

### Tintype

- 1856 – 1890
- Japanned iron support
- Silver image in collodion binder
- Typically varnished. Hand coloring in cheeks common
- Iron support may rust upon exposure to high RH



Tintype  
(Hand-Colored in Cheeks)  
Anonymous c. 1870  
Private Owner

### Direct Positives popularity timeline




1840 1850 1860 1870 1920

Daguerreotype Ambrotype Tintype

### Photographic Print Materials: Key Topics to Consider


- Timeline & Identification



Tarleton Law Library, University of Texas School of Law

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Tarleton Law Library, University of Texas School of Law

### Photographic Print Materials: Key Topics to Consider


- Timeline & Identification
- Deterioration Problems



Man in Bottle  
John C. Higgins (American, active 1880s-90s)  
Date: ca. 1888 Medium: Albumen silver print from glass negative  
The Metropolitan Museum of Art  
Accession Number: 2011.199

### Photographic Print Materials: Key Topics to Consider

- Timeline & Identification
- Deterioration Problems



[Double (Self?) Portrait with Camera]  
J. Halstead (American, active 1860s-70s)  
Date: 1865-77 Medium: Albumen silver print from glass negative  
The Nelson-Atkins Museum of Art, Kansas City, Missouri, Gift of Hallmark Cards, Inc. (2005.27.218)

### Photographic Print Materials: Key Topics to Consider

- Timeline & Identification
- Deterioration Problems
- Preservation Guidelines and Priorities



### Approaches to Identification

- Historical
- Contextual
- Technical



Anonymous  
Matte Collodion  
Private Owner

### Clues to Identification: Historical/Contextual

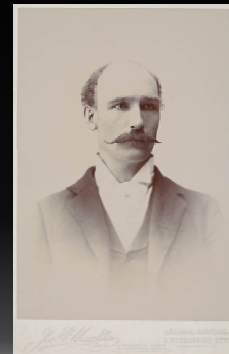
- Photographer
- Provenance
- Image content
- Format



Private Collection, Silver Gelatin Photograph

### Clues to Identification: Historical/Contextual

- Photographer
- Provenance
- Image content
- Format



J. F. Mackley Studio  
Albumen  
Private Owner

### Clues to Identification: Technical

- Image quality
- Image color
- Non-image color



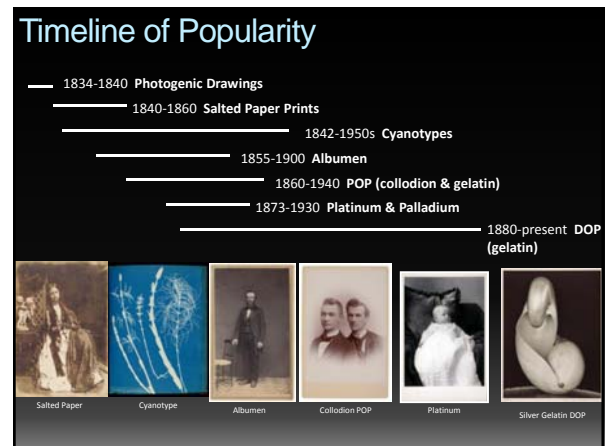
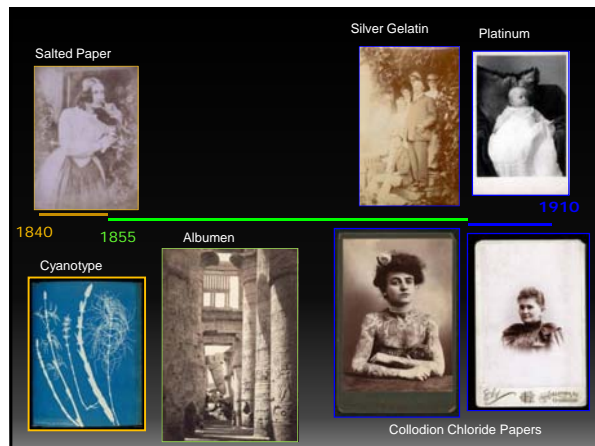
Alexandre Dumas by Nadar  
November 1855. Salted paper print from glass negative  
Gilman Collection, 2005 Metropolitan Museum of Art, 2005.100.371

### Clues to Identification: Technical

- Image quality
- Image color
- Non-image color
- Surface characteristics
- Format and presentation
- Deterioration characteristics



Rayograph by Man Ray  
Date: 1923-24, Silver Gelatin print  
Gilman Collection, Metropolitan Museum of Art, 2005  
2005.100.140



