

Stamps That Glow

Luminescent Tagging on United States Stamps

Part I

The Experimental Years

Presentation By:
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FLOREX – 2 December 2018

It's All About Sorting the Mail



Post Office Sorting Room - 1935

And Canceling Stamps



Feeding the Canceling Machine - 1951

Facing - Labor Intensive and Error Prone



Cinderella Canceled as Postage



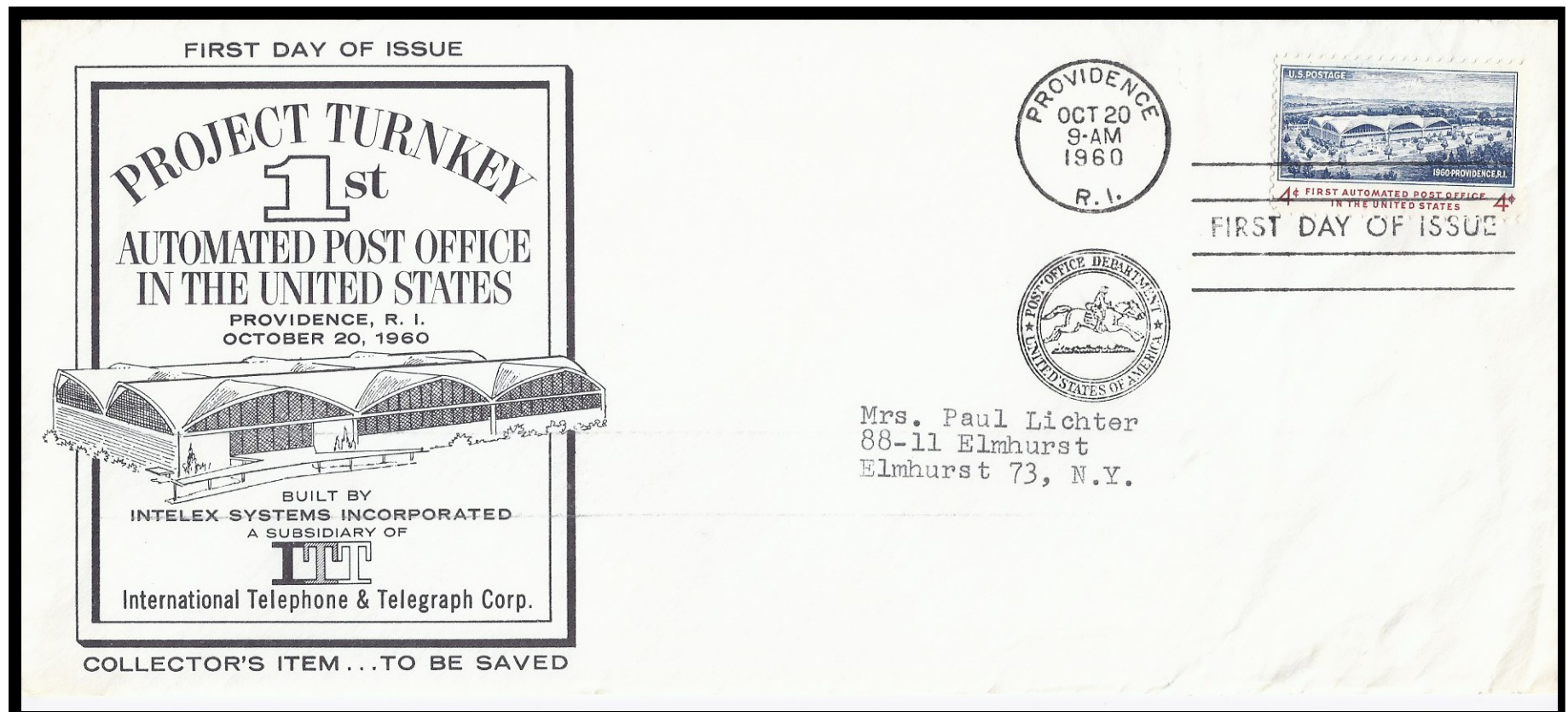
Greenbox Stamp Co.
Trading Stamp

Historical Note:

