
Museums of Astronomy in Japan

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We carried out an investigation about astronomy exhibits of the museums in Japan 15 years ago and presented the result in the report [1]. In this article, I present the current situation and problems of astronomy museums in Japan. The facilities performing educational activities of astronomy in Japan are approximately 300. Of these, the facilities having exhibits of astronomy are about 100. The recent tendency of astronomy museums in Japan is modernization of the displays such as utilization of the computer graphics and increase of the exhibits about the history of astronomy. The important matter for the museums in Japan is to cope with the population decline society of Japan.

1. Introduction

At first, as an introduction of this article, I introduce Yamaguchi Museum (Fig. 1) which I belong to as an example of medium size museums which have the field of astronomy.

1.1. Yamaguchi Museum

Yamaguchi Museum is in Yamaguchi City, Yamaguchi Prefecture, Japan. Ya-



Fig. 1 The facade of Yamaguchi Museum. An astronomical dome is installed on the rooftop of the building.



Fig. 2 Yamaguchi Museum at the time of 1917.

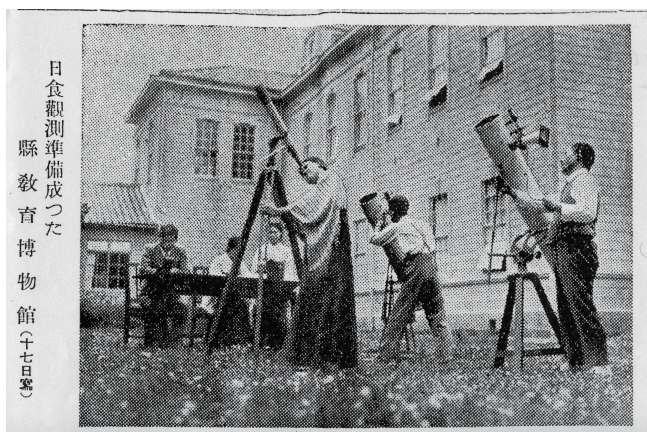


Fig. 3 A scene of preparations for the solar eclipse observation at Yamaguchi Museum in 1936. (The Mainichi Shinbun Newspaper, 1936)

Yamaguchi Prefecture is at the west end of Honshu Island of Japan, and Yamaguchi City is located in the center of Yamaguchi Prefecture. Yamaguchi City is the capital of Yamaguchi Prefecture, but the population is less than 200,000. Yamaguchi City is one of the local small cities in Japan.

Yamaguchi Museum has six sections - science and technology, earth science, botany, zoology, Japanese history, and astronomy. The number of the personnel of Yamaguchi Museum is around 20. Yamaguchi Museum was established by Yamaguchi Prefectural Government, and run by Yamaguchi Prefectural Board of Education. I have been working at this museum as a curator in charge of astronomy or a manager for 30 years.

Yamaguchi Museum was founded in 1912 and celebrated the 100th anniversary three years ago. Yamaguchi Museum is one of the oldest prefectural museums in Japan. This photograph (Fig. 2) is Yamaguchi Museum at the time of 1917. The photo (Fig. 3) of the newspaper is a scene of preparations for the solar eclipse observation program of 1936. Yamaguchi Museum started the star-gazing programs in the 1930s and is one of the museums performing educational activities of astronomy for a long time in Japan.

1.2. *Activities of Yamaguchi Museum*

Yamaguchi Museum holds various special exhibitions as well as the permanent



Fig. 4 An exhibition of the history of astronomy held in Yamaguchi Museum.

exhibits. The photo (Fig. 4) is a special exhibition of the history of astronomy. In addition, we hold a lot of astronomy-related lectures and the star-gazing parties using the 20cm refractor in the astronomical dome of Yamaguchi Museum.

A characteristic of the activities in these 10 years is to be putting effort into cooperation with schools. Four education staff was increased to enhance the cooperation. We go to schools and carry out museum lectures for children or students at the schools. We go to schools, mainly elementary and junior high schools, 200–300 times a year, and the number of children taking the museum lectures amounts to 25,000 a year. Because the number of elementary and junior high schools in Yamaguchi Prefecture is around 500, it turns out that we go to about half of all the schools every year. In addition, we hold lectures for school teachers in our museum (Fig. 5).

1.3. *Stored Materials in Yamaguchi Museum*

Stored materials in Yamaguchi Museum include materials related to the history of Japanese astronomy. Yamaguchi Museum stores telescopes and observational equipments, calendars, celestial maps and so on which were made 100–300 years ago. Most of these materials were donated to Yamaguchi Museum by the people who were in Yamaguchi Prefecture.

2. Category of Japanese Museums

Museums in Japan are defined by the law called “the museum act”. The museum act prescribes various standards of museums. The museum which meets all these standards is defined as “registered museum”.

Other than “registered museums”, the facilities which meet a certain standard are prescribed as “facility equivalent to museum”. They are, so to speak, “quasi registered museums”. In addition, as the category outside of the rule of the law, there are facilities called “facility similar to museum”. These facilities perform the activities similar to a museum.

According to the survey by Ministry of Education, Culture, Sports, Science and Technology of 2011, the total number of three kinds of facilities is approximately



Fig. 5 The rooftop of Yamaguchi Museum. A workshop of how to use astronomical telescopes was held for school teachers.

6,000 (registered museum : 913, facility equivalent to museum : 349, facility similar to museum : 4,485). 70–80% of those are facilities of the central government or local governments.

In this article, I use the name “museum” as a general term including all of “registered museum” “facility equivalent to museum” “facility similar to museum” unless I note it in particular.

