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## Stargazing: 150 Years of Astronomy at the University of Michigan

### INTRODUCTION

This exhibit was designed and executed as a companion piece to a physical exhibit of the same topic.



Professor Hazel Marie Losh on the Observer's Chair at the University Observatory. Hazel Marie Losh Papers, Box 2, Folder: "Photographs-Personal-Adult"

While the physical and online exhibits differ slightly in content, the goal of both exhibits is to provide contextual history for the Detroit Observatory, offer an overview of astronomy instruction at the University of Michigan, as well as highlight notable or exceptional faculty members. It also aims to share an awareness with the viewer of the ways in which astronomical instruction and observations have evolved over time.

This exhibit was arranged in six sections:

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**Astronomy Instruction** covers the tools and techniques used to educate a new generation of astronomers, and addresses the specific contributions of key faculty members. The goal of the Astronomy Department was to produce Michigan-educated astronomers and this exhibit section will address how the department went about the business of "raising up native astronomers."



**Astronomy Department History** will examine the development of the astronomy department from its earliest days until more recently. One focal point of this exhibit



The front of a planisphere. Designed by Michael H. Harrington, Director of the University Observatory, around 1890. It is a star chart that can be adjusted to display the visible stars for any time and date between 1891 and 1901. Observatory Papers, Box 7, Folder: "Planisphere".

the individuals whose profiles are included here were involved in the founding of the department, or conducted extensive research projects, or lived a remarkably unusual life, or were exceptional educators.

**Observatory Origins and History** details the reasons that University President Tappan was so tirelessly dedicated to constructing an observatory in Ann Arbor. This exhibit section also addresses the disadvantages of climate and discusses the history of the observatory's location.

**Expeditions** describe the many observing expeditions that University of Michigan astronomy faculty made during their tenure. Most expeditions are fairly well-documented with photographs, and we have included a sampling of expedition photographs. Michigan astronomy faculty ranged as far as South Africa, Sumatra, and Egypt, and as near as Canada, Maine, and Nevada. Expeditions were frequently summer endeavors, as it could take several weeks to ready camp and equipment for a party of astronomers.

Finally, **Resources for Further Research** provides researchers with additional manuscript collections and secondary materials with which to continue research about the University of Michigan Astronomy Department and the Detroit Observatory. Where available, a link to the location of the electronic finding aid is provided.

Please enjoy your visit to Stargazing: 150 Years of Astronomy at the University of Michigan.

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*This exhibit was created in February 2009 by Bentley Library graduate assistants Dominique Daniel, Rachael Dreyer, and Shannon Wait, University of Michigan School of Information.*

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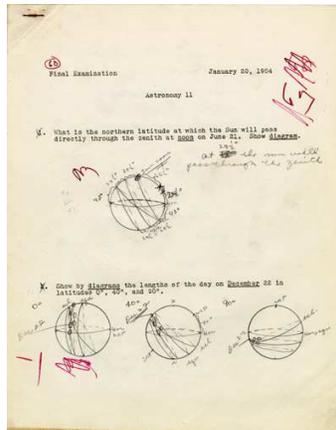
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## "Star Gazing": 150 years of astronomy at the University of Michigan

### INSTRUCTION

Astronomy was first listed as a separate subject in the University of Michigan catalogue in the year 1844-1845. It was taught by George Palmer Williams, Professor of Mathematics and one of only two faculty members at that time. But it was President Tappan's administration that gave astronomical studies a decisive impetus in 1853, as the construction of the Observatory began and astronomical instruments were ordered in New York and Berlin.



A page from a typical examination in the early 1950s. Hazel Marie Losh Papers, Box 1, Folder: "Student papers"

President Tappan's vision for higher education was to integrate the scholarly, classical course of study with an applied scientific program. Astronomy was one of his priorities. Franz Friedrich Ernst Brünnow, the Director of the new Observatory and Professor of Astronomy chosen by Tappan, started to build up an astronomy curriculum combining theory and practice. The possibility of practical training with the instruments set apart the University of Michigan from other American universities with comparable astronomical equipment.

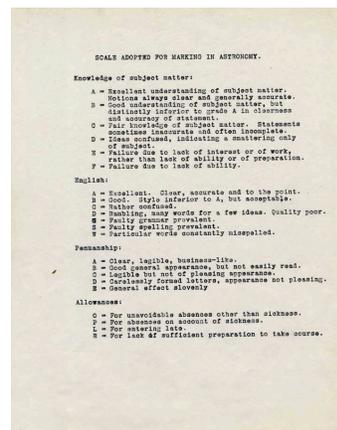
Although the reputation of the University's astronomy curriculum quickly spread, enrollment was

not large. Few changes were made to the curriculum until 1878-1879, when physics and mathematics were made prerequisites and the order in which astronomy courses might be taken was designated. One of Brünnow's earliest and most brilliant students was James Craig Watson, who obtained the bachelor's degree at the age of 19 and the master's degree 2 years later, one of the first two master's degrees that the University granted on examination. He assisted Brünnow at the Observatory and took his place as Director when Brünnow returned to Germany in 1863.

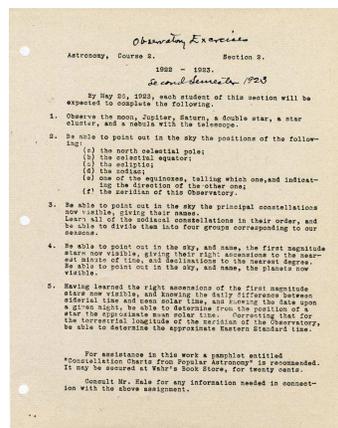
Watson was an excellent lecturer who could synthesize the literature and express complex problems in a clear way. President Angell held him in high regard: "In teaching he had none of the methods of the drill master. But his lecture or his talk was so stimulating that one could not but learn and love to learn by listening. Sometimes while discussing an intricate problem he would suddenly have an entirely new demonstration flash upon his mind as by inspiration and then and there he would write it out upon the blackboard."(quoted in [Encyclopedic Survey](#), p.453)

However, he gave his attention mostly to those students who showed particular skill and interest in astronomy, and he was known for his lack of interest in examinations. Rumor has it that he passed an entire class on final examination, including one member who had died shortly after enrollment! ([Encyclopedic Survey](#), p.453) While students could use some astronomical instruments, they frequently complained about lack of access to the big 12-inch telescope in the Observatory.

Watson's successor after 1879, Mark W. Harrington, gave students access to more astronomic instruments. Teaching was further expanded under the directorship of William Joseph Hussey in the 1905-1926 period. Ralph Hamilton Curtiss was recruited as Assistant Professor of Astronomy in 1907 and new courses were added, including in astrophysics and other courses in modern astronomy. The doctoral program was created. The number of students enrolled in astronomy courses grew dramatically, reaching 650 in 1922-1923. The quality of the facilities and of higher courses attracted brilliant graduate students, and eleven persons obtained PhD's in astronomy between 1915 and 1926, including Hazel Marie Losh, Will Carl Rufus, and Richard A. Rossiter who later joined the Astronomy department.