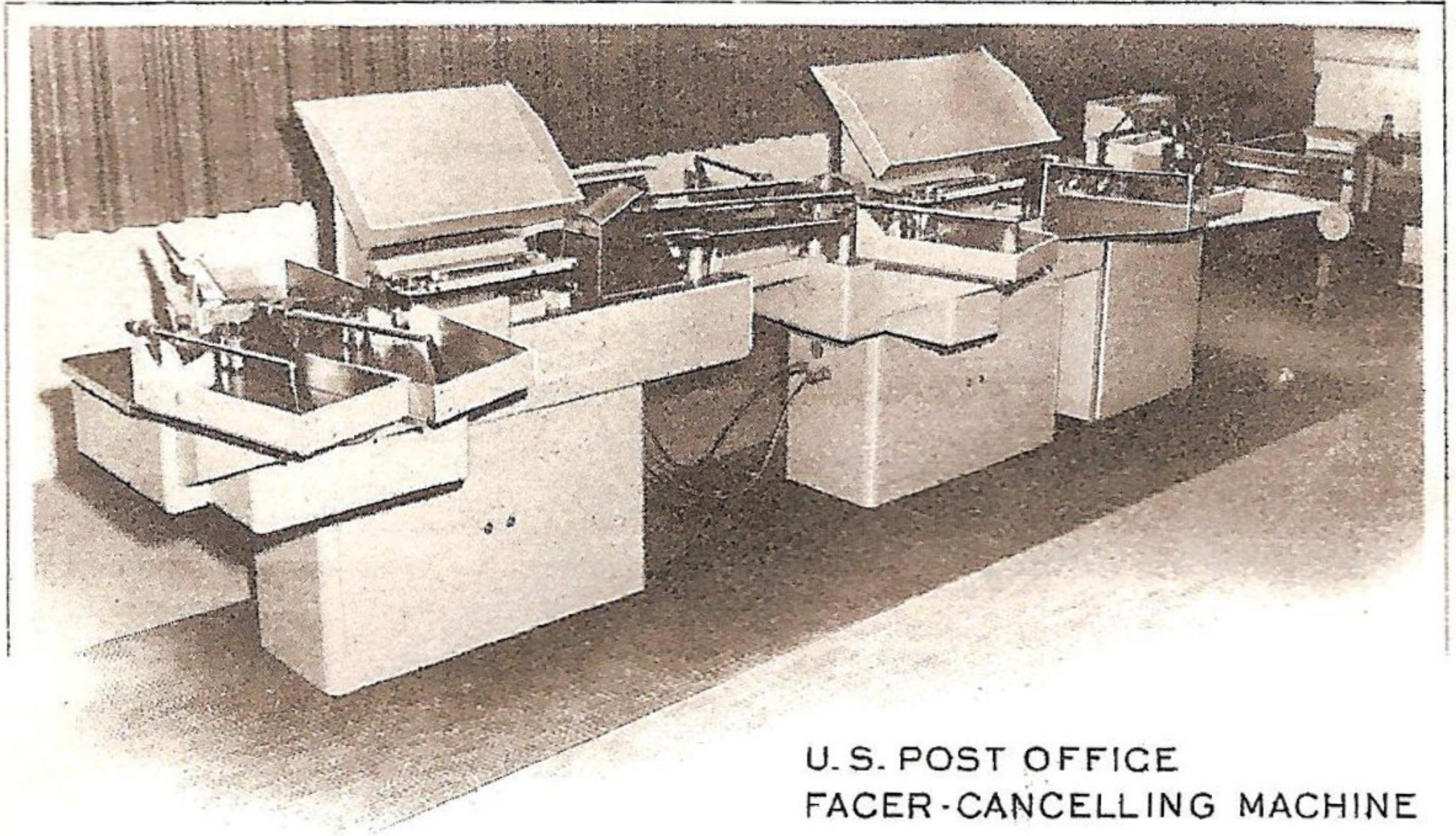
Greenbox stamps are still around. They are a division of PigglyWiggly Carolina Co. They are no longer paper stamps, having been replaced with electronic greenbox you can accrue with a Pig's Favorite Customer (PFC) card.

First Automated Post Office

- Culminated Postmaster General Summerfield's 1953 initiative to improve mail processing.
- Principal components provided by Pitney-Bowes and National Cash Register Corp. (NCR)
- System integration by International Telephone & Telegraph Corp. (ITT)



Mark II Facer-Canceler



U. S. POST OFFICE
FACER-CANCELLING MACHINE

Mark-II Facer-Canceler Fooled by Christmas Seals.



The 6 cent orange stamp was subsequently canceled with a porelon roller.

