

# A Full Account of the 1887 American Solar Eclipse Expedition to Japan

## Revealed by the Materials from Yale University Library's Manuscripts & Archives

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### Abstract

On the occasion of the total solar eclipse of August 19, 1887, David Peck Todd visited Japan with his American Eclipse Expedition team. His eclipse observations, conducted at Shirakawa, Fukushima Prefecture, proved unsuccessful due to unfavorable weather conditions. Owing to the shortage of original materials, it was previously impossible to present a comprehensive picture of the expedition. Recently, however, I discovered a large collection of original materials located in *The David Peck Todd Papers* and *The Todd-Bingham Picture Collection*, preserved in Yale University Library's Manuscripts & Archives. These archival materials enable us to visualize the full achievements of the 1887 American Eclipse Expedition to Japan. The present paper illustrates the accomplishments of the American Expedition from various perspectives and describes their historical significance in modern astronomy.

### 1 Introduction

The total eclipse of August 19, 1887 occurred during Solar Cycle 12, and two years before the sunspot minimum in 1889. Beginning near Leipzig, Germany, the path of totality traversed Russia, China, and the main island of Japan, before ending in the Pacific Ocean. Japan was best placed to observe the eclipse after 14:00. The Japanese government paid close attention to this phenomenon and decided to organize eclipse expeditions. Several parties were formed by the Ministries of Home Affairs, Education, and the Navy respectively and sent to designated places within the belt of totality. Newspapers described the event in detail and attracted public attention nationwide.

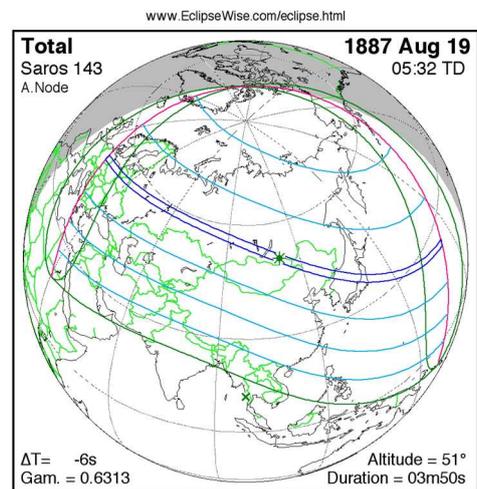
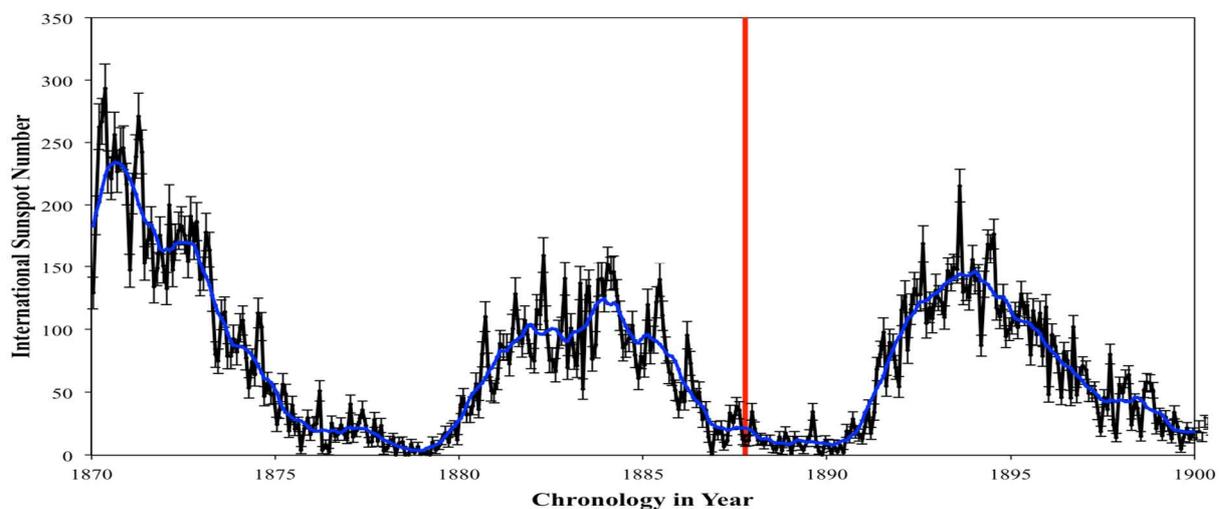


Figure 1-1  
Thousand Year Canon of Solar Eclipses  
©2014 by Fred Espenak

Courtesy of Fred Espenak,  
www.EclipseWise.com.



