Impressionistic Geography

A Three Part Series

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Overview Geography: Static and Dynamic
The History and Philosophy of the Charts

- The Impressionistic Geography Charts, begin Dynamic Geography. This looks at movements of the earth and phenomena that occur on the earth.
- These Impressionistic Charts capture the children’s imagination, and give the children an impression of a particular reality.
- The charts are organized from a general to a detailed viewpoint.

- Striking the Imagination: Technical and Psychological Lessons
- Impressionism
- The Role of the Impressionistic Charts

The earth is studied in relation to the universe and to the solar system; then in relation to solar energy, movements of the earth and related consequences. Next are phenomena that modify the earth’s crust and therefore conditions of life on earth; the atmosphere and phenomena related to it, the hydrosphere and phenomena related to it.

- The Charts help the children to know the different phenomena in a simple way, near to their experience or level. Not all the charts are impressionistic, some are more scientific.
- We examine one difficulty at a time and then combine with others. For example, we consider the earth still, then rotation, then revolution, then both movements together.
Are They Misnamed?

- The name is misleading.
- These charts are not traditional geography. Their massive curriculum is not just geography; it forms the heart of the dynamic physical sciences plan for upper elementary school.
- They differ from traditional geography in that they are meant to powerfully strike the children’s imagination. These charts are not only meant to convey information, they are meant to excite, inspire, and motivate students through their imaginations.

The Content or Curriculum

- Geography, and:
  - Anthropology
  - Astronomy
  - Botany
  - Chemistry
  - Fundamental Needs of People
- Historical Geology
- Geology
- History
- Meteorology
- Oceanography
- Physics

The Organization of the Charts

- **Chapter 1:** The Universe, Solar System and the Earth (7 Charts)
- **Chapter 2:** Solar Energy and the Earth (10 Charts)
- **Chapter 3:** Movements of the Earth and Their Consequences (12 Charts)
- **Chapter 4:** The Atmosphere and its Phenomena (8 Charts)
- **Chapter 5:** The Work of the Wind (3 Charts)
- **Chapter 6:** The Hydrosphere and its Phenomena (20 Charts)

Additional Basics

- The Topics.
- Isolation.
- The Experiments.
- The Research and Project Suggestions.
- How to Present the Charts.
- When to Present the charts.

Levels to Present the Charts

**Age Range**

- **Charts 1-6** Presented as a part of history Lower Elementary
- **Chapters 1 & 2** Fourth Year
- **Chapters 3 & 4** Fifth Year
- **Chapters 5 & 6** Sixth Year

Fourth Year

- **Chapter One**
- **Chapter Two**
  - Note: Chapter One is also used in History for Lower Elementary
Chapter One
The Universe, Solar System and the Earth

- Seven Charts
- 33 Topics
- 19 Experiments
- 32 research and Project Suggestions

Chapter 1: Topical Overview

- The Formation of the Earth
- Force of Attraction
- Force of Repulsion
- Centripetal and Centrifugal Force
- Inertia
- Friction
- Gravity
- Chemical Reaction
- Precipitation

- Matter and Energy
- Mixtures
- Crystallization
- States of Matter
- Materials change state at different temperatures
- The Sun and the Earth
- The Solar System
- The Beginning of the Cooling Process of the Earth

More Chapter 1 Topics

- Hot Air Rises
- Volcanism
- Filling the Oceans
- Erosion
- Layers of the Earth
- Liquid and Viscous
- Elastic, Plastic, Rigid
- Specific weight

- Density
- Lithosphere
- Stratification of Rocks
- The Rock Cycle
- Igneous rock
- Sedimentary rock
- Metamorphic rock
- Continental drift

Chapter 1 The Universe, Solar System and the Earth

Sensorial Title
1. How Small the Earth Is!
2. The Sun’s Family
3. The Cosmic Dance
4. The Time of the Volcanoes
5. The Sun’s Beautiful
6. What’s Inside the Earth?
7. The Continents Drift!

