INDIVIDUAL PROPERTY/DISTRICT
MARYLAND HISTORICAL TRUST
INTERNAL NR-ELIGIBILITY REVIEW FORM

Property/District Name: U.S. Plant Introduction Station Survey Number: PG:70-54

Project: proposed demolition Agency: F/USDA

Site visit by MHT Staff: X no ___ yes Name _____ Date _____

Eligibility recommended X Eligibility **not** recommended _____

Criteria: X A X B X C ___D Considerations: ___A ___B ___C ___D ___E ___F ___G ___None

Justification for decision: (Use continuation sheet if necessary and attach map)
Established in 1919 in Glenn Dale, Maryland, by the U.S. Department of Agriculture, the U.S. Plant Introduction Station functioned as the primary quarantine facility for the introduction of foreign plant material to the U.S., tested plants for economic benefit and operated an extensive propagation center for the country. In addition the scientists stationed at Glenn Dale made important advances in the field of agriculture. For example, Mr. Frederick Bradford instigated the extensive breeding program for the Bradford Pear tree, a very popular landscape element. The complex of buildings and structures includes laboratories, administrative space, greenhouses, and storage barn. The Trust believes that the following resources contribute to the significance of the property: 1,2,3,4 22,23,20,7,8,9,10,11,12, 13,14,15,16,17,18,24,25,26,27,28,29,30,31,32,34,35,38,41,42,43,44. See compliance project file for more details regarding MHT comments.

Documentation on the property/district is presented in: MHT Inventory form and compliance file "Glenn Dale"

Prepared by: Robinson & Associates

Lauren Bowlin — May 1, 1996
Reviewer, Office of Preservation Services — Date

NR program concurrence: X yes ___ no ___ not applicable

Orlando Rabbitt — 5-6-96
Reviewer, NR program — Date

Survey No. PG:70-54

MARYLAND COMPREHENSIVE HISTORIC PRESERVATION PLAN DATA - HISTORIC CONTEXT

I. Geographic Region:

____	Eastern Shore	(all Eastern Shore counties, and Cecil)
__X__	Western Shore	(Anne Arundel, Calvert, Charles, Prince George's and St. Mary's)
____	Piedmont	(Baltimore City, Baltimore, Carroll, Frederick, Harford, Howard, Montgomery)
____	Western Maryland	(Allegany, Garrett and Washington)

II. Chronological/Developmental Periods:

____	Paleo-Indian	10000-7500 B.C.
____	Early Archaic	7500-6000 B.C.
____	Middle Archaic	6000-4000 B.C.
____	Late Archaic	4000-2000 B.C.
____	Early Woodland	2000-500 B.C.
____	Middle Woodland	500 B.C. - A.D. 900
____	Late Woodland/Archaic	A.D. 900-1600
____	Contact and Settlement	A.D. 1570-1750
____	Rural Agrarian Intensification	A.D. 1680-1815
____	Agricultural-Industrial Transition	A.D. 1815-1870
__X__	Industrial/Urban Dominance	A.D. 1870-1930
__X__	Modern Period	A.D. 1930-Present
____	Unknown Period (___ prehistoric	___ historic)

III. Prehistoric Period Themes:

____	Subsistence
____	Settlement
____	Political
____	Demographic
____	Religion
____	Technology
____	Environmental Adaptation

IV. Historic Period Themes:

__X__	Agriculture
__X__	Architecture, Landscape Architecture, and Community Planning
____	Economic (Commercial and Industrial)
__X__	Government/Law
____	Military
____	Religion
____	Social/Educational/Cultural
____	Transportation

V. Resource Type:

Category: buildings.structures

Historic Environment: rural

Historic Function(s) and Use(s): agriculture/horticultural facility

Known Design Source:

PG: 70-54
U.S. PLANT INTRODUCTION STATION -- GLENN DALE, MD

Location: Glenn Dale, MD (Prince Georges County)
Date of Construction: 1919-1937
Access: Public (Restricted)

The U.S. Plant Introduction Station at Glenn Dale was established in 1919, one of four federal stations in the country under the Department of Agriculture's Plant Introduction Section. (It is today one of only two remaining stations.) These stations received materials introduced into the United States, tested them for suitability for more extensive trial among this country's plant scientists, and, if found suitable, increased and distributed the plants. If quarantine of the foreign seed or plant was necessary, it was typically conducted at Glenn Dale. It was the most highly developed of the four federal stations in the United States. In addition to its role as a quarantine center, the property was the location of numerous breeding programs. The Glenn Dale station is perhaps best known for the azalea breeding program undertaken by B.Y. Morrison, who later became the first director of the National Arboretum. Throughout the 1930s and 1940s, Morrison conducted research on hardy azaleas, developing new strains, of which he named some 450. The other research project that resulted in the widespread application of Glenn Dale plant materials was the ornamental pear research conducted by several key people at the station, including Frederick Bradford. The Bradford pear, named for Bradford in 1960 after his death on the station property, has become one of the most extensively employed landscape elements in urban and suburban landscaping in the United States. The Glenn Dale property is "L"-shaped, encompassing 70 acres. The buildings of the station were clustered together in the northernmost area of the property, in a small 12-acre section.

HISTORIC CONTEXT

Geographical Organization: Western Shore

Chronological/Developmental Periods: Modern Period

Prehistoric/Historic Period Theme(s): Agriculture

Resource Type:

Category: Buildings

Historic Environment: Rural

Historic Function(s) and Use(s): Plant Introduction and Quarantine

Known Design Source: Unknown

Maryland Historical Trust
State Historic Sites Inventory Form
Maryland Inventory of Historic Properties

Survey No. PG 70-54
Magi No.
DOE ___yes ___no

1. Name

Historic Name U.S. Plant Introduction Station

Common Name and Building Number U.S. Plant Introduction Garden; National Plant Germplasm Quarantine Laboratory

2. Location

Street and Number 11601 Old Pond Drive

City, Town Glenn Dale Congressional District

State MD 20769 County 033

3. Classification

Category	Ownership	Status	Present use	
X District	X Public	X Occupied	X Agriculture	__ Museum
__ Building(s)	__ Private	__ Unoccupied	__ Commercial	__ Park
__ Structure	__ Both	__ Work in Progress	__ Educational	__ Private Residence
__ Site	**Public Acquisition**	**Accessible**	__ Entertainment	__ Religious
__ Object	__ In Process	__ Yes: Restricted	__ Government	__ Scientific
	__ Being Considered	X Yes: Unrestricted	__ Industrial	__ Transportation
	__ Not Applicable	__ No	__ Military	__ Other:

4. Owner of Property (all owners)

Name Agricultural Research Service, Beltsville Area, Building 003

Street & Number 10300 Baltimore Avenue Telephone No. 301-504-5187

City, Town Beltsville State and Zip Code MD 20705-2350

5. Location of Legal Description

Courthouse, Registry of Deeds, etc. Prince George's County Courthouse Liber# 143 Folio# 457

Street & Number 14735 Main Street

City, Town Upper Marlboro State and Zip Code MD 20772

6. Representation in Existing Historic Survey _Yes XNo

Title

Date Federal____ State____ County____ Local____

Depository for Survey Records

City, Town State and Zip Code

7. Description

Survey No. PG 70-54

Condition

__ Excellent	__ Deteriorated	__ Unaltered	__ Original Site	
__ Good	__ Ruins	__ Altered	__ Moved	Date of Move _____
X Fair	__ Unexposed			

SEE CONTINUATION SHEETS ENTITLED Description - Buildings
AND
SEE CONTINUATION SHEETS ENTITLED Description - Landscape

DESCRIPTION - BUILDINGS

Overview

The U.S. Plant Introduction Station at Glenn Dale, Maryland, is located on a 70-acre site about 16 miles northeast of Washington, D.C. [1] To the west of the property is the abandoned Glenn Dale Hospital, a large multi-building facility run by the District of Columbia earlier in the century as a Tubercular Sanitorium. The road running along the north of the property is called Old Pond Drive, and the pond of said name is located in the northwest corner of the Glenn Dale station site. The property as a whole is L-shaped. The longer leg of the L, running north-south, comprises the original 50 acres purchased by the government in 1919. The shorter leg of the L, totaling 20 acres, runs east-west along the southernmost part of the property and extends east over Lottsford branch. The majority of the site is cultivated as fields and orchards for propagation and testing; during much of Glenn Dale's history, 65 of the 70 acres were in use.

Description - Buildings

The buildings of the station are clustered together in a small portion of the property at its northeast corner. Many of the buildings are attached to one another, creating a complex maze of interrelated buildings and supporting structures. The earliest construction on the site included a long headhouse with two large greenhouses attached, several barn structures for storing equipment and for packing plant materials for distribution, and three cottages for the superintendent and essential staff. Subsequent structures were built on this framework, adding more greenhouses and screenhouses and new and more permanent headhouse/office space. The general character of the site is a uniform and rural one, because the bulk of construction occurred between 1920 and 1937, during the first two decades of the station's existence and the height of its period of significance. Constructed of like materials, the buildings are virtually all one-story structures. The complex has changed little in recent years, aside from the reconstruction of most of the greenhouses and the deterioration of the wood frame structures. Later construction has generally been in keeping with the scale of the station as it was established in the 1920s and 1930s.

General Architectural Characteristics

There are three basic types of building materials at the Glenn Dale station: wood-frame structures, which include the barn buildings and the cottages; glass greenhouses with wood or aluminum frames; and unadorned concrete-block buildings with pitched gable roofs, which serve as office and laboratory space.

The buildings erected by the U.S. Department of Agriculture's Division of Rural Engineering in the 1920s are characterized by wood-frame construction, horizontal clapboard siding, and large multi-

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[1]The old Washington-Baltimore-Annapolis trolley line ran along the property to the north, and the convenient Bell Station stop which serviced the Glenn Dale site gave the U.S.D.A. property the informal name of "Bell Station."

paned windows. These include the original 1920 headhouse, the 1922 storage/distribution shed, and the grouping of barn buildings (called farm implement sheds) at the southeastern corner of the proposed district, constructed and added to between 1920 and 1929. The other wood-frame buildings of the 1920s are the three residences-- one-story bungalow-style cottages with porches and shingled facades.

The greenhouses, beginning with the first two constructed in 1920 by the American Greenhouse Manufacturing Corporation, are large glass-wall structures with either aluminum/metal or wood framing. Because of the necessity at Glenn Dale to separate various crops, the predominant type of greenhouse erected at the site was a detached house. These individual houses were connected only by a long headhouse, thereby preventing the spread of pests or diseases. The other type of greenhouse popular in the 1920s and 1930s was the ridge-and-furrow greenhouse, which essentially consisted of one large house with separate pitched roofs, a type not well suited to a plant introduction station.

Beginning in 1931 with the construction of the main office, concrete-block became a major building material at the Glenn Dale station. With their pitched gable roofs and chimneys, these concrete-block laboratories and office spaces resembled small cottages and were distinctly unindustrial in appearance. They were painted white and, although architecturally unadorned, were substantially enhanced with exterior plantings.

Another significant characteristic of the buildings at Glenn Dale is their interconnected nature. Most of the scientifically related buildings in the heavily developed section of the site are interconnected by screenhouses, headhouses or other forms of connecting buildings. This characteristic of construction at the site dates from around 1930, when the arrival of the Japanese Beelte necessitated tight protection of the greenhouses. Virtually all the greenhouses were eventually accessed by a screened porch or headhouse.

Description of Individual Buildings

Many of the buildings at the Glenn Dale station are attached to one another, creating a complex maze of interrelated buildings and supporting structures. In many cases it is difficult to discern the construction chronology and whether a particular structure is an addition to an existing building. Buildings are grouped together below for ease of understanding.

Buildings 1, 2, 3, 4, 22, 23

The Main Office of the Glenn Dale station (comprised of Buildings 1, 2, 3) was constructed in 1931, of the cinderblock materials that have become the primary building fabric of the site. It is a U-shaped building with screened walkways, called Japanese Beetle corridors, connecting the wings (Buildings 2 and 3) with the central block (Building 1). The small-scale, one-story building and its wings are characterized by strongly pronounced gables. Benjamin Morrison, who directed the largest azalea breeding program in the United States from the Glenn Dale station, conceived the design for the

building as an English cottage.[2] Trellises covered the bare concrete-block east facades of the main building and its wings. The trellises on the central block surrounded three elegant 16-pane windows in the shape of French doors. A variety of functions were housed in the building. As the central office, Building 1 contained the records and files and provided a meeting point for staff; its wings contained a seed and bulb storage area on one side (Building 2) and a laboratory and darkroom on the other side (Building 3).

Extending west from the main office is the headhouse (Building 4), a long one-story structure which services the propagation greenhouses and houses the boiler room, lockers, and lavatories. It is a narrow building with a gable roof, its north facade punctuated by a number of windows and doors, and its south facade characterized by large openings to several of the greenhouses. It is located on the same site as and shares the basic footprint of the original 1920 wood frame headhouse. This original headhouse was one of the first buildings constructed for the fledgling Plant Introduction Station and was the center of the station's activities. When the main office (Building 1) was constructed in 1931, the headhouse was extended eastward and connected by a Japanese Beetle corridor to the new central office. At some point probably around this date, the headhouse was faced or reconstructed with concrete blocks. In 1937 (Building 23) and 1941 (Building 22), two lean-to greenhouses were constructed on the north facade of the headhouse.

In the daily function of a plant introduction station the headhouse plays a critical role, providing controlled access to the greenhouses as well as a central point of communication for the station's staff. The propagation greenhouses located to the south of the headhouse, in particular Buildings 5 and 6, were the site of some of the most important work accomplished at Glenn Dale; during World War II the houses were given over to the cultivation of some four million cinchona seedlings, for the production of quinine. Although the original headhouse was of wood-frame construction, the subsequent renovation of the house, which resulted in a concrete-block structure, occurred within the site's period of significance and does not materially alter the building's integrity. The building in its concrete block construction now blends with the context established by the main office (Building 1), and it also appears to share a fenestration pattern similar to the original clapboard-sided headhouse.

Buildings 5, 6, 20

This grouping of buildings consists of two large (glass) greenhouses attached on the south side of the headhouse (Buildings 5 and 6), and a wood-frame building (Building 20).

Buildings 5 and 6 are cypress wood-frame and glass greenhouse structures with pitched roofs and concrete foundations. The first two greenhouses for the fledgling Plant Introduction Station, these propagation houses are the site of some of the more significant plant introduction work done at Glenn Dale, including the massive cinchona production project during World War II. They were substantially renovated, on the same concrete footers, in 1957 (Building 6) and 1961 (Building 5).

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[2]Oral interview with Dr. John L. Creech, conducted by Heather Ewing of Robinson & Associates, Inc., June 14, 1995.

Building 20 was among the earliest buildings constructed for the Plant Introduction Garden. Designed by the Department of Agriculture's Division of Rural Engineering in 1922, it was intended for use as a storage and packing shed. It is a typical frame farm building with wood siding and large shed-type entrance doors located on the east and west facades; it is similar in style to the earliest original headhouse at Glenn Dale as well as to the farm building grouping at the south edge of the historic district. Attached to the first two greenhouses, the building served a supporting role in the plant introduction work of the station. (It was here that the plants approved for distribution were packaged to be sent out across the United States.) Although few alterations appear to have been made to the building, the structure is in extremely poor physical condition. Parts of the ceiling have caved in and there is evidence of severe water damage throughout the building. Most recently the building was cordoned off because of the danger of electrical shock hazard as a result of intermittent standing water.

Buildings 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17

This complicated attached complex of greenhouses, screenhouses, and concrete block buildings was constructed (or reconstructed) over an extended period of time from approximately 1930 to 1980. Although it is not clear which of these buildings was the first constructed, the grouping is now fundamentally organized by an attached unnumbered screenhouse that runs in front of (to the north of it) and provides access to six greenhouses (Buildings 7, 8, 9, 10, 11, 12) and the storage shed (Building 16). There is also an unnumbered screenhouse that runs along the south, connecting many of the greenhouses. Building 15 is a greenhouse attached at the southern end of Buildings 10, 11, and 12. Building 14 is small cement block building attached to Building 15. Buildings 13, a concrete bunker-like underground plant storage area, and Building 17, a large metal frame screenhouse, are both attached to Building 14.

The long narrow unnumbered screenhouse that is a central element in this grouping of buildings is of wood construction and it incorporates small pre-existing wood-frame buildings that house steps to Buildings 10, 11, and 12. The greenhouses that are attached to the screenhouse are of differing designs and date to varying periods. Buildings 10 and 11, are low (approximately 4 feet above ground) wood-frame structures in which only the glass gable of the buildings is above ground. They date to 1931 (Building 10) and 1932 (Building 11). Both of these greenhouses are in extremely poor physical condition with significant sections of glass missing and portions of the roof collapsed. Building 12, of wood and metal construction, is taller (approximately 6 feet) than Buildings 10 and 11, and in addition to the gable, one tier of side glass panels appears above ground. This building dates to 1933 and it too is in poor physical condition. Buildings 7, 8, and 9, reconstructed around 1980, are identical modern metal frame greenhouses. The other greenhouse that is a part of this complex, Building 15, is a metal frame building dating to 1933. This building is in poor shape as well, and is inaccessible.

The other two structures of this cluster are of more permanent construction materials. As mentioned above, Building 13 is an underground storage facility. It is of concrete construction and is accessed from stairs housed within the wood shed attached on the north facade of Building 14. It is in good physical condition. Building 14 is a small cinderblock structure with a gable roof. It functioned as a cold storage facility and was used for keeping seeds and/or plants. It too is in relatively good condition.

Buildings 24, 25, 26

The Building 24, 25, 26 grouping is an ensemble designed by Frederick Bradford in 1937 for use by the Soil Conservation Service. Building 25 was designed as the office, laboratory, and headhouse for Greenhouse #10 (Building 26) and the adjacent northern exposure lean-to greenhouse with cinderblock south wall (Building 24). Square in plan, with a steeply pitched gable roof, chimney, and large 16-pane windows, Building 25 follows the English Cottage model established with Building 1. Designed by Frederick Bradford, who was Superintendent at Glenn Dale and responsible for the ornamental pear breeding program (the Bradford Pear was named for him), this concrete-block office and laboratory has the appearance of a small house. It was sited in a north-south direction as part of a row of concrete block buildings (Buildings 27, 31) begun in the early 1930s. The placement of these structures creates a small alley between the main headhouse (Building 4) and the quarantine facilities (Buildings 27, 31). The grassy alley, which leads from the parking lot to the rear side of Building 3, is heavily planted.

Buildings 27, 28, 29, 30, 31

The Building 27-31 cluster consists of a structure that functions as a headhouse (Buildings 27/30) and three attached greenhouses (Buildings 28, 29, 31). It is the center of greenhouse quarantine operations at the Glenn Dale station. Half of this complex was constructed in the early 1930s, the other section not until 1949. Building 27, constructed in 1934, is a one-story concrete-block building with a pitched roof that is consistent with the predominant "cottage style" characteristic of the 1930s-era buildings on the site. It was designed by Frederick Bradford to function both as the quarantine office and as the headhouse for Quarantine Greenhouses 28 (built in 1930) and 29 (built in 1934). This building complex may be an example of W.P.A. work at the Glenn Dale site.[3] Architecturally these greenhouses, metal frame houses on concrete footers, were distinctive in their original design because they served as quarantine greenhouses. The specific requirements of quarantine dictated that each area of the house be compartmentalized to prevent the transfer of pests or diseases. Historically they represent what was most unique and valuable about the Glenn Dale station: its role as the center of quarantine activities for the entire Department of Agriculture. In 1949, Buildings 30/31, another headhouse/greenhouse complex consistent with the earlier grouping, was constructed adjacent on the east.

The Cottages (Buildings 32-34)

Building 32, one of three cottages erected on the Glenn Dale property between 1919 and 1920 to support the fledgling Plant Introduction Garden, has been used continuously as a residence since its construction. Identified in the original drawings as "Cottage #1," this dwelling is the only remaining cottage on the campus that retains its original use. Cottage #2 (Building 34) was vacated, and an arson fire destroyed Cottage #3 (Building 35) in May 1995.

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[3]P.W.A. Projects Submitted for Action, June 22, 1935. Record Group 7, Bureau of Entomology and Plant Quarantine, NC-136, Box 1659, National Archives and Records Administration.

Designed by the U.S. Department of Agriculture, Division of Rural Engineering, Building 32 exhibits elements of the Craftsman bungalow, representing the dominant style for smaller houses constructed across the country between 1905 and 1920. Constructed atop an exposed concrete foundation, the house features a predominant hipped roof with shed dormers and overhanging eaves. Typical window configurations of multi-pane sash over sash with one large glass pane, and groupings of multi-pane windows are along all four elevations. Original drawings indicate that the one-story dwelling featured prepared shingles on the roof and shingle siding along its first story and at shed dormers. These drawings also suggest that the house was originally designed to incorporate multiple roof planes (including two front-facing gables), a partial-width projecting front porch along its primary elevation, and center and end chimneys.

Building 32 was designed to function as the Superintendent's house and was the largest of the three cottages constructed when the Glenn Dale Station was first established. Experience at other federal stations indicated that in order to maintain newly introduced seedlings and prepare for sudden changes in weather, it was necessary for several employees to live on the Glenn Dale property. Although several persons who lived in the house were responsible for certain plant introductions during their tenures, the most notable superintendent to inhabit Cottage #1 was, in all likelihood, Frederick Bradford. Bradford, who resided at Glenn Dale during the 1950s, supervised the breeding program that established the Bradford Pear as one of America's foremost ornamental trees. He died at Glenn Dale.

Building 33

Building 33 was a secondary cottage, similar in design to Building 34, built between 1919 and 1920 to house employees at the Glenn Dale station. It was destroyed by fire in May 1995.

Building 34

Building 34 was the second of three cottages to be constructed at the Glenn Dale Station between 1919 and 1920. Identified in the original drawings as "Cottage #2," Building 34 is similar in design to Building 32 (Cottage #1) and was also used continuously as a residence until approximately 1984. Building 34 was designed to house the Assistant to the Superintendent at Glenn Dale. As noted above, Building 34 remains vacant.

Designed in 1919 by the U.S. Department of Agriculture, Division of Rural Engineering, Building 34 exhibits elements of the Craftsman bungalow prevalent during this period. Constructed atop an exposed concrete foundation, the small residence features multiple roof panes, including a double gable and partial hip roof at its primary elevation, shed dormers, overhanging eaves with exposed rafters, and a center chimney. The front double gables feature louvered vents and projecting eaves. Original drawings indicate that a partial-width projecting porch was featured along the building's primary elevation. The porch is currently enclosed. Other elements exhibited on the house that are typical of Craftsman design and construction include multi-pane sash over sash with one large glass pane, and groupings of multi-pane windows along all four elevations. Similar to Building 32, this one-story residence also featured a prepared shingled roof and shingle siding along its first story and shed dormers. Despite the fact that Building 34 is no longer used as a residence, and has not been for

over ten years, the building still clearly reads as a residential dwelling and retains the features that characterize it as Craftsman.

Building 38

Building 38 was the center structure of three identical quarantine screenhouses. It is today the only one remaining. The house is a large wood-frame structure with a gable roof and a small screen porch entrance on the north side. The footers for the other two demolished screenhouses are still extant. The whole area is enclosed by a chainlink fence. Located at a distance from the other Glenn Dale plant activities, this screenhouse and the others that flanked it were used for long-term testing of new plants. Typically some fruit trees were grown for several years before it could be determined whether the plants could safely be released. Building 38 was the site of quarantine in 1975 for the priceless collection of Japanese bonsai trees given to the United States on the occasion of the U.S. Bicentennial. Today these trees are located at National Arboretum.

Building 41

Constructed in 1939, this low-lying cinderblock structure is called the Plant Washing Building on the site plan. The single, subterranean interior room has been used in recent years to store plants in the winter. It is located at a distance from the center of the station's plant introduction activities.

