

# Allegheny Chapter #1

of the

## Society for Pennsylvania Archaeology, Inc.

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### Officers 2015 - 2017

President: Brian Fritz  
Vice President Bill Johnson  
Secretary/Treasurer: Amanda Valko

### Meeting Information

First Tuesday of the month at 7:30 p.m.,  
February through June and September through  
November. Holiday Dinner is in December at  
an alternate location.

**February 2018** – Meeting cancelled.

**March 2018** – Archaeology Film.

**April 2018** – To be announced.

**May 2018** – To be announced.

*Meetings are held at Michael Baker International,  
100 Airside Drive, Moon Township, PA in the first  
floor presentation room. Parking is free. Building  
is locked so please buzz the security guard to get in  
and sign in at the reception desk.*

## President's Letter

Stuck in Lancaster

I have been absent from the past several chapter meetings, but for good reason. I am currently working on a multi-month archaeology project in Lancaster County, Pennsylvania. I definitely miss western PA and being home with friends and family, but if one has to be away from, Lancaster is a good place to be stuck in. The cultural heritage of Lancaster County is immensely rich. It was home to the Susquehannock Indians during early colonial times. Several well-known village sites are found here. At that time the Native population along the Susquehanna River and its tributaries was probably the greater than any place within Pennsylvania. These Native tongues of these first inhabitants adorn the rivers and streams with names like Conestoga, Chiqueslunga, Conowingo, Tucquan, Pequea, and of course the Susquehanna.

Over the past several months I have driven thousands of miles on back roads, through rolling farm country and small rural towns. Lancaster is where the iconic Pennsylvania four bay bank barn was invented and replicated across Pennsylvania by Pennsylvania's early German immigrants. I am struck by the sheer number of barns and the fact that it appears that nearly every one of them has survived to this day. It seems as though there is a barn on every mile. Some are still use for farm animals and storing straw and hay, but a large number have been creatively repurposed. Most are restored and well maintained. They function as the family garage, or the back yard wood shop. Many have been turned into stores, offices, fresh vegetable markets, and commercial workshops. The larger and more majestic barns are constructed with stone and brick, a form that is seldom seen in western Pennsylvania. There are also a good number of tobacco barns, and this past October I saw several with their ventilation shutters propped

open and their interiors hanging full with tobacco leaves.

Lancaster also has a rich industrial heritage. I lost count of the number of old grist mills that I have passed by. Some of Pennsylvania's earliest iron furnaces and forges were located here. Martic Forge, Safe Harbor, and Marietta are towns and villages rooted in the iron trade. Marietta had eight hot-blast furnaces that were fueled with anthracite coal brought down from the coal field on canal boats. Traces of the iron works and the old canal basin are still visible near Marietta. Peter Shoenberger of Pittsburgh was part owner in the Marietta Furnace. Shoenberger was the Andrew Carnegie of the mid-nineteenth century, owning extensive iron manufacturing facilities across Pennsylvania. He was one of the founding partners in the Cambria Iron Works at Johnstown, Pennsylvania which became the archetype for integrated urban iron centers into the twentieth century. Andrew Carnegie admired Dr. Shoenberger's early success in the iron business, and once said, "I have always considered him my predecessor."

Lancaster is a lovely place to visit for an extended stay, but I look forward to the day that this archaeology project is done and I can come home.

Brian

## **Ancient Knowledge Lost?**

By Brian L. Fritz

On many occasions I have watched shows on television about various archaeological ruins around the world; the pyramids of Giza, the causeways of Teotihuacan, or some ancient citadel hidden in the dense tropical forests of the Yucatan. Often the narrator will state the fact that the ancient stone ruins align perfectly with the cardinal directions of north, south, east, and west. Occasionally, the narrators asks, "how did these ancient builders align their cities without the benefit of the magnetic compass or modern surveyor's instruments?" Those of us who have a passion for the past easily fall prey to this old film maker's ploy. The question wells up feelings of mystery and a romanticism for some hidden knowledge that is lost to the modern world.

The film maker sucks us into his story by teasing us with the promise of revealing some tidbit of ancient wisdom. Almost always, the show ends with the question unanswered.

So, how did the ancients align their buildings and streets so perfectly with the rotational access of the Earth, or true north? Ironically, a magnetic compass is a poor solution for this problem. Magnetic north is misaligned with true north at most locations. Across western Pennsylvania, the magnetic declination, the difference between true north and magnetic north, varies from six to ten degrees. In some parts of the world the difference is as much as thirty degrees.

The solution is remarkably simple. The ancients observed the path of the sun across the sky and measured the sun's progress with simple instruments. Let us reconstruct the solution step by step. We begin by inserting a straight, tall pole into the ground as close to vertical as possible. The area around the pole should be relatively level with an unobstructed view of the horizon. In bright sunlight, the pole will cast a shadow onto the ground. We also need a roll of string and three short wooden stakes to mark locations on the ground.

In the early to mid-morning the Pole's shadow will extend from the base of the pole toward the west in the summer or the northwest in winter. Mark the end of the shadow by placing a stake into the ground. Let's call this stake location A. As the morning progresses, the shadow will move east and get shorter. Around noon in standard time (1:00 pm daylight savings time), the Pole's shadow will be at its shortest, after which, it will grow in length as it continues to move toward the east. Now is a good time to go grab a cold beer because watching shadows in the hot sun is hard work.