Scale adopted for marking, n.d. Observatory Records, Box 7, Folder: "Astronomy Department - Course materials, 1907-1927". [Click for larger](#)



Typical observation exercises, circa 1924. Observatory Records, Box 7, Folder "Astronomy Department- Course materials, 1907-1927". [Click for larger](#)

In those days, astronomy students had to be versed in the history of astronomy, mathematics and physics, astronomical theory as well as practice. They had to produce essays, answer multiple choice questions and record observation results. A detailed and precise mind and superior penmanship were required of would-be astronomers.

With the increase in enrollment, the Observatory proved insufficient to provide practical experience to all students. In the late 1870s a small separate building about 100 feet away from the main Observatory had been set up for use by students, with a six-inch equatorial refractor and a three-inch transit, with zenith telescope attachment. In 1908 the Students' Observatory was moved to a location about 300 feet west of the main building and its equipment upgraded. But after 1923 it had to be removed from the site of Couzens Hall.

To make up for the loss, plans were made to equip Angell Hall with a new Student Observatory and laboratory, with the upper floor entirely devoted to astronomy. The Angell Hall Observatory was ready in 1926-1927. Observation and Laboratory requirements in the curriculum were increased, and enrolment reached about 900 in 1930-1931. After World War II, the number of undergraduates shot up again.



One of the iconic figures of astronomy at the University of Michigan was Hazel Marie Losh, who first came to the University of Michigan in 1921 and was part of the astronomy faculty until she retired in 1968. Affectionately called "Doc" by her students, she was named "for ever" honorary Homecoming Queen.

Professor Losh during an astronomy class, n.d.  
Hazel Marie Losh Papers, Box 2, Folder "Personal"

In 1963 the Department  
of Astronomy was moved  
to the new Dennison

Building on Central Campus in 1963. Today the Department has several facilities, including the Angell Hall Planetarium and the Angell Hall Student Observatory, located on the roof of the Angell Hall classroom building. The Angell Hall Planetarium has a projector that can display the sky as seen at any location on the Earth at any time.

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*This departmental history section of the exhibit was created February 2009 by graduate student assistant Dominique Daniel, University of Michigan School of Information.*

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## Stargazing: 150 Years of Astronomy at the University of Michigan

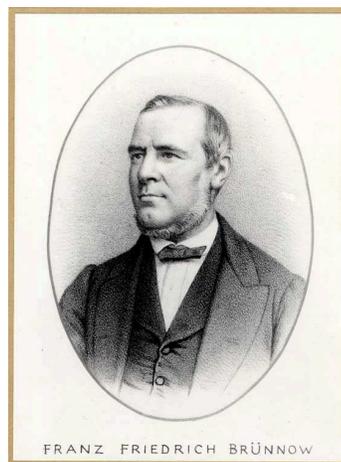
### FACULTY PROFILES

#### Franz F. Brünnow

The first director of the Detroit Observatory, Brünnow was recruited by Tappan after the Regents' first two choices for Director declined the position. Brünnow had been working at the Berlin Observatory at the time he was approached by Henry Philip Tappan about Directorate of the Detroit Observatory.

Three years after his arrival in Ann Arbor, Brünnow married Rebecca Tappan, Henry Philip Tappan's daughter in 1857. Brünnow served as Director of the Observatory from 1854 until 1863, when the Brünnows and Tappans permanently resettled in Europe. Tappan had been dismissed as President of the University and Brünnow subsequently resigned his post at the Observatory.

After leaving Ann Arbor for Europe, Brünnow assumed a position at Dunsink Observatory near Dublin, Ireland.



Franz F. Brünnow, Michigan's first Observatory Director and full-time astronomy faculty member. From UM Faculty and Staff Portrait Series, Box 1.

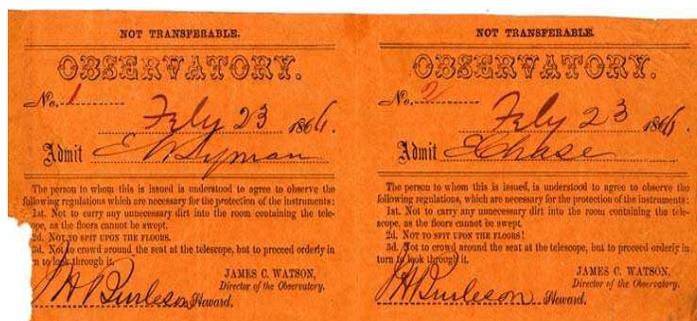
#### James Craig Watson



James Craig Watson. From James C. Watson Papers, Box 1.

Following Brünnow's departure from the University, James C. Watson assumed the directorship of the Observatory. Watson had been viewed as something of a genius for his mathematical abilities. Some of his students might have said that he was as portly as he was talented; his girth was a frequent target of students' mockery.

During his directorship, students complained of "considerable trouble in obtaining tickets of entrance and still greater difficulty in gaining the desired admission . . . So long as the University advertises to allow admission to the Observatory, it might be well to make the means of gaining this entrance a little more practical" (University Chronicle, February 1, 1868).



A coveted admission ticket to the Detroit Observatory.  
From the Observatories Vertical File.

Watson publicly made admission tickets available, but in practice was reluctant to let the public enter the Observatory for viewings, likely because public tours diverted time away from his observational work.

Watson left the Observatory in 1879 for a position at the newly founded Washburn Observatory at the University of Wisconsin. While overseeing construction work of his new home in 1880, he fell ill and died shortly after. In his funeral memorial address, University President Frieze expressed, "The University is in mourning. She has lost the foremost and brightest of her sons. This community, this State, the whole world of science mourns his loss. A great light has gone out forever. Professor Watson is dead!"<sup>1</sup>

### Mark Walrod Harrington

An interesting figure indeed, Mark Harrington served as director of the Observatory for twelve years, from 1879-1891.

Students appreciated his accessible teaching style, and he advocated for new student observing equipment, as well as additional classroom space. Harrington published articles on botanical subjects and a plant identification guide; he'd previously held professorial appointments in botany, zoology, and geology. Like most other University of Michigan professors, Harrington was well traveled. Before assuming the directorship, Harrington participated in geological surveys in Alaska. Later, while an astronomy professor and Observatory director, had spent one year (1876) of study in Leipzig, Germany, with an addition year (1877) teaching astronomy and mathematics in Beijing, China.



Mark W. Harrington.  
From UM Faculty and Staff  
Portrait Series, Box 2.