Technical Title
A Comparison of the Size of the Earth to the Sun
The Solar System
The Beginning of the Cooling Process
Volcanism and the Cooling Process
Cooling and Filling the Daughter Oceans
Geochronal Constitution of the Earth
The Evolution of the Continents
Chapter 1: Experiments

Experiment 1: Force of Attraction
Experiment 2: Centrifugal and Centripetal Force
Experiment 3A, 3B, 3C, and 3D: Force of Inertia
Experiment 4A, 4B: Force of Gravity
Experiment 5: Hot Air Rises
Experiment 6: Volcanism

Experiment 7: Erosion
Experiment 8A, 8B: Air Occupies Space
Experiment 9A, 9B: Specific Weight
Experiment 10: Stratification of Rocks
Experiment 11: Formation of the Mountain
Experiment 12: Fracture of the Earth's Crust
Experiment 13: Stratification of Rocks Observation of the Three Groups of Rocks
Chapter 1: Research and Project Suggestions

- Classify the stars according to light color and size.
- Graph the representative distances of the principle star from Earth.
- Gather information on the principle constellations.
- Make a visit to a planetarium if possible, slides, films on the universe are suggested.
- Build the planets with clay or papier-mâché, with size proportional, arrange them using proportional positions, on a wall, floor, ceiling.
- Make a graph to show the distance of the planets from the sun.
- Graph the planets in relation to the sun in proportional dimension.
- Gather information and pictures regarding space exploration.
- Prepare charts and illustrations of the consistencies and proportions of the continental land masses through the ages, i.e. continental drift.

Chapter 1: More Research and Project Suggestions

- Collect pictures and illustrations of volcanoes, especially presently active ones. Research principle volcanic eruptions in history.
- Look for practical examples showing how hot air rises.
- Find examples of gravity in daily life.
- Earthquakes- visit a seismic center.
- Locate the seismic zones of the world by means of maps.
- Graph the principle earthquakes.
- Collect photos of changes caused by earthquakes.
- Make a chart of specific weights of most common elements.
- Observation of the stratification of rocks in the environment, includes a drawing exercise.
- A collection of minerals and/or fossils and their classification.
- A visit to a museum of natural history.

Chapter Two
Solar Energy and the Earth

- Ten Charts 8-17
- 10 Topics
- 6 Experiments
- 10 research and Project Suggestions
Chapter 2  Solar Energy and the Earth, Continued

Sensorial Title                         Technical Title
13. The Rays Work to  The Work of the Rays of  
    Reach the Earth      the Sun in Passing Through 
                          the Atmosphere
14. The Earth Stores Heat  The Atmosphere as a Poor 
                          Conductor of Heat
15. The Earth Gives Back Heat  Radiation
16. Like a Warm Bed    Radiation: Retaining Heat
17. Like a Freezing Bed  Radiation: Dispersing Heat
Chapter 2 Experiments

- Experiment 14: Solar Energy
- Experiment 15: Illumination of the Earth
- Experiment 16: The Perpendicular and the Oblique Rays
- Experiment 17: Illumination of the Equator and the Poles
- Experiment 18A and 18B: Good and Poor Conductors of Heat

Chapter 2 Research and Project Suggestions

- Research various parts of the earth and heat distribution in various seasons.
- Make a graph representing temperatures at different heights.
- Graph showing differences of temperature at sea level and on a mountain.
- Graph temperature throughout the day.
- Graph temperature throughout the year.
- Graph temperature in your home and another distant city or locale. Keep records.
- Distribution of heat in various parts of the Earth.
- Investigate the insolation of the planets.
- Investigate various energy sources. How are each related to the sun?
- Find out about alternative energy.
Chapter 3: Movements of the Earth and their Consequences

- Twelve Charts 18-29
- 15 Topics
- 4 Experiments
- 11 research and Project Suggestions

Chapter 3 Topical Overview

- Locate the fundamental points (N-S-E-W) in relation to the sun.
- Show use of the compass.
- Orienteering and compass courses
- Orienteering without compass and/or at night.
- Construction of a sundial.
- Graph the length of day and night during the year, need calendar with sunrise and sunset noted.
- Graph the length of day and night during the year, need calendar with sunrise and sunset noted.
- Graph temperatures of various houses throughout the day.
- Locate the principle cities of the world and note the time difference between these cities and your home.
- You can compare the times in different countries.
- Examine human life in different climatic zones.

