

The Birth of An Idea

A History of the First Agricultural Experiment Station



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Chief Entomologist, State Entomologist

CT Agricultural Experiment Station

December 23, 2015

CAES – First in America



Bottom line reads:

“ESTABLISHED 1875 BY THE GENERAL ASSEMBLY”

Plaque placed by the Connecticut Development Commission in 1950

The Connecticut Agricultural Experiment Station



*Main Laboratories
New Haven*



*Valley Laboratory
Windsor*



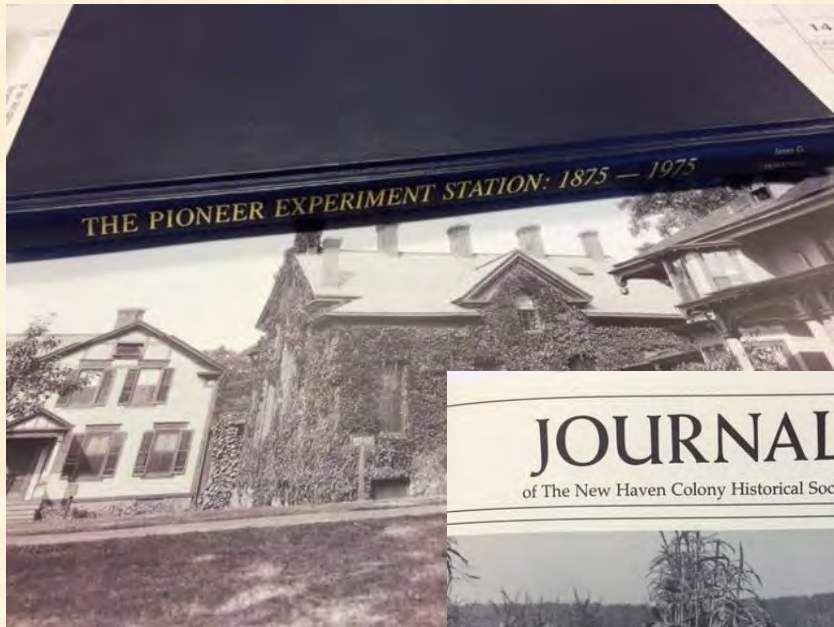
*Griswold Research Center
Griswold*



*Lockwood Farm
Hamden*

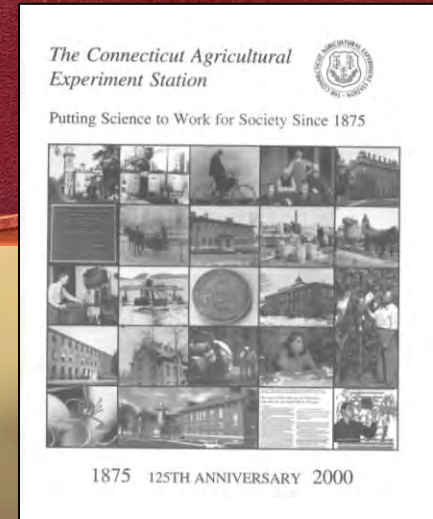
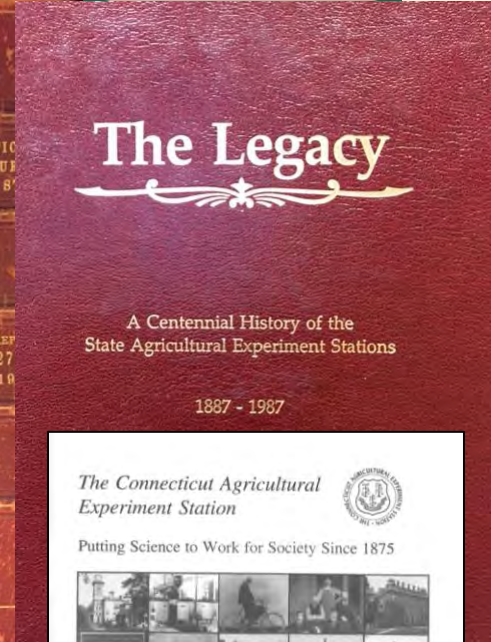
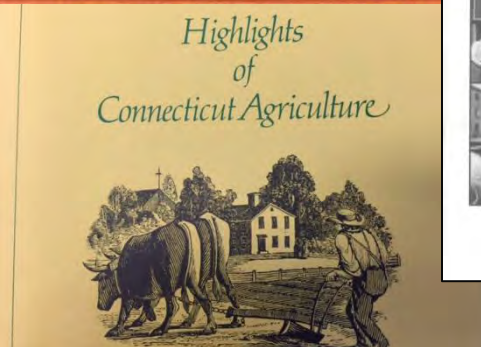
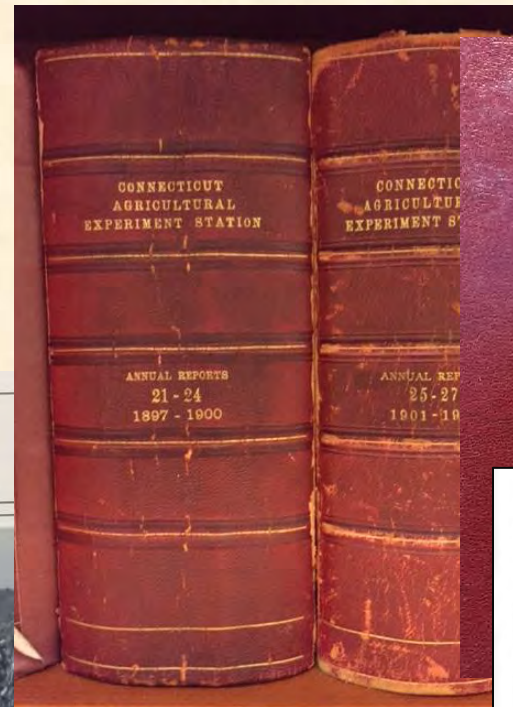
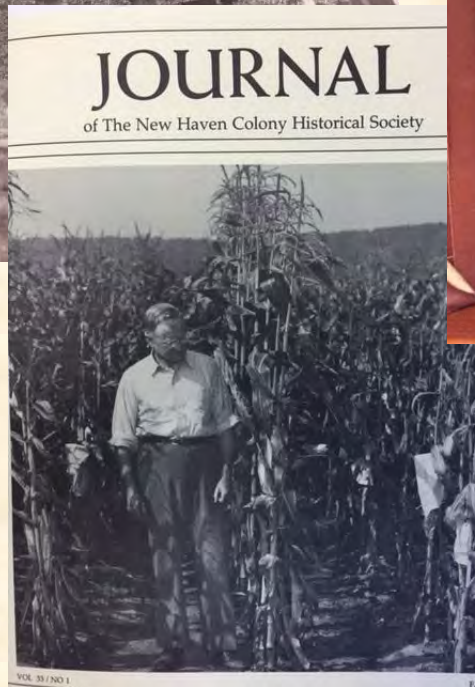


Sources General History Experiment Station(s)



James G. Horsfall.
The Pioneer Experiment
Station 1875-1975:
A History. 1992

James G. Horsfall.
CAES: New Haven's
Gift to America. 1986



Birth Scientific Agriculture

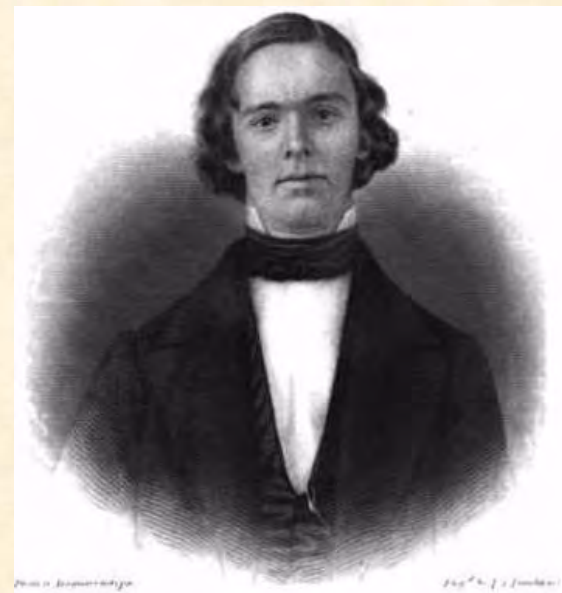
- 1840 Justus von Liebig of Germany published *Organic Chemistry In Its Application of Agriculture and Physiology*. Attracted interest here US and elsewhere
- 1852 German state of Saxony established 1st publicly funded agricultural research station (*Landwirtschaftlich Versuchsstation*) at Möckern estate, near Leipzig. It was *Julius Adolf Stockhardt*, a professor of Ag Chemistry at the Tharandt Academy Ag and Forestry, *Wilhelm Crusius*, president Saxony's oldest ag society at the Möckern estate, and agricultural minister *Theodor Reuning* that founded this 1st agricultural experiment station.

Kerr, Norwood A. 1987. *The Legacy: A Centennial History of the State Agricultural Experiment Stations 1887-1987*. Missouri Ag. Expt. Sta., 318 pp.

Finlay, Mark R. 1988. *The German Agricultural Experiment Stations and the Beginnings of American Agricultural Research*. *Ag. History*. 62(2):41-50.

John Pitkin Norton

- Studied chemistry under Benjamin Silliman at Yale College
- Traveled to Scotland study under James F.W. Johnson, who analyzed fertilizers for Scottish farmers, and wrote that US should establish an ag research agency.
- Professor Agricultural Chemistry 1846
Yale's first farmer-scientist
- Helped found what later became the Sheffield Scientific School, advocated an agricultural college.
- *Samuel William Johnson was a pupil of Norton's.*



"Norton John Pitkin" by Noah Porter and others -
Frontispiece of Memorials of John Pitkin Norton.
Licensed under Public Domain via Commons

(Norton died in 1852 of TB at age 30)

Samuel William Johnson

The Birth of an Idea



- Samuel W. Johnson was born in 1830.
- In 1850, S. W. Johnson entered Yale and in 1851 as a sophomore proposed in the Albany Cultivator that:
“...farmers set up an agricultural institute...should possess a legal incorporation...located near an academy”.
- Johnson went to Europe in 1853 where he planned to study under Liebig. He was within an hours walk of the 1-year old agricultural experiment station in Möckern and first visited the experiment station in February 1854.

He quickly wrote about the station to The Country Gentleman.



The Country Gentleman 1854. Vol III, No. 17, pp. 261-262.

The Cultivator. 1851. pp. 263-265.

County Agricultural Institutes.

EDS. CULTIVATOR—There is an important question now loudly demanding an answer from our farming community, from the political economist, and the man of science—What can be done to promote scientific Agriculture? It seems a trite thing to advocate the importance of reform in our practice, and the utility of science as the means of reform. Such advocacy is daily becoming less needed. Much interest has been excited in the matter. Schools are going into operation. Colleges are equipping with agricultural professors. Even the Legislatures of the states and the General Government have been brought to consider the subject. Much has been said, but very little is yet accomplished. All the existing means of education exercise but an exceedingly tri-

be most proper. Costly medals are better adapted to tickle vanity than to subserve any useful purpose. In all cases a certificate of award should accompany premiums.