Building 42

This simple one-story wood-frame shed was constructed in 1923 as part of the complex of barn buildings concentrated just to the south of the main Glenn Dale station activities. It is rectangular in plan, stretching east-west, with the primary entrance on the west end of the building. The shed is faced with clapboard siding (now painted red with white trim) and has a series of irregularly spaced windows and doors on its north and south facades. Wide horizontal clapboard double doors on the western facade provided access for storing equipment. The roof is a low gable, and is deteriorating. The building is collapsing. Designed by the Department of Agriculture's Bureau of Rural Engineering for the fledgling Plant Introduction Station, the shed was intended for use as a storage and implement shelter.

Building 43

Situated along the eastern property edge of the Glenn Dale site, Building 43 is a simple, one-story, L-shaped shed built to house farm equipment. The wood-frame shed is part of the complex of barn buildings concentrated just to the south of the main concentration of buildings at the station. The longer leg of the L-shape was constructed in 1924, and the small extension perpendicular to the original shed on its northern end was added in 1929. Like the other sheds in the complex, this building is faced with clapboard siding painted red with white trim. It has a gable roof, which is deteriorating. The shed is divided into a series of stalls, each with a set of double doors. According to Dr. William Ackerman, who was in charge of the Glenn Dale station from 1959 to 1974, this shed was gradually abandoned, because its stalls could no longer accommodate the width of newer farm

equipment.[4]

Building 44

The largest structure and the only two-story building at the Glenn Dale station, this traditional barn is the center of a complex of related barn buildings built in the earliest years of the Plant Introduction Garden. Building 44 was constructed in 1920 to house horses and other equipment. The rectangular building is faced with horizontal clapboard siding (painted red with white trim). Large sliding double doors, supported by intricate hardware, provide access to the interior of the barn from both east and west. On the north facade, three six-over-six windows provide light to the first floor, while two identical windows on the second floor, or loft level, flank a set of double doors. A large lean-to was added to the southern facade in 1924. It attaches to the main building immediately below the sills of the second-floor windows. Doors on the east, south, and west sides of the lean-to are interspersed with six windows. Each window on the lean-to is comprised of only six panes, half the size of the windows on the main barn building. The lean-to roof has collapsed on the western end of the structure and several panes of glass are broken or missing. Although the original plans have not been located, it seems likely that the building was constructed by the Department of Agriculture's Department of Rural Engineering, which designed Glenn Dale's Building 20 in a similar style.[5] The building is still used in a limited way for its original purpose, the storage of farm equipment.

Building 44 was one of the first structures of the station. Subsequent sheds that were constructed in the surrounding area followed the stylistic precedent established by Building 44. Along with the residence cottages, greenhouses, and a headhouse, the barn building provided an obvious support function to the daily operations of the federal plant introduction garden.

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[4]Oral interview with Dr. William Ackerman, conducted by Heather Ewing of Robinson & Associates, Inc., June 9, 1995. He stated that one could drive into the stall but then could not open the vehicle doors.

[5]Drawing for Building 20, signed by the Division of Rural Engineering, is located at the Office of Facilities and Engineering, Building 426, Beltsville Agricultural Research Center.

Other Buildings

The Glenn Dale site also includes a number of very small outbuildings scattered over the developed area. These include Buildings 35, 36, and 18, which served as freestanding pumphouses.

Several other buildings on the site plan have been demolished in recent years. They include Building 19, a large lathe screenhouse; Building 45, a shed; and Building 33, one of the original 1920 cottages, which burned in an arson fire in May 1995.

DESCRIPTION - LANDSCAPE

Overview

The U.S. Plant Introduction Station (originally called the U.S. Plant Introduction Garden) at Glenn Dale, Maryland, is a 70-acre site, located about 16 miles northeast of Washington, D.C. It was established in 1919 as one of four federal plant introduction stations around the country, under the Department of Agriculture's Section of Foreign Seed and Plant Introduction.

Description: Landscape Elements

The site is "L"-shaped, encompassing 70 acres. The long leg of the "L," which runs in a north-south direction, comprises the first 50 acres purchased by the government in 1919. This area, generally flat and cleared of natural growth, consists of the principal nursery plots. It was divided into four sections, A B C and D, which ran in a north-south direction from east to west. The buildings of the station were clustered together in the northernmost area of the property, in a small 12-acre section. The short leg of the "L," totaling 20 acres, runs in an east-west direction at the southern end of the 50-acre plot; it was leased in 1930 and purchased in 1940. The acreage directly south of the 50-acre parcel rises slightly before dropping again at the property line, creating an area referred to as Watson's Hill (for a farmer that occupied this land adjacent to the station in 1919 when operations at the station began). Watson's Hill, covered in a large pile of brush and other plant material, has been used by the station as the dump for plantings that are no longer needed. As the property proceeds to the east, it crosses Lottsford Branch, which runs through a wooded gulch/gulley area. These five acres by Lottsford Branch were never developed for use in propagation or experimental plots.

Around the Buildings: Northern Section

The 12-acre area at the northernmost end of the property is dominated by the cluster of the station's buildings. Notable landscape features in this section include the pond at the northwest corner, the entrances to and roadways of the station, and the ornamental plantings around the buildings and along the perimeter of the property.

At different times in its history, Glenn Dale has been the site of large-scale plantings of azaleas, bamboo, flowering cherry, heritage apples, holly, lilacs, maple, and various nut trees. Many specimens representative of the station's activities are planted around the buildings and fields of the Glenn Dale site. In some instances, because the plantings at Glenn Dale were the first of their kind in the United States, these particular specimens are the largest known in the United States. In other cases, in which the item was not commercially viable or was never introduced, the Glenn Dale examples were probably the only one of their kind in the United States.[6]

[6]Interview with Dr. Howard Waterworth, conducted by Heather Ewing of Robinson & Associates, Inc., May 18, 1995. A number of these plants have reached the end of their lifespans within the past few years.

The pond was created early in the history of the station; on the first site visit in 1919, when the heads of the department were first examining land in the Bell area, they noted the "living stream" at the northwest corner of this property. It seems likely that, soon after acquiring the land, they created the pond to be fed by the stream.

There are four distinct entrances to the station. Only two are in use today. The westernmost entrance, which served as the principal entrance to the station for many years, has not been in use for close to the last decade; located at the northwestern corner of the property, it is the first view of the station when approaching from Glenn Dale Road. The entrance road, which runs east-west across the north section of the station and creates a divider line between the fields and the cluster of buildings, is enhanced by two rows of Bradford Pears. These trees were planted in the early 1960s by Dr. William Ackerman when he was superintendent, to create a formal approach into the station.[7] The three remaining entrances are all located along the northern boundary of the station, along Old Pond Drive parallel to the old Washington, Baltimore & Annapolis railroad bed. Two of these entrances in use today are located at either end of the bank of quarantine greenhouses. The one at the western end of the greenhouses opens onto a small parking lot and a road leading to the road that borders the fields. The entrance at the eastern end of the greenhouses accesses a service road that leads past the Main Office (Buildings 1, 2, 3) to the beginning of the fields. There is yet another entrance along this north boundary line, at its easternmost end, which leads past the superintendent's cottage (Building 32) to the edge of the fields; although the house is still lived in, this entrance is no longer used. Although some of these entrances are now closed, the circulation pattern of this northern section of the station remains essentially unchanged from the station's circulation pattern during the height of its period of significance in the 1930s.

The ornamental plantings that surround the buildings were located in four distinct plots, which were named P1, P2, P3, and P4, moving east to west across the north end of the station. Some of the more significant individual specimens extant on the Glenn Dale site are described below. They include the Dawn Redwood tree, an example of which is located near Cottage #2 (Building 34). This species was thought to have been extinct for over seven million years until a Chinese forester discovered a single Metasequoia in a temple in the remote Szechuan village of Mo-Tao-Chi. The specimen at Glenn Dale was presented in 1948, the result of an expedition that traveled down the Yangtze River and across three mountain ranges to retrieve the seeds.

The Pat Nixon Rose, presented as a gift to the wife of then-President Nixon, was placed in quarantine at Glenn Dale upon its arrival in the United States. When the plant was finally released, the Nixons had left the White House and the plant could not be accepted; it was never distributed. Glenn Dale maintained the rose, which is believed to have been the only planting of its kind, for a number of years in a permanent planting alongside Building 3. It is no longer extant.

Still extant in a spot to the the west (or rear) of Building 3 is an enormous flowering cherry, of the variety Higan Cherry, which was received as budwood in 1917 by plant explorer David Fairchild, the

[7]Interview with Dr. William Ackerman, conducted by Heather Ewing of Robinson & Associates, Inc., at Glenn Dale, October 30, 1996.

head of the Foreign Plant Introduction department at the Department of Agriculture. It is believed to be one of the largest specimens of its kind in the United States. Near Cottage #1 (Building 32) is another large Japanese flowering cherry tree, which was transplanted to Glenn Dale in 1926 from Fairchild's Chevy Chase home, "In the Woods." The extant ornamental cherries near Cottage #1 formed part of an orchard of cherries planted in the first years of the station as a beautification measure along the perimeter of the property.

Along the road leading to Cottages #2 and #3 (Buildings 34 and 33 respectively) is a line of conifers, established from trees introduced by renowned plant explorer Frank N. Meyer. Meyer spent thirteen years (1905-1918) in China, Manchuria, Korea, Siberia, Turkestan, and the Caucasus, collecting over 2,000 species and varieties of plants. He disappeared in 1918 from a steamer on the Yangtze River. These trees are the oldest recorded permanent plantings at Glenn Dale, and the original specimens for these trees were sent from Northern China by Meyer in 1906.[8]

The Fields: A, B, C, and D

The fields run north-south the length of most of the property. They are divided into four separate sections, labeled A, B, C, and D. Each lettered section is divided into subsections, which have been numbered. The original numbering system, in use for most of the history of the station, ran from 1 to 5, beginning A1 for example at the level south of the barn cluster, and B1, C1, and D1, at the line created by the road that runs east-west south of the cottages and Building 20. As mentioned above, the area north of this road, occupied by the buildings and ornamental plantings, was divided into four sections referred to as P1, P2, P3, and P4. The National Arboretum in their use of the site has omitted reference to these P numbers, creating instead a system that labels A1 through E1 at the north end of the station -- encompassing all the buildings (A1 through D1) and the pond (E1). Beginning at the fields, the sections are labeled A2 through D2, continuing through to A6, B6, etc. At the southernmost end of the property, Watson's Hill is referred to as A7, a small planting area between the hill and the woods is named B7, and the woodlands at the southwest corner of the station are referred to as C7.

The circulation pattern of the fields at the Glenn Dale station has remained essentially unchanged throughout the history of the station's operations. They are accessed by two principal drives, which run parallel to one another in a north-south direction. At the middle of the fields, in between plots B and C, is a drive that runs two-thirds of the way south through the fields before turning east to join the other principal road. The road farther to the east, located between plots A and B, runs the length of the station. Apparent from aerial photographs is an additional road that ran along the easternmost boundary line, no longer extant. There was also a small road that extended along the southern border of the original 50 acres, west from the central road that ran the length of the property; while the bed

[8]Much of the above on plantings at Glenn Dale came from Jan Bowman, *Ghosts of Glenn Dale Past: The History and Folklore of Several Permanent Plantings at the National Plant Germplasm Quarantine Laboratory, Glenn Dale, Maryland*, private printing, May 1, 1990. Since her publication, a large percentage of the specimens that were extant in 1990 reached the end of their lifespan, died because of storms or harsh weather, or were removed.

of this road is still clear of plantings, it is not as distinct a road as the others of the station. Likewise, there appear on the aerial photographs to be two small roads that extend into the Watson's Hill section of the station; these also remain open beds today, but are not distinct roads such as visible elsewhere on the station.

Plantings were rotated frequently, as different experiments were conducted at different times in the history of the station. The general disposition and use of fields, however, is still clearly legible, as the National Arboretum (the current occupant) has planted out the fields in a similar fashion. There are a number of large ornamental trees that are remnants of earlier experiments, still standing in the fields.

At the entrance to the fields, to the west of the road that runs down the middle of the station is an ornamental pistachio tree, brought by Dr. Ackerman from the Plant Introduction Station in Chico, California; Ackerman had been doing experimental work there prior to his tenure at Glenn Dale. There is a cluster of large trees, none of which has a particularly distinguished history, around Building 41. By the quarantine screenhouse (Building 38), near the entrance road that leads from the northwest corner of the station, there is a large chestnut tree. Halfway down the station property, in the middle of the fields, is a cluster of large trees, including a sawtooth oak (daughter of the original sawtooth oak that was located to the east of Building 1) and a Zelkova Schneideriana. At the rear of the original 50-acre parcel, at the foot of the Watson's Hill area, is a large tree related to the Turkish Filbert, at the corner of what represented the nut block; the only specimen still standing from the use of this area as an orchard, it is thought to be the largest specimen of its kind in the United States.[9]

The Woods

At the southwestern corner of the property is a sloping wooded area. Amidst this natural growth, the scientists of Glenn Dale conducted experiments on certain woody ornamentals, especially the Glenn Dale azalea work undertaken by B.Y. Morrison and continued by others, and also work on rhododendrons collected in Japan. There is still much evidence of azaleas and rhododendrons in the woods. The section of woodlands at the western perimeter is part of the original 50-acre parcel; the rest of the woods falls into the 20 acres that were leased in 1930 and purchased in 1940. A winding path through the woods is still extant today. It is lined with azalea bushes and rhododendrons.

Today, the main road concludes at the foot of Watson's Hill, at the perimeter of the original orchard blocks. As mentioned above, it is apparent from aerial photographs of the 1930s, when more of this 20-acre south section was used for plantings, additional circulation systems existed at this end of the station. A road ran west to the edge of the woodlands at this point, and additional roads led in a eastward curve up over the hill to the rear amphitheatre-like planting area. Open beds in these locations today give evidence of the original road paths.

[9]Site visit with Drs. Ackerman and Waterworth, conducted by Heather Ewing of Robinson & Associates, Inc., October 30, 1996.

Watson's Hill: Southern Section

The southern section of the station, which runs east-west and comprises approximately 20 acres, was leased in 1930 and purchased in 1940 from Hyattsville Realty Company. The most dramatic feature of this section of the station is the large hill, called Watson's Hill, that rises from the fields. The hill was so named for the owner of this land when the government began operations at the station in 1919. This hill has been used as a dumping ground by the Glenn Dale scientists, where specimens from abandoned or completed experiments are discarded when the fields are prepared for new work. Given the small acreage of the station, it was not possible to leave old experiments in the fields; the land was constantly reused for new work. At the rear or south side of Watson's Hill, the land slopes down quickly to the property line, creating a small amphitheatre-shaped area. In aerial photographs from the 1930s, it is apparent that this area was planted out; it does not appear to have been used in recent years and contains a scattered sampling of orchard trees.

As the property continues to the west, it extends over Lottsford Branch, dropping precipitously into a densely wooded area. Ackerman suggested that there were at one time plans to develop a method by which the area could have been used for plantings -- a project that would have included building a bridge -- but this idea was never carried out. Principally this area was used by the station as a non-plant materials dump. It has been cleared of all refuse in recent years. It constitutes approximately five acres, virtually the only area of the station not developed for use in conjunction with the efforts of plant introduction and quarantine.[10]

[10]Site visit with Drs. Ackerman and Waterworth, conducted by Heather Ewing of Robinson & Associates, Inc., October 30, 1996.

8. Significance

Survey No. PG 70-54

Period	Areas of Significance - Check and justify below			
__Prehistoric	__Archeology-Prehistoric	__Community Planning	__Landscape Architecture	__Religion
__1400-1499	__Archeology-Historic	__Conservation	__Law	__Science
__1500-1599	X Agriculture	__Economics	__Literature	__Sculpture
__1600-1699	__Architecture	__Education	__Military	__Social/Humanitarian
__1700-1799	__Art	__Engineering	__Music	__Theater
__1800-1899	__Commerce	__Exploration/Settlement	__Philosophy	__Transportation
X 1900-	__Communications	__Industry	__Politics/Government	__Other (specify)
		__Invention		

Specific Dates	Architect	Builder	Area
1919	Bureau of Agricultural Engineering		

Applicable Criteria:	X A	X B	X C	__D			
Applicable Exception	__A	__B	__C	__D	__E	__F	__G
Level of Significance	X National		__State		__Local		

SEE CONTINUATION SHEETS ENTITLED Significance - Buildings
AND
SEE CONTINUATION SHEETS ENTITLED Significance - Landscape

SIGNIFICANCE - BUILDINGS

Overview

The U.S. Plant Introduction Station at Glenn Dale, Maryland (first known as the U.S. Plant Introduction Garden), was established in 1919 by the Department of Agriculture for the purpose of testing plants of potential economic benefit to the United States. One of four such federal introduction gardens across the country (and one of only two operational today), the Glenn Dale station received an enormous range of plant species from around the world and served as an important source of seeds, plants, cuttings, and associated information for use by growers. Established in close proximity to Washington, the Glenn Dale station was the only one of the four stations that serviced the central Agriculture headquarters and the Inspection House, which was the first stop for plants entering the United States. For nearly all of its history, it was the center of quarantine facilities for the entire Department of Agriculture and the most highly developed of the four stations. Because of its ample greenhouse units and facilities for propagation of all plants, the Glenn Dale station was typically the one selected for extensive propagation jobs, both for specialty items for within the U.S. and for the government's foreign aid programs.

Most of the agricultural crops grown today in the United States were derived from foreign plants introduced by early settlers or were indigenous and utilized by the Native Americans several centuries ago. The Agriculture section of the Patent Office (established in 1839) first handled some of the activities for the U.S. government. In 1862 when the Agriculture Department was created, these functions were centered in the Department's Division of Gardens and Grounds, and the Division of Seeds, created in 1862 and 1868, respectively. It was not until 1898, however, that a formal plant and seed introduction program was established. The expansion of American agriculture westward into areas with new soils and temperatures heightened the benefits of a national plant introduction program.

History of Plant Introduction in the United States

The definition of plant introduction, while it can refer specifically to the actual release of plant materials for public or commercial use, generally encompasses the transfer of living plant materials from one location, where the plant has presumably existed for an extended period, to a new location.[11] Most of the major plants and crops in the United States are of foreign origins. While blueberries, cranberries, pecans, sunflowers, and tobacco were originally present in the United States, the "native" crops we think of such as corn, beans, wheat, tobacco, and cotton were all introduced from areas outside the United States. Before and after the American Revolution, seeds and plants were brought into the country through a variety of ways: immigrants, traders, government officials, and privately sponsored expeditions. There was, however, no organized system of seed distribution or

[11]Howard L. Hyland, "History of Plant Introduction in the United States," *Plant Genetic Resources: A Conservation Imperative*, ed. by Christopher W. Yeatman, David Kafton, and Garrison Wilkes, AAAAS Series, Westview Press, CO, 1984. p. 5

experimentation.[12] In the 1780s and 1790s agricultural societies were formed in South Carolina, Pennsylvania, New York, and Massachusetts, for the purpose of experimentation and the dissemination of results.[13] By the early nineteenth century, as the country expanded and included new and diverse climates and terrains, it was recognized that the introduction of plants from other countries was necessary for the full development, or cropping potential, of the entire United States.

Government Involvement in Plant Introduction

Thomas Jefferson wrote that "the greatest service which can be rendered any country is to add a useful plant to its culture." Although Washington, Jefferson, and other prominent statesmen advocated agricultural research programs from an early date, very little government action was taken before the middle of the nineteenth century. Plant introduction was essentially limited to individually sponsored efforts. The first official organization of plant introduction efforts came in 1827 when John Quincy Adams issued a circular requesting U.S. consular officers abroad to send home any seeds and plants that might "give promise ... of flourishing and becoming useful."[14] In 1839 Congress appropriated $1,000 for seed distribution and the dissemination of plant information by the Agricultural Section of the Patent Office. With this appropriation others soon followed, enabling further research and the establishment of a garden on the Mall in Washington, D.C., for experimentation of new crops. In 1858 the Commissioner of Patents hired his first plant explorer, Robert Fortune, to go to China to collect tea seed.[15]

When Abraham Lincoln established the Department of Agriculture in 1862 during the Civil War, plant introduction and seed distribution were recognized as a critical part of its mission. Isaac Newton, who had served as chief of the Agriculture Section in the Patent Office, was appointed the first commissioner of the new department, a post he held until his death in 1867. In addition to the collection and distribution of seeds, the department answered inquiries; disseminated statistical and other information; tested new implements, cereals, seeds, and plants; performed chemical analysis of soils, grains, fruits, plants, vegetables, and manure; published results; and sought to establish professorships in botany and entomology, as well as an agricultural library and museum.[16]

At the turn of the century, the head of the Department of Agriculture was recognized as a Cabinet-

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[12]Hyland, p. 6.

[13]True, Alfred C. *A History of Agricultural Experimentation and Research in the United States, 1607-1925*, p. 7.

[14]W.H. Hodge, C.O. Erlanson. "Federal Plant Introduction: A Review," *Economic Botany*, p. 303.

[15]Hyland, p. 7.

[16]True, p. 41.

level position.[17] James Wilson, appointed the first Secretary in 1898, was particularly connected to the endeavors of plant research and introduction. He immediately established the Section of Seed and Plant Introduction, the first formal plant introduction program. In that same year, the first Federal Plant Introduction Garden, now known as the Subtropical Horticulture Research Station, was established in Miami, Florida.

The Department of Agriculture's Office of Foreign Seed and Plant Introduction, and the Creation of the Four Federal Plant Introduction Gardens[18]

Together with the organized collecting of plants abroad, the Department of Agriculture recognized that it was necessary to establish facilities in the United States for the testing and propagation of these plants prior to their distribution throughout the United States. Consequently, in 1898, the Federal Plant Introduction Garden was created in Miami, Florida. In 1904 the second station was established in Chico, California, focusing on introductions in a western climate. The need for a station near the Department of Agriculture's headquarters and inspection house resulted in the establishment of the Glenn Dale station in 1919. In this same year the Barbour Lathrop station was built in Savannah, Georgia, the final and smallest of all the four stations, primarily to support research on bamboo.

Work at these four stations was carried out in conjunction with the state agricultural stations and with private individuals. As members of the Plant Introduction Section explained in a 1956 article on the Federal Plant Introduction Gardens:

> The Introduction Gardens have been called the "Ellis Islands" of immigrant plants. They simply receive introduced plants, quarantine them if necessary (primarily at Glenn Dale), test them to see if they are in any way suitable for more extensive trial among America's plant scientists, and, if so, are increased and distributed, based on the orders of specialists at the headquarters of the Plant Introduction Section. To the Introduction Gardens go plants to be quarantined, woody species which cannot be handled as annual crops, certain types of ornamentals, and all little-known plants the potentialities of which are yet to be determined. Some introductions may even need to be grown to maturity to allow their correct names to be determined or verified. Introduced seeds or propagules of most of our common annual field and vegetable crops do not normally go to these Gardens but rather enter test programs in the United States through another series of regional plant introduction centers administered cooperatively by the Department with the State Agricultural Experiment Stations.[19]

In 1898, the United States found itself at the end of the Spanish-American War with new tropical possessions, about which they knew little. The first activities of the newly established Office of

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[17]Hodge, Erlanson. "Federal Plant Introduction: A Review," p. 301.

[18]Material in the following paragraphs comes from Hodge, Loomis, Joley, and Creech, "Federal Plant Introduction Gardens," *National Horticultural Magazine*, April 1956, pp. 86-106.

[19]Hodge, "Federal Plant Introduction Gardens," p. 87.

Foreign Plant Introduction were directly related to the study of tropical plants and their introduction.[20] The first Federal Plant Introduction Garden in Miami was a small six-acre site, soon supplanted by a site at Buena Vista, north of Miami. By 1923, the plants had been established at Chapman Field, a World War I Army aviation base near Coconut Grove. The station today is known as the Subtropical Horticulture Research Station; along with Glenn Dale it is the only other federal station remaining. Whereas the original Miami site was concerned primarily with studies of tropical woody plant introductions, the Coconut Grove station has propagated seedlings received from every part of the subtropical and tropical world. The introduction of Indian and Philippine varieties of mangoes, and avocados from Mexico and Central America have contributed to the development of extensive U.S. commercial plantings of these fruits.

