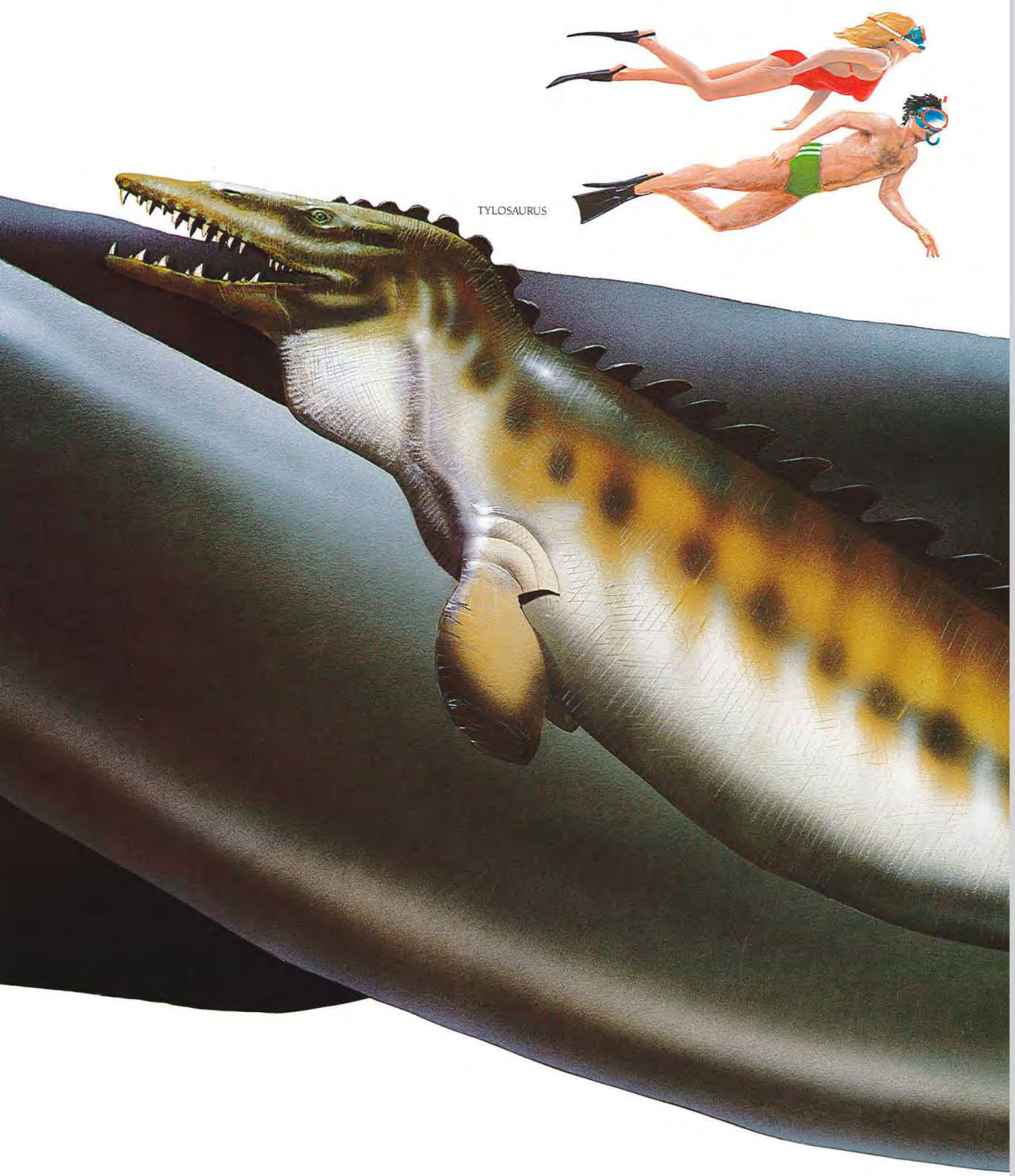


TYLOSAURUS

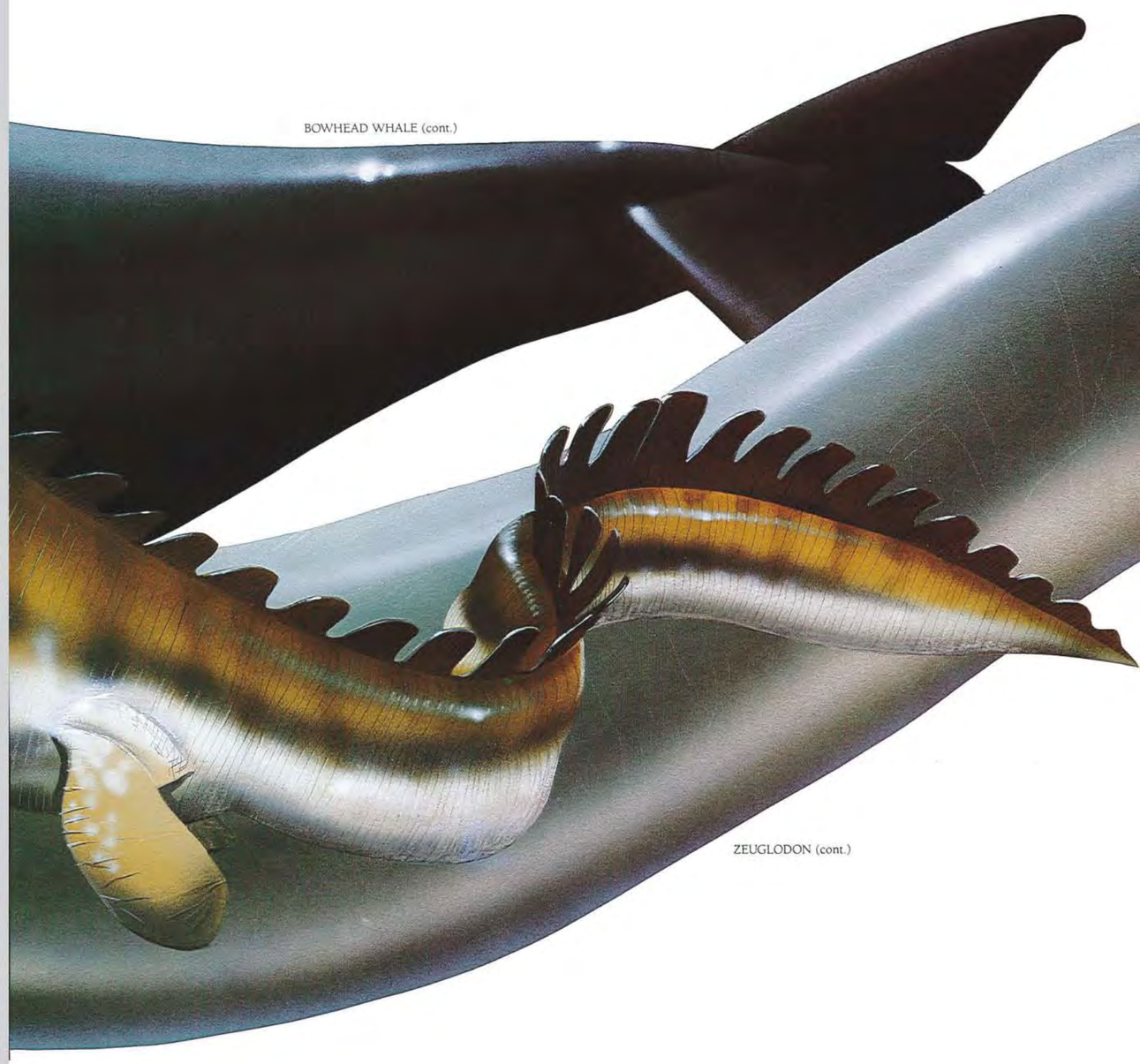


## Tylosaurus

*Tylosaurus dyspelor* [extinct]
Squamata • Reptilia • Chordata

*Tylosaurus* (tie-luh-SOR-uss) was a marine lizard of the Cretaceous period, 100 million years ago, that grew up to 45 feet long. A recently discovered close relative may have been 56 feet long. *Tylosaurus* was one of the largest mosasaurs, or sea lizards, related more closely to present-day lizards than to the pliosaurs they resembled or to any of the dinosaurs.