The 1887 eclipse (red vertical line)  
contextualised in the monthly and monthly-smoothed sunspot number  
(Clette et al. 2014; Clette and Lefevre 2016),  
courtesy of Hisashi Hayakawa.

From overseas, the American Eclipse Expedition (hereafter, the American Expedition) led by Professor David Peck Todd (1855–1939), Director of the Amherst College Observatory (hereafter, Prof. Todd), came to Japan and set up an observation station at the Shirakawa Castle ruins in West-Shirakawa District, Fukushima Prefecture (Figure 1-3, Table 1-1). On the very day, however, they failed to observe totality as thick clouds spread extensively across the path of totality and obscured the sun.

I first learned about the American Expedition in 2017 and started to collect information on the subject. In the course of this work, however, the following two questions arose.



**Figure 1-3 Observation Stations**

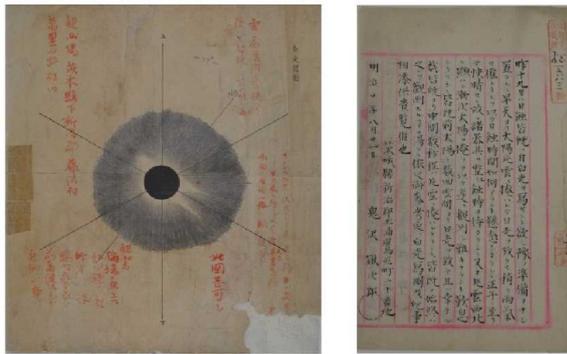
Solar eclipse map of August 19, 1887, courtesy of Fred Espenak, NASA GSFC Emeritus, NASA eclipse website.

### Observation Parties

**Table 1-1**

	<b>Location of the Station</b>	<b>Chief of the Party</b>	<b>Organized by</b>	<b>Contacts (Japan time)</b>		<b>Observation of Totality</b>
①	Shirakawa Castle ruins, Shirakawa, Fukushima	Prof. D. P. Todd, Director of the Amherst College Observatory	Prof. Simon Newcomb, Superintendent of the Nautical Almanac Office, Bureau of Navigation, Navy Department	1	14:15:46.6	Failed
				2	15:25:25.3	
				3	15:28:33.8	
				4	16:31:17.4	
②	Mt. Atago, Takaku, Tochigi	Prof. Hisashi Terao, Professor of Astronomy	College of Science, Imperial University	1	14:15:49.5	Failed
				2	15:25:31.7	
				3	15:28:43.2	
				4	16:31:28.8	
③	Mt. Yo-meiji, Higashi Osaki, Niigata	Ikunosuke Arai, Director of the Tokyo Observatory and the Central Meteorological Observatory	The Geographical Bureau, Ministry of Home Affairs	1	14:13:21.3	Succeeded
				2	15:23:33.3	
				3	15:26:47.2	
				4	16:30:02.9	
④	Mt. Ishigamine, Takaya, Ishikawa	LCDR Takeshi Isono	Naval Hydrographic Department, Ministry of the Navy	1	14:11:09.2	Succeeded
				2	15:22:52.5	
				3	15:24:52.4	
				4	16:29:32.4	
⑤	Mt. Hachiman, Utsunomiya, Tochigi	Kiyotoshi Miura	The Geographical Bureau, Ministry of Home Affairs	1	14:16:17.9	Failed
				2	15:26:16.2	
				3	15:29:08.6	
				4	16:32:06.5	
⑥	Mt. Atago, Takagami, Chiba	Kazutomo Kobayashi	The Geographical Bureau, Ministry of Home Affairs	1	14:19:01.9	Succeeded
				2	15:28:55.1	
				3	15:30:58.8	
				4	16:33:50.3	

Contact time: courtesy of Xavier M. Jubier ([http://xjubier.free. Fr.](http://xjubier.free.fr)).



**Figure 1-4**  
 Corona Sketch. Duration of Totality Report.  
 Courtesy of the Mitaka Library,  
 National Astronomical Observatory of Japan.

