

Two records of observation in Fusihmi, Kyoto and change of feeling of night sky

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On 1770 Sep 17, low-latitude aurora was observed in Japan, and recorded in various area of Japan. In the diary of Higashihakura family worked as Goten-azukari (Administrator) of Fushimi-inari shrine in Yamashiro-no-kuni (present Fushimi in Kyoto), that aurora was recorded in detail with the term "sekki" (which means red vapor, express red (low latitude) aurora). Various records of this aurora shows people caught magical meaning of a convulsion of nature, "fear".

In Fushimi, Kyoto, on 1793 Aug 26, first "kanbounai" (night sky watching with the telescope) was held in Japan. Nankei Tachibana, the sponsor of this star party, and his friends, who were intellectual, caught scientific meaning of night sky, and therefore they enjoyed that party. These two records of observation were written by intellectuals of those days, however one gave the phenomena in night sky magical meaning, and the other used night sky as content of amusement with the telescope, which is scientific tool. In twenty years between two events, there is a large change of sentence, and various reasons exist, including scientific understanding of astronomy. In this presentation, we discuss how people's sentence of sky change, with various background; geophysical feature, innovation of telescope of Japan, and so on.

Keywords: History of astronomy, Telescope, Perspective of science

The origin of Japanese word for the wooden thermometer screen: "*hyakuyo-so*"

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The origin of Japanese word for wooden thermometer screen: "*Hyakuyo-so*" (meaning 'hundred-leaves-box') is discussed. It is speculate that a Japanese phrase of meaning "double louvre boarded box" which depicts the aspect of "Stevenson's Box for thermometer" (Figure) was abbreviated based on the literatures of meteorological authorities at that time. The process of thermometer screens' introduction into Japan also be discussed.

Figure

(Left) Illustrations in the report of Thomas Stevenson for the new type of a box for holding thermometers characterized by double row of louvre boards.

(Right) An illustration of "Stevenson's Thermometer Stand" in one of a magazine series of articles that introduced more than ten kinds of thermometer stands. The illustration was widely used including a first official manual for meteorological observation edited by Japanese Meteorological Authority (1886).

Keywords: thermometer screen, meteorological observation, history of meteorology

Fig. 1.

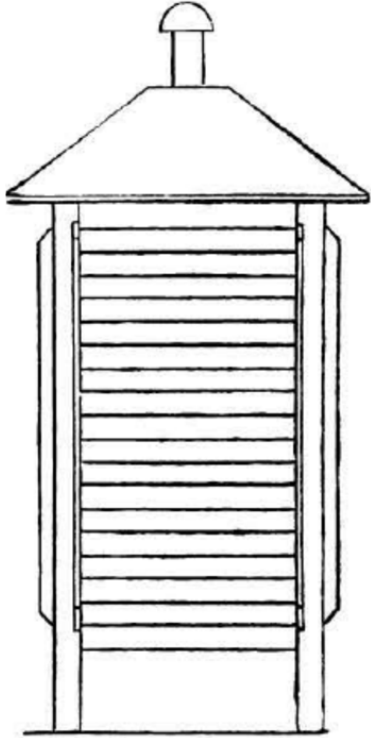
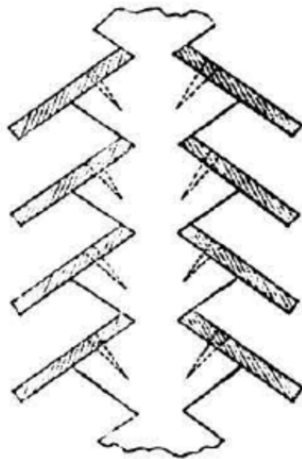
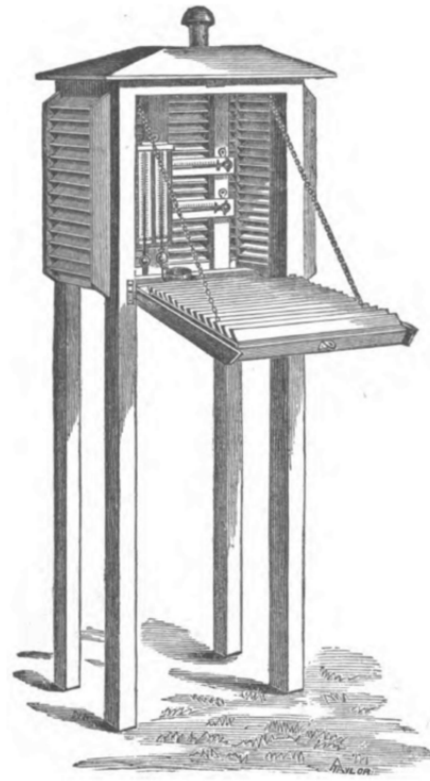


Fig. 2.



