

EARTH SCIENCE FROM FLAT EARTH TO PLANETARY TECTONICS [Synopsis - Five Frames]

Title and Plan

Alfred Wegener's original theory in his epic 1929 book, "*On the Origin of Continents and Oceans*" is referenced on the title page (recommended reading). The Plan with preliminary notes lays out a chronologic theme development, from the 1488 flat earth map of Marcellus through Continental drift and Plate Tectonics to the recent remote exploration and mapping of the surface of planet Mars.

Treatment

The exhibit follows the early mapping of the earth's surface and the resulting development of the Theory of Continental Drift and the more recent scientific application of Plate Tectonics. The influence of Alfred Wegener (1880-1930), who first proposed Continental Drift in 1915, is traced, and his defense of his theory is discussed. Wegener's untimely death in 1930 put advocacy for the theory in abeyance for three lost decades. The deep-sea drilling observations and extensive echo sounding (SONAR) seafloor mapping of the 1960s resulted in the verification of Wegener's ideas and the rise of the Science of Plate Tectonics to explain the forces involved in the Earth processes.

Importance of the Theme

Understanding of the earth, its processes, 4.5 billion year history, present status, and its prospects are essential to everyone on the planet. This exhibit attempts to educate the viewer about the broader concepts and implications of Earth Science.

Knowledge, Study

The time sequence maps of drifting continents are illustrated on postal issues of several countries, and all are shown in the exhibit to further the story of a dynamic Earth. The mechanics of plate tectonics are illustrated with philatelic and ephemera material showing volcanoes, earthquakes, geophysics, seismicity, biology, zoology, paleontology, chemistry, subduction, ocean floor spreading and paleoclimatology. The beauty of Wegener's original theory is the interdisciplinary integration of the sciences to unravel and explain Earth processes over geological time. The catastrophic, plate tectonic, earth processes which endanger human life and property are highlighted.

Personal Research

A magnifying glass symbol indicates personal research, which has been recorded in scholarly articles authored by the exhibitor. The difficult theme elements took years of study, research to assemble in the present form. Published research articles are listed under "References" below.



Rarity and Condition

Unique and rare philatelic and non-philatelic items are outlined or tagged with a red rectangle. Condition is the best available. Three, challenging to acquire, unique artist's original artworks are featured.



- 1865 Prussia stampless legal cover with boxed Wegener postal marking – scarce, p. 11
- 1922 Belgium Geological Congress cover with Secretary General's autograph – Scarce, p. 16
- "Pangaea" sample banknote with Alfred Wegener and Continental Drift maps – scarce, p. 17
- German trading cards featuring Alfred Wegener and his gravesite under the ice in Greenland – scarce, p. 23
- Algeria - unique original artwork of issued World Geological Congress 15f phonolite dyke stamp, p.26
- Chromalin proof showing international time zones from Tonga - only five known, p. 30
- Progressive die proofs of zircon radioactive age determination triptych stamps at Langlade – scarce, p. 34-35
- Survey ship *Meteor* commemorative medal awarded to the crew and scientific staff – rare, p. 44
- Original artist's drawing by Ian Oliver of the design 20c Tuvalu Boring Apparatus on HMS Porpoise p. 51-52
- Indonesia - unique original artwork of issued 15s earthquake-induced landslide stamp, p.55
- Die proof of unissued oil field stamp of Occupied Poland General Government – rare, p.75
- Die proof 10f showing the desert water well of French Occupation of Fezzan – scarce, p.77

Presentation

Double pages accommodate oversized items and larger covers. The theme text precedes the

italicized philatelic comments. A bas-relief mounting technique is used, in which some important items to the story are projected slightly from the background, but not completely detached from it.

Recent additions

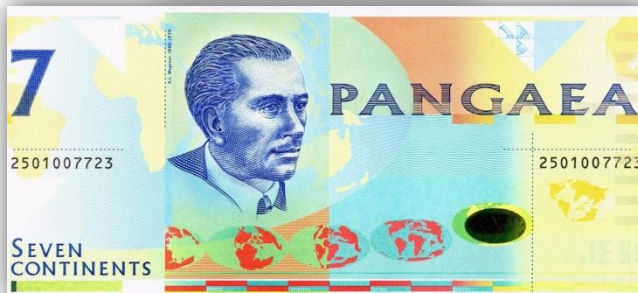
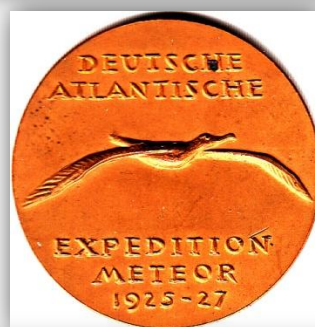
This exhibit is continuously evolving. New additions of philatelic and non-philatelic material are shown here in reduced size. Text for each item is given on the appropriate exhibit page.

Philatelic

Non-Philatelic



[reduced size]



"Scientists still do not appear to understand sufficiently that all earth sciences must contribute evidence toward unveiling the state of our planet in earlier times and that the truth of the matter can only be reached by combing all this evidence. ... It is only by combing the information furnished by all the earth sciences that we can hope to determine 'truth' here, that is to say, to find the picture that sets out all the known facts in the best arrangement and that therefore has the highest degree of probability. Further, we have to be prepared always for the possibility that each new discovery, no matter what science furnishes it, may modify the conclusions we draw." — Alfred Wegener, 1929 [The Origin of Continents and Oceans](#)

References to original research articles by the exhibitor

Taylor, James R., 2019, **Alfred Wegener's Continental Drift Theory**, *American Philatelist*, v. 133, n. 9, whole 1424, October, p. 918-922. ; Taylor, James R., 2019, **Milanković Cycles and the Earth's Ice Ages**, *Topical Time*, v. 70, n. 5, Whole 417, September, p. 54-59. ; Taylor, James R., 2018, **The 1925-1927 Voyage of the German Survey Ship Meteor** The Secret Mission and Surprising Scientific Discoveries, *London Philatelist*, v. 127, n. 1459, October p. 386-393.