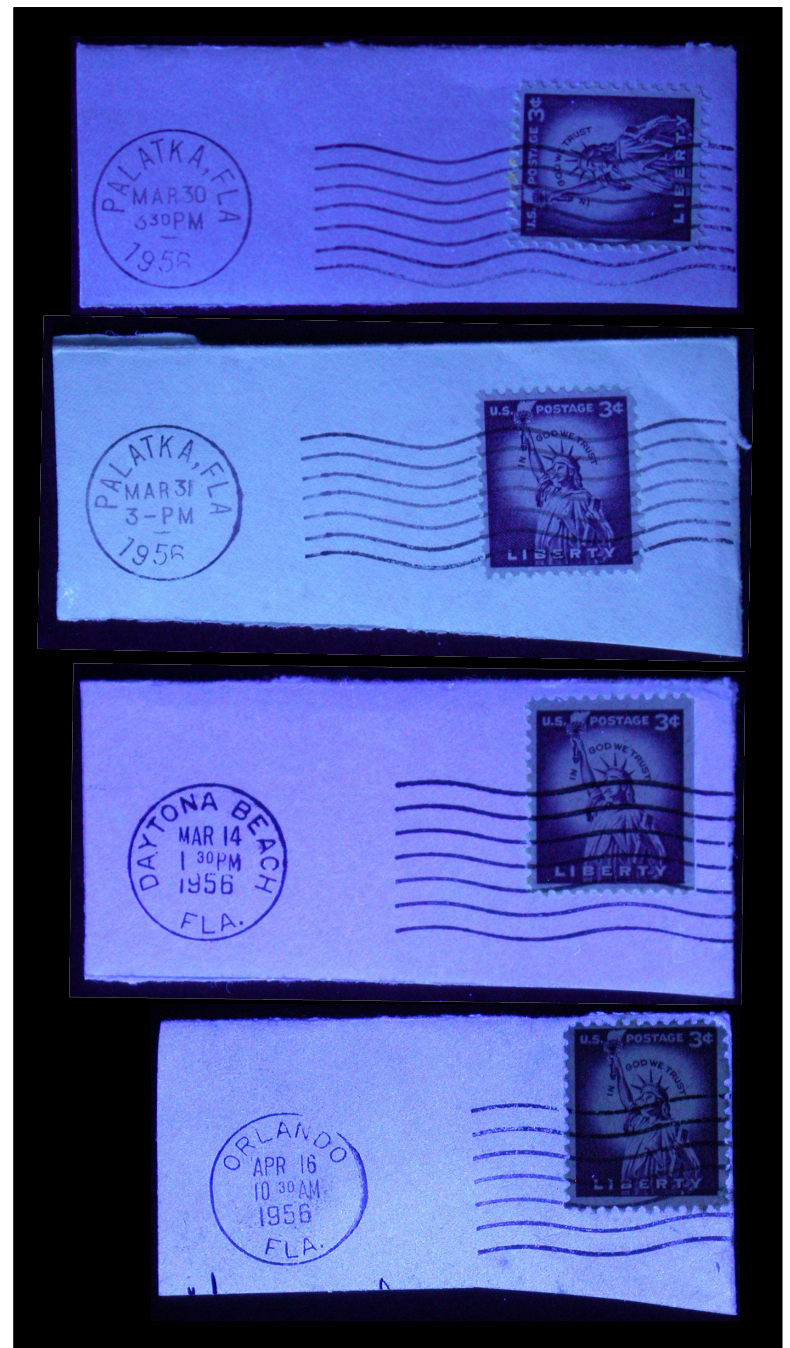


- No noticeable difference between these four envelopes
- Pitney-Bowes discovered when illuminated with long-wave UV light some paper glows increasing contrast

Visible spectrum illumination

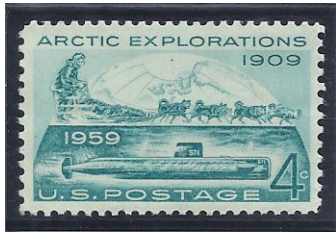


Visible spectrum illumination

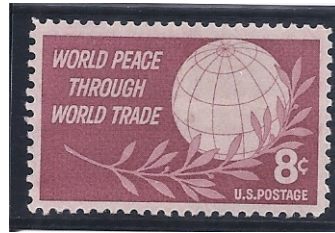


Long-wave UV illumination

Stamps on Brite Paper



Scott 1128 - "brite" paper



Scott 1129 - dead paper



Scott 1130 - dead paper



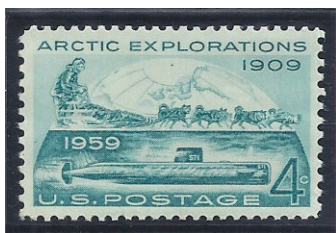
Scott 1132 - "brite" paper

Pitney-Bowes approach:
augment or replace the visible
light source with a long-wave
ultra-violet (UV) light source.

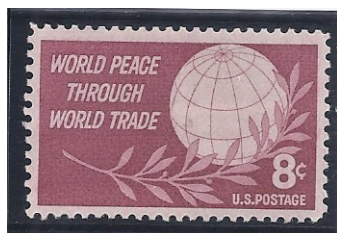
To support Pitney-Bowes testing,
in 1958 the USPOD began
issuing some stamps on what
Boerger described as "brite"
paper.

Visible spectrum
illumination

Stamps on Brite Paper



Scott 1128 - brite paper



Scott 1129 - dead paper



Scott 1128 - brite paper



Scott 1129 - dead paper



Scott 1130 - dead paper



Scott 1132 - brite paper



Scott 1130 - dead paper



Scott 1132 - brite paper

Visible spectrum
illumination

Long-wave UV illumination

All “Brite” Paper is Not the Same



Two identical plate blocks?

- Paper manufacturers measure brightness as the percentage of blue light reflected from the surface measured at 457 nanometers
- Visible blue light (457 nanometers) falls outside the UV portion of the electromagnetic spectrum (380 to 10 nanometers)
- There were no standards for fluorescence brightness (“brite” paper)
- The Bureau of Printing of Engraving did not manage paper by lot and type

All "Brite" Paper is Not the Same



Two identical plate blocks?



Not identical when illuminated with long-wave UV

National Cash Register (NCR) Approach

- Apply a taggant to the stamp
 - Organic phosphorous compound
 - Invisible to the unaided eye
 - Glowed in color under short-wave UV illumination
- Two colors
 - Red-orange
 - Blue-green
- Solved two problems
 - Locating the stamp in the facer-canceler
 - Separating airmail from surface mail

1963

C64a 8¢ Capitol & Jet Airmail

1238 5¢ City Mall Delivery
 1213b 5¢ Washington
 1213c 5¢ ZONE booklet pane (Slogan 2)
 1229a 5¢ Washington coil
 1036b 4¢ Lincoln
 1240a 5¢ Christmas

1964

1213c 5¢ ZIP label booklet (Slogan 3)

C69 5¢ Goddard airmail

1254-7a 5¢ Christmas set of 4
 C64c 8¢ Airmail booklets

1965

C65a 8¢ Airmail coil

1276a 5¢ Christmas
 1282a 4¢ Lincoln - black

The Experiment Phase I

The First Tagged Stamp

- The 8¢ Capital airmail stamp (Scott C64) was coated with a taggant that glowed red-orange.
- The tagged stamps (Scott C64a) were issued on August 1, 1963 for a limited city-wide test in the Dayton, Ohio area.