In 1903, the Section of Seed and Plant Introduction was placed under the Bureau of Plant Industry, a new division (BPI was established in 1901) that unified all aspects of plant research in the Department of Agriculture. A year later in 1904, the second federal plant introduction garden was founded in Chico, California. This Sacramento Valley station focused specifically on testing, propagating, and distributing specimens under West Coast conditions. The original 80 acres donated by the citizens of Chico was enlarged to 210 acres with the acquisition of neighboring properties. By the 1950s, Chico was the center of introductions of deciduous stone fruits and nuts. Extensive tests were conducted over a series of years on several hundred varieties of foreign cherries, apricots, peaches, and nectarines; experiments were also made on 750 introductions to find a nematode-resistant rootstock pistachio nut tree. Eventually three types were passed on as good enough for trial elsewhere. During these years the Glenn Dale station held all stone fruits entering the country before sending them on to Chico for evaluation. The Chico station closed in 1973.

In 1919, the U.S. Plant Introduction Garden (later called the U.S. Plant Introduction Station) and the Barbour Lathrop Plant Introduction Garden near Savannah, Georgia (which closed in 1981) were created. The Savannah station was established on the site of an enormous grove of bamboo, which was saved from destruction by Barbour Lathrop, a world traveler from Chicago who purchased the stand at the behest of David Fairchild and gave it to the government. The bamboo originated from Japanese plants introduced to the area in the early 1880s. Once the garden was established, virtually all bamboo was transferred to Savannah, creating the largest living collection of hardy bamboo extant. Research on the possible industrial applications of bamboo, as well as the testing of other unrelated ornamental plants of interest to the South, was carried out at the station until its closure.

The Development of the Glenn Dale Station (1919-1920)

The site of the U.S. Plant Introduction Station at Glenn Dale was acquired by the government from John D. and Alice G. Wormwood in 1919. It had originally been a part of the Marietta farm, and the Wormwoods had acquired the land in 1891.[21] The Agriculture Department's Division of Rural

[20]Ryerson, Knowles A., p. 122.

[21]Correspondence from 1925 relating to right-of-ways on the property contains language from the original deeds. Files located in Building 1, Glenn Dale.

Engineering designed the first buildings on the property. The station provided a needed facility where immediate care could be given to plant material weakened by long transit from abroad.[22]

The Glenn Dale station was the most highly developed of these four stations, and the only one which serviced the central Department of Agriculture headquarters and the Inspection House, which was the first stop for all plant materials entering the United States, in Washington. It was unique in its role as the primary quarantine facility for the Department of Agriculture. Because of its ample greenhouse units and facilities for propagation of all plants, the Glenn Dale station was typically the one selected for extensive propagation jobs, both for specialty items for the United States and for foreign aid programs. The station received an enormous range of plant species from around the world and served as an important source of propagules and information for use by growers. It was the first step for many of the plants brought into the United States; often materials for the other federal introduction stations and the regional experiment stations passed first through the Glenn Dale station.

In addition to the introduction activities at Glenn Dale, research activities were also carried out to cultivate strains of plants that would improve upon extant varieties by creating more hardy breeds or breeds that increased yield. Many of its successes related to ornamental plants. One example familiar to the public are the Glenn Dale azaleas. Over 450 varieties, the result of the largest azalea breeding program in the country, were developed to be winter-hardy in the Washington, D.C., climate.[23] Many of these specimens are today on display at the National Arboretum. The camellia was another plant that was not winter-hardy. Research at Glenn Dale virtually doubled the range of this beautiful shrub, which originally could not be grown north of North Carolina; and seventeen new varieties were developed. The Bradford Pear and similar ornamental-type pears were also products of research at Glenn Dale. One of the most popular landscape elements in use today, the pest-resistant Bradford Pear was named for Frederick Bradford, the station superintendent during the 1950s when the plant was released. The Glenn Dale station also maintained an orchard collection of pome fruit variety introductions. This collection of over 800 varieties of foreign and domestic apples was used for testing and evaluating quality in the search for new sources of good early ripening apples to supply the summer fresh fruit market, and the search for late blossoming apples.[24]

The 1930s were a period of great expansion at the Glenn Dale site. At least some of the expansion was funded by PWA funds.[25] An additional 20 acres south of the station was leased for cultivation.

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[22]Hodge, *Advances in Agronomy*, p.201.

[23]B.Y. Morrison. *The Glenn Dale Azaleas*, Agriculture Monograph No. 20, United States Department of Agriculture, Washington, D.C., October 1953.

[24]Ackerman, William L. "Evaluation of Early Ripening Apple Introductions," *Series I. Evaluation of Foreign Fruits and Nuts*. No. 11: Apples. U.S. Bureau of Plant Industry, Soils and Agricultural Engineering, September 1962.

[25]P.W.A. Projects Submitted for Action, June 22, 1935. Record Group 7, Bureau of Entomology and Plant Quarantine, NC-136, Box 1659, National Archives and Records Administration.

Prominent Glenn Dale personnel, such as Benjamin Morrison and Frederick Bradford, played active roles in the design of new facilities. A main office and laboratory building was constructed next to the headhouse, intended by Morrison to evoke the character of an English cottage.[26] The first quarantine greenhouses and screenhouses were built. Located to the north of the headhouse, away from the propagation greenhouses, the quarantine greenhouses were equipped with individually controlled compartments. A trio of isolated quarantine screenhouses was established some distance from the center of the Glenn Dale building grouping, for long-term examination of fruit trees for latent pathogens. During this decade, Morrison was in the midst of his groundbreaking breeding program of the Glenn Dale azaleas, centered primarily around the main propagation greenhouses. The Soil Conservation Service, established in 1935, had the use of a newly-constructed greenhouse/headhouse on the property, for research on artificial light propagation.[27]

The 1940s brought additional changes to the site. In 1940, the twenty acres at the southern border of the station, which had been in use through a lease arrangement since 1930, were purchased from the Hyattsville Realty Company. During World War II, virtually the entire range of greenhouses was turned over to the propagation of cinchona, the number one source of quinine. Young trees, begun with some four million cinchona seedlings, were later sent to Latin American centers for the establishment of new plantations. Although the cinchona tree was originally a native of the New World, by the 1930s nearly all commercial production was concentrated in the East Indies and in Africa. Efforts were begun in the mid-1930s to grow improved varieties in Latin America, particularly in Costa Rica and Guatemala. After the war, these regions became the primary suppliers of quinine in North America.[28]

The Expansion of the Plant Introduction System, and the USDA-States Cooperative Program (1948-1975)

After World War II, significant changes were made to the plant introduction system. In 1946, the Research and Marketing Act was passed by Congress, which included funding for regional "New Crops" programs. Centered at Beltsville, Maryland, this program encouraged research on new crops that could partially replace economic crops considered surplus or in over-production. By 1952, four Regional Plant Introduction Stations had been established in different quadrants of the United States, and a single interregional project created in Wisconsin to handle potatoes. The regional programs effectively coordinated the needs of federal, state, and individual plant specialists. The Act also provided increased funding for explorations to collect materials supporting this research. It was recognized at the same time that the long-term storage of valuable germplasm was necessary to preserve plant materials introduced into the United States, as many of the items brought in since 1898

[26]Interview with Dr. William Ackerman, conducted by Heather Ewing of Robinson & Associates, Inc., June 9, 1995.

[27]Architectural Drawings located at the Office of Facilities and Engineering, Building 426, Beltsville Agricultural Research Center; oral interview with Dr. J.L. Creech, June 14, 1995.

[28]Rasmussen, Baker, p. 164.

could no longer be found extant in this country. In 1958, the National Seed Storage Laboratory was established at Fort Collins, Colorado. Up until this time, the Plant Introduction Station at Glenn Dale had served as the nation's "savings account" of the plant germplasm collections.[29] The Glenn Dale station housed these collections in a new seed storage building, completed in 1952.

In addition to highlighting the need to preserve introduced germplasm, the Regional Plant Introduction system infused new supplies of funding into the Department's activities. Money from the regional system funded the renovation of Glenn Dale's two main propagation houses, Buildings 5 and 6. By the 1950s and 1960s, nearly all of the Glenn Dale station's 70 acres were cultivated, and as many as 6000 plants were being grown. On the property there were 13 greenhouse units, comprising a total of 34,000 square feet of glazed area, 5,000 square feet of screened outdoor beds, and 29 cold frames. A major coffee program was underway to grow out introductions from Africa before sending them on to South America, as part of an effort to prevent the spread of devastating crop diseases. The Bradford Pear tree, released in 1960 and named for Frederick Bradford, has since become one of America's major landscape elements [see further description under the Landscape Addendum].

Plant Quarantine at the Glenn Dale Station

Despite the devastating effects that pests can have on a country's economy or the health of its population, little consideration was given to the inadvertent importation of pests into the United States in the nineteenth and early twentieth centuries. Problem pests introduced to the United States include the gypsy moth, the Japanese Beetle, and the Dutch elm disease.[30] The first federal quarantine law in the United States was enacted in 1912, after the white pine blister rust and the chestnut blight fungus had become established in this country.[31] This act was supplemented by the Organic Act of 1944, which authorized survey and control programs against endemic and exotic pests, and the Federal Plant Pest Act of 1957, which authorized emergency actions to prevent the introduction or interstate movement of pests not covered in the 1912 act.

The Glenn Dale station was distinguished from the other federal stations by its function as the plant quarantine center for the U.S. Department of Agriculture. Glenn Dale acted as a holding area for newly introduced plant imports, until such a time as the U.S. Plant Quarantine Division was ready to release them.[32] Quarantined plants were contained in specially constructed greenhouses.

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[29]Hodge, *Advances in Agronomy*, p. 208.

[30]Interview with Dr. Howard Waterworth, May 18, 1995.

[31]Waterworth, Howard E., and George A. White. "Plant Introductions and Quarantine: The Need for Both," *Plant Disease*, January 1962.

[32]Ackerman, William L. "Evaluation of Early Ripening Apple Introductions," *Series I. Evaluation of Foreign Fruits and Nuts*. No. 11: Apples. U.S. Bureau of Plant Industry, Soils and Agricultural Engineering, September 1962. According to Hodge (*Economic Botany*, p. 314), plants introduced as seed seldom require quarantine procedures, although there are some exceptions.

Plants entering the United States first cleared the U.S.D.A. Inspection House at 224 12th St., S.W. Since the closing of the Inspection House in the early 1970s, this step has been handled at the Plant Germplasm Quarantine Center at Beltsville, Maryland. The three categories for quarantined plant material are prohibited, restricted, and post entry. Those plants falling in the prohibited category are typically sent to Glenn Dale for testing in quarantine; they originate from parts of the world that have serious disease problems, most of which do not exist in the United States. Those plants in the restricted category, which encompass most plant materials coming into the United States, are inspected, perhaps given fumigation treatment, and sent on to the appropriate importer. Those plants considered in the intermediate post entry category must, after inspection and treatment, be grown under close observation. This work is still done today at Glenn Dale, where specimens are closely observed and tested. The tests, which vary according to genus, include molecular assays, biological assays, and electron microscopy to assess pathogenicity. Some infected plants are given therapy to produce pathogen-free germplasm.[33]

During the 1970s, Glenn Dale continued to serve the plant introduction system as the primary quarantine facility of the Agriculture Department. Some of the more notable introductions brought through the Glenn Dale station during this time were the New Guinea impatiens, and the Japanese bonsai trees, given by Japan to the United States in 1975 in celebration of the U.S. Bicentennial. The bonsai collection is today located at the National Arboretum.

In the early 1980s, it was determined that the station at Glenn Dale was unable to address adequately the needs of a modern quarantine facility. Updated and modern systems are required to contain securely the pathogens which may be found on new introductions. Additionally, many of the procedures and materials used at Glenn Dale in the earlier decades of this century were discovered to have continuing deleterious effects. There were no modern pesticides in the 1920s; it is likely that scientists at Glenn Dale used mercurial sea treatments, arsenic compounds, lead-containing compounds, and, in the post-Depression era, DDT, in treating plants.[34] A new and modern facility, the National Plant Germplasm Quarantine Laboratory, was begun at the nearby Beltsville Agricultural Research Center in 1983. Currently, nearly half quarantine activity remains at Glenn Dale. While the government has already appropriated funding for the continuation of construction of the facility, the entire complex has yet to be completed. Those structures that have already been erected at Beltsville by the Animal and Plant Health Inspection Service reflect the needs of contemporary plant quarantine. All labs, greenhouses, and screenhouses are state of the art.[35] Today Glenn Dale is both a quarantine facility used for pathogen-indexing of introduced fruit, grain, and vegetable germplasm and, since

[33]Plaque on wall of Japanese Beetle Corridor leading from Building #1 to Building #4 at Glenn Dale, MD.

[34]Interview with Dr. Howard Waterworth, May 18, 1995.

[35]Waterworth, "Processing Foreign Plant Germ Plasm at the National Plant Germplasm Quarantine Center," pp. 854-860.

1987, a repository for the woody ornamental germplasm collection of the National Arboretum.[36]

Conclusion

The important work of the Plant Introduction Garden at Glenn Dale spans over 75 years. It includes the quarantine, introduction, and propagation of literally thousands of species of plants which today have had an important contribution to American commerce, agriculture, or horticulture. Many varieties of azaleas that are planted in the Mid-Atlantic and north, as well as hardy camellias, the Bradford-type ornamental pears, and New Guinea impatiens to name a few, are linked to work done at Glenn Dale. Established at the height of U.S.-sponsored field explorations, the Glenn Dale station evinces the development in this country of a sophisticated program to increase the productivity and variety of American agriculture. The materials collected and introduced during this period (1898-1930) probably contributed more to crop improvement than any other time in U.S. agricultural history.[37] The Glenn Dale station also played a supporting role in the United States' foreign aid programs, such as through the large coffee-growing program after World War II. Most importantly though, as the U.S. Department of Agriculture's primary quarantine facility, the Glenn Dale station served a unique function within the government's plant introduction system.

[36]George A. White, Henry L. Shands, and Gilbert R. Lovell, "History and Operation of the National Plant Germplasm System," p.10.

[37]Hyland, p.10.

SIGNIFICANCE - LANDSCAPE

Overview

The U.S. Plant Introduction Station (originally called the U.S. Plant Introduction Garden) at Glenn Dale was established in 1919, one of four federal stations around the country under the Department of Agriculture's Plant Introduction Section. It is today one of only two remaining. These stations received materials introduced into the United States, tested them for suitability for more extensive trial among this country's plant scientists, and, if found suitable, increased (propagated) and distributed the plants. If quarantine of the foreign seed or plant was necessary, it was typically conducted at the Glenn Dale site. Of the four introduction stations, Glenn Dale was the most highly developed facility and the only one located near Washington, D.C., which was the main point of inspection for plant materials brought in from abroad. For nearly all of its history, it was the center of plant quarantine facilities for the Department of Agriculture.

As Beverly T. Galloway, the head of the Bureau of Plant Industry from its establishment in 1901 until 1913, explained in an article on the fledgling Plant Introduction Gardens:

> The Garden at Bell, Maryland, is the direct outgrowth of a demand on the part of the public for more rigid scrutiny of commercial shipments of plants coming to this country from foreign parts. It became evident that if the Federal Government applied rigid rules and regulations affecting the importation of seeds and plants by commercial and private parties it must apply the same or even more stringent rules and regulations to those brought in for eventual public use. For it must be understood that our Government is supporting and has supported for 25 years an organization [the Office of Foreign Seed and Plant Introduction] unique in the history of the world -- one whose function is to search the world for new crop plants, to bring them here, clean them, test them and if found promising, distribute them where it seems likely they may succeed.[38]

The Garden at Yarrow, Maryland

The impetus for creation of the Glenn Dale station -- an approximately 50-acre site in the vicinity of Washington, D.C. -- found its origins in the work carried out by the Office of Foreign Seed and Plant Introduction in the Inspection House and detention greenhouses located on the Department grounds in downtown Washington, D.C., and in the operations of a 40-acre garden at Yarrow, Maryland. The Yarrow garden had been established [in the 1910s] on land supplied to the department by a Mr. Lee Hunt. Hunt was a personal friend of David Fairchild; Fairchild, head of the Office of Foreign Seed

[38]B.T. Galloway, "A Plant Introduction Garden: What it is and What it Does," ca. 1924. Beverly T. Galloway Papers, Box 1, National Agricultural Library, Special Collections. Galloway left the Department of Agriculture in 1914/15, but returned later to work directly under David Fairchild, where he was heavily involved in the establishment and operation of the federal plant introduction stations.

and Plant Introduction since its establishment in 1898, was one of the critical minds behind the development of the plant introduction system.[39] Work was conducted at Yarrow until 1918, when conditions became less favorable for an unnamed reason.

At that time, Beverly T. Galloway sought a Congressional appropriation to establish a new garden, in a "location with good tractable soil as well located as possible for our detention and propagation work."[40] A team of men from the department explored properties in Fairfax, Virginia; College Park, Maryland; near the Soldier's Home, in Washington, D.C.; and at a location some 16 miles northeast of Washington called Bell.

Bell, Maryland

The department was drawn to Bell, Maryland, principally because of one of its residents, Dr. Walter Van Fleet, an Agriculture Department employee in the Office of Horticultural Investigations. Galloway visited Van Fleet on May 29, 1918, intent on securing information on the propagation of nursery stock, the effect of the restrictions of the War Trade Board and the Federal Horticultural Board on importations, and general information on growing. World War I had proved to be a test for the plant introduction system, posing critical challenges both to increase food production and to save crops from disease.[41]

The plant introduction system of the Office of Foreign Seed and Plant Introduction was undergoing a great expansion at the close of World War I. One of the earliest stations established in the system, at Chico, California, in 1904, acquired 130 additional acres in 1917, expanding its land from 80 to 210 acres. The office acquired a new station in Savannah, Georgia, in 1919, dedicated principally to research on bamboo, the gift of Barber Lathrop. The small six-acre station that had been the first creation of the federal plant introduction system in 1898 at a site in Miami, Florida, and later moved to Buena Vista, north of Miami, was moved in 1922 to Chapman Field, a large World War I aviation base near Coconut Grove.

A station in close proximity to Washington was the goal of the Department. The land that Galloway visited at Bell, Maryland, was conveniently located along the Washington-Baltimore-Annapolis trolley

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[39]P.H. Dorsett, "Report on the Establishment of the Bell Station (1919-23)." National Archives and Records Administration (NARA), Record Group (RG) 54, Entry 135F, Box 29.

[40]Dorsett, "Report on the Establishment of Bell Station (1919-23)," notes from July 25, 1919. Galloway had begun his long and distinguished career with the U.S. Department of Agriculture at age 24, in the Division of Botany. Within a year, because of senior retirement, Galloway was appointed head of the Section of Mycology. Over a short period of time, he attracted numerous young scientists, including David Fairchild, P.H. Dorsett, and others, to the U.S.D.A. All of these men went on to play critical roles in the development of plant pathology in the United States. When the Bureau of Plant Industry was created in 1901, Galloway was appointed its chief.

[41]B.T. Galloway, "Plant Pathology," *Agricultural History*, Vol. II, No. 2, April 1928.

line, at the Bell Station stop. Leasing a four-acre plot from a local farmer [whose name was not uncovered during the course of archival research], the Department had been conducting experiments in the Bell area since about 1912 or 1913. Van Fleet, in addition to managing this work, had been growing test plots on his own farmland as well.

On the leased land, Van Fleet had created a test orchard of Chinese hairy chestnuts in 1913. Between 1906 and 1914 the Office of Foreign Seed and Plant Introduction had imported large numbers of these chestnuts, sent by plant explorer Frank Meyer, who found them in northeast China. Nearly half of the plantings in Bell (some 1,400 seedlings) were hybrids made by Van Fleet in an effort to secure a blight-resistant type.[42] Attractive to the men determining the new station's location was the fact that Van Fleet's chestnuts were located less than one-half mile from an old stand of chestnuts severely infected with blight, and thus "had unusual opportunities for infection."[43] The product of Van Fleet's work was considered by the department as one of the most promising trees to combat disease at that time (an opinion that was later altered); the specimen was also being tested for nut production, and for its tannin production possibilities. Interest in the native chestnut had been spurred by the concerns in the tannin industry, nearly 50 percent of the material for which was supplied by the chestnut.

After the visit, Galloway submitted a report to David Fairchild with a plan for establishing a plant introduction garden system. The report concluded:

> The dominant idea in these suggestions is that we need places where men of right temperament, combined with ripe experience and judgement, may without interruption utilize many of our introductions in developing new crop plants. The plan does not presuppose any conflict with existing breeders in the Department or elsewhere. Rather, it would supplement other breeding work. In short, we need plant work shops where the right kind of men may take raw materials in the shape of plant emigrants and in the melting pot of the breeder's garden develop new crop plants, useful alike to American agriculture and horticulture.[44]

Van Fleet, known today mostly for his research on roses, epitomized the "right kind of men" to which Galloway referred. Galloway described Van Fleet's work to secure new crop plants as constant, saying "it cannot be regulated by Government time or Government hours." This image of the solitary scientist working on his own plot of land around the clock and through the seasons guided the conception of the plant introduction stations as it had evolved by the late 1910s. In his notes, Galloway had indicated that David Fairchild had first conceived of the idea of "individual plant

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[42]B.T. Galloway, "Chinese Hairy Chestnut (Castanea Mollissima Blume)," *Plant Immigrant*, No. 211, November 1923, pp. 1934-36.

[43]Galloway, "Notes, Observations," May 29, 1918, p. 207.

[44]B.T. Galloway to David Fairchild, June 8, 1918. Letter on display in an exhibit on B.T. Galloway and the Bureau of Plant Industry, National Agricultural Library, Special Collections, Fall 1996.

gardens for men with ability" on a visit to Dr. Van Fleet's residence in early 1917.

> It is evident that as the work of the Department goes on, there will from time to time be men of peculiar temperament and ability like Dr. Van Fleet who could do good work provided they are furnished necessary material and equipment. With this object in mind, it would seem proper to consider a plan looking toward the gradual establishment of what might be called Plant Gardens. The dominant idea would be the utilization of plant introductions and other desirable plant material for crop improvement purposes. These gardens would primarily be one man establishments....[45]

Van Fleet was the model upon which the plan for the station was developed, and the land in the vicinity of Bell where he worked seemed a natural choice for the site of a plant introduction station near Washington. Galloway noted that:

> There is a fine field of red clover across the car track from Doctor Van Fleet. This is on a place belonging to Mr. Wormwood. He is a good farmer and nearly always has fine clover which he cuts for hay and the next year follows with potatoes. His rotation is corn, clover, and potatoes. Clover is now in full bloom.[46]

During the summer months, Galloway returned to the Bell area with a group from the department, including Fairchild, Van Fleet, Peter Bisset and P.H. Dorsett. They examined a number of properties in the vicinity of Van Fleet's farm, ultimately concluding that Wormwood's acreage was best suited to their plans.

> We looked over the Wormwood farm of 96 acres along the Washington Baltimore & Annapolis Rail Road at Bell just to the south of Dr. Van Fleet's. This is the best looking farm and best-kept of any I have seen here or elsewhere. The entire farm is practically cleared and is in a good state of cultivation. Mr. Wormwood has been practicing the rotation of corn, wheat, clover, and potatoes and has his place is good condition. The soil is Norfolk sandy loam. It's slightly rolling and there are a few low and more or less wet areas on it. The place is advertised for $20,000. The west part of the place would suit our purposes, I think admirably. This in my opinion, all things considered, is the best thing we have seen. This tract is within ½ to 3/4 of a mile of the projected slate concrete highway which is supposed to be completed within the next two years.[47]

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[45]B.T. Galloway, "Notes, Observations, Suggestions, and Recommendations relative to Nursery Stock and Some Related Subjects," 1918, p. 217. Bound typescript, Beverly T. Galloway Papers, National Agricultural Library, Special Collections.

