
The Relationship Between Bricks And Clemson

Denis Brosnan

Introduction

MANY GREAT UNIVERSITIES have contributed to the development of the brick and ceramic industries. The Ohio State University is recognized as the “father institution” of Ceramic Engineering in the United States. Other universities have contributed significantly to the growth of ceramic technology, to include the University of Illinois (which had the first “forum” for clay plant operators - just before World War II), Rutgers, Alfred, Georgia Tech, Iowa State, Missouri, Mississippi State, Virginia Tech, and Texas - just to name a few. North Carolina State University played an important role for the heavy clay industry, and in fact, the initial *Plant Operator’s Forum* was developed at NC State in 1955, with Mr. H. B. Foster (Statesville Brick, now deceased), as the Chairman.

Toward the end of World War II, then Clemson College President, Robert Franklin Poole and key State leaders realized that South Carolina was deficient in many valuable minerals, but they believed that clay was in abundance, and a clay industry could be developed. Dr. Poole consulted with Dr. A. F. Greeves-Walker of North Carolina State’s Ceramic Engineering Department, and Professor Greaves-Walker recommended a young NC State grad named Gilbert C. (Gil) Robinson for the job at Clemson College.

Gil told me that on his first interview trip, he took the train to Clemson arriving at a stop “out in the country” where there was no station. He looked around and saw nothing (at the location near the intersection of Cherry and Hopewell Roads), so he asked the conductor where Clemson College was located. The conductor pointed to the Northwest and told Gil to carry his suitcase for a few miles, and he would bump into the college. It is ironic that Gil and Barbara would eventually build their home near that train stop. Gil tried driving the second time he visited Clemson, but he had trouble “finding” the town due to the “poor” roads of that era. It was fortunate that this inauspicious beginning did not deter him from accepting the job.

It is clear that the impact of Gil Robinson’s life’s work made an indelible mark upon the brick business. This is because Gil came to Clemson as a young man, and he helped



A Young Gil Robinson in His Office in Olin Hall (About 1954)

pull off the *miracle of his day* in the late 1940’s and 1950’s, when the Ceramic Engineering Department was created (1946) and Olin Hall was built (1953) respectively. Many of Gil’s graduates entered the brick business and that led to a very close industry-university relationship.

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As other great universities, such as NC State, deemphasized clay technology in favor of “technical ceramics” or, more recently, “advanced materials”, Clemson University has been left with a unique situation of supporting the entire brick industry through The National Brick Research Center. While I give credit to Alfred for its support of glass and some whiteware products, Rutgers for its support of other whiteware products, and Rolla (the University of Missouri at Rolla) for their work in refractories, Clemson has remained as the sole supporter of brick manufacturers.

The purpose of this article is to document part of this story, and I want to thank many people - to include the Robinson family - for their assistance. Perhaps in learning about this history, the brick industry can better understand its “roots” as it deals with increasingly difficult challenges with automation, environmental compliance, and competitive materials.

The Early Beginnings Of Clemson University

On November 6, 1886, Thomas Green Clemson signed the final draft of his *Will* providing the bulk of his estate at Fort Hill (now Clemson, SC) to the State of South Carolina to

establish the “Clemson Agricultural College” providing assets of 814 acres of land, including his home, and about \$80,000 in securities and cash. In 1889, the State of South Carolina “accepted” the Clemson bequest. It is interesting that, to this day, any donor to the State must have a gift “accepted” before the gift is “official”.

On July 19, 1890, Henry Aubrey Strode, a graduate of the University of Virginia, reported to work as the first President of the College. Plans were already underway for construction of an initial campus building by a Board of Trustees, a group created just earlier in January of 1890. These plans included advertising of bids to obtain *brick* and other building materials, engaging an architect, and use of convict labor in construction (the latter authorized by the South Carolina Legislature). Interestingly, some of the annual funding for the fledgling College was from federal funds - transferred from the University of South Carolina to the new Clemson College - perhaps forming the first basis in the State for the rivalry between Clemson and USC.