Scott C64a

Image of Scott C64a
Under short-wave UV illumination

All Postal Installations

8-Cent Luminescent Tagged Airmail Postage Stamp

The current 8-cent airmail stamp will be used in the first field test of luminescent tagging to speed mail handling. A luminescent ink, which glows a reddish-orange color under ultra-violet light, will be overprinted on airmail stamps used in the field tests. This ink contains an invisible, inorganic phosphor commonly used in creams, ointments, and medicines.

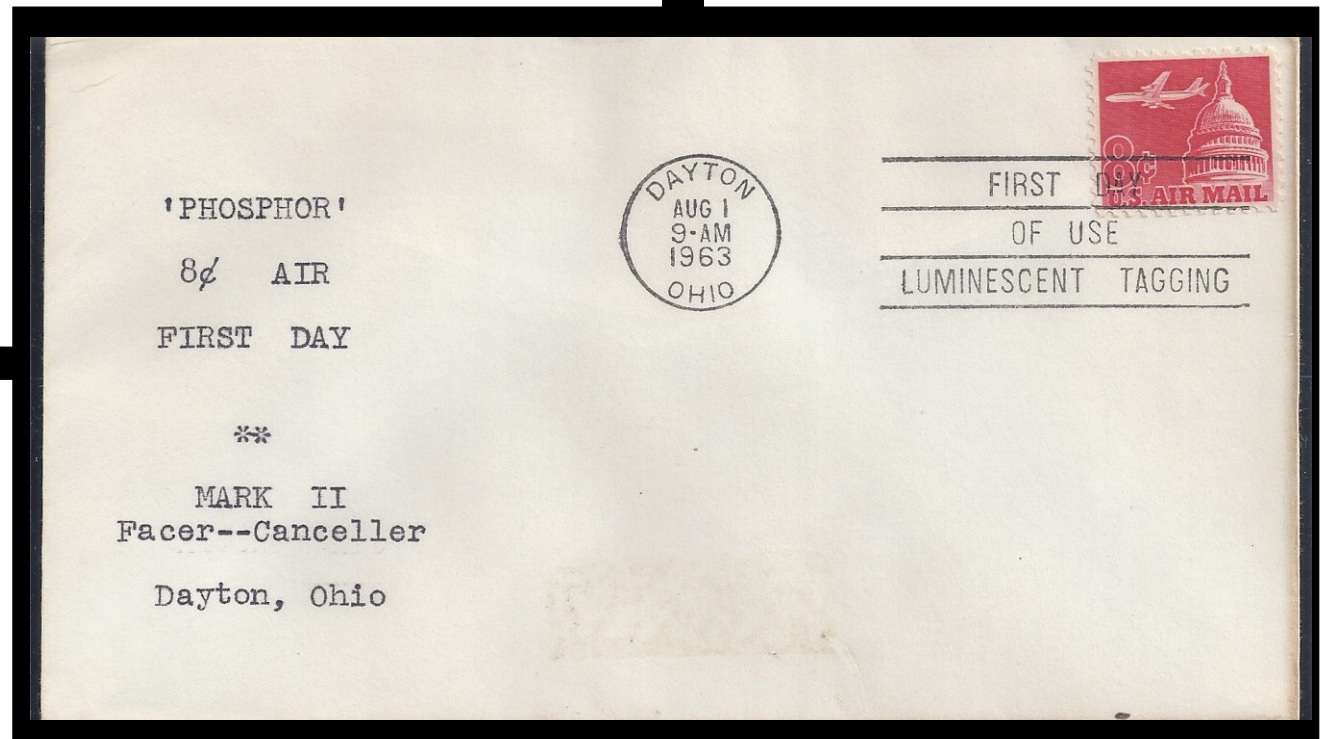
This stamp will be first placed on sale at Dayton, Ohio, on August 1, 1963. During controlled field test, and until further notice, the tagged stamps will be utilized only at Dayton. They are interchangeable with untagged stamps for normal postal purposes.

A small black box added to the Mark II facer-canceling machine will "recognize" and separate specially treated airmail stamps in the field tests. The relatively inexpensive modification was conceived and developed by the Post Office Department research scientists, working in conjunction with the National Cash Register Co., Dayton, Ohio, and climaxes experiments that have been going on for more than 3 years.

The luminescent tagging of this airmail stamp represents not only a significant technological advance but a first in U.S. postal history. The principles incorporated in this test will provide the Post Office Department with technical capabilities that offer great potential benefit to the mailing public in terms of dollar savings and improved service.

Collectors desiring first-day cancellations may send addressed envelopes, together with remittance to cover the cost of the stamps to be affixed, to the Postmaster, Dayton, Ohio 45401. See Postal Manual section 145.3. Mint stamps will be available at the Philatelic Sales Agency, Post Office Department, Washington, D.C. 20260, on and after August 2, 1963.—*Special Assistant to the Postmaster General, 7-18-63.*

The First "Tagged" stamp

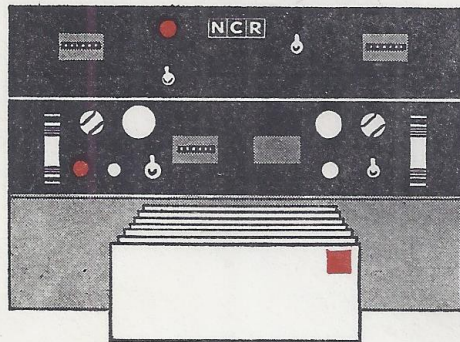


NCR Created a Special FDC

NCR

THE NATIONAL CASH REGISTER COMPANY
Dayton 9, Ohio

FIRST DAY COVER



This envelope carries the first issue of a new phosphor-ink airmail stamp used in NCR-Post Office test program to speed airmail service through automatic machine separation of mail.



