

the anatomical curiosities of biology. Some of them, like the great bristly strainers of baleen in the mouths of the whalebone whales, that sort out gallons of shrimps from a mouthful of sea water, were well known to the old time whalers. Other points, such as what have become of the whales' ears and hind legs in millenniums of aquatic life, have taken a goodly stretch of scientific time to unravel. Still other questions, such as how an air breathing animal can stay under water for an hour and somehow neutralize the effects of the poisonous gases generated in his lungs, are unsolved mysteries that men would profit much to solve.

The source of the whales' undoing lies today, just as it did in the heyday of New England whaling, in the thick coat of blubber that protects these warm-blooded animals from the changing temperature of the sea. Even then the world quest for oil had begun. To get it, Nantucket sea captains went out on three, four and five year voyages in search of the wherewithal for light and lubrication. Today whale oil goes into soap. Yesterday the whale's only contribution to feminine beauty was whalebone for milady's wasp-like waist. Nowadays his fat yields up glycerin for the cold cream and toilet soap for her complexion.

Under the magic wand of the organic chemist, whale oil turns into gold through many strange channels. Shaving soap, tooth paste, and cosmetics of many kinds all contain glycerin into which it may be converted. In Europe the hydrogenated oil is used in making lard substitutes and candles. Most of it, however, is made into soap. (*Turn to next page*)

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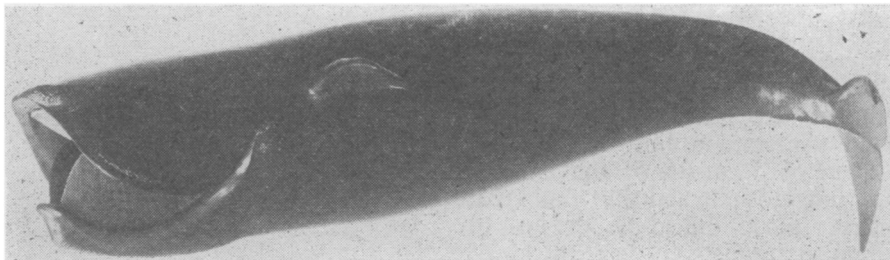
The English manufacturers of a widely advertised brand of soap flakes maintain floating factories in the Antarctic for the purpose of securing their own oil at its source. Under modern management a single whale has a value as high as \$7,500 to \$9,000, while the estimated value of the entire fishery is around \$30,000,000 annually.

Even in the exciting days when whales were harpooned by hand from small boats, the fishery was prosecuted with such vigor that they were becoming noticeably fewer. The growing scarcity made the long voyages of the New England whaling fleet increasingly expensive. During the Civil War many of the old whalers were burnt, captured or used for warships. These circumstances, along with the advent of the cheaper petroleum products, put a kink in the American whaling industry from which it has never recovered.

In 1864 Svend Foyn, a Norwegian, invented the harpoon gun, and there began a new era in whaling, though it was not until around 1870 that the advantages of the new weapon were conclusively demonstrated. Steam vessels replaced the oar propelled whale boats of cedar plank. These vessels carry a small cannon in the bow that shoots the harpoon bomb. The head of the harpoon is filled with powder exploded by a time fuse, releasing four prongs at right angles to the harpoon, thus forming a strong hold on the whale when the line is pulled taut. These developments rapidly led to the pursuit of fast swimmers like the blue and the fin whales that no old whaler ever "lowered" for because they swam too fast for any hand-propelled boat to catch. So whole species were opened up for exploitation that had previously been exempt.

Since the beginning of the twentieth century the greatest development of the industry has taken place in the Antarctic regions around the South Shetland Islands, the South Orkneys, the Falklands and South Georgia. The waters in this neighborhood abound in the shrimp and other minute forms of marine life upon which the great whalebone whales feed. According to Dr. Roy Chapman Andrews of the American Museum of Natural History, thousands of fin whales are present here, where there are dozens in other oceans.