*Tylosaurus*'s body and tail were flattened from side to side and it swam by making back-and-forth undulations like a sea snake. The thin, webbed flippers were small and were used only for steering. *Tylosaurus* had large, conical teeth for catching fish and crushing shelled sea creatures. The lower jaw had an extra joint midway down its length, enabling *Tylosaurus* to open its jaws extra wide. Its nostrils were situated on top of its head, like a whale's, enabling *Tylosaurus* to breathe while remaining almost completely submerged. Fossils have been found in northern Europe and Kansas.



BOWHEAD WHALE (cont.)

ZEUGLODON (cont.)

STELLER'S SEA COW

ZEUGLODON (cont.)

## Steller's Sea Cow

*Rhytina stelleri* [extinct]
Sirenia • Mammalia • Chordata

Once found only in the frigid waters around islands in the Bering Strait between Alaska and the Soviet Union, Steller's sea cow was the largest of the Sirenia, plant-eating mammals probably related more closely to elephants than to the seals, walruses, and whales they resemble. From 28 to 35 feet long, Steller's sea cow, like its smaller cousins the manatee and dugong, had a front like a walrus's and a tail like a whale's. The head held two tiny eyes, almost hidden among the wrinkles and rolls of blubber. Its huge, split upper lip, studded with long, strong bristles, was used to nip off seaweed. It was always eating to support its huge bulk. Steller's sea cows lived in herds. They were often seen to float vertically with their heads held high out of the water.

In 1742, Georg Wilhelm Steller, a German doctor with the first Russian expedition to the area, became the only trained scientist ever to see a Steller's sea cow alive. There may have been as few as 1,500 individuals left at the time. By 1770 the peaceful sea cows had been slaughtered to extinction for their meat.

## Sea Scorpion

*Pterygotus buffalohensis* [extinct]
Eurypterida • Chelicerata • Arthropoda

The sea scorpion, a meat-eating underwater relative of the modern horseshoe crab, grew up to 9 feet long. It lived in coastal lagoons 500 to 360 million years ago, from the Ordovician through the Devonian period. It probably preyed on the very first vertebrates, seeking them with its many-faceted eyes and snatching them with huge pincers called chelicerae, which were not limbs but extended mouth parts positioned in front of the first pair of limbs. Scientists believe that the sea scorpion crawled rightside up but swam upside down. Like the horseshoe crab, its paddle-shaped rear limbs moved like oars and the plates on its belly fanned the water. Its flattened tail could have been flapped for rapid acceleration toward prey or away from predators. Fossils have been found in North America, Australia, and Europe.

## Dinichthys

*Dinichthys terrelli* [extinct]
Arthrodira • Placodermi • Chordata

*Dinichthys* (die-NIK-thiss) was one of the largest of the placoderms, prehistoric fish that had bony armor protecting the forward parts of the head and body. The largest *Dinichthys* grew up to 30 feet long and was one of the biggest animals of the Devonian period, some 350 million years ago.