[46]Galloway, "Notes, Observations," p. 207.

[47]Dorsett, "Report on the Establishment of the Bell Station (1919-23)," p. 25.

Development of the Property: the Glenn Dale Station in its First Years

The Department of Agriculture purchased 50 acres for $10,000 from the Wormwoods, comprising the western portion of the Wormwood farm. The Wormwood house and barn, the only structures on the property, were both located on the eastern section of the land, unaffected by this sale. [This section of the Wormwood farm later became known as the Darrow property.]

In late summer 1919, the team of men from the Department returned to Bell to pace the property and sketch a preliminary layout for the station. The pencil sketch drawn by Dorsett at that time reveals that the essential plans for the use of the land had already been formed by the group, and that many important elements remained through the design process to become part of the station as it was ultimately built.

In the sketch, the buildings are clustered in the northeast corner of the property, with the greenhouses extending south from an east-west-oriented headhouse. Ridge greenhouses are typically erected with the ridges oriented in a north-south direction. In the same cluster area with the headhouse/greenhouses is an office, stable, and storage facility, as well as cottages for the employees. To the west, located off of an entrance to the station is another cottage, approximating the location of the cul-de-sac with residences that was ultimately erected. A few linear roads run parallel to one another in a north-south direction, separating the fields into two large sections, which presumably would have been yet again divided into smaller growing plots. One significant difference between the sketch and what was finally built were the individual laboratory structures scattered around the building area. Following the philosophy articulated by Fairchild and Galloway, these labs were probably intended to enable scientists to carry out their individual research projects in solitude; by the time the buildings were actually constructed, however, this plan appears to have been abandoned or altered, omitting the individual laboratories.

As the construction of the station was begun, the careful consideration of its appearance was foremost in the minds of those shaping it.

> The location selected for the new plant detention station at Bell Station, Maryland, lies in such fashion that nearly the whole area of fifty acres may be seen from the Washington, Baltimore & Annapolis Electric Railroad.... The tract is nearly rectangular in shape with the north end abutting on the electric road. From the electric road, and especially from the electric cars in passing, one may get a general view of the entire area. There are no trees or hills of consequence to obstruct the view. All the foregoing facts should be kept in mind in considering the layout of buildings and other equipment.[48]

P.H. Dorsett ran the station in its infancy, overseeing the construction of the buildings and the initial seasons of plantings. As the Glenn Dale station was established, the department rushed to bring everything over from Yarrow. Plantings were undertaken immediately, with many of the specimens

[48]Memorandum by B.T. Galloway, "Buildings and Equipment for the New Plant Detention Station, Bell, Maryland: General Conditions," August 18, 1919. NARA, RG 54, Entry 135F, Box 2.

transferred from the garden at Yarrow. David Bisset, who had been the Superintendent at one of the regional stations in Brooksville, Florida, was appointed the first Superintendent of the station.

The layout of the station established patterns that remained throughout the history of the site's operations as a plant introduction station. The buildings were clustered together in the northern end of the property, with the fields extending south to the edge of the property line, articulated by several parallel roads. The rear of the station was occupied by the test orchards and an orchard permanent planting or repository for the varieties being tested. A description of the station offered by B.T. Galloway on one of his visits painted a picture of the work of the fledgling station:

> At Bell, Maryland, a walk through the greenhouses and nurseries shows even more interesting and striking things. Here in one place are thousands of baby rhododendrons, collected by [plant explorer J.F.] Rock in the high mountains of Yunnan, China.... He describes many of them as growing at very high altitudes and having gorgeous flowers. In a specially made compartment, artificially heated and artificially humidified, so as to imitate the steaming tropics, are many papayas, mangosteens, litchis, and related plants. The litchi and mangosteen are much prized fruits of the Orient. We are endeavoring to introduce them into our own tropics. Also, nearby are hundreds of infant chaulmoogra oil trees which furnish the nuts affording an oil used in the treatment of leprosy. These trees will be sent to Hawaii, the Canal Zone, Porto Rico and Cuba. Then there are new avocados from Guatemala, from Ecuador and from other parts of Central and South America, mangos from India and a host of other things. Out in the open air is a block of nearly 7,000 baby chestnut trees from nuts which, less than a year ago, were hanging on the parent trees somewhere in northeastern China. These are the mollissima chestnut and we know that they furnish a fine edible nut and are blight resistant.

As discussed earlier, the work initiated by Van Fleet in the 1910s on the chestnut continued to be one of the principal activities of the fledgling station. Over an acre was devoted to the chestnut trees towards the rear of the station.

One of the first projects undertaken at the station, and one that remained an active interest at Glenn Dale throughout much of its history, involved ornamental pear research. The test nursery was located south of the greenhouses. Initiated in 1919, when Glenn Dale was first opened, the nursery contained many trees that had been grown out one year previously at the Yarrow, Maryland, test nursery. The pear orchard plantings, consisting of two or three different species, were located towards the rear of the station. From the very beginning, the station installed permanent plantings around the buildings, placing single trees or small groups on the lawns about the cottages and greenhouses, in addition to the orchards at the rear of the station; the original Bradford pear specimen was one of these, planted in 1919 in what became known as area P4, located to the west of the parking lot at the northwest of the station [see "Bradford Pear" below]. Most of the pears came from China, where they had been collected by Frank Meyer. These were joined by a number of hybrids made by Van Fleet.

The objectives of the pear plantings were to provide an authentic collection of pear introductions, in

order to secure data on the behavior of the trees; to furnish fair-sized trees (with the quarantine regulations more severe, material sent to other gardens had to have been under observation for several years); to obtain data as to the relative value of certain pear species as stocks; to provide propagating material for exchange; and to provide material for breeding work for other branches of the Bureau as well as experiment station workers.

Another of the projects in the earlier years at Glenn Dale was the initiation of a new system of propagation for hardy types of economic bamboos, and the establishment of a permanent collection of bamboo types introduced into the United States. Work had been done at the plant introduction stations in the South, but complications from rust and mite and the inadvertent placement of plants too close together (enabling them to mix) had caused the loss of most of the introductions.

> We believe it desirable, therefore, to establish at Bell a small bamboo garden where we can grow and carefully safeguard our more hardy types or the ones in which we are most interested for economic reasons. The space between the greenhouses [Buildings 5 and 6] and Mr. Goucher's cottage [Superintendent's Cottage #1, Building 32] would furnish an admirable place for the garden. It could be made ornamental and by proper planting the entire stretch of glaring greenhouses and the square ungainly storage building [Building 20] could be screened. ... There are about 40 or 50 hardy bamboos that we should introduce and get established here preparatory to further work on this interesting group of plants. It may be desirable to duplicate our collection at Savannah but there the fact that we can not keep careful watch on our material and be on the look-out for diseases and insects at these outlying gardens makes it desirable to build up our collections here.[49]

The work on the station grounds was augmented during these first years by leases with the neighbors for small amounts of acreage on surrounding lands. Through these leases, the scientists at the station gained an additional 30 acres on which to conduct their work.[50] This arrangement between the neighbors and the station apparently continued in an informal way throughout much of the history of the station (at least into the 1960s).

Soon after the establishment of the station, the need arose for a clarification of Glenn Dale's role in the "detention" of plants. The memorandum produced after a conference of various Department officials specified two levels of action: absolute quarantine (which was to remain at the Inspection

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[49]B.T. Galloway, "Notes Made at Bell, Maryland," October 14, 1924. B.T. Galloway Papers, National Agricultural Library, Special Collections.

[50]Memorandum, "Summation of Land used by the Bureau of Plant Industry at Bell, Maryland," undated [ca. 1927]. NARA, RG 54, Entry 135F, Box 2. The neighbors leased from included Mrs. Mary Haynes, Bureau of Fisheries; Mrs. Walter Van Fleet; George M. Darrow and Grace E. Darrow; Grover Cleveland Beall and Wm. T. Beall (Wm. W. Anderson, Executor). Mrs. Van Fleet, perhaps out of respect for the contributions her husband had made to the Department and concern for her in her widowhood, was paid $80 per acre a year, as opposed to the $20 per acre that the others were compensated.

House on the grounds of the Department of Agriculture headquarters in Washington), and detention, which was to occur at Bell, as the Glenn Dale station was then known. In the time prior to erecting a detention greenhouse at Bell, one end of one of the propagation greenhouses (Buildings 5 and 6) was to be partitioned and used exclusively for detention. An inspector from the Federal Horticultural Board (FHB) arranged to make regular visits to the Glenn Dale station, in order to go over the material in detention. As a result of this memorandum, Edward Goucher, the plant propagator at the Inspection House, was transferred to Glenn Dale "at the earliest practicable date," with all the plant material not held in absolute quarantine; and F.J. Hopkins, at that time located at Glenn Dale, was transferred to the Inspection House to look after the quarantine material, with the Federal Horticultural Board paying half his salary.[51] By the mid-1920s, Goucher became the second Superintendent at Glenn Dale, when Bisset moved on to Savannah to direct the Barber Lathrop station.

> So many dangerous and destructive crop enemies have been brought into this country that public sentiment has demanded more thorough protection... Cooperating with the Federal Horticultural Board, intensive inspection is made of all seeds and plants coming from foreign countries and all seeds and plants distributed from our stations but originally coming from abroad. The increase in this work under the Quarantine Order No. 37, issued by the Federal Horticultural Board, has made it necessary to broaden its scope. To this end a new plant detention station is being established near the city of Washington. This station will have for its primary object the receiving and growing of new plant immigrants with a view to removing all possible chances of introducing dangerous diseases and insect enemies.[52]

As the plants arrived, they were each assigned a plant introduction number, known as a Bell number. In 1922, David Fairchild requested in addition to the numbering system the labeling of plants at all the plant introduction gardens, which "will help the men at the gardens to learn the names of the plants and to know the countries that constitute the source of our material and to become acquainted with the names of our explorers and collaborators.... Numbers mean little to us unless they are connected with the names of the plants, the source of origin, and, whenever practicable, the people responsible for sending them in."[53]

By the time the station was about five years old, more attention began to be paid to a permanent plantings plan, one that would enhance the area of the buildings at the north end of the station with ornamental plantings. Galloway in a visit to the station described the appearance of the station and a plan for its improvement. The small triangle east of the headhouse was at the time planted with unnamed roses; Galloway found that Superintendent Goucher suggested hugonis for the site, to provide propagating material in the future. To the northwest of the headhouse, Galloway suggested

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[51]Memorandum Regarding Inspection and Detention Work, August 13, 1921. NARA, RG 54, Entry 135F, Box 2.

[52]*Annual Report of the Bureau of Plant Industry, Department of Agriculture, for 1919*, p. 23.

[53]B.T. Galloway to David A. Bisset, September 30, 1922. NARA, RG 54, Entry 135F, Box 3.

planting a thick screen of phyllostachys bambusoides, which could be taken from the large stands of bamboo located towards the rear of the station; "Mr. Goucher suggests that this will make a fine and picturesque screen shutting off the unsightly coal yard from the front view."[54] Northeast of the headhouse, on the west side of the road, he recommended putting a group of three Ulmus pumila for specimen plants. In the mid-1920s, there was only a named catalpa at that location, brought originally from Yarrow. Along the east side of the property, where a 75-foot strip had been reserved for permanent plantings, a planting of Japanese cherry trees had been initiated; Galloway indicated that this should be finished, with 19 different cherries then in the nursery to go into this permanent planting. Today, a few of these cherries remain, most notably one brought in 1926 from David Fairchild's Chevy Chase property, "In the Woods."

By the end of the first decade of the station's existence, about 17 acres of land at the northern end of the station was used for "lawns and ornamental plantings of shrubs and trees... [which] adds greatly to the operating expenses of the station. Mr. Morrison is now at work on a new plan of arrangement of this portion of the station grounds in which a large portion of the 17 acres will be converted into cultivated nursery plantings." Another factor propelling the need for the reconsideration of the building area was the anticipated arrival of the Japanese beetle: "All greenhouses will, of course, have to be tightly screened at entrances and ventilators."[55]

Benjamin Yoe Morrison and the Development of the Glenn Dale Station in the 1930s

In 1930, there was a major reorganization of the work at Bell. The Division of Plant Exploration and Introduction was established with B.Y. Morrison as the Principal Horticulturist in Charge. Morrison also administered the National Arboretum. Morrison, Superintendent of the Glenn Dale station, was the driving force behind the development of the station during these years.

The scattered plantings of deciduous fruits that were then currently under test were concentrated in two orchards, located close to one another at the end of the station. The old introductions were removed, and those needing further testing were placed in the permanent orchard at the rear of the station. A number of the Pyrus species (pear) were donated for landscape development of the Mount Vernon Highway. The station established a central nursery for deciduous fruits, an early precursor to the national seed storage program created in the 1950s. A new orchard management program, to monitor orchard practices such as pruning, fertilizing, spraying and soil management, and the effect they have on growth of introductions, was also established; a new method of note-taking, focused on individual tree records replaced a previously inadequate system. New concerns such as the Japanese beetle spurred some of these changes. The station's spray equipment was replaced by a new "Friend Power Sprayer," and a new employee trained in pathology and entomology was brought on to be

[54]B.T. Galloway, "Notes Made at Bell, Maryland," October 14, 1924. B.T. Galloway Papers, National Agricultural Library, Special Collections.

[55]Harry A. Gunning, Associate Horticulturist in Charge [Glenn Dale], to Knowles A. Ryerson [FPI], March 6, 1928. NARA, RG 54, Entry 135F, Box 6.

responsible for the control of diseases and insects.[56]

In connection with the reorganization of work at Glenn Dale, Morrison initiated a substantial building program for the station. Morrison, who was trained as a landscape architect, sketched out a design for a new office and laboratory building for the station. Modeled after an English Cottage, with steeply pitched gable roofs, trellises along the main facades, and small multi-pane casement windows, this building (Buildings 1, 2, 3) became the prototype for all future buildings erected on the station [the buildings are discussed in more detail in the earlier Maryland Historical Trust Inventory Form: Robinson & Associates, Inc. *U.S. Plant Introduction Station, Glenn Dale, Maryland*, June 1995, revised January 1996]. Morrison's new plan also involved changes to some of the roads around the buildings, as well as the moving of one of the cottages.[57] Between May and June of 1931, one of the cottages (presumably Cottage #1, which appears to have been moved a couple hundred feet south) was moved. In a letter to Morrison while he was overseas, Knowles A. Ryerson, Principal Horticulturist in Charge wrote that "Yesterday was Small Fruit Field Day at Bell - Waldo had a very good crowd. Dr. Taylor was out. He was very much pleased with the buildings. He didn't have much time and wants to come back and look over the whole layout more thoroughly. The place does have a mighty good appearance. They are setting up the foundation under the Broderick house - that will be done this next week."[58]

The quarantine work at the station continued to expand, supported by the beginning of what would become a row of quarantine greenhouses to the north of the headhouse, as well as the erection of a cluster of quarantine screenhouses near the western property boundary, at the head of the fields (D-nursery). In the early 1930s, Screenhouse #1 contained 30 peaches, 7 nectarines, 21 apples, 37 apricots, 29 plums, 24 pears, and 3 Rubus; screenhouse #2 contained 12 peach, 9 almond, 17 apricot, 12 plum, 15 pear, 2 pomegranate, 28 cherries, 4 walnuts, 8 apple, and 1 nectarine. When released from quarantine, these items were either planted in the orchard at Bell, sent as scions or trees to Chico, or sent to federal and state workers. Of the deciduous fruit and vegetable introduction work, all quarantined material was ultimately supervised by the Bureau of Plant Quarantine. When the material arrived in Washington, it was grown by the Bureau's choice at either the Inspection House in Washington, the new quarantine greenhouse at Beltsville, or the specially constructed screenhouses at Glenn Dale.[59]

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[56]W.E. Whitehouse and J.C. Long, Memorandum to Mr. B.Y. Morrison, "Outline of the Deciduous Fruit and Vegetable Activities at Bell Station, Maryland, Chico, California and Washington, D.C.," November 26, 1932. NARA, RG 54, Entry 135F, Box 69.

[57]Harry Gunning, Associate Horticulturist in Charge to Joseph Mahoney, Foreign Plant Introduction (Bureau of Plant Industry, D.C.), May 5, 1931. NARA, RG 54, Entry 135F, Box 6. Letter discusses "recent changes in our roads and the general plan of the station."

[58]Knowles A. Ryerson to B.Y. Morrison, June 6, 1931. NARA, RG 54, Entry 135F, Box 69.

[59]W.E. Whitehouse and J.C. Long, Memorandum to Mr. B.Y. Morrison, "Outline of the Deciduous Fruit and Vegetable Activities at Bell Station, Maryland, Chico, California and Washington,

In 1931, from March to September, Morrison was away on a trip to Great Britain, Germany, Holland, Belgium, France, Switzerland, and Italy. He sought to establish relationships with the directors of botanic gardens and arboreta, the owners and superintendents of estates where there were important plant collections, and with nurserymen from whom material has been or might well be purchased. With his work planning the reorganization of work at the Glenn Dale station, he also planned to study the administration of these different establishments.[60]

During this decade, the station expanded to work the land located to the south of the station property, a 20-acre rectangular plot that ran in an east-west direction, creating an "L"-shaped property. The land was leased by the station in 1930 and ultimately purchased in 1940. The most distinguished feature of the land was a large hill that rose immediately from the edge of the original station tract. Known as Watson's Hill, it was named for the farmer who occupied the land beginning in 1919. Watson had purchased it from a Mr. Hammer, who had had no livestock and did not farm the property. Hammer had passed through the Glenn Dale station on foot to get to the trolley, using the property "more as a camp than a homestead."[61]

Aerial photographs, taken in 1932 and 1938, reveal the extent to which the acreage of the station was being used. Fully 65 of the 70 acres were under development, and the five acres not tilled was a wooded area located in a gulch at the very southeastern corner of the Watson's Hill property, inaccessible to the workers of the station because of its topography. Much of the Watson's Hill area in the aerial photographs is cultivated. In particular, the south side of the hill, which is shaped like an amphitheater, is grown in what appears to be a terraced semi-circular pattern. The photographs also clearly illustrate the orchards located in the southern third of the original station property, the variety of plots -- some fallow, some active -- at the head of the fields, and the ornamental plantings located at the northern end of the station surrounding the buildings. Individual plant specimens are distinguishable. Those most impressive are no longer extant. These include the enormous sawtooth oak, the largest tree on the property in the photographs, located to the east of Building 1; it blew down and was removed in 1995. Also visible is the original Bradford pear, located along the northern boundary of the station at the middle entrance. This tree was taken down in early 1960s, after it was damaged in a storm. In the very middle of the central section of the fields are visible a cluster of large trees, two of which are still extant, including a sawtooth oak (daughter of the original one by the office) and a Zelkova Schneideriana. Surrounding the cul-de-sac at the northwestern corner of the station, by the two secondary cottages, are a number of planting materials, many of which are still extant. At the rear of the station's original 50-acre parcel were the orchards, where a number of large trees are visible in the aerial photographs. Today one tree remains, a relative of the Turkish filbert, originating from a specimen collected by Frank Meyer. Considered to be the largest specimen of its

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D.C.," November 26, 1932. NARA, RG 54, Entry 135F, Box 69.

[60]Knowles A. Ryerson, Principal Horticulturist in Charge, to Dr. W.A. Taylor, January 28, 1931. NARA, RG 54, Entry 135F, Box 69.

[61]Superintendent Goucher to Roland McKee, Foreign Seed and Plant Introduction, January 8, 1926. Correspondence related to right-of-ways, located in the office files, Building 1, Glenn Dale.

kind, it is located at the intersection of the roads at the foot of Watson's Hill, at the corner of what was at one time referred to as the nut block. The nut block contained hickories, oaks, chestnut trees, and other specimens. The Forestry Service came in to the Glenn Dale station for years to collect seeds, which they transported to Appalachia to grow out plants, which would in turn provide fruits for the wild turkeys native to that area.[62]

Morrison and the Azalea Breeding Project

Morrison initiated his research at Glenn Dale on azaleas in 1929, and continued it through the 1930s and 40s. The goal of the program at its start was to create a series of azaleas that would be winter-hardy at least as far north as Washington, D.C. One other key goal of the research was to produce azaleas with large flowers, akin to those varieties common in the South at the time. Predictably, the program was expanded during the course of its history and certain varieties of azaleas were produced that while not meeting the original criteria were found to be valuable in themselves.[63] The work was conducted principally in the Azalea Woods, a wooded area at the southwestern corner of the station, where native trees provided an appropriately shady location. Paths through the woods, still extant today, provided ample access to much of the wooded acreage. Many of the plants are still extant in the woods, and recent volunteer efforts of the Azalea Society of America have been underway to document the species; they have been successful in identifying many of the plots that still exist based on existing documentation and the appearance of the plants in flower.[64]

Morrison's historic work on the Glenn Dale hybrid azaleas, perhaps one of the most well-known plant materials to emerge from the station during its history, was continued by others in subsequent years. Morrison wrote, in fact, that "nearly every person who has worked at the station, in one way or another, has assisted in the life of the plants."[65] In the late 1950s and early 1960s, J.L. Creech worked to recover some of the material from Morrison's experiments that existed primarily only at the Glenn Dale station; he succeeded in transporting a large number of the original materials developed by Morrison, to the National Arboretum, where they were installed at Azalea Hill. Creech also at this time made his own selections from a series of crosses between Glenn Dale and Belgium azaleas, the five most outstanding of which were named and released in 1962: "Bayou," "Green Mist," "Petite,"

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[62]Site visit with Dr. Ackerman and Dr. Waterworth, conducted by Heather Ewing, Robinson & Associates, Inc., October 30, 1996.

[63]B.Y. Morrison, *The Glenn Dale Azaleas*, Agriculture Monograph No. 20, p. 10. Washington, D.C.: United States Department of Agriculture, October 1953.

[64]Conversation with Barbara Bullock, Curator of Azaleas, National Arboretum, December 4, 1996; William Miller, Azalea Society of America, December 12, 1996; with Heather Ewing of Robinson & Associates, Inc.

[65]Morrison, *The Glenn Dale Azaleas*, p. 1.

"Pink Ice," and "Whitehouse."[66]

The Glenn Dale Station During World War II

The Glenn Dale station during the 1940s was devoted to an enormous propagation project concerning the cinchona tree, whose bark provided a critical source of quinine, effective in fighting malaria. Although this plant was originally native to the Americas, by the 1930s the United States relied heavily on countries overseas for its supply. With the outbreak of World War II, the supply lines were cut off, triggering the massive propagation project that dominated the Glenn Dale station's activities during World War II. After Pearl Harbor, a final shipment of seeds were flown in to Glenn Dale from the Philippines. Propagated in many of the station's greenhouses, these growths were then flown out to tropical America, where commercial culture was deemed practical. The government was actively assisting in a number of plantation operations in South America and Puerto Rico. The cinchona seeds were only one of 2,125 items that arrived during 1942, half the usual number received at the station during a typical year. A new technique, the use of sifted dry sphagnum moss as a medium in which to plant seeds in greenhouses, hotbeds, and coldframes, which had first been suggested in 1941, was found to be a success. Workers at Glenn Dale controlled "damping-off," a fungus disease that often kills seedlings, by collecting living moss from neighboring bogs. Equally good results were found also to be achieved using dried moss from florist supply houses.[67]

In 1943, the *Annual Report of the Department of Agriculture* boasted that more than 150,000 seedlings were growing in Puerto Rico, Central and South America, flown from Glenn Dale, as part of the cinchona project.[68] A high demand from the War Department's plantation in Costa Rica further increased the numbers being grown at the Glenn Dale station. In 1944, the following year, 250,000 seedlings were shipped, and many more were being propagated under glass at Glenn Dale. Virtually all of the greenhouses were devoted to the project, as well as to side projects such as the growth and shipment of Elaeis (oil palm), Caesalpinia (tannin), and Derris (insecticide).[69] The work of disseminating large propagations to other countries, principally in Central and South America, occupied the majority of effort at the various plant introduction gardens. In the 1944 *Annual Report of the Department of Agriculture*, the plant introduction gardens were listed as having distributed 231,481 items to foreign countries (most to Latin America) and only 38,558 items domestically.[70] The shipment of 200,000 seedlings to special cooperative cinchona plantations in Costa Rica in 1945 essentially completed the program at Glenn Dale. A small basic collection of all strains, races, and

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[66]Ackerman, "The Introduction of New Plants from Foreign Lands," *The Garden Journal*, November-December 1965, p. 244.