The first concerns the “Amateur Oriented Eclipse Observation Event,” proposed by Prof. Todd and held by the Japanese government (overseen by the Ministries of Education and Home Affairs). Non-professional residents (particularly elementary and middle school teachers, local government officials and police officers) within the path of totality were encouraged to observe the eclipse and complete

observation reports (The Cabinet Official Gazette Bureau, 1887). Instruction manuals for drawing the corona and measuring the duration of totality were prepared by Prof. Todd, then translated and printed by the government. Thus, 150 copies of an instruction manual for drawing the corona were distributed to schools, local government offices, police stations, etc., along the eclipse’s central line. Meanwhile, 100 copies of a manual for measuring the duration of totality were distributed to above-mentioned institutions along the northern and southern limits of totality.

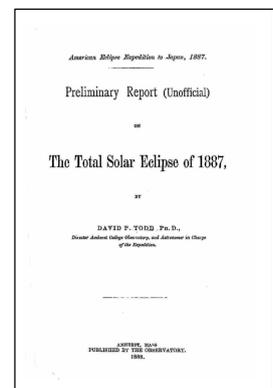
On the day of the eclipse, a large number of amateur volunteers responded to the government’s call and participated in the event. Despite the adverse weather that prevailed in the path of totality, many volunteers managed to observe the eclipse through breaks in the clouds. Subsequently, their observation reports were collected by the aforementioned Ministries.

Today, the reports collected by the Ministry of Education (94 corona sketches and 51 reports of the duration of totality) are preserved in the Mitaka Library, National Astronomical Observatory of Japan (hereafter, Mitaka Library, NAOJ) (Figure 1-4)\*. The whereabouts of the reports collected by the Ministry of Home Affairs, however, were unknown.

The second question concerns the official report of the American Expedition compiled by Prof. Todd. In 1888, he published *American Eclipse Expedition to Japan, 1887. Preliminary Report (Unofficial) on the Total Solar Eclipse of 1887* (Figure 1-5) and remarked therein that the final report was scheduled to be published (Todd & Holland, 1888, pp. 2, 6). However, its whereabouts also remained unknown.

In January 2019, after pursuing these questions for two years, I finally came upon *The David Peck Todd Papers* and *The Todd-Bingham Picture Collection*, preserved in Yale University Library’s Manuscripts & Archives. They are a portion of the huge corpus of material kept by Dr. Millicent Todd Bingham (1880–1968), a Prof. Todd’s only daughter, and gifted to Manuscripts & Archives, a division within the Yale University Library’s Special Collections, between 1964 and 1970. The collection includes a large quantity of unpublished material on the American Expedition.

The present paper seeks to offer a full description of the American Expedition from various perspectives and to highlight the expedition’s historical significance for modern astronomy. The present work is based



**Figure 1-5**  
*American Eclipse Expedition to Japan, 1887. Preliminary Report (Unofficial). Scholar’s Choice.*

\* In 1969 and 1971, a detailed study on those reports was conducted by K. Saito and S. Shinozawa (Saito & Shinozawa, 1969, 1971).

mainly on the materials preserved in *The David Peck Todd Papers* and *The Todd-Bingham Picture Collection* in Yale University Library's Manuscripts & Archives (hereafter, *The David Peck Todd Papers* and/or *The Todd-Bingham Picture Collection*).

After the Eclipse Expedition, Prof. Todd ascended the summit of Mt. Fuji accompanied by Mrs. Todd (1856–1932), Dr. W. J. Holland (1848–1932), a Professor at Pittsburgh University who joined the American Expedition as a naturalist (hereafter, Dr. Holland), and some officials from the Ministry of Home Affairs. There, he successfully conducted various astronomical observations (Sept. 4–6). As this expedition was separate from the solar eclipse expedition both in funding and objectives, it will not be discussed further here (Todd, D. P. & Todd, M. L., 1892). Dr. Holland collected an abundance of botanical, entomological, and geological specimens and achieved remarkable results. This subject too will not be discussed further, as this paper focuses on the solar eclipse expedition.