In 1891, Harrington left Ann Arbor to become Chief of the National Weather Bureau, a post he held for three subsequent years. His experience at the Weather Bureau soured; he proved to be a poor manager when in charge of non-scientists and non-academics. The situation became so unbearable that Harrington was removed from duty. In retrospect, it was likely during his time at the Weather Bureau when his mental illness moved from a latent to more active state. Harrington then moved to Seattle to assume the presidency for the Territorial University of Washington (Washington did not become a state until 1889). The political climate at the University was turbulent and Harrington experienced leadership difficulties. He resigned his post two years later. After several intervening years, Harrington re-entered the Weather Bureau for one year (1898-1899), before retiring due to poor health. One day, he wandered away from home, saying that he was going out for dinner, and that was the last any of his family saw of him until 1908. He had no recollection of his name or history when he applied for shelter at a police station in Newark, NJ in 1907. During his absence, he worked menial jobs in China, Washington State, Louisiana, but perhaps other places as well. Some speculate that Harrington returned to places where he had previously worked. Though Harrington's family located him in an asylum, his mental state never improved to the point where he could return home and resume his duties. He died in 1926 at the New Jersey State Hospital at Morris Plains. In a letter about Harrington the Hospital Medical Director wrote, "In regard to your inquiry of recent date concerning Prof. Mark W. Harrington, I will say that there has not been any apparent change in his mental condition during the last two years. He will not recognize

his former identity or give any information concerning his previous history and experience. He claims to have undergone a complete metamorphosis in his personality and insists that his legal name is John Doe. If you desire to communicate with him you might address him as John Doe #8, Greystone Park, NJ." <sup>2</sup>

Harrington's case is clearly one of the most sensational faculty histories in the department--his situation was widely covered by the newspapers of the day.

#### William J. Hussey

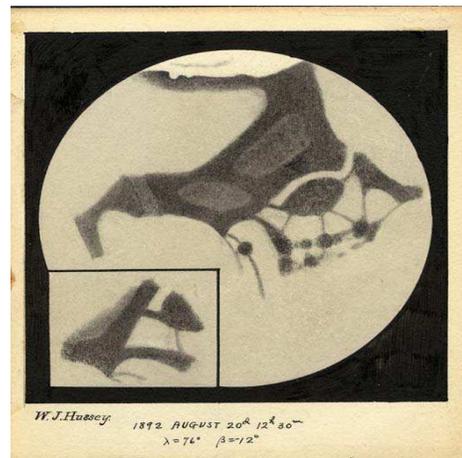
After Harrington left Ann Arbor, W.J. Hussey served as acting director of the Observatory, until Asaph Hall, Jr. assumed the position officially. Hussey left to take a professorship at Stanford University, where he taught and was able to conduct

observations at the Lick Observatory. During the summer of 1892, Hussey created painstaking charcoal drawings of Mars' surface; the same images would be captured by a Mariner satellite not quite 100 years later. The similarities between Hussey's sketches and the satellite images are striking; one instantly recognizes that both depict the same celestial object.

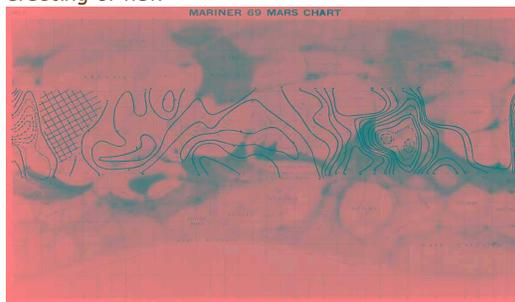
Hussey was particularly interested in studying asteroid pairs in the early 1900s. Hussey frequently participated in eclipse expeditions, both in North American and abroad. Additionally, he traveled to Egypt, Argentina, and South Africa to supervise the erecting of new



W.J. Hussey (seated furthest left; Mrs. Ethel Hussey is the frontmost seated woman) with astronomy colleagues. From Hussey Family Papers, Box 10.



William Hussey's Sketches of Mars' Surface. From Observatory Records, Box 16.



Mariner 69 Satellite Image of Mars, 1969. From AURA Records, Box 16.

observatories. From 1910 to about 1915, Hussey had a dual appointment at the Observatory in Ann Arbor and at the La Plata Observatory at the National University in Argentina. Of his trip to Bloemfontein, South Africa, Hussey wrote, "The Cape Observatory is well equipped and as we have known for many years, it has done excellent work. Its location is not favorable. It is about three or four miles from the center of Cape Town, and not on high ground, but almost down to sea level. Right back of Cape Town Table Mountain rises to an elevation of more than 3500 feet, I think the highest point is 3558 feet above the sea. But it would not be

a good place for an Observatory, on account of its being so constantly covered with cloud. The cloud forms about its summit on one side, and flows over it and dissolves on the other side, keeping the top covered to a much greater proportion of the time than the surrounding country."<sup>3</sup>

Hussey had long wanted to establish a University of Michigan observatory in the southern hemisphere; one wonders if Hussey's trip to South Africa had as much to do with helping to establish the Bloemfontein Observatory as it did with scouting out a site for a future Michigan-owned and operated observatory.

Under Hussey's direction, the Astronomy department added new classrooms and a students' observatory in 1908.

Hussey also developed the curriculum as well, offering a broader range of courses than had previously been available.

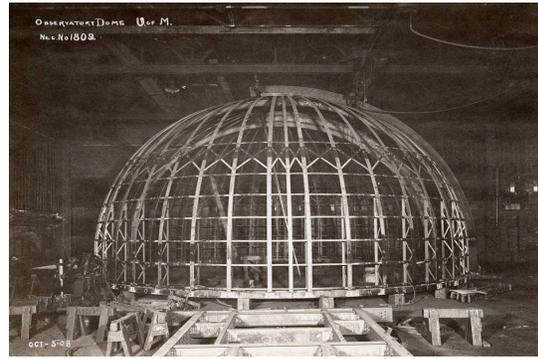
Hussey died abruptly in London en route to South Africa in Fall 1926, his dream of a southern

hemisphere observing facility nearing actualization. On November 18, 1926, "at 3:15 p.m. the box containing Prof. Hussey's cremated remains was brought to his office, which he left just six weeks before almost to the minute."<sup>4</sup> Hussey's ashes were interred at Forest Hill Cemetery in 1929 alongside his first wife, Ethel.

#### Robert R. McMath

McMath, director of the McMath-Hulbert Observatory operated by the University of Michigan near Pontiac, MI, was born May 11, 1891 in Detroit.

Francis C. McMath, Robert's father, and Henry S. Hulbert were the namesakes for the McMath-Hulbert Observatory. Earning his Bachelor of



The reverse of this photo reads, all in capital letters, "YOU MAY WANT THIS." From Observatory Records, Box 16.



McMath-Hulbert Observatory, Lake Angelus, MI, ca. 1950. From UM Photographs Vertical File.



Science in Civil Engineering in 1913, his early career was spent designing bridges, as an Army Engineer in the Air Service, in real estate development, and in managerial positions for the Detroit-area Motors Metal Manufacturing.

In 1928, he directed his energies to astronomy, having been a devoted amateur astronomer while working in the industrial sector. He spent the next decade as Director of the McMath-Hulbert Observatory at Lake Angelus, near Pontiac. In 1939, McMath returned to his industrial origins,

Robert R. McMath, amateur astronomer,  
professional industrialist.  
From UM Detroit Observatory Records, Box 17.

servng as Chairman of the  
Board of Directors for  
Motors Metal  
Manufacturing, the

company where he'd earlier risen from general manager to president and director. Concurrently, he also continued his directorship of the McMath-Hulbert Observatory. McMath, though not conventionally trained, became a widely known, widely published professional astronomer, and he did so almost exclusively within the state of Michigan. His membership in over 20 professional societies put him in contact with many of the great scientific minds from the period between the World Wars. As his publication record <sup>5</sup>indicates, McMath was particularly interested in solar prominences, sunspots, and in the study of motion picture capture of solar phenomena.