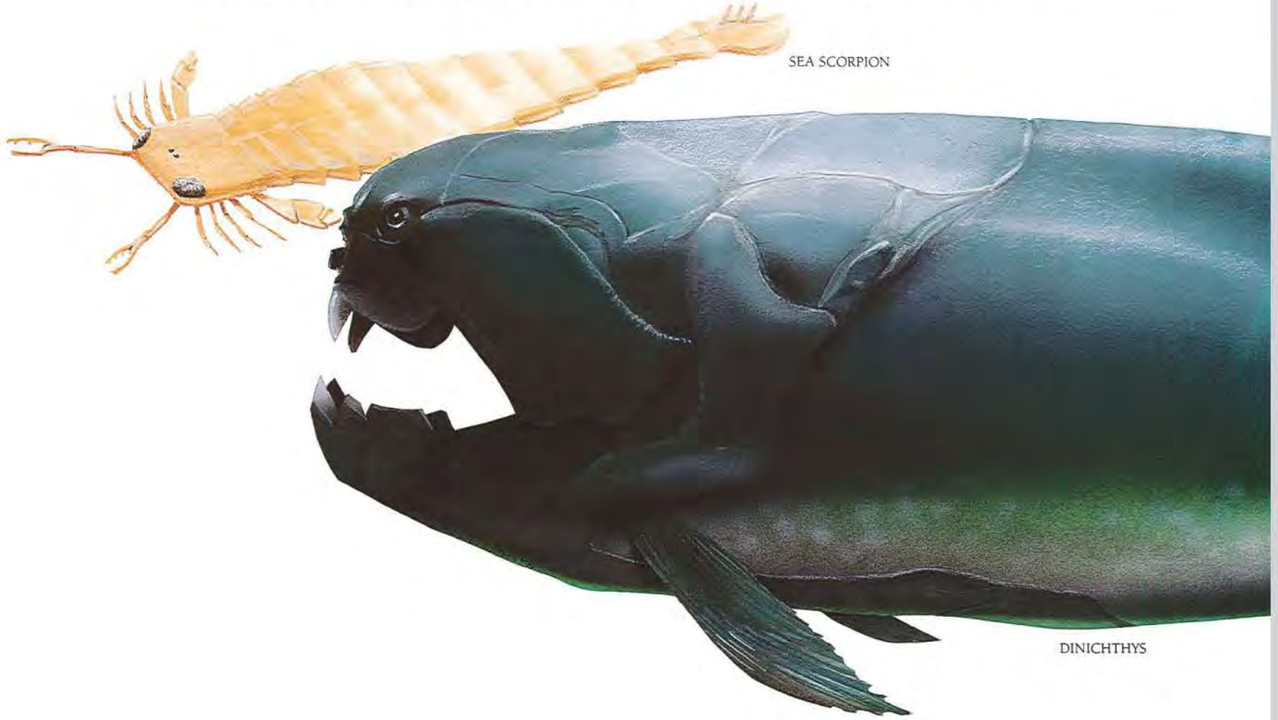
*Dinichthys* was a ferocious predator that ate primitive sharks and armored fish. Its powerful jaws could crack their armor. *Dinichthys* had no true teeth. Instead, fanglike projections of sharp bone jutted out from its jaws to serve the same purpose. Bone enveloped its head and the forward portions of its back, and a flattened chest plate protected it underneath. Even its large eyes were protected by a ring of bone. The rest of its body was without armor. *Dinichthys* swam with side-to-side sweeping movements of its long tail and used its fins for steering. Fossils have been found in Europe and North America.

## Giant Spider Crab

*Macrocheira kaempferi*
Decapoda • Crustacea • Arthropoda

Sometimes called the stilt crab, the giant spider crab is the largest living arthropod, cold-blooded animals with hard coverings of chitin over their segmented bodies and many-jointed legs. The crab's body is only 12 to 14 inches long, but the span from pincer to pincer can measure up to 12 feet, and unconfirmed measurements of 19 feet have been reported. The giant spider crab can weigh up to 41 pounds.

Found in the deep seas surrounding Japan, the giant spider crab has small, 5-inch pincers at the ends of its enormously long arms. They are used in fighting, digging burrows, and catching fish. The crab's long legs help it to walk through the soft ooze of the deep-sea bottom.