I have thus sketched roughly the outlines of an ideal picture, which I hope, for the sake of American agriculture, may soon find many realizations, each wrought by some master-hand and finished in all its details. I could enlarge upon some points of this plan and introduce others. I might furnish a draft of the building &c. but want of space forbids. I conclude by asking the opinions of practical and scientific men concerning the feasibility of the scheme. **SAML. W. JOHNSON, Dep. of Philosophy and the Arts, Yale College, Ct.**

PROTECTION AGAINST THE CURCULIO. We have heard of some instances where the fumigation of trees with hydrogen seemed to protect plums from this insect.



Messrs. Editors - Within an hour's walk of Leipsic, near the village of Moeckern, is situated an Agricultural Experiment Station, some account of which may be acceptable to your readers.....the institution falls therefore into two divisions- that of *practical agriculture* and that of *natural science*... The establishment is...controlled by a Board of Directors...one of whom is Prof. Stockhardt...

Comment Editors to Johnson's Correspondence

We hope the suggestions of Mr. JOHNSON will receive, as they merit, the attention of the officers of our State Agricultural Associations, and of the enlightened and liberal friends of agricultural improvement. We have as a people, talked much about agricultural education, but as yet have done little to promote its advancement, and absolutely nothing towards developing the true principals of the science of agriculture. We had hoped and still hope, that our State Agricultural Society would take the lead in devising and carrying into effect some feasible plan for the promotion of Agricultural Science. An institution, like the one described by our correspondent, where science and practice should go hand in hand - where the results of the laboratory should be tested by exact experiments on the farm – where the multitude of questions that are constantly arising in the minds of intelligent farmers with regard to the adaptation of manure to particular crops and soils, the best manner of feeding animals, &c. &c, should be decided by the investigations of chemistry and actual experiment, could not fail to be of immense practical advantage to every farmer.



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- In 1855, Johnson returned to the US and Yale as an assistant professor of agricultural chemistry.
- In 1857, Samuel Johnson was elected chemist of the Connecticut State Agricultural Society and he analyzed fertilizers for them and published the results, the first example of consumer protection in America.
- The Land Grant College System was established by Congress with Morrill Land Grant College Act 1862 and Yale became the Land Grant institution in Connecticut. Johnson became Professor of Agricultural Chemistry and was elected to the National Academy of Sciences in 1866.
- In 1868, Johnson publishes *How Crops Grow*, a major text for 40 years.
- Johnson and Wilbur O. Atwater, a student of Johnson's, continued to push for the experiment station. Samuel W. Johnson again proposed supporting agrarian research with the establishment of the nation's first Agricultural Experiment Station.

Characteristics German Model

Agricultural Experiment Station

- Tax-supported
- Structured like a public corporation
- Not controlled strictly by farmers
- Board of Control that consisted of scientists, politicians, and farmers
- Near, but not part of a university
- Research not a “hobby” of college professors

Horsfall, J. 1986. CAES: New Haven's Gift to America. J. New Haven Historical Society. Vol. 33. No. 1: 27-44.

Beginnings at Wesleyan University, 1875

Johnson Outflanked

- With offer of funding from Orange Judd if assigned to Wesleyan, the CT General Assembly passed an appropriation bill that est. Station for two years and it was signed by Governor Ingersoll on July 20, 1875. Wilber O. Atwater, now head of chemistry at Wesleyan, was appointed Director.
- Station was located on the ground floor in the Orange Judd Hall of Chemistry at Wesleyan University these first two years.
- Atwater's first report appeared in the 1877 *Proceedings of the State Board of Agriculture*.



Judd Hall, est. 1870
& W. O. Atwater

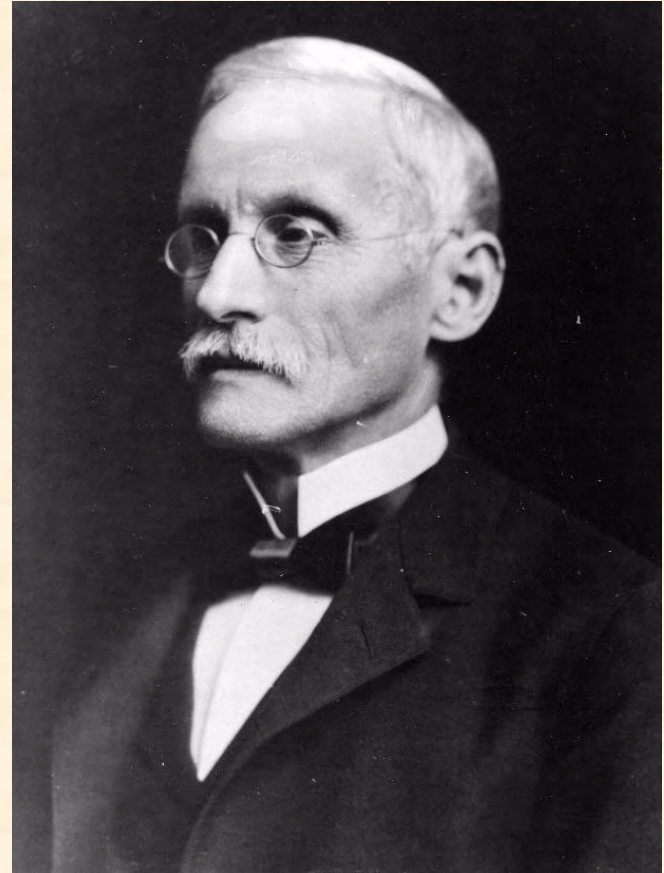


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Permanent Establishment of The Connecticut Agricultural Experiment Station

- On March 21, 1877, the CT General Assembly approved a new bill that permanently established the current structure of the Station as envisioned by Johnson with a Board of Control, and Samuel Johnson was empowered to appoint and call the first meeting of the Board into session.
- Johnson was appointed Director and he moved it to New Haven into borrowed space at Yale's Sheffield Hall.



Move to New Haven

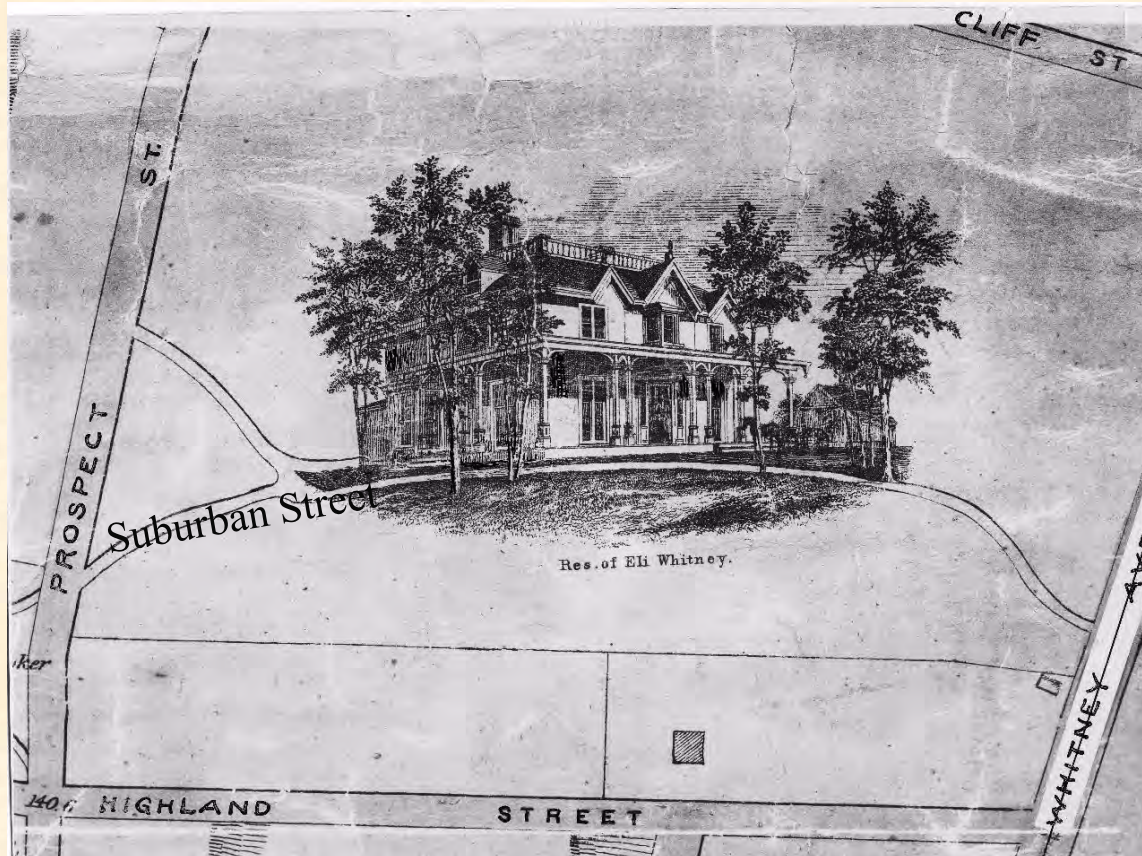
- Yale offered space for 5 years in the old “Sheff” building (Sheffield Scientific School) on the corner of Prospect and Grove streets where the Station took the entire ground floor of the east wing. The laboratory was ready August 6, 1877.
- The only person to move from Wesleyan was Edward H. Jenkins, who later became the third Director.
- At the end of the 4th year, Yale gave notice that it would need its rooms for instruction at the end of the 5 years named in the original offer, which would be June 30, 1882.





The old Sheffield building site is now occupied by the Sheffield-Sterling-Strathcona Hall. Insert: Plaque commemorating Sheffield Hall in Sheffield-Sterling-Strathcona Hall (Staib, Wikipedia).