Journal of Scottish Meteorological Society (1864)



STEVENSON'S THERMOMETER STAND.
[See page 2.]

Symons's Monthly Meteorological Magazine (1869)

Edmund Naumann (1854- 1927) and Ogai Mori (1862-1922): geologist vs writer

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A German geologist Edmund Naumann came to Japan in 1875. He was the first professor of geology in the University of Tokyo and founded the Geological Survey Japan. When he went back to Germany in 1885, German, Austrian, and British Geological Society invited Naumann to have a talk on geology, nature, culture, and people in Japan. In 1886, in Dresden in Germany, one Japanese student of medicine attended one of the meeting that Naumann talked and he offered objection to Naumann's speech. The Japanese was Ougai Mori, studied medicine in Germany at that time and became the famous writer. Mori continued controversy with Naumann in the German Newspaper. Mori was wrong in the contents, but the detail was not known in Japan and Mori was applauded among Japanese people because at the end of 19th century, Japan was suffered the unequal treaty. This case is one of the by-product of modernization of Japan, and the reputation of Naumann is wrong still now.

Keywords: Naumann, Ogai, controversy

A Comparative Study of Research Methodology of Geology and Geophysics(or Seismology)

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Jiro Tomari (2008), describing the process of acceptance of the plate tectonics theory into the Japanese circles of earth science, concluded that its acceptance in geology had delayed by 10 years compared to that in (solid-earth) geophysics and seismology. As one of the grounds for the conclusion, he pointed out that an increase in the frequency of use of "plate terms" in the presentations on the Meeting of *the Geological Society of Japan* had occurred 10 years after that in *the Seismological Society of Japan*. On the other hand, Miyoko Shibasaki (2011), citing the concept of "field" proposed by Pierre Bourdieu, criticized that the frequency of use of "plate terms" might differ between the two journals because the "field" differs between geology and (solid-earth) geophysics/seismology, and that the delay of an increase in the frequency of use of "plate terms" could not justify the delay of acceptance of the plate tectonics theory in geology.

In this study, the author discusses what differences in terminology may occur between geology and (solid-earth) geophysics/seismology by comparing methods in geology and those in geophysics/seismology, and explores ways to overcome "incommensurability" lying between researchers in both fields by comparing differences anew between geology and (solid-earth) geophysics/seismology, both studying the same object: the solid earth.

Keywords: Research Methodology, Geology and Geophysics, Plate Tectonics theory

"Restrain" Over Critical Thinking Involving Geoscience

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To deal with nature and understand people that have been altering the nature to continue evolutionary adaptation, as well as their efforts, it is necessary to comprehend the target of their action, the natural environment. The comprehension of the natural environment can demonstrate the limits of the people and their efforts (positively speaking, the goals), and contradictions. Many times, geoscientists are on the top of these efforts. They can see quickly the limits and contradictions.

The role of scientists, who conduct studies as representatives of the society, is to share with other organizers (citizens) that compose civil society. However, the critical thinking and knowledge proceeding from Geoscience are often "restrained" and not adopted. The situation in which studies are disregarded or distorted has continued for so long. These factors have been the main causes of natural catastrophes and nuclear plant disasters.

The science literacy that leads to the so called "scholars beholden to the government", "restrain" of critical thinking and a way to overcome these issues will be analyzed based on "empathy" featured in cognitive science and "ethical" perspective that derives from metacognitive ability to deal with rationality.

Keywords: The Role of Scientists, Scholars Beholden to The Government, Science Literacy

Whewell's anti-pluralism of worlds

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Is the earth we know the only world in which the intelligent being lives, or, are there plural worlds other than our earth? This has long been questioned since antiquity and is still now being debated (Crowe 1999; 2008). Throughout this long debate, William Whewell (1794-1866)'s *Of the Plurality of Worlds* (1853) and *A Dialogue on the Plurality of Worlds* (1854) in response to many of his critics are noteworthy since they first sparked the hot debates among his contemporaries. This talk focuses on his scientific and philosophical arguments in line with his apologetic anti-pluralism and describes the characteristics of the plural-world debate in the 19th England when the concept "scientist" was recently coined.

