HISTORY

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I. Introduction

A. Review of Primary History

A basis for history is established in the primary class in a number of ways:

1. Current Events: The child should be helped to see that everyday we're making history. This can be accomplished by bringing a newspaper into the classroom and commemorative stamps illustrating what is currently being celebrated. An emphasis on the positive should be made.

2. Use of Stories and Songs: Ones that refer to events in history such as ballads. They should cause the child to think.

3. Poetry: Should be read out loud. Pictures and short biographies of the poets can be brought in. Children can copy poems and create their own folders. Poetry is important as it reflective of the spirit.

4. Card Material: Children can lay out cards, matching the picture with a definition or description of the picture. Builds a sense of history; illustrates how man's needs were met through our development. One item, such as water transport, can be illustrated as it developed throughout history. A general impression is given first; process of selection is important and should be sparse. This is appropriate for upper primary and early elementary. When the child is beginning to go beyond sensorial there is no need for matching; he should be prompted to use his imagination.

5. Collections of Rocks Fossils and Artifacts: Bring one of each to lesson table; state what they are: a rock found in the earth; a bone found in earth and a sign of life; a coin, evidence of man. Give sensorial experience of things found in the earth. Have collections available for further investigation, can have labels. Rocks should include one of each kind (sedimentary, igneous, and metamorphic) and the language should be given. Fossils should include both plant and animal life. Several artifacts perhaps a coin, key, piece of pottery. Aim to excite child, encourage child to bring in things he's found. Class collection should be changed occasionally.

6. Use of Drama: Little plays. Three levels; first tell story a number of times, later invite children to act it out; eventually bringing in props until at the 3rd level children can act them out without narration. Can be embellished with song and percussion instruments. Dramatic techniques can be discussed i.e. speaking clearly, appropriate use of language and gestures, sorts of words used etc. Make sure whatever is done is reality centered.

7. Child's Own Creative Work: Children can write their own stories. Can write in booklet form and do illustrations. Different kinds of paper should be available. Can also do scrolls and charts.

B. History in the Elementary Class

History in the elementary classroom is an umbrella for everything done with the students. It is an all encompassing program serving as a basis for every subject taught. As in the other subject areas, the history program is structured around the psychological characteristics of the child.

During his first six years, the child's self-construction took place in the context of his family and the Montessori prepared environment. Now at five and a half or six, he begins to turn outward from his family and school to society at large.

In the first plane of development the child had the possibility of exploring sensorially and took in the totality of life around her including the customs, culture and psychological climate of his environment. Now, during her second plane of development, she explores time and space using her imagination. To respond to this characteristic, the history program includes impressionistic materials used to arouse the child's interest and curiosity. The adult's role is crucial: our own enthusiasm and sense of wonder inspires the child's interest and aids the child in finding her

own answers (rather than giving them to her).

The child at this age is interested in the bizarre and extraordinary and exhibits a preoccupation with infinity. He has a high sense of morality and is conscious of what is right and wrong. He has a tendency for hero worship making it important to edify all that's good in the people of the past. At six, he begins to resist working alone, showing his herd tendency and his overwhelming need to be with peers.

Key lessons are presented to small groups using illustrative materials. The child is then free to respond with his own follow-up or not respond at all. He should never be coerced to do so.

The child should be allowed to work in accordance with his characteristics, but also needs to be accountable for the work required by the public school system. In most cases, the work in the classroom will encompass these requirements but the public school curriculum should be posted in the room (so the children can check to see that they are fulfilling those requirements).

A portion of the material is given to spark the child's interest in research and is referred back to time and again but is not meant to be memorized. This material consists of pictures, charts and time lines, which are imaginative and impressionistic. Other materials are more specifically designed to help the child remember facts, people, dates etc. It's important to keep the history syllabus in mind for our own use, not as a checklist for the student's work.

If the students don't seem to be responding, it could be that the lessons aren't exciting enough or are too complete (too much information). To excite an interest, the teacher must first be excited herself. To keep lessons from being too complete, not all the information on a topic should be given. It's important to leave the child with restlessness to know more. After a lesson, a short stack of books on the subject can be left out for the child's use, with other books available in the history section of the room. It's important to have a good library, but it shouldn't be too large as that can be overwhelming to the child and would also do away with the need to use the public library. The class should be taken as a group to the library early in the year to meet the librarian, get their own cards and learn the hours. They should then be helped to return their books on time.

Because history is the story of man on earth, it's necessary to study geology and biology as a basis for the earth's preparation for man. Before man could start his drama of life, the stage was set and the scenery was changed many times. When man arrived, his adaptation varied with the different regions that came to be. This idea is conveyed to the child with the history material as well as a sense of stewardship for the earth. With the high level of automation in our society, the child misses the connection human beings have to the natural environment that is serving our needs. It is important to instill respect for the environment, particularly in urban areas where children have little opportunity to explore plant and animal life form, farms, forests, etc.

The program of history in the Montessori classroom is the opposite of traditional education. Rather than working from the child's immediate environment to a broader perspective, the child is given a picture of the whole first and gradually works down to his own culture.

The child is given a notion of the immensity of the length of time it took to prepare the earth for man's arrival and the contribution of each creature for making it possible. By performing their cosmic task, each plant and animal formation paved the way in a parade leading to man's entrance.

When dealing with natural history, don't give specific dates, as they are speculative at best, and the purpose of the lesson is to inspire and give impressions, not to give facts for memorization. After a presentation on the creation of the earth, it's preparation for humanity is considered in a way that stresses: "It seems as if it might have been…" The story continues with how man used his faculties to meet his needs, emphasizing the spiritual characteristics in his development. The child sees not only how man's needs were met, but is also given a sense of his own powers and development in meeting his needs.

The program is structured around the following needs and tendencies of man:

Physical Needs Mental Tendencies Spiritual Needs Food Adapt Vanity

Housing Explore/Know Culture

Transport Communicate Art

Defense Measure Religion

Clothing

The child who was introduced to the idea of needs and tendencies through his work in the primary class uses this concept as a springboard for his investigative history work in the elementary class. By studying the mental tendencies that have been used to satisfy man's needs, the child begins to see how tendencies influenced the development of man through history. As in the need for food, the child sees that the control of the food supply was the determining factor for how society developed. When prehistoric gatherers exhausted their food supply, they were forced to move on and eventually made the discovery that seeds could be cultivated and certain animals domesticated. This lead to the agricultural revolution, which in turn freed enough time to create a division of labor and an improved way of life. With this came a baby boom, which forced large groups of people to live together, leading to an urban or civic revolution. In combination with more efficient transport, interchange between cultures was possible and the continual search for a better way of life brought about the industrial revolution. This in turn has led us to what could be termed a technological revolution.

The child sees that as civilization formed, groups related to each other in different ways. There has been peaceful infiltration, religious pilgrimages, forced dispersal and wars as well as exploration, which has determined our heritage. By presenting history in this way, the child's interest and curiosity is aroused and he forms an appreciation for the "cosmic plan" of our life on earth. It helps the child to understand his world, to see that humanity is more alike than different and to feel at home in our society. By giving the child an appreciation for the building of the earth and the similarity of its people, he is given the possibility of wondering what his contribution to the world will be. "Where the world's seeds and my gifts intersect, there lies my vocation."(Aristotle) The child is given the possibility of designing his own life.

C. General Plan of Work

1st Chapter: Natural History (Geological Eras)

A. Creation of the Universe.

B. Black Strip: Impressionistic Material.

C. Clock of Eras: Impressionistic material.

D. Evolution Time Line: More precise, fills in details.

This section deals with the creation of the earth and the laws that govern substances. It gives an impression of the immense period of time it took to furnish the earth for the coming of humanity. The material is generally used to arouse the child's interest and excite him about what happened long ago. Children have the option to do follow up work or not. It's important to have books available after a lesson and most children will want to work with a friend.

2nd Chapter: Prehistory (before writing)

A. Chart of Fundamental Needs: presented in a formal way.

B. The Hand Chart: Impressionistic.

C. First Timeline of Humans-Early Time Line of Paleolithic People

D. Second Timeline of Humans-Upper Paleolithic (with History Question Charts)

3rd Chapter: Linear Measurement of Time

A. Clock: Begin with what child knows

B. Days of the Week

C. Months of the Year

D. Creation of a Class Diary

E. Investigation of the History of the Children's Names

F. Creation of First Time Line:

1) Child's Family

2) Child's Own Life

3) Presentation of BC and AD

The child does technical work and learns the etymology of the language. He may also explore other systems of measuring and time such as the Jewish and Chinese calendars.

4th Chapter: Written History (to the present)

1. Great River Cities
2. Classical Civilizations
3. Middle Ages
4. Renaissance
5. Age of Exploration
6. Own National, State & Local History

Migration charts are also used showing the various reasons why and methods by which humans moved to different places on the earth.

D. Subjective Aspect of History

The point of view used by Montessori regarding history is a perspective on human life based on how human beings have satisfied their physical and spiritual needs through mental tendencies along with the creation of a spiritual tendency. If we regard history in this way: how humans have has met their physical and spiritual needs using these tendencies, it follows that we must look at the children with whom we work in that light. The child should be helped in using his tendencies to meet his needs and build himself into an integrated personality.

Physical Needs (of the child):

1) Housing: The child should be helped to realize the classroom is his environment and he has the social responsibility to care for it. A chore list can be devised. Thorough cleanings will be needed on occasion; children should be instructed how to do so. Parents should be informed that the child needs to have responsibilities at home, care of his own room, etc.

2) Food: It's not our place to make extreme demands on what to eat, but children should be taught about food groups, protein, fats, etc. Lunchtime is important for setting the table properly and teaching other procedures of eating. Where possible, students should be involved in the meal's preparation.

3) Defense: Many children love the study of weapons. Help children find ways to handle aggression and conflict. They should be helped to understand that they can always say what they're feeling. Help them to identify their feelings and to express these feelings in an acceptable way.

4) Transportation: Help children to know bus routes and schedules as well as procedures. Aid them in finding where they can go on foot and how to make inquires on the phone. Give them skills so they don't get lost or go the wrong way.

5) Clothing: Give children opportunities to knit, weave etc. Remind them of appropriate clothing for the weather conditions.

Psychic Tendencies (of the child):

I) Exploration: Children come to the class with different degrees of the faculty; some will be very anxious to learn while others will be less motivated. The teacher may have to tell the passive child what to do for awhile and try to key in to an interest that child has. The classroom should be made seductive to learning with art prints on the walls, newspaper clippings posted in an area, and books that are varied.

2) Communication: The children should be brought together every few days to share what they've done (if they want to). This may be in the form of poetry, stories, oral reports, plays, etc. and it is a way to attach worth to the work they've done. They should be instructed on how to give a presentation, i.e. how to stand, project their voices, and make grammar visible in the spoken voice. They should be taught other social skills such as answering the phone, taking a message, getting information, using the phone book and writing both business and personal letters. School stationary should be provided and instruction on the layout given. Personal stationary should also be available.

3) Tendency Towards Mathematics: Things required by the public school system that aren't always provided in the Montessori core curriculum should be given (practice with money, graphs, budgeting, weights and measures, etc.)

4) Tendency to Classify: practical experiments should be provided, particularly historic ones such as "sink and float" experiments. Stories should be brought in when possible, they help to bring the material to life.

Spiritual Needs (of the child):

1) Vanity: As teachers, it's important to present ourselves attractively (as professionals). Teachers should be fair to all students. An older or more able student can be assigned as a mentor to a slower child. It's also important to avoid negative interactions when possible and to create ways for positive ones to come about. A special way to

honor a child is on his birthday.

2) Culture: Group activities help to foster the gifts of the children and should be encouraged outside of the classroom as well as in. The school should be used for social purposes such as boy and girl scouts, sports clubs etc. Art: The art program has two aspects, that of pure art with activities of drawing, painting, collage, ceramics contained in a section for arts and crafts in the room and integrating art with the other subject areas by illustrative art, diagrams, the study of pottery, etc. Art appreciation should also be given in a three-period lesson starting with three contrasting works such as a painting, a classical work and a modern piece. The prints can be presented and the children can comment on what they see and what feelings are evoked. Language should be given on the period and location. Postcards of the works can be used for matching exercises.

3) Religion: The religious lives of others can be studied with celebrations being a convenient way of doing so. The historic aspect and traditions should be emphasized. Parents should be informed as to what context the study will be undertaken. A quiet corner should also be provided in the room and should be esthetically pleasing. Attention should be paid to the body, mind and spirit of the children without pressure of academic achievement, which should occur naturally. This point of view should be communicated to the parents.

II. Natural History

A. The Black Strip

PREPARATION: large spool on which is wound a black piece of cloth. The cloth is 30 meters long (98 feet) and the last cm. (3/8") is red. (or white)

PRESENTATION:
Take the children out to a large open area such as the beach, a large park or football field. "Today we're going to do a very special lesson." (Begin to unroll the Black Strip, attaching the end to a pole, or preferably, having another teacher or older student hold that end.)

"Do you remember the "Story of the Creation of the Earth.? We learned how the Earth was formed. Now we're going to look at how long it took to form the Earth.

"What do you see? The black strip is very, very long. There was darkness for such a long time. (Unwind the strip without saying anything.)

"The Earth started as a ball of gases. And this went on for a long, long time. (Unwind the strip without saying anything.)

"After a long time the earth began to cool very slowly and the crust was formed. And this went on for a long, long time. (Unwind the strip without saying anything.

"Now the earth is covered with volcanoes. And this went on for a long, long time. (Unwind the strip without saying anything.)

"Eventually the rains came and the earth cooled off some more and the rain filled up some of the craters left by some volcanoes and formed the oceans. And this went on for a long, long time. (Unwind the strip without saying anything.)

"Now the earth is covered with rocks and water and some active volcanoes. And this went on for a long, long time. (Unwind the strip without saying anything.)

"Still the only thing on the earth, at this point were rocks and water and volcanoes. And this went on for a long, long time. (Unwind the strip without saying anything.)

(As you get close to the end of the strip, slow down) "Finally, after a very, very, long time, the Earth was ready for something entirely new! What do you suppose happened? The first forms of life. And after al ong while, human beings first appeared on the earth.

"Humans have existed only a tiny bit of time in relation to the creation of the Earth. This little piece of white is the amount of time that all of life, including humans have been on the earth and this long black strip is the amount of time the earth has existed.

"Can you hold this? (the piece of white cloth at the end of the strip) You're holding all of humanity-- the cave dwellers, the Babylonians, the Egyptians, the Greeks, the Chinese, the Native American, and even us!

History of this Lesson:
Montessori was in India in June, 1939, at the beginning of W.W.II.
Mr. Arundel, President of World Theosophical Society invited her to give her lectures in Madras. There were several children to demonstrate her work. One of the children told Dr. Montessori that there was nothing that he and India could learn from someone in the West. After all, the oldest real civilization was in India 10,000 years ago. Egypt was 3.5 thousand years ago. Babylon and Assyria were 5,000 years ago. The Indian civilization was actually 9,000 years old, but she said she would make it 10,000 to give him the benefit of the doubt. Later she asked a printer to make a strip of cloth 300 meters long and 50 cm. wide. 299.99 were in black and 0.01 meters were in white. When the roll was ready, she had it brought to the school and said: "Now, I'm ready for something." She had 2 teachers on bicycles unroll the whole thing along the street. They started with all black and finally came to the little piece of white. The children asked what it was. Montessori said it was the history of the earth since it was created. The children asked if it was of one color. Montessori answered. No. It changed to white when the history of humans began. Now we make this as a 30 meter ribbon. It is still a lesson of humility. We could make it longer today to represent 4-5 billion years.

Notes:
1. Don't give the child the measurement of the strip. The demonstration is meant to be impressionistic and to pique an emotional response.

2. The colors should be opposing

3. The white dates from the first real appearance of civilization on the Indus River.

Materials: The proportions of the black strip are difficult to represent:
The oldest hominid species known, Australopithecus afarensis (southern ape of the Afar), could be dated back only **3.6** million years. Its most famous member, **Lucy**, unearthed in Ethiopia's bleak Afar Triangle in 1974, is a mere **3.2** million years old. However, **homosapiens** only goes back **100,000** years.

If you represent the hominids:
For every 100 meters, 8.9 cm (50 meters, 4.45 cm, etc...)

If you represent homosapiens:
For every 100 meters, 0.22 cm (50 meters, 0.11 cm, etc...)

Measuring the proportions of years to length of black strip:

Take the length of the blackstrip (in meters, say) and divide it by 4.5. If the black strip is 100 meters long, then 100/4.5=22.22. Then, if you want to know how many years any particular length of the black strip represents (in the same unit of measurement as the original measurement of the entire black strip--here, meters) you just take whatever length you want and divide it by, in this case, 22.22. So 50 meters of a 100 meter black strip represents

50/22.22=2.25, so 2.25 billion years which is half of 4.5 billion years.

Remember the Dance of the Elements in our Creation Story? That was such a long, long time ago. (begin unrolling strip) In the beginning we said that everything was dark, there were whirling gasses which gradually cooled. How long this process took! It took thousands of years. And then the rains came and filled in the hollows, the air was cleared up and the seas were formed. Now the Earth was like a shriveled up apple. There was no life on Earth. At sometime, somewhere, a long, long time ago, life began. It began to fill the seas and after thousands of years, it began to climb out of the water onto the land.

(keep looking at how long it was, referring back to the strip)
Insects developed and large dinosaurs. The insects have made a contract with the flowers and the earth is covered with grass... There are flowers in her hair... and pure water is crystal clear... Watch what is coming! How long it has taken! What is it? A white line. What does it mean? This is humanity - all humans. Hold it in your hands... this is all of history: cave people, Egyptians, Greeks... all here. How long it took for the earth to prepare itself. A long time passed, while the animals developed and the plants prepared for Humans to come to this Earth!

