

THE DESCRIPTION OF TWO FIELD TRIPS FOLLOW: (UPDATED NOV 25, 2007)

American Museum of Natural History Field Trip I:

Attach ticket stubs and receipts as proof of your visit. **BE SURE TO ASK FOR THE STUDENT PRICE AND HAVE YOUR ID WITH YOU.** Be prepared to spend a day or at least 5 hrs there. When visiting the museum pick up a floor plan map. You will explore in this trip the Frederick Phineas and Sandra Priest Rose Center for Earth and Space at the American Museum of Natural History Central Park West and West 81th Street.

Main highlights Include the New Hayden Planetarium , "Big Bang Theater@ and the Cullman Hall of the Universe. Take notes whenever possible and answer questions and prepare summaries of your experience as indicated below. A field trip from the outer reaches of the universe to the inner workings of the Earth. Expect to spend at least half a day at the Museum. The centerpiece of the facility is the new Hayden Planetarium.

1. Visit and experience the Space Show at the Planetarium. Tickets for the Space Show can be reserved starting in early 2000 by calling 212-769-5200.

A. Summarize the science behind the show you see (take notes during the show when possible).

B. What are the features that make this Planetarium and its Zeiss Star Projector unique.

2. Visit the bottom half of the Great Sphere and explore the the "Big Bang Theater" a dramatic recreation of the first minutes of the origins of the universe.

Discuss your findings about beginning of time and space, and the dramatic, multi sensory re-creation of the first moments of the universe

3. Continue from the latter to a journey that chronicles the evolution of the universe by following the Harriet and Robert Heilbrunn Cosmic Pathway -- a sloping walkway that takes them through 13 billion years of cosmic evolution.

A. Summarize the highlights of this walk?

B. What is humanities importance in this perspective.?

C. Check out the Acomputer@ on the path and answer What is the most distant object we observe. How long ago did the light leave it?

D. What is the current accepted age of the Universe

4. The Cosmic Pathway leads visitors to the Lewis B. and Dorothy Cullman Hall of the Universe, on the bottom level of the Rose Center, underneath the sphere. Visit this Cullman Hall of the Universe, which examines issues such as how the universe evolved.

Examine and study the Kinetic sculptures, computer visualizations, and dramatic projected images that illustrate the processes that led to the creation of our galaxy, stars, and planets. Note that the topics are presented in thematic clusters called Zones.

Briefly answer the following questions about the modern discoveries of astrophysics.

A. How did the universe evolved into galaxies, stars, and planets ?

B. How did the atoms from which we are made become created in cosmic events?

C. Where did the matter necessary for life come from?

D. Discuss what you find out about (supermassive) black holes?

E. Define the AU@: What is, was and will be the universe.

F. How do rotation and gravity effect a galaxies shape?

G. What kind of galaxies are there?

5. Watch the video shown in an adjacent mini-theater and discuss the nature of the extreme forces of gravity and the warping of space and time found near a black hole.

A. What is a black hole?

B. What is a black holes relationship to Einstein=s theories.

6. Note the video sequence of two colliding galaxies that appear to hang in space above the Galaxies Zone, and discuss this phenomena?

7. In the Stars Zone the rare circumstance of an entire star exploding as a supernova is featured. Discuss this event.

8. The Planet Zone features the Willamette Meteorite. Examine it.

A. What is the significance of this ancient cosmic debris?

B. What caused the extremely pitted surface of the large meteorite?

C. What role do asteroids and comets cover in crater formation?

D. How dangerous is the latter to your life?

9. How does the "Ecosphere," found in this Hall answer questions about where life could exist in the universe and how we are searching for it ?

10. From the AAstroBulletin. summarize the latest news, and events from space, especially what are the current space missions?

American Museum of Natural History Field Trip II

Attach ticket stubs and receipts as proof of your visit. **BE SURE TO ASK FOR THE STUDENT PRICE AND HAVE YOUR ID WITH YOU.**

Be prepared to spend a day or at least 5 hrs there. When visiting the museum pick up a floor plan map. Most of the suggested places to visit are on the same floor with the exception of the Dinosaur rooms.

Most main halls to visit are listed in order on the same floor. Answer the questions below as part of your report. You can use the other sides of these sheets to add additional material or answer questions more fully. Follow directions as listed to find various displays. If you see displays that interest you please feel free to add to your report ideas and concepts you want.

Visit the **Gottesman Hall of Planet Earth**@

Be sure to watch any films that pertain to the topics below!

Enter the hall by going to the left (left as you face into the hall from the entrance).

