



# PRESERVATION AND CONSERVATION ASSOCIATION

Box 2555, Station A, Champaign, Illinois 61820

“The Past Has A Future”

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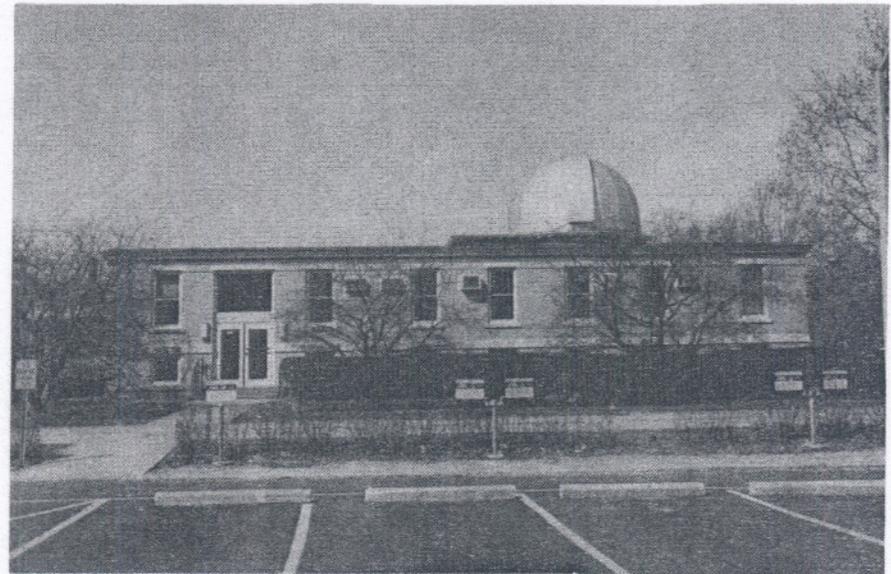
## THE UNIVERSITY OF ILLINOIS OBSERVATORY

The University of Illinois Astronomical Observatory is significant as the location of the development of the selenium cell and the photoelectric cell which revolutionized the science of astronomical photoelectric photometry — the measurement of celestial magnitudes. The research was conducted on the twelve-inch Warner and Swasey refractor telescope located in the second story equatorial room of the 1896 brick observatory. Although the original form of the building was enlarged by additional classroom wings in the 1950's and 1960's, the original design as expressed by the plan, space, structure, and style is clearly evident and recognizable apart from the later wings.

During the state legislative session of 1895, a sum of fifteen thousand dollars was appropriated for a new astronomical observatory at the University of Illinois. The location was to be on the grassy knoll between Mathews Avenue and Burrill Avenue. The vacated Burrill Avenue is now the location of the sidewalk along the eastern side of the University Quadrangle. The site is just north of the 1876 Morrow Plots, the nation's oldest experimental field, now a National Historic Landmark. The structure was built to replace a smaller observatory located further north and west, closer to the heart of campus.

Contracts were let in the early spring of 1896, and ground was broken in April of that year. The architect was Charles A. Gunn; Bevis and Company of Urbana were the general contractors. Ira Baker, a professor of Civil Engineering, served as the supervisor of construction while George Meyers, first director of the observatory, was in Europe.

The building was constructed on a one-story T plan, facing north. It is of buff-colored Roman brick (manufac-



tured in Indiana), with limestone lintels and sills. The bar of the T is seventy-five feet long east to west and twenty-five feet deep. The stem of the T is located to the south, centered along the east-west axis and is twenty-six feet deep by twenty-five feet wide. The octagonal observation tower rises to a height of twenty-five feet at the intersection of the T and then becomes round, continuing to a total height of 35 feet. At the floor level of the second story equatorial room, a balustrade circles around the exterior of the tower on the north, east and west.

The tower is capped by a great hand-tooled, circular, limestone plate which carries the dome track. The internal diameter of the dome is twenty-four-and-one-half feet and at its apex, is twenty-four feet above the equatorial floor. The operable slit has a clear opening of forty-four inches and is opened and closed by hand in a matter of seconds. The dome tower and equatorial room are completely original with the exception of a motor drive which re-

placed the rope and sheave method of rotating the dome on its metal track.

At the center of the equatorial room is located the 1896 twelve-inch refractor telescope. The telescope was made by the highly respected firm of Warner and Swasey of Cleveland, Ohio. For maximum stability, it is mounted on a brick pier which extends down the bedrock and is not attached to the building in any way. The telescope was obtained at a cost of \$4,500. Also original is the observer's chair; it was included in the original contract for the building and equipment and was built by Bevis Company at a cost of \$25.