During World War II, McMath participated in army research, developing pneumatic artillery triggers, aerial photography, and precision telescopes, among other products. In the late 1950s, he also participated in navy weapons research. As the years went by, McMath stopped publishing articles on astronomical topics, turning instead to his other talents.

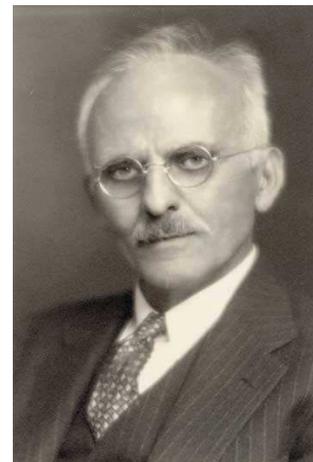
The following excerpts from a letter to Robert McMath from the Board of Regents highlights his contributions to astronomy at the University of Michigan and the field in general, as well as the obstacles he faced as a self-trained, amateur astronomer.

"Whereas, Dr. Robert R. McMath, devoted friend of The University of Michigan from the time he earned the B.C.E degree in 1913, is about to relinquish his active role as Professor of Astronomy; . . . whereas, the many gifts which Robert R. McMath has presented to the University have added great stature and genuine character to the University's program in astronomy; and whereas, Robert R. McMath, the amateur astronomer of the early thirties was eclipsed by the professional astronomer and authority of today who has become the highly productive scholar in the fields of solar astronomy and infrared spectroscopy; and whereas he is widely recognized for his authoritative studies in continuous records of celestial phenomena by motion picture methods and for his studies in the design and construction of telescopes" <sup>6</sup>

The letter goes on to thank McMath for his contributions toward establishing the Kitt Peak National Observatory near Tucson, AZ and expresses gratitude and best wishes for the future.

#### Heber Doust Curtis

Heber D. Curtis, was affectionately referred to as HDC by his colleagues, traveled extensively, both internationally and domestically, to observe eclipses, one of his research specialties. Curtis undertook much of the planning for eclipse expeditions during his tenure at Michigan as director of the University of Michigan Observatories, encompassing more than just the Detroit Observatory. Of the August 1932 eclipse expedition to Freyburg, Maine, Curtis wrote to his son, Baldwin in December 1931 that "I am beginning to make plans for the eclipse of August 31st next, to be located at Freyburg, Maine, the same town as chosen by the Lick party. . . You and I, according to present plans, will get there about August 1st, to start the camp. Am looking for a volunteer to take charge of the 40-foot which Aitken is loaning us. The



H.D. Curtis. From UM Faculty and Staff Portrait Series, Box 1.



Equipment used for eclipse expedition, Fryeburg, Maine. A 40-foot portable telescope is depicted in this image.

one in charge will not see the eclipse, except a few seconds by lifting up a flap. You may be the goat in charge of this." <sup>7</sup>

Curtis had begun his career at the Lick Observatory in California and so would have been particularly interested in the prospect of observing again with former colleagues. A detailed log of eclipse camp preparation and observing activities was kept from this expedition.

#### Hazel Marie Losh

One of the most popular astronomy professors in the history of the department, Hazel M. Losh taught at the University from 1928 until her retirement in 1969.

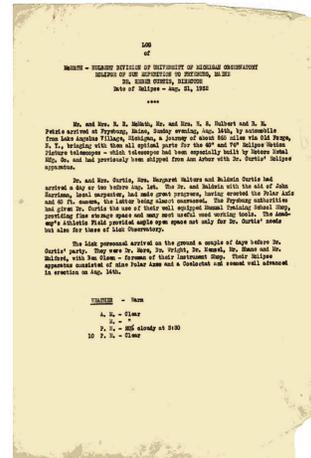
Rumor has it--though it is based on hearsay--that Losh had a unique grading scale:

"A for Athletes  
B for Boys  
C for Co-eds."

One former student, having got wind of accusations against Professor Losh, signed a supportive letter to her in the following way:

"No athlete, I: I remain today as I was then, a spindly, phthisic, ill-coordinated, non-competitive philosopher, who never quite saw nor understood what was going on in the great green field of a Saturday afternoon, and who is forever, this disability notwithstanding, your most respectful and admiring student." <sup>9</sup>

A fervent Wolverine fan, Losh attend home games and traveled to Bowl Games to support Michigan,



Fryeburg Expedition Log of observing and camp activities. From Heber D. Curtis Papers, Box 1. [Click for larger image.](#)



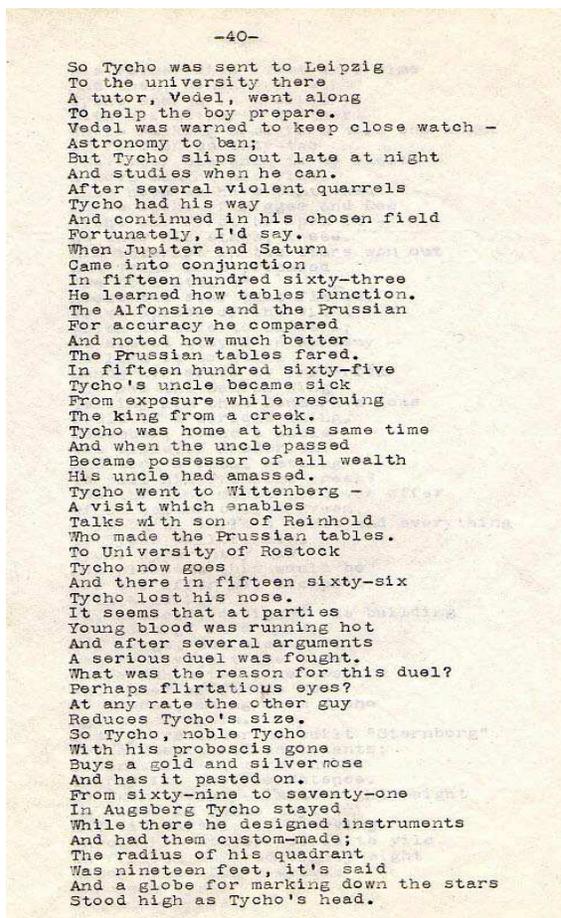
Professor Hazel Marie Losh in the observer's chair inside the dome of the Detroit Observatory. From Hazel Marie Losh Papers, Box 2.

but football wasn't her only love; she cheered on hockey, basketball, and baseball teams as well. In a 1976 interview with Thomas Slavens, the 78-year old Losh attempted to describe her affinity with collegiate athletics, saying "athletics has been a great avocation, I guess you'd say, a hobby, or



Professor Hazel Marie Losh on the football field with Michigan Letterman, Hazel M. Losh Papers, Box 2.

something-- it's so different from astronomy. Of course, astronomy is the reason I'm here. And it was my first reason for being here and the thing I've liked from the time I was a child. But still, you can't just have astronomy all the time. . . .<sup>9</sup>"



Seibert S. Sproull's *History of Astronomy in Verse*, 1949. From Hazel M. Losh Papers, Box 1.