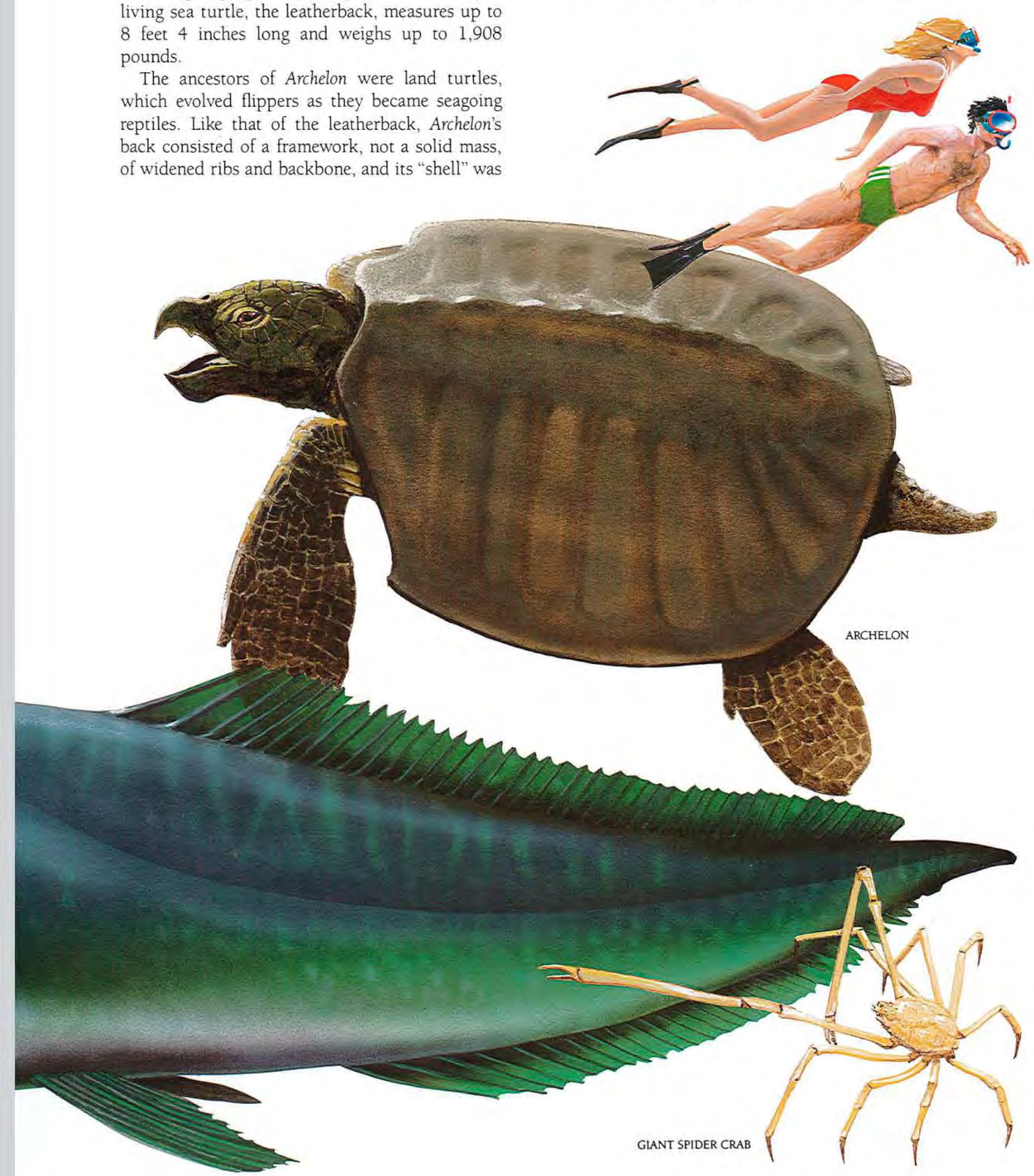



## Archelon

*Archelon ischyros* [extinct]
Chelonia • Reptilia • Chordata

*Archelon* (AR-kuh-lon), a giant marine turtle of the Cretaceous period 70 million years ago, was the largest turtle ever, measuring up to 14 feet long and weighing up to 4,000 pounds. The largest living sea turtle, the leatherback, measures up to 8 feet 4 inches long and weighs up to 1,908 pounds.

The ancestors of *Archelon* were land turtles, which evolved flippers as they became seagoing reptiles. Like that of the leatherback, *Archelon*'s back consisted of a framework, not a solid mass, of widened ribs and backbone, and its "shell" was a tough layer of skin, in place of the horny shell of enlarged scales present on most other turtles. Like all turtles, *Archelon* had no teeth, but its jaws were powerful and sharp, with hooked tips. It ate shellfish, fish, and some plants. *Archelon* had to surface periodically to breathe and probably came ashore only to lay eggs, like a modern sea turtle.



GIANT SQUID

## Arctic Lion's Mane Jellyfish

*Cyanea capillata arctica*
Semaeostomae • Scyphozoa • Coelenterata

Found in all northern waters and named for its dusky yellow fringe of tentacles, the Arctic lion's mane jellyfish is by far the largest jellyfish in the world. The bell of this giant can be 7½ feet wide, and the streaming tentacles can extend for 120 feet. There are reports of specimens with tentacles 275 feet long, but these are considered unreliable. Typically the Arctic lion's mane jellyfish has a bell 3 feet wide, and its 1,200 tentacles may reach 75 feet in length. It is futile to remove a giant jellyfish from the water to weigh or measure it. Only two layers of cells make up the body, and it disintegrates without the support of water all around.