[67]*Annual Report of the Department of Agriculture for 1942*, p. 19.

[68]*Annual Report for 1943*, p. 24.

[69]*Annual Report for 1944*, p. 26.

[70]*Annual Report for 1944*, p. 26.

species was maintained under propagation at the station -- enabling rapid increase in the event of an emergency at any of the cooperative stations. This important function, as a storage for plant germplasm, was one that the station had performed in numerous instances; it was a critical and often overlooked element of the plant introduction system in general, which was only institutionalized on a national level in the late 1950s.

The quality that had most characterized the work of the station during the war was the role of the Glenn Dale station as an intermediary stage, growing plants that were not intended to be crops of the United States. In addition to the cinchona project, the station grew coffee from Africa, ensuring that it was free of rust disease before shipping the seedlings to plantations in South America. Bananas, too, were grown to protect against disease; delivered from Hawaii and the Pacific Islands, bananas were shipped when determined clear to an island off of Honduras.[71] All of these items were important consumer products in the United States, but none was to be developed as a native crop.

The Glenn Dale Station After World War II

As normalcy returned to the Glenn Dale station after the war, other projects were undertaken. The testing of foreign apples was begun in the orchard fields. Among the greenhouses, experiments with fluorescent lights were initiated; these involved examining rooting cuttings and growing seedlings under the light, permitting close control of humidity and freedom from excessive temperatures. Workers developed model propagation cases for these experiments during the year.[72]

The general goals of the division after the war were redefined as:

- the introduction of plants that could be used directly in supplying primary materials for chemical or manufacturing industries;
- the introduction of plants possessing special characteristics that could be used in breeding programs to improve economic plants for agricultural or industrial use (disease/insect resistance, cold/drought tolerance);
- the evaluation, cataloguing, and preservation of introduced plants;
- the evaluation, cataloguing, and preservation of native plant materials that had not been adequately tested for agricultural or industrial use.

With the renewal of activities and goals for the plant introduction system came a call for a regional plant introduction system. Increased funding from Congress spurred research programs on new economic crops and the creation of regional plant introduction stations. At this time, the Department also renewed its foreign plant exploration work, as little in this area had been done in the past ten

[71]Oral interview with Dr. William Ackerman, conducted by Heather Ewing, Robinson & Associates, Inc., June 9, 1995; site visit with Dr. Ackerman, October 30, 1996. Ackerman stated that the young banana trees were pushing right up against the glass roofs of the propagating greenhouses (such as Buildings 5 and 6).

[72]*Annual Report for 1946*, p. 55.

years.

The 1959 site plan reveals much about the operations of the station's grounds in the period following the changes instituted by B.Y. Morrison. [The plan was probably executed earlier and the 1959 date reflects a revision date.] The area around the buildings in the plan was surrounded by a number of nursery test plots and cold frames. Just south of Cottage #1 (Building 32) is a large rectangular nursery, labeled the Superintendent's Nursery, which could have been used for individual or personal projects. Dr. William Ackerman said it was gone by the time he became Superintendent in 1959.[73] To the east of the main propagating greenhouses (Buildings 5, 6, etc.) was a Test Nursery, consisting of two large plots. This area was dedicated to ornamental plantings, and contained a number of large specimens, such as the station's original sawtooth oak. Just to the north of the test nursery were several herbaceous beds. The east-west axis providing a visual approach to the Main Office (Building 1) was left open between these beds. Just to the east of the secondary cottages, along the station road that leads south from the parking lot, was a row of cold frames. Like the lean-to greenhouses, these cold frames were typically designed on south-facing walls, to receive the north light.

South of the Shipping and Packing Building (Building 20) and the lathe propagating houses (Buildings 17, 19), across the east-west road crossing the property and dividing the buildings from the fields, were two rows of cold frames. South of this cluster of cold frames was a nursery block called the East-West Nursery. It is possible that the large trees currently located in this area (near Building 41) were once part of this nursery, but no information has been located on their history. To the south of the farm building cluster (Buildings 42-44) along the eastern perimeter of the property, the site plan indicated that there was a pasture. This was probably used for the horses that were kept in the barn. At a later date, this became part of the planting plots, all of which were rotated and contained a variety of plantings. Dr. Waterworth described this area as containing the kenaf project at one point, as well as some of Dr. Ackerman's work on Japanese irises [see below].

Just to the west of the pasture was the first field, called the A-nursery. The fields, as have been described earlier, were arranged by letter from east to west, beginning with A and concluding with D. Numerically they extended south towards the perimeter of the original 50 acres, separating each letter block into distinct, smaller plots. The B-nursery began at a point south of the East-West Nursery on the 1959 site plan. The principal drive that lead from the buildings out to the fields provided a physical separation between the B-Nursery and the C-Nursery. D-Nursery, located adjacent to the western perimeter of the property, contained the three Quarantine Screenhouses in its northeastern corner.

The Glenn Dale Station in the 1960s and 1970s

Under Dr. William Ackerman, who became Superintendent in 1959, Glenn Dale began a program "of wide crosses" (difficult or frequently unsuccessful) of camellias, to develop hybrids with wider genetic variation. Camellias had long held interest in Asia for economic reasons, as tea and oil could be

[73]Site visit with Dr. Ackerman, with Heather Ewing of Robinson & Associates, Inc., October 30, 1996.

extracted from the seeds of certain species. In Europe and America, interest in the plant existed solely for its ornamental values. The camellia had been introduced to the United States in the late 18th century, its popularity had waned towards end of the 19th century, and it had not been revived until after World War II. By 1971, the Glenn Dale collection consisted of 26 species that had been collected by plant explorers between the 1940s and 1960s. In his historic work on the flower, Ackerman used 20 species as parents for interspecific crosses, resulting in 459 hybrids from 106 combinations. Most of these controlled crosses were made in greenhouses screened against insects, obviating the need to protect the flowers from undesired pollination. Other flowers, grown outdoors, were bagged for protection from pollination by insects. Their growth was carefully monitored; the night period between September and March was broken between 10 p.m. to 2 a.m. with incandescent light to accelerate growth.[74] This work resulted in a collection of camellias that was the largest and most outstanding of its kind outside of Asia.

The camellia project was part of a research program in ornamentals headed by Ackerman, who arrived at Glenn Dale from the Plant Introduction Station at Chico, California. Other components of the program included work on Japanese iris, holly hybrids, and continuing work on the ornamental pears [see Bradford pear below]. The Japanese iris were planted in several different locations around the station, including on the southeast side of the pond and south of the barn (Building 44). Lone iris are occasionally visible by the pond in the spring. The holly hybrids, the result of a cross between Ilex cornuta and I. ciliospinosa, were being tested for cold hardiness, form, leaf type, and berry profusion.[75] A number of individual hollies, placed in the permanent plantings around the buildings, are still extant.

Specialty or chemurgic crops -- which include new potential drug, fiber, and industrial crops not yet commercially grown in the United States -- were another area of introductions grown at the Glenn Dale station. By the early 1960s, one of the most interesting specialty crops under investigation was the Mexican yam, dioscorea, which represented an important source of cortisone and other precursors to steroidal drugs. Research on the yam at Glenn Dale, conducted initially in the main propagating greenhouses (Buildings 5 and 6), related to developing the optimum environment for growth and propagation. Once the challenges of reproducing high-yield clones were overcome by scientists at the station, the project was terminated.[76]

In the late 1960s, Dr. Joseph J. Higgins directed the investigation of several new chemurgic crops. Glenn Dale was one of a number of locations where experiments with these crops, which were believed to have great potential for industry, were conducted. Many of the fields of the Glenn Dale station during the late 1960s and through the 1970s were devoted to his projects. Among the exotic

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[74]William L. Ackerman, "Genetic and Cytological Studies With *Camellia* and Related Genera," *Technical Bulletin No. 1427, Agricultural Research Service, United States Department of Agriculture*, Government Printing Office: Washington, D.C., September 1971.

[75]William Ackerman, "Testing Many Plants for Introduction," *American Nurseryman*. July 1, 1961.

[76]Ackerman, "Testing Many Plants for Introduction."

crops planted were "Crambe abyssinica," of the same family as rapes and mustards, which contained an oil in the seed with potential for the manufacture of synthetic fibers, rubber, plastic coatings, etc., because it never disintegrated; "Limnanthes," another crop with oil in the seed, which could be converted into waxes and greases for industry, and which Colgate-Palmolive desired for its lubricating potential; "Stokesia," which was believed to have beneficial pharmaceutical properties; and "Hibiscus cannabinus" or "Kenaf," which provided excellent fiber for pulp and paper products. The kenaf was planted at one time south of the barn (Building 44). Known to grow 14 feet in a single year, kenaf provided a greater yield of fiber in a year than comparable forest tree growth. The kenaf was eventually shipped out to the states for experimentation work, where it was discovered to thrive in southern climates. Several thousand acres are currently given over to it in the southern tip of Texas.[77]

In addition to the ornamental and specialty crop work, Ackerman brought a focus on fruit trees, in conjunction with a new virus-indexing program, centered in the quarantine greenhouse facilities of the station. Dr. Howard Waterworth, subsequently to become the last official Superintendent of the Glenn Dale site, was brought in to assist with the indexing program; he focused on apples, indexing all the new apple variety introductions as well as the more important varieties among the 1000 or so clones in the station's permanent orchard.[78] Subsequently, as the virus-indexing program grew, Dr. Robert Kahn was also hired, to perform the work on peaches and plums. By the late 1960s, this work had expanded to include grapes and other items.

The Bradford Pear

One of the events that generated immense activity for the Glenn Dale station in its later history was the release of the Bradford pear in 1960. The tree was named for Frederick Bradford, the Superintendent of the station prior to J.L. Creech, by Dr. J.L. Creech and Dr. Whitehouse (Whitehouse was incidentally Bradford's brother-in-law). Bradford, who had lived in Cottage #1 (Building 32), had died at the station. The pear, as noted earlier, had been a continual aspect of research at Glenn Dale. Plant explorer Frank Meyer, in one of his last acts before his death, had collected more than 100 pounds of Pyrus calleryana seeds and shipped them back to the United States; he had noted that tree's ability to thrive in many different soil environments in China. Testing of the tree as rootstock had been extensive at Glenn Dale in the 1930s. Free of disease and insects, the tree had extensive blossoms in the spring, yellow foliage through the summer, and a brilliant russet color in the fall, with the leaves remaining on the tree well into late fall/early winter. Its compact shape made it especially appealing for residential planting. In 1954, J.L. Creech organized a successful test planting of the tree

[77]Ackerman, "The Introduction of New Plants from Foreign Lands," reprinted from *The Exchange*, no date [ca. early 1970s].

[78]This orchard, which typically contained two examples of each variety as a kind of bank, was bulldozed in the 1980s, after cuttings from all the trees had been sent to the various regional stations around the United States handling each variety. Site visit with Dr. Howard Waterworth, with Heather Ewing, Robinson & Associates, Inc., October 30, 1996.

in University Park, a then-treeless subdivision in Maryland near the District of Columbia.[79]

The Bradford pear received its greatest publicity in a ceremonial planting at the U.S. Department of Agriculture grounds on the National Mall, which was attended by Lady Bird Johnson. The ceremony included the planting of two or three six-foot specimens. It was heavily covered by the national press, resulting in an unrelenting flood of requests for the tree at the Glenn Dale station. The original Bradford pear tree, planted at the very beginning of the station's existence, stood at one of the entrances to the station, on the west side of the parking lot (in planting P4). Dr. Ackerman, during his tenure as Superintendent, was forced to call for the tree to be taken down at the height of the its popularity, after it was damaged in a storm in the early 1960s; he felt it was ill-advised to have this injured specimen so prominently on display at the station. To mitigate the loss of the tree, Ackerman planted Bradford pears along the principal entrance road, creating an elegant formal allée to the station.[80]

The Bradford pear was grown widely throughout the Mid-Atlantic states and west as far as Mississippi. It was listed among the ten most recommended trees of several of these states. As time wore on, it became apparent to the scientists at Glenn Dale that a more upright or columnar form of the tree was desirable for narrow streets. The Whitehouse pear, named in honor of Dr. William E. Whitehouse, a retired Senior Horticulturist with the Department of Agriculture, thus was selected in 1969 from the approximately 2,500 seedlings then growing at Glenn Dale. The original Whitehouse pear tree developed accidentally, as an open pollinated seedling, a cross presumably between the Bradford Pear and one of the many strains of Pyrus calleryana growing at the station. Physically it was located on the property of Mr. Radford Rigoli on Bell Station Road, outside of the Glenn Dale station grounds. This was an example of how the station appears to have operated throughout its existence. Informal arrangements with the surrounding neighbors, many of whom were farmers or horticulturists themselves, provided additional opportunities for sampling varieties.[81] The original Whitehouse pear, which was destroyed prior to 1977, was propagated and grown in orchard and landscape plantings at Glenn Dale.[82] The virus-indexing program of introduced fruit, grain, and vegetable germplasm continued to dominate the activities of the station through to its most recent years.

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[79]William E. Whitehouse, J.L. Creech, G.A. Seaton, "Bradford Ornamental Pear: A Promising Shade Tree," *American Nurseryman*, April 15, 1963.

[80]Site visit with Dr. William Ackerman, October 30, 1996.

[81]An undated memorandum listing a series of leases with neighbors indicated that the station operated on an additional 30 acres outside the property lines of the station. Memorandum, "Summation of Land used by the Bureau of Plant Industry at Bell, Maryland," n.d. [ca. 1927]. RG 54, Entry 135F, Box 2.

[82]William Ackerman, "'Whitehouse' Ornamental Pear," *HortScience*, Vol. 12 (6), December 1977.

Conclusion

The important work of the Plant Introduction Station at Glenn Dale spans over 75 years. It includes the quarantine, introduction, and propagation of literally thousands of species of plants which today have had an important contribution to American commerce, agriculture, or horticulture. Some of the most well-known plants linked to Glenn Dale include varieties of ornamental pears such as the Bradford, the New Guinea impatiens, and the Glenn Dale azaleas. The historic work conducted at Glenn Dale by B.Y. Morrison and others on the Glenn Dale azaleas, and by Dr. William Ackerman on camellias, has greatly extended the range of these plants through the creation of cold-hardy varieties. Established at the height of U.S.-sponsored field explorations, the Glenn Dale station evinces the development in this country of a sophisticated program to increase the productivity and variety of American agriculture. The materials collected and introduced during this period (1898-1930) probably contributed more to crop improvement than any other time in U.S. agricultural history.[83] The Glenn Dale station also played a supporting role in the United States' foreign aid program, serving as an intermediary grower for such crops as bananas, coffee, and illustrated especially by the massive cinchona propagation project during World War II. Most importantly, the Glenn Dale station, as the U.S. Department of Agriculture's primary quarantine facility, served a unique function within the government's plant introduction system; it was a role, enhanced by the virus-indexing work of the 1960s on, that Glenn Dale continued to play up through its most recent years.

[83]Howard Hyland, "History of Plant Introduction in the United States," *Plant Genetic Resources: A Conservation Imperative*, p. 10.

9. Major Bibliographical References

SEE CONTINUATION SHEET

10. Geographical Data

Verbal Boundary Description and Justification

The boundaries are defined by the original property lines, as they existed after the purchase of the 20-acre parcel in 1940. The boundaries of this property are shown on the accompanying map entitled "Site Plan of U.S. Introduction Station, Glenn Dale, Maryland."

11. Form Prepared by

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Organization: Robinson & Associates, Inc. Date: March 1997

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City or Town: Washington State and Zip Code: D.C. 20009

Approved by the Federal Preservation Officer

Concurrence of State Preservation Officer

The Maryland Historic Sites Inventory was officially created by an Act of the Maryland Legislature to be found in the Annotated Code of Maryland, Article 41, Section 181 KA, 1974 supplement.

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White, George A., Henry L. Shands, and Gilbert R. Lovell. "History and Operation of the National Plant Germplasm System." *Plant Breeding Reviews*, vol. 7.

Wiser, Vivian and Wayne D. Rasmussen. "Background for Plenty: A National Center for Agricultural Research," *Maryland Historical Magazine*, Vol. 61, No. 4 (December 1966): 292.

Oral Interviews conducted by Heather Ewing, Robinson & Associates, Inc.

Dr. William L. Ackerman, Superintendent at Glenn Dale (1959-1974)
June 9, 1995 (telephone interview)
October 30, 1996 (at Glenn Dale)

Barbara Bullock, Curator of Azaleas, U.S. National Arboretum (1990-)
December, 1996 (telephone interview)

Dr. John L. Creech, Superintendent at Glenn Dale (1948-1959)
June 14, 1995 (telephone interview)
November 22, 1996 (telephone interview)

Dr. Dan Kugler, U.S. Department of Agriculture (expert on kenaf)
January 29, 1997 (telephone interview)

William Miller, Azalea Society of Washington, D.C.
December, 1996 (telephone interview)

Dr. Howard E. Waterworth, former Superintendent at Glenn Dale, currently Supervisory Plant Pathologist, National Plant Germplasm Quarantine Laboratory (at Glenn Dale 1964- November 1996; now at Beltsville, MD)
May 18, 1995 (at Glenn Dale)
September 30, 1996 (at Glenn Dale)
October 30, 1996 (at Glenn Dale)

Figure 36. Photograph of the land at Bell Station under consideration by the Department of Agriculture, showing the Wormwood Farm, summer 1919. Source: National Archives and Records Administration, Entry 135F, Box 29.

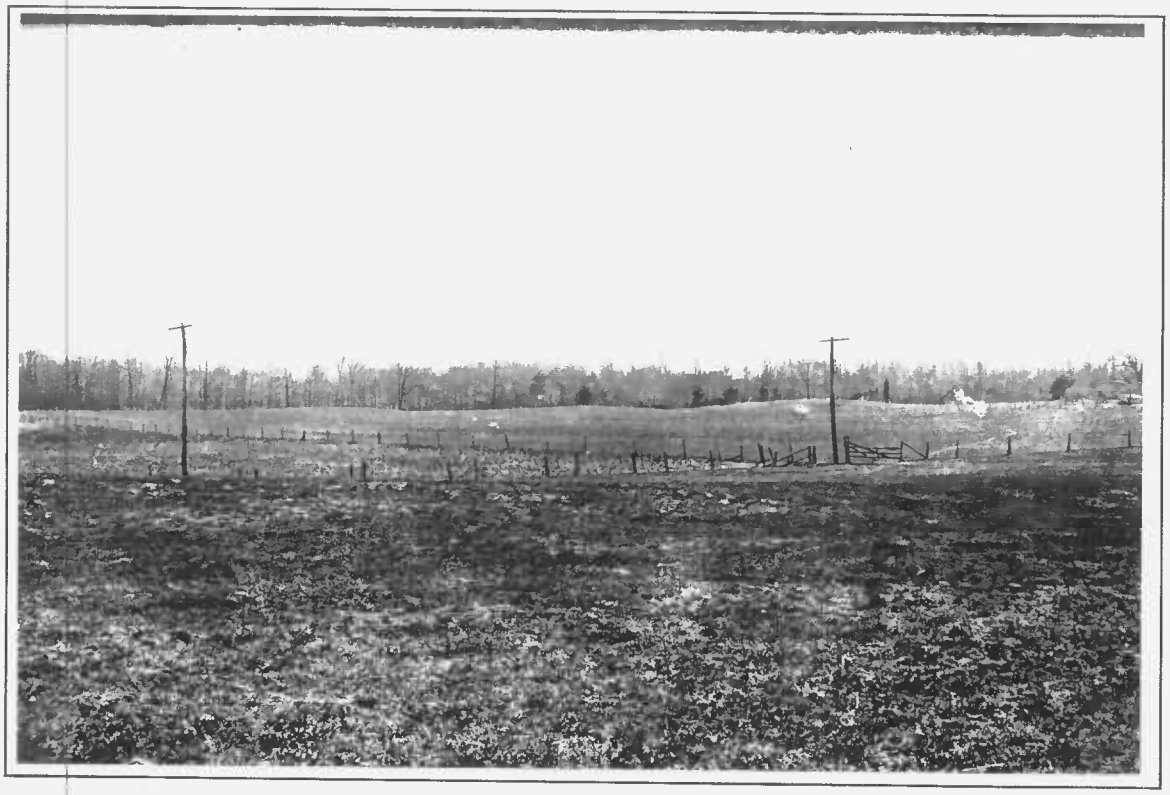

Figure 37. Photograph of the land at Bell Station under consideration by the Department of Agriculture, summer 1919. Source: National Archives and Records Administration, Entry 135F, Box 29.

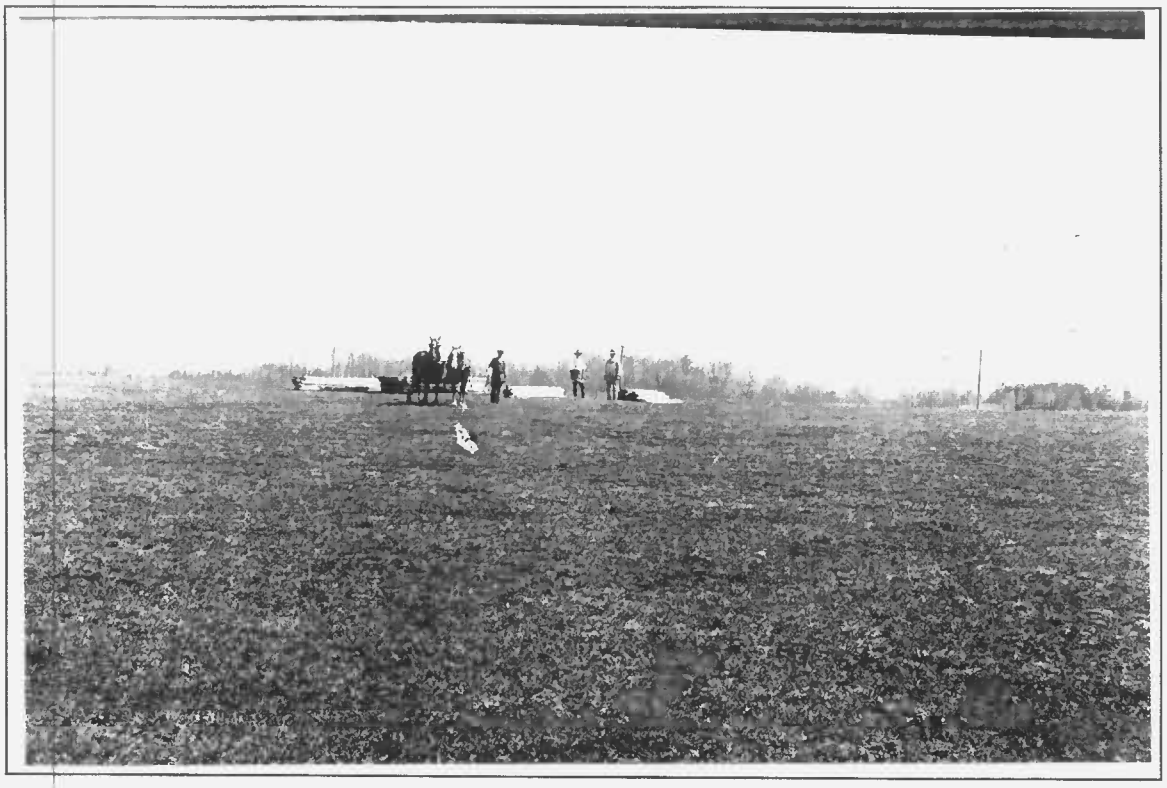

Figure 38. Photograph of the land at Bell Station under consideration by the Department of Agriculture, showing horses in the field, summer 1919. Source: National Archives and Records Administration, Entry 135F, Box 29.