A colorful character, Losh tried to instill in students a sense of enthusiasm for astronomy. One of the ways in which she did this was to assign a paper on the history of astronomy, to be written in verse. Several other examples survive and can be found in the Hazel M. Losh papers.

Losh's greatest contribution to the University consisted of her educational legacy. In a 1970 letter, Losh wrote, "I estimate that I have taught 50,000 students during my 42 years on the staff at the University of Michigan (a guess, but I think a conservative one)."<sup>10</sup> Losh so enjoyed teaching that she retired unwillingly--she had originally been slated to retire in 1968, but arranged to remain on active faculty status until she finally accepted her retirement in 1969.

1. Memorial addresses delivered in University Hall, November 26, 1880, at the funeral of James Craig Watson. (1882), p. 5, Bentley Historical Library, University of Michigan.

2. Medical Director to H.S. Jewett, 27 March 1914. Mark W. Harrington Necrology Supplemental File, Bentley Historical Library, University of Michigan.

3. William J. Hussey to Colliau, 3 December 1923. Hussey Family Papers, Box 2. "Correspondence: 1923, July-December." Bentley Historical Library, University of Michigan.

4. Observatory Notes. University of Michigan Observatory Records, Box 8. "Records, 1921-1966." Bentley Historical Library, University of Michigan.

5. Robert Reynolds McMath. Robert R. McMath Papers, Box 1. "Vitae, dossiers, bibliography (1)." Bentley Historical Library, University of Michigan.

6. Letter to McMath from the Board of Regents, 21 June, 1961. Robert R. McMath Papers, Box 1. "Vitae, dossiers, bibliography (2)." Bentley Historical Library, University of Michigan.

7. Letter to 'Binks' Curtis from Heber Doust Curtis, 7 December, 1931. Heber Doust Curtis Papers, Box 1. "Correspondence, 1931." Bentley Historical Library, University of Michigan.

8. Letter to Cavendar from Losh, 27 October 1970, Hazel Marie Losh Papers, Box 1. "Biographical Material." Bentley Historical Library, University of Michigan.

9. Letter to Professor Losh from Harold Walsh, n.d., Hazel Marie Losh Papers, Box 1. "Correspondence, Undated and 1921-1923." Bentley Historical Library, University of Michigan.

10. Slavens, Thomas. Interview with Dr. Hazel Losh, 1976, Hazel Marie Losh Papers, Box 1. "Correspondence, Undated and 1921-1923." Bentley Historical Library, University of Michigan.

*This Faculty Profiles page was created February 2009 by Bentley Library graduate student assistant Rachael Dreyer, University of Michigan School of Information.*

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## Stargazing: 150 Years of Astronomy at the University of Michigan

### HISTORY OF THE ASTRONOMY DEPARTMENT

The University of Michigan Astronomy Department dates from the early years of the University. The 1843 General Catalog lists Astronomy as a junior-year, third-term course, taught with Denison Olmstead's (astronomer teaching at Yale) *Astronomy* text.

Looking at the course offerings for the 1843-44 academic year, it becomes clear that even before an instructor was hired to teach the subject, the course was offered, an indication of the contemporary scientific importance placed on the study of astronomy.

Early astronomy course focused heavily on mathematical calculations, but as the department constructed the observatory and acquired observing equipment, and later in 1908, with the construction of additional classroom and student observatory space, students were expected to perform observations.

In a letter to the Board of Regents, Mark W. Harrington, director of the Observatory from 1879-1891, detailed equipment needed to provide students with adequate astronomy instruction:

"an equatorial with a 6 inch object glass, cost \$1800  
a transit instrument with 3 inch object glass, cost \$1000  
a chronometer required for use with instruments, cost \$250  
Total probable cost \$3050. These are the instruments planned by my predecessors and suitable for the instruction required."<sup>1</sup>

The Astronomy Department continues to map out and contribute what is known about the universe. The Astronomy

Year	Term	LANGUAGES AND LITERATURE.	MATHEMATICS AND PHYSICS.	INTELLECTUAL AND MORAL SCIENCE.
I.	1	Fabian's <i>Levy</i> , Xenophon's <i>Cyropaedia</i> , and Anabasis.	Bozidon's <i>Algebra</i> .	
	2	<i>Levy</i> finished, Heron, Theophrastus, Herodotus, Roman Antiquities.	Algebra, Legendre's <i>Geometry</i> , Botany.	
	3	Horace finished, Homer's <i>Odyssey</i> .	Geometry, Mensuration, Application of Algebra to Geometry.	
II.	1	Cicero de <i>Senectute</i> and de <i>Amicitia</i> , Lyrius, Isocrates, Demosthenes.	Plane and Spherical Trigonometry, Logic.	
	2	Cicero de <i>Oratore</i> , Greek "Pagan's <i>Dialectic</i> " Descriptive and Analytical <i>Grecian Antiquities</i> , Newman's <i>Rhetoric</i> .	Geometry.	
	3	Facinus, <i>Vita Agricola</i> , and Germanus, Analytical Geometry, Bridg's <i>Conic Sections</i> , Greek Tragedy.		
III.	1	Cicero de <i>Officiis</i> , Greek Poetry.	Olmstead's <i>Natural Philosophy</i> / Zoology.	Abercrombie's <i>Intellectual Powers</i> .
	2	Terence, Greek Poetry, <i>General Grammar</i> .	Natural Philosophy; Chemistry.	Paley's <i>Natural Theology</i> .
	3	Whately's <i>Rhetoric</i> .	Olmstead's <i>Astronomy</i> ; Chemistry; Mineralogy.	
IV.	1	Lectures on Greek and Latin Languages and Literature.	Geology; Calculus.	Stuart's <i>Intellectual Philosophy</i> , Comenius's <i>Psychology</i> .
	2			Whately's <i>Logic</i> , Wayland's <i>Moral Science</i> , Political Grammar.
	3			Story on the <i>Constitution</i> , Wayland's <i>Political Economy</i> , Butler's <i>Analogy</i> .

University of Michigan Course Catalog, 1843-1844.  
[Click here for larger.](#)



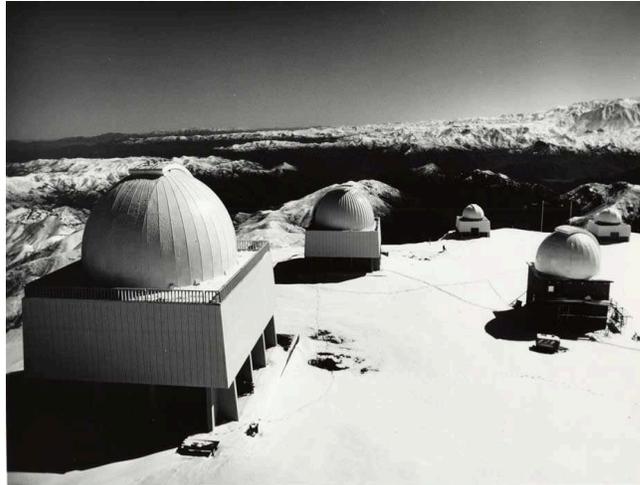
Henry Fitz refracting telescope in dome of UM Detroit Observatory, ca. 1870. From UM Photographs Vertical File.



department conducts research in the following areas: computational astrophysics, cosmology (the origins of the universe), extragalactic (the study of objects outside of our galaxy), extreme astrophysics (the study of galactic extremes that can't be modeled on Earth), instrumentation (the design and construction of observational equipment), star and planet formation, and stellar populations (groups of stars sharing some kind of similarity). To learn more about current projects at the UM Astronomy Department, please visit their [Research](#) page.