Chapter 3 Movements of the Earth and Their Consequences

<table>
<thead>
<tr>
<th>Sensorial Title</th>
<th>Technical Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>18. Day and Night</td>
<td>Rotation and its Consequences</td>
</tr>
<tr>
<td>19. What is the Hottest Time of Day?</td>
<td>Variations in Temperature of the Earth Surface with Respect to the Rotation of the Earth</td>
</tr>
<tr>
<td>20. The Earth is Leaning</td>
<td>The Inclination of the Axis of the Earth</td>
</tr>
<tr>
<td>21. The Seasons</td>
<td>The Revolution of the Earth and the Seasons</td>
</tr>
<tr>
<td>22. The Seasons on the Map</td>
<td>The First Day of Each Season</td>
</tr>
</tbody>
</table>
Chapter 3  Movements of the Earth and their Consequences, Continued

<table>
<thead>
<tr>
<th>Sensorial Title</th>
<th>Technical Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>23. The Zones of the Earth</td>
<td>Astronomic Zones</td>
</tr>
<tr>
<td>24. Our Summer</td>
<td>The Northern Summer Solstice</td>
</tr>
<tr>
<td>25. Our Winter</td>
<td>The Northern Winter Solstice</td>
</tr>
<tr>
<td>26. Spring and Autumn</td>
<td>The Vernal and Autumnal Equinoxes</td>
</tr>
<tr>
<td>27. Torrid Zone</td>
<td>The Equatorial Climatic Zone</td>
</tr>
<tr>
<td>28. Temperate Zones</td>
<td>The North and South Temperate Climatic Zones</td>
</tr>
<tr>
<td>29. Frigid Zones</td>
<td>The Arctic and Antarctic Climatic Zones</td>
</tr>
</tbody>
</table>
Chapter 3 Experiments

- Experiment 19: Day and Night
- Experiment 20: Inclination of the Polar Axis
- Experiment 21: Marking off the Imaginary Parallels
- Experiment 22: The Seasons
Chapter 3: Research and Project Suggestions

- Locate the fundamental points (N-S-E-W) in relation to the sun.
- Show use of the compass.
- Orienteering and compass courses.
- Orienteering without compass and/or at night.
- Construction of a sundial.
- Graph the length of day and night during the year, need calendar with sunrise and sunset noted.
- Graph temperatures of various hours throughout the day.
- Locate the principle cities of the world and note the time difference between these cities and your home.
- You can compare the times in different countries.
- Examine human life in different climatic zones.
- Examine animal life in different climatic zones.

Chapter 4: The Atmosphere and its Phenomena

- Eight Charts 30-37
- 10 Topics
- 4 Experiments
- 13 Research and Project Suggestions

Chapter 4: Topical Overview

- Air Pressure
- The Formation of the Winds
- Low and High Pressure
- Regular Winds
- Rapidity of Cooling Depends on the Nature of the Body
- Sea Breeze
- Land Breeze
- Monsoon Winds
- Summer dry winds
- The layers of the atmosphere.

Chapter 4: The Atmosphere and its Phenomena

<table>
<thead>
<tr>
<th>Sensorial Title</th>
<th>Technical Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>30. How the Winds Form</td>
<td>The Formation of the Winds</td>
</tr>
<tr>
<td>31. Wind Cycles</td>
<td>Winds: A Scheme of Their Formation</td>
</tr>
<tr>
<td>32. Regular Winds</td>
<td>Local Winds: the Daytime Sea Breeze</td>
</tr>
<tr>
<td>33. A Sea Breeze</td>
<td>Local Winds: the Nighttime Land Breeze</td>
</tr>
<tr>
<td>34. A Land Breeze</td>
<td></td>
</tr>
</tbody>
</table>
Chapter 4: The Atmosphere and its Phenomena, Continued