B. The Clock of Eras

Working off a table of geologic time and a list of time periods from the website wikipedia.org I established some new eras for the clock as well as their durations. This clock presupposes that the Earth was formed 4.6 billion years ago. Many times were inexact so the clock will reflect that to some degree. Eras and Eons have been merged here when the eras were only differentiated by prefixes (neo-, meso-, paleo-). I have listed three Eras that can be combined, if preferred, into one: the Hadean, Archean, and Proterozoic are often called the Precambrian Era collectively. The Precambrian Era ends when hard-shelled animals appear on the Earth.

The Clock of Eras
PRESENTATION:
Do you remember the black strip? What did we learn from the black strip?
Let's see if we can learn more about the time the earth took in preparing for humans.

Let's imagine that the whole of time was divided into 12 hours like the clock on our wall. But these aren't normal hours. These are "***cosmic***" hours!

Earth formed 4.6 billion years ago

Hadean Era ended at 2:05
4.6 billion years ago until 3.8 billion years ago (800 million years long)

This era was originally thought to be before there were any rocks, though scientists have now found rocks from this time. The name comes from Hades which was the name for the underworld in Greek mythology. This evokes an Earth that was still in turmoil.

Archean Era ended at 5:29
3.8 billion years ago until 2.5 billion years ago (1.3 billion years long)

Scientists have found many of the earliest rocks were formed during this era. The beginning of this era is marked by discoveries of single-celled organisms. By the end of this era, scientists believe there was stabilization of cratons which are a part of the continental crust.

Proterozoic Era ended at 10:35

2.5 billion years ago until 544 million years ago (1.956 billion years long)

During this era the crust was growing and multi-celled organisms, like sponges, began to appear. More oxygen was in the atmosphere of the planet.

Paleozoic Era ends at 11:22
544 million years ago until 245 million years ago (299 million years long)

This era is marked by what is called the "Cambrian Explosion", a term used to describe the many types of animals that began to appear. Beginning in the oceans with trilobites and coral, plants moved onto land and vertebrates emerged. Amphibians and reptiles appeared on the Earth as well as many insects like flies and dragonflies. Near the end of this era Pangea, the supercontinent, was formed by the merging of all land. The ending of this era is marked by the Permian Extinction. This is the largest mass extinction in the history of Earth where almost all life became extinct (about 90 % of life in the water and 70 % of vertebrate life on land adding up to 95 % of life on the planet). Fungal species ruled the planet for a period of time. There are many theories about the cause of the extinction which was global in nature. Possibilities include volcanoes, meteors, supernovas, plate tectonics as well as others. Some theorize it must have been some combination of these factors.

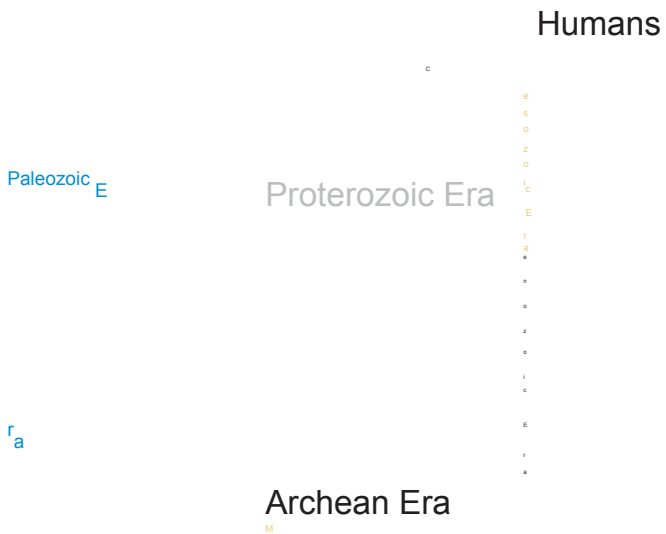
Mesozoic Era ended at 11:50
245 million years ago until 65 million years ago (180 million years long)

This era marks the appearance of the first mammals, the reign of the dinosaurs, early forms of birds, as well as the first flowering plants. During this era Pangea breaks into the two landmasses called Gondwana and Laurasia, followed later by the breaking apart of Gondwana into the southern continents we know today.

Cenozoic Era continues to 12:00
65 million years ago until present time (65 million years long)

The beginning of this era follows the mass extinction of the dinosaurs. Her we see the emergence of large mammals as well as the evolution of humans from the first hominoids. Modern mammals and birds appear and we see the rise of human civilization.

Humans appear at 11:59:58, marking 2 seconds on the 12-hour clock.
5.332 million years ago



Era Years Hours Minutes Seconds Hadean Era 800,000,000 2 5

Archean Era	1,300,000,000	3	24	
Proterozoic Era	1,956,000,000	5	14	
Paleozoic Era	299,000,000	-	47	
Mesozoic Era	180,000,000	-	28	
Cenozoic Era	65,000,000	-	10	
Humans Appear	5,300,000	-	-	2
Total	4,600,000,000	12	0	0

Alternate Presentation (www.moteaco.com/albums/history5.html):

This chart tells the history of the Earth from the time it was a ball of flaming gas up to the present. We call it the Clock of Eras because it looks like a clock. This clock is special, though, because the colors tell a part of the story of our planet. This clock is different from most, though, for each hour on the Clock of Eras represents 250,000,000 years!

A. Formative Era (Also called Azoic)

The first four hours are colored black. During this time, the Earth transformed itself from a mass of flaming gases into a planet with a cool, hard crust. The sun and earth were more alike then, but the sun did not cool like the earth. Its great size and heat brought about changes within our star, making light and heat stream out in all in all directions.

The Earth, much smaller, did not give off light. As it cooled, however, hot gases rose and fell on its surface. This was the cosmic dance. The rising flaming gas is represented by angels flying up with their basin of coals. When these gases were far enough away from the Earth they cooled. Then they descended, represented by angels flying down with their basins of ice .

Slowly the crust was formed, but it was very thin. Inside, the earth still held flaming gases, which needed space to expand. Where weak spots in the crust broke open, the gases escaped and volcanoes were formed. The volcanoes we have today are very few compared to the number then.

They threw out such ash and smoke that a thick cloud formed and the earth grew dark and colder. At some point, we don't know when, water was formed in these clouds and rain began to fall.

At first this rain turned to steam and rose again, but there was so much water that it finally cooled the earth and stayed. The valleys and lower parts of the Earth were covered. Afterwards, the clouds thinned and the sun began

to shine.
On our Clock, we have now come to 4:00, and this long era is finished. How many years have passed? Even today, though the Earth's crust has thickened, it is still thin compared to the inside layers of our planet. There is still much heat and some of those layers are not solid.
In cooling, the earth's crust formed huge plates, which rode upon the surface and rubbed against one another. Where they collided, great mountains arose and sank, earthquakes spread out, or volcanoes brought forth matter kept hot by pressure. This action continues today.

Humans have only seen the center of the earth with computer images. No hole has ever been drilled so deep. It is believed the center is formed of nickel and iron. The symbols for these elements are **Ni** and **Fe**. Some scientists have named the center of the Earth **NIFE** because of this. The layers around the center form the mantle. The **crust**, also called the **lithosphere**, is outside. Look closely on the chart and you will see the thin layer of water called the **hydrosphere**. Surrounding it, invisible but essential to life, is the **atmosphere** we breathe.

B. Paleozoic Era

The word **Paleozoic** comes from the Greek words *Paleo,* which means **old** and *zoic,* which means **life.** It is colored blue on the **Clock of Eras** to represent the color of the sea. This era lasted for approximately 385,000,000 years. This period saw the harmful ultra-violet rays of the sun beating down on the earth with no screen to protect it. Most life forms remained in the sea for protection from the sun. Now that the problem of putting more than one cell together was solved, more and more complex animals developed. During this period every phylum of the animal kingdom appeared.

C. Archaic Era

The word "Archaic" means "ancient". This time period is also called the **Proterozoic Era**. **Proterozoic** comes from the Greek *Protero* meaning **early** and *zoic* meaning **life**. It is colored yellow on the Clock of Eras to represent the fact that there was little life. At the beginning of this era the earth was five billion years old and still there was only one-celled life. Many one-celled animals developed in this era. This era is the period of great rains. The rains carried millions of tons of minerals into the oceans. Concentration of the minerals in the oceans caused the oceans to become poisonous. (Too much of anything can be very harmful) One-celled animals discovered how to take the poison in and make their shells. Foraminifera was the one-celled animal that removed the poisons from the ocean. The Forminifera did such a good job that their bodies cover about one third of our ocean floor.

D. Mesozoic Era

The word **Mesozoic** comes from the Greek, Meso meaning **middle** and, *zoic* meaning **life**. The Mesozoic Era is colored brown on the Clock of Eras because it represents land. This era lasted for approximately 150 million years. Great masses of land were emerging out of the water. In the Mesozoic Era an atmosphere developed. Animal life, which lived principally in the water, now began to live on the land. The atmosphere shielded the Earth from the ultra-violet rays of the sun. New and more complicated animals appeared on the land. The reptiles appeared and still exist. This is the age of the great dinosaurs.

E. Cenozoic Era

The word **Cenozoic** comes from the Greek word *Ceno,* meaning **recent** and *zoic*, meaning **life.** The Cenozoic Era is colored green on the Clock of Eras to represent the freshness of spring. This era lasted for approximately 65 million years. Two amazing things happened during this era: plants emerged on the land and animals developed that took care of their young. We know them today as mammals. Mammals bear their young alive and take care of them. The birds also played a major role at this time. Birds and mammals are the only warm-blooded animals. New

volcanoes began to erupt. The climate grew a little drier and cooler and true flowering plants emerged.

F. Neozoic Era

The word **Neozoic** comes from the Greek word *Neo* , which means **new** and *zoic*, which means **life**. It is colored red on the Clock of Eras to signify the appearance of humans on Earth. The beginning of this era was characterized by the great **Ice Age** when **glaciers** appeared. In the beginning humans played a minor role. Later, humans lived in caves and discovered the use of fire. They made tools and weapons of stone and pieces of bone. They hunted wild animals for food and clothing. They painted pictures of these animals on the walls of caves.



The Second Great Lesson:

"The Coming of Life" and The Timeline of Life:

Material:
Timeline of Life
Presentation:

There is no record of the original text of this story as told by Maria Montessori. The 'carpets of grass' conclusion is attributed to Mario Montessori. The body of this retelling of The Coming of Life was transcribed by Fahmida Malik.

The Coming of Life

Remember the story of how the earth came to be? Today let's hear the story of earth coming to life with plants and all kinds of animals. Think back to when the earth was born; just a drop of light and heat, full of commotion and confusion. And in all that, each particle was given a set of laws. The earth cooled and settled down according to these laws: water, rocks, and the air surrounding it. The earth was a beautiful little pearl lit up by her mother, the sun. The sun could not stop looking at it. It looked day and night.

One day the sun saw something was not quite in order. Something was beginning to happen. There was trouble! It rained a lot on this earth. As the water passed through the air it got mixed with different gasses (carbon dioxide, sulfer dioxide, and nitrous oxide). This made an acid rain that washed over the rocks and washed parts of them into the sea. There were lots of storms and water pounding on the rocks breaking them down more and more. The sea was becoming full of the mineral salts. The land was being washed away. It looked like the order that had been created was beginning to be lost!

Who was causing this? Who was the culprit? Sun looked at Water and said: "Water, you must be the culprit. You are washing the salts into the sea!" But Water said: "Who, me? What have I done? Remember how I am made and the laws that I must follow! When I become hot I rise up as vapor, but if I get cold I must fall down as a liquid. Since I am a liquid I must press downward and sideways, and whenever I see a hollow I have to enter. What can I do? I don't have any choice! And my sister Air stirs me up and carries me around, dropping me on the rocks. It's her fault that I have to move, talk to her!"

Air said: "Me? I like that! I was given the job of covering the earth with layers of blankets so she won't be cold. I have to always cover her, but she has a big tummy and her head and feet are frozen. I have to keep on the move to cover them. Whenever I go near Water, she jumps on my back to take a ride! That's fin when it's flat, but

when I run into mountains it's different. It is hard climbing mountains and I get so tired carrying Water up the mountain that I have to drop her. I can't play all of the time. I have important work to do! It's the fault of those rocks! Why does the earth have to have such a wrinkly skin? Rocks have no consideration at all! They do not move to let me pass. Sometimes they get so hot that when I go near them I have to climb up to avoid burning. When they are freezing, I cringe!"

The Rocks said with one voice: "Why do you blame us? We are not doing anything but sitting around! Do you think we want to get hot? The sun shines on us and we cannot help it. We are made this way. If you ask us, Sun, it is your fault. You are the culprit!" And so it went on. Non one wanted to be blamed, but the trouble just got worse and worse. You see, everything was at fault. Everything was acting just the way it should, following its own laws, and yet the beautiful order was being threatened. Soon the earth would no longer be a beautiful pearl in space. Something had to be done. But what could be done?

A wonderful thing happened! Something new was created, things so small that you could not see them. These tiny particles were given a gift that would save the earth. This gift was sensitivity. These new particles also had

some rules. In order to exist, these particles had to eat and grow - but not all of them ate the same things. They were also given the ability to create others like themselves. And so life came like this, as tiny particles in the water. The tiny particles of life began to eat and eat and eat, and they began to clean up the sea by eating the mineral salts in the water. From the mineral salts some built shells around their bodies for protection. When they died, their shells dropped to the floor of the sea with the salts trapped in them. Time passed and layer upon layer of these tiny shells built up. They were like the pages of a book. Some of these pages that were laid down long before we were born were left for us to read to tell us what happened long, long ago.

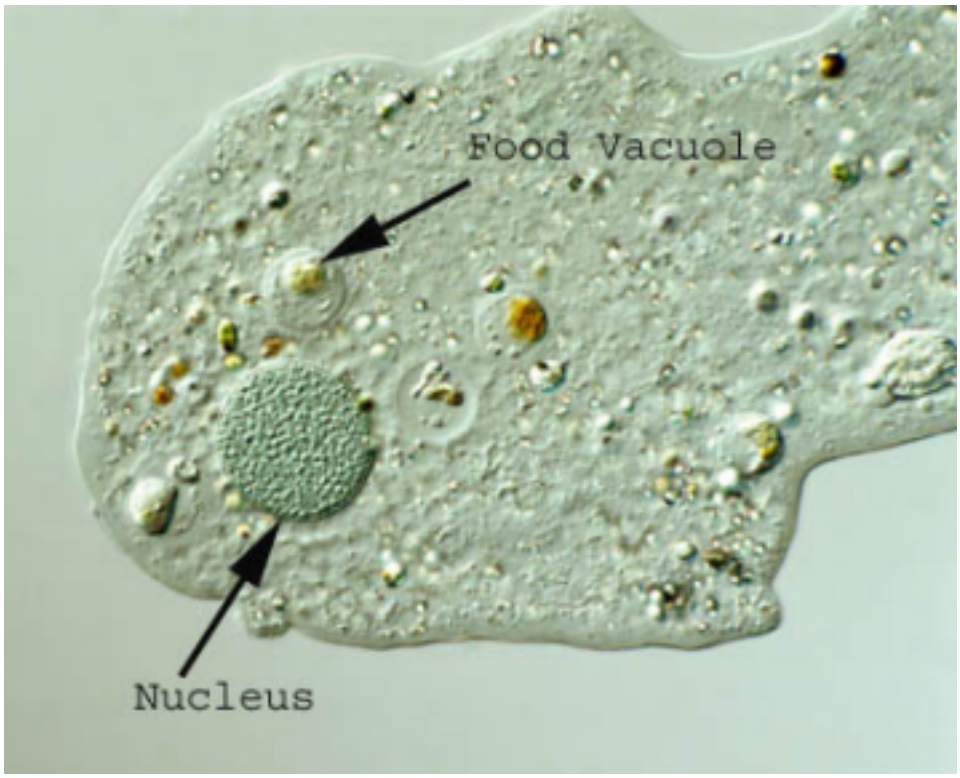
Now these tiny creatures were made of just one tiny cell. This tiny cell did all the work that needed to be done - all the eating, breathing, growing, and getting rid of what the cell didn't want. These tiny creatures drifted around the seas, cleaning the waters for a long time.

Time went on and some of these creatures seem to have said, "Let's join together and be a bigger creature. We could do things better that way." Thus they formed into bigger creatures made of many cells. They grew, multiplied and fed in the sea as they drifted about.

Then, some of the creatures thought, "Instead of each cell doing the same thing, it would be much better if some of us did one job and others did other jobs. Some could do the eating, some could do the breathing, some could do the moving, and so on." So the cells divided the work up amongst themselves. Some cells were to do the eating, others were to do the moving, and others would do the breathing. Thus came creatures with legs, mouths, hearts, lungs, and so on - creatures with organs. When the Book of Earth is opened to the first page, we can see that all of these creatures were there. The tiny one-celled creatures, the multi-celled creatures, and those with different organs.

(Open up the Time Line of Life to the Cambrian Period)

When the Book of Earth opened up its first page, all these tiny creatures were already there, living in the water. Here is the amoeba, a one-celled creature with no shell. (point to the amoeba)

Amoeba----------

Here's another, called a flagellate, with two little whips to help it move about.

Flagellate----------

Yellow Tube Sponge:

This creature is made of a group of cells.



Sea anemone, Stone Point gravel spit at low spring tide. 24 March 2004. *Ian West (c) 2004.*



Sea anemones like this (point to the sea anemone) stayed in one place. In order to get food, they moved the water with these long thin body parts so tiny creatures in the water would come into their mouths.

Sea Anemone----------

17

18



There was one kind of creature th
They are known as trilobites. Trilo
shapes and sizes. Today we no lon
of life on earth.



Trilobites----------

(Open up the Time Line of Life to the Ordovician Period)

19

Time went on and all kinds of creatures appeared, and all sorts of experiments went on. Look here! This creature is called a cephalopod. (point to the cephalopod) It had its legs attached to its head.