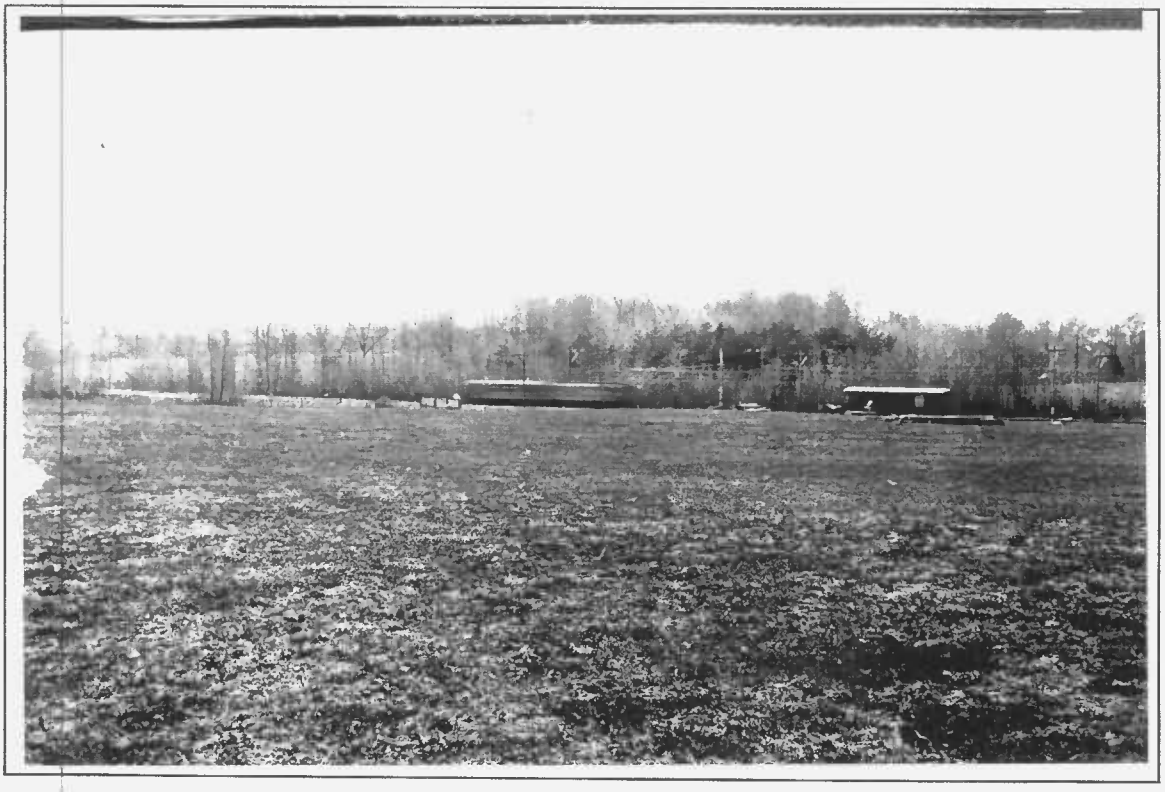

Figure 39. Photograph of the land at Bell Station under consideration by the Department of Agriculture, showing the Washington, Baltimore & Annapolis trolley, summer 1919. Source: National Archives and Records Administration, Entry 135F, Box 29.

Figure 40. Photograph of the land at Bell Station under consideration by the Department of Agriculture, showing the Washington, Baltimore & Annapolis trolley, summer 1919. Source: National Archives and Records Administration, Entry 135F, Box 29.

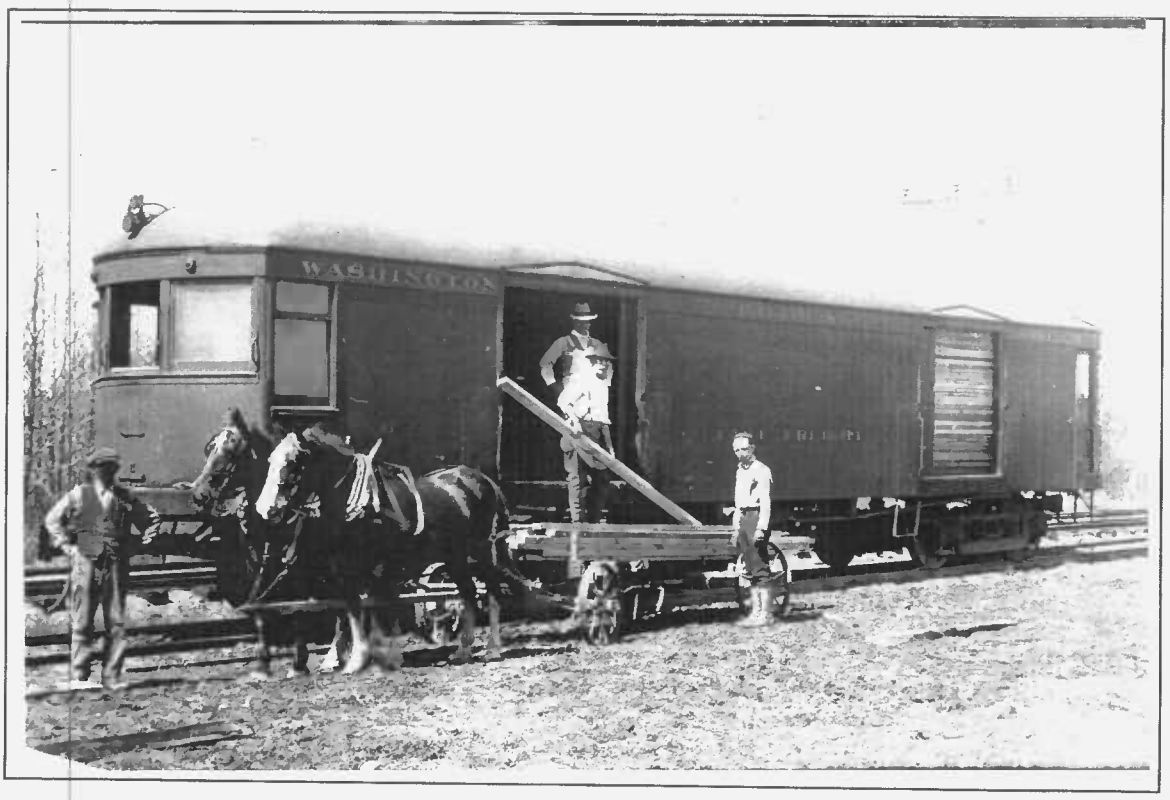

Figure 41. Photograph of the Washington, Baltimore & Annapolis trolley at or near Bell Station, summer 1919. Source: National Archives and Records Administration, Entry 135F, Box 29.

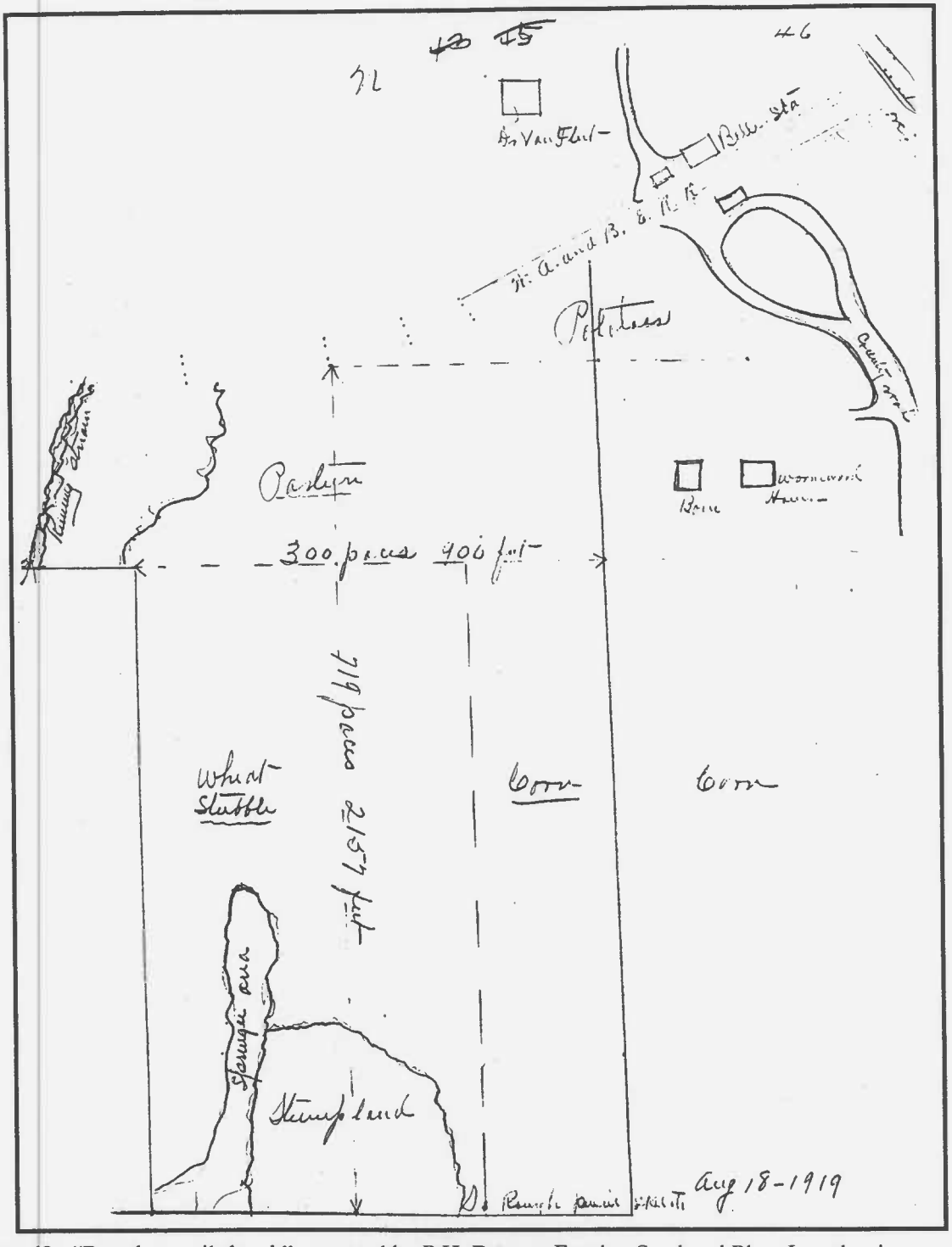

Figure 42. "Rough pencil sketch" executed by P.H. Dorsett, Foreign Seed and Plant Introduction, showing the condition of the land at Bell Station, August 18, 1919. Source: National Archives and Records Administration, Entry 135F, Box 29.

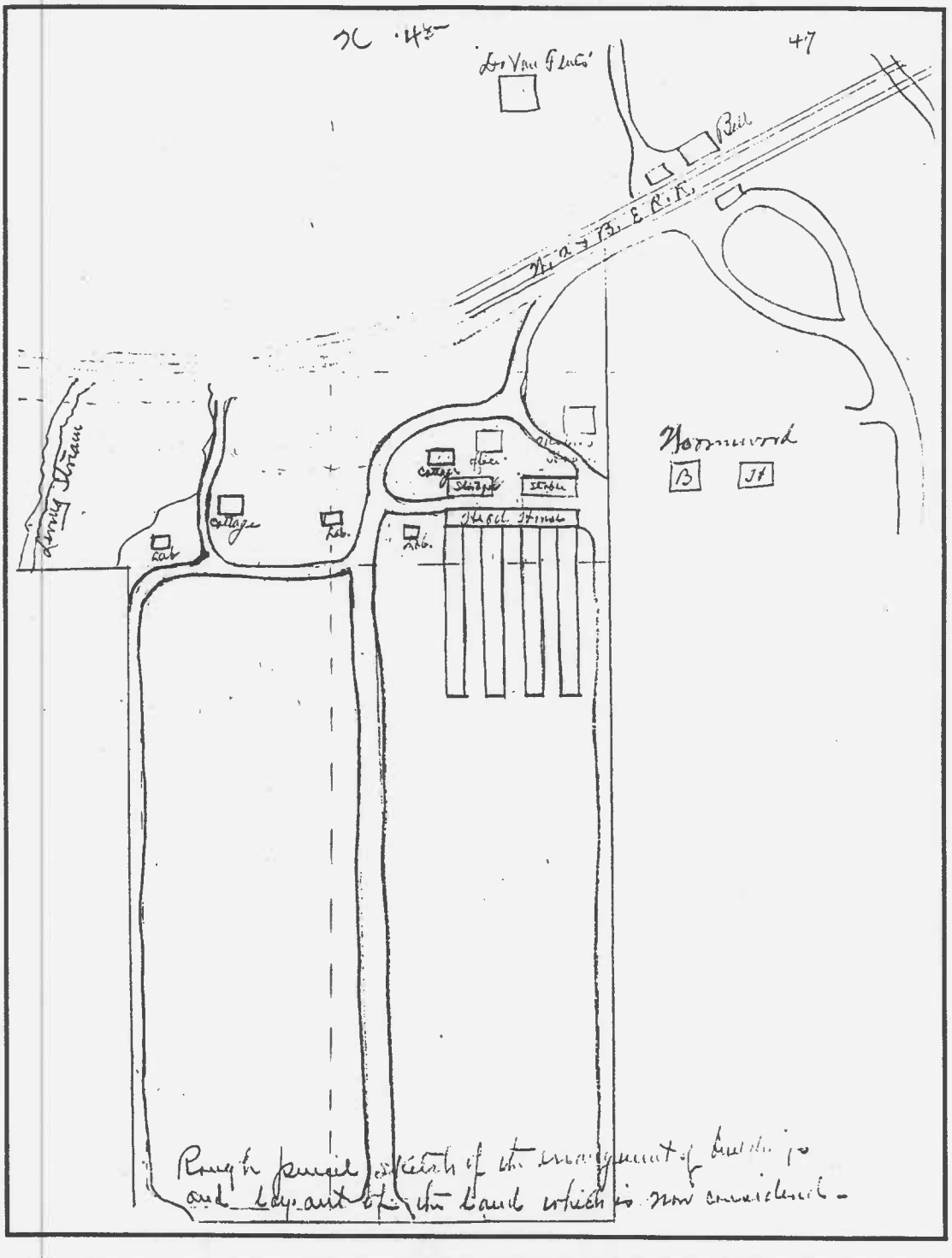

Figure 43. "Rough pencil sketch of the arrangement of buildings and layout of the land which is now considered," executed by P.H. Dorsett, Foreign Seed and Plant Introduction, n.d. [August 18, 1919]. Source: National Archives and Records Administration, Entry 135F, Box 29.

SOME OF MR. ROCK'S INTRODUCTIONS FROM YUNNAN.

The plants collected by Agricultural Explorer J. F. Rock in the remote Province of Yunnan, southwestern China, are being propagated in the United States and distributed to experimenters for trial. Mr. Rock has sent in large quantities of seeds, including many interesting species of Pyrus, Malus, and other genera well known in the Temperate Zone. The above illustration shows several rows in the nursery at the Plant Introduction Garden, Bell, Md., where these plants have been grown during the past summer: on the left is an undetermined species of Sorbaria, in the right center (two rows) a species of Photinia, and on the extreme right a Pyracantha. (Photographed by Wilson Popenoe, August 27, 1923; P35030FS.)

Figure 44. Plant explorer J.F. Rock in the nursery at the U.S. Plant Introduction Station at Glenn Dale, Maryland, 1923. Source: *Plant Immigrants*, March 1924.

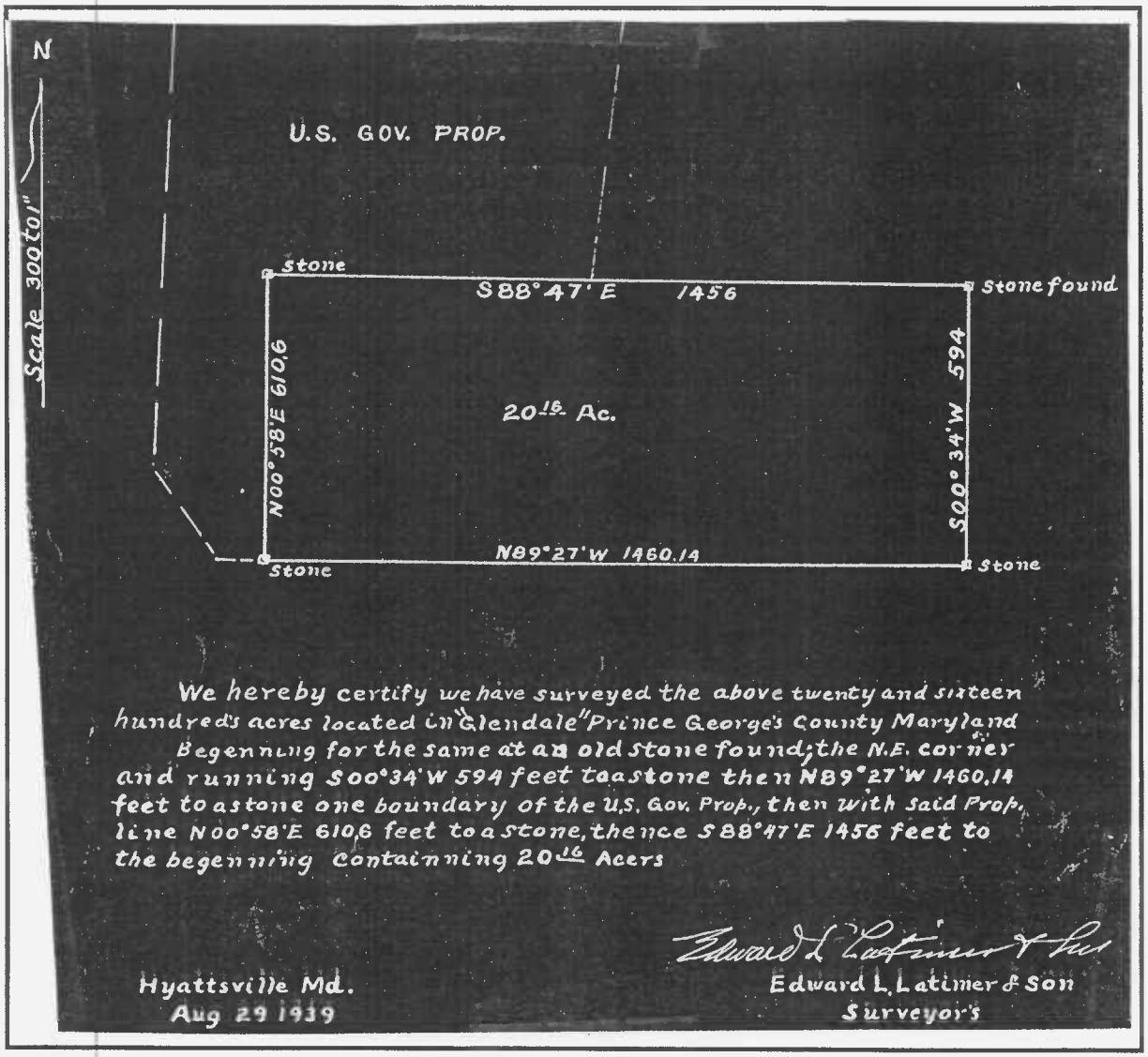

Figure 45. Survey of the 20 acres at the south of the U.S. Plant Introduction Station at Glenn Dale, Maryland, purchased in 1940, conducted by Edward L. Latimer & Son, August 29, 1939. Source: National Archives and Records Administration, Record Unit 54, Entry 135F, Box 7.

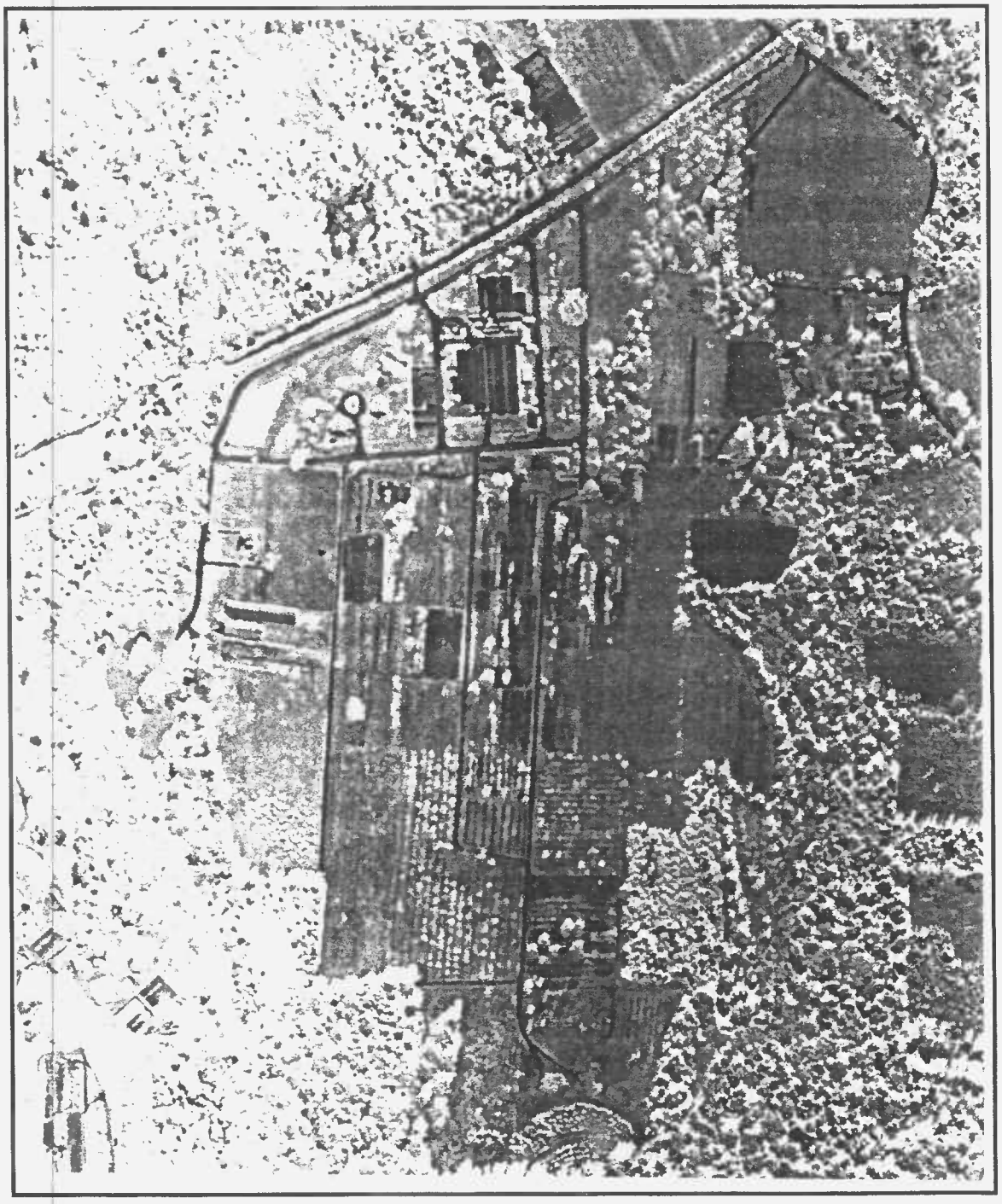

Figure 46. Aerial photograph of the U.S. Plant Introduction Station, Glenn Dale, Maryland, 1932. Source, National Archives and Records Administration, Record Group 145.