This jellyfish swims by drawing its body together and expelling the water within the bell. Both food and waste materials pass through the mouth, the only opening in the body, located beneath the central umbrella. The Arctic lion's mane jellyfish eats any small marine organism that swims too close to the poisonous stinging cells on its long tentacles, which may be fatal to human swimmers as well. To capture prey, this giant jellyfish sinks slowly with its tentacles spread out in a wide net covering over 500 square yards. On contact, a stinging tentacle contracts to 1/10 its size in less than a second, bringing the prey within reach of curtainlike oral arms. These draw the victim up to the mouth to be digested.

Jellyfish are among the most ancient of animals, leaving fossil impressions that date from some 750 million years ago.

## Giant Squid

*Architeuthis dux*
Decapoda • Cephalopoda • Mollusca

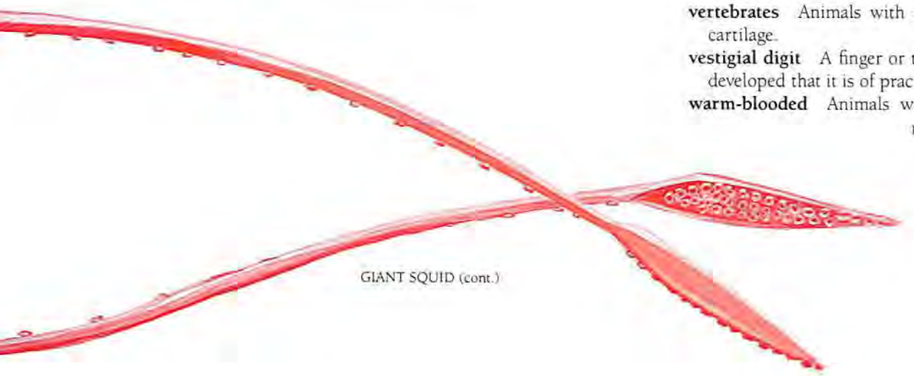
The giant squid may reach a length of 55 feet, including its 35-foot tentacles, and may weigh up to 4,480 pounds. Giant specimens are rare; 6½ footers are the common variety. Giant squids are found in all the oceans, but the largest live at the extreme depths of the North Atlantic, where light cannot penetrate and humans rarely venture.

The giant squid has eight thick arms and two slender tentacles. The arms are double-lined with sucking disks for seizing and holding prey. The tentacles, with sucking disks clustered at the enlarged ends, are used to shoot out and grab prey, pulling it back within range of the arms. The giant squid has a horny, parrotlike, beaked mouth in the center of its arms and a rasping tongue called a radula. Its eyes, among the most advanced of invertebrates, may measure up to 9 inches across.

The giant squid's rocket-shaped body has fins on the back end and is stiffened by an internal layer of horny material. The animal swims slowly, with rippling movements of its fins, but it may jet away with incredible acceleration by forcibly ejecting water out a mobile funnel below the head. The funnel is flexible so that the squid can accelerate in any direction and make sharp turns as well. The giant squid may also eject a foul, inky fluid that acts as a smoke screen to confuse its enemy, the sperm whale, which often bears circular scars left by the squid's sawtooth-edged suckers.