Dennison Hall was built in 1963 as the departmental home of physics and astronomy. From UM Photographs Vertical File.



Cerro Tololo Inter-American Observatory in winter, Las Campanas, Chile. From AURA Records, Box 16.

Currently, the astronomy department operates several local observation sites: telescopes and an observatory in Angell Hall and a dark-skies observing site and radio telescope at Peach Mountain in Dexter, MI. The department also participates in partnerships that allow students and faculty to use high-powered visual telescopes in geographic regions and climates that are more conducive to visual observations. The University of Michigan participates with the Kitt Peak

National Observatory and the Magellan Project, a consortium of academic institutions that operate telescopes at an observatory site in Las Campanas, Chile. Also in the vicinity of northern Chile is an observatory operated as



Solar observatory at Kitt Peak National Observatory, an hour away from Tucson, AZ. From AURA Records, Box 16.

the Cerro-Tololo Inter-American Observatory (CTIO), which is managed by the National Optical Astronomy Observatory (NOAO). Cerro-Tololo is one of the observatory sites supervised by the Association of Universities for Research in Astronomy (AURA), which manages NOAO. Cerro-Tololo is the current home for a former Michigan telescope: the Curtis-Schmidt telescope from the University of Michigan's Portage Lake Observatory was relocated to the Cerro-Tololo site in 1966. The Portage Lake facility, a few miles southwest of Pinckney, MI, was



completed in 1950. Although located at a distance from the light pollution of growing Ann Arbor, Portage Lake still had to contend with a humid and frequently overcast Michigan climate.

Industrial pollution and cloudy, humid weather make Michigan a difficult area in which to perform astronomical observations that require high visibility. However, climate and light pollution do

not negatively impact radio telescopes, which the department operates at Angell Hall, as well as Peach Mountain. The Angell Hall radio telescope was constructed in 2001, and is a smaller instrument, measuring approximately seven feet in diameter. In contrast, the Peach Mountain radio telescope dates from 1958, and is a larger instrument, 85 feet in diameter. Michigan astronomers have clearly made the most of the limitations of their location.

Starting with no dedicated faculty member in 1843, only a course textbook, the UM Astronomy department has grown to encompass 16 faculty members, in addition to professors from other departments who teach related courses such as physics. Henry Philip Tappan's visions and efforts to establish a pre-eminent astronomy department and observatory appear to have been prophetic.

1. Mark W. Harrinton to the University of Michigan Board of Regents, n.d. Observatory Records, Box 7, "Communication to the Board of Regents." Bentley Historical Library, University of Michigan.

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*This departmental history section of the exhibit was created February 2009 by Bentley Library graduate student assistant Rachael Dreyer, University of Michigan School of Information.*



Portage Lake Observatory, 1949  
From UM Photographs Vertical File.

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## The Origins of the Detroit Observatory

Henry Philip Tappan became the first president of the University of Michigan in 1852. In December of that year, in the same month as his inauguration, he began raising funds for an astronomical observatory to be built on University grounds. Along with his friend and ally, railroad-man Henry Walker, he met with donors and organized fundraising meetings. The first of such meetings was held in the Michigan Exchange, a Detroit hotel, and attended by prominent Detroit citizens, such as businessmen, scientists, and wealthy acquaintances of Walker. This group of Detroiters quickly raised close to \$10,000 dollars, and the Observatory was named after Detroit in honor of their generosity. Having successfully made a case for the building of this observatory, which would be the first in Michigan and the second in the Midwest, Tappan began touring notable observatories abroad and selecting staff and instruments in 1853.



President Henry Philip Tappan, 1860. From Tappan papers, Box 1.

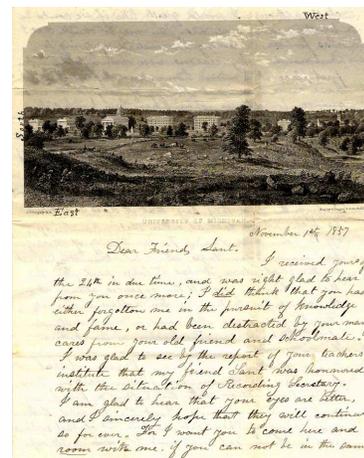


Detroit Observatory, 1870. From University of Michigan vertical file (call number: UBimus D13).

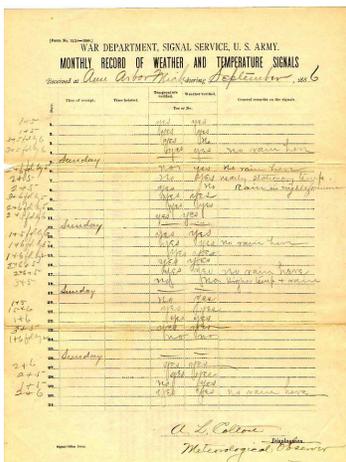
Clearly, the building of an observatory was a project that Tappan saw as central to his mission for the University. To him, it was the mark of a true research university, dedicated to the sciences as well as the classics, and something that set the University apart from others. This sentiment is reflected in contemporary

letters, such as one by William Reid, a student in the 1850s, who wrote to a friend at Dartmouth about the University's ownership of a "telescope [sic] next largest in the U.S. "the Observatory's famous Fitz telescope"and suggested that it was one of "many reasons for preferring this College to Dartmouth."

School pride in the Observatory is also seen in University publications, such as an 1857 University catalog, which devotes significant space to the Detroit Observatory and also notes a telescope, "which in size, is surpassed only by the Telescope in Cambridge, Mass., and by that in Pulkova in Russia." The catalog also attempts to entice students with by mentioning that "Students who make Astronomy an optional study during the Senior year, or in the University course, will have instruction in the use of the instruments and will have an opportunity to participate in the observations." Clearly, the Observatory and its large telescopes were an effective public relations tool.



From the William Reid papers



Record kept for the Signal Service, 1884. From the UM Detroit Observatory records, Box 12.