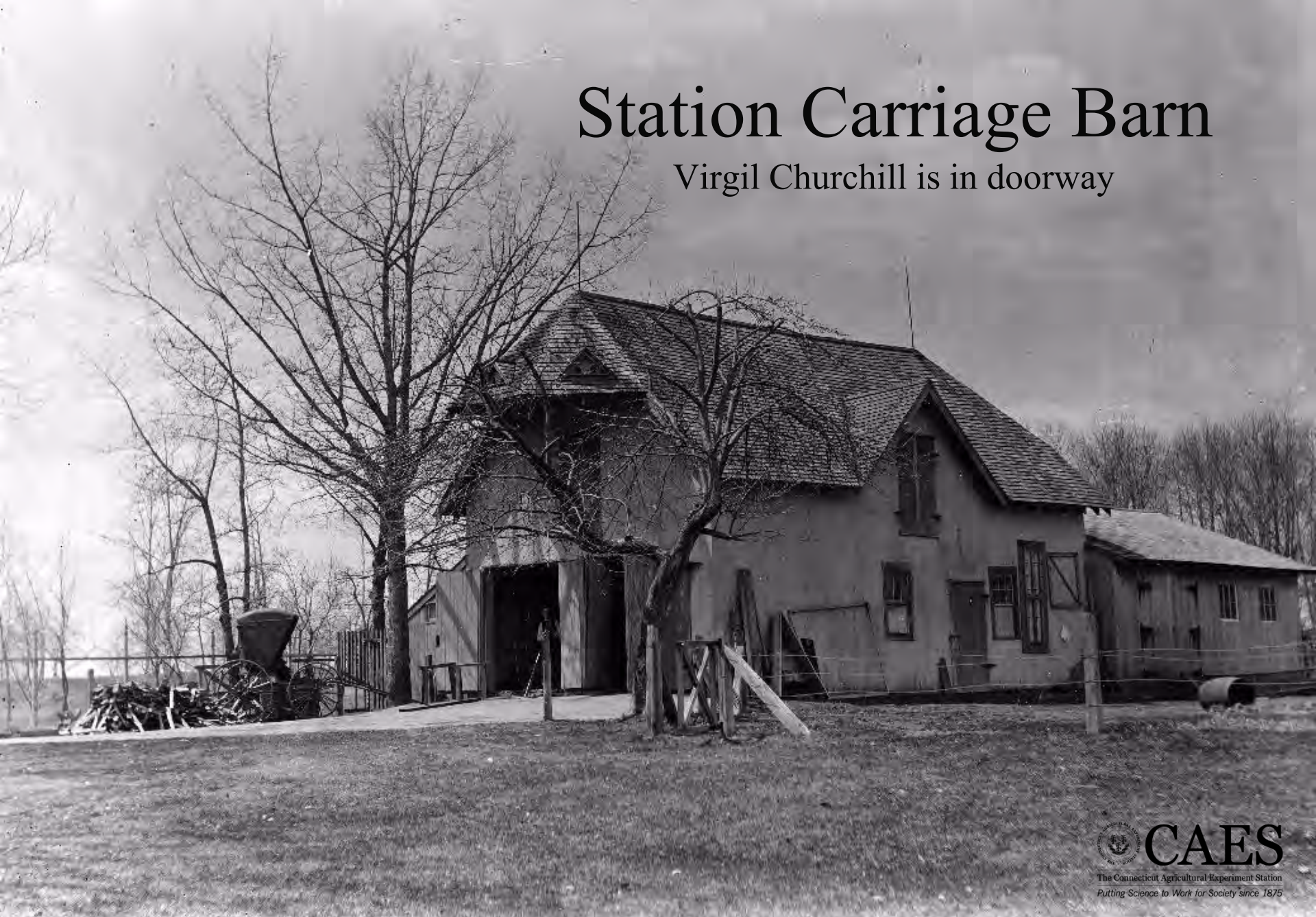
Our current property was purchased May 9, 1882 from Eli Whitney, Jr. for \$12,000 consisting of ca. 5 irregular acres with the Eli Whitney house, a barn and a well on Suburban Street



Eli Whitney Residence, 1859

Station Carriage Barn

Virgil Churchill is in doorway



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Change to Suburban Street CAES Report, 1897

- Straightening of Suburban St. started 1892 with a secession of several different layouts.
- Final layout cut into Station grounds and changed the boundary lines approved General Assembly May 23, 1895.
- Mr. Whitney died August 1895.
- September 1895, new streets named Huntington on the south, Rock Avenue on north, and Edgehill Road for east transverse street. New sewer for Rock Avenue in October and Station connected to it (before sewage ran out beyond to private vacant lands owned by Mr. Whitney).
- Four irregular parcels land between Station and new streets. Transfer rights to old streets deeded to Station, settled with Whitney estate March 17, 1897 (March 1895 settled with city). Total boundary was 2,187 feet, ca. 6.25 acres.



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Purchase of Permanent Site

- During the winter of 1882-1883, the Station was without laboratory facilities. By March 1, 1883, the new laboratory was so nearly completed that chemical work could begin.
- 1886, Johnson hires Thomas B. Osborne who established the second department, Biochemistry.
- Hatch Act of 1887 was passed and the Storrs Agricultural Experiment Station was established under the Storrs Agricultural School (although Yale was still land grant college at that time).



Thomas B. Osborne t



The Chemical Laboratory, currently the Thomas B. Osborne Library, on the left and the Whitney Building on the right. This building was constructed in 1852 by Eli Whitney II as a residence.



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Chemical Laboratory



Note the wooden floors

1890



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Osborne Library



Named after Thomas B. Osborne
Biochemist – chemistry proteins and
discovered Vitamin A.

Converted to library in 1905 as
chemistry moved to the new Johnson
Laboratory

The original chemistry building had chimneys removed and in 1955 was rebuilt by removing wooden construction and replacing one floor with two to house 21,000 volumes on three stack floors. The façade was preserved.

Formal dedication held September 28, 1955

Whitney Hall



July 24, 1952

Whitney Building Long Side



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Early Station Plantings



Undated photo



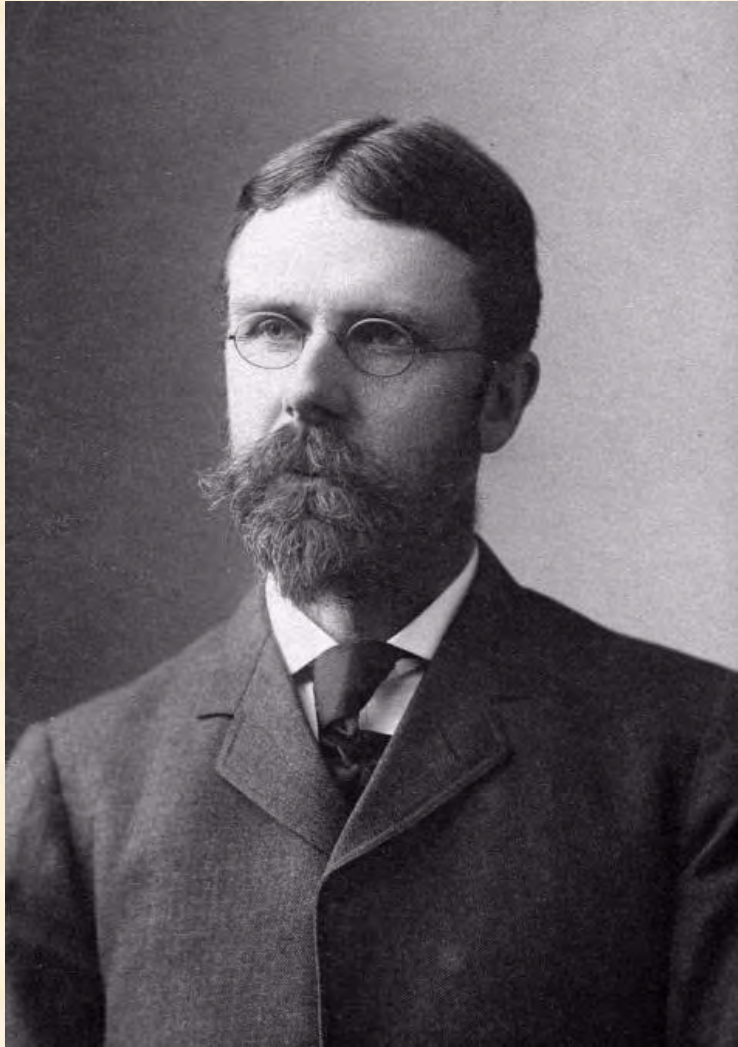
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Huntington Street 1899



Note: Soldier's & Sailor's Monument on East Rock was completed in 1887.



Roland Thaxter

1888-1892

Roland Thaxter
1st appointee under Hatch
Act, set up third
department in 1888
and called it Mycology
(Became Dept. of Botany
in 1893)



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The Thaxter Laboratory was built 1888-89. Botanical laboratories were on the lower floor and entomology was on the upper floor (Thaxter called it mycotheca or fungus house)



Note curve of Suburban Street on the left



Thaxter Laboratory entrance



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Botanical Library & Laboratory Thaxter Building



Transfer Land Grant Status

- In 1893, General Assembly transferred funds, title, and purpose of the Morrill Land Grant Colleges Act to the Storrs Agricultural School.
- Renamed it the Storrs Agricultural College.
- Yale was awarded \$155,000 in compensation*
- In 1899, General Assembly changed name to Connecticut Agricultural College.
- Became University of Connecticut in 1939.