## 2 Overview of Archival Materials

### Photoduplicated Materials

Table 2-1

Collection	Number of Items	Number of Photoduplicated Images
The David Peck Todd Papers, MS 496B	902	2,383
The Todd-Bingham Picture Collection, MS 496E	22	44
<b>Total</b>	<b>924</b>	<b>2,427</b>

### Categories of Material

Table 2-2

Category		Number of Items	Category	Number of Items
Correspondence	Letters	200	Business cards	159
	Envelopes	37		
	Postcards	11		
	Telegrams	14		
Amateur Oriented Eclipse Observation Event	Corona sketches	83	Notes	134
	Blank sketch sheets	4		
	Reports of duration of totality/ surrounding sceneries	6		
	Lists of duration of totality	3		
	Instruction manuals (printed) (corona sketch/ measurement of the duration of totality)	13		
Diary, Expedition reports, Observation journals, Observation records		37	Newspapers (including clipped articles)	39
Photographs		62	Documents	19
			Printed Material (books, magazines, etc.)	14
			Financial Records	33
			Maps	8
			Tags	15
			Miscellaneous	33

Materials that I selected from *The David Peck Todd Papers* and *The Todd-Bingham Picture Collection*

were photoduplicated and sent to me digitally. The total amount of material and a breakdown by category are shown above in Tables 2-1 and 2-2. Appendix I provides a brief summary of these materials.

### **3 The Two Questions Were Solved**

The answers to the two questions discussed above were found in *The David Peck Todd Papers*. Both the eclipse observation reports collected by the Ministry of Home Affairs and Prof. Todd's final report were preserved in that collection. (Refer to sections 5, 6.2, and Appendices II, IV for details.)

### **4 A Comprehensive Picture of the American Expedition**

The most distinctive feature of the materials on the American Expedition in *The David Peck Todd Papers* and *The Todd-Bingham Picture Collection* is that almost all are originals produced by Prof. Todd or other relevant persons themselves. These documents enable us to witness their experiences in Japan 136 years ago, as if they were alive. By combining these materials with others that have already been described, a comprehensive picture of the American Expedition can finally emerge from the mist.

#### **4.1 Organizing an Expedition**

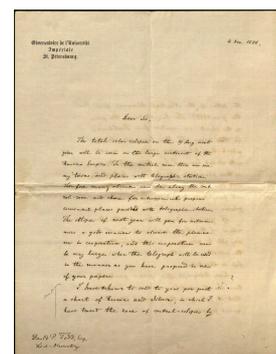
*"The American Eclipse Expedition to Japan in 1887 had its origin in correspondence between Professor Newcomb and Professor Todd, which began in January of that year."*

This begins the final report compiled by Prof. Todd and submitted to Prof. Simon Newcomb (1835–1909), Superintendent of the Nautical Almanac Office, Bureau of Navigation, Department of the Navy (hereafter, Prof. Newcomb), on April 12, 1889. Their communications started after Prof. Todd received a letter from Prof. Sergey P. Glasenapp (1848–1937), Director of the St. Petersburg Imperial University Observatory, inviting him to visit Russia to observe the total solar eclipse in August 1887.

It was Prof. Todd's long-cherished dream to direct an overseas expedition. In mid-January 1887, in response to Prof. Glasenapp's invitation, he devised a plan to organize an expedition to take clear corona photographs with a horizontal photoheliograph and proposed it to Prof. Newcomb, who accepted Prof. Todd's proposal and rendered him great service to ensure it was realized. A sequence of letters from Prof. Newcomb to Prof. Todd (from Jan 17 to June 18, 1887) in *The David Peck Todd Papers* allows the process of organizing the expedition to be outlined as follows.

##### **4.1.1 Destination**

Prof. Todd initially considered observing the eclipse in Russia. However, Prof. Newcomb suggested "Japan" as an alternate destination, not only because travel to Russia would have been prohibitively expensive but also because Prof. C. A. Young (1834–1908) of Princeton University already planned to make observations in Russia\*.



**Figure 4-1**  
Letter from Prof. S. Glasenapp to Prof. Todd, dated Dec. 4, 1886. *The David Peck Todd Papers*, MS 496B, Manuscripts & Archives, Yale University Library.

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\* Letter from Prof. Newcomb to Prof. Todd, dated Jan. 17, 1887. *The David Peck Todd Papers*.

#### 4.1.2 Raising Funds

Prof. Todd first sought funds from Congress, but this effort was unsuccessful<sup>\*1</sup>. In Prof. Todd's stead, Prof. Newcomb was kind enough to make a grant application to the trustees of the Bache Fund, National Academy of Sciences, from whom he secured \$2,000 for the expedition's expenses. These funds were officially approved on June 1, just one week before Prof. Todd's departure from his home for Japan<sup>\*2</sup>.