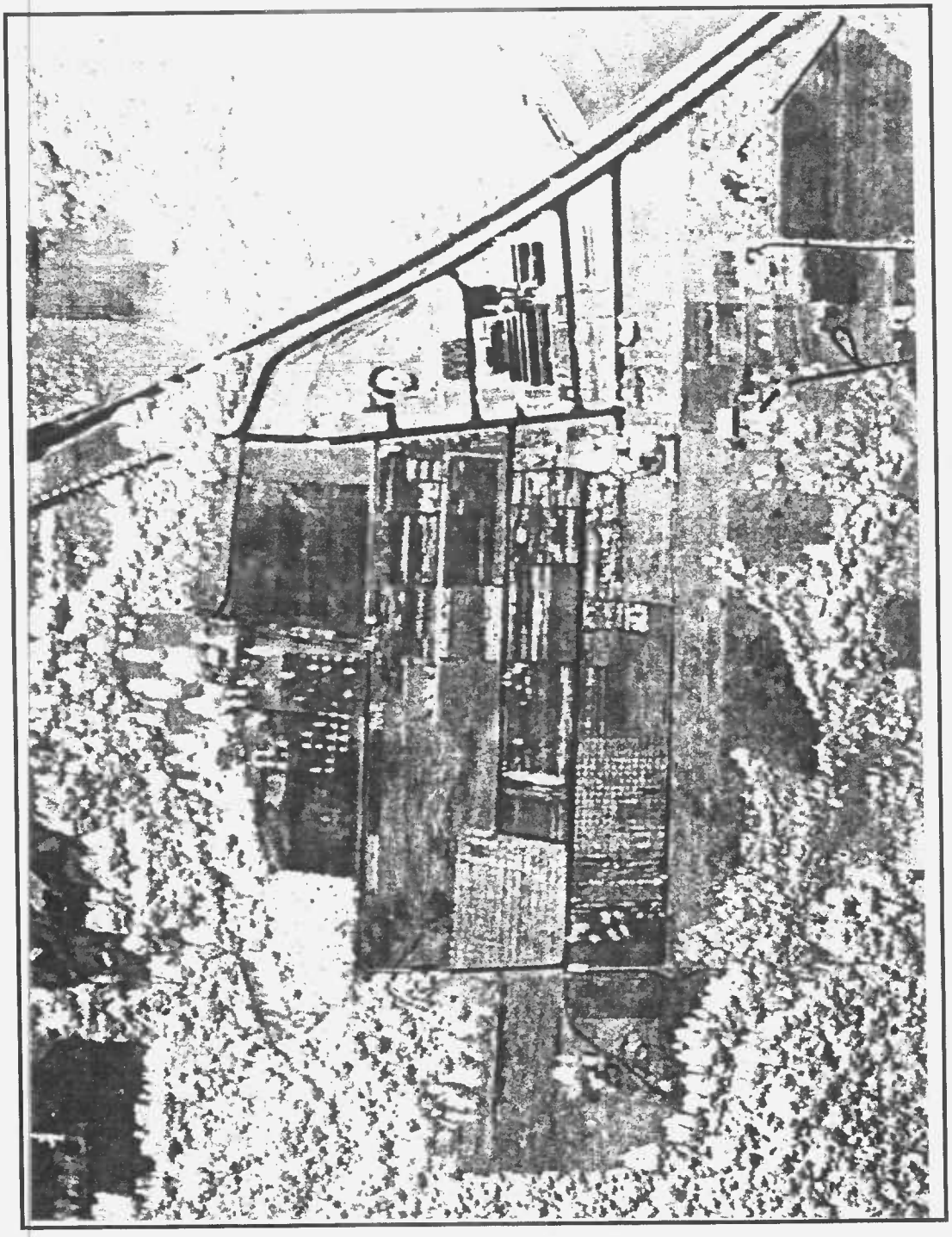

Figure 47. Aerial photograph of the U.S. Plant Introduction Station, Glenn Dale, Maryland, 1938. Source, National Archives and Records Administration, Record Group 145.

Figure 48. Glenn Dale azaleas in a test planting in the Azalea Woods at the rear of the U.S. Plant Introduction Station at Glenn Dale, Maryland. Source: *The Garden Journal of the New York Botanical Garden*, November-December 1965.

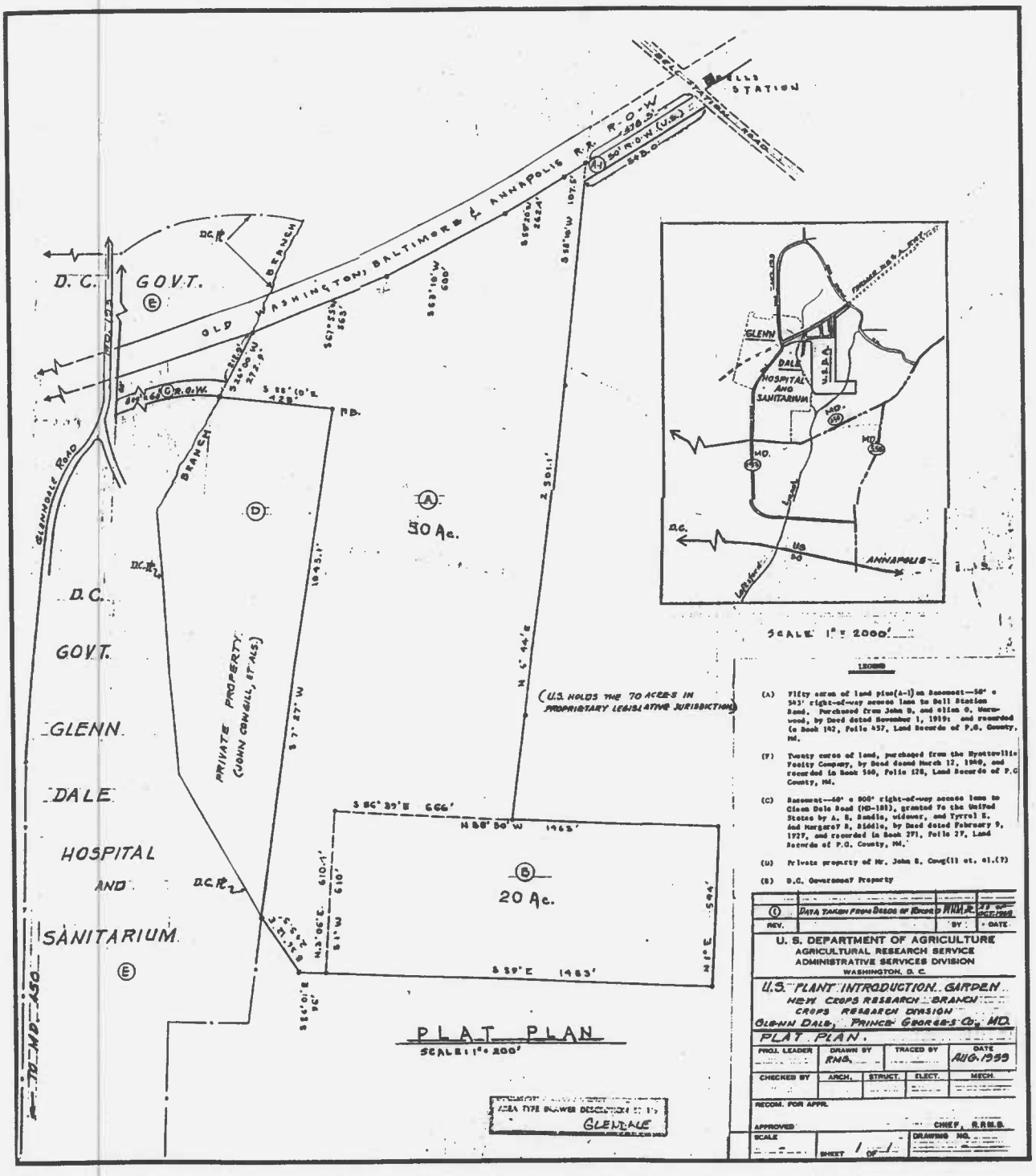

Figure 49. Site plan of the U.S. Plant Introduction Station, Glenn Dale, Maryland, 1959. Source: Division of Facilities and Engineering, Building 426, Beltsville Agricultural Research Center, Beltsville, Maryland.

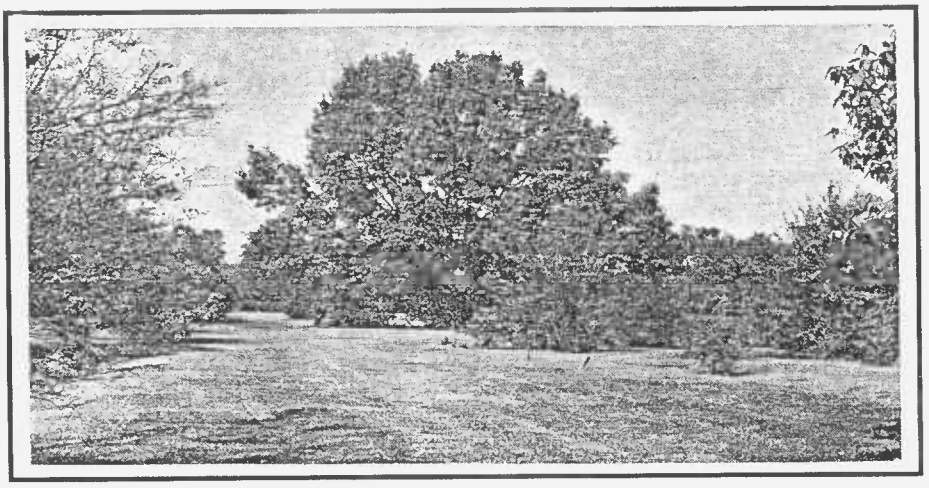

Figure 50. The original Chinese sawtooth oak, *Quercus acutissima*, 36 years old, in the ornamental test plot to the east of the main office building (Building 1) at the U.S. Plant Introduction Station at Glenn Dale, Maryland in 1961. Source: *American Nurseryman*, July 1, 1961.

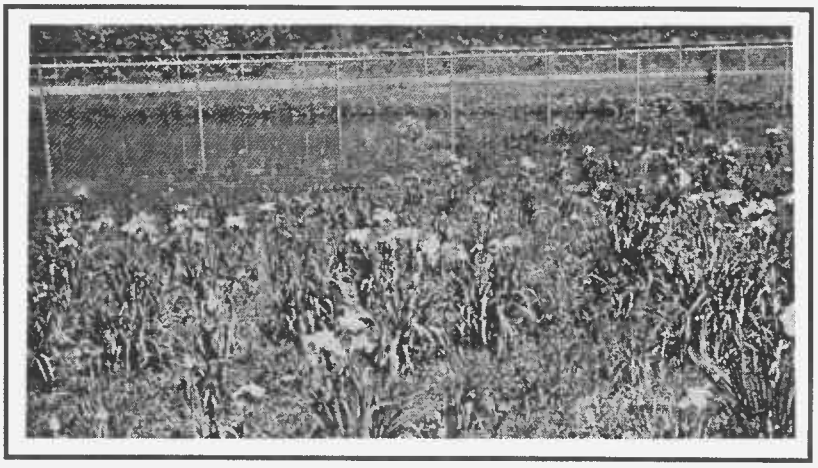

Figure 51. A test planting of the Japanese iris, *Iris kaempferi*, growing on the southeast side of the pond at the U.S. Plant Introduction Station at Glenn Dale, Maryland, n.d. Source: *The Exchange*, n.d. [ca. early 1970s].

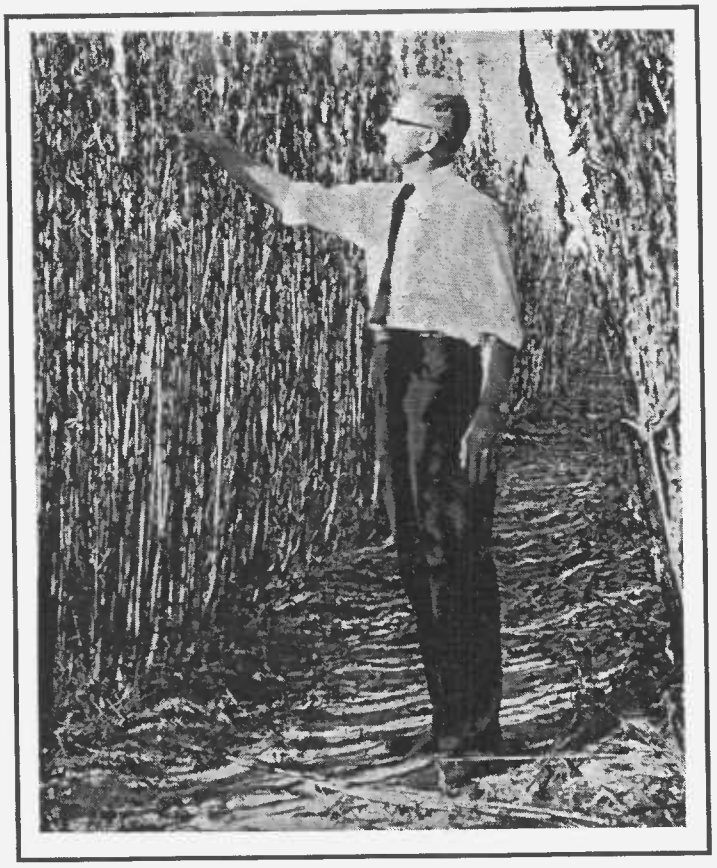

Figure 52. Joseph J. Higgins examining *Hibiscus cannabinus* (kenaf) in one of the fields of the U.S. Plant Introduction Station at Glenn Dale, Maryland, n.d. Source: *The Exchange*, n.d. [ca. early 1970s].

Figure 53. The original Bradford pear tree, located on the west side of the parking lot by one of the entrances of the U.S. Plant Introduction Station at Glenn Dale, Maryland. It was photographed in full bloom on April 12, 1951, when the tree was 30 years old. Source: *American Nurseryman*, April 15, 1963.

Figure 54. Six-year-old Bradford pear trees, planted in 1954 by J.L. Creech, in full bloom at University Park, Maryland. Source: *American Nurseryman*, April 15, 1963.

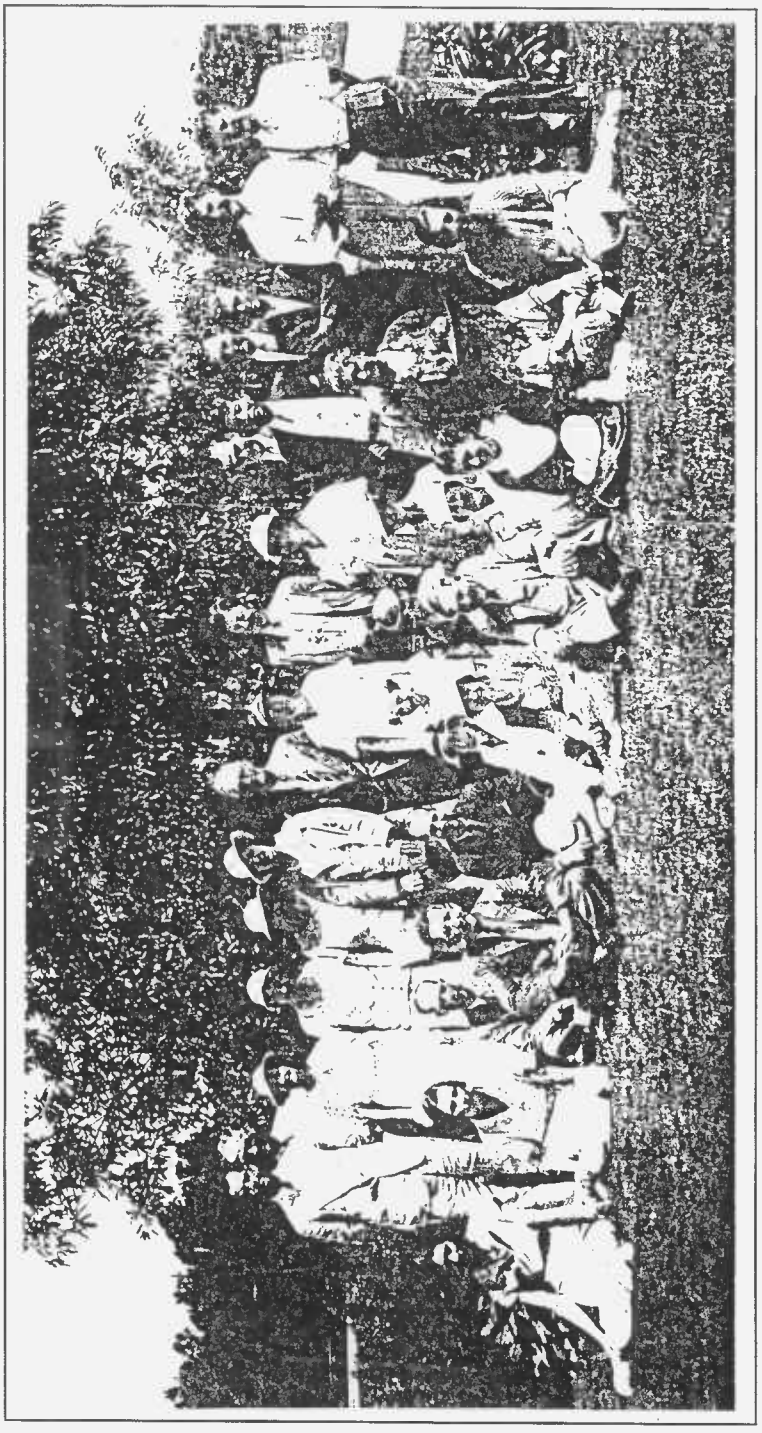

Figure 55. The staff of the U.S. Plant Introduction Station at Glenn Dale, Maryland, in front of the Chinese sawtooth oak, ca. mid-1930s. Source: the files at the U.S. Plant Introduction Station, Glenn Dale, Maryland.

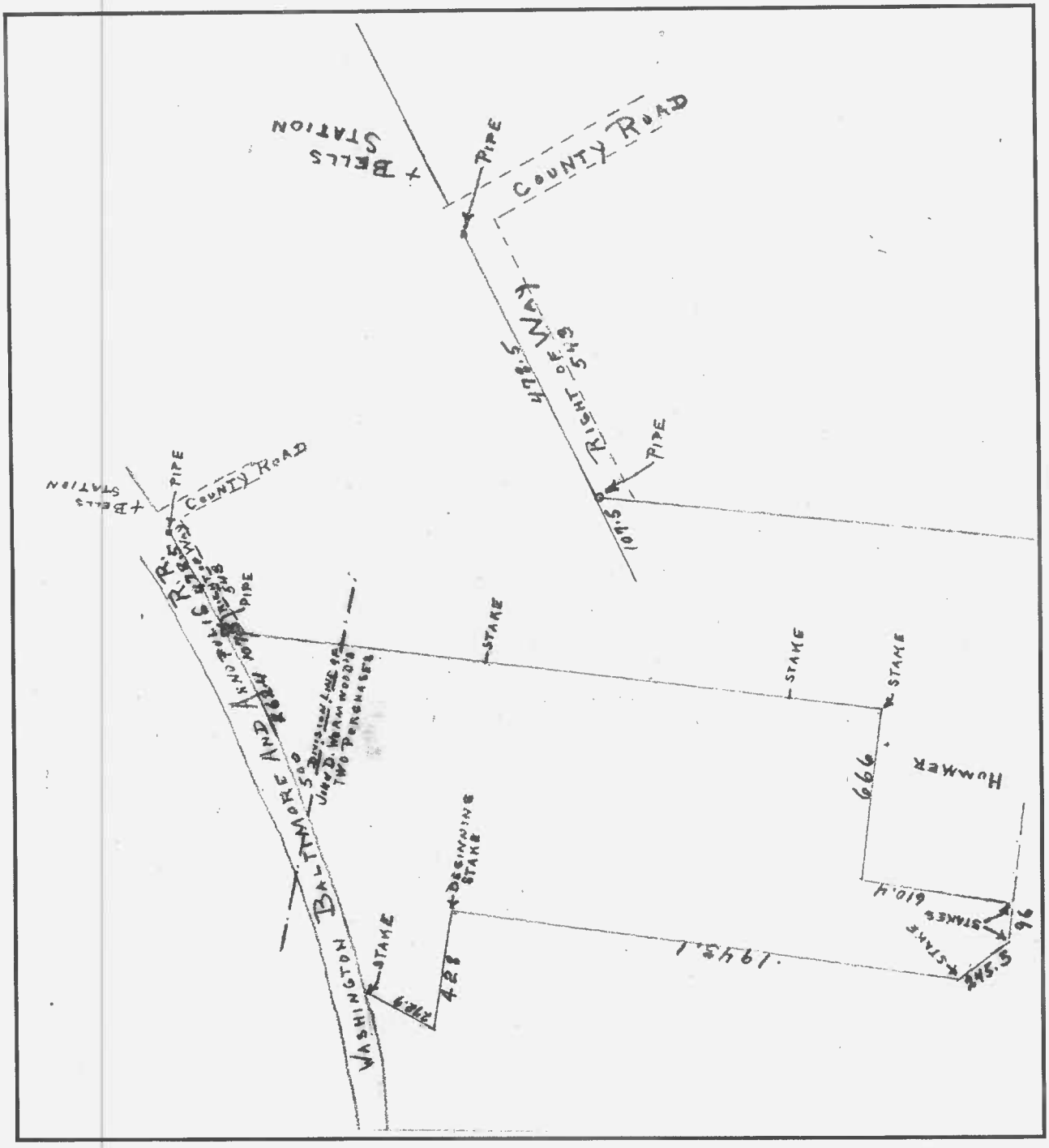

Figure 56. Survey of the government property at the U.S. Plant Introduction Station at Glenn Dale, Maryland, showing right of way, n.d. Source: the files at the U.S. Plant Introduction Station at Glenn Dale, Maryland.

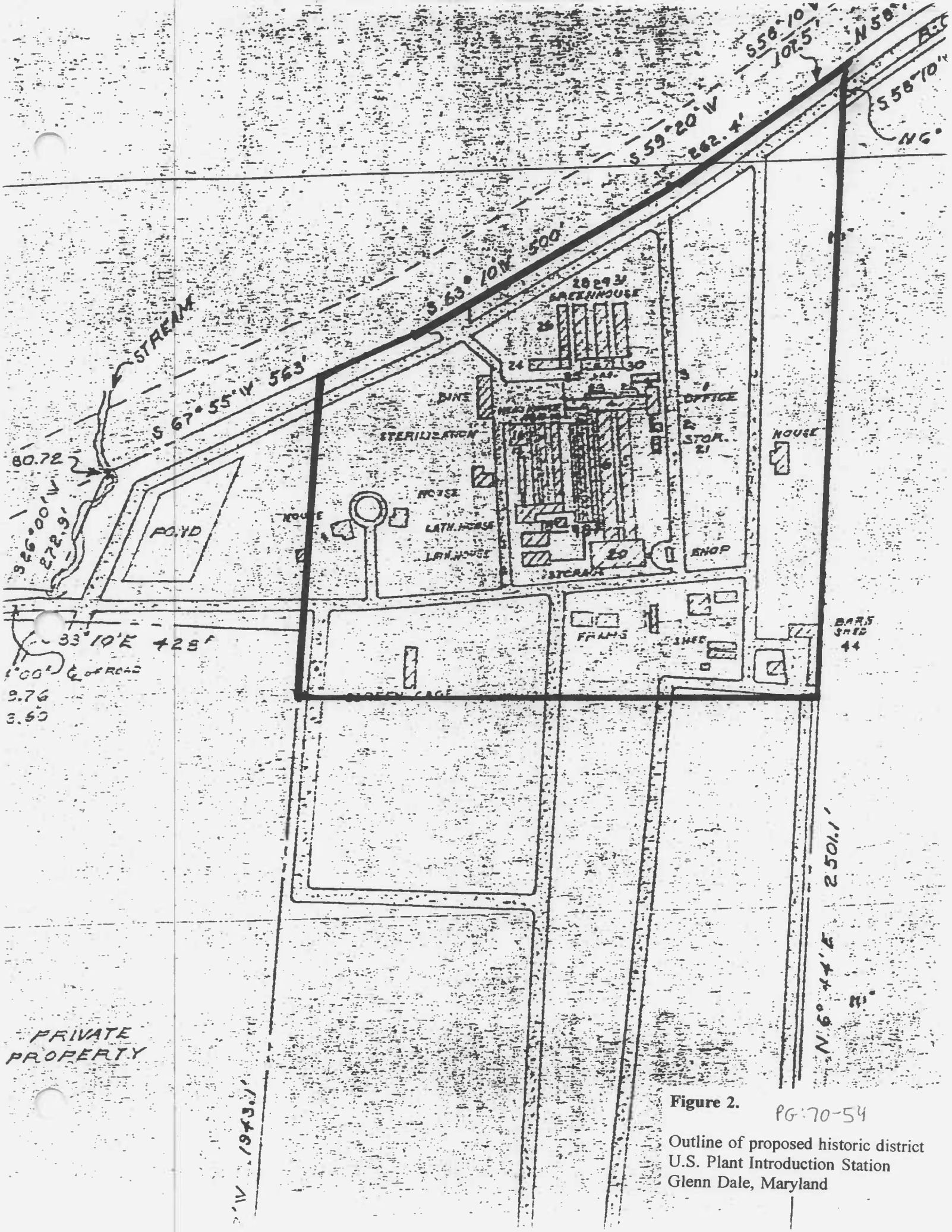

Figure 2.