* = \$4,022,172 in 2014 dollars

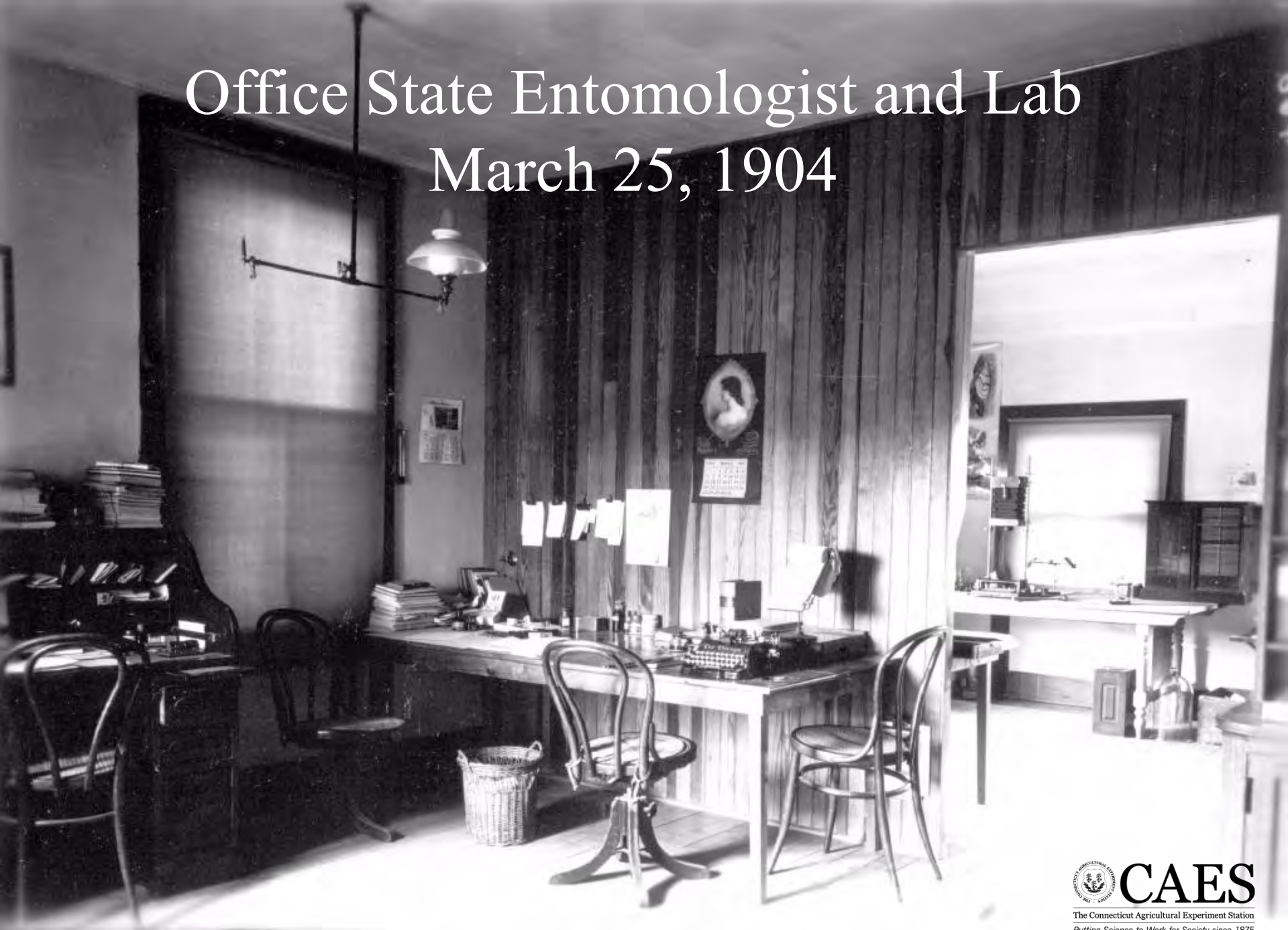


Wilton Everett Britton
(1868-1939)
Joined CAES in 1894 as
a horticulturist

Became
State Entomologist
July 1, 1901
and set up 4th department
- Entomology

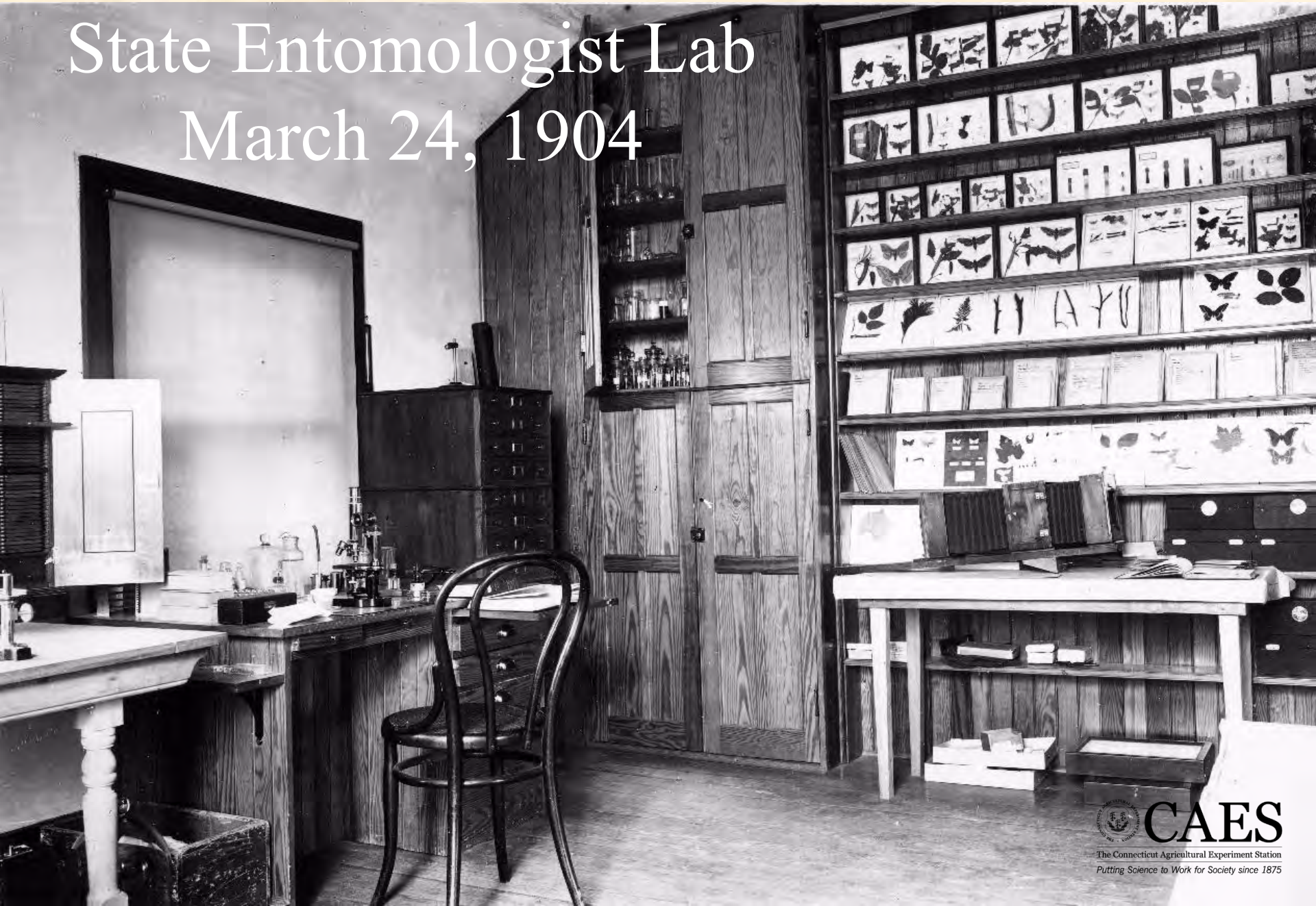
Office State Entomologist and Lab

March 25, 1904



State Entomologist Lab

March 24, 1904



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View of botanical laboratory (left), chemical building (center) and Whitney Building (right), 1894. Both entomology and forestry were crowded into the botanical laboratory.



Thaxter Botanical Laboratory



July 9, 1959

The laboratory was razed in 1960 and reconstruction of the end of the Soils & Climatology greenhouse was completed.



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Plaque Marking Thaxter Laboratory

A plaque marking the location of Thaxter Laboratory and commemorative of Dr. Thaxter's association with the Station was mounted in the east wall of the rebuilt greenhouse. The plaque reads as follows:

SITE OF THAXTER LABORATORY

Erected 1888

Removed 1960

Named for

ROLAND THAXTER

Distinguished mycologist, pioneer plant

Pathologist, whose first post was as

First Station Botanist 1888-1891



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At this time, the wooden Thaxter Laboratory houses the Dept. of Soil Research on the first floor and the Dept. of Plant Breeding on the second floor. The building was erected in 1888 for the Botanical Department and later the Entomological Department used the second floor. The greenhouse was erected in 1895. A special appropriation of \$28,000 was made in 1917 for the building of a heating plant. It contained a small assembly room.



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Broiler room
building later
added to
Britton
Building



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At the turn of the century, as this picture of Highland Street suggests, Ronan-Edgehill was still rural. Looking downhill from Prospect, the wooden fence of St. Francis Orphanage stands on the left side of the street. To the right are woods. St. Ronan Street had not yet been cut through to Highland. Edgehill Road, halfway down the hill, was an unpaved stub. Cows still grazed in fields on Whitney Avenue.

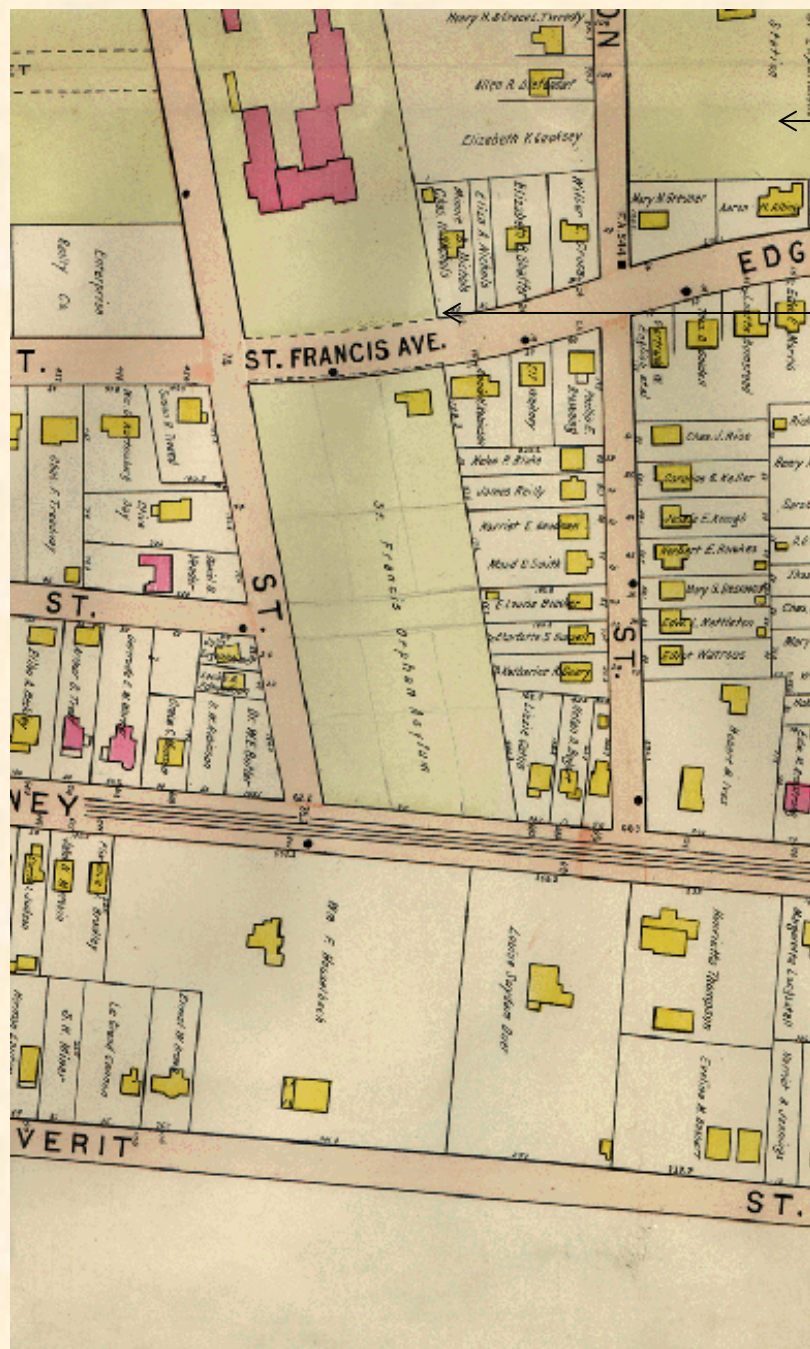


From www.sachem.org/newhistory.html or newhistory2.html

By 1912, Edgehill Road had been laid out and sidewalks put in place. Many houses had been built. This picture shows St. Francis Avenue -- the one block long stretch linking St. Ronan Street and Edgehill Road that ran in front of the St. Francis Orphan Asylum.



From www.sachem.org/newhistory.html or newhistory2.html



← CAES

← Old Suburban Street ran along the north (or right) side of the Orphanage property. The location is marked by two pillars on Edgwood Avenue between Huntington and Highland.

