

THE SMITHSONIAN INSTITUTION FACT SHEET

The Smithsonian Institution is a museum, education and research complex of 17 museums and galleries, and the National Zoological Park. Fifteen museums and galleries are located in Washington, D.C., two are in New York City, and the National Zoo is in Washington. Ten of the museums and galleries are situated on the National Mall between the U.S. Capitol and Washington Monument.

One of the world's leading scientific research centers, the Institution has facilities in eight states and the Republic of Panama. Research projects in the arts, history, and science are carried out by the Smithsonian all over the world.

The new National Museum of the American Indian is scheduled to open on the National Mall in 2002. The centerpiece of the museum is the priceless collection of Native American artifacts transferred to the Smithsonian from the Museum of the American Indian, Heye Foundation (New York). The New York exhibition facility - the Heye Center of the National Museum of the American Indian opened October 30, 1994 in lower Manhattan.

Another new museum, the National Postal Museum, is located near Union Station on Capitol Hill. Devoted to the history of the U.S. mail service, the museum houses the world's largest and most comprehensive collection of its kind, with more than 16 million stamps, covers, and artifacts.

HISTORY

James Smithson (1765-1829), a British scientist, drew up his will in 1826 naming his nephew, Henry James Hungerford, as beneficiary. Smithson stipulated that should the nephew die without heirs (as he did in 1835), the estate would go to the United States to found "at Washington, under the name of the Smithsonian Institution, an establishment for the increase and diffusion of knowledge..."

On July 1, 1836, Congress accepted the legacy bequeathed to the nation by James Smithson, and pledged the faith of the United States to the charitable trust. In 1838, following approval of the bequest by the British courts, the United States received Smithson's estate - bags of gold sovereigns - then the equivalent of \$515,169. Eight years later, on August 10, 1846, an Act of Congress signed by President James K. Polk, established the Smithsonian Institution in its present form and provided for the administration of the trust, independent of the government itself, by a Board of Regents and Secretary of the Smithsonian.

SMITHSONIAN MUSEUMS, GALLERIES AND ZOOS

Anacostia Museum	National Museum of the American Indian
Arthur M. Sackler Gallery	National Museum of Natural History
Arts and Industries Building	National Portrait Gallery
Cooper-Hewitt, National Design Museum	National Postal Museum
Freer Gallery of Art	National Zoological Park
Hirshhorn Museum and Sculpture Garden	Renwick Gallery
National Air and Space Museum	S. Dillon Ripley Center
National Museum of African Art	Smithsonian American Art Museum
National Museum of American History	Smithsonian Institution Building ("Castle")



AGES 8 & up

WARNING:

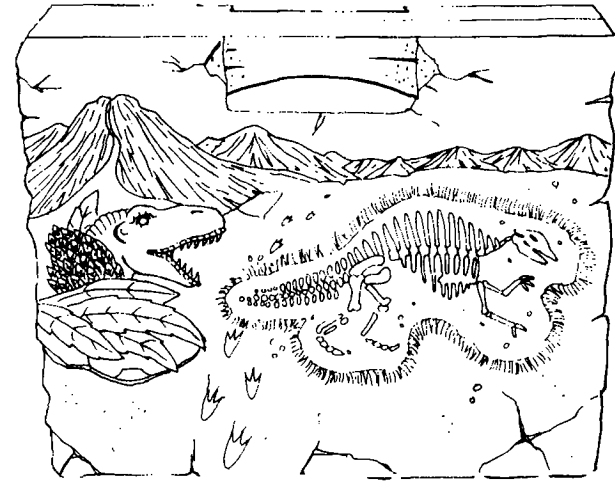
Only for use by children over 8 years old. This set contains a geologic hammer with a functional sharp point. Adult supervision required.

CAUTION!

Cover your work surface with a few layers of old newspaper or larger scrap paper to protect it from the brick. It is also a good idea to wear a smock or old clothing while excavating.