1. What makes the Earth Habitable? Looking left and right as you proceed up the ramp.

2. What is an Ore? Where do they come from?

3. Discuss Briefly the.. **Rock Cycle; Water Cycle; Carbon Cycle**

Watch the film on the Earth.

4. Sit under the large Earth on the Ceiling display.

Watch the changes and comment on your observation.

5 Go to the Hydrothermal display (on second floor of the Hall head back to entrance direction).

Comment on Life at a hydrothermal vent and its relationship to Jupiter=s moon Europa.

6. (Check out opposite wall) What Causes climate and climate changes(briefly discuss each cause)?

7. Back to Left wall (left viewed from facing into the hall from the entrance).

Discuss the formation of the planets. Include the evidence and ideas.

8. In the hall are displays on Volcanism. Discuss the main points about this phenomena.

9. Watch the film on the large screen in the rear of the Hall. Comment on its significance.

Move through the **Hall of Bio-Diversity** on your way to **Human Biology and Evolution Hall** (see Map)

10. Using the information provided on the right side of the Hall.

Define the following with illustrative examples: **Cartilaginous Fish; Bony Fish; Amphibians; Snakes and Lizards; Crocodiles and Birds; Mammals**

11. You might want to stop for lunch or snack by entering the Hall with the Blue Whale on the right as you walk through the Bio-Diversity Hall. **What is significant about the Blue Whale?**

12. Consult the map and go to the **Spitzer Hall of Human Origins** (Note that the Meteorite Hall and the Hall of Minerals and Gems are just after this Hall)

Examine the skeletons of the Chimp, Modern Human and Neanderthal at the Hall Entrance.

Comment on the similarities and differences of the Hands, Feet and Shoulder Area.

13. Enter the Hall and going to the right to the Homo Ergaster exhibit. How did this species fit into human evolution?

What important mutation did they show and what advantage was it?

14. Near the center are two Australopithicus models and just behind them is the famous skeleton of "LUCY".

What is the significance of Lucy and Austalopithicus in Human Evolution?

15. Further in on the right (from the entrance) is the exhibit of Homo Erectus? What is the significance of Homo Erectus in Human Evolutio?

What is the "Out of Africa" model of human evolution? How has it been confirmed?
What was the other model of human evolution which is no longer believed?

16. On the Left middle of the Hall (from the entrance) is the **Neanderthals Exhibit**.
What is the significance of Neanderthal? Is there evidence that Modern Humans evolved from them or that they are still in our gene pool?

17. On the Left side toward the Back of the Hall is the Migration Exhibit: Discuss current concept how Modern Humans spread all over the world giving time periods of the Migration?

18. Watch the Video on the Right side middle of the hall called HUMAN BULLETIN:

What did you learn watching this presentation?

Enter the **ROSS HALL OF METEORITES**

Walk and around and study the outlying exhibits and answer the following questions.

19. Outline significance of Meteorites(Asteroids and Comets) to:

A. Origin of Solar System (origin of life?).

B. Extinction of Dinosaurs - What is the Evidence?

20. Define Meteorite and Asteroid? . What is their relationship and their source?

21. What was the Tunguska Event?

22. Briefly discuss surface features of Meteorites, upon entering the atmosphere.

23. Discuss Meteorite impacts and mechanics of cratering.

24. Discuss significance of Iron Meteorites and the size of Planets.

25. How old are Meteorites and how is it determined?

26. Outline the classification of Meteorites. List the characteristics of each type.

27. What is the largest Meteorite recovered? Outline character as to type, locality, age, size, weight and origin.

28. Briefly discuss the character and significance of chondrules and the Carbonaceous Chondrites.

29. Watch the Meteorite Film narrated by Dr. Sally Ride (astronaut) on Meteorites and the Origin of the Solar system.. Summarize the highlights of the Film. Some of the information in this film can be used to help answer some of the questions above.

30. Any other observation of your interest in the Meteorite Hall

Visit the Guggenheim Hall of Minerals:

31. Immediately on the right as you enter is the Nature of Minerals display. What is a mineral? List some minerals and ores the you find as you wander the Hall. Especially ones the you find that are beautiful in your opinion?

32. Look over the Display room called the Morgan Memorial Hall of Gems also on the right of the main Mineral Hall. What is your overall impression of Gems?

33. Check out the presentations on Gold (film). Discuss how gold is deposited by natural processes for humans to find it?

34. Any other observation of your interest in the Mineral Hall?

35. Visit the **two Dinosaur rooms(4th Floor)** and Discuss their evolutionary significance in relation to the Earths' History.

36. What are the new ideas we have about Dinosaurs? Comment on warm bloodiness and feathers?

37. Are dinosaurs still with us?