Whitney Avenue

1911 Map



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New Chemical Laboratory Built in 1905



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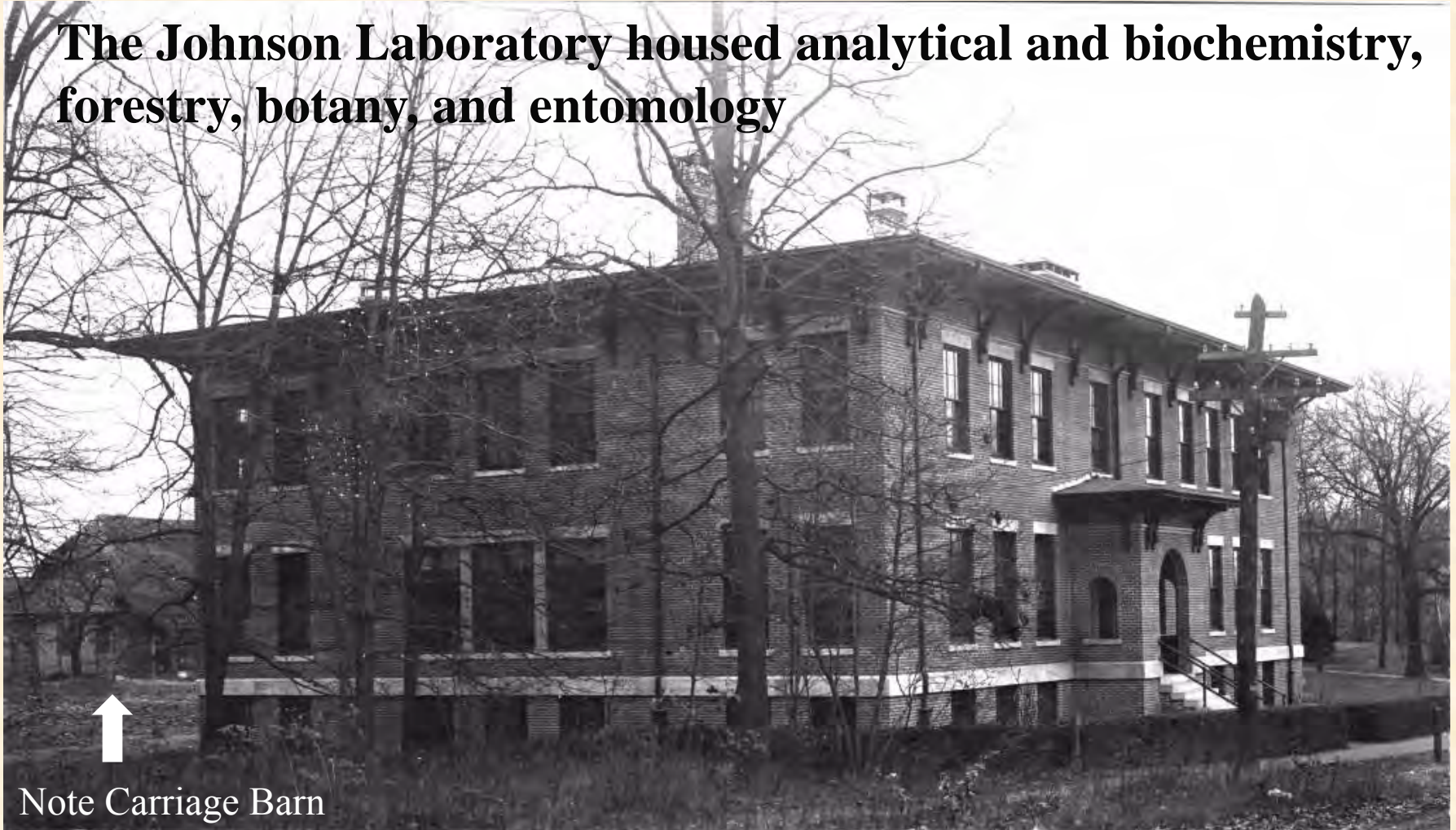
A brick and concrete addition was begun in October 1909 on the west. It was ready to be roofed when, in January 10, 1910, a fire believed to be incendiary in origin, burned out the east wing. There was little harm to the new addition. The interior was rebuilt with concrete floors. It was named the Johnson Laboratory in ceremonies in summer 1910.



May 1910

Johnson Building

The Johnson Laboratory housed analytical and biochemistry, forestry, botany, and entomology



Note Carriage Barn



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Dedication and First Field Meeting

“On the 10th of August 1910, a field meeting was held at the Station, to informally dedicate the new building, named the Johnson Laboratory, at which more than four hundred farmers and their wives were present. In the afternoon, this company went from the Station to the Centerville field and inspected and informally discussed the work there. It was intended to hold this summer meeting each year” (Hopson, 1910. *33rd Annual Report of the Station*).



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First Field Meeting

...it was 49 years ago that a small group of farmers gathered at the old Farm (which is now Norwood at the intersection of Whitney and Washington Avenues in Hamden) for the first Field Day. Need we say that on that first Field Day there was no tent, no tractor tours, no committees, and no automobiles. The staff and guest came on the trolley or drove a horse (Ernest M. Stoddard. *50 Years in Retrospect*. Frontiers Plant Science. November 1959).



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Mt. Carmel Farm
19.6-ac purchased late 1910
money Lockwood Trust
Mt. Carmel Field Day 1913

Whitney Avenue
Trolley New Haven to
Centerville, expanded to
Mt. Carmel in 1903

Centerville Farm
Site of 1st Field Day, 1910
Given up spring, 1912
Now a residential area

Construction New Johnson-Horsfall Building



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Johnson-Horsfall Laboratory



The Jenkins Laboratory was completed in 1932 to house botany, entomology, forestry, and genetics. It was a W.P.A.* project.

May 4, 1959

*Works Progress Administration



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General Assembly appropriated funds 1938 for 3 greenhouse for Plant Pathology, Entomology, and Plant Breeding; finished 1940-1941



Renovation of the greenhouses
Photo undated



9/27/2012

Jenkins Laboratory Pre-Construction



The Jenkins building had no elevator and visitors had to climb stairs to reach the diagnostic offices. It was non-compliant with the American Disabilities Act. No AC. The roof leaked and the wiring and plumbing were nearly 80 years old. Fire escape left something to be desired.