Cephalopod----------

(Open up the Time Line of Life to the Silu



As time went on, all kinds of animals appeared. Here we have some that look like flowers on a stalk.

Crinoids----------

(any one of a group of flower shaped sea animals having a small, cup-shaped body with five branched, feathery arms, usually attached by a stalk; sea lily. The crinoids comprise a class of echinoderms.)

They stayed in one place like the anemones. Some built rings of stone out of the salts in the in the sea water. These rings held their soft jelly-like bodies. With the feathery parts they moved in the water they could catch tiny creatures floating about in the sea. Because they were so colorful and looked like 00, they were called sea lilies. (point to the seal lilies) But they were animals, not plants. When they died, the stalk of rings collapsed and fell to the bottom of the sea. The waters were full of life at this time!

(Open up the Time Line of Life to the Silurian & Devonian Period)

There were creatures of long ago who, instead of eating other creatures, made their own food out of sunlight and salts in the water. As they drifted about, they thought, "I wonder what it would be like over there on the land?" And so they drifted over to the edge of the sea, The waves and tides caught some and washed them onto the land. They stayed there until the water caught them again and washed them back into the sea. They day came, however, when some said, "Oh, it is lovely here!" They stayed on the land because they had plenty of sunshine and air, which contained a gas called carbon dioxide that they needed to make food. They attached themselves to the land, from which they could get water and mineral salts.

(The earliest land plants were found in Upper Silurian rocks. These are small, very simple plants consisting of naked axes, terminally bearing sporangia. In even older rocks isolated pieces of cuticle, tracheid-like structures and (crypto)spores can be found. These are, however, often still difficult to interpret.)



Cooksonia-----

(The evolution of the first land plants was a major event in the history of Earth. It cleared the way for the irresistible development of animal life on the land. And it was the land plants which changed the biosphere thoroughly, e.g. the oxygen rate, the carbonic acid rate, the soil structure and the character of the erosion.
The most famous Silurian land plant is a small creature sized up to a couple of centimeters, named Cooksonia. It is not only the best-known plant, but up to now also the oldest one.
Yet a lot is unknown about it. For example the way in which the plant was attached to the soil.)
(http://www.xs4all.nl/~steurh/engcook/ecooks.html)

And so came the plants. For the first time, plants appeared on the land! When the plants died, they left their bodies there, preparing the ground for other life forms to come. *(Open up the Time Line of Life to the Devonian Period)*

Life was now moving onto the land. While plants were trying out the land, two new kinds of creatures appeared.

One of these was the coral polyp, which helped to build up the land by eating salts in the sea. The other was an animal that had a hard rod in its body. Up until now, the hard part was always outside the body. This was the beginning of animals with backbones. This animal eventually developed into the fish, but these fish were different from those we have today. They were enormous fish with hard plates on the outside to protect themselves.



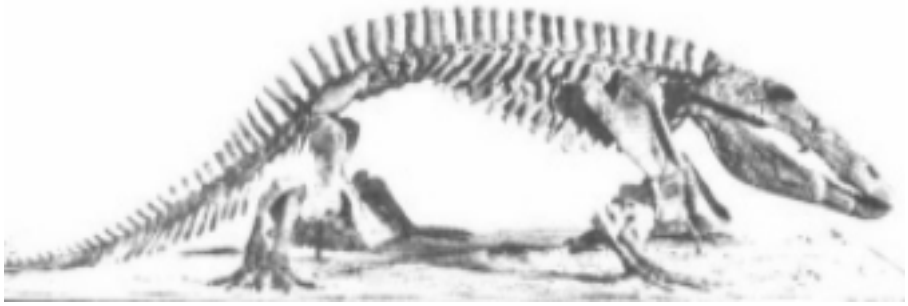
Devonian (Placoderm) Fish----------

They buried themselves in the bottom of the sea with only hard plates sticking out, and waited until a bit of dinner floated by, and then they would open up their mouths and gobble it up. Some could swim very swiftly, and they developed movable fins which helped them to swim better.

(Open up the Time Line of Life to the Carboniferous Period)

Then the land began to rise. Places that were in the sea became land and places that had no rain began to dry out. Some fish were cut off from the water. Imagine being a creature in one of these places! You need water so that you can live, but the water dries up! Fish, who needed water, began to think about what to do now that they were on land. They had to change or die. So they decided to build a sack inside their body with water in it so that when there was no water they could still breathe. And so the secret of breathing outside of water was invented. And so came the amphibians, animals who live partly in the water.

(Both the lung structure of air-breathing organisms and the swim bladders of most modern fishes evolved from paired air sacs of primitive bony fishes. In the primitive fish, as in the modern bony fishes, these sacs served as a buoyancy device that inflated and deflated to alter the fish's depth in the water. In other fish, they became primitive lung structures, repeatedly folding inward to maximize oxygen uptake in an oxygen-deprived environment. Both kinds of fishes improved upon a preexisting adaptation but in so doing evolved into very different groups of organisms. http://encarta.msn.com)



Carboniferous Amphibians----

Fins were of no use any more, so they changed and became legs to walk on.
Something very wonderful happened when the amphibians came. The sound of the first voice on the face of the

earth! A voice on the land! Until the amphibians came with their voices, the silence was broken only by the sound of rain on the rocks, or the rumble of thunder. Imagine how exciting it would have been to have heard the first sound ever to be made on the land!



Calamites/Annularia (far left, Late Carboniferous), Polystichum (upper left, extant), Phlebopteris (upper right, Triassic), Osmundia (far right, extant), Todites (lower right, Jurassic), Psaronius (center, Late Carboniferous), and Rhacophyton (lower left, Late Devonian).

Meanwhile the plants had left the sea. They grew in great variety and size, eating and making their own food with the air and sunlight.



Homoioptera (wing-span 20 cm) A large archaic insect belonging to a group called Palaeodictyoptera



Meganeura (wing-span 70 cm) A huge archaic dragonfly-like insect belonging to a group called Protodo

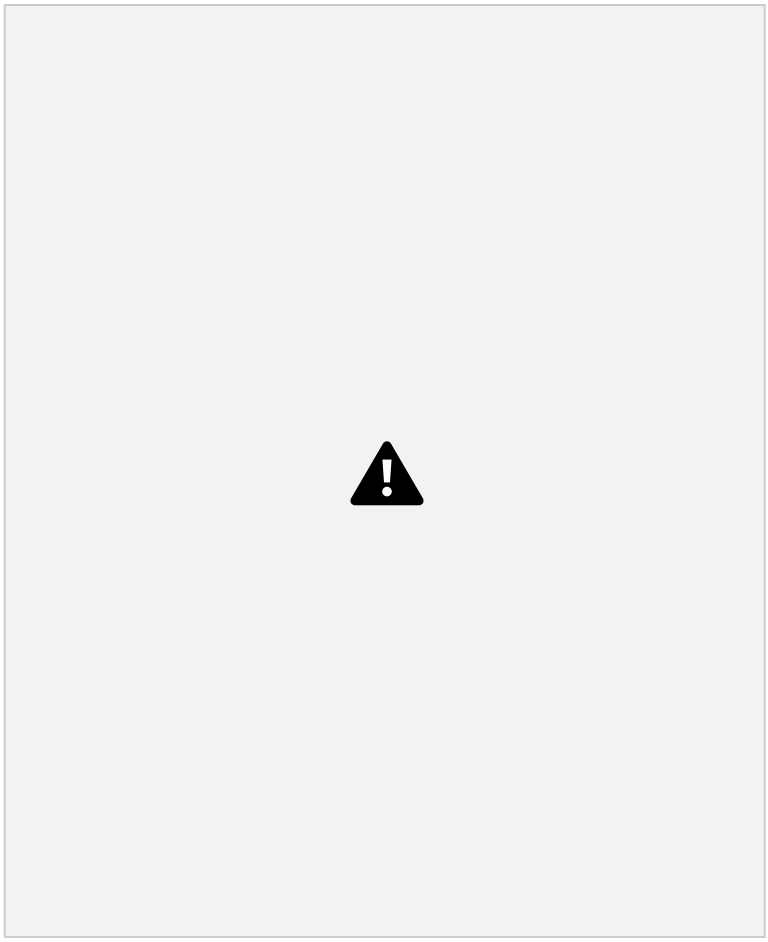
The insects also came so there was food around for the amphibians. They had a great time - except for one little problem: because of their skins, the amphibians needed to be near the water to keep from drying out. Some wanted to be free of the water. They wanted to be independent, and to be able to travel! They wanted to be able to eat plants that grew farther from the water, but how? They thought and thought. They would have to leave the water!

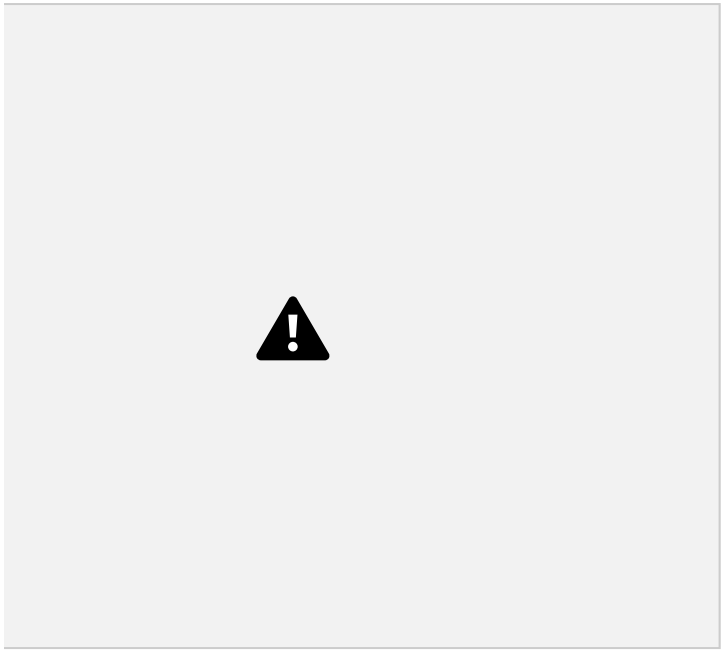
(Open up the Time Line of Life to the Permian Period)

So, gradually they developed a special type of skin that did not dry out, and for their eggs they invented a shell. Now there was no problem! These were the reptiles. They had a skin that could be in the sun and shells for their eggs so they would not dry out. Now they could move wherever they wished across the land!

Permian Period Reptile----------

And then what happened? There were plenty of plants and amphibians. The reptiles had a good time and they grew and grew. Many experiments were tried. There was no one to stop these creatures, and they became the lords and masters of the world! They took over the land, and the seas, and they even took control of the air!





The Pennsylvanian diapsid Spinoaequalis schultzei jumps into the water to escape a hungry Haptodus garnettensis (a synapsid). The base of a Sigillaria trunk

is visible in the upper right corner.

(Open the Time Line of Life to the Mesozoic Era)

Here is a picture of one of these creatures:

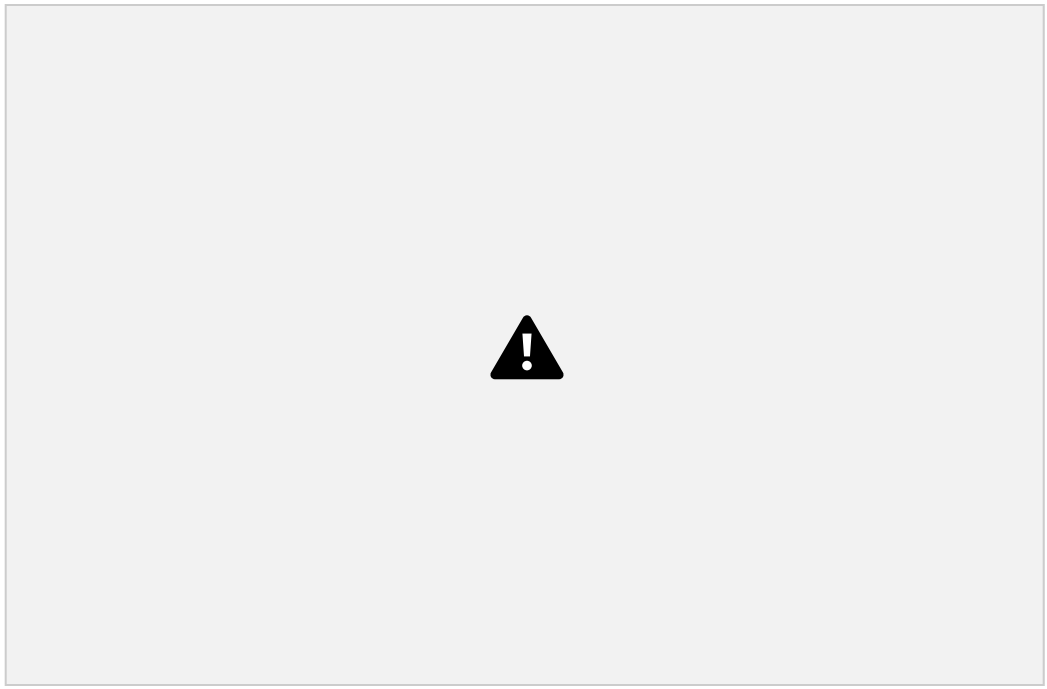
----------Apatosaurus

Do you know how big this creature was?

Seventy feet long! This creature had a head that was a big as a man's body! Our classroom is ___ feet long. This animal would fill more than ___ rooms like this! There was something peculiar about this creature. It had a brain in its head, and another down near the base of its tail, so that messages from the tail didn't have to travel all the way to the head to be processed.

Can you imagine how the earth must have shaken as these huge creatures stomped around while they fed? These animals had everything they wanted. The little animals had no chance against these big animals. And so the smaller fled to where it was cold, where the large reptiles could not live and could not get to them.

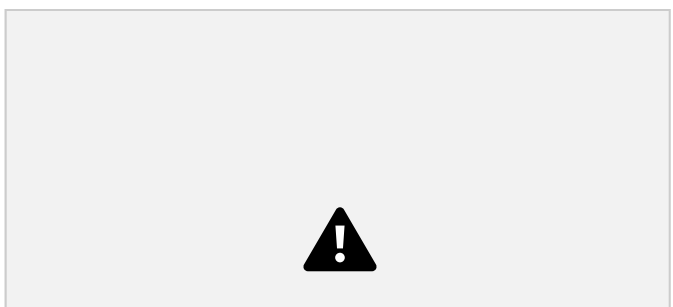
As time went on, these animals who lived on the fringes where it was cold developed something to protect them from the cold. They developed hair or fur and a way to keep their blood warm without sunlight. These were the first birds and the mammals.



Archaeopteryx---------
(of the Jurassic Period)

What about their eggs? They knew very well what happened to eggs that were left alone, so some began to carry them inside their bodies. The birds, however, could not carry their eggs and still fly, so they built nests for their eggs. One of the birds always stayed with the eggs until the babies were hatched, and fed them until they were big enough to leave the nest.

(Around the end of the



Cretaceous Period (65

million years ago), the dinosaurs have all died out. One half of all animal families died out.)

The weather cooled or a meteorite hit the Earth and the dinosaurs disappeared, though no one is really sure why this happened. Then the mammals took over. They grew and grew. They were able to go everywhere! There were giant animals: giant pigs. giant hippopotami, and giant elephants.

Archaeopteryx

The oldest known which lived in the Late Jurassic period. It is known from only six skeletons and a few other disputed remains, all recovered from the Solnhofen Limestone of Germany. Archaeopteryx was about the size of a crow with well developed feathers on its forelimbs. However it retained several reptilian features, including a long bony tail, teeth in its jaws and clawed fingers on the wings. It is believed to have evolved from the dinosaurs from the dromaeosaur group. (http://www.abc.net.au)

A note on the use of 'Tertiary':
More than 95% of the Cenozoic era belongs to the Tertiary period, an unreasonable division which reflects the arbitrary manner in which the geological epochs were first named. From 1760 to 1770, Giovanni Arduino, inspector of mines in Tuscany and later professor of mineralogy at Padua, set forth the first classification of geological time, dividing the sequence of the Earth's rocks into Primitive, Secondary, and Tertiary. During the 18th century the names Primary, Secondary, and Tertiary were given to successive rock strata, the Primary being the oldest, the Tertiary the more recent. In 1829 a fourth division, the Quaternary, was added by P. G. Desnoyers. These terms were later abandoned, the Primitive or Primary becoming the Paleozoic Era, and the Secondary the Mesozoic. But Tertiary and Quaternary were retained for the two main stages of the Cenozoic. Admittedly, attempts to replace the obsolete "Tertiary" with a more reasonable division of Pal-

aeogene (early Tertiary) and Neogene (later Tertiary and Quaternary) have not been completely successful, but most of the newer geological timelines have rejected the Tertiary.

(Mammals start to come around in the mid-Cretacsous Period)

*(Open the Time Line of Life to the **Cenozoic Era**) (Cainozoic)*
(The Age of Mammals)

Quagga----------

(It was native to desert areas of the African continent until it was exterminated in the 1880s. Related to horses and zebras, it was a yellowish brown with stripes only on its head, neck and forebody.

Those hairy, milk-producing, warm-blooded animals that you have seen all of your life are mammals. Placental mammals are one of three major groups of living mammals. Marsupials, or Metatheria, form another. This group includes all of the pouched animals, such as oppossums, kangaroos, and Tasmanian devils. The third group, the Monotremes, are far less diverse and less well known. They are warm-blooded, have hair, and produce milk just like other mammals, but they lay eggs and do not give live birth like marsupials and placentals duck-billed platypus and the spiny anteater.) A fourth major group, the ~~Multituberculata,~~ are entirely extinct, though they were once widespread and successful. http://www.ucmp.berkeley.edu/mammal/mammal.html)

The mammals kept their eggs inside (except in a few cases) them and when the babies were born they fed them with their own milk!