The octagonal entrance hall below the equatorial room is centered around the massive brick pier. The interiors of the loadbearing brick wall are painted white. Other non-bearing walls are of four-inch tongue and groove bead board. This room was originally and continues to be used for storage of portable equipment, books, etc. The original stairs, newel posts, balustrades and wood floors are extant.

Originally, there were two transit rooms in each of the east-west wings. Each room had a permanently mounted transit telescope on a brick pier. Transit telescopes are useful for accurate measurement of stellar positions. The windows drop into pockets in the basement wall to allow for unobstructed observing from these locations. Corresponding slits in the ceiling opened to complete clear meridian and zenith. The transit rooms have since been converted to office space, as has the southern classroom wing. The brick piers are still visible in the basement beneath the transit rooms.

The exterior is subtly ornamented by a brick cornice, stone sills and lintels, stone water course, ornamental gutters and original copper downspouts. Most windows are original wood double hung. The central front entrance door with transom and concrete stoop is original. While the original front balustrade has been replaced, the western stoop and ornamental iron balustrade is intact.

Although the transit rooms are no longer used for their original purpose, the primary alteration to the building has been the two single story additions, one located in the southwest corner and the other being the large wing on the east.

The first addition was of light cream-colored brick and was nestled into the southwest corner of the building to provide additional classroom and office space in 1956. The addition replicates the original structure in scale, rhythm and detail, and materials in essentially every way except color. Care was taken to match the cornice lines, gutters, stone lintels, sills and watercourse. The brick is of the same size, and its configuration attempts to match the narrow mortar joints of the earlier building.

Likewise, the large east wing, constructed in 1966, is of the same light cream-colored brick and also replicates the aforementioned detail. The scale of this later addition is much larger than either of the two previous components. This building provided more office space, a new dark room and a radio telescope lab. Both additions were designed by architect P. Dixon.

"As a result of Stebbins' work at Illinois with the photoelectric cell, photoelectric photometry is the standard technique in determining stellar magnitudes today," quoth George McVittie, fourth director of the University of Illinois Astronomical Observatory. Stellar magnitude is one of the most fundamental measurements in the field of astronomy. The University of Illinois Observatory is significant as the site of

revolutionary research in the use of electronic techniques for the detection of astronomical radiation.

Prior to 1907, nearly all measurement of the magnitude of stars had been obtained by visual or photographic means. The earliest method, visual comparison of relative brightness, has been linked to measuring the weights of rocks by holding them in your hands. Later, photographic methods used starlight to make a representation on a photographic plate. Neither method was adequate for quantitative measurements as they were not nearly accurate enough for anything but the most rudimentary comparisons. Because of these drawbacks, the use of electricity for empirically gathering astronomical data revolutionized the field of astronomy.

Two German scientists had experimented briefly with the use of an electric cell to measure starlight in 1895. Due to the minimal success of the experimentation, it was not pursued and photography continued to be the accepted means for measuring starlight. The credit for the science of modern photoelectric astronomical photometry is given to Joel Stebbins (1878-1966). Stebbins did his pioneering research in the field during the period from 1907 to 1922 while he was director at the Illinois observatory.

Stebbins arrived as director of the Observatory after completing his PhD at the University of California, Berkeley in 1903. For the next few years he conducted research into the relative brightness of binary stars using visual and photographic techniques. Stebbins was assisted in his efforts by his wife, May, who frequently acted as recorder. In a speech before the American Astrological Society in 1957, Stebbins recalled the events which led up to the use of the electric cells. "She (May Stebbins) wrote down the numbers as the observer called them, but after some nights of recording a hundred readings just to get one magnitude, she said it was pretty slow business. I responded that someday we would do all this by electricity. That was a fatal remark. Thereafter she would often prod me with the question, 'When are you going to change to electricity?' It happened that within two or three months, the Department of Physics gave an open house, and one of the exhibits was in charge of a young instructor, F.C. Brown. He showed how when he turned on a lamp to illuminate a selenium cell, a bell would ring, when the lamp was off, the bell would stop. Here was the idea: Why not turn on a star to a cell on a telescope and measure a current?" Stebbins soon made friends with Brown and in due time they had a selenium

cell positioned on the twelve inch refractory telescope. In the fall of 1907, after some trial and error, the two achieved the first light curve for the moon since 1860.