SMITHSONIAN

Diggin' Up Dinosaurs™



DEAR CUSTOMER,

NSI is the manufacturer of this kit. If we made an error and left something out of this set, or if something is damaged, we are sorry and wish to correct our error. Please do not return the set to the store where you purchased it, or to the Smithsonian, as they do not have replacement parts. Instead, write us a letter giving us:

1. Date of Purchase
2. Where Purchased
3. Model Number
4. Name of Set
5. Brief Description of Problem
6. Sales Slip

We will do our best to satisfy you.

Quality Control Department, Natural Science Industries, Ltd.

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Introduction

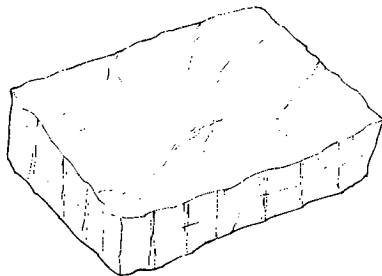
Ever since the first dinosaur bone was documented back in 1677, we have been fascinated with these incredible creatures. With this set, you will dig, assemble and display a replica of a dinosaur skeleton.

This set has gone through a painstaking process by Paleontologists to ensure the quality and accuracy of the contents. Diggin' up Dinosaurs will provide you with an enjoyable voyage into the fascinating prehistoric world.

Description of Kit:

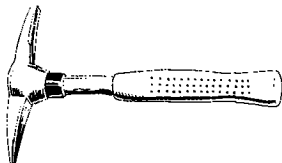
• Kit Contents

- **Safety Goggles:** Paleontologists know the importance of safety. Always secure your safety goggles over your eyes to protect them from any dust or particles that are loosened during your dig.
- **Sand Block:** This sand block represents a piece of Earth similar to an area that you might be working on in a true field study. Buried within the sand block are the dinosaur bones that you will be excavating. Be sure to work carefully at excavating. Dinosaur bones are extremely fragile, or delicate. Go slowly - use patience!



The sand block consists of sand, plaster of paris and one plastic dinosaur skeleton replica.

- **Geologic Hammer:** Use this digging tool to help separate the sand stone to reveal the fossils.



YALE UNIVERSITY - PEABODY MUSEUM OF NATURAL HISTORY
<http://www.peabody.yale.edu>

FIELD MUSEUM OF NATURAL HISTORY, CHICAGO
<http://www.fnmh.org>

MUSEUM OF THE ROCKIES
<http://museum.montana.edu>

DINOSAUR ART
<http://www.indyrad.iupui.edu/public/jrafert/dinoart.html>

THE PALEONTOLOGICAL SOCIETY
<http://www.ucmp.berkeley.edu/Paleonet/PalAss/PalAss.html>

DINOSAURIA ON-LINE
<http://www.dinosauria.com>

THE DINOSAUR INTERPLANETARY GAZETTE
<http://www.dinosaur.org>

THE DINOSAURICON
<http://dinosaur.umbc.edu/main/index.html>

THE DINOSAUR DATABASE
<http://palaeo.gly.bris.ac.uk/dinobase/dinopage.html>

DINOFEST - The World's Fair of Dinosaurs
<http://www.dinofest.com>

THE TREE OF LIFE Project
<http://phylogeny.arizona.edu/tree/eukaryotes/animals/chordata/dinosauria/dinosauria.html>

DINOSAUR MAILING LIST
I WANT TO BE A PALEONTOLOGIST - WHAT DO I DO?
<http://www.cisab.indiana.edu/~mrowe/dinosaur-FAQ.html>

OTHER FUN STUFF TO CHECK OUT...

THE LOCH NESS MONSTER
<http://www.geo.ed.ac.uk/home/scotland/monster.html>

DINOSAURS IN SCIENCE FICTION AND FANTASY LITERATURE
<http://www.dinosauria.com/jdp/misc/fiction.htm>

DINOSAURS IN THE MOVIES
<http://www.dinosaur.org/MovieHistory.htm>

The name *Velociraptor* comes from the word **Veloci**, which means fast, and **raptor**, which means thief. *Velociraptor* had a large head, and long arms, with teeth like steak knives! It also had a sickle claw on its feet. *Velociraptor* was about 7 feet long, and weighed only one-twelfth of a ton. This is small in comparison to dinosaurs such as the great T-rex, who weighed a hefty 7 tons!