President Strode and the trustees hoped that students could be accommodated by 1891. In May of 1890, Clemson College contracted with Messrs. Pool of Newberry, SC (itinerant brickmakers) to produce 3,000,000 bricks locally

with the order to be complete in January, 1891. The first load of bricks was delivered in mid September (1890). The order was *rejected* because the brick were of inferior quality, and the Trustees determined that Messrs. Pool were “unable to carry out the contract”. *The Trustees then bought the local brickmaking facilities, and the College started producing its own brick using convict labor to meet their building goals for 1891.*

A brick plant was owned and operated by John Wesley Cochran near the town of Calhoun, SC, on the flatland by the Seneca River (now near the “Twelve Mile County Park” North of Clemson). This is probably the same plant originally owned by Clemson College. The plant ceased to operate in about 1900 after the death of its owner.

The first buildings were completed using those college-produced brick, to include the chemical laboratory (Hardin Hall), a mechanical laboratory (perhaps Godfrey Hall - the old “textile mill”), an agricultural experiment station, and various residences and support buildings.

President Strode resigned in November of 1892 before any student ever set foot on the campus. He was succeeded by Edwin Boone Craighead, who greeted the first class in July of 1893. There are implications in the historical record that the Trustees forced the resignation of President Strode. President Craighead, the only Clemson President schooled in the humanities, had a term from 1893 to 1897. The name of Clemson Agricultural College was changed to Clemson University in 1964, under the leadership of Dr. Robert Cook Edwards (term of 1958-1979).

It is reasonable to assume that the historic houses in the area, to include the Calhoun “Mansion”, used plantation-made bricks. In many cases, the early settlers learned of the location of “good” clay deposits from the local Indians.

The main campus building, known as Tillman Hall, was begun in July of 1891 using College-made bricks and convict labor. Both Hardin (the first chemistry building) and Tillman Hall burned in their early history, leaving the load bearing walls intact. In these cases, the buildings were simply rebuilt using the same walls - although the original gabled roof of Hardin Hall was replaced with a flat roof after the fire. When both buildings were renovated (Hardin in about 2000 and Tillman in 2004), charred wood was found present in the buildings from these fires.

After about 1900, Clemson College had to buy bricks outside of the local area because of the demise of the Cochran plant in Calhoun. The brick on the old library and now the administration building, or Sikes Hall (built 1904), was specified on the plans as “Colonial Red” (a product name used historically by The Belden Brick Company). A brick called “Airedale”, made in Sumter, SC (Sumter Brick Works), was used on Riggs Hall



Tillman Hall, The Main Building Completed With College Made Bricks

Detail of Bricks

(1927) and Sistine Hall (1938) setting a tone for a dark red and flashed “look” on central campus. A glazed unit called “Buftons”, manufactured by the Stark Brick Company, was incorporated into Sistine Hall as an accent. “Local bricks” were used on the steps of Riggs and Sistine Halls.

Further notable use of bricks occurred on the campus in the post-World War II years. In the development of the “agricultural campus”, a lighter colored brick or “buff” product was used, while the first surface coated brick produced in the State were used on the “tin can” dormitories (Johnstone Hall) in the early 1950’s. These brick were kaolin-coated red brick, possibly made by Guinyard Brick. It is interesting that molded brick made by St. Joe Brick (Slidell, LA) were used in the load bearing walls for the old Clemson House Hotel - an interesting architectural statement of its day.

Over time, an engineering campus was built using a light colored or “buff range” of brick, with the latest building being the Fluor-Daniel Engineering Innovation Building. However, there was early innovation when Olin Hall (The Ceramic Engineering Department) was built in the early 1950’s, as the first building on central campus to depart from the flashed red range by employing a lighter shade of brick.