This was very new. ***No other animal ever did this before!*** Other animals just left their eggs and some of the eggs were eaten by other animals. The young ones had to look after themselves. But the children of the birds and mammals remained with their parents until they could take care of themselves.

(Around the Neogene, the

Age of Grasses: grasses come on the scene and so also the long legged running animals on the sevannhas.)

(INDRICOTHERIUM pervum
Indricotherium was the largest land mammal ever, weighing four times that of a modern elephant and twice that of the largest known mammoth. It's head was small compared to its enormous body which was supported by three toes on each foot (much like the rhinoceros of today). Using two teeth on its upper jaw and two on its lower jaw, the Indricotherium was able to graze on trees more than 26ft high. Remains have been found in Baluchitherium (Pakistan) which the animal is sometimes referred to as.

TIME - Oligocene - Tertiary period
RANGE - Asia
DIET - Herbivore (Plants / Trees)
SIZE - 26ft. (8 m) long large herbivore in the Oligocene Epoch. http://www.prehistory.com/indricth.htm)

The mammals had a good time, even as it got colder, and huge sheets of ice covered much of the earth. The mammals moved all over the earth in search of food and warmer weather. In the end, none of the giant mammals were able to survive.

Something very exciting happened toward the end of a very cold period. A completely new kind of creature emerged! It did not have sharp teeth to eat with, nor huge claws to fight with, nor fur. But it had something that none of the others had. It had a larger brain and it had the power to think and imagine. This creature also had an enormous gift for loving others, both of its own kind and those of other kinds of animals. This creature was the human being.

----------Happy People

You see, it was as if all of this (move your hand across the entire span of the Time Line of Life) had to happen in order for man to come. Human beings would not have found it possible to live if they'd come here (point to the Cambrian Period), or when the plants were first

If the earth had a voice, it would have said, "I am spread thick with fields of grass that you can run around on with your feet. There are flowers in my hair and I am covered with jewels that you find pleasing. My cupboards are full of milk, meats, fruits, and vegetables that you can eat. The Earth is a safe and supportive place for humans."

And so we are here. This (move your hand across the entire span of the Time Line of Life) was all prepared for us, and now we are part of the story.

Alternate Version of this Presentation:

Remember the Clock of Eras, who remembers what we learned? Remember, we went almost half way around the clock before life began. Today, we are going to study the evolution of life on earth. Lets begin at the very beginning, millions and billions of years ago. When the earth had cooled, simple one celled life began to form, called bacteria. Then sponges, worms, trilobites, mollusks and other single-celled invertebrates began to form in the *earliest* recorded span of time we call the **Cambrian Period**. This period was named after some rocks in Wales called Cambria. These forms of life were self-contained and reproduced by simply dividing. Sponges waved in water and worked in a colony to get their food.

(Unroll the timeline just enough to reveal the Cambrian Period.)

The *second* span of time extends several million years. We call this time the **Ordovician Period**. Ordovicia was the name of a tribe in Wales who studied ancient rocks called fossils. Plants, such as sea lilies appeared as well as burrowing invertebrates. Early forms of vertebrates arrived such as primitive fish, corals, crinoids and clams. Trilobites became extinct. Life begins to cooperate, each part doing a particular job. Life was still in the water.

(Continue to unroll the timeline.)

During the *third* evolutionary time called the **Silurian Period**, spanning over several million more years, mostly invertebrates lived. The first jawed fish appeared and the first insects appeared. Plants began to come out of the water to form marsh plants. Silures was a place in Wales, where rocks and fossils were studied.

The **Devonian Period** was named after Devonshire, England, where rocks and fossils were studied. Corals and sponges still thrived in the warm coral reefs. Ferns and leafy greens appeared. The first air-breathing arthropods, spiders and mites appeared on land. Coiled shellfish called Ammonoids (related to the squid) were common. Fish now had armor, fins, scales and jaws.

The **Carboniferous Period** was the time when amphibians walked on land. Many insects appeared, such as dragonflies with 3 feet wingspans. Carbon means coal, ferre, to bear. Coal formed over many millions of years of the large ferns and other plants dying and being pressed down into the earth. Forests and swamps covered large areas. Many animals and vegetation died out. We have many fossils from this time. Reptiles evolved from earlier amphibians. Corals, crinoids, land snails, mollusks and insects were abundant.

The **Permian Period** - a time of widespread unrest on the earth's crust, continents were being raised and oceans were drying up. Early dinosaurs were arriving on the earth and amphibians were declining. Early reptiles were developing into mammal-like forms.

Thus, the 6 divisions of the Paleozoic Era.

The **Mesozoic Era** includes the **Triassic Period**, when there was less water so needle- shaped leaves appeared, small mammals and small dinosaurs, palm trees and marine reptiles appeared; the **Jurassic Period**, during which dinosaurs flourished and there was a great development of reptiles, including flying reptiles and the first bird; and

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the **Cretaceous Period**, Creta named after chalk discovered in England. The continents were continuing to shift, mountains rising. Grasses covered the earth. Several reptilian groups, including dinosaurs, became extinct and something also caused devastation to algae, vegetation and small animals.

The **Cenozoic Era**, the most recent era before humans, is the shortest era, only a few million years 65 million years), during which the animals and life we know now came into being. Humans arrive. Humans have an opposable thumb, a highly developed mind, the capacity for language, imagination and memory; use tools and adapts to the environment using more than instinct.

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III.

A. The Hand Chart

PREPARATION:

The chart is about ten feet long, one foot wide. Suggesting the time human beings have been on earth, approximately I to 2 million years. If we take the time as one million, we use one foot for one hundred thousand years. The last 5000 years represent the time of recorded history in the last red inch. The chart is black with white vertical marks at regular intervals, approximately 6 inches apart, suggesting the passing of time; or a long black piece of material approx. 10' by 1'. In the middle there is a drawing of the human hand, holding a stone pointing down as if digging.

PRESENTATION:

Does this remind you of anything? Do you remember what the evolution timeline (Timeline of Life) told us? Well this tells us something about the evolution of human beings.

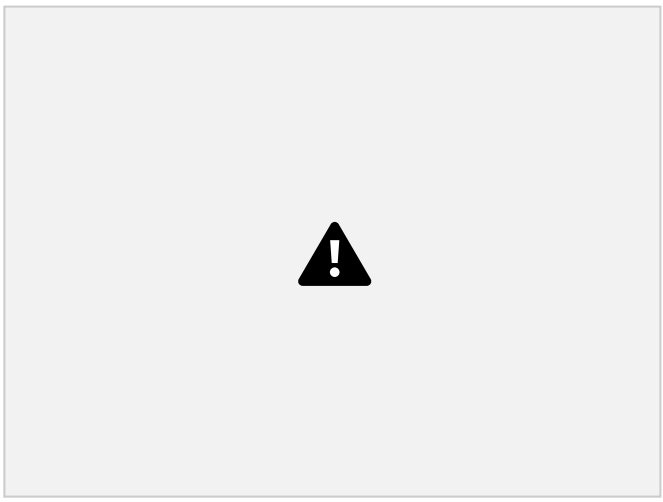
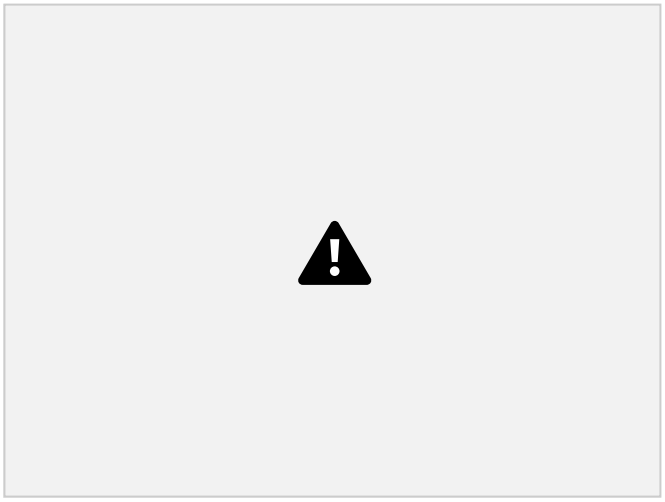
Let's see what this has to show us.... a lot of time is passing and so much is unknown to us about human beings on the earth....be sure to look for a clue as to what is happening....

The black part represents all the time that humans were on the earth and we have only tools and artifacts or objects made by hand to tell us about their lives…

We know that humans must have used their hands and found food, protected their young, found or made shelter and clothing…Here is a human hand. What does it show? (Yes, an early human using a rock as a tool, to dig with, perhaps to dig for food or to make a pit for a fire…

And now, here at the very end of this strip of cloth…The little bit of red at the end shows us a special use of the hand; it shows us the time when humans first learned to write—to draw the first pictographs, then ideographs, then eventually developing an alphabet. The little bit of red at the end of the strip is showing all of written history. All the time before this is when there was no writing by humans, only the use of the hand in preparation for writing.

Before there were written records, we learned about early humans through artifacts: which is Latin for "to make art".


B. The Fundamental Needs of Man

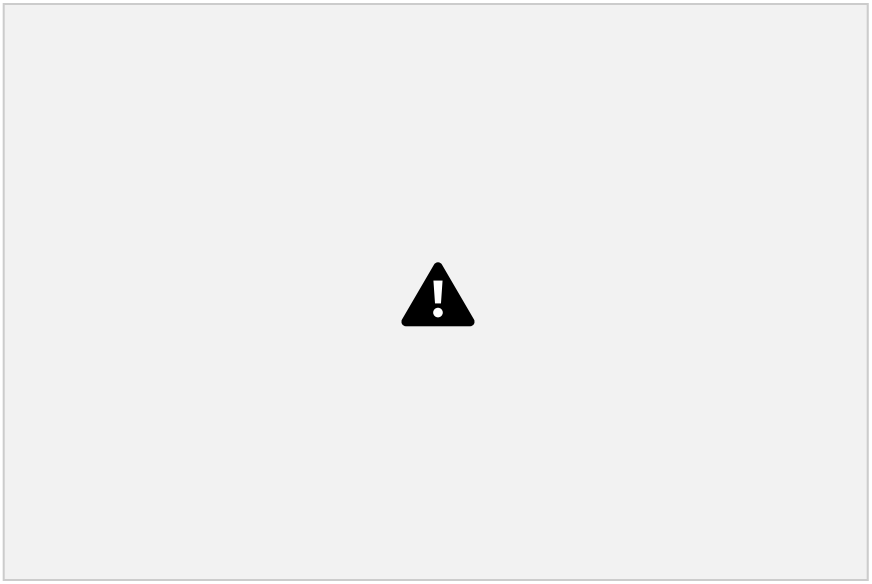
PREPARATION:
Materials:

A chart entitled The Fundamental Needs of Humans that includes physical needs (food, shelter, clothing, ?defense? and transportation-include a picture of each) and spiritual needs (art, beauty, self-esteem, community and love) Include a picture of each.)

PRESENTATION:
1. Go outdoors (preferable into the woods) with the children. "Lets pretend we are early human beings who lived a long time ago. What are some things you would absolutely need to survive?"
2. Let the children discuss and make a list. (They may list clothing, shelter, food, family, friends.) Do not intervene or tell them that any item on their list is "wrong."
3. Then go back through the list one by one and have the children evaluate if that item is absolutely essential for survival.
4. Show the chart The Fundamental Needs of Humans and discuss it. Do all humans everywhere on the planet need these things? (Yes) If you live in a very cold climate will your clothing and shelter look the same as someone in a hot climate? (No) You want the children to realize that the same basic need for shelter, food, clothing, etc. is the same.

Alternate Presentation (www.moteaco.com/albums/history2.html):
What kind of things does a person need?
(The discussion will probably go from food to toys)
Imagine that you are on an island and you will not survive without a few very important things.
What will this person need on this island that you do not need?
(Discuss human's needs and the similarities and differences of those needs through history and in different regions)
People who lived a long time ago - and people all over the world have the same basic needs. Humans need to clothe

themselves, nourish themselves, to defend themselves, to transport themselves, to shelter themselves, etc., but they also have spiritual needs : the arts, religion or a belief in something more powerful than yourself, and vanity, or pride and caring of self.
Show chart.
Continue discussing related ways that different human groups have satisfied these needs or ways that these needs have been met through time.
Make examples different people: the Pilgrims of Plymouth Plantation, the Native Americans in Massachusetts, the people in the South Seas, the Arctic, etc.
Age: 7 years
Aim: To have the child come to her own conclusion that needs are constant and to show the difference in a need and a want.

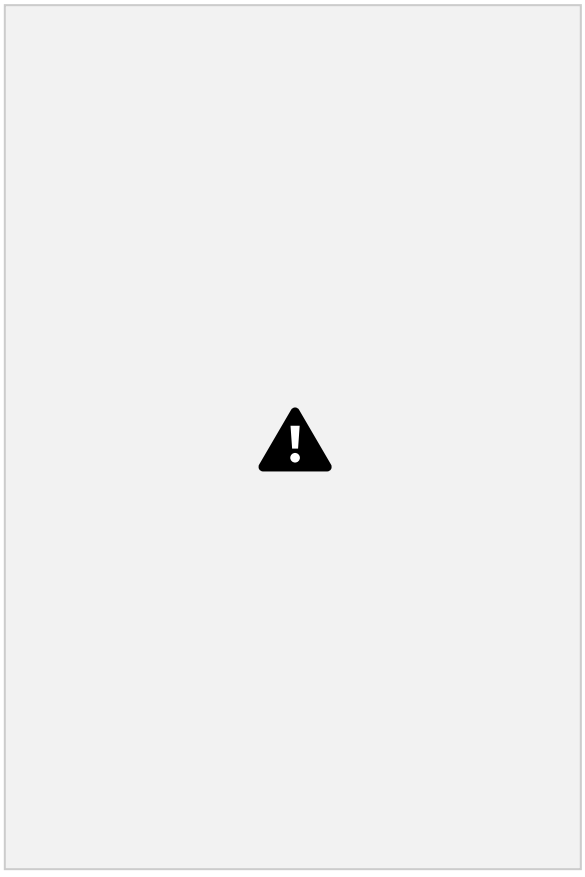


First, Write down a list of what the children say they think are needs.

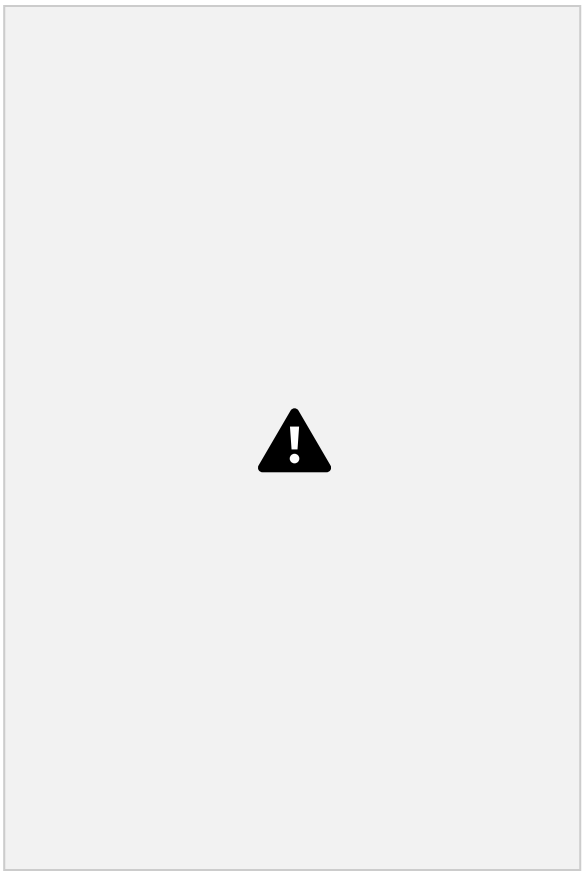
Then, circle the ones they

Next, let

them think about the list and cross off any they now think are <u>not</u> necessary.



Next, have them come up with more really want to keep.



general cat egories in which the items listed may be placed.

C. First Time-Line of Early Humans

PRESENTATION:

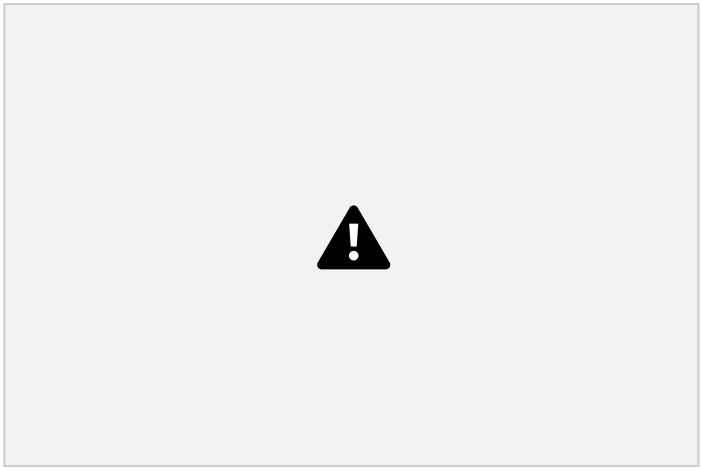
Last week we looked at the Hand Chart. What did the hand chart show us? (The activity of the human hand on the environment and the distinction between how long there has been written history compared to how long humans have been on the earth.)