FIRST DAY

OF USE

LUMINESCENT TAGGING

VIA AIR MAIL

The Experiment Phase I

1963

C64a 8¢ Capitol & Jet Airmail

1238 5¢ City Mall Delivery
1213b 5¢ Washington
1213c 5¢ ZONE booklet pane (Slogan 2)
1229a 5¢ Washington coil
1036b 4¢ Lincoln
1240a 5¢ Christmas

- Customer use of old “un-tagged” postage hampered the experiment
- Dayton postal clerks made special order of tagged airmail labels
- Tagged labels placed on all airmail sent at the Dayton, OH post office

1964

1213c 5¢ ZIP label booklet (Slogan 3)

C69 5¢ Goddard airmail

1254-7a 5¢ Christmas set of 4
C64c 8¢ Airmail booklets

1965

C65a 8¢ Airmail coil

1276a 5¢ Christmas
1282a 4¢ Lincoln - black



Airmail Label



Image of Airmail Label
Under short-wave UV illumination

The Experiment Phase I



The Experiment Phase I

1963

C64a 8¢ Capitol & Jet Airmail

- 1238 5¢ City Mail Delivery
- 1213b 5¢ Washington
- 1213c 5¢ ZONE booklet pane (Slogan 2)
- 1229a 5¢ Washington coil
- 1036b 4¢ Lincoln
- 1240a 5¢ Christmas

- First stamp issued tagged
- 5¢ 100th Anniversary of City Mail Delivery (Scott 1238)
- First tagged commemorative stamp

1964

1213c 5¢ ZIP label booklet (Slogan 3)

C69 5¢ Goddard airmail

- 1254-7a 5¢ Christmas set of 4
- C64c 8¢ Airmail booklets

C65a 8¢ Airmail coil

1965

- 1276a 5¢ Christmas
- 1282a 4¢ Lincoln - black



Scott 1238



Image of Scott 1238
Under short-wave UV illumination

Because the clear varnish used to apply the taggant has yellowed, the Type IIA tagging application is visible on the stamps under ambient light.

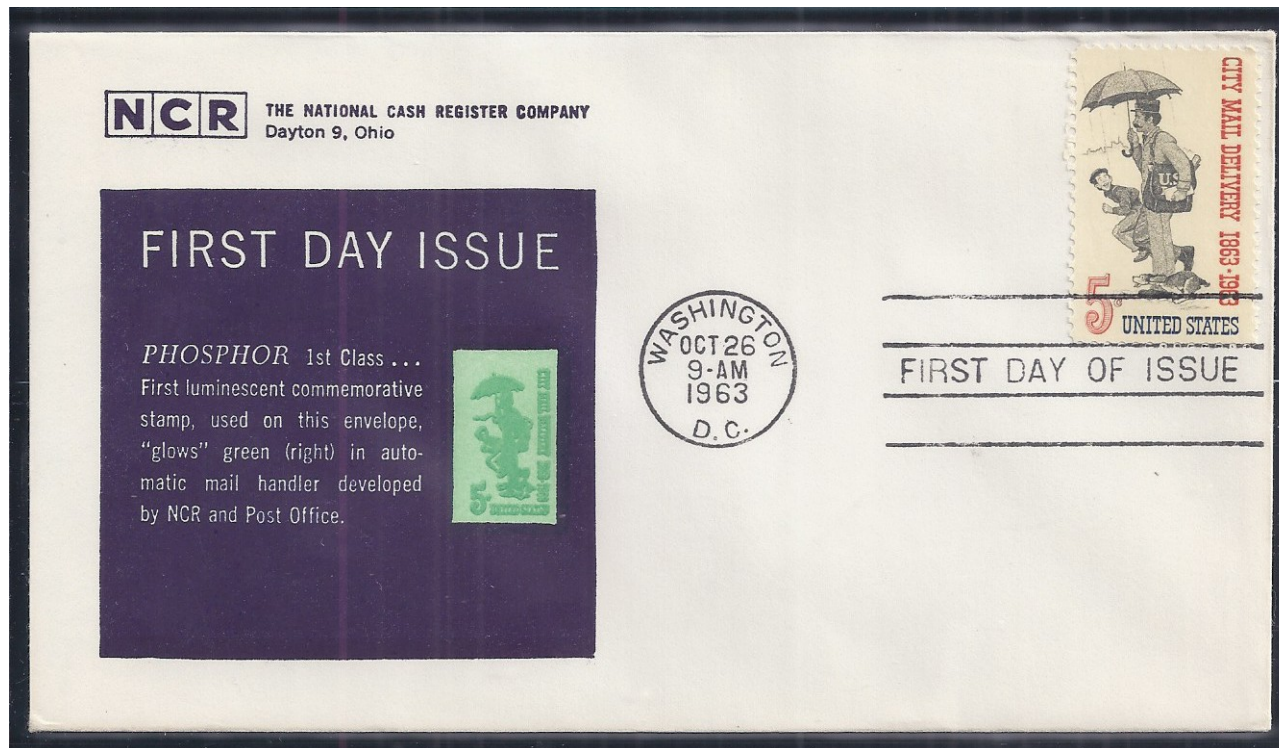
First “Tagged” Commemorative

- Issued to commemorate the 100th Anniversary of City Mail Delivery



First Tagged Commemorative

- NCR FDC captured the technological first of the issue
- First stamp issued tagged