Before the shadow grows too long, tie one end of your string to the base of the pole. Now stretch out the string to the stake at location A. Mark the length from the pole to the stake by tying a knot in the string. While still tied to the pole, stretch the string down the length of the afternoon shadow. When the shadow lengthens to the knot in your string, mark that location with a second stake. We will call this stake B.

Tie a second length of string to the stake at location A, stretch it tight, and tie it to stake B. The line from stake A to stake B is aligned with true east-west. Next we need to find the mid-point between A and B. This is easily achieved with a third piece of string by measuring the distance between A and B and folding the string in half to find the distance to the mid-point. Set stake C at the mid-point. If done correctly, the line from the pole to stake C will be perpendicular to the A-B line and perfectly aligned with true north. Now is a good time for a second beer in celebration for accomplishing this great feat of ancient astronomical engineering.

This simple arrangement of a pole, three stakes, and some string represents the most basic design for an astronomical observatory. It establishes a fundamental set of reference points that are aligned with the Earth itself. Unlike magnetic north which drifts and changes through time, the rotational axis of the Earth is indefinitely fixed. This simple solar observatory can be scaled to the size of a citadel using rudimentary surveying techniques. It also provides the fundamental reference points from which the movements of the sun, moon, stars, and planets can be observed over longer periods of time. Careful observation of celestial phenomena over days, months, years, and human life spans was the basis from which the ancients developed their calendars and numerical systems in civilizations around the world.

Today we have atomic clocks to keep our time and no longer need these ancient methods of astronomy. FALSE! An atomic clock is nothing more than a very high precision counting instrument that counts the internal pulses emitted by atoms. The atomic clock is a timer with no intrinsic reference point, similar to a stop watch. It can count how many fractions of a second pass between a starting point and an ending point, but it cannot tell you what time it is without a known reference. The rotation of the Earth provides this reference. The ancients used the repeating position of the sun in the sky as one clock cycle to count the number of days within a year. Today, we use radio telescopes pointed at distant quasars. Instead of counting the number of days in a year, modern time keepers count the number of atomic clock cycles during one rotation of the Earth. One rotation of the Earth is determined by the radio telescope's observation of a quasar's the pin point position in the sky. The basic principles

are the same. We just use more precise instruments and more distant celestial objects to achieve a higher resolution of time keeping.

Wow! This realization of lost ancient wisdom deserves another beer!

## **Society for Pennsylvania Archaeology Annual Meeting**

The 89th Annual Meeting is fast approaching and is being held April 6-8, 2018 at the Comfort Suites, 10 Lakeside Avenue, Dubois, PA, 15801. The theme for the 89th annual meeting will be "Of the Past, For the Future: Current Contributions to Pennsylvania Archaeology." There will be three open sessions, Saturday morning, Saturday afternoon and Sunday morning. Anyone wishing to participate should send abstracts of 150 words or fewer for papers and posters to the Program Chair by March 4, 2018. Ken Burkett is the program chair and his email address is [kburkett-jhc@windstream.net](mailto:kburkett-jhc@windstream.net). Papers are reviewed and accepted by the Program Chair on a first come, first served basis. Students please send a scan or copy of your student identification when you submit your abstracts. All speakers must be members of the SPA. There will also be the Friday afternoon PAC symposium and the theme for this is Archaeologists Have History Too: Oral History of Pennsylvania's Archaeology Site Survey. The banquet speaker is Dr. Michael Gramly presenting: Ritual Hunting of Proboscideans in the New World: Its Character, Inception and Disappearance.

For meeting accommodations please identify yourself as being with the Society for Pennsylvania Archaeology. Single room rate is \$79.00 plus tax. PLEASE NOTE - This rate is in effect only until March 3, 2018. Please make your reservations directly with the hotel at (814) 375-6028 for this discounted rate. A complimentary hot/cold buffet breakfast is served daily.

For more information go to the SPA web site at [www.pennsylvaniaarchaeology.com](http://www.pennsylvaniaarchaeology.com).

## 2018 MEMBERSHIP FORM

To become a member of Allegheny Chapter #1, SPA, complete this form and send it to Amanda Valko, Secretary, Allegheny Chapter #1. Thank you!

NAME \_\_\_\_\_ DATE \_\_\_\_\_

ADDRESS \_\_\_\_\_

CITY \_\_\_\_\_ STATE \_\_\_\_\_ ZIP \_\_\_\_\_

TELEPHONE NUMBER \_\_\_\_\_

EMAIL ADDRESS \_\_\_\_\_

PRESENT CHAPTER AFFILIATION (IF ANY) \_\_\_\_\_ STATE MEMBER? \_\_\_\_\_

### MEMBERSHIP CATEGORY (CHECK ONE):

<input type="checkbox"/> LIFE	\$150.00	<input type="checkbox"/> ACTIVE HUSBAND/WIFE	\$16.00
<input type="checkbox"/> SUSTAINING	\$ 20.00	<input type="checkbox"/> STUDENT	\$ 8.00
<input type="checkbox"/> ACTIVE INDIVIDUAL	\$ 10.00	<input type="checkbox"/> INSTITUTIONAL	\$16.00

MAKE CHECKS PAYABLE TO: ALLEGHENY CHAPTER NO. 1, SPA

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