Large numbers of whales present has brought about a great concentra-



THE RIGHT WHALE that helped keep grandmother slender, so called because it produced the longest and best whalebone and so was the right whale to catch

tion of the fishery in the shadow of the South Pole that has led to the establishment of vast floating factories, the last word in modern efficiency in a venerable industry. These factories embody a reversion to the idea of trying out blubber on board. They are mother ships of from 12,000 to 17,000 tons with a capacity for carrying three and a quarter millions of gallons of oil, according to the U. S. Bureau of Fisheries, and are equipped with try works for converting the blubber into oil. They are accompanied by smaller boats, either steam vessels of from 150 to 180 tons or fast motor boats, capable of a speed of from twelve to fifteen knots, that do the actual chasing and catching and tow their prey back to the factory for cutting in and trying out.

The floating factories were introduced by the Norwegians, who constitute the bulk of the personnel in the whole Antarctic industry. Just as in the old days of whaling, all hands share in the catch on a percentage basis, though nowadays this share is tacked on to a predetermined base pay. In successful years a mere deckhand may receive as high as \$1,800 for a season, while the captain of a whale catcher may get as much as \$25,000.

The factories are able to handle from six to eight large whales per day and as many as twenty small ones. The whales chiefly caught are humpbacks, blue whales and finbacks, and more rarely sperm whales. The latter are not considered sufficiently profitable to bother with, since they waste much of the crew's time by "sounding" for a longer time than other whales, and give more trouble when caught. The big blue whales yield around 75 barrels of oil apiece. The smaller fin whales and humpbacks give around 42 and 30 barrels respectively. Humpbacks are the preferred variety because they are

easier to kill and handle than the others, though incessant pursuit appears to be making them wise to the game. They have apparently learned which is the business end of a catcher and, after sounding, come up in the rear of the boat instead of in front, staying a safe distance behind and adjusting their speed to that of the boat until the hunters give up the chase in despair as so much time lost. No gun is carried in the stern of the whalecatchers because of the danger of the whale line fouling the propeller.

Though whaling in the Antarctic is chiefly in the hands of the Norwegians, the territory containing the only safe harbors, that is South Georgia, the South Shetlands, Falklands, etc., belong to the British Empire. Consequently they are able to exercise some control of the industry by demanding licenses from each floating factory and by imposing a tax on the oil. The license is good for twenty-one years, according to information made available by Dr. Waldo Schmitt of the U. S. National Museum, who has recently visited the whaling grounds of the far south. The fee is \$1,500 per season for one factory with two catchers. Each additional catcher costs \$500 apiece, though the number is usually limited to three catchers for each mother ship. The oil tax amounts to \$1.20 per barrel.

In spite of taxes and high wages the profits of the whaling companies are so large as to incite the prosecution of the fishery to a pitch of intensity never known before in the history of whaling.

The taxes collected by the British, which amounted for the calendar year of 1926 to almost a million and a half dollars, are being used for research on the natural history of whales. Two laboratory ships, the "Discovery" (*Turn to next page*)

63 Story Building Most Economical

Engineering—Economics

On a piece of city realty, with the land worth \$200 per square foot, a 63-story building will yield the greatest return on the investment. With the land worth \$400 a square foot, which is more nearly the value of land in the Grand Central Terminal region of New York, a 75-story building will pay best. The engineering difficulties of a building as high as 2,000 feet, or nearly 200 stories, could be overcome, but such a structure would not be economically feasible. Even a building of 131 stories would not return any net income.

These are some of the principle conclusions drawn from a study that has been in progress during the last two years, under the direction of W. C. Clark, New York economist, for the American Institute of Steel Construction. Many arguments have been advanced on both sides of the skyscraper question, but the Institute recognized that the decisive one would ultimately be whether or not the tall

building is more profitable than the low one.

For the purposes of the study, the committee considered a specific site in New York near the Grand Central Terminal, on which the Lincoln building, of 52 stories, is now being erected. Plans were actually drawn for eight separate buildings on this location, ranging from 8 to 75 stories. These were of the setback type, required for high buildings by the New York zoning laws. Estimates of costs and income were made for each of these by experienced architects, engineers, builders, building managers and rental agents.