The First Tagging Error



Scott 1238 and 1238a



Images of Scott 1238 and 1238a
Under short-wave UV illumination

The Experiment Phase I

1963

C64a 8¢ Capitol & Jet Airmail

- 1238 5¢ City Mall Delivery
- 1213b 5¢ Washington
- 1213c 5¢ ZONE booklet pane (Slogan 2)
- 1229a 5¢ Washington coil
- 1036b 4¢ Lincoln
- 1240a 5¢ Christmas

- 1963 Christmas Stamp provides comparison of “brite” and “tagged”
- Issue was printed on “brite” paper and tagged

1964

1213c 5¢ ZIP label booklet (Slogan 3)

C69 5¢ Goddard airmail

- 1254-7a 5¢ Christmas set of 4
- C64c 8¢ Airmail booklets



Scott 1240a



Image of Scott 1240a
Under long-wave UV illumination



Image of Scott 1240a
Under short-wave UV illumination

1965

C65a 8¢ Airmail coil

- 1276a 5¢ Christmas
- 1282a 4¢ Lincoln - black

The Experiment Phase I

1963

C64a 8¢ Capitol & Jet Airmail

1238 5¢ City Mall Delivery
1213b 5¢ Washington
1213c 5¢ ZONE booklet pane (Slogan 2)
1229a 5¢ Washington coil
1036b 4¢ Lincoln
1240a 5¢ Christmas

- 5¢ Goddard airmail (Scott C69)
- Second stamp issued tagged
- Airmail tagged in red-orange
- All subsequent airmail stamps issued tagged

1964

C69 5¢ Goddard airmail

1254-7a 5¢ Christmas set of 4
C64c 8¢ Airmail booklets

1965

C65a 8¢ Airmail coil

1276a 5¢ Christmas
1282a 4¢ Lincoln - black



Scott C69

First Airmail Issued Tagged



1966

1283a 5¢ Unshaven Washington

UX48a 4¢ Lincoln postal card

1035b 3¢ Statue of Liberty

1044d 10¢ Independence Hall

1046a 15¢ John Jay

1209a 1¢ Jackson - sheet

1225a 1¢ Jackson Coil - 3000

1285a 8¢ Albert Einstein

1208a 5¢ Flag over White House

1314a **5¢ National Park Service**1315a **5¢ Marine Corps Res.**

TD107a Test Coil

1316a **5¢ Women's Clubs**1317a **5¢ Johnny Appleseed**

1035d 3¢ "Look" Liberty Coil

1318a **5¢ Beautification of America**1319a **5¢ Great River Road**1320a **5¢ Savings Bonds**1321a **5¢ Christmas**1322a **5¢ Mary Cassett Painting**

1284a 6¢ Franklin D. Roosevelt

C59a 25¢ Lincoln - Airmail

1044Ac 11¢ Statue of Liberty

C63a 15¢ Liberty Airmail

C62a 13¢ Liberty Bell Airmail

C67a 6¢ Bald Eagle Airmail

UY18a 4¢ Double Reply card

1323 5¢ National Grange

1967

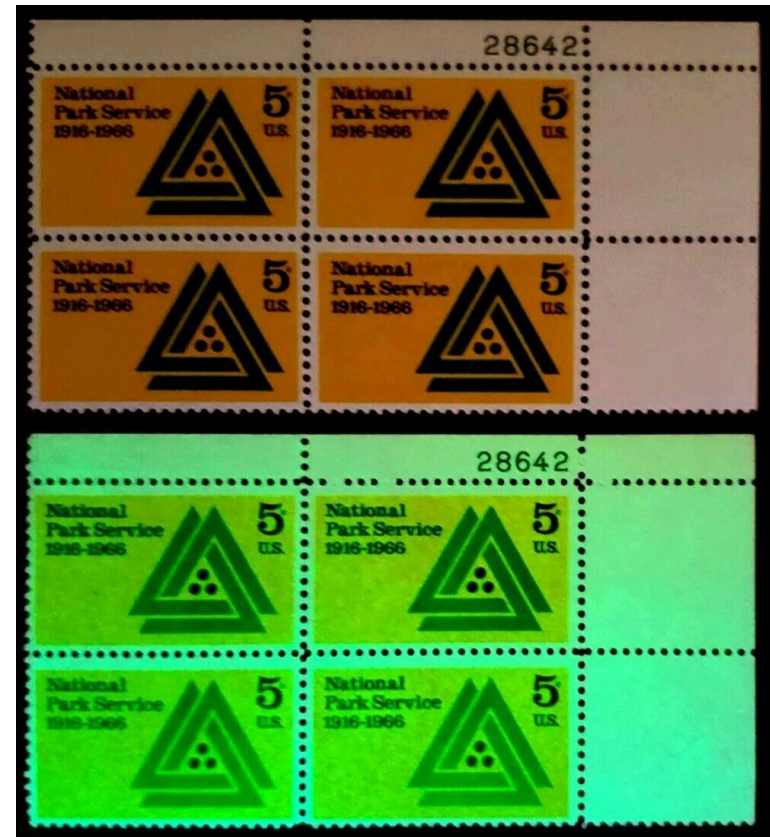
1035b 3¢ Liberty Coil "Look" Reprint

U550a 5¢ "glo-bar" envelope

UC37a 8¢ "glo-bar" air envelope

The Experiment Phase II

- Started on May 19, 1966 in Cincinnati, Ohio
- Plan was to saturate the tri-state area (Ohio, Kentucky and Indiana) with tagged postage
- Area accounted for about 12% of the national postage stamp consumption
- Bureau of Printing and Engraving tagged 12% of the eight (8) 1966 commemoratives and the 1966 Christmas stamp (**Bold** in the timeline at the left)
- Tagging was an overprint of the untagged stamps