This successful use of photoelectric technology was a quantum leap in the field of astronomy. Stebbins later discovered that cooling the cell to zero degrees Fahrenheit doubled the sensitivity and diminished the irregularities in the circuit tenfold. Likewise, by reducing the size of the cell, irregularities were again reduced. Brown and Stebbins went on to detect stellar intensity and activity that were previously unrecorded. In the process, their work superseded and scrapped four doctoral theses.

Stebbins continued to do pioneering work with the selenium cell until 1913, when he became associated with Jacob Kunz. Kunz was a University of Illinois physics professor who had been doing experimentation on an improved photoelectric cell which was based on the alkalia metals. This cell was the predecessor of the modern day "electric eye." Its applications in science and industry have been widespread, including early uses in talking motion pictures, television and aviation.

The improved technology of the photoelectric cells over the selenium type had the advantage of greater sensitivity and faster operation. Stebbins explained it in this way, "Only recently we managed to produce a cell which is twice as sensitive as anything we had before, and this amounts to the same thing as though some good fairy had suddenly doubled the light gathering power of our telescope." The results were precise light curves of eclipsing double stars, which permitted the determination of the diameters and masses of stars with a higher accuracy than any previously attained, and the discovery of previously undetected eclipses in several stars such as Beta Aurigae and Delta Orionis."

Through his work with Stebbins, Kunz continued to refine his cells. This owed largely to the fact that starlight is one of the farthest of all light sources. Kunz's cells were the most sought after in the country, being more than a million times more sensitive than cells commercially available. This dedication earned him the recognition as the "father of the photoelectric cell." Because of his close collaboration with Kunz, Stebbins usually got the best cells for himself, leaving those of second best quality to other observatories.

Apparently disgruntled at the Administration at the University of Illinois, Stebbins left in 1922 to take over the

directorship of the Washburn Observatory at the University of Wisconsin. Stebbins replaced his mentor, George C. Comstock, whom he had studied with as a graduate student some twenty-five years before. Stebbins went on to apply the techniques he developed while at Illinois. Continual experimentation led to continuously improved technology for the study of astronomy.

*(Excerpted from the National Register nomination prepared by Shauna Francissen. The building was listed in the National Register of Historic Places in November 6, 1986.)*

## THE SOCIETY FOR COMMERCIAL ARCHEOLOGY

The Society for Commercial Archeology is a unique national organization concerned with the artifacts and structures, signs and symbols of the American commercial process. Encompassing both the celebrated and anonymous work of many of America's best designers, the mass-produced forms of the machine age, and the vernacular conceptions of local builders, these elements comprise a significant part of our national heritage.

Features of the American commercial environment include transportation facilities such as highways, airports, and bus stations; roadside development — gas stations, diners, and motels; components of the traditional business district — movie theatres, drugstores, and department stores; and recreation facilities — resorts, fairgrounds, and amusement parks. The SCA is concerned that these resources, while rapidly disappearing, are often considered too recent to be analyzed, recorded, or preserved.

The goals of the Society are to promote public awareness and exchange of information, and to encourage the selective conservation of the commercial landscape. Its membership is comprised of individuals and organizations involved in fields ranging from art, architecture, historic preservation and design, to business, engineering, and law. Members have the opportunity to participate in conferences and field trips, receive the *SCA News Journal* and special publications, and contribute to the future growth of the Society.

For further information write to The Society for Commercial Archeology, Room 5010, National Museum of American History, Washington DC, 20560.

## MEMBERSHIPS RENEWALS

Like all of the other national and area not-for-profit organizations, the Preservation Association is asking you to remember us as you decide on your year-end charitable contributions. Now is the time to renew your 1986 membership to PACA. In order to vote at the Annual Membership Meeting on February 1, 1987, you must be a current member in good standing. Your mailing label shows the month/year of your last renewal; a letter instead of numbers signifies that you are receiving a complimentary newsletter for a limited time. You must join PACA to be sure that you will continue to receive the newsletter.

All of PACA's operating budget comes from membership dues, salvage donations and tour receipts, so your membership IS important. Please remember to put PACA on your renewal list.

## ANNUAL MEMBERSHIP MEETING

A lecture on Greek Revival houses in east Illinois will highlight the Fifth Annual PACA Membership Meeting scheduled for Sunday, February 1, 1987 from 2-4 p.m. at the Queen Anne style Heath Funeral Home, 201 North Elm Street, Champaign. Michael Lambert from Plainfield, IL, will discuss the architectural and historical significance of these early homes. His discussion will add focus to the importance of the renovation of Champaign-Urbana's only documented Greek Revival building, now located in Leal Park.