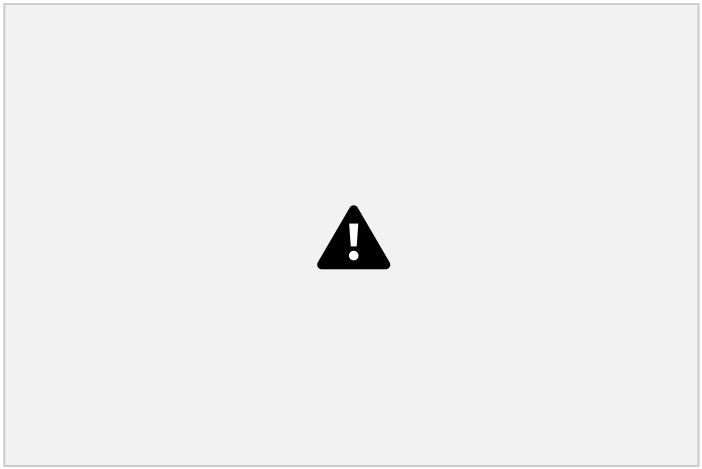
This chart will fill in some of the details that happened during that long period from when humans first used a stone as a digging instrument.

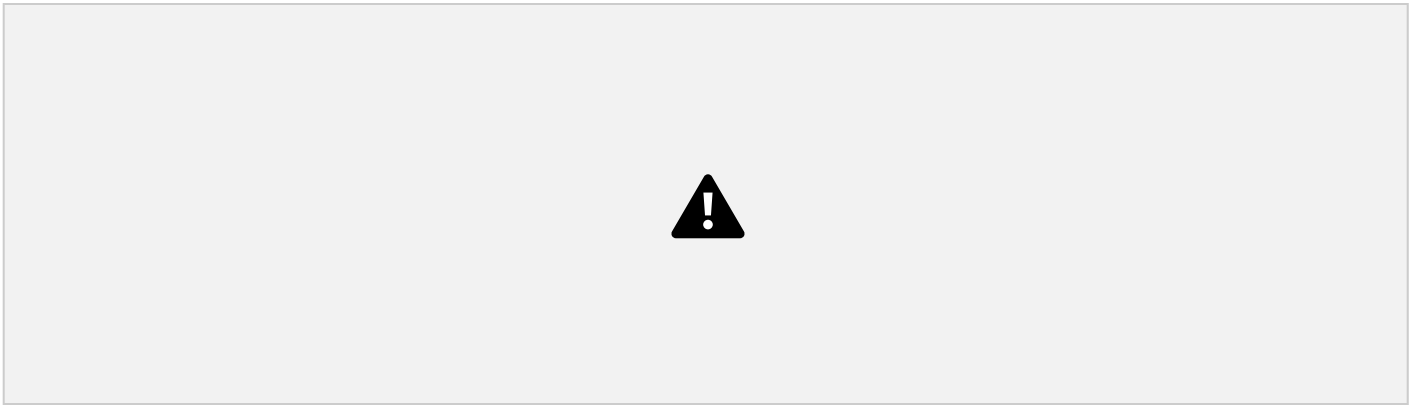
This time-line starts at 500,000 B.C. What do you notice? (Begin to unroll the timeline and discuss it with the children. Let them tell you what they see.)

The up and down line illustrates the temperature changes caused by the glaciation periods.

- The pointed **spear** was a big step for humans, first tools made; previously humans used what was found or could be made by knocking 2 stones together.
- Cooking over fire could have been an accident; a piece could have fallen in, someone tried it and liked it
- Animals were used in the environment, were eaten, skins were tanned and worn as clothing.







The factual approach (discuss w/ children the first paragraph of the "Notes on Early Man")

In the evolution timeline (Timeline of Life) we studied how each life form took what it needed from the environment and returned something to it. That created a balance of nature.

Now as we begin to study humans we see the same exchange. There is one significant difference, however. Instead of being led by an unconscious instinct such as that which we find in plants or animals, humans can use their intelligence to work on the environment to create a better life for themselves.

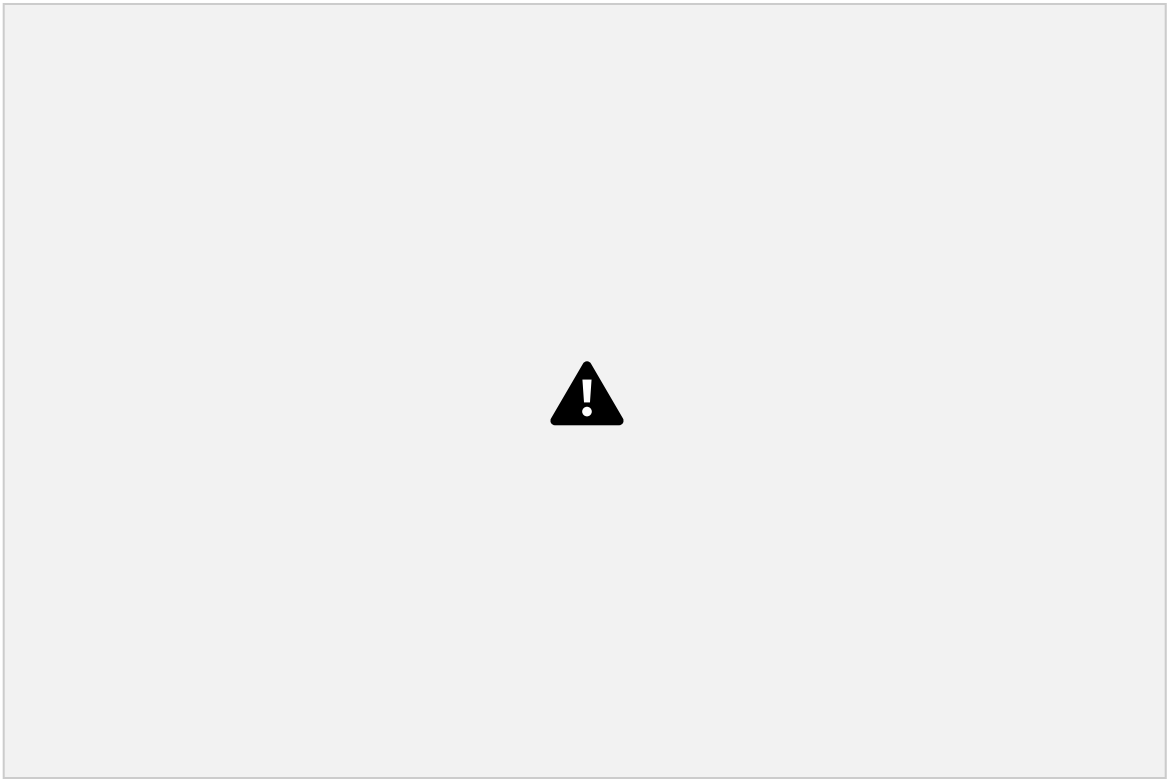
So there is a change with the coming of humans; we transform the environment with the work of the hands and mind together, adapting the world to ourselves instead of adapting ourselves to the world as the other animals must do. We call this cultural evolution instead of natural evolution. (Isn't this sort of saying that we do not have to adapt ourselves to nature???)

Let's look at the words at the top of this time-line, ***Paleolithic*** and ***Neolithic***. Lithic means stone; paleo

means old, so the Paleolithic time was the Old Stone Age. The neo in Neolithic means new and this stands for the New Stone Age.

The Paleolithic time has been divided into the Lower Paleolithic and the Upper Paleolithic. Let's explain what that means with an experiment:

(Put different layers of rocks, bones, sticks, feathers, etc. in a jar) Which was the oldest layer set down in the jar? Which has been there the longest? The lower the layer, the older the material; the farther up the layer, the younger the materials. This helps to explain that Lower Paleolithic period is the oldest period of the Paleolithic and the Upper Paleolithic the youngest period.



(Note dates) It was at least several million years ago (3.5 -4 mya if talking about hominids) that humans first came on Earth (note pictures). Lucy's skeleton is 3.2 (3.6mya?) million years old. Humans first developed what we call primary tools; these are tools that act directly on the environment, like this digging tool, a stone.

Then humans developed secondary tools. These were tools to make other tools. At first, humans would tear meat away from the bone with their teeth. Later they used tools to sever meat from the bone. You can encourage children to embellish the chart with their own research.

We will return to this timeline again and again.

(First show what's on the chart in a factual way, then go back in followup lessons, showing how humanity developed from one stage to the next, building on each previous advance.)

Alternate Presentation from: www.moteaco.com/albums/history7.html

Materials:

...The Prepared Time Line beginning about 500,000 years ago up to 1 AD.

...As much appropriate fossil material as you have.

...As many appropriate illustrations as you have.

Presentation 1: (Homo Habilis)

Explain that there were earlier hominid examples, but this time lime begins with Homo habilis, "The Toolmakers." If you met one of these "people" today, you would not think he or she looked very human. They were only four to four and a half feet tall. They weighed less than 60 pounds. They had low brows and protruding jaws.

But, they did something no other creature had ever done before - they picked up a rock and used it to help with their work. Scientists have found actual examples. Homo habilis, lived in small groups and one factor in their ability to survive was their ability to work together. They established home bases where they would camp for a while rather than roam.

The picture of the man eating raw meat is to represent the fact that these early hominids did not have fire. They did not have a language with words. They communicated with grunts, screams and meaningful gestures.

Follow up:

1. This is a great place to stop and direct a play between two groups of Homo habilis bands. The children must not speak words. They must gesture and grimace while uttering growls, hoots, groans, grunts and screams. The children love to do this! Don't forget that the dominant males will probably form a defiant protective shield in front of the females, adolescents and children. (Assure the students that they will perform this play with their clothes on. Some may be reluctant as they think they will have to remove all their clothes.)
2. Find examples of Homo habilis in pictures by different artists. Have the children discuss the differences and figure out what is speculative and what is known.
3. A child can draw or copy scenes.
4. Information cards should be available for research. NOTE: Older books will have little or no information of Homo habilis in them.

Presentation 2: (Homo Erectus)

Homo erectus, "The Upright Man" was short (five feet tall). Their skulls were thicker than modern humans but compared with earlier hominids, their heads and brains were considerably larger and their faces were flatter. The hand of Homo erectus was becoming more dexterous with the pincer grip of thumb and fingers supplanting the power grip of H. habilis. Because of this, they were able to fashion large hand axes that functioned as cleavers. Perhaps the greatest achievement of these people was their use of fire, which may have been related to the ice age. With fire, they were able to cook wooden spear points to harden them enough to jab into much larger animals with much tougher skin. Fire also served to keep the people warm night and day and to keep predators away at night. Although these people originated in Africa, they could carry fire with them and were able to move into the temperate regions of the world including China and Germany. [NOTE: First person to discover the remains of H. erectus was a Dutch man named Eugene Dubois.]

H. erectus hunted in larger groups and used fire to drive animals into swamps or off cliffs. By cooking their food, their jaw muscles and teeth were able to diminish in size, allowing the brain size to increase. While the vocal apparatus of H. erectus would not allow much vocalization, it is possible that a few sounds were used to "name" individuals or objects (NOUNS).

H. erectus built the first shelters recognized as such. There is no evidence that they made clothing, but those living in the temperate climates probably wore animal skin capes during the winter at least.

Follow up:

1. Similar to that for Homo habilis.
2. Using a carefully tended briquette grill outside, the children can harden wooden points. Have the children scrape the bark from freshly cut saplings. The toasting must be done carefully so that no charcoal (which is soft and crumbly) forms. If it does, use it with your history of writing activity!

You may be able to find a local archeologist or Native American who is adept at chipping flint tools. A visit from 3.

such a person is always a treat for everybody.

Presentation 3:

Homo neanderthalensis, take their name from the little valley in Germany where they were discovered. They were very powerful with strong muscles and thick bones. It is easy to understand why scientists mistook them for stooped, hulking brutes with a vacant expression. We now know that this is false, but this mistaken image of a "caveman" lingered for a long time - even into today in some people's minds.

Their skulls were low in front with a heavy ridge of bone above their eyes. They barely had any chin at all. They had a brain capacity greater than modern humans. This does not mean they were smarter than we are. Intelligence depends on size and organization of the brain. Studies show that their vision was probably better than ours, but their language was not as developed and they couldn't think ahead as well as we do.

The Neanderthals were great hunters. They hunted large animals such as mammoth and woolly rhinoceros with little more than fire hardened wooden spears. There is no evidence that they used stone spear points, but they did chip stone scrappers off flint cores.

Neanderthals buried their dead, including small children, with food and tools, probably indicating some kind of religion. This practice has contributed to the numerous skeletons in museums and to a greater knowledge of the customs of the Neanderthal. There is evidence that they cared for sick and elderly members of their clans. They used animal skins as clothes and may even have used certain plants for medicine. They continued the tradition of building simple shelters. There are indications of huts made from saplings built inside some of the European cave sites.

About 30,000 years ago, the Neanderthals died off and the cause remains a mystery, but we have a clear idea of what came next, the Cro-Magnons.

Follow up:

Similar to those after the other early hominids. Just adjust your information and give it a go!

1.

Presentation 4:

Over 100,000 years ago, a new line of humans began to develop. They were called Homo sapiens, "the wise men." These people were nicknamed Cro-Magnons after the name of the place where they were first discovered. About 30,000 years ago, the Neanderthals died out and left the Cro-Magnons as the only kind of human on earth. Today all humans, even you, belong to this species.

The Cro-Magnons had brains larger than ours today. They were taller and more slender than the Neanderthals. Their faces looked much the same as ours. If you were to meet a Cro-Magnon dressed in a business suit, you would probably not notice anything strange about them.

They were hunters, artists, dreamers, seekers and doers. They invented music (Scientists have found a flute dating from 32,000 years ago.), art (found in Altamira and Lascaux caves dating from about 17,000 years ago) and language.

The more people know, the faster changes occur. In the Paleolithic, it sometimes took 100,000+ years for a new way of making tools to develop. As time went on, our prehistoric ancestors learned to use fire, the wheel and the bow and arrow. The pace of change grew faster. This is still happening today. Our technology may change more in one year than did that of our prehistoric ancestors in a thousand centuries (1,000,000 years).

Prehuman and early human individuals lived for over 3 million years at the technological level characterized as the Lower Old Stone Age. The Upper Old Stone Age will span only 30,000 years, or 6 inches on our time line. In the last two inches are contained the Middle Stone Age, the New Stone Age, the Copper and Bronze Ages and our own Modern Age.

Obviously it is time to expand the scale of the time line so we can study these last important stages in greater detail. Unroll the Second Time Line after demonstrating the expansion of an elastic between your hands.

NOTE: This time line is 9-12 material and is usually not given in detail at 6-9.

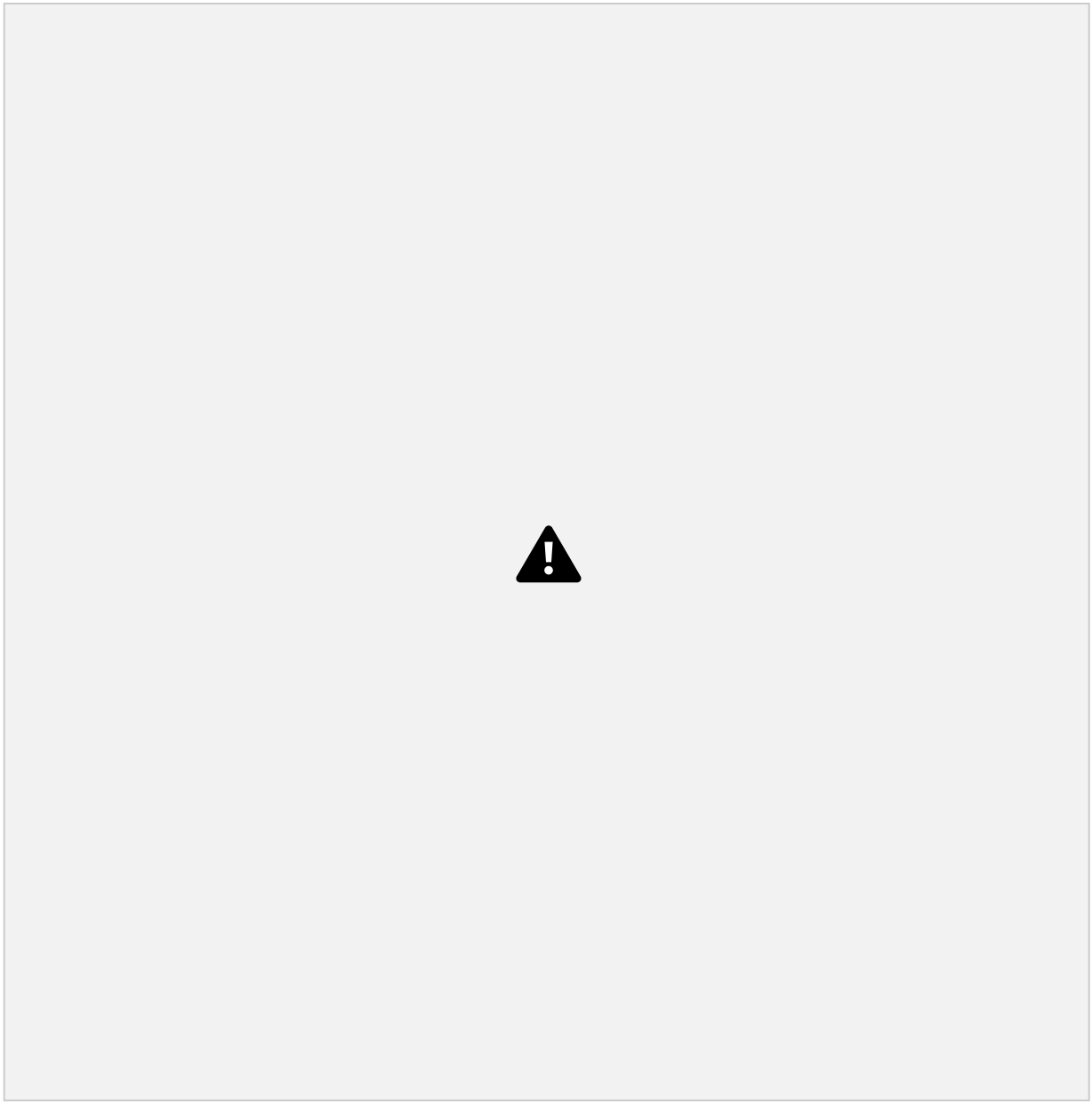
Follow up:

The Human Question. Each species has its own special survival tools, for example: fangs, claws, speed, the ability to hide or the ability to withstand drought. Our tools are our hands and our brains. With these tools, we have the power to choose to shape the world around us. We are the only creature that has ever had that choice. The great questions that arise from this are

How will we shape the world?