One of the most interesting “brick stories” concerning Clemson was a visit by the late Ames Wells and Don Taylor (Richtex or Richland Clay Products) to then President Poole in the 1950’s, during the time that Hartwell Reservoir was being built. Mr. Wells, after “polite conversation”, demanded some of the brick business on campus eventually “banging” his fist on President Poole’s desk. The President never answered the emphatic questions from Ames Wells. Instead,



Plantation-made Bricks in the Calhoun Mansion



Gil Robinson Draws a Brick Out of a “Heavi-Duty Kiln” (About 1952)

he sidestepped the issue by saying something to the effect of “Let’s ride over to see the dike construction” (at the future lake site). The group proceeded to get in the President’s car and visit the dike. That was the end of the meeting.

Interestingly, the bricks used on the recently recreated

versions of the old “barracks” on central campus were made by Richtex (now Hanson Brick), as a simulated handmade brick. It was Ames Well’s nephew, Mitch Wells (a 1961 Clemson graduate) that had oversight in making these modern bricks. Don Denison is fond of saying that Mitch “made a career” of producing extruded brick that “looked like” molded brick.

James F. Barker, AIA, became Clemson University’s 14th President in October of 1999. Formerly Dean of Architecture at Clemson,

Mr. Barker enjoyed a long relationship with South Carolina brick producers through their support of the University’s Architecture Foundation. It must be mentioned that the growth of the Brick Research Center has been under the administrative leadership of Dr. Thomas M. Keinath, who became Dean of the College of Engineering and Science on July 1, 1992.

The Robinson Era

Gil Robinson was born in 1919 in Lykens, PA, and his family moved to Tarboro, NC, in about 1924, where Gil’s father was rector of an Episcopal missionary church. Gil graduated from the Virginia Episcopal School in Lynchburg, VA, with honors in 1936. He enrolled at the North Carolina State College in Ceramic Engineering and graduated in 1940. When asked why he chose ceramic engineering, Gil told me he simply thought ceramic products were “useful”, and he picked that field.

Gil came to Clemson College to establish the Ceramic Engineering Department in 1946. He was reportedly given a year to develop the curriculum and obtain some rudimentary facilities. His “Department” was housed in some old wooden buildings or “sheds” below the present day Olin Hall (in an area that is now the library reflecting pond). The first graduate of the program was Harold Bishop (1951), who went into fiberglass production. Right behind was George Bishop (1952, and no relation to Harold), who went to Guinyard brick in Columbia, SC, and later joined Richtex Brick - before forming Waccamaw Brick.

President Poole and Frank Jervey (a professor who also worked in alumni affairs) had a plan to solicit funds from the *Olin Foundation*, an organization incorporated in 1938 by industrialist-philanthropist Franklin W. Olin. I do not know what role Gil Robinson played in the solicitation of funds, but it is reasonable to suspect that the vision for Olin Hall

was created by Gil. It is certain that a good “vision” was needed to convince the Olin Foundation to make the gift.

In 1953, the 28,500 square foot teaching and research building named Olin Hall was completed, using a grant of \$445,000 provided by the Olin Foundation in September of 1952. An additional \$180,000 was provided by the Olin Foundation to equip the building, to include a \$35,000 pilot laboratory for manufacturing brick, tile, and pottery; a \$60,000 analytical laboratory with an early electron microscope; a \$26,000 laboratory for research in electronic ceramics; a \$26,000 laboratory for fundamental research in ceramics; and a \$12,000 laboratory to duplicate the process of making porcelain enamel. A \$10,000 lab was created to “illustrate instrumentation in ceramic plants”.

The *Grand Opening* of Olin Hall was held on Thursday, June 17, 1954. Present at the *Grand Opening* was Mr. R. W. Pafford, Vice President of Acme Brick Company, and President of the American Ceramic Society. Attendees were particularly impressed with the RCA transmission electron microscope, the first electron microscope located in the State, now preserved in the South Carolina State Museum (Columbia).

Olin Hall was dedicated on April 12, 1958, with the dedication address presented by Dr. Charles F. Horn (of the Olin Foundation), whose portrait always was located within the entrance to the building (generations of Clemson students mistakenly assumed the portrait as that of F. W. Olin). In his address, Dr. Horn focused on the desire of

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Mr. Olin to aid education, and he concluded that “The earth offers greatness . . . to Clemson College and South Carolina”.