With regard to the contemporary value of these funds, Prof. Todd's diary entry for June 4 records that he obtained a draft for 1,688 <sup>31</sup>/<sub>100</sub> silver yen in exchange for \$1,300 on the Yokohama Specie Bank in New York. Roughly speaking, if one silver yen of that time can be equated to 20,000 yen today (Nomura Holdings, Inc.; Nihon Keizai Shimbun, Inc., n.d.), this amount is equivalent to about 52,000,000 yen ( $\approx$ \$451,880 on March 7, 2022). A round trip ticket between Boston and Yokohama cost \$400, suggesting that the funds available barely covered the expedition's costs.

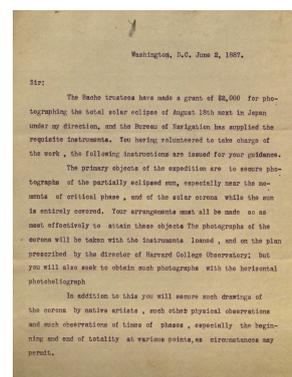
#### 4.1.3 Position of Prof. Todd and His Mission

Before Prof. Todd's departure for Japan, Prof. Newcomb gave him the following instructions<sup>\*3</sup>.

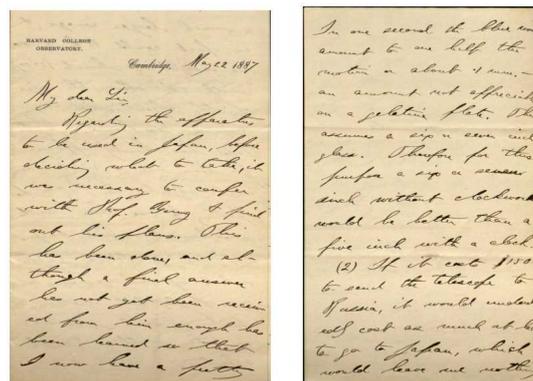
1. The expedition shall be conducted under the direction and responsibility of Prof. Newcomb, because the funds were granted to him.
2. Prof. Todd has volunteered to take charge of the following operations planned by Prof. Newcomb.
  - a. Take photographs of the partially eclipsed sun, especially near the moments of critical phase, and of the solar corona with the horizontal photoheliograph.
  - b. Some other corona photographs will be taken in collaboration with the Harvard College Observatory, in accordance with the plan developed by Prof. E. C. Pickering (1846–1919), Director of the Harvard College Observatory (hereafter, Prof. Pickering).
  - c. Secure drawings of the corona by Japanese artists, other physical observations, and observations of the times of contacts, especially the duration of totality at various points, as circumstances may permit.

#### 4.1.4 Plans Proposed by Prof. Pickering

In accordance with Prof. Newcomb's request, the following plan was proposed by Prof. Pickering<sup>\*4</sup>. (Refer to Appendix III for details.)



**Figure 4-2**  
Letter from Prof. Newcomb to Prof. Todd, dated June 2, 1887. *The David Peck Todd Papers*, MS 496B, Manuscripts & Archives, Yale University Library.



**Figure 4-3**  
Letter from Prof. E. C. Pickering to Prof. Newcomb, dated May 22, 1887, describing his photographic plan in Japan. *The David Peck Todd Papers*, MS 496B, Manuscripts & Archives, Yale University Library.

<sup>\*1</sup> Letter from Billings Montana to Prof. Todd, dated April 29, 1887. *The David Peck Todd Papers*.

<sup>\*2</sup> Letter from Prof. Newcomb dated June 2, 1887. *The David Peck Todd Papers*.

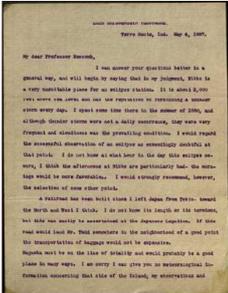
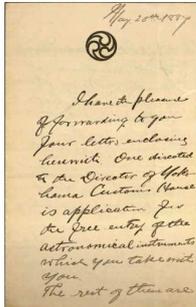
<sup>\*3</sup> Letters from Prof. Newcomb to Prof. Todd, dated May 13, May 14, and June 2, 1887. *The David Peck Todd Papers*.