1. Will we make it better, or will we destroy it?

2.



1. Australopithecus afarensis
2. Australopithecus africanus
3. Homo habilis
4. Homo erectus
5. Neandertal

D. The Second Time-Line of Human Beings

Presentation:

This presentation/discussion is very similar to the presentation of the first timeline of humans. Unroll the chart and discuss with the children what they notice, what they think is being depicted by the pictures on the timeline. If there is something that intrigues them, encourage them to do some research and report back to the class what they discover.

Follow-up: History Question Charts.

E. Notes on Early Man

In the evolution timeline, we saw how the life forms took something from the environment and gave something back. With humans, this goes on in an unconscious way. Instead of transforming our bodies so we're suited to the environment, we adapt the environment to ourselves. This is a different kind of evolution called cultural evolution as we strive to find better ways to adapt the environment to ourselves. (And sometimes humans have a very destructive impact on the environment. Discuss examples of this—where we are failing in our cosmic task as stewards of the planet.)

Our intellect has made us different and we've been able to adapt our needs and tendencies to adapt to our environment. The tendency to explore has been needed to survival. Aided by memory, early people were able to successfully search for food noting the movement of herds and were able to come back at the right seasons for food. Later they took this form of finding out what was there just to explore, exercising his inborn need to know.

They also used his imagination to abstract qualities and arrange them in new ways. They were able to visualize the fur of an animal as a cover for themselves. They could create a digging tool, perhaps after watching a rabbit dig with its paws. In place of bodily strength, man was given the gift of imagination.

We don't know when people first used words in a denoting way (to refer to objects), but their development of language was probably connected to the birth of the tribe. To master the environment, early people joined groups, which forced communication to develop. By remembering mistakes and talking about them, similar mistakes could be avoided. An important location where something could befound (water, berries) could be described by language. Later this was preserved in writing.

Another faculty, which allowed us to respond in more efficient ways to our environment was our mathematical mind. One aspect of this, our tendency for exactness allowed us to work more precisely (as in refining the tip of an arrow). We also exercised our tendency to know which is called science form the Latin word *scio*. Early people's quest to find out about things is of great interest to children, especially when they hear how early people had to discover many things the hard way, by trial and error! (Who discovered which foods are poisonous, for example.)

The spiritual territory and tendency towards vanity was also operative in early people. Even from the beginning there was a need to adorn oneself as a manifestation of the first basic love for oneself. Another aspect of love later evolved into the formation of larger groups to facilitate the hunt. Men generally did the hunting while the women usually gardened and tended children and the hearth. The Eros manifestation of love, both procreative and recreative existed and can be seen in their cave paintings. These were usually done in the back of their caves away from their living areas indicating they may have been related to religious celebrations. The artist assumed an important position and was given aprominent place in the hearth to mix his pigments consisting of red, black, white and okra.

The impulse for religion seemed to always be present. Animals were invested with supernatural powers as indicated by the burial patterns such as one site in France where human remains were found surrounded by the skeletons of 25 bears. This elaborate burial practice is later taken to extreme levels by the Egyptians.

The physical needs are easiest to note on the timelines of early people: food, shelter transport, defense and clothing (leading to the fundamental needs of people chart.). During the Paleolithic period, these psychic tendencies

were hard at work helping early people to create a livable world. As the spiritual territory developed, there became a need for spiritual independence leading to the migrations of people. On the Timeline of Life, we saw that various ages had characteristics, which gave it their name. This is true of the human timelines as well

In the upper Paleolithic, a unique species came into being known as Homo sapiens meaning "knowing human". Homo sapiens possessed a highly developed nervous system, a large brain, the power of reflective and projective thought (memory and imagination), and the ability for abstract thought. On the physical level, humans have the thumb, the erect posture which allows the hands to be free for activity and the gift of speech. By 23,000 BC, these people were similar to us physically and adapted by changing culturally, rather than physically. This growth defined as cultural evolution can be measured by the successful use of ones resources or through revolutions in economics. With each advance, the population increased as people lived more comfortably and could survive better. The growth in numbers of people has not been steady though and occurred in three population explosions resulting from a cataclysmic event. The first was the agricultural revolution occurring after the last ice age as a result of conflicts between tribes over the use of land. This was followed by the civic or urban revolution characteristic of a coming together of peoples sometimes through conflict such as one group taking over another. The most recent one is the industrial revolution.

The **Eolithic** time was characterized by the first accounts of human creatures. This was marked at the end of the evolution time line. Information on this period is scant although remains have been found in Kenya, Java and Japan. There is no evidence that these people knew how to chip stones for use but rather used what they could find. Fossil remains also show that the dead weren't buried, indicating little interest in the after life or religion. Because of the shape of the jaw, there appears to be no rudiments of speech.

From the Paleolithic period there are few fossils and scientists have had to rely on pollen layers to summarize what the environment must have been like. This was a hostile time with three ice ages occurring and a climate that went up and down in temperature. Many animals, such as the saber-toothed tiger and wooly mammoth, lived at this time and are now extinct. The hand axe, a stone with a sharp point, was used as a weapon and later was attached to a stick to make a primitive spear. Balls of limestone have also been found indicating that a sling may have been used. Other methods for killing animals included pitfalls, which were holes dug to create a falling trap, and a tripping trap made with a vine and a log which would come down on the animal and stun it. The traps were placed according to the migration paths of the animals and around paths to watering holes.

There was some evidence of ceremonial burials at this time. The leadership of tribes seems to have been based on physical prowess and leadership was shared with the tribe artist. Women had a strong role in the family and in some tribes, a strong leadership role in the tribe.

During the Upper Paleolithic period (shown on the second timeline, starting at 250,000 BC), the world itself was still changing. The land ridge of Gibraltar was broken at this time as the ice from the last ice age melted. Britain was still attached to Europe, while Italy was still connected to Africa. The climate became steadily warmer and the stages of vegetation changed, from tundra to steppe, to evergreens until the broad leaf forest occurred in Europe. The most dominant form of fauna at the time was the reindeer, which gives the period it's folksy name of the reindeer age.

The science of metallurgy began through mining while new tools and weapons were developed such as the bow and arrow, the bone needle and fish hook. Art was illustrated in cave paintings, pottery and jewelry and while we don't know much about their language, they made murals using picture writing. Burial grounds became evident at this time; chieftains were buried differently from regular tribesmen indicating that some form of hierarchy or government existed. Some skeletons also have shown that people were executed, alluding to the possibility that people were punished for offenses.

As the glaciers began to move back, peoples began to migrate into northern regions which had previously been uninhabitable. Wind belts began to switch north along the African coast creating less rain and making these areas dry. Other objects found at this time include mortar and pestles and evidence that clothing became more were fitted with the development of the needle.

During the Neolithic period, around 8,000 BC, peoples of the Middle East and Europe began to gain control over their food supply leading to the **Agrarian Revolution**. There were two aspects to this: the domestication of animals and utilizing the seed which enabling humans to plant and harvest. In some places only one of these

methods was used while in other places both were. The Agrarian Revolution was significant in the advance of civilization in that it allowed more time for things other than just finding food. Wheat and barley were two types of crops grown while sheep and goats were often raised.

There may have been some attempts at a written language as indicated by the remains of the Druids. There was lots of barter going on (everything from gems to shells) while housing was still very simple, such as grass or pit houses. The structures of the lake dwellers that lived on pilings in the water in Switzerland was a more complex structure. Great physical effort went into the making of temples and hedges indicating the importance of religion to these peoples. Towards the end of this period, there existed a chain of self-sufficient communities who produced their own food, which paved the way for the second revolution: the **Civic Revolution**.

This second revolution was characterized by a division of labor. As people were allowed to spend all of their time doing one thing, they became better at this and the quality of life could be improved. People became dependent on one another to meet their needs and there was freedom from each person or family needing to perform all the jobs previously necessary for survival.

Another feature of the Civic Revolution is that through the development of large communities, large work such as the building of roads and hedges could be carried out. With the development of the wheeled cart and the sailboat, there was greater interchange between people, as access to other communities became easier. This gave people an extended view of the world as new techniques, ideas and methods of construction could be exchanged. A new kind of society was emerging which was beyond the survival level. In addition to meeting the physical needs, there was investigations into the sciences, arts, religion and government. At the hub of this society was the city. This growth came about during the age of metal. As developments in this area were wide spread and varied, depending on the location, it's hard to date this period. Of the three stages, the **age of copper** came first, followed by the **age of bronze** and finally the **age of iron**. They happened at different times in different places in the world. There is not much at the end of the second timeline as the development of civilizations became diversified at this point. Now particular styles in building, clothing, art, etc. can be taken up by the child's own work constructing timelines for different civilizations. It should be noted that all ancient societies grew up along rivers at approximately the same latitude level. The rivers provided transportation while the climate was good, making it easy to meet the needs of these early civilizations. The soil was fertile from the rivers flooding and the growing seasons were longer. If the earliest civilizations had developed at the tropics, they would have had to endure the extreme heat, there wouldn't have been a material to write on which could withstand the humidity, etc. This building of a body of written knowledge was essential for the growth of greater civilizations.

4. Written History

A. The Growth of Culture: Migration Charts

(Introduce these charts after children have studied different civilizations)

When humans were first on the earth, the social unit was the family, which was later extended for purposes of safety. Now we refer to the global family which is true economically if not ideologically. In this study we will look at how people have combined and come into contact with each other.

There are a number of reasons why people have migrated. All have had to do with population pressures either physical or psychological. Some are a result of natural resources being used up; others have to do with climate changes or invasions. The first two have already been alluded to in the children's work.

The Migration Charts:

Follow herds (or the hunt): Why did people move or migrate to a new place to live? One reason may have been that they used up a nature resource like food. Early people moved to find food. Because obtaining food by hunting used to required larger groups, tribes were formed. These people are called nomads and they follow the migration patterns of the animals.

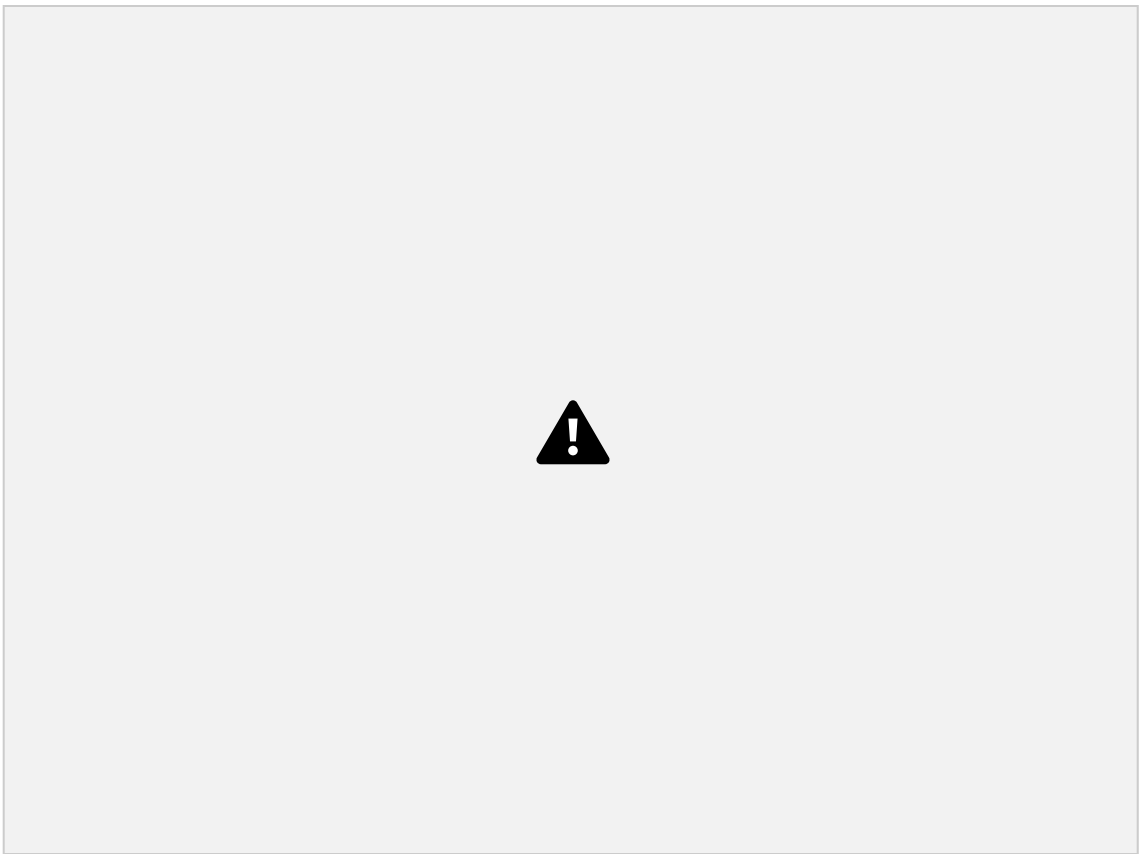
Following the Herd Chart Needed Here

Climate changes caused by glaciers and the building of deserts: Another reason people have migrated from one place to another is because they needed to get away from advancing ice. Remember the ice ages on the timelines of humans? When the glaciers melted there was a change in the wind patterns. The winds carry rains. In some places, deserts were formed were there were once lush jungles. At one time there were Stone Age tribes in the Sahara desert. Due to the changing winds and the lack of rain they were forced out of their land and moved into the Nile River Valley. That is when the civilization there grew up.

Ica Age Migration Chart?? Needed Here



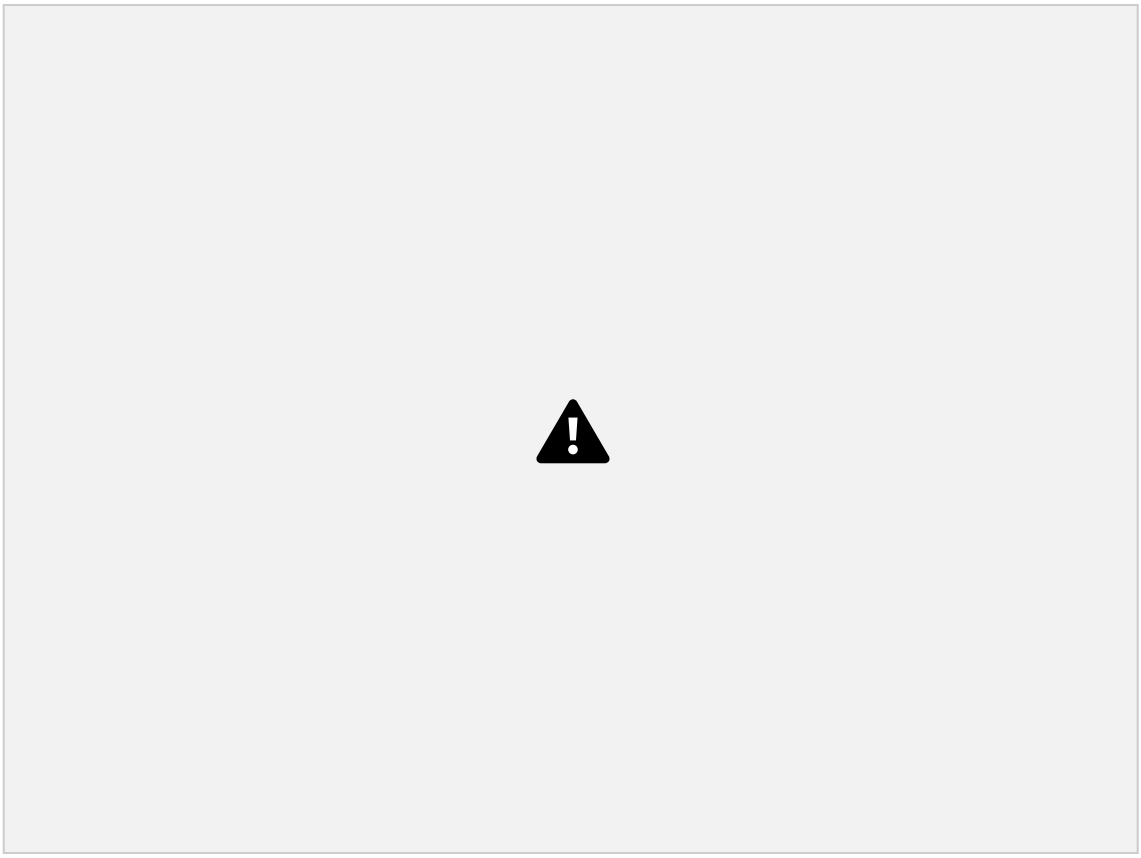
Clearing the forest: This picture shows how people would move into an area and clear part of the forest for their gardens. After a while the plants would not grow because the soil was depleted and so they would move on. Sometimes these people would slash and burn the trees.