Velociraptor roamed the earth during the **Mesozoic Era, Cretaceous Period, Campanian Stage** or about 84 - 71 million years ago. It roamed Mongolia, at a rather fast speed, about 20 miles per hour, preying on other dinosaurs. The most famous *Velociraptor* skeleton ever found is the “fighting dinosaur” specimen, where *Velociraptor* is locked in a death grip with a *Protoceratops*.

LIST OF DINOSAUR RELATED WEB SITES

Are you looking for more information that will help you learn more about dinosaurs? Try visiting some of these helpful websites about these fascinating creatures.

SMITHSONIAN INSTITUTION

<http://www.nmnh.si.edu/paleo/>

(HOME page of the Department of Paleobiology)

<http://www.nmnh.si.edu/paleo/dino/>

(Virtual tour of the Dinosaur Hall)

EARTHNET INFO SERVER (ILLINOIS STATE GEOLOGICAL SURVEY)

http://denr1.igis.uiuc.edu/isgsroot/dinos/dinos_home.html

MUSEUM OF PALEONTOLOGY,

UNIVERSITY OF CALIFORNIA, BERKELEY

<http://www.ucmp.berkeley.edu/diapsids/dinosaur.html>

SOCIETY OF VERTEBRATE PALEONTOLOGY

<http://www.vertpaleo.org>

NATURAL HISTORY MUSEUM, LONDON

<http://www.nhm.ac.uk/>

ROYAL TYRRELL MUSEUM OF PALEONTOLOGY

<http://tyrrellmuseum.com/home.html>

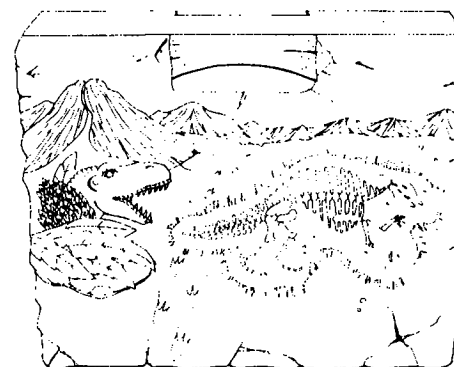
HUNTERIAN MUSEUM, UNIVERSITY OF GLASGOW

<http://www.gla.ac.uk/Museum/HuntMus/dinosaur/>

AMERICAN MUSEUM OF NATURAL HISTORY

<http://www.amnh.org>

- **Brush:** Use the brush to dust off any loose particles from the fossils as you excavate.
- **Plastic Case:** This case can be used to store the tools you will be using to excavate your dinosaur fossils, and is a safe place to store the bones as you excavate.



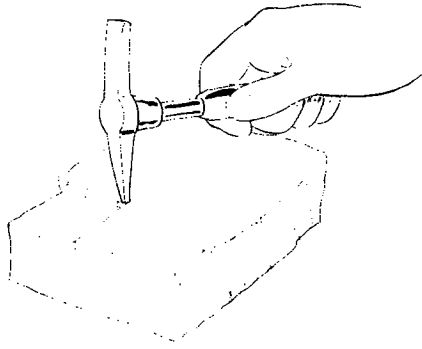
Preparing for your Dig:

Step 1: Set up a clean area with a hard flat surface where you can do your work, such as a kitchen table, where the lighting is good. Cover the area with newspaper to protect the area from the dust of the sand block. Ask an adult to help you secure the newspaper to the table with tape, otherwise the paper may slip and slide while you are trying to work. Be sure you are wearing a smock or apron, to protect your clothes.