<sup>\*4</sup> Letter from Prof. Pickering to Prof. Newcomb, dated May 22, 1887; Two letters from Prof. Pickering to Prof. Todd, both dated May 23, 1887. *The David Peck Todd Papers*.

1. Prof. Pickering will provide the following instruments at his own expense, which will be taken to Japan and will be operated by the expedition members.
  - a. A 7¼-inch telescope without clockwork, for studying the form and brightness of the corona.
  - b. A 5-inch double camera, for studying the brightness and shape of the faint light surrounding the corona.
  - c. A 4-inch single camera, for studying the same thing.
2. Some plate holders and 8 in × 10 in and 4 in × 5 in dry plates will be provided by Prof. Pickering.

Prof. Pickering also decided to collaborate with Prof. Young, who was to observe the eclipse from Rzhev, Russia, where it would occur two hours earlier than in Japan. Equivalent instruments were to be used in Japan and Russia so that the observation results could be easily compared later. A 6¾-inch lens from the Amherst College Observatory was loaned to Prof. Young and mounted on his telescope\*.

#### 4.1.5 Cooperation by Former Japanese Government Employees

Request for support to (1)	(1)	(2)	(3)
	Letters of Introduction to (2)	Letters of Introduction to (3)	
Prof. Newcomb	<p><b>T. C. Mendenhall</b> (Employed as Professor of Physics at Tokyo University, chief observer of Tokyo Univ. Observatory, 1878–1881)</p>  <p>Letter from Prof. Mendenhall to Prof. Newcomb, dated May 4, 1887, <i>The David Peck Todd Papers</i>, MS 496B, Manuscripts &amp; Archives, Yale University Library.</p>	<p><b>R. Kuki</b> (Envoy Extraordinary and Minister Plenipotentiary of Japan to the U.S.)</p>  <p>Letter from Minister Kuki to Prof. Todd, dated May 28, 1887, with letters of introduction. <i>The David Peck Todd Papers</i>, MS 496B, Manuscripts &amp; Archives, Yale University Library.</p>	<p><b>T. Saigo</b> (Minister of the Navy)</p> <p><b>S. Kabayama</b> (Vice Minister of the Navy)</p> <p><b>A. Mori</b> (Minister of Education)</p> <p><b>S. Tsuji</b> (Vice Minister of Education)</p> <p><b>M. Oki</b> (Governor of Kanagawa Pref.)</p> <p><b>T. Arishima</b> (Chief of Yokohama Customs)</p> <p><b>S. Narahara</b> (President of Nippon Railway Company)</p> <p><b>H. Takamine</b> (Assistant Principal of Tokyo Higher Normal School)</p> <p><b>Takaki</b> (New York Branch Manager, Yokohama Specie Bank)</p>
		<p><b>E. S. Morse</b> (Employed as Professor of Zoology at Tokyo University, 1877–1880)</p>	<p><b>D. Kikuchi</b> (President of College of Science, Imperial University)</p>
Prof. Todd	<p><b>G. A. Leland</b> (Employed as Professor at the Physical Education Teaching Center, 1878–1881)</p>	<p><b>D. B. Simmons</b> (Medical doctor in Yokohama, 1859–1889)</p>	
		<p><b>W. N. Whitney</b> (Interpreter, U.S. Legation, Tokyo)</p>	

\* Prof. Young's eclipse observation was also unsuccessful due to unfavorable weather.

It is worth noting that former Oyatoi-Gaikokujin (foreigners who were once employed by the Japanese government to visit Japan and teach new techniques) played an important role in eliciting significant support from the Japanese government. Table 4-1 shows the sequence of actions taken by Thomas C. Mendenhall (1841–1924), George A. Leland (1850–1924) and Edward S. Morse (1838–1925)\*<sup>1</sup> in responding to requests for assistance by Prof. Newcomb and Prof. Todd.

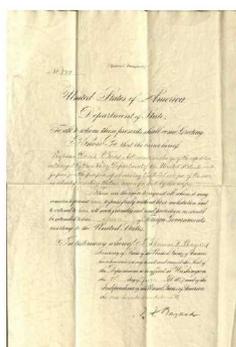
Those who received letters of introduction from Mendenhall and Leland spared no effort in offering the utmost assistance to the American Expedition.