Keywords: History of Science, Philosophy of Science

Environmental Citizen Science as the Seamless Earth Science (SMLES) Policy

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Prof. Yasuo Shimazu started his research career in the dynamo theory of the earth. After that he changed his research subject to the Earth's interior physics, environmental science and regional studies. He promoted his research under the slogan of "3E Science" (Earth science, Ecology, Economy) and "3A Science" (Assessments science, Action science, Appropriate science). These phrases were clearly guiding principles of his students. The most famous slogan is "SMLES" (Seamless Earth Science = no seam earth science). It has been enthusiastically supported by a number of young earth scientists. SMLES has been used not entirely faded.

Prof. Shimazu worked at Department of Earth Sciences, Faculty of Science, Nagoya University until retirement in 1990. So, after he changed his research subject, his students were educated in the course of earth science program. Therefore almost people of his students and co-researcher thought SMLES mean the policy of seamless in science sections, geology, geophysics and geochemistry. Of course, these seams are big walls for the professional researchers.

But was he proposed "SMLES" as the borderless between the disciplines? In this study, we focused the role of Prof. Shimazu in "the environmental citizen research contest" supported by the Toyota Foundation began in 1979. This contest was citizen lead research on familiar environment by a team. In the process of each research, the team advances the research has been the advice in the field, is a special research expenses of the judge.

Prof. Shimadzu has played a role of a judge at the 3rd and 4th contests. After that, he has also served as evaluators of the first year of "Review Project". He proposed the evaluation point as "First scientific research, second something different with professional research". He classified research on the environment in three categories "Science of academicism" "Science of service", "Citizen Science".

"Science of service" and "Citizen Science" are unique concepts. These were new categories invented by Prof. Shimazu. Citizen science is to know the mechanism of the environment in a study carried out by the citizens themselves. This means the effect and achievement is not only how-to of solving the problem but also to discover the problem in his activity by himself.

In this way, Prof. Shimadzu has emphasized the importance of citizens to study with a sense of ownership about their personal belongings of environment. To carry out life-sized environmental research by citizens mean a change of research system from expert only to co collaboration research between citizens and expert. In conclusion, "SMLES" means not only the seamless of disciplines in earth science but also the seamless of participant of scientific research.

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Keywords: Interdisciplinary, Environmental studies, Citizen Science

Background of the Geologist Teiichi Kobayashi's Conception of 'Geoscience'

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When the geologist Teiichi Kobayashi (1901-1996) published a paper on earth sciences education in 1942, he included not only geology but also astronomy and geophysics as teaching materials. During the post-war period he was engaged in the establishment of the educational category 'earth sciences' or *chigaku* namely 'geoscience'. In this paper, I examine the background of Kobayashi's conception of 'geoscience', pointing especially to the development of theories of the evolution of the universe and the popularization of them from 1910s to 1930s.

Keywords: Teiichi Kobayashi, geoscience, earth sciences education, theory of the evolution of the universe

Important Materials for Earth Sciences in the Archives of Earth and Planetary Science
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The first generation of geologists in Japan studied at the Geology Institute (now Earth and
Planetary Science Department) of the University of Tokyo, which was first founded in 1877. The
Archives of the Institute has many valuable used books, maps and journals, as well as graduation
theses of all students and many reprints collected by successive professors. Unfortunately,
however, most geoscientists and historians in Japan have not realized the importance of above
mentioned 'treasure'.

There is a plan to make a new library in the Faculty of Science of the University of Tokyo in a few
years. The new library will not have adequate base area to accept all the 'treasure'. It is
problem. The archives are important enough not only to register the history of geosciences in the
East Asia from their beginnings but also to promote future historical study of the sciences. Please
visit the Library of Earth and Planetary Sciences, explore the archives, and consult magnus opus,
maps and manuscripts.

Keywords: The Library of the Earth and Planetary Science Department, Graduate School of Science,
the University of Tokyo, Archives, East Asia