Scott 1314 (above) and 1314a (below)
Under short-wave UV illumination

1966

1283a 5¢ Unshaven Washington

UX48a 4¢ Lincoln postal card

1035b 3¢ Statue of Liberty

1044d 10¢ Independence Hall

1046a 15¢ John Jay

1209a 1¢ Jackson - sheet

1225a 1¢ Jackson Coil - 3000

1285a 8¢ Albert Einstein

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TD107a Test Coil

1316a 5¢ Women's Clubs

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1044Ac 11¢ Statue of Liberty

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C62a 13¢ Liberty Bell Airmail

C67a 6¢ Bald Eagle Airmail

UY18a 4¢ Double Reply card

1323 **5¢ National Grange**

1967

1035b 3¢ Liberty Coil "Look" Reprint

U550a 5¢ "glo-bar" envelope

UC37a 8¢ "glo-bar" air envelope

The Experiment Phase II

- Phase II ended on April 17, 1967
- Program went nation-wide with the issuing of the 5¢ Centennial of the National Grange (Scott 1323).
- Beginning with this issue, all stamps have been issued as tagged, except Bureau Precancels, and other special rate stamps.



Scott 1323

Tagging Implemented Nation-Wide



1966

- 1283a 5¢ Unshaven Washington
- UX48a 4¢ Lincoln postal card
- 1035b 3¢ Statue of Liberty
- 1044d 10¢ Independence Hall
- 1046a 15¢ John Jay
- 1209a 1¢ Jackson - sheet
- 1225a 1¢ Jackson Coil - 3000
- 1285a 8¢ Albert Einstein
- 1208a 5¢ Flag over White House
- 1314a 5¢ National Park Service
- 1315a 5¢ Marine Corps Res.
- TD107a Test Coil

- 1316a 5¢ Women's Clubs
- 1317a 5¢ Johnny Appleseed
- 1035d 3¢ "Look" Liberty Coil
- 1318a 5¢ Beautification of America
- 1319a 5¢ Great River Road
- 1320a 5¢ Savings Bonds

- 1321a 5¢ Christmas
- 1322a 5¢ Mary Cassett Painting
- 1284a 6¢ Franklin D. Roosevelt
- C59a 25¢ Lincoln - Airmail

- 1044Ac 11¢ Statue of Liberty
- C63a 15¢ Liberty Airmail
- C62a 13¢ Liberty Bell Airmail
- C67a 6¢ Bald Eagle Airmail
- UY18a 4¢ Double Reply card

- 1323 5¢ National Grange

1967

- 1035b 3¢ Liberty Coil "Look" Reprint

- U550a 5¢ "glo-bar" envelope
- UC37a 8¢ "glo-bar" air envelope

3¢ Statue of Liberty Coil



Scott 1057c



Image of Scott 1057c
Under short-wave UV illumination

3¢ "Look" Statue of Liberty Coil



Scott 1057d



Image of Scott 1057d
Under short-wave UV illumination

3¢ "Look" Statue of Liberty Coil Reprint

Tagged 2¢ Jefferson Coil



Scott 1055a



Image of Scott 1055a
Under short-wave UV illumination

1968 DAV printing in rolls of 3,000



Scott 1055a



Image of Scott 1055a
Under short-wave UV illumination

1971 printing in rolls of 500

▼ Taggant Joint Line

1966

- 1283a 5¢ Unshaven Washington
- UX48a 4¢ Lincoln postal card
- 1035b 3¢ Statue of Liberty
- 1044d 10¢ Independence Hall
- 1046a 15¢ John Jay
- 1209a 1¢ Jackson - sheet
- 1225a 1¢ Jackson Coil - 3000
- 1285a 8¢ Albert Einstein
- 1208a 5¢ Flag over White House
- 1314a 5¢ National Park Service
- 1315a 5¢ Marine Corps Res.
- TD107a Test Coil

- 1316a 5¢ Women's Clubs
- 1317a 5¢ Johnny Appleseed
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- 1318a 5¢ Beautification of America
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- C62a 13¢ Liberty Bell Airmail
- C67a 6¢ Bald Eagle Airmail
- UY18a 4¢ Double Reply card