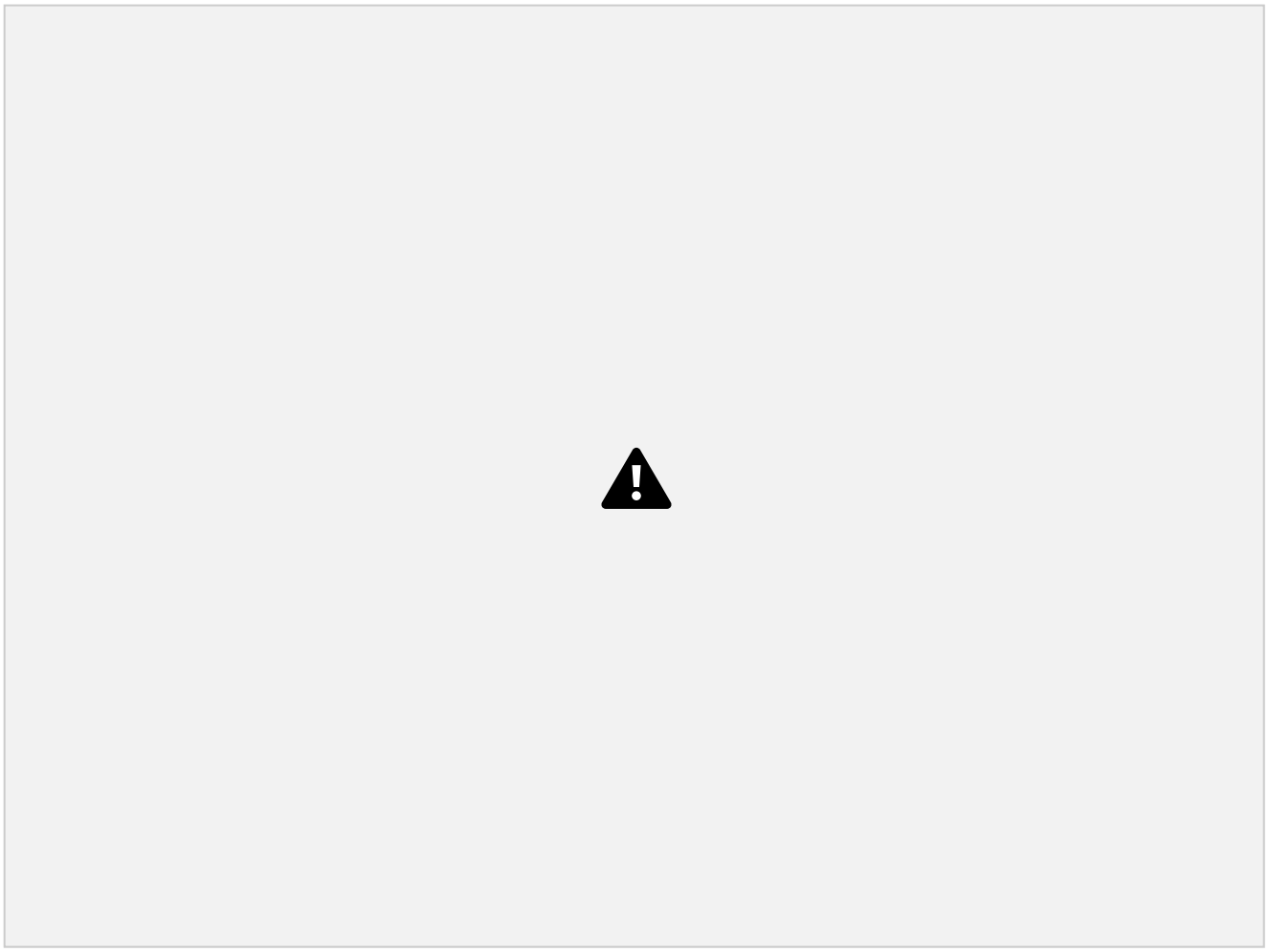
Billiard ball migration: At first there was a group of people living here. (Pint to first "billiard ball", upper left of chart.) Another group of people came in and gradually displaced them. As they moved on they gradually displaced another group. There was no intermingling of the people. Each group of people remained distinct. (Examples: Jews pushed out the Arabs; colonist's pushed out Native Americans;

Mongolian tribes
forced out the Huns
who displaced Goths
who went into the Roman Empire.)

Breaking the wall: Throughout history empires have been established and have set up boundaries. These boundaries have been imaginary or concrete such as the Hadrians wall or the Great Wall of China. When there was a disorganized army, the walls were not properly defended and then another people could break through them. They broke through just like a flood, sacking and looting. The American Revolution is an example of a group of people breaking the wall and moving out of England.



Infiltration and fusion: Different groups of people established themselves as peaceful inhabitants of a certain country. At first they remain separate, but as other people join them they begin to trade and intermarry. At this time a larger group is formed of the combination of people, but traces of the first group still remain. This happened in the Swiss Cantons, the USA and many other places.



The horde: This occurs when there are several chieftains in an area and one emerges as the strongest. The smaller tribes turn to the chieftain for protection in exchange for certain taxes. When the big chief decided to go to war the smaller chiefs would join him in order to share in the spoils. When they all moved, it looked like a great whirling mass. Genghis Kahn is an example of this.

Sea born migration: is another kind of migration we must consider. That is how the new world was discovered. With the improvement of sailing vessels, groups traveled to other areas and tried to take over or if unoccupied, moved in. Examples: The Vikings, the Greeks with their settlements around the Mediterranean and Black Sea.

Sea Born Migration Chart HERE

B. How to Organize a History Study

Children at the 8-10 year old level can begin to study the ancient, classified civilizations. One study should be chosen for the group while others can be at the students' own initiative. At the 10-12 year old level, children should study later history such as the explorers and U.S. history. The oldest group can do a study on their own state and city.

To begin a history study, bring the group together and state that you want to do a study of an ancient civilization (e.g. Egypt). Invite students to use the needs of man charts and the history timelines. Ask what aspect of the civilization they'd like to study and write these down. (foods, fauna, flora etc.) Present resource books for gathering the information. Later get together to share what they have found. This meeting should be short and

exciting. A story can be given to stir the student's interest.

Some time during the following week, the group should be gathered to share the information they've gathered. To organize the information, relate it to the needs chart.

Ways to expand this lesson:

1. Locate the civilization on the map; make sure students know where it is, note geographic features.
2. Mention famous personalities to catch the student's interest (they can identify with the people). Give stories on people but tell them rather than read them.
3. Establish a time frame for the study.
4. Contrast the civilization with its golden age with its present form.
5. Display artifacts.
6. Invite resource people to come in.
7. Children can make charts of different aspects of the era e.g. the animals, foods, etc.
8. Learn something about the written language; contrast it with other alphabets.
9. Develop a file folder of pictures and caption; organize these like geography folders on the civilization as its zenith. Encourage children to contribute to this.
10. Trace maps of the area; note major cities and geographic features.
11. Go out in the community to whatever resources are available. Museums, displays, presentations, etc.
12. Construct a timeline as a group; some considerations:
    - Set time frame so it is manageable; a metric system is preferred.
    - Have children mark subdivisions on charts with different colors; label.
    - Include maps at appropriate intervals; indicate vegetation, exploration, and territorial acquisitions.
    - Mark unobtrusive vertical lines at regular intervals to facilitate reading the line.
    - Make it a general timeline; entries should reflect the whole society, religion, science, needs etc. kings, queens.
    - Have drawing and writing paper available so entries can be made separately then put on the line. (Teams could have a captain who could check the entries before they're put on the chart.)

Stages in the Progress of Civilization

From: www.moteaco.com/albums/history3.html#anchor1248203

Materials:

- The Fundamental Needs Chart
- Many booklets: Stages in the progress of civilization each booklet contains pictures and corresponding labels.

Presentation: (Age: 6 1/2 - 7 1/2)

Let's look at one of these booklets - travel on the sea.
(The chart is put away and the booklet presented. The child puts the pictures down in any order.)

"Which boat looks like one that you might ride in today?"
(It is chosen and put to the right of the child)

"Which one do you think was the oldest boat used"
(Then look at the remaining boats and try to place them in the order of first to last trying to reason why. The teacher then presents a three period lesson naming each picture. In the first period, full descriptions are given for each picture, referring to various details in the picture. The child is then given the labels and matches them to the pictures. The child may then read the booklets.)

Vertical and Horizontal Studies of History

Clarification:

Vertical study means to study a specific subject. This is taking one subject: e.g.. shelter and looking at it through time. The purpose for this is to take a subject and look at how humans met their needs with this subject through history. The younger child finds this easier to work with and enjoys the comparison of different aspects of the same thing through time. This lesson is also more impressionistic for the young child, allowing her/him the opportunity to imagine what things were like at different ages. The vertical study is impersonal as it is involved with things. Horizontal study means to look at one age and compare the fundamental needs of a human during that specific time. This work done after the vertical studies and is especially relevant at the 9-12 level. Each civilization can be looked at specifically, e.g. Roman times for its housing, food, music, art, lighting, etc., etc. This is the child's first detailed research. The horizontal study is personal as it is involved with people.

A. Vertical Study of History

Materials:

- Booklets of Stages in the Progress of Civilization
- Time line on which each space is a century with 100 centuries (10,000 years) are represented for B.C.E. in white, 20 centuries for C.E. in red.
- Set of labels for each booklet, these with dates indicated on back.

Presentation:

1. Choose cards which the child can relate to: shelter or lighting. Give the pictures one at a time without regard to order. Give a story with each picture and the name orally.
   After you have done this, have the child give you the names.
2.

3. Ask if she has a picture of her own house or can she draw one. (this involves the child in the project more).
4. Give the reading labels and have the child place under the appropriate picture.
5. Repeat for the series in this way with other cards and lessons.
6. Extensions: A group of children can build shelters through the ages and do research on this.

B. Passage from Vertical to Horizontal

Presentation:

1. Take the picture cards again. By now, she knows the names and stories. Now give a time sequence to these images.
2. Order them with the child from left to right - oldest to youngest
3. Observe with the child that if we connect these, we have a time line of dwellings.
4. Remove the reading levels and put arrows there. The arrows say the same on the front as the reading labels.
5. See what is written on the back side. Turn each arrow over. Note that the dates go first by 1000's, then by 100's. This ordering will tell us if we have placed the picture cards in accurate order. 3000 BCE, 2000 BCE, 700 BCE, 300 BCE, 9th Century CE, 16th century, 19th century CE, etc.
6. Through this transition process, the child is entering the understanding of history.

C. Horizontal Study of History

Have a group of children working together:

1. Put down two or more sets of fundamental needs cards.
2. Have the child choose one period of time and ask which part interests him the most.
3. Put a red arrow at this point. Take away all other cards except this period of time.
4. Have group work to go through all of the lamps, dresses, vehicles, heating, transportation, etc. for that one period of time.
5.

Now when we look at the horizontal study of 1890, we have a good impression of how humans met their fundamental needs for this period of time.

The deepened study of a particular time's environment is the horizontal study of

history. Suggested time slots for Vertical/Horizontal Studies:

- Prehistoric Prior to 4000 BC
- Early Civilizations 4000 BC-1000 BC
- Greek 1000 BC - 146 BC
- Roman 509 BC - 330 AD
- Byzantine 330 AD - 800 AD
- Middle Ages 800 AD - 1300 AD
- Renaissance 1300 AD - 1600 AD
- Baroque 1600 - 1700 AD
  Classical 1700 - 1800 AD Eighteenth Century
- Romantic 1800 - 1900 AD Nineteenth Century
- Modern 1900 - 2000 AD Twentieth Century
- 2000 - Future

C. American History Timeline

Introduction:

The study of American history in the Montessori elementary classroom progresses from the general to the particular or from the whole to the parts. The work begins with a study of natural history, moves to an investigation of early man, and culminates in a study of the nation, state, and community.

Because there is no uniform syllabus of American history in the United States, only the requirements of each public school district, our aim in the Montessori classroom can be broader than the memorization of names and dates.

As in every area of the Montessori curriculum, the child's sensitivities are used as a guide for teaching American history. An enormous sensitivity to fairness and justice is evident in the elementary child as well as a love for heroes, heroines, and villains. Examples of justice and injustice in our development should be emphasized and an appreciation for those who have contributed to the social good should be cultivated.

The child's identity as a U.S. citizen must also be kept in mind (as well as whether or not the child is in fact a citizen), which means not projecting a view of America as always right. It is important to be honest and humble about our mistakes as in the treatment of native Americans, African-Americans and immigrants in our history. [Suggest the use of alternative history accounts such as Howard Zinn's.]

History should not be the study of power and war. The child in the upper elementary is on the verge of the age of idealism, which occurs at the third plane of development, and should be encouraged. We should try to create a sense of hope for creating a better world and should show them what they can realistically do to help. We want them to be proud, yet humble, and to become politically active. To do so they need to see the good as well as the imperfect in our nation.

The study of American history should emphasize such questions as, for example:

Which groups were successful and survived by collaborating and cooperating?

- How was harmony created?
- Was there disharmony?
- What units of power have been established?
- What individuals or groups have taken for themselves and given back?
-

Mute Charts and Panels

Materials:

American history timeline panels (scale: except the first, 2 years per inch); mute charts for each panel; envelope of loose texts, maps, pictures, and artifacts for each mute chart. Panels consist of:

1. American Aborigines (Native Americans) - title colored **green** to indicate the forested land; the time span is not proportional, it just gives an impression of the tribal nations.
2. Period of Exploration - 1492 – 1607-- colored **blue** to refer to the exploration by water.
3. Colonial Period - 1607 1776--colored **brown** for buckskin.
4. The New Nation - 1776-1881; **orange** to represent the fire or energy of a new nation.
5. Reform and Reconstruction - 1861-1914-- **gray** to indicate our age of technology.
6. World Power- 1914 - - **yellow** to indicate that hope springs eternal.

Presentation: American Aborigines

1. Discuss that students will be leaving the Montessori elementary program soon and will need some background in U.S. history.
   Present chart of the aborigines (meaning from the beginning).
2. Ask students what they notice on the chart; point out such things as: people having crossed over from
3. Asia, Stone Age methods of living, people were from the Mongolian race; some stayed in the north and became Eskimos, others traveled to the USA and South America.
   Emphasize that people's lifestyles would differ according to their environment and natural resources, and
4. how the climates of the regions differed.
   Ask who would like to investigate one of the groups just mentioned or perhaps someone would like to
5. find another group of aborigines to study. (The aborigines of Japan and how they have been treated by modern Japanese is an interesting study.)
   Introduce the mute chart to show the relationship of the geographical maps, the Aborigine groups, and
6.

their artifacts.

7. A week or two later have the children share their research work; projects may have included making clay pots or hand-woven articles.

Chart of the Aborigines

Here **Presentation**: Period of

Exploration

When interest begins to wane in the first panel, bring out the first panel and add the second panel to it.

1. Explain that the period of exploration refers to European exploration.
2. Point out the date to memorize: 1492 (the date that Columbus crossed the ocean to the new world.)
3. Point out other explorers, e.g. De Soto, Sir Frances Drake [note: Pt. Reyes and Fort Ross]
4. Mention such things as: St. Augustine was the first permanent settlement, The first American child born to English parents on Roanoke Island, VA - all the settlers disappeared from there and were never found. Ask who would like to find out more about these and other explorers and their settlements.
5. Introduce the mute chart and folders.
6. Later bring the children together to share their research.
7.

Presentation: Colonial Period

After the last period of study is exhausted, bring out the first two panels and attach to them to the third.

1. State that a colony is a place governed by another place.
2. Explain that the European kings and queens began to claim colonies for themselves in the U. S.
3. Children will notice the blood on the timeline - tell them about the war between France and England.
4. Point to 1607 as a date to remember - the founding of Jamestown was the first permanent English settlement in America.
5. Discuss that men came looking for gold - found tobacco instead. Pilgrims came to worship as they pleased; point out intermingling of cultures.
6. Some pictures reflect an event and some reflect just the general climate of the country.
7. Stories of interest to children - Boston Tea Party, Salem Witch Trials.
8. Encourage research, work with the mute chart, sharing what is found.
9.

Presentation: The New Nation

Repeat procedure pointing out the new acquisition of land which is **colored red** (the old part is brown

1. and the part not yet acquired is gray).
   Children will notice the blood standing for the War of Independence.
2. Point out: the picture of the Boston Tea Party (a precursor to the war of 1776). The picture of the slaves
3. on this panel is a precursor to the war of 1812.
   Children will use the mute chart and its pieces and do in-depth research as follow up work.
4.

Presentation: Reform and Reformation

Ask who the presidents were during this period? The inventors?

1. Point out other famous people.
2. Children will be interested in the picture of the car and may want to research the history of the car.
3. The map has all the states colored in puzzle map fashion.
4. No picture to indicate the next war because it wasn't on U.S. soil.
5. Same follow up as before.
6.

Presentation: The World Power

Point out the date to remember (1914); may want to add 1941.

1. Discuss the carrier pigeon, the visit by Maria Montessori, the wars, etc.
2. The pictures of famous people are personal choices.
3. There is space left on the end of the panel for the teacher's own

additions. 4.

Notes:

The timeline is introduced when the children are 9 1/2 to 10 years of age. Time should be left for the study of the state and community. The timelines are meant to be memorization devices.