PG: 70-54

Outline of proposed historic district
U.S. Plant Introduction Station
Glenn Dale, Maryland

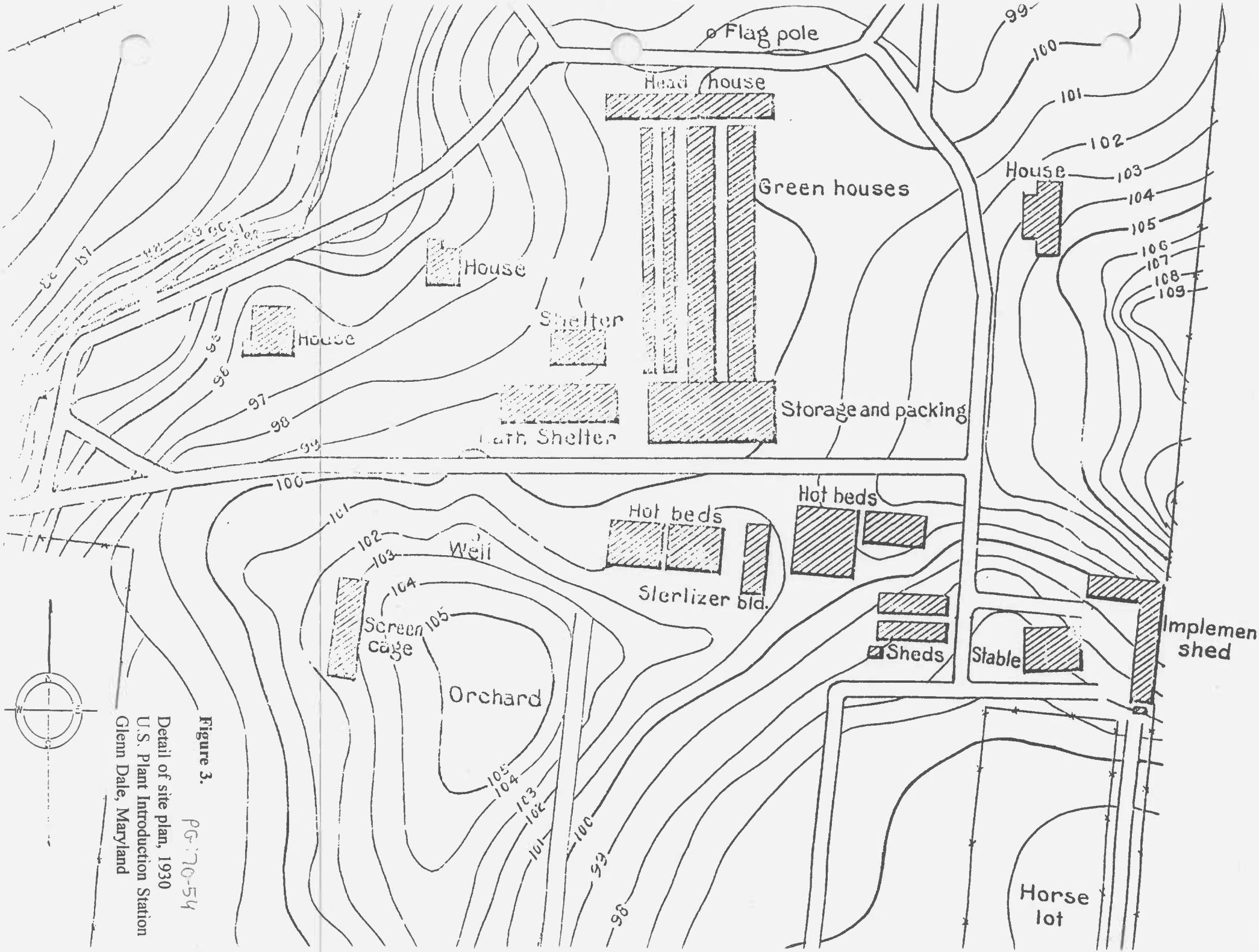

Figure 3.

Detail of site plan, 1930
U.S. Plant Introduction Station
Glenn Dale, Maryland

PG 70-54

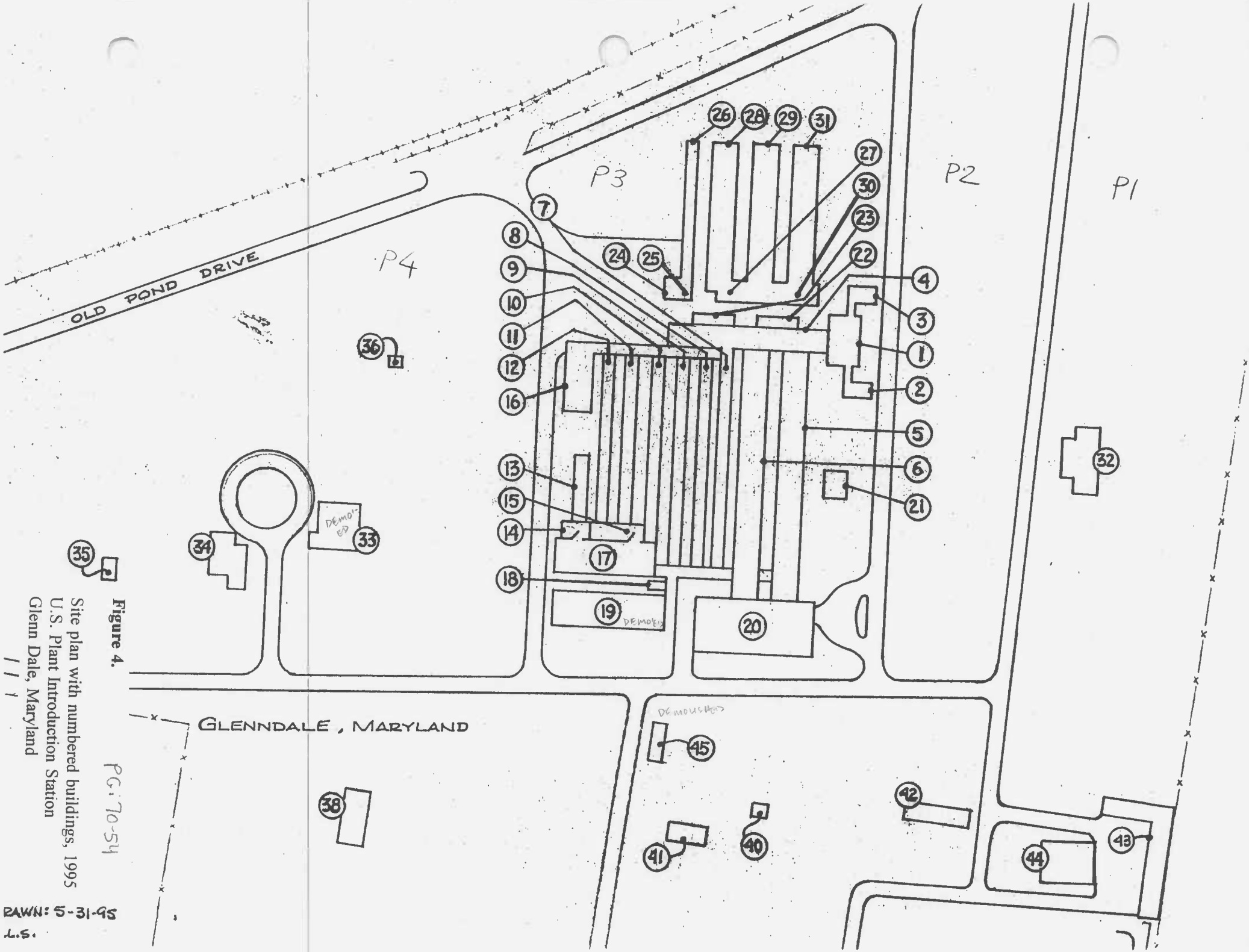

Figure 4.

Site plan with numbered buildings, 1995
U.S. Plant Introduction Station
Glenn Dale, Maryland

PG: 70-54

DRAWN: 5-31-95
L.S.

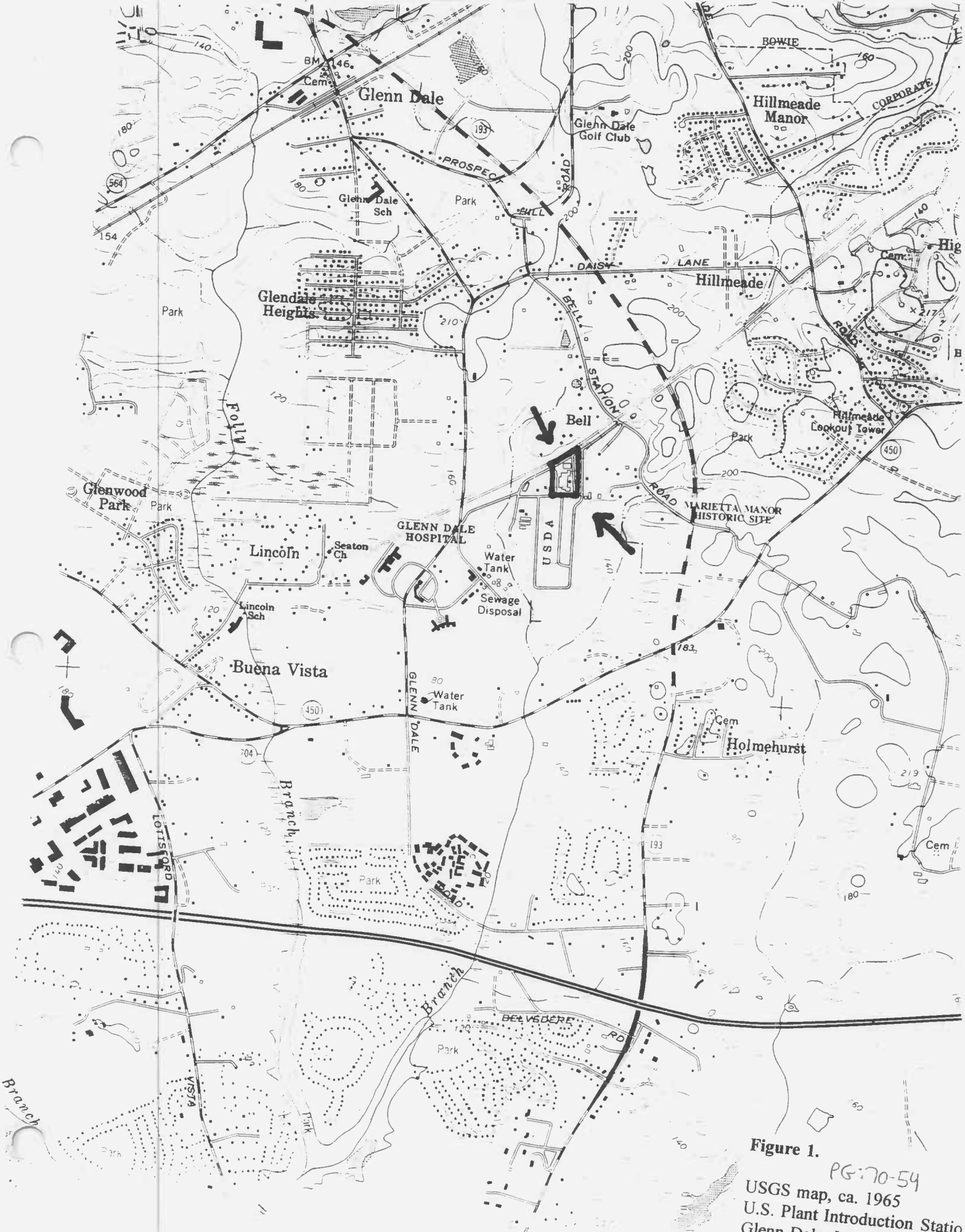

Figure 1.

PG: 70-54

USGS map, ca. 1965
U.S. Plant Introduction Statio
Glenn Dale, Maryland

PG 70-54
US PLANT INTRODUCTION STATION
GLENN DALE
PRINCE GEORGE'S COUNTY MD

HEATHER EWING
APRIL 1997
MD SHPO
1 OF 19

ALLÉE OF BRADFORD PEARS PLANTED BY DR ACKERMAN. AT MAIN ENTRANCE TO STATION. LOOKING EAST (DUMPSTER IN REAR CENTER)

PG 70-54
US PLANT INTRODUCTION STATION
GLENN DALE
PRINCE GEORGE'S COUNTY, MD
HEATHER EWING
MAY 1995
MDSHPO 2 OF 19

BUILDINGS 1, 2, 3 LOOKING NORTHWEST
FLOWERING APPLE SPECIMENS PLANTED
BY SUPERINTENDENT CREECH IN FOREGROUND

PG 70-54

US PLANT INTRODUCTION STATION

GLENN DALE

PRINCE GEORGE'S COUNTY MD

HEATHER EWING

APRIL 1997

MD SHPO

3 OF 19

GIANT CHERRY BLOSSOM TREE AT REAR OF MAIN OFFICE (BUILDINGS 1, 2, 3) LOOKING EAST

PG 70-54

US PLANT INTRODUCTION STATION

GLENN DALE

PRINCE GEORGE'S COUNTY MD

HEATHER EWING

APRIL 1997

MD SHPO

4 OF 19

MAIN ORNAMENTAL PLOT IN FRONT OF MAIN OFFICE. COTTAGE #1 AT RIGHT.

PG 70-54
US PLANT INTRODUCTION STATION
GLENN DALE
PRINCE GEORGES COUNTY MD
HEATHER EWING
MAY 1995
MDSHPO

5 OF 19

BUILDING 5, LOOKING NORTH TO HEADHOUSE (BUILDING 4). LARGE CHERRY BLOSSOM TREE SPECIMEN VISIBLE TO LEFT OF CHIMNEY.

PG 70-54
US PLANT INTRODUCTION STATION
GLENN DALE
PRINCE GEORGE'S COUNTY MD
HEATHER EWING
MAY 1995
MDSHPO
BUILDINGS 12, 13, 14, 15, 17
LOOKING SOUTHWEST

6 OF 19

PG 70-54
US PLANT INTRODUCTION STATION
GLENN DALE
PRINCE GEORGE'S COUNTY MD
HEATHER EWING-
MAY 1995
MD SHPO

BUILDINGS 24, 25, 26 WITH BUILDINGS 22 + 23
TO THE SOUTH AT RIGHT. GLENN DALE AZALEAS
IN FRONT OF 22+23

7 OF 19

PG 70-54

US PLANT INTRODUCTION STATION

GLENN DALE

PRINCE GEORGES COUNTY MD

HEATHER EWING

MAY 1995

MDSHPO

8 OF 19

BUILDINGS 27 + 30, LOOKING EAST TOWARD BUILDING 3. LARGE CHERRY BLOSSOM TREE SPECIMEN AT RIGHT

PG 70-54
US PLANT INTRODUCTION STATION
GLENN DALE
PRINCE GEORGE'S COUNTY MD
HEATHER EWING
MAY 1995
MD SHPO

BUILDINGS 28, 29, 31 LOOKING SOUTHWEST

9 OF 19

PG 70-54
US PLANT INTRODUCTION STATION
GLENN DALE
PRINCE GEORGE'S COUNTY MD
HEATHER EWING
MAY 1995
MDSHPO

BALTIMORE

INTERIOR, BUILDING 28

10 OF 19

PG 70-54
US PLANT INTRODUCTION STATION
GLENN DALE
PRINCE GEORGE'S COUNTY MD
HEATHER EWING
MAY 1995
MDSHPO

BUILDING 34, LOOKING WEST

11 OF 19

PG 70-54
US PLANT INTRODUCTION STATION
GLENN DALE
PRINCE GEORGE'S COUNTY MD
HEATHER EWING
MAY 1995
MD SHPO

BUILDING 38, LOOKING SOUTH

12 OF 19

PG 70-54
US PLANT INTRODUCTION STATION
GLENN DALE
PRINCE GEORGE'S COUNTY MD
HEATHER EWING
MAY 1995
MDSHPO

BUILDING 44, LOOKING EAST

13 OF 19

PG 70-54
US PLANT INTRODUCTION STATION
GLENN DALE
PRINCE GEORGE's COUNTY MD
HEATHER EWING
MAY 1995
MDSHPO

DETAIL, HARDWARE ON BUILDING 44

14 OF 19

PG 70-54

US PLANT INTRODUCTION STATION

GLENN DALE

PRINCE GEORGE'S COUNTY MD

HEATHER EWING

APRIL 1997

MD SHPO

LOOKING SOUTH INTO FIELDS, PISTACHIO TREE PLANTED BY DR. ACKERMAN IN FOREGROUND

15 OF 19

PG 70-54

US PLANT INTRODUCTION STATION

GLENN DALE

PRINCE GEORGE'S COUNTY MD

HEATHER EWING

APRIL 1997

MD SHPO

SAWTOOTH OAK (DAUGHTER OF ORIGINAL THAT WAS LOCATED IN FRONT OF BUILDING 1)

LOOKING SOUTH INTO FIELDS

16 OF 19

PG 70-54

US PLANT INTRODUCTION STATION

GLENN DALE

PRINCE GEORGE'S County MD

HEATHER EWING

APRIL 1997

MD SHPO

FIELDS OF STATION, LOOKING NORTH,
TURKISH FILBERT SPECIMEN AT RIGHT

17 OF 19

PG 70-54

US PLANT INTRODUCTION STATION

GLENN DALE

PRINCE GEORGE'S County MD

HEATHER EWING

APRIL 1997

MD SHPO

VIEW OF FIELDS FROM FOOT OF
WATSON'S HILL. LOOKING NORTHWEST

18 OF 19

PG 70-54

US PLANT INTRODUCTION STATION

GLENN DALE

PRINCE GEORGE'S COUNTY MD

HEATHER EWING

APRIL 1997

MD SHPO

WATSON'S HILL, LOOKING SOUTH

19 OF 19

[illegible]

BUILDING 2, looking west

PG 70-54
US PLANT INTRODUCTION STATION, GLENN DALE
PRINCE GEORGE'S COUNTY, MD
[illegible] EWING, MAY 1995

MD SHPO

BUILDINGS 1, 2, 3, looking southeast

INTRODUCTION STATION, GLENN DALE
PRINCE GEORGE'S COUNTY, MD
HEATHER EWING MAY 1995

MD SHPO

WSSC PLANT INFECTION STATION, GLENN DALE
PRINCE GEORGE'S COUNTY MD
HEATHER EWING 1995
MD SHPO

EWING E. INTERIOR

US PLANT INTRODUCTION STATION, GLENN DALE

PRINCE GEORGE'S COUNTY, MD

HEATHER EWING MAY 1995

MD SHPO

7/30

BUILDINGS 9 + 10, LOOKING SOUTH

PG 70-54
US PLANT INTRODUCTION STATION, GLENN DALE
PRINCE GEORGE'S COUNTY MD
HEATHER EWING MAY 1995
MD SHPO

8/30
SCREENHOUSE AT HEAD OF BUILDINGS 10, 11, 12, 16.
LOOKING SOUTHEAST

USPLANT INTRODUCTION STATION, GLENN DALE
PRINCE GEORGE'S COUNTY, MD
HEATHER EWING MAY 1995

MD SHPO PG 70-54

PRO-MIX BX

9/30

INTERIOR SCREENHOUSE AT HEAD OF BLDGS 10, 11, 12, 16

US PLANT INTRODUCTION STATION, GLENN DALE

PRINCE GEORGE'S COUNTY MD

HEATHER EWING MAY 1995

MDSHPO

PG 70-54

10/30

BLDG 12, LOOKING SOUTH TO BLDG 14

US PLANT INTRODUCTION STATION, GLENN DALE
PRINCE GEORGE'S COUNTY, MD

HEATHER EWING MAY 1995

MDSHPO
PG 70-54

12/30

BUILDING 14, LOOKING EAST

PG 70-54

US PLANT INTRODUCTION STATION, GLENN DALE

PRINCE GEORGE'S COUNTY MD

HEATHER EWING MAY 1995

MDSHPO

13/30
BUILDING 20, LOOKING WEST
USPLANT INTRODUCTION STATION, GLENN DALE
PRINCE GEORGE'S COUNTY, MD
HEATHER EWING MAY 1995
MDSHPO
PG 70-54

15/30
Buildings 24, 25, and 26 looking northeast
PG: 70-54
US Plant Introduction Station, Glenn Dale
Prince George's Co, MD
Heather Ewing, May 1995
MD SHPO

19/30
Building 32, looking northeast
PG: 70-54
US Plant Introduction Station Glenn Dale
Prince George's Co. MD
Heather Ewing MAy 1995
MD SHPO

20/30

BUILDING 34, LOOKING SOUTH

US PLANT INTRODUCTION STATION, GLENN DALE
PRINCE GEORGE'S COUNTY MD

HEATHER EWING MAY 1995

MD SHPO

PG 70-54

23/30
Building 41, Looking South
PG: 70-54
US Plant Introduction Station Glenn Dale
Prince George's Co. MD
Heather Ewing May 1995
MD SHPO

24/30

BUILDING 42, LOOKING WEST

PG 70-54
VS PLANT INTRODUCTION STATION, GLENN DALE
PRINCE GEORGE'S COUNTY MD

HEATHER EWING MAY 1995

MDSHPO

25/30

BUILDING 43, LOOKING EAST

PG 70-54

US PLANT INTRODUCTION STATION, GLENN DALE

PRINCE GEORGE'S COUNTY, MD

HEATHER EWING MAY 1995

MDSHPO

USNG
221510

26/30
Building 43, looking north
PG : 70 - 54
US Plant Introduction Station Glenn Dale
Prince George's Co. MD
Heather Ewing May 1995
MDSHPO

27/30
Building 43, looking northeast
PG: 70-54
US Plant Introduction Station Glenn Dale
Prince George's Co. MD
Heather Ewing, May 1995
MD SHPO

28/30

BLDG 44, LOOKING EAST

PG 70-54

US PLANT INTRODUCTION STATION, GLENN DALE
PRINCE GEORGE'S COUNTY MD

HEATHER EWING MAY 1995

MDSHPO

29/30
BUILDING 44, LOOKING NORTH
US PLANT INTRODUCTION STATION, GLENN DALE
PRINCE GEORGE'S COUNTY, MD
HEATHER EWING MAY 1995
MDSHPO