Although it was certainly a status symbol of sorts for the University, the Observatory had several factors working against it from the beginning. Most significant was the weather. Michigan is the second cloudiest state in the nation, and only Washington has fewer clear days per year. This meteorological disadvantage certainly worked against it as a major site for astronomy. Also, as the city of Ann Arbor grew, the Observatory was increasingly in proximity to campus, and by 1915, it was completely floodlit. Nonetheless, it was used for some important research, especially early on; James Watson discovered 19 comets using its telescopes, and it was

used for a number of meteorological purposes. In the late 19th century, Observatory staff made daily, and sometimes hourly, reports on wind speed and direction, measured with anemographs. They also recorded information on weather for the Army Signal Service of the U.S. War Department. In this way, the Observatory contributed to the scientific pursuits and the reputation of the University from the beginning.

Astronomical Observatory; U

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5	5	5	5	5	5	5	5	5	5	5	5	5
6	6	6	6	6	6	6	6	6	6	6	6	6
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29	29	29	29	29	29	29	29	29	29	29	29	29
30	30	30	30	30	30	30	30	30	30	30	30	30
31	31	31	31	31	31	31	31	31	31	31	31	31

Anemograph record (detail), 1880. From the UM Detroit Observatory records, Box 12.

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*This exhibit was created in February 2009 by Bentley Library graduate assistant Shannon Wait, University of Michigan School of Information.*

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## "Star Gazing": 150 years of astronomy at the University of Michigan

### EXPEDITIONS

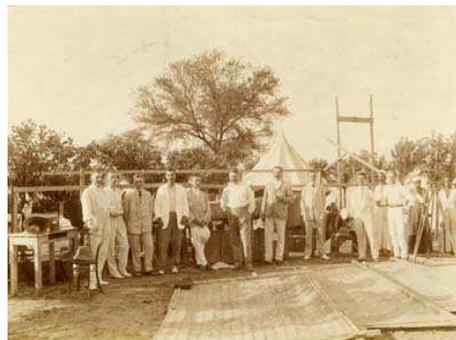
Astronomers travel a lot to find favorable locations to observe astronomical phenomena, and the faculty of the University of Michigan Department of Astronomy are no exception.

James Craig Watson, for his part, participated in numerous expeditions and the U.S. government appointed him astronomer-in-chief for the 1874 expedition to Peking, China to observe the transit of Venus. In his trips he was often accompanied by his wife, who acted as recorder for her illustrious husband.

In the summer of 1905, William Joseph Hussey went to Egypt in charge of the Lick Observatory expedition to observe the total solar eclipse. Between 1911 and 1916, Hussey acted as Director of the LaPlata Observatory in Argentina and divided his time between that institution and the University of Michigan. Hussey also initiated the construction of an



Camp established at Cartwright, Labrador to observe the solar eclipse of 1905. Heber Doust Curtis Papers, Box 1, Folder: "Eclipse Expedition, 1905- Cartwright, Labrador".



Lick Observatory expedition to Egypt, 1905. Hussey Family Papers, Box 10, Folder: "Photographs- Miscellaneous".



LaPlata Observatory, Argentina, n.d. Meridian circle, center front. Hussey Family Papers, Box 10, Folder: "Photographs LaPlata Observatory"

observatory in Bloemfontain, South Africa. He and his friend Robert P. Lamont intended to establish an observatory to catalog double stars, which requires observation from both a north hemisphere and a south hemisphere location. In October 1926, as the Lamont-Hussey Observatory was nearing completion, Hussey died in London on his way to South Africa.

Heber Doust Curtis went three times to Sumatra (in 1901, 1926 and 1929) on eclipse expeditions. In





Heber Doust Curtis standing in front of equipment, Sumatra eclipse expedition, 1926 or 1929. Heber Doust Curtis Papers, Box 1, Folder: "Eclipse Expedition, 1926 - Beukoelen and 1929 - Takengon".

letters to his family, Curtis explained how challenging and exciting these trips to Sumatra were. In a November 28, 1925 letter (Heber Doust Curtis Papers, Box 1,

Folder: "Correspondence, 1925"), Curtis recalls the harrowing trip to the isolated village of Beukoelen, the site of the eclipse camp. His wife was the first to be struck by the "5-day fever", a mysterious fever that affected almost every member of the expedition. The weather was hot and humid, the terrain mountainous. However, in Beukoelen they found accommodations that were "finer than we had imagined in our wildest dreams". Unable to accommodate the influx of astronomers in the local hotel, the little city had assigned their visitors to various houses as paying guests. Their long stay in Beukoelen was marked with social events with local officials and a party of German astronomers who had also come to observe the eclipse. The climax of the stay was a party organized by local officials after the successful completion of eclipse observations.

Curtis also headed the Allegheny Observatory Eclipse Expedition to Gerlach, Nevada in 1930 and conducted a party to Freiburg, Maine, to observe the total solar eclipse of August 31, 1932.

Such expeditions were often expensive events requiring important logistics. They could lead to significant scientific publications, but they were not always successful. Watson's trip to China resulted in a wealth of scientific data that was published in *Observations of the Transit of Venus*, December 8-9, 1874. But for the total solar eclipse of January 24, 1925, Hussey made plans to observe it from a balloon in Geneva, New York. \$4,000 were spent in preparation, but high winds and lack of open space for filling and taking off prevented the flight of the balloon, while clouds

prevented participants from making observations. In anticipation of the January 14, 1926 eclipse in Boenkoelen, Curtis and his colleagues placed bets on the weather. In the tropics, storm were unpredictable and struck very fast. Fortunately, on "D-Day", the sky was clear and the astronomer returned to the United States with a wealth of data and photographs from their observations (Heber Doust Curtis Papers, Box 1, Folder: "Correspondence, 1926").

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*This departmental history section of the exhibit was created February 2009*

*by Bentley Library graduate assistants Dominique Daniel, Rachael Dreyer, and Shannon Wait, University of Michigan School of Information.*



Gerlach, Nevada expedition, 1930 to observe the solar eclipse. Curtis' wife (center right) and his son, nicknamed "Binks" (Far right) were present. Observatory Records, Box 16, Folder: "Eclipse Expedition, 1930 - Gerlach, Nevada".



Heber Doust Curtis at Fryeburg, Maine to observe the total solar eclipse, 1932. Observatory Records, Box 16, Folder: "Eclipse Expedition to Fryeburg, Maine, 1932".

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## Resources for Studying Astronomy at the University of Michigan

### MIXED MATERIALS

#### Association of Universities for Research in Astronomy

- Association of Universities for Research in Astronomy records, 1953-1975
- 16 linear ft.

Records of the Association of Universities for Research in Astronomy, Tucson, Arizona. Correspondence files of Robert R. McMath, Leo Goldberg, and Orren C. Mohler, reports, minutes, financial and budgetary materials, and technical reports relating to the development of AURA and its predecessor organization, the Advisory Panel for the National Astronomical Observatory, and concerning observatories at Kitt Peak, Arizona, and Cerro Tololo, Chile; also material concerning political developments in Chile; and photographs.

Stored off-site; prior notice required for retrieval

[Finding aid available online](#)

#### Byrd, David

- David Byrd Photograph Series
- 1 linear ft. (in 2 boxes and 1 portfolio) and oversized.

Portraits and photos of Byrd, his wife Letitia, and friends and family; photographs of projects, including churches, commercial buildings, and private residences; portfolio of photos of The Detroit Observatory, taken by David Byrd, 1973.