The eight-story building, they found, would cost \$22,193,000 to build, and would yield but 4.22 per cent. on the investment, at a land value of \$200 per square foot. The 63-story building, costing \$39,100,000, would give a return of 10.25 per cent. For higher buildings the return decreases, becoming 10.06 per cent. for a 75-story building. Estimates made of returns

on still higher buildings indicated that at 131 stories the net income would vanish. For higher land values, however, higher buildings are more economical. At \$400 per square foot, the committee found, the 75-story building would give the greatest return.

From an engineering standpoint, Mr. Clark stated, buildings could be built up to 2,000 feet. This limit is imposed chiefly by the elevators, as the weight of the cables would become too large for greater altitudes. Also, he said, the normal human ear drum cannot stand an elevator speed greater than 1,500 feet per second. This speed would have to be attained for practical operation in a building of this size.

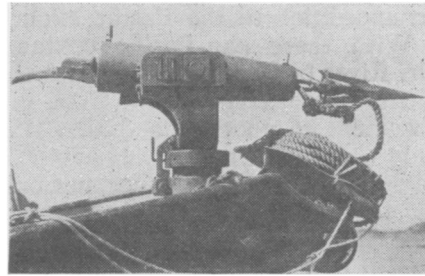
At present, the Woolworth Building, 792 feet, or 58 stories, is the world's tallest. The Chrysler Building, now under construction, will reach 808 feet with its 63 stories. The Chicago Tower, now contemplated, may ascend to 880 feet, with 75 stories.

Science News-Letter, September 28, 1929

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and the "William Scoresby," maintained out of this income, have been cruising in the Antarctic for several years trying to find out how whales live, where they go, and other questions that have bothered students of the giant cetacea for the last hundred years. The "William Scoresby" is still at sea, but the "Discovery" expedition ended in September, 1927, after examining 1,685 whales, the largest number ever investigated. The dissection of a whale makes more demands on the limitations of time and space than investigations on the anatomy of a frog or a rabbit or even a horse. A scientist needs literally all out-of-doors and a piece of the ocean for a laboratory when he is cutting up a beast that weighs from forty to seventy-five tons. In former years a naturalist was lucky if he ever managed to look into as many as six whales in the course of a lifetime. So the work on the "Discovery" has yielded generalizations about whales formerly impossible to attain.

It is now believed that the whale mating season occurs in the southern winter, that is in June and July. Most of the baby whales, some of them twenty-one feet long at birth,



THE HARPOON GUN instituted a new era in whaling

are born during the same season. Gestation is thought to require ten months. The mothers nurse their young for about five or six months, a period in which growth takes place at a terrific rate. Young blue whales, just weaned, were found to be between 45 and 48 feet long and the fin whale somewhat shorter. Whale's milk must contain potent vitamins or some other magic growth-promoting power, for the rate slows up considerably when the young whales have to rustle for their own food, the scientists found.

The myriads of minute forms of marine life, known as plankton, that float on the surface of the sea and furnish the chief bill of fare for the great whalebone whales, are thought

to be an important factor in that unsolved mystery of the deep, the migrations of whales. Observations on the distribution of plankton were taken on over 2,400 miles of the "Discovery's" course. Further attempts to check on whale meanderings were made by means of numbered metal tags attached to the flukes of young whales. No recoveries of tags, however, have as yet been reported.

The task of working out an effective means for protecting the whale presents many difficult problems, since the giant mammals roam at large on the high seas, a circumstance that leads at once to international complications. Though whalers themselves realize that their industry cannot last much longer at the present rate of killing, each is unwilling to stop until he has positive assurance that the other fellow, representative of some other nation, will do likewise. To overcome this difficulty, the council for whale conservation is endeavoring to cooperate with scientists in other countries who will work toward interesting their respective governments in treaties and regulations to stop their complete extermination.

Science News-Letter, September 28, 1929