Thus, Gil Robinson wondrous career at Clemson College began. He was assisted initially by Associate Professor Hugh Wilson (NC State) and Assistant Professor Cliff Fain (Clemson and Ohio State). This team (later with Associate Professor Henry Lefort - Clemson and Illinois) was the one that did the lion’s share of work in producing graduates, many of whom would make it into the brick industry. These graduates are too numerous to mention them all, but notables on The National Brick Research Center’s Building Committee included Jody Patrick (Southern Brick), Don Denison (Encertec/Lingl), Mitch Wells (Richtex Brick - later Hanson Brick), John Isenhour (Isenhour Brick), and Joe Edwards (General Shale Brick).

There is no question that President Poole was interested in industrial development in the State. He found a practical man in Gil Robinson, who set up his Department to aid industry, and early documents clearly show that the Department was to have a role in economic development. It is also true that Gil developed a graduate research program, illustrating that a “balance” between theory and practice is successful strategy for an academic department.

Gil Robinson did not attend the initial *Plant Operator’s Forum* (then called “The Brick Short Course”) held in Raleigh, NC, in 1955. The Chairman of the initial meeting was Mr. H. B. Foster (most recently of Statesville Brick, now deceased). However, Gil was influential in bringing the meeting to Clemson for its second meeting in 1956 (the first time it was called the “Forum”). Mr. H. B. Foster joked at the 30th Forum about how he was the “Grandfather” of the Forum while Gil was the “Father of the Forum”.

Gil Robinson served as Program Chairman of the Forum for 32 years, as the Forum was held on alternate years at NC State beginning in 1955 and Clemson beginning in 1956. In 1971, the Forum was permanently located at Clemson. Gil Robinson’s last Forum was the 41st meeting (1995).

Among Gil Robinson’s lesser known activities were owner and operator of a round kiln brick plant near the Broad River (North of Gaffney, SC). It is said that Gil and his wife Barbara would spend time in Clemson Monday through Friday morning and then drive to the plant to make payroll and plan the next week’s activities. Running a brick plant while developing an academic department is indeed



Construction of Olin Hall (About 1952) With a Light Range of Bricks (insert) Departing from the Red Brick Prevalence on Central Campus

a reflection of Gil's boundless energy. In 1985, Gil Robinson was forced to "retire" from Clemson University by the then-existing laws in South Carolina, but he never quit working.

In 1971, after 26 years on the Clemson faculty, Gil and friends, including those from regional brick associations, created the *Chad Heath Trust Fund* to provide continuing research for brick manufacturers on the Clemson campus. Notables who participated were Charles Taylor, Sr. (Taylor Clay), Allen Puckett, Sr. (Columbus Brick), and Ed Stout (Acme Brick).

Gil organized The *Center for Engineering Ceramic Manufacturing* in 1986 as a successor organization to the *Chad Heath Development Fund*. This Center was later officially approved by the South Carolina Higher Education Commission in 1987.

In 1989, I joined the Clemson faculty as an Associate Professor, and I became Director of The *Center for Engineering Ceramic Manufacturing* (because Gil was officially "retired"). It is interesting that, *once again*, a Clemson President had a major influence on the relationship between bricks and Clemson. In this case, it was President Max Lennon, who served the University from 1986 until 1994.

President Lennon held periodic meetings with faculty members in academic departments, and he met with the Ceramic Engineering Faculty in 1990. On that occasion, I told him all about what I wanted to do for the brick industry. He said he "couldn't give me a penny", but "*he would help me raise money for a laboratory*".

I then began soliciting funds to build a stand-alone research laboratory for the brick industry. I started by going to the Foundation and asking for a \$380,000 loan - *a perfectly logical business idea* in my mind. After they stopped *laughing* at me in the Foundation, they said *they* would help. It turned out that a Development Officer named *Perry Fulkerson* proposed a strategy of starting with a solicitation of gifts from the McAlister and Bishop Families. Mr. McAlister was a Trustee Emeritus of the University, and Mr. George Bishop founded Waccamaw Clay Products and Waccamaw Pottery. Interestingly, now Perry Fulkerson is a Vice President of Florida State University.