Jenkins Penthouse



Demolition Time

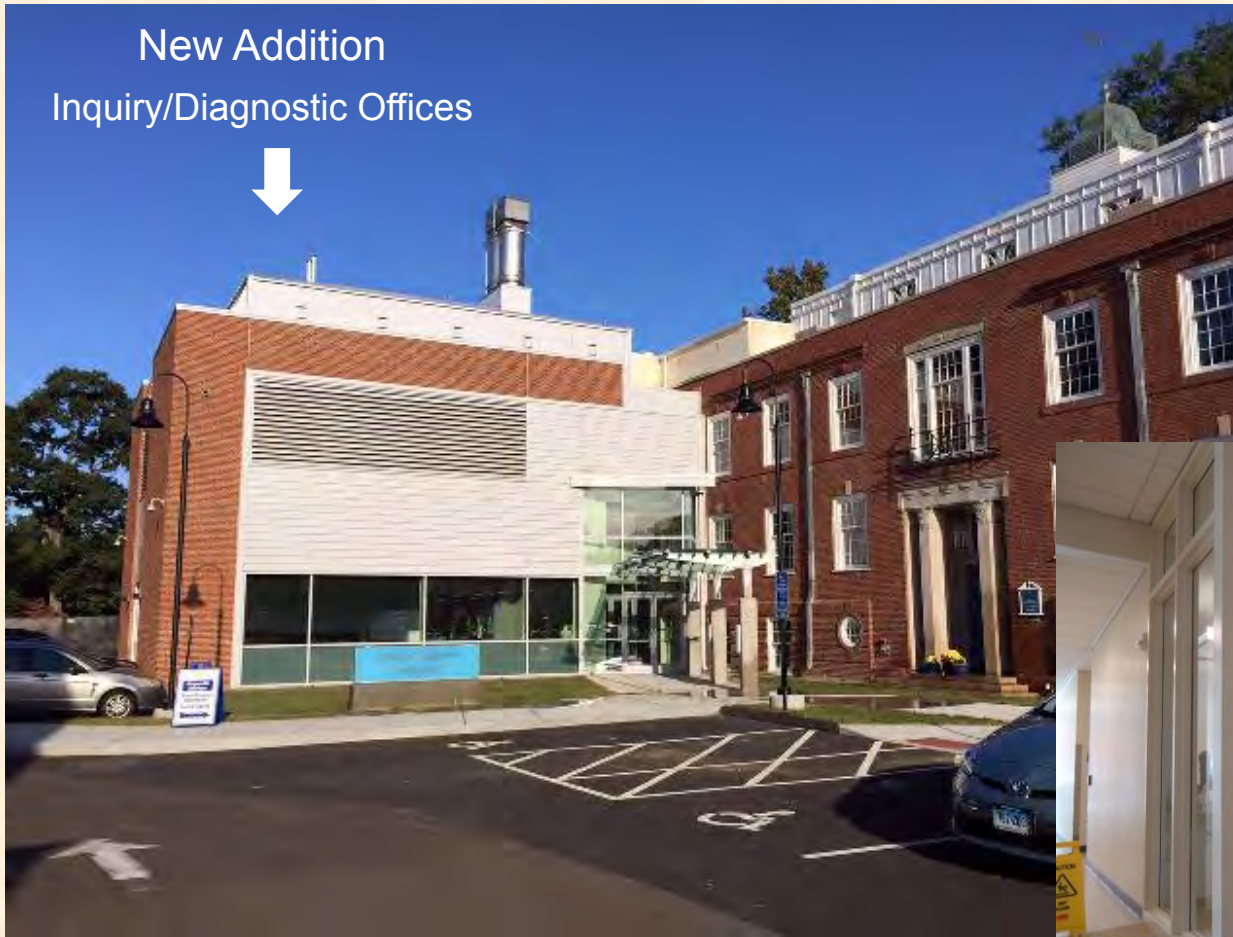




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Jenkins-Waggoner Laboratory

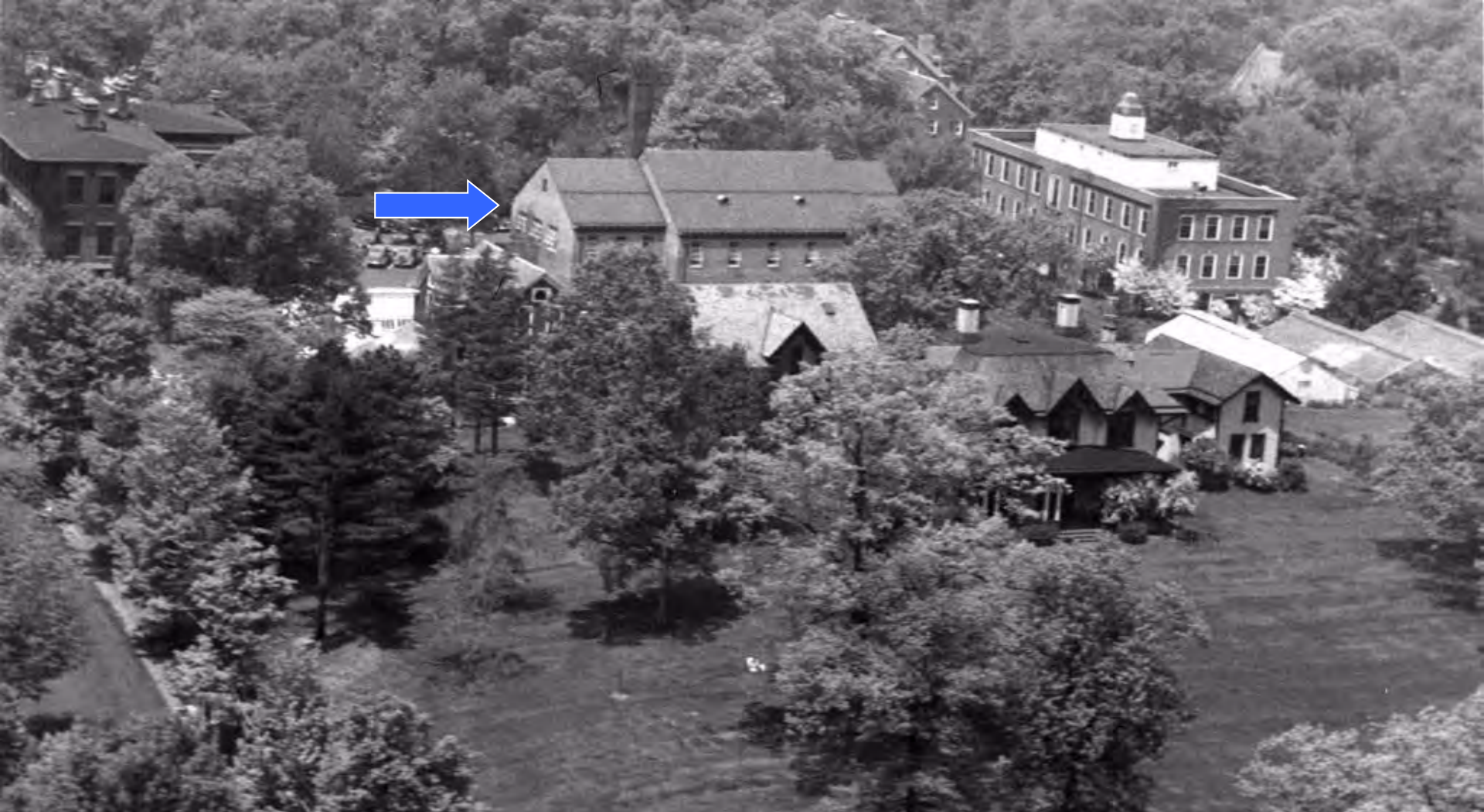


New Addition
Inquiry/Diagnostic Offices



Insect Information Office





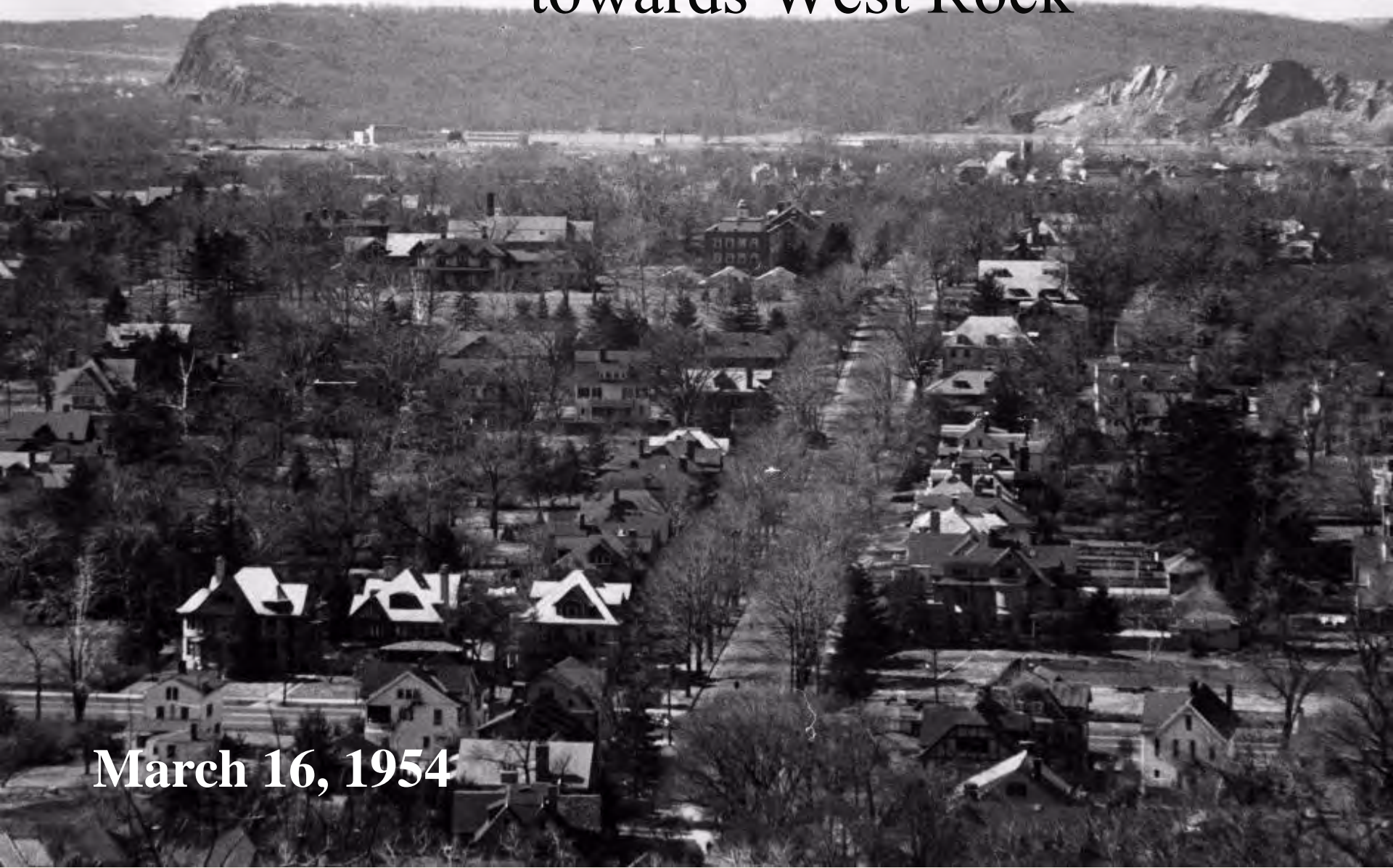
Station Buildings from helicopter 1951. The Britton Building that houses our Jones Auditorium was completed in 1942. Auditorium modernized in 1970s as the Jones Auditorium.



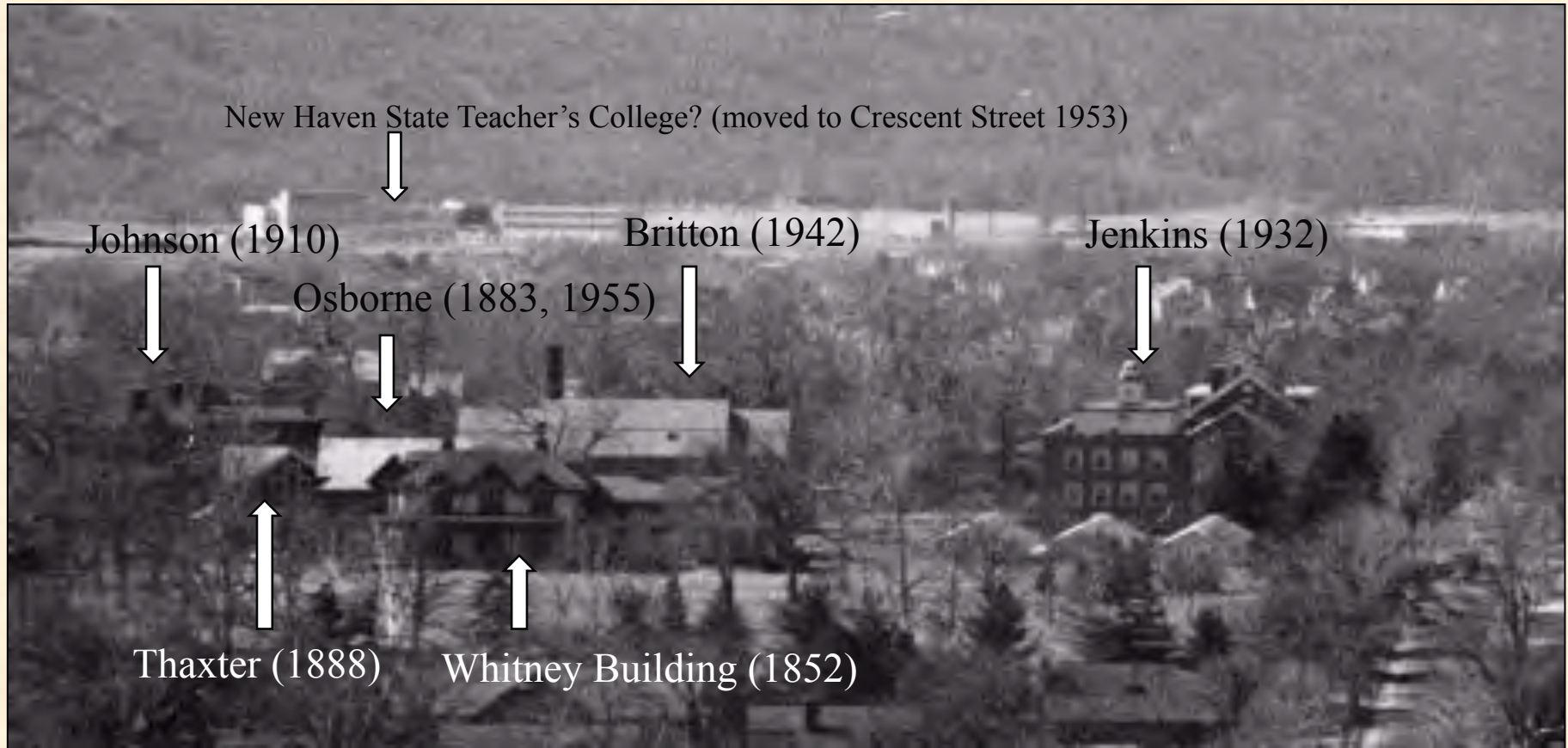
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View Station up East Rock Road towards West Rock