David Heath will also give a short talk on the history of the Heath Funeral Home building followed by the presentation of the Third Annual Heritage Awards. There will be a very short business meeting with the election of three directors to the governing Board. The meeting is free and open to the public so please come and bring your friends.

## S.A.V.E (Salvage of Architecturally Valuable Elements)

PACA was able to successfully negotiate with the University of Illinois for permission to salvage from eight houses on the Beckman Institute site. A number of interesting and recyclable items were obtained from these buildings including three staircases with newel posts, pine woodwork, oak and pine doors, pair of oak french doors, three clawfoot tubs, three multi-lite beveled glass doors, pair

of pocket doors, doorknobs, two oak columns on pedestals. Information about these and other PACA salvage items is available from the Salvage Committee Chairman, Bob Swisher (359-1100).

PACA is pleased to announce a new, permanent location for the salvage warehouse at 65 East University Avenue, Champaign. All salvage items will be consolidated to this location which will make viewing and resale a much easier operation.

A well deserved thanks goes to all of the volunteers who gave of their valuable pre-holiday time to salvage from the Beckman houses, to help clean the new warehouse and move the inventory. Well done!

## WHY PRESERVATION?

Preservation of the best of our past for present use and future appreciation strengthens our sense of community and continuity. The restoration and use of older structures builds an understanding of history that can enrich the context in which we understand ourselves.

Preservation is vital. Taking rundown structures and transforming them into comfortably elegant homes, human-scale office buildings, or empathetic museums is a life-affirming exercise.

Philosophy aside, preservation has a favorable economic, as well as aesthetic, bottom line. The restoration of old buildings for contemporary use is often less expensive than demolition and new building. Preservation goes hand in hand with community need for sound schools, churches, offices, and for the involvement of citizens in community life.

The Preservation & Conservation Association invites you to join in the preservation of our heritage and history. For information on joining PACA or to volunteer for a special project, call PACA at 359-0114.

## DALLENBACH TRAGEDY

In September, another needless demolition happened in Champaign — the Queen Anne style Dallenbach-Caton House. PACA tried to work with the new owners of the site, the First Federal Savings & Loan, to have the building restored and used as office space or to allow the building to be moved. There were two parties extremely interested and capable of relocating the house to a new site. However, First Federal had other plans for the building even though

they publicly agreed with PACA's request to have the building moved. The terms and conditions they set for the interested parties were unrealistic and impossible to meet, although valiant efforts were made to do so. By September 27, the house was rubble, barely two weeks after the general public was informed about the situation.

While the Dallenbach House cannot be resurrected from the landfill, it can serve as the focus for educating the community about the importance of historic preservation. Letters to the Editor help keep preservation an issue before the public and we thank those individuals who have taken the time to write. Remember, that without a sense of history, without a sense of time and place, a community is a void. A strong sense of history provides a continuum

instead of a vacuum. We must not lose where we have come from. To this the Preservation and Conservation Association is dedicated.

**NEW & RENEWING MEMBERS**

- Mr. & Mrs. James Downs
- Carol Marlin
- Architectural Spectrum
- Helen Curley
- Dr. Joy K. Potthoff
- Mark & Suzanne Replogle
- Dana Pratt
- Jim & Mare Payne
- Tim Gregg
- Brian Ross & Cheryl Sullivan
- Mr. & Mrs. John Gilpin
- Mr. & Mrs. Donald Miller
- Louissette Zuidema

- Mr. & Mrs. Walter Meyers
- Wendy Jayne
- Randy L. Estes
- Margaret DeCardy
- Mark & Delores Lipton
- Robert Finch
- Mrs. Mildred Barnett
- Priscilla Holt
- Lourdes Mesa
- William Leach

**V.I.P.'s**

- Eugene Jacobs
- Joe Marriott
- Wendy Jayne
- Mark Replogle
- Bob Swisher
- Steve Tyner-Wilson
- Melonie Tyner-Wilson



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359-0114

Please submit material for publication in the next newsletter before 15th of month.

**Membership Application P.A.C.A.**



**MEMBERSHIP CATEGORY:**

**INDIVIDUAL**

- Adult ..... \$10.00
- Student (1/2 time or more) ..... \$ 5.00
- Senior Citizen ..... \$ 5.00
- Family (includes all members of a household with no more than two members being over age 21) ..... \$15.00

Additional Contribution \_\_\_\_\_

**CIVIC**

- Over 100 members ..... \$100.00
- 50-100 members ..... \$ 75.00
- Up to 50 members ..... \$ 50.00

**CORPORATE**

..... \$ 50.00

NAME \_\_\_\_\_

RENEWAL                       NEW MEMBERSHIP

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