<table>
<thead>
<tr>
<th>Sensorial Title</th>
<th>Technical Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>lesson on &quot;Winds and their Direction at the Equinox&quot; is given using Chart 36</td>
<td></td>
</tr>
<tr>
<td>35. Summer Monsoon Winds</td>
<td>Winds and the Distribution of Precipitation During the Summer in the Northern Hemisphere</td>
</tr>
<tr>
<td>36. Winter Dry Winds</td>
<td>Winds and the Distribution of Precipitation During the Summer in the Southern Hemisphere</td>
</tr>
<tr>
<td>37. Winds and the Distribution of Precipitation - Work Chart</td>
<td></td>
</tr>
</tbody>
</table>
Chapter 4: Experiments

- Experiments 23A, 23B, and 23C: Air Pressure
- Experiment 24A: Rapidity of Cooling Depends on the Nature of the Body

Chapter 4: Research and Project Suggestions

- Practical experiences to show the fact that air occupies space.
- Practical demonstration of the movements of the air.
- Observation of a barometer. Record the various pressures.
- The construction of a barometer.
- Construct a graph showing variation of pressure in the same place at different hours of the day.
- Construct an anemometer - an instrument to measure the velocity of the wind.
- Construct an instrument to measure the direction of the wind.
- Research local winds. Why do they form? Which direction do they blow? What phenomena do they cause?
- Research the layers of the atmosphere.
- Research the component gasses in the atmosphere.
- Examine air pollution.
- Research the atmospheres on other planets.
- Experiment with growing plants in other gasses

Sixth Year

- Chapter Five
- Chapter Six

Chapter 5: The Work Of The Wind

- Three Charts 38-40
- 6 Topics
- 4 Experiments
- 9 Research and Project Suggestions

Chapter 5: Topical Overview

- Heating and Cooling of Water
- Marine Currents
- Heating and Cooling of Solids
- Heating and Cooling of Salt Water
- Origin of Marine Currents
- Wind Erosion
## Chapter 5: The Work Of The Wind

<table>
<thead>
<tr>
<th>Sensorial Title</th>
<th>Technical Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>38. Marine Currents</td>
<td>Cold and Warm Marine Currents</td>
</tr>
<tr>
<td>39. Names of Important Marine Currents</td>
<td>Nomenclature of Marine Currents</td>
</tr>
<tr>
<td>40. Let’s Destroy the Rock</td>
<td>Erosive Power of the Winds</td>
</tr>
</tbody>
</table>

### Chapter 5: Experiments

- Experiment 24B: Heating and Cooling of Water
- Experiment 24A: Heating and Cooling of a Body
- Experiment 24C: Heating and Cooling of Salt Water
- Experiment 25: Origin of Marine Currents

### Chapter 5: Research and Project Suggestions

- Research marine currents.
- Find illustrations or photos of places touched by warm and cold marine currents. Compare yearly temperatures for these places.
- Find pictures of wind erosion. Find other phenomena produced by wind (dunes, etc.).
- Research other actions of wind in nature.
- Examine wind power.
- Study windmills throughout the ages.
- Examine other human uses of wind (sailing, kites, etc.).
- Research thermals.
- Study destructive winds.
Chapter 6: The Hydrosphere and its Phenomena

- Twenty Charts 41-60
- 23 Topics
- 4 Experiments
- 29 Research and Project Suggestions

Chapter 6: Topical Overview

- Heating and Cooling of Water
- Marine Currents
- Heating and Cooling of Solids
- Heating and Cooling of Salt Water
- Origin of Marine Currents
- Wind Erosion

Chapter 6: Topical Overview

- Orographic train and desertification
- Rain at the Sea: Local Rain
- Evaporation and Condensation
- Rivers
- River Cities/Civilizations
- The Most Important Rivers of North America
- The Rivers of North America
- The Major Rivers of the World
- The erosive work of water
- Stratification of Sediment
- Strange, erosive phenomena
- Age of Rivers
- Development of a Valley
- The Alluvial Valley
- The Canyon
- The Glacial Valley
- Chemical Erosion
- Expansion due to Freezing
- Freezing and Thawing
- Marine
- Hanging Valley
- The Water Cycles
- Vegetative Zones