Once again, President Lennon had a major influence on the future of the Center. He asked me how much money I needed, and I replied that a half million ought to do it. He told me I should "*set my sights higher*". It was his opinion that a million dollars was a "minimal goal". In retrospect, President Lennon was right!

I met with P. W. McAlister one day - telling him about my vision for The Center, and I assured him that George Bishop

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would make a gift if he did (although I had not talked to George about it). P. W. said, "*You tell George I will only if he will make a gift also!*" Fortunately, George agreed, and I had a million dollars in pledges right away.

Major gifts from the McAlister and Bishop families, as well as gifts from most brick manufacturers, provided for construction of the Center's 27,000 square foot building - known as the *Bishop Ceramic Laboratory*. Total contributions toward the building project were \$2.8 million at the time of construction (1995-1996), with the physical plant valued at about \$5 million in 2004. Construction was substantially complete at the time of Gil's passing in 1996.

Perry Fulkerson's genius was the organization of a Center Building Committee. This group made solicitations of most brick manufacturers in North America, and a total of 1.8 million dollars in pledges was raised. A bridge loan from the Clemson University Foundation allowed construction to start. The whole process was aided tremendously by Dr. Gary Ransdale (then Vice President of Development) and Dr. Jay Gouge (then Vice President of Research). Both Drs. Ransdale and Gouge later became Presidents of major universities.

During the fund raising process, Gil Robinson learned that the Tile Council of America (TCA) planned to relocate from New Brunswick, NJ, to the Southeast. After a series of meetings with TCA, the TCA Board of Directors authorized their "new" Executive Director, Bob Daniels, to "co-locate" with the Center in the Clemson Research Park. Bob's vision was that facilities could be "shared" so that each organization could benefit from the other's presence. The Tile Council subsequently built an 11,000 square foot office building investing \$1.1 million.

The *Center for Engineering Ceramic Manufacturing* evolved into The *National Brick Research Center* in 1999. Many good things have happened in succeeding years, including the fact that Jim Frederic (Clemson Class of 1966) joined the Center in 1997, and John Sanders (Clemson, B.S. 1992 and Ph.D. 1995) joined the Center in 2000. A recent focus of the Center has been expansion of analytical facilities in our Bishop Laboratory. In many ways, The National Brick Research Center has become what Olin Hall was in the beginning (a pilot plant and analytical labs). *Brickyard Road* magazine, created in 2002, is a practical teaching and public relations instrument in the true "Gil Robinson style".

It is interesting that the "Brick Manufacturer's Short Course", with a start in the initial Forum in 1955, has been conducted separately from the Forum for many years. This five-day course features hands-on activities, considerably following the format used by Gil Robinson for years.

The Robinson Legacy

The fundamental Robinson legacy is the relationship between Clemson and bricks. It was Gil, with boundless energy, creativity, and vision that created a *basis* for the creation and modern expansion of *The National Brick Research Center*. The future of the Center is intimately tied to the success of the brick industry.

Now, the “*Clemson Meeting*” or the *International Brick Plant Operator’s Forum* has placed Clemson, SC, and Clemson University on the tongues of many people throughout the world. The unique industry-university relationship between bricks and Clemson can be enjoyed by alumni of many great universities. This relationship depends on the fulfillment of the public service mission of the University to support industry and on industry to provide funds for research.

Thus, the Robinson legacy is a “win-win” situation for the brick industry and the University. Clemson has a long relationship with bricks, and there are few, if any, parallels on our campus of a sustainable Center solely serving an entire industry.

Can you imagine a university trying to manufacture millions of bricks today? ■

Resources:

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Presented at the International Brick Plant Operator’s Forum, October 4, 2004.



Gil Robinson (left) and Montgomery Steele at an American Ceramic Society Meeting in Clemson (Early 1970’s)

Friends Of The Forum (Modular Size): Chemical Products, Halbert Mill, LignoTech USA/Additive A