# GLOSSARY

**amphibians** Cold-blooded backboned animals that breathe with gills underwater until maturity and breathe air as adults; includes frogs and salamanders.
**arthropods** Cold-blooded backboneless animals with a shell and jointed legs, such as insects, shrimp, and crabs.
**baleen** "Teeth" that hang from a whale's jaws in large sheets to form a sieve for filtering food from seawater.
**canine teeth** The large pointed teeth between the front teeth (incisors) and back teeth (molars) in mammals.
**carnivores** Meat-eating mammals.
**carrion** Dead and decaying flesh.
**cartilage** Whitish, tough yet flexible tissue that supports and shapes many parts of the body, but is not as rigid as bone.
**chitin** A hornlike substance that forms the shells of insects, crabs, and other arthropods.
**Chordata** Animals that breathe with gills or lungs and also have a spinal cord, perhaps with a backbone to protect it.
**Coelenterata** Simple backboneless animals consisting of little more than skin, tentacles, mouth, and stomach; includes jellyfish.
**cold-blooded** An animal whose body temperature rises or falls along with the temperature of its surroundings.
**crustaceans** Arthropods with many jointed legs and two pairs of antennae, such as crabs.
**depth perception** The ability to judge the distance of objects from oneself.
**dinosaurs** Extinct land reptiles, usually large, with legs placed directly under their bodies instead of splayed out to the sides.
**dorsal fin** A fin on the back of an animal, usually an aquatic one.
**echolocation** *See* sonar.
**embryo** An unborn animal during the earliest stages of its development.
**evolution** The history of the gradual change and development of different species.
**extendable jaws** A mouth with special joints that let it open very wide to take in food.
**extinct** No longer existing; specifically, when all of the individuals of a particular species are presumed to be dead.
**fossil** The remains of a living thing that have turned to stone.
**gestation** The gradual development of the young within the body of the mother before birth.
**gills** The blood-filled organs that most fish and young amphibians use to obtain oxygen from water for breathing.
**incubate** To keep an egg warm so it will hatch.
**insulation** A covering like feathers, hair, or blubber that keeps an animal warm.
**invertebrates** Animals without a backbone.
**mammals** Warm-blooded backboned animals that feed their young with milk from the mother's body, such as humans, bears, and whales.
**marsupials** Mammals whose females have an external pouch for carrying the underdeveloped young; includes kangaroos.
**mollusks** Cold-blooded backboneless animals with soft bodies that are usually enclosed in a hard shell, such as clams, snails, and (shell-less) squids.
**nocturnal** Active at night.
**nymph** Immature insect young, usually without wings.
**plankton** Small- to microscopic-size plants and animals that float in water.
**predator** An animal that kills other animals for food.
**prehensile** An organ, such as a hand, that can grasp or wrap around an object.
**prehistoric** The time before written languages existed.
**primates** Mammals with nails, not claws; forward-looking eyes; prehensile hands, and sometimes prehensile feet and tails, too.
**reptiles** Cold-blooded air-breathing backboned animals that are usually covered with scales, such as snakes and turtles.
**resonating chamber** A space inside an animal that amplifies sounds, usually for mating calls.
**scavenger** An animal that feeds on animals it finds already dead.
**serrated** Having tiny saw-like teeth on an edge for improved cutting.
**sexual maturity** The age when male and female animals develop the ability to mate and produce young.
**sonar** A way of detecting objects by sending out a series of sounds and then listening for the echos reflecting off the object.
**species** A group of animals or plants with similar characteristics and the ability to breed with one another and reproduce themselves; the basic unit of scientific classification.
**vertebrae** The bones of the backbone, from the neck bones to the tail bones.
**vertebrates** Animals with a backbone made of bone or cartilage.
**vestigial digit** A finger or toe that is so small and poorly developed that it is of practically no use.
**warm-blooded** Animals with the ability to create and maintain body heat regardless of the temperature of the surroundings.