March 16, 1954



March 16, 1954

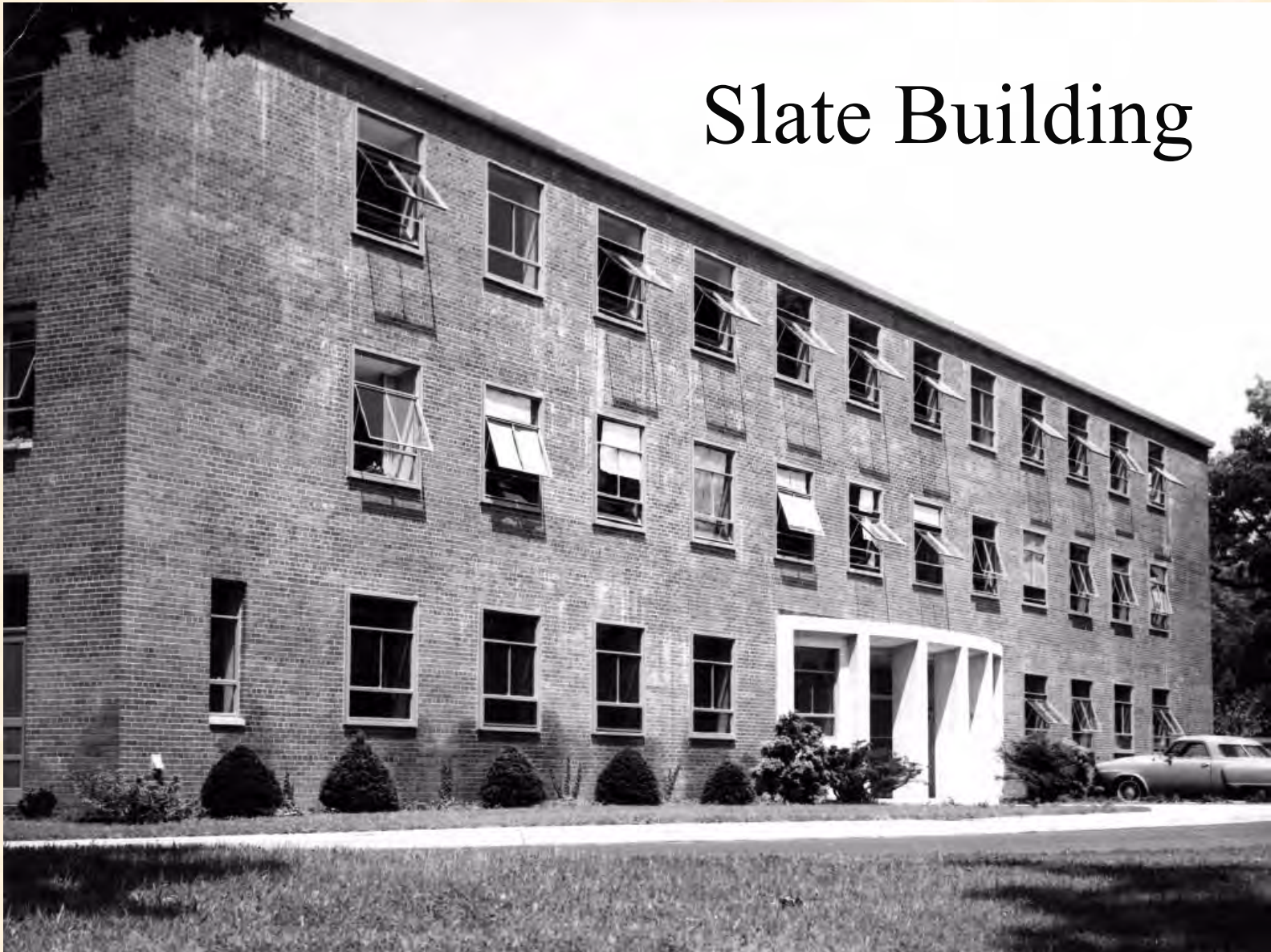


2009



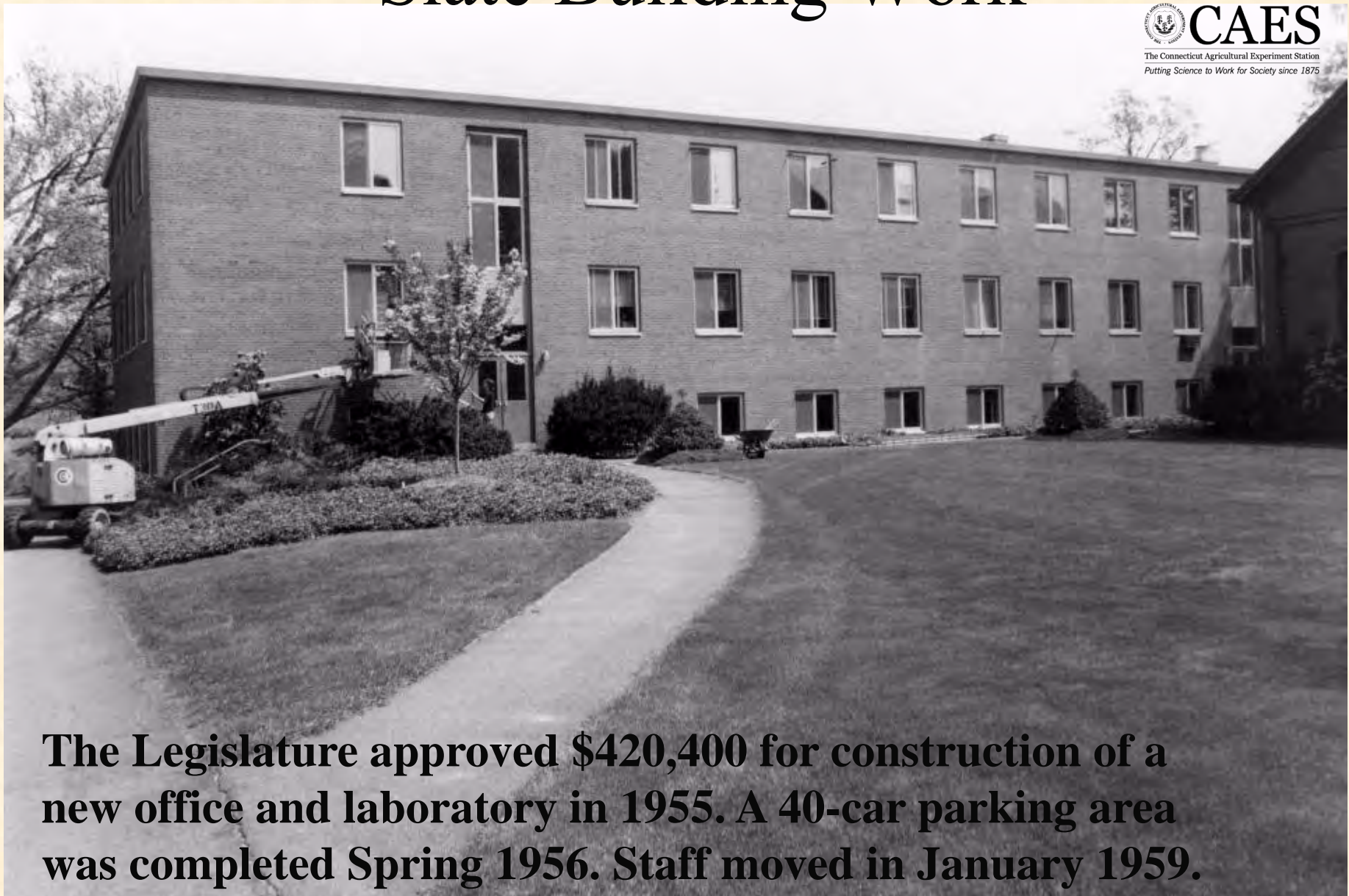
December 21, 2015

Slate Building



The Thaxter and Whitney Buildings made room for construction of the Slate Laboratory

Slate Building Work



The Legislature approved \$420,400 for construction of a new office and laboratory in 1955. A 40-car parking area was completed Spring 1956. Staff moved in January 1959.

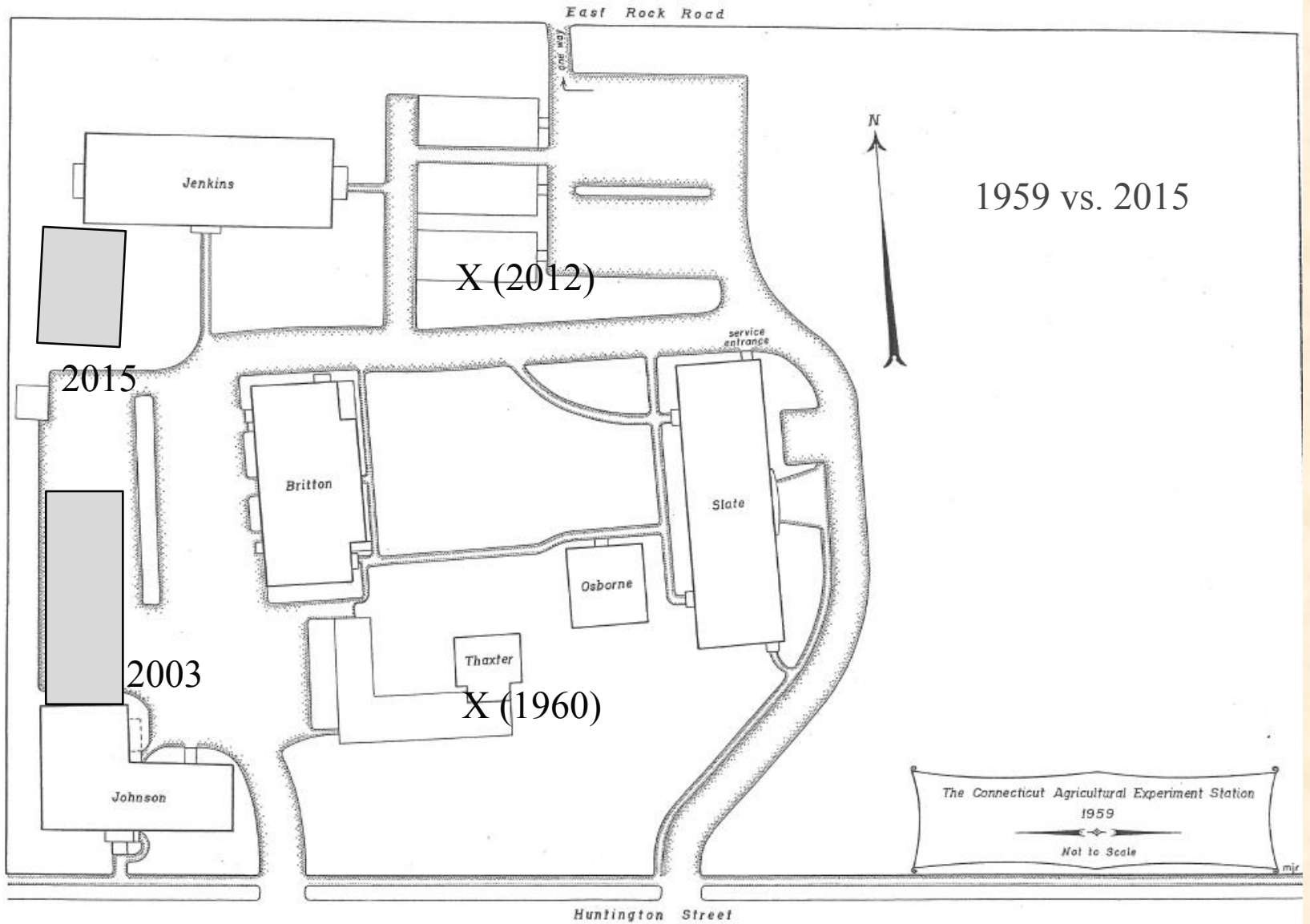
Slate Laboratory

- Late in summer 1957, the Whitney Building, a converted residence about 100 years old, was demolished to make room for the Slate Laboratory
- It housed research in biometry, genetics, forestry and soils and climatology
Fireplaces from Whitney Building and Thaxter Laboratory preserved
- Provided space for director, business manager, accounting staff, and editor