#### 4.1.6 Measures to Reinforce Prof. Todd’s Position

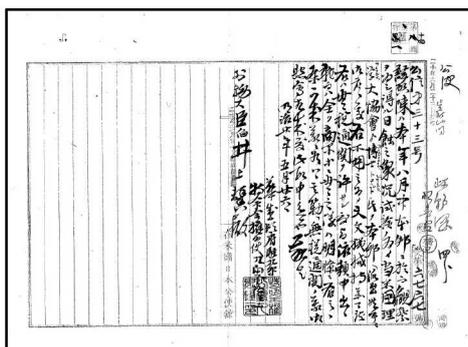
The dual leadership structure between Prof. Newcomb (legally in charge) and Prof. Todd (practically in charge) could have engendered distrust in the Japanese government. In this event, the American Expedition would have been unable to expect adequate aid from this resource. Due to limited funds, it was crucial for the American Expedition to obtain as much Japanese assistance as possible. Therefore, to reinforce the position of Prof. Todd, a special passport for Prof. and Mrs. Todd was issued (and one for Dr. Holland) by the Department of State at the request of Prof. Newcomb\*<sup>2</sup>.

In the special passport, Prof. Todd’s position was defined as “*Astronomer in charge of the expedition authorized by the Navy Department of the United States to visit Japan for the purpose of observing the total eclipse of the sun,*” and requested the Japanese government “*to extend to him all such friendly aid and protection, as would be extended to like officers of Foreign Governments resorting to the United States*” (Figure 4-4).

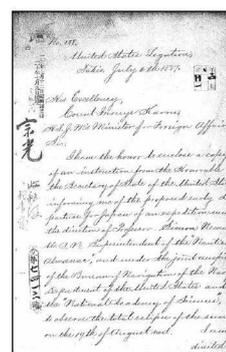
On May 26, Ryuichi Kuki (1852–1931), Envoy Extraordinary and Minister Plenipotentiary of Japan to the United States of America (hereafter, Minister Kuki) sent an official letter to Kaoru Inoue (1836–1915), Minister of Foreign Affairs (hereafter, Minister Inoue). Minister Inoue was requested to provide adequate support to Prof. Todd and his staff (including tax-free customs clearance for the astronomical instruments) (Figure 4-5).



**Figure 4-4**  
Special passport for Prof. and Mrs. Todd. *The David Peck Todd Papers*, MS 496B, Manuscripts & Archives, Yale University Library.



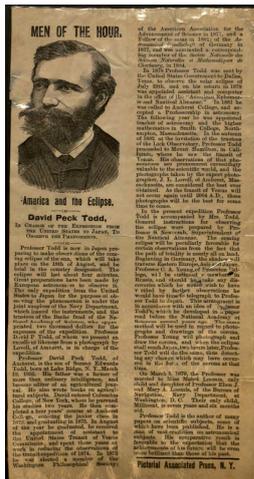
**Figure 4-5**  
Official document sent by R. Kuki, Envoy Extraordinary and Minister Plenipotentiary to the U.S. to K. Inoue, Minister of Foreign Affairs, dated May 26, 1887. JACAR (Ref. B12082122900, 4th picture).



**Figure 4-6**  
Letter from Richard B. Hubbard, Envoy Extraordinary and Minister Plenipotentiary of the U.S. Legation, to K. Inoue, Minister of Foreign Affairs, dated July 6, 1887. JACAR (Ref. B12082122900, 11th picture).

\*<sup>1</sup> He provided Prof. Todd with information and tips for foreigners to stay in Japan.

\*<sup>2</sup> Prof. Todd’s diary, June 3, 1887; Letter from Prof. Newcomb to Prof. Todd, dated June 8, 1887. *The David Peck Todd Papers*.



**Figure 4-7**  
 Newspaper Article.  
*Pictorial Associated Press*, N. Y., date unknown.  
*The David Peck Todd Papers*, MS 496B,  
 Manuscripts & Archives, Yale University Library.

On July 6, an official letter was also sent from Richard Bennet Hubbard (1832–1901), Envoy Extraordinary and Minister Plenipotentiary of the United States of America to Japan (hereafter, Minister Hubbard), to Minister Inoue. The letter similarly requested that he may furnish assistance to the American Expedition (Figure 4-6).

Prof. Todd's status as the chief of the overseas eclipse expedition was thus assured, though entirely through the action of Prof. Newcomb. Thanks to his careful preparations, Prof. Todd and his staff were recognized as representatives of the United States of America and obtained adequate support from the Japanese government.