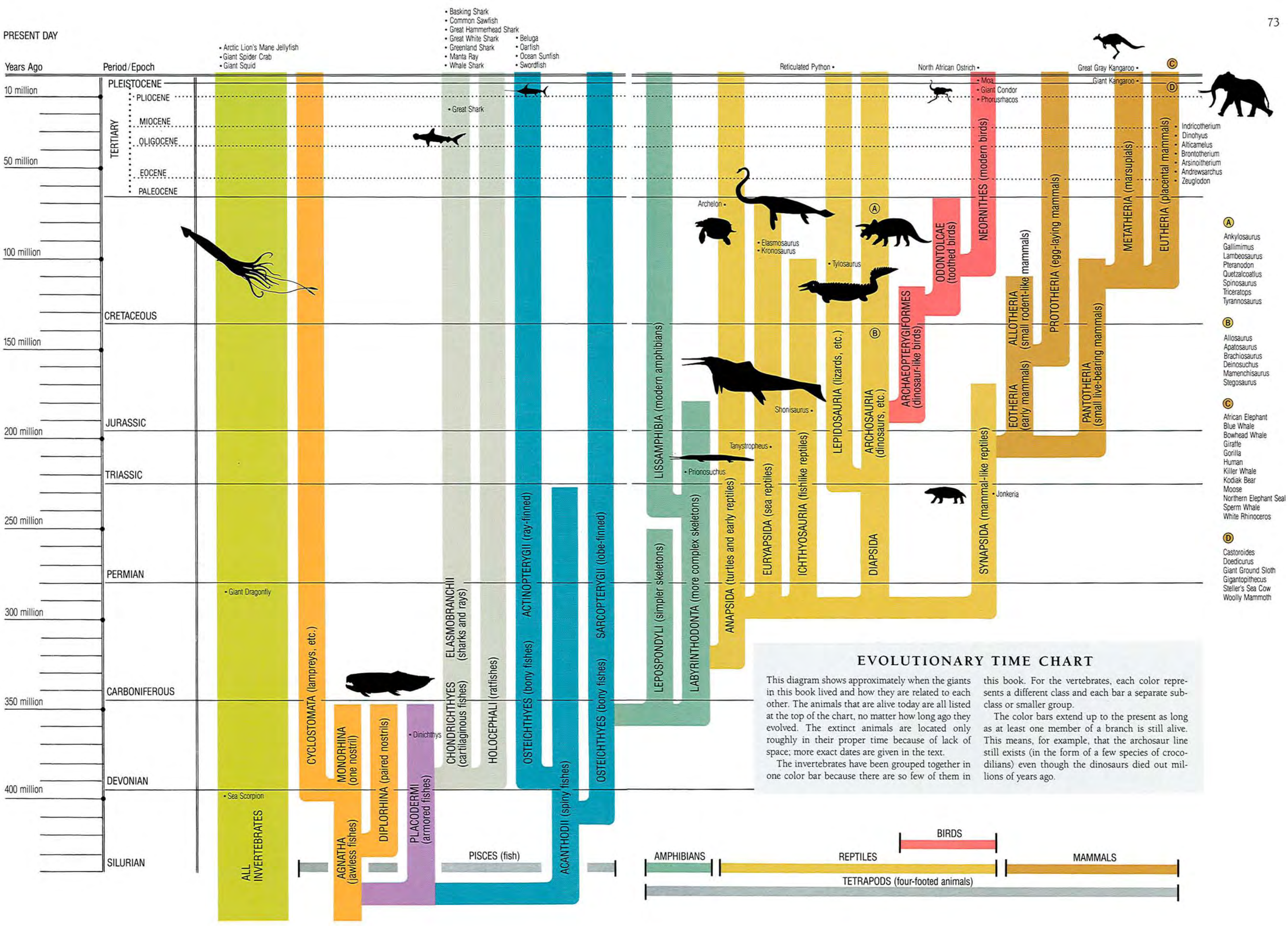


GIANT SQUID (cont.)



# INDEX TO THE ANIMALS

Page numbers in *italic type* refer to material in illustrations.




Ⓐ
Ankylosaurus
Gallimimus
Lambeosaurus
Pteranodon
Quetzalcoatlus
Spinosaurus
Triceratops
Tyrannosaurus

Ⓑ
Allosaurus
Apatosaurus
Brachiosaurus
Deinosuchus
Mamenchisaurus
Stegosaurus

Ⓒ
African Elephant
Blue Whale
Bowhead Whale
Giraffe
Gorilla
Human
Killer Whale
Kodiak Bear
Moose
Northern Elephant Seal
Sperm Whale
White Rhinoceros

Ⓓ
Castoroides
Doedicurus
Giant Ground Sloth
Gigantopithecus
Steller's Sea Cow
Woolly Mammoth

## EVOLUTIONARY TIME CHART

This diagram shows approximately when the giants in this book lived and how they are related to each other. The animals that are alive today are all listed at the top of the chart, no matter how long ago they evolved. The extinct animals are located only roughly in their proper time because of lack of space; more exact dates are given in the text.

The invertebrates have been grouped together in one color bar because there are so few of them in this book. For the vertebrates, each color represents a different class and each bar a separate subclass or smaller group.

The color bars extend up to the present as long as at least one member of a branch is still alive. This means, for example, that the archosaur line still exists (in the form of a few species of crocodilians) even though the dinosaurs died out millions of years ago.

**David Peters** is a St. Louis–based freelance commercial artist who is self-taught. He graduated from the School of Journalism at the University of Missouri in Columbia. Like many children, he had an early interest in dinosaurs, whales, and sharks, and at the age of 31 expressed his interest in this, his first book.

Run past a dinosaur…

swim alongside a whale…

dodge a giant dragonfly or snake…

Find out just how big the giants of yesterday and today really are. Seventy-one of the largest animals of all time are compared to us and to each other in stunning full-color paintings, all drawn to the same scale. Fold-out sections open to show the biggest of the big…stretching out for page after page after page. A capsule biography of each giant describes its life—and fate—on earth.

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