Extensions:

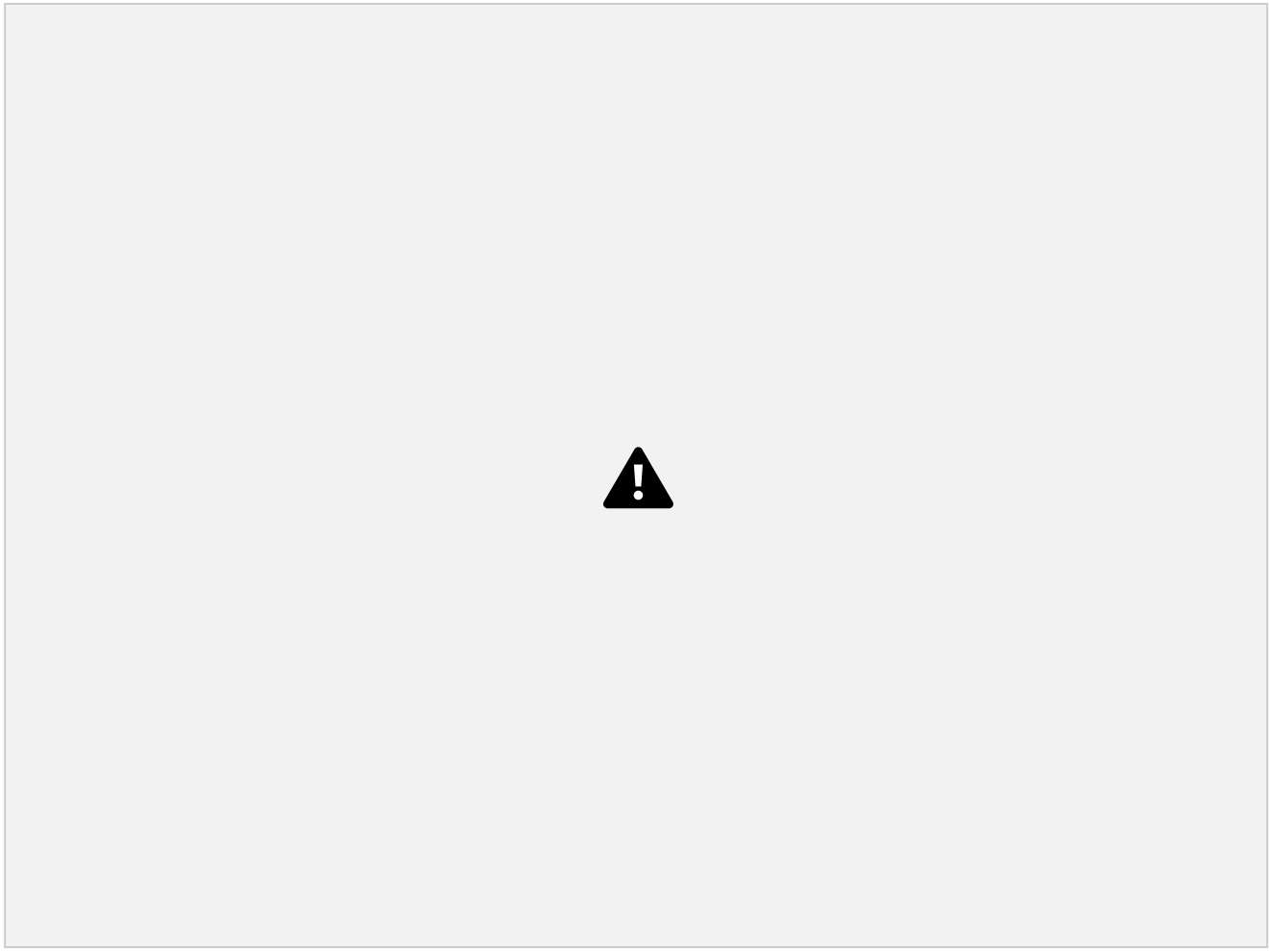
Many additional topics are appropriate such as presidential succession (president flashcards are popular), inventions, American Indians, etc. Use art, drama, music, stories (biographies), cooking projects, etc. to connect children with their topics of study.

V. Linear Measurement of Time

A. The Clock

Materials:

- a wooden clock with movable and detachable hands
- blue hour discs



- red hour discs

Presentation:

1. Recall the rotation of the earth as studied in Geography.
2. One rotation of the earth takes 24 hours, or one whole night and one whole day.
3. Note that when the earth moves on its axis this is rotation; and that when the earth moves around the sun that it revolution.
4. Place the red discs starting with one and go all the way around to 12, then remove the reds and place the blue discs in their place, numbering the hours from 13-24.
5. Discuss how the clock has to go around twice to measure one whole day.

6. Some countries use the 24-hour notation, but in the United States (other than the US military), we count half a day from 1-12 and the other half from 1-12 again.

7. Then take out the blue discs and put in the red discs again. (If the clock has detachable hands, remove the long hand.)

8. Show how the little, or second hand tells the hour.

Move the second hand around and ask the child what time it is. "What time it now? Now? Now?"

9. Explain that it takes one hour for the little hand to move from one number to the next.

10. Since one hour is a long time, we use the long hand to show us how many minutes of the 60 in the hour

11. have passed by.

The long hand sweeps around the clock one whole turn while the little hand just moves from one

12. number to the next.

When the little hand is exactly an hour, the long hand is at 12.

13. When the long hand is on the 6, it is 1/2 past the hour. Note that when the small hand is in between

14. two hours the time is the lesser number.

After half hours have been mastered, introduce quarter hours (7:15, 2:45) and then every possible time

15. (4:08, etc.) Children can test each other.

Alternate Presentation (moteaco):

Materials:

Clock with movable hands (it is helpful to be able to remove the hands), divisions for minutes, Metal insets 1/2 and 1/4. Rubber stamps of clock face without hands. Paper strips the length of the circumference of the clock. Two loose hands, hour and minute.

1. Introduction:

"Think of all the kinds of clocks or watches there are. The kind of clock with hands is called a face clock. The clock is round like a face. But no matter what kind of clock we are looking at, it is still measuring the same hour and minute of the day in our own time zone. There are 24 hours in a day. 12 hours for day and 12 hours for night."

Look at the clock in front of you. Use the hour hand to count out the hours as it moves around the clock from 1-12. "But I told you there were 24 hours! The clock goes around 2 times to make a day." The hands are placed on the 12 to represent noon. "What hour does this arrow point to ? What happens at 12:00? Twelve o'clock is called 'noon' After 'noon' there are 12 hours more. At the next 12:00, it is the middle of the night, 'midnight'. There are 12 hours before noon and 12 hours afternoon. Noon usually represents the sun at its zenith, at the highest point of the day. (Noon comes from the Latin prefix non meaning nine. It is supposed to be nine hours from sunrise, which would be about 3:00).

2. The hours:

"Let's see what time you do the things that are important to you. What time do you get up? 7:00? This is 7:00".(or the child sets the clock to the correct time). The child makes a book of the things s/he does on a

normal school day on the hour, and the time s/he does it.

3. The half-hours:

"The day is divided into 24 hours but each hour is also divided into parts. There are 60 minutes in each hour. From 12:00 to 1:00 is sixty minutes. Each little mark on the clock represents a minute, or 60 seconds. People make telling time much easier by skip counting by 5's and by remembering how many minutes make a half. " Count by 5's to 30 and then place a half fraction inset down. This is twelve thirty or half past twelve. When it is half past twelve, the hour hand is halfway between the twelve and the 1. " Children can make a book of "Half pasts" with stamps.

4. Minutes:

The hands show 3:00. How can I show 5 minutes after 3:00? I can count the little minutes.....or I can count by 5's like we did when we learned half past. 5 minutes past 3 is written 3:05. Children can make a book of one hour of minutes counting by 5's.

5. Quarters:

Show a clock with example 8:15

- Put the red 1/4 inset down to show 15 minutes past is 1/4 past the hour.
- Therefore 8:15 is a quarter past 8.
- Show a clock with 8:30 - remember half past 8?
- Show a clock with 8:45 on the clock.
- How many minutes past 8? There is one quarter to go to the next hour. This is called a quarter to 9.
- Then you can teach 10 to the hour, 5 minutes to, etc.
- Extensions: Use rubber stamp to make booklets of quarter to, quarter after,

etc. •

B. Days of the Week

Materials:

A card with the days arranged Sunday through Saturday, and the identical card cut into strips to use as a work chart.

<u>Presentation</u>:

Show the child the card listing the days from Sunday through Saturday.

1. Take the movable alphabets, spelling the root in one color ("Mon") and the "day" in the other, or use
2. colored pencils to write the same exercise on paper.
   Then investigate the etymology of the name
3.

Sun's day Sunday Moon's day Monday Tiw's day Tuesday (Norse god of War)
Woden's day Wednesday (Norse god of Storms)
Thor's day Thursday (Norse god of Thunder)
Freya's day Friday (Norse goddess of Love)
Saetr-daeg Saturday (Saturn is the Roman God of Planting)

Make a comparison with the French and Spanish languages:

Lundi
Mardi
Mercredi
Jeudi
Vendredi
Samedi
Dimanche

Sunday

Monday

Tuesday

Wednesday Thursday Friday

Saturday

Tell the story of why there are 7 days in the week: The Babylonians had identified 5 of the planets in the sky as well as the sun and the moon, and they gave one day for each.
Then have the child put in order the loose cards of days of the week from Sunday to Saturday. Then test the order with the children with the 3-period lesson: "If today is Tuesday, what was it 2 days ago?" "3 days from now?"

C. Months of the Year

1. Explain that different people have developed months of differing length and number. 5,000 years ago the Sumerians created a twelve-month calendar, with consistent thirty-day months. The Babylonians alternated 30 and 31-day months so the calendar would cover the whole year. The Romans used a ten month calendar, later expanded to twelve months to honor Julius and Augustus, two extremely powerful emperors.
   The names for our months are taken from those of the Roman calendar.
2. January was named for Janus, the Roman god with two faces who looks back to the past and forward to the future. (Perfect to start the new year.)
3. February was named for the festival of purification (februa). (Originally it was the last month of year—a time to clean house and right wrongs. Julius Caesar moved it.)
   March was named for the Roman god of war.
4. April comes from the Latin word "aperio," to open. (Earth opens, new life)
5. May was named for Maia, the Roman goddess who protects new plants and helps plants grow.
6. June was named for Juno, queen of the goddesses.
7.

8. July was named for Julius Caesar, emperor of Rome (47 BC-He changed calendar)
9. August was named for Caesar Augustus, also a Roman emperor. (He wanted to have more days in the
10. month he was born. Stole days from February. Augustus ruled after Julius Caesar and wanted to be as great as his uncle.)
September comes from the Latin word "Septem" for seven. Before Julius and Augustus inserted
11. themselves into the calendar. This was the seventh month of the year.
October comes from the Latin "Octo" for eight.
12. November comes from the Latin "novem" for nine.
13. December comes from the Latin "Decem" for ten.
14. Children can do research.
15.

D. Class Diary

- Encourage the children to create and maintain a decorated diary in which they record activities, lessons, events, in short, anything that is important to them.
- The diary may be a notebook, a handmade book, or a purchased journal.
- As the children record events in their diaries, they build a sense of the passage of time, how history is recorded, and how the time passed in their lives represents their personal history.

E. History of Names

Materials:
A Name Chart (to stir interest)

Presentation:

1. Tell the children, "I'm thinking of the oldest thing in the classroom. It is something invisible and it is something that was sitting waiting for you before you were born."
My name or the name of one of the children.
2. Tell the origin of the name:
3. Then have the children tell where their names came from. Have the children record them on a chart.
4. Then make two sets of cards with:
5. the children's names on them and

1.
with the origin of the

names. 2.

F. Personal Time

Lines Materials:

Unlined paper, Lined paper cut into strips and colored

pencils. •

Presentation:

1.
2.
3.
4.
5.
6.
7.
8.

strips of lined paper, and show the child that one bar on the lined paper = one year of life. Have the child cut out a piece of ruled paper to represent his age, and label it, and then cut out pieces of paper for his parents and brothers and sisters:

Illustration:

Superimpose the strip of paper for one of the parents on top of the child's strips to show how much older one person is than the other, thus how many more years that person has been on earth than the child making the chart. "Suppose we wanted to tell more about your life. We don't have much room in those 7 little spaces, so let's STRETCH that space, and expand each year into months."

Timeline of Child's Life (using months)

"We will use the same paper, but this time, each line will equal one month instead of one year." Show the child how to mark the paper off into intervals of 12 months showing each year. This timeline may be embellished with photographs. Use stars to show birthdays, mark the date for each year of life, and place one comment in the margin for each year. The past is written in the past tense, and the present is written in the present tense.

Example:
Put out a piece of unlined paper and entitle it: "My Family."
Suggest to the child that we try to make a picture of the lengths of the lives of people in the family. To do this cut

G. BCE/CE (B.C./A.D) Timeline

(B.C.-- 'Before the Common Era or B.C.E.' and A.D.-- 'Common Era or C.E.')

Materials:

Cash Register Tape and Colored

Pencils. •

Presentation: •

•
"What year are we living in?" (2006) What happened 2006 years ago that we starting counting the year from that date?"

Take a piece of cash register tape (about 4 feet long) and fold it in half. At the halfway point place the star and the figure of the baby Jesus.

Tell the child that the star represents the birth of Christ, and the little figure is the baby Jesus.

- Then explain that this birth marks the beginning of historical time in dating in the Western
- world.
  "We call the birth of Christ the zero year."
- "Since the date today is 2006, this means that it has been 2006 years since Christ was born."
- "But time did not begin with Christ. There were many years before he was born" (show the area to
- the left of the star).
  "Let's mark off the years before Christ's birth and after Christ's birth, in 100 year packages." •

Alternate marking 100 years A.D. with 100 years B.C. until the strip reads 2000 in either direction

- (about an inch per 100 years).
  Each 100 years is called a century (cento is Latin for 100)
- "Sometimes you will see in a book the date such as 400 B.C."
- "Just what does B.C. mean?"
- It stands for Before Christ, and a date in B.C. is any time before Christ was born" (show the
- child the left side of the chart).
  "You might also see the date 200 A.D. and wonder what A.D. stands for. A.D. means Anno
- Domini, or in Latin "The Year of Our Lord."
  We also call B.C. 'Before the Common Era or B.C.E.' and A.D. 'Common Era or C.E.'."
- Since the church fathers of the Roman Empire organized our calendar, they used their
- language to name the time after the birth of Christ."
  "What does it mean when we read: "In the 2nd century A.D.?"
- "We know that one century equals 100 years, so the 1st century would be from the years 0-100 and
- the 2nd century would mean in the time between the first hundred and the second hundred years

(100-199). Let's show that on our chart with a red line (for the years after Christ was born. Red signifies love. We will use a green line for the years before Christ was born to signify the hope for something new. These lines continue through all time, for centuries continued through all time, and we will use Roman Numerals to show the centuries."

Note how the numbers and lines are placed:

- "An easy way to remember centuries is this: count one less than the number of centuries and
- that will give you the number of years: 4th century = 300 and 3rd century = 200 etc."

"So the 2nd century A.D. is before 200, in the 100's, and A.D. means the time was after the birth of

- Christ."

Let the child make his own chart. Then make one that will stay in the classroom

- permanently.

Exercises:

The children may set out their card sets on this time line: housing, clothing, defense, etc.

1. Include problems related to time in story problem cards:
2. "Julius Caesar was born in ____.
   1. He died in _____.
   2. How old was he when he died?"
   3.

The children copy the problems: "How many weeks are there in 3 years?"

1. 52 weeks (one year) times 3 equals 156 weeks in 3 years
2.

Alternate Presentation:

(From:www.moteaco.com/albums/history.html) Materials:

Golden bead, numeral cards, chains of 100, 1000 (2 each), first historical time line materials:

1. Two thousand chains, two hundred chains, thousand cube, hundreds, units as needed. Math quantity
2. symbols for the current year.
   B. C. E./C.E. (B.C./ A.D) Time Line
3. Arrow labeled "This year"
4. Labels: Before Common Era or Before Christ with B.C.E and B.C. on back
5. Common Era and Anno Domini with C.E. or A.D. on back
   Cards with 1st - 21st on one side and I-XXI on the other.

6.

1. "What year is this? 2006:

A child gets the numeral cards and corresponding quantity in golden bead material. The quantity is counted. The cards are arranged and the numeral is read. "We want to represent this quantity in a line. For each one thousand cube, we can use a long chain of one thousand." The children lay the two chains out (perhaps in a field) and count to 2000 by decades and puts the arrow 'this year' at the correct point. "But this is too long. Let's try another way." A chain of 100 is laid out. "We'll let each bead represent 10 years." The child counts by 10's and 100's until reaching the end of the chain. "This chain now represents 1000. We'll put this cube at the end to remind us. Another 100 chain is placed out and the children count by 10's until they reach 1990-2000. They place an arrow there with the numerical cards of this year.

2. "Why do we call this 200_ ?

What happened 200_ years ago?

They may come up with suggestions--the earth was created, life began. "All of those things happened many, many years before this time. Throughout the world, there are different calendars that people use. Each people bases the beginning of their calendar with an important event. The calendar that we use in the Western world was based on when they thought Jesus was born". Place a flame or a star at the point of the year '1'. This is where our own calendar started. But there were many, many years before this time." Loose ten bars are laid out at the left side of the chain. "We could have many more ten bars because there are many, many years before Jesus was born. So many that these ten bars would go all the way through the school and out the door. The years before Jesus was born were called B.C. or Before Christ and the years from 0-present are called A.D. or Anno Domini, Latin for in the year of our Lord. Non-Christians call B.C. 'Before the Common Era or B.C.E.' and A.D. 'Common Era or C.E.'."

3. Layout with cards

Now the chains are replaced with the time line strips. The green which is labeled B.C.E and B.C. stands for hope. The red which is labeled C.E. and A.D. stands for love. The star or flame can be at the two century ones. "Now we need to find out where to put the 'this year' arrow on this time line.On this time line, instead of representing one year at a time like we did with the thousand chain and 10 years at a time (or decades) like the hundred chains, each unit on this time line will represent a century, or 100 years." The 1st card in red is put down,"This is the 1st century in the Common Era or A.D." Then the 1st card in green is put down. " This is the 1st

century Before the Common Era or B.C." The child puts down 2nd century C.E. and 2nd Century B.C.E., etc. up to the 20th century C.E. and B.C.E. Both ends of the time line should be arrows to show that time goes on in each direction. "When we write the numerals for the centuries, we can use Roman Numerals". Turn the cards over and the Roman Numerals are printed on them. (Extension: There can be another whole lesson with craft sticks making the Roman Numerals) The cards are turned over and read again. Use three period lesson for any confusion of names.

Age: 7 years.

Aim: To orient the child to historical time lines and dates
Extensions for older children: study of other