*Have all of your tools handy in your work area: **goggles, geologic hammer, brush, case, and the sand block.**

Step 2: Fasten the safety goggles around your head to protect your eyes. After this has been done, you may carefully unwrap your sand block, and throw away the plastic wrap. As there is one pair of goggles in this set, make sure no one is close by when excavating, as dust may irritate their eyes.

Step 3: Place the sand block flat on the table. Carefully use your geologic hammer to begin scraping away parts of the sand block. You will need to brush away dust from the block from time to time to keep your excavating area clean.



Step 4: Excavating dinosaur bones can take a long time. Be sure to continue scraping with your pick. Hammering or smashing is not recommended. Dinosaur bones can be hidden and they are fragile, or easy to break. Be patient, you will find some bones soon! Lightly sprinkling some water on your block from time to time will make your digging easier.

Step 5: When you begin to see a fossil through the sand, keep digging: dig around and on the sides of the fossil, being careful not to scratch or crack the bones. Continue to dig carefully, using only your excavation tool and the brush to free and dust the area of the fossil.

Step 6: Once you have freed the "fossil," you may want to use a bowl of water to rinse the remaining sand from it. Dry it and set it aside safely, in your plastic carrying case. It is a good idea to carefully brush away the sand from the area you were working in. Look carefully, you will probably find another fossil close by. You can take a picture of the block as each fossil is fully exposed. This way you can reconstruct the full fossil after you remove all the parts.

Step 7: Follow these same steps to unearth all your fossils. A good paleontologist knows that his or her work may take a long time. Be patient, and keep on digging!

Step 8: Once you have unearthed all the dinosaur fossils, they will snap together nicely to build a model.

In many cultures, dinosaurs are one of the most popular creatures of all times. Because of this, there is a great deal of information for you to read and find about dinosaurs, how they lived, what they looked like etc. However, not all of the information that is out there is written by someone who is an expert on dinosaurs. A **dinosaur paleontologist** is a scientist who professionally studies dinosaurs and their fossils. Worldwide, there are only about 100 men and women who are professional dinosaur paleontologists.

Tyrannosaurus rex lived in the **Mesozoic Era, Cretaceous Period, Maastrichtian Stage**, or about 71-65 million years ago.

Tyrannosaurus rex roamed Western North America, living in the lowlands, and in forests. *Tyrannosaurus rex* didn't have trouble catching its prey. It is considered a fast moving dinosaur, moving around at 20 miles per hour. The next time you are in a car, ask your mom or dad to drive twenty miles per hour to get a sense of how fast *Tyrannosaurus rex* moved.

Triceratops:

In 1889, John Bell Hatcher first began collecting *Triceratops* fossils, in the Lance Creek Formation of Wyoming. Much has been learned about this great creature through that and other discoveries. *Triceratops* is scientifically classified within the Dinosauria, Ornithischia, Marginocephalia, Ceratopsia and Ceratopsidae. The name *Triceratops* comes from the word **Tri**, meaning three, **cera**, meaning horns and **tops**, which means face. Doesn't that make sense when you think about the fact that *Triceratops* had three large horns on its face? *Triceratops* was about 30 feet long, and weighed approximately 6 tons. It had the largest head of all the plant-eating dinosaurs.

Triceratops roamed the earth during the **Mesozoic Era, Cretaceous Period, Maastrichtian Stage**, about 71 to 65 million years ago, in Western North America. It roamed the lowlands and forests. It fed on a diet of flowering plants and ferns, cycads and evergreens. *Triceratops* had the most powerful jaws of any plant-eating dinosaur. *Triceratops* moved slowly, approximately 10 miles per hour. The next time you are in a car, ask your mom or dad to drive ten miles per hour to get a sense of how slowly *Triceratops* moved. *Triceratops*, moving at ten miles per hour was a favored prey of the great *Tyrannosaurus rex*, who moved at a speed double that!