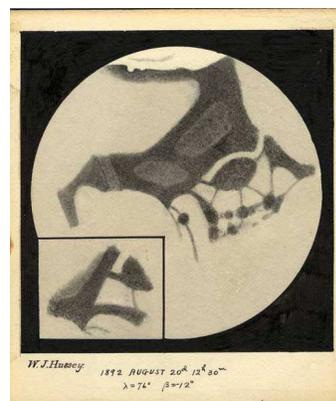
Finding aid available in the library.

#### Curtis, Heber Doust

- Heber Doust Curtis papers, 1889-1890, 1900-1908, and 1921-1942.
- 1.3 linear ft.

Personal correspondence, mainly copies of letters to family, describing various astronomical expeditions to Chile and Sumatra; also speeches; photographs and photograph albums. One letter, July 19, 1925, concerns the controversy over the teaching of evolution and the Scopes trial including comments about Clarence Darrow and William Jennings Bryan.

[Finding aid available online](#)



W.J. Hussey's drawing of Mars, 1892.  
From UM Observatory papers, Box 12.

#### Curtiss, Ralph Hamilton

- Ralph Hamilton Curtiss
- 0.3 linear ft.

Professor of astronomy at University of Michigan.

Professional correspondence, lecture notes in Descriptive Astronomy, Astronomy 32, ca. 1929, and a biographical sketch. Correspondents include: Heber D. Curtis, Oct. 3, 1918, William J. Hussey, 1907, 1911, and July 18, 1923, and Harrison M. Randall, Dec. 5, 1911.

**Department of Astronomy (University of Michigan)**

- Dept. of Astronomy (University of Michigan) records, 1960-1989 (bulk 1980-1989).
- 2 linear ft.

Records of the Association of Universities for Research in Astronomy observatories visiting committee, 1980-1985; chairman's daily file, 1984-1988; and various subject files.

[Finding aid available online](#)



Detroit Observatory, ca. 1940.

**Detroit Observatory (University of Michigan)**

- Detroit Observatory (University of Michigan) records, 1860-2004
- 26 linear feet and 1 flat file drawer

Astronomical observatory on the campus of the University of Michigan. Built in 1854, it was named to recognize the Detroit citizens who helped

finance its building. No longer an active observatory, a major restoration was completed in 1999.

Includes collected historical records and extensive documentation of the observatory restoration during the 1990s. Documentation includes information about the observatory's scientific instruments, former directors, and outreach and publicity. Formats include photographs, scientific log books of weather observations (1880-1890), architectural drawings, and publications. Also includes a gold medal awarded to Franz Brünnow in 1848.

[Finding aid available online](#)

**Hiltner, William**

- William A. Hiltner papers, 1942-1991
- 11 linear ft.

Astronomer, professor of astronomy at the University of Chicago, later at the University of Michigan.

Biographical material, correspondence, topical files, teaching materials, research files, and photographs relating to professional interests, including his interest in photoelectric photometry leading to the discovery of interstellar polarization; also files relating to various observatories.

[Finding aid available online.](#)

**Hussey Family**

- Hussey Family papers, 1876-1926
- 8.5 linear ft. and 1 oversize folder.

Correspondence, diaries, scrapbooks, photographs and other materials relating especially to Hussey's activities as professor of astronomy and director of the astronomical observatory at the University of Michigan, including his scientific visits to South America and South Africa.

Finding aid available in the library.

**Losh, Hazel Marie**

- Hazel Marie Losh papers, 1870s-1978
- 2 linear ft.

Professor of astronomy at the University of Michigan, friend of the University's athletes and athletics, and officer of Phi Beta Kappa, Alpha Chapter.

Correspondence, speeches and speaking notes, clippings, publications, and photographs; also a transcript of an oral history interview conducted by Thomas Slavens.

[Finding aid available online](#)

**McMath, Robert**

- Robert R. McMath papers, 1916-1962
- 10 linear ft.

Detroit, Michigan industrialist and director of the McMath-Hulbert Observatory of University of Michigan (located on Lake Angelus near Pontiac, Oakland County, Michigan.)

[Finding aid available online](#)

### Michigan Historic Preservation Network

- Michigan Historic Preservation Network records-- Photograph Series, 1999-2004
- 0.5 linear ft.

Photographs and CDs of images of buildings and other structures, community districts, cultural landscapes, local institutions, and other preservation projects compiled as part of submission process for the organization's historic preservation awards.

[Finding aid available online](#)



Albert Boggess uses the meridian circle telescope 1953. From the News and Information Services records, Box A-9.

### Observatory (University of Michigan)

- Observatory (University of Michigan) records, 1855-1985
- 16 linear ft., 1 oversize box, 1 oversize v., and architectural drawings.

Observatories of the University of Michigan, including the Lamont-Hussey Observatory, the McMath-Hulbert Observatory, the Portage Lake Observatory, the Angell Hall Laboratory, the Detroit Observatory, and the Department of Astronomy.

Correspondence, records of astronomical and meteorological observations, financial records, reports, architectural drawings, and scrapbook; include correspondence of observatory directors, William J. Hussey, Ralph H. Curtiss, Heber D. Curtis, Orren C. Mohler, W. Carl Rufus, A. D. Maxwell, Leo Goldberg, Robert R. McMath, and R. A. Rossiter; observations of J. M. Shaeberle, Asaph Hall, Jr., William J. Hussey, C. S. Woodard, and S. D. Townley.

### Watson, James C.

- James C. Watson papers
- 2 linear feet and 1 outsize folder.

Professor of astronomy and director of the Observatory at University of Michigan and University of Wisconsin.

Correspondence relating to astronomy and observatories, world travel, 1874-1875, particularly in China and Egypt, the piano exhibit at the 1876 Centennial Exhibition, and the invention of the telephone; also notes, articles, and miscellaneous manuscripts on his scientific interests, three diaries, 1870-1875, two letterbooks, a log book of a journey abroad, and three volumes of notes; also photographs. Correspondents include Alexander Graham Bell, 1876-1879; A.W. Chase, 1873-1874; Elisha Gray, 1877-1879; Joseph Henry, 1877; William E. Upjohn, 1880; Victor C. Vaughan, 1880. Also includes travel letters of Annette Waite Watson, 1874-1875.

[Finding aid available online](#)

### BOOKS

- Allmendinger, George Franklin. *George Franklin Allmendinger Student Notebook*. Notes on the lectures of James C. Watson in astronomy and Edward Olney in mathematics. Call Number: BImu C34.
- Hussey, William. *Notes on Popular Astronomy...* Call Number: DA 2 H972 N911.
- Shaw, Wilfred B. [ed.] *University of Michigan: An Encyclopedic Survey*. Ann Arbor, University of Michigan Press, 1942-. [Available online](#)
- Whitesell, Patricia S. *A Creation of His Own: Tappan's Detroit Observatory*. Ann Arbor, Mich.: Bentley Historical Library, University of Michigan, 1998. Call Number: FImu D13 O14 W594.

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*This exhibit was created in February 2009 by Bentley Library graduate*

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