3. The Number of Astronomy-related Museums

The astronomy-related museums have various names such as “Museum” “Science Center” “Planetarium” “Astronomical Observatory”. According to the investigation that we performed 15 years ago, there were 87 museums in Japan which had astronomy exhibits. According to our survey based on the recent publications [2], [3], the number of the facilities which have astronomy exhibits and/or astronomy materials and/or the staff in charge of the astronomy was 112. Among 112 facilities, registered museums, facilities equivalent to museum, and facilities similar to museum are 41, 12, and 59, respectively.

In addition, about 300 planetariums are in Japan [4]. The planetariums which are not opened to the general public are included in them. For example, those are planetariums installed in schools or the teacher training facilities. Furthermore, there are about 300 public astronomical observatories in Japan [5]. Because these numbers include the double count of the same facility and there are dormant facilities among them, it is thought that in Japan there are approximately 300 facilities performing educational activities of astronomy for the general public.

4. The Situation of the Astronomy Exhibits in Japan

In this chapter, I write down the situation of the astronomy exhibits of the museums in Japan.

Museums having an exhibition room of astronomy perform extensive displays about the universe depending on the area of the exhibition room. Planetariums perform astronomical phenomenon projections. Public astronomical observatories



Fig. 6 The permanent exhibits of the history of astronomy in Yamaguchi Museum.

hold star-gazing parties. It can be said that the star-gazing party is real thing display. Museums having a natural history section, even if they don't have an astronomy exhibition room, may have the exhibits of meteorites or exhibits about the birth of the earth and the universe as an overture to the geological age. But, in Japan, a museum named “natural history museum” rarely has comprehensive exhibits of astronomy.

History museums may have an exhibit of materials related to the history of astronomy as one of the exhibits of history. There are not many materials related to the history of astronomy in one history museum, but the total number of these materials becomes enormous because there are a lot of history museums in Japan.

5. Recent Trends of the Astronomy Exhibits in Japan

After our investigation 15 years ago, what I realize as recent trends of the astronomy exhibits in Japan is that exhibits of the history of astronomy are increasing clearly. More than 20 years ago, the astronomy exhibits in Japan only presented the structure and evolution of the universe. The museums which displayed a lot of materials about the history of astronomy were few.

However, a lot of museums made exhibits about the history of astronomy newly or expanded them at the time of display renewal. Particularly, the exhibits of the history and folklore about Japanese astronomy are increasing. The story of the Greek myth was common in the planetarium programs, but programs of Japanese traditional constellations and Japanese folklore about stars are increasing recently. We prepared exhibits of the history of astronomy in Yamaguchi Museum at the time of display renewal four years ago (Fig. 6).

The quality of the display devices using computer graphics improved very much. On the other hand, an effort to present each hierarchy of the universe with three-dimensional models without depending on the pictures or CG is being continued. The understanding of the universe will deepen by displaying the three-dimensional models.

6. The Future of Astronomy Museums in Japan

As a conclusion of this report, I write about the future of astronomy museums in Japan.

It is an important mission of museums to present astronomical discoveries or new information, but it is difficult for museums to obtain such latest information. The information announcement and the plain commentaries from the research organizations such as National Astronomical Observatory (NAOJ) or Japan Aerospace Exploration Agency (JAXA) are hoped.

Because the universe is four-dimensional structure including time, there are many cases having difficulty in making of the display models. However, those problems seem to be overcome by the development of CG and virtual reality (VR) technology. We hope the development of the technology to apply VR to displays. And a challenge to advanced display technique is expected.

In addition, it is important that we accumulate the information about the materials of the history of astronomy in Japan and utilize them. Materials of the history of Japanese astronomy exist in various places in Japan. History museums in Japan store a lot of those materials. It is necessary for astronomy museums to accumulate the information about materials of the history of astronomy in collaboration with the history museums. At the same time, astronomy museums having a section of the history of astronomy are necessary.

Now, there is “Japan Public Observatories Society” as an organization of the public astronomical observatories to cooperate with each other, and there is “Japan Planetarium Association” for the planetariums. It will be necessary for museums having exhibits or materials of astronomy to establish an organization for information exchange and training of those staffs.

Finally, the biggest problem that museums in Japan face will be the falling birthrate, aging society and shrinking population of Japan. The population of Japan peaked five years ago, and the population at that time was 128 million. There is an estimate that it will be two-thirds of its peak 50 years later. The population decline is serious in the provinces in particular. Thirty years ago, the population of Yamaguchi Prefecture was 1.6 million, but began decrease at that time. It is estimated that the population of Yamaguchi Prefecture will be 1.07 million (two-thirds of the peak) 25 years later.

How we cope with this change is the biggest challenge for the museums in Japan. The population of Japan is shrinking, but cheerful elderly people are increasing. In consideration of these situations, it is necessary to rebuild the mission and activities of museums for new development.

References

- [1] Working Group on the astronomy exhibits (A working group of the Japanese Society for Education and Popularization of Astronomy) ed. 2000, “A survey and analysis of the astronomy exhibits in Japan” (in Japanese).
- [2] Japan Association of Museums ed. 1986-2014, “Comprehensive list of the museums in Japan” (in Japanese).
- [3] Japan Association of Museums ed. 2014, “Directory of personnel of the museums in Japan” (in Japanese).
- [4] Japan Planetarium Association ed. 2012, “Planetarium resources of Japan 2010” (in Japanese).
- [5] Japan public observatory Society ed. 2007, “White paper on public astronomical observatories in Japan 2006” (in Japanese).