- 1323 5¢ National Grange

1967

- 1035b 3¢ Liberty Coil "Look" Reprint

- U550a 5¢ "glo-bar" envelope
- UC37a 8¢ "glo-bar" air envelope

Postal Stationery



Scott U550a

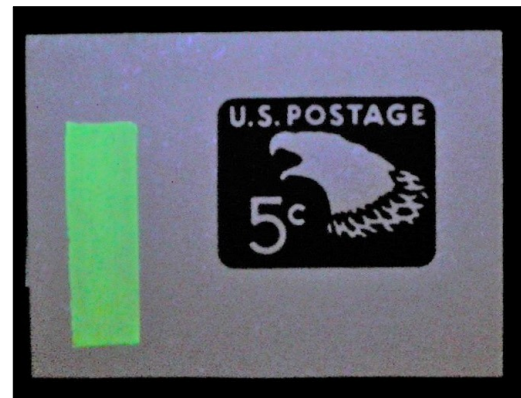


Image of Scott U550a Under short-wave UV illumination



Scott UC37a

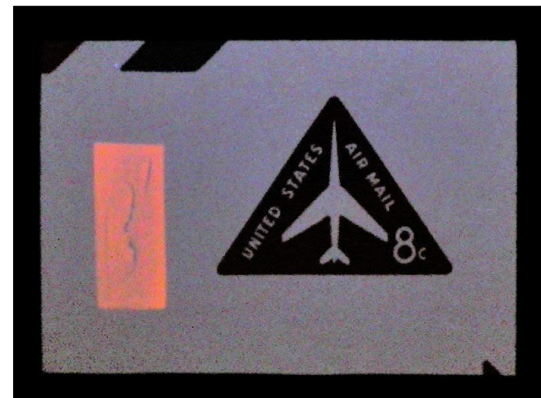


Image of Scott UC37a Under short-wave UV illumination

The End of Orange-red Tagging



Scott C89



Scott C90



Images of Scott C89 and C90
Under short-wave UV illumination

- Last two airmail stamps tagged in orange-red were Scott C89 and C90, both issued on January 2, 1976.
- Domestic Air Mail as a separate class of service was formally eliminated on May 1, 1977.
- Eliminated the need to separate domestic air mail from domestic surface mail
- The first airmail stamps tagged in bluish-green were Scott C91 & C92 issued on September 23, 1978.



Scott C91
and C92



Image of Scott C91 & C92
Under short-wave UV illumination

Evolution of Tagging Technology

- **Taggant application techniques evolved over time**
- **Four categories of Tagged Stamps**
 - Overall Tagging
 - Block Tagging
 - Phosphored Ink
 - Prephosphored Paper
- **These tagging technologies are addressed in detail in our next chat:**

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Luminescent Tagging on United States Stamps

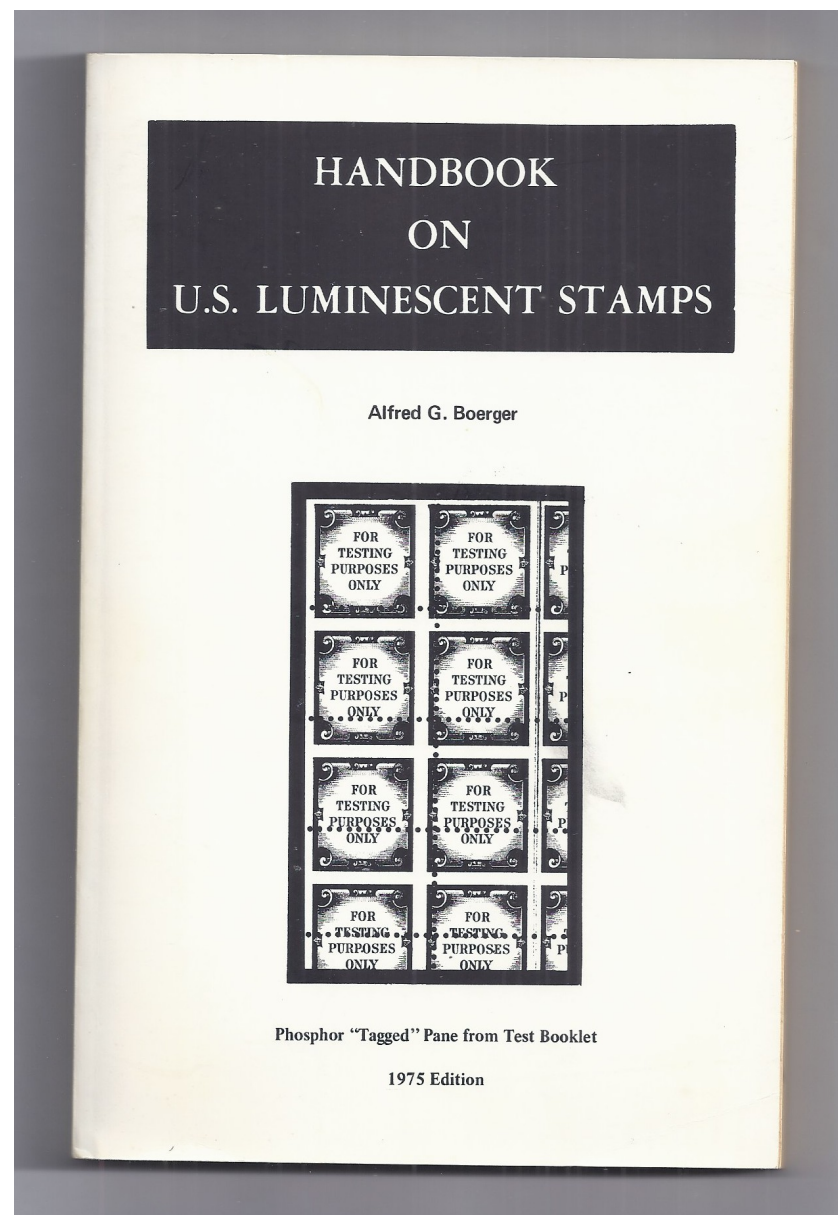
Part II

Evolution of the Technology

Principal Published Reference

Alfred G. "Tag" Boerger
(1912 - 2001)

- Recognized worldwide as a Philatelist, researcher, writer, and expert in the U.S. Postal Phosphor Tagging Program
- Member of the American Philatelic Society, and the Hollywood (Florida) Stamp Club



Stamps That Glow

Luminescent Tagging on United States Stamps

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The Experimental Years

Questions ?