Chapter 6: The Hydrosphere and its Phenomena

Sensorial Title
Technical Title

41. Rain and the Desert
- The Influence of Mountains on Precipitation and the Development of Deserts

42. Rain by the Sea
- Local Rain: Rain by the Sea or Local Rain

43. Warm Air Rises
- Evaporation

44. Vapor Condenses
- Condensation

45. Where Do Rivers Begin?
- Formation of Rivers
Chapter 6: The Hydrosphere and its Phenomena, Continued 1

<table>
<thead>
<tr>
<th>Sensorial Title</th>
<th>Technical Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>46. North America is Like a Sponge</td>
<td>Major Rivers of North America</td>
</tr>
<tr>
<td>47. North America is Like a Great Sponge</td>
<td>The North American Part of the Hydrosphere</td>
</tr>
<tr>
<td>48. The Earth is Like a Sponge</td>
<td>Major Rivers of the World</td>
</tr>
<tr>
<td>49. Let's Carry Away the Rock and Soil</td>
<td>The Erosive Work of Water</td>
</tr>
<tr>
<td>50. A Valley Dug by a River</td>
<td>The Alluvial Valley</td>
</tr>
</tbody>
</table>
Chapter 6: The Hydrosphere and its Phenomena, Continued 2

<table>
<thead>
<tr>
<th>Sensory Title</th>
<th>Technical Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>51. A Canyon</td>
<td>Erosion: a Special Case</td>
</tr>
<tr>
<td>52. Pillars of the Earth</td>
<td>The Winter Freeze</td>
</tr>
<tr>
<td>53. Frost - Like a Young Boy</td>
<td>The Spring Thaw</td>
</tr>
<tr>
<td>54. Thaw the Young Boy</td>
<td>A Valley Excavated by a Glacier</td>
</tr>
<tr>
<td>55. A Glacial Valley</td>
<td></td>
</tr>
</tbody>
</table>
Chapter 6: The Hydrosphere and its Phenomena, Continued 3

Sensorial Title
56. Glaciers and the Environment
57. When Glaciers Disappear
58. Cycles of Water
59. Games of Water
60. Water and Plants

Technical Title
Moraines
The Hanging Valley
The Water Cycle 1
The Water Cycle 2
Types of Vegetation according to Climatic Zones
Chapter 6: Experiments

- Experiment 26: Stratification of Rocks: The Wearing away of Stratified Sediments
- Experiment 27: Development of a Valley
- Experiment 28: Destruction of the Rocks (Chemical Erosion)
- Experiment 29: Expansion

Chapter 6: Research and Project Suggestions

- Importance of water for life.
- River Cities and Civilizations.
- Dams and Canals.
- Rivers in transportation.
- Examine water or hydro power.
- Study hydraulics.
- Study water mills throughout the ages.
- Study irrigation.
- Examine other human uses of water.
- Rain, snow, hail, dew, fog-research these.
- Illustrate different phases in the life of a river.
- Changes caused by a river in our environment. Outings, if possible.
- Find information and illustrate mechanical and chemical actions of water.
- Glaciers-illustrate types, changes they make in environment.
- Study Ice Ages and Glaciers, show distribution in geological ages.
- Study Oceanography
- Do a pond or stream study
- Types of vegetation and their distribution on the earth.
- Research water pollution. How can we help in diminishing pollution, which civilization and technology have brought?
- Research erosion. Study agricultural practices that reduce erosion.
- Mechanical and chemical actions of the water.
- Research mineral water.
- Research springs, including thermal springs.
- Research bogs, swamps, and marshes.
- Research ground water and subterranean waters which erode caves and tunnels.
- Learn about stalagmites and stalactites.
- Research glaciers today. Examine what is happening to them.
- Research different kinds of vegetation and their distribution throughout the earth.
- Research of other actions of water in nature.
The Clock of the Eras

- This is not really a part of the Impressionistic Charts, but is related to them.

Any Questions?