Velociraptor:

In 1923, The American Museum's Gobi Expedition, led by Roy Chapman Andrews found the first skull of *Velociraptor*, in Mongolia. Much has been learned about this great creature through that and other discoveries. *Velociraptor* is scientifically classified within the Dinosauria, Saurischia, Theropoda, Coelurosauria, and Dromaeosauridae.

Dinosaur Profiles: We have chosen to profile four dinosaurs: Stegosaurus, T-rex, Triceratops and Velociraptor.

Stegosaurus:

In 1886, field crews near Canyon City, Colorado discovered the first complete Stegosaurus. Much has been learned about this great creature through that and other discoveries.

Stegosaurus is classified scientifically as within the Dinosauria, Ornithischia, Thyreophora, Stegosauria and Stegosauridae. The name *Stegosaurus* actually comes from two parts: the first part, **Stego**, means roofed, and the second part, **saurus** means lizard. This makes sense, since people referred to dinosaurs as “great lizards”, and Stegosaurus had large plates on the top of its back, like a roof. *Stegosaurus* had a very small head, and a tail with spikes on the end of it. The average *Stegosaurus* was about 25 feet long, and weighed about 4 tons!

Stegosaurus lived during the **Mesozoic Era, Jurassic Period, Kimmeridgian Stage**. This was about 154 to 151 million years ago. During its time on earth, *Stegosaurus* roamed the Western United States, living in the lowlands, with rainy and dry seasons, feeding on plant life, and **meandering**, or moving very slowly, near the rivers. In fact, *Stegosaurus* only moved about 5 miles per hour. The next time you are in a car, ask your mom or dad to drive only five miles per hour to get a sense of how slowly the *Stegosaurus* actually moved.

Tyrannosaurus rex:

In 1902, Barnum Brown discovered the first *Tyrannosaurus rex* skeleton in the Hell Creek area of Montana. Much has been learned about this great creature through that and other discoveries. *Tyrannosaurus rex* is classified scientifically within the Dinosauria, Saurischia, Theropoda, Coelurosauria and Tyrannosauridae. The name *Tyrannosaurus* comes from the word **Tyrannos**, which means tyrant, or bully. It is also taken from the word **saurus**, meaning lizard, and **rex**, meaning king. This makes sense when you think about some of the things we know about *Tyrannosaurus rex*. T-rex was the most powerful predator. We know that *Tyrannosaurus rex* was a **carnivore**, meaning it ate meat, as in **other dinosaurs!** *Tyrannosaurus rex* weighed about 7 tons, and measured about 45 feet in length. It had a large head, with giant teeth the size of bananas!

Most of the information about dinosaurs and their evolution, or development over time has come from the study of dinosaur skeletons, or their **fossils**. One of the major goals of paleontology, or the study of dinosaurs, is to recreate, to the greatest extent possible, the course of evolution of dinosaurs through this study.

History:

The study of dinosaurs has a long detailed history. Many different scientists from around the world made contributions to this field of knowledge. It is hard to say exactly when the first discoveries about dinosaurs were made. Most likely, markings of their footprints, or tracks in the ground, were noticed long long ago, before people even recognized their bones.

Dinosaur Paleontology, the professional study of dinosaurs, had its first roots in Europe, and then slowly moved across the globe to other countries. The first reported discoveries were from the Jurassic strata of England. There were other early observations in France and North America too. For about 150 years after scientist Robert Plot made the first illustration of a dinosaur bone in 1677, fossils that were found were mistakenly recorded and judged as fossils of elephants, crocodiles and fish. It was William Buckland who first recognized that these bones belonged to an **extinct**, or vanished, creature that was different from anything living at that time. Some called them “giant reptiles”.

In April of 1842, scientist Richard Owen used the term **Dinosauria**, in his “*Report on British Fossil Reptiles*”. He described this new name as meaning “fearfully great, a lizard”. People have often wrongly used his original term as “terrible lizard”, which is not correct! Dinosaurs are not terrible, and they are not lizards!

From here, the study of dinosaur remains took off like wildfire. It is still an area that stirs up great interest in many people today.