In the U.S., the American Expedition was elaborately introduced in the newspapers. Eventually, there was general agreement among the public that the American Expedition was authorized by the government (Figure 4-7).

## 4.2 The Expedition Team and Their Observation Station

Prof. and Mrs. Todd and Dr. Holland arrived at the Port of Yokohama on July 8, 1887 and began preparations for the observation. Details of their tireless efforts are illustrated in Prof. Todd's diary as well as in the observation journals recorded by his key staff.

### 4.2.1 Key Staff Members and Collaborators

The organization of the American Expedition can be outlined as follows.



**Figure 4-8** Key Staff Members  
 (On the premises of the Shirakawa Castle ruins.)  
 From left (back row): Dr. Holland; K. Ogawa; Dr. King; J. Pemberton; Prof. Todd; Mrs. Todd; Prof. Hitchcock.  
 From left (front row): Mrs. Hitchcock; Lieutenant Southerland; five Japanese men (unknown).

*The David Peck Todd Papers*, MS 496B, Manuscripts & Archives, Yale University Library.

## Members and Collaborators

Table 4-2

	Name	Occupation	Responsibilities
<b>Key Member</b> (Reported to Prof. Todd)	W. J. Holland (1848–1932)	Professor at University of Pittsburgh.	Invited by Prof. Todd to join the expedition as a naturalist.
	W. Romyrn Hitchcock (1851–1923)	Professor of English at the Third Higher Middle School in Osaka; staff member of the Smithsonian Institution.	Met Prof. Todd at Yokohama en route to Hokkaido. Invited by him to join the team as chief photographer.
	W. H. H. Southerland (1852–1933)	Lieutenant, USS Monocacy. Assigned by Admiral R. Chandler, Commander, Asiatic Squadron of the U.S. Navy, in accordance with a request from Prof. Newcomb.	Joined the expedition as Executive Officer. In charge of time observation, chronometer comparison, and meteorological observation.
	J. Pemberton	Passed Assistant Engineer, USS Monocacy. Assigned by Admiral R. Chandler.	Joined the expedition as an engineer. In charge of designing observation tools, assembling instruments, electrical connection arrangements, etc.
	Mrs. Todd (1856–1932)		Drawing of corona and observation of general weather conditions.
<b>Hired in Japan</b>	Kazumasa Ogawa (1860–1929)	Photographer.	Assistant to Prof. Hitchcock.
	Tsuzuki; Yoshihara	Assistants to K. Ogawa.	Assistants to K. Ogawa.
<b>Assigned by the Japanese Government</b> (to study astronomical techniques and to support the American Expedition)	Masayuki Nakagawa (1848–1897)	Director of the Naval Observatory, Ministry of the Navy.	Comparison of time signals between Shirakawa and Tokyo. Meteorological observation.
	Masanobu Shirai	Assistant, Naval Observatory.	Assisting in time-signal operations between Shirakawa and Tokyo.
	Hidesuke Igarashi (1859–1933)	Engineer, Ministry of Communications; Professor at Tokyo Telegraph School.	In charge of telegraph line arrangements and Morse recording instrument for time signals.
	Morikazu Yashima (1845–1922)	Land Surveyor, Ministry of War.	Provided a topographic map of the area around Shirakawa castle ruins and town to Prof. Todd.
<b>Assigned by Chancellor of Imperial University</b>	Keizaburo Ashino (1866–1941)	Student at College of Science, Imperial University.	Interpreter and assistant to Prof. Todd. Translation of instruction manuals for corona drawing and observing the duration of totality.
<b>Short-term participation</b>	Dr. Divie B. McCartee (1820–1900)	Medical Missionary, Diplomat, Former Professor at Tokyo Kaisei College.	Met Prof. Todd on the ship bound for Yokohama and asked him to join the team. Assisted in procuring chemicals.
	Dr. Y. May King (1864–1934)	Adoptive daughter of Dr. McCartee. Medical Doctor. Studied photography.	Joined the team with Dr. McCartee. Assistant to Prof. Hitchcock.
<b>On-the-day participation</b>	Clarence R Greathouse	U.S. General Counselor, Yokohama.	In charge of operating an apparatus to determine the actinic effect of the coronal light.
	Dr. Howard E. Ames	Assistant Surgeon, U.S. Navy.	In charge of operating a double camera.