Dedication Slate Building



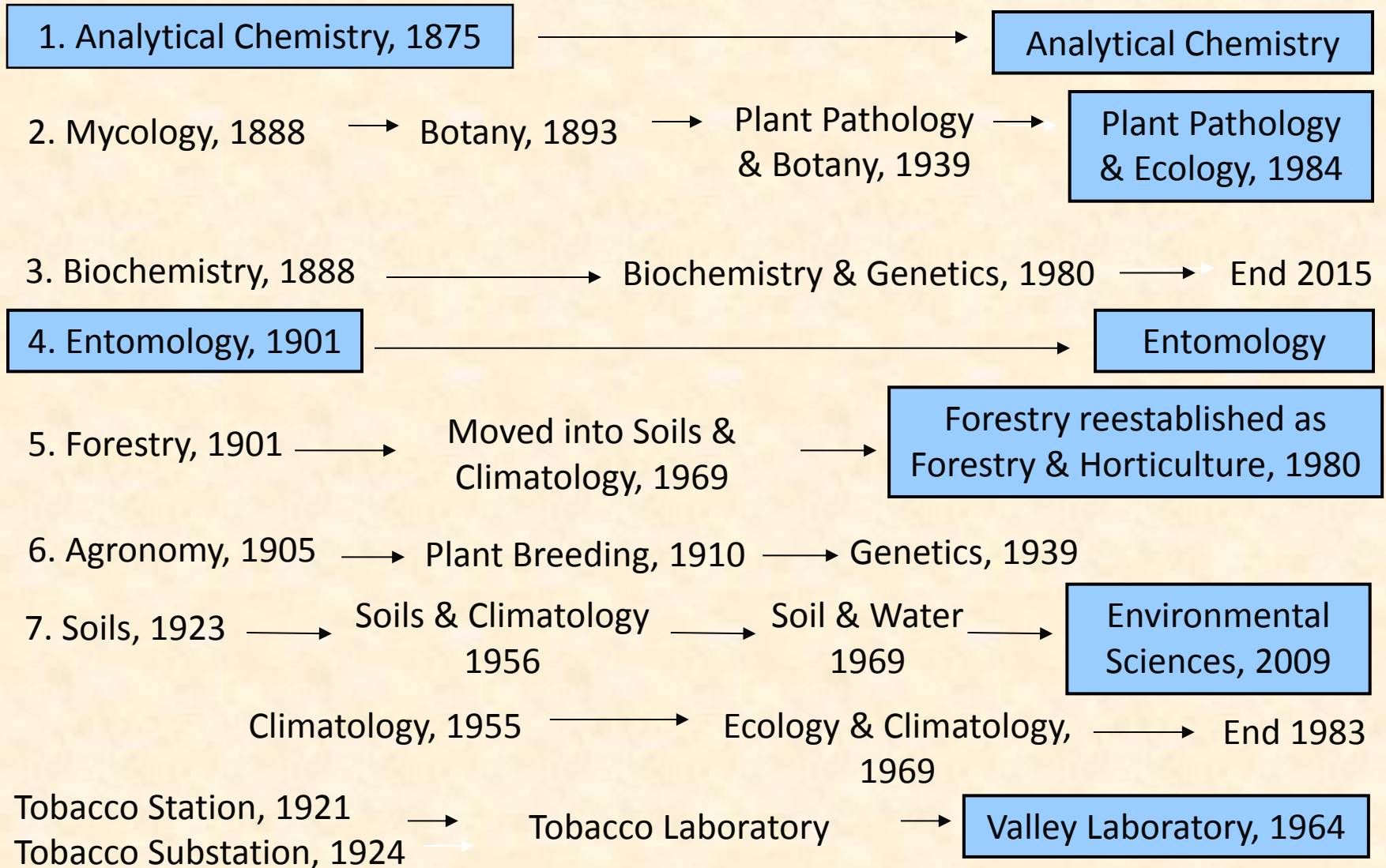
- 34 staff moved in on January 19, 1959
- Dedication held on June 9, 1959
- Pictured:
William L. Slate on left
and Board Member
Charles G. Morris on
right






Departments at CAES

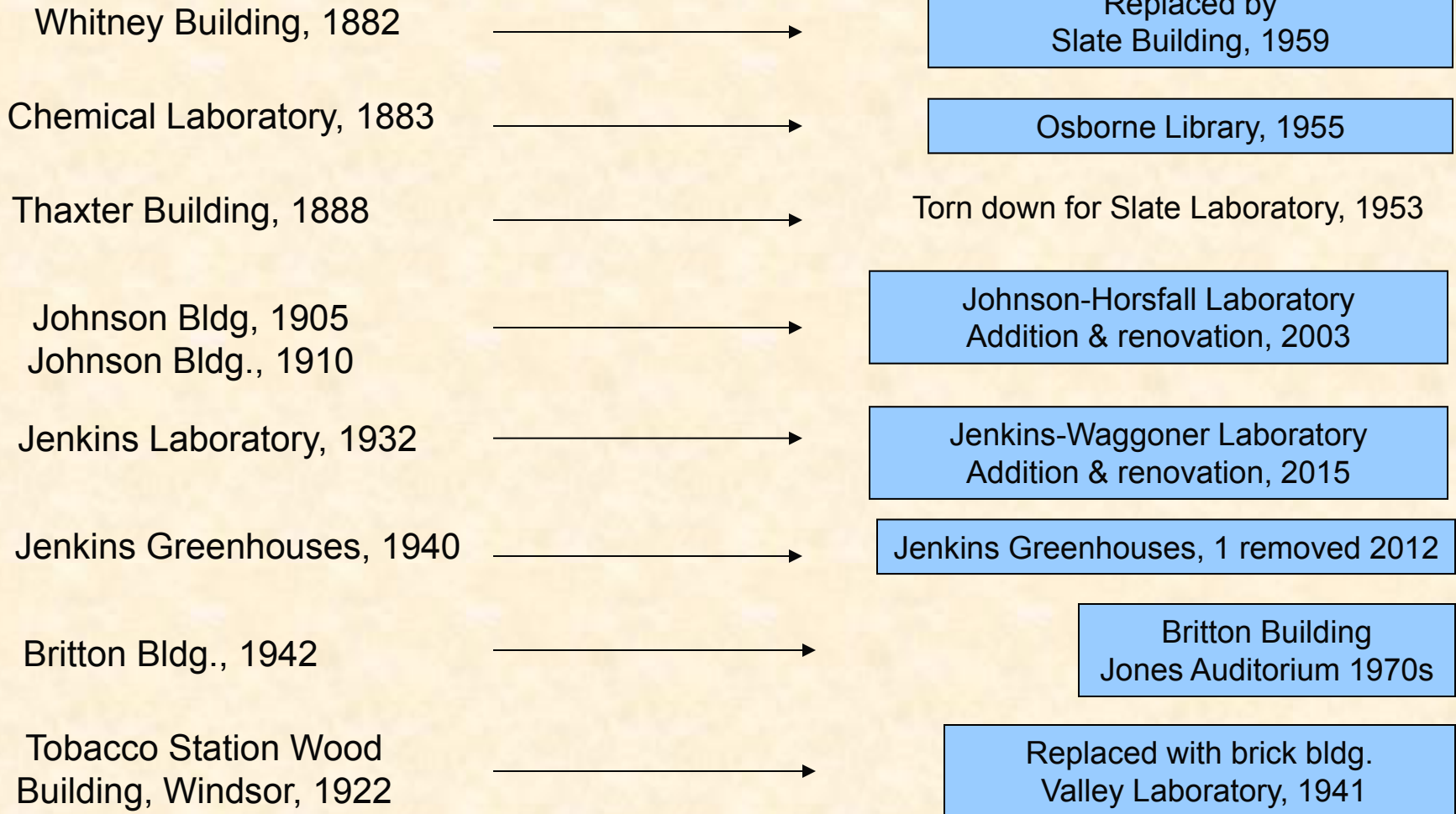
■ Current Depts.





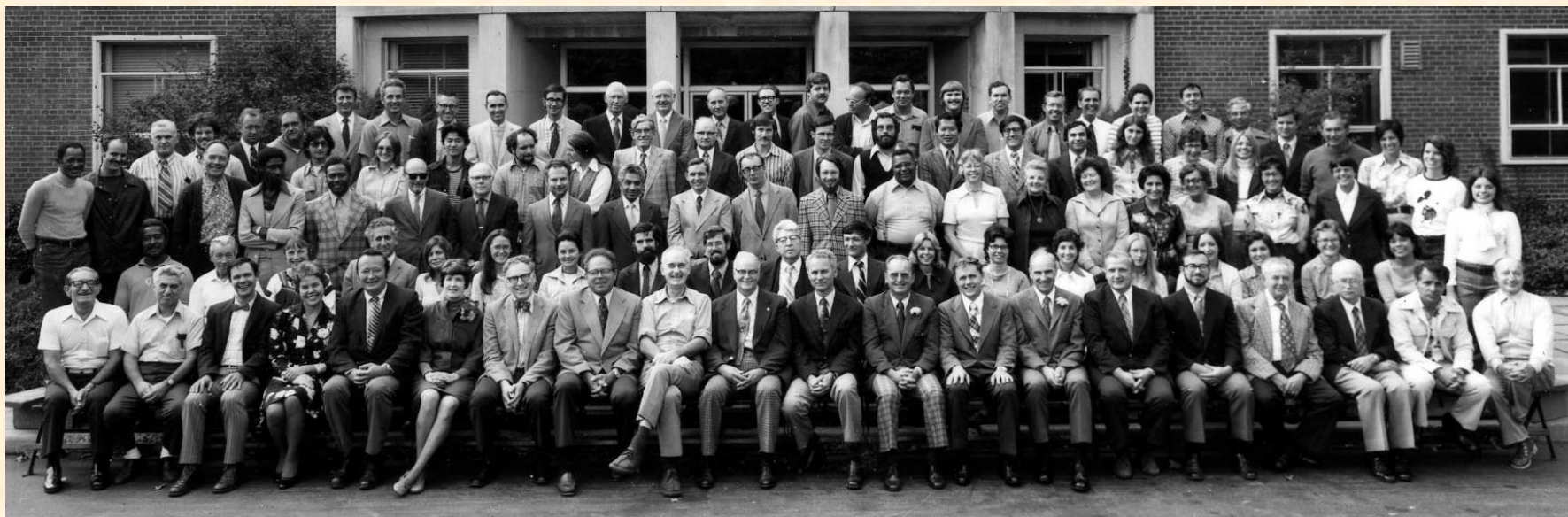
Buildings at CAES

 Current Building





Station Staff, 75th Anniversary, June 21, 1950



Station Staff, 100th Anniversary, September 30, 1975

Station Staff 2000 (125th Anniversary)



13 active staff not pictured

Historic Landmark, 1964