Where and how dinosaur fossils are found:

In order for a paleontologist to successfully hunt for dinosaur bones, he or she needs facts about the local geology and stratigraphy of the area they are working in, and they need time to carry out their search. A paleontologist must be able to tell the difference between fossils and regular rocks.

There are two important rules that all paleontologists must follow when they are conducting their searches. First, they must have permission from the landowner or land manager in charge of the property they are excavating. Second, they must respect the landscape of the area they are working in. This is true whether the land is private or public property.

To get the best results, paleontologists use, or rely on, **geologic maps** that plot the rocks of different geologic ages. This is so they do not waste time looking in the wrong areas. They use these maps to help them narrow their search for dinosaur bones. They know that fossils are not usually found in volcanic ash, and that only sedimentary rock might have fossils.

However, they also know that not all sedimentary rock areas will have dinosaur bones! Paleontologists know that dinosaur remains are found only in rocks that are from the late **Triassic Period** to the end of the **Cretaceous Period**. A **period** refers to major spans of geologic time. Dinosaurs roamed the Earth during the **Triassic, Jurassic** and **Cretaceous** periods.

Most paleontologists agree that it is a good idea to also search where other fossils have been found. The amount of bones can be sketchy; there are lots of bones in some places and very few in other places. Paleontologists will often re-visit old sites in the hopes of finding more bones from a particular dinosaur, or new bones from a new creature. Careful searching around bone that is already exposed may result in the discovery of new bones. Sometimes, the exposure of one or a few bones may indicate part of, or even a whole dinosaur skeleton.

Once the bones have been discovered, paleontologists make the decision about whether or not the bones should be **excavated**, or dug out. This is a very important decision. The decision to excavate is a big responsibility of time, and money, plus a commitment to preparing laboratories, and finding a place to store the new bones.

Once the decision has been made to **excavate**, or dig, for the bones, a grid map is made to show where the bones will be excavated. Paleontologists also use pictures of the area to help them be more specific, or **accurate**.

Excavation of fossil bones can be tricky. The way paleontologists work may change a little from one site to another. The process can be described, but it cannot really be learned without **in-field training** by an experienced paleontologist.

Blocks of rock, ranging in size from hundreds of kilograms to a ton or more are being removed. Sometimes **bulldozers** or **jackhammers** are needed to get the job done, to remove the layers of rock above a skeleton.

Paleontologists only take away as much rock as they need to reach their goal. They are careful to respect the land they are working on. They may need small hand held tools, or power tools. As they get closer to the bones, paleontologists may continue digging, using tools such as a dental pick!

As bones are exposed and lifted out of the rock, they may begin to crack, because they have been covered in rocks for millions of years. Paleontologists have special chemicals that they can spread over the bones to help stop this from happening. At some point in the excavating, the bones must be further protected, to prevent any damage to them. The bone is **encased**, or covered, in a plaster "jacket", similar to a cast that a doctor uses to set a broken bone. This makes them ready to be moved. In the end, the bones are made ready for study, storage, or exhibit somewhere.

Extinction Theories:

Ideas about how most of the dinosaurs disappeared from the Earth have long been argued. Two main **theories**, or ideas, exist. The first theory suggests that the dinosaurs were roaming the Earth in great numbers, when the Earth began to go through changes that affected its biological and physical characteristics. All these changes cause a **gradual**, or slow decrease in dinosaur populations. As the number of dinosaurs decreased, or went down, they became susceptible, or in danger of extinction due to physical causes and threats. Eventually they died off.

On the other hand, there is a different view of how dinosaurs became extinct. This is known as the **Impact Theory**. This theory says that at one time, dinosaurs roamed the Earth in large numbers, until some large object **collided** with, or hit into, the Earth, causing many horrible things to happen. One of these things may have included a time of total darkness across the planet, and acid rain. Following this, dinosaurs were gone.

Although these two theories have things in common, there is much that is different as well. There is still much to be learned about the life and extinction of these great creatures.