### Silver-Based Printing Processes

#### The Basics

1. Unexposed papers contain light sensitive silver halides ( $\text{AgCl}$ ,  $\text{AgBr}$ ,  $\text{AgI}$ )

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3. Developed (if DOP)



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1. Unexposed papers contain light sensitive silver halides (AgCl, AgBr, AgI)
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3. Developed (if DOP)
4. Fixed to remove residual light sensitive salts



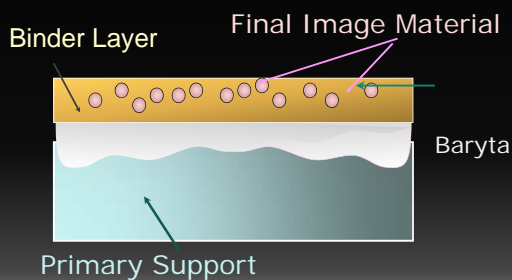
## Silver-Based Printing Processes

### The Basics

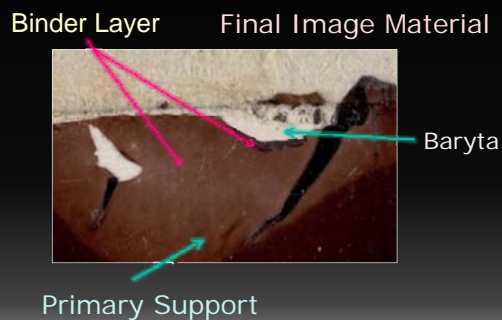
1. Unexposed papers contain light sensitive silver halides (AgCl, AgBr, AgI)
2. Exposed to light (contact printing if POP – projection printing if DOP)
3. Developed (if DOP)
4. Fixed to remove residual light sensitive salts
5. Washed to remove residual fixer



## Structure of Photographic Print Materials



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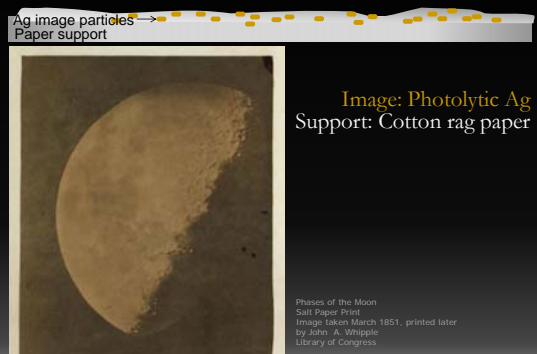


## Common 19<sup>th</sup> Century Photographic Print Materials

- Salted Paper
- Albumen
- Silver Gelatin Printing Out
- Collodion Chloride Printing Out



## Salted Paper Prints





### Salted Paper

- 1841 – 1860
- No binder layer
- Photolytic silver image produced by light
- Purplish-brown image color
- Faded silver image
- May be abraded



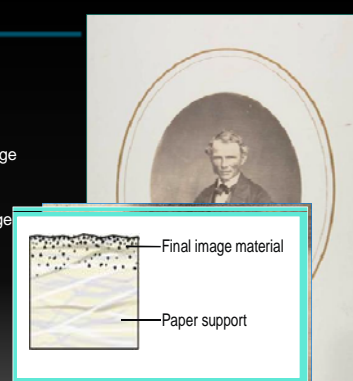
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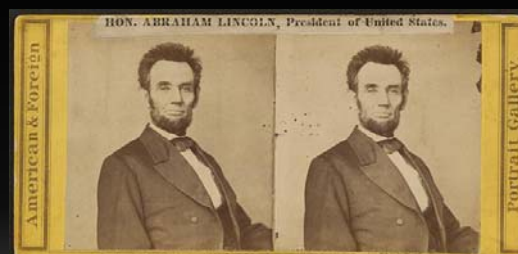


Images from the Image Permanence Institute, Graphics Atlas:  
[www.graphicsatlas.org](http://www.graphicsatlas.org)

### ALBUMEN PHOTORAPH



### ALBUMEN PHOTORAPH



Levins E. Walker, Honorable Abraham Lincoln, President of the United States, 1865  
Albumen, stereograph, 8.2 x 17.1cm  
Library of Congress

Albumen



ALBUMENIZED LIGHT-SENSITIVE PAPER

The Albumen Print: Photographic Processes

Albumen



ALBUMENIZED LIGHT-SENSITIVE PAPER

The Albumen Print: Photographic Processes

Albumen




ALBUMENIZED LIGHT-SENSITIVE PAPER  
CONTACT PRINT WITH NEGATIVE  
EXPOSE TO SUNLIGHT

The Albumen Print: Photographic Processes



Reproduced from the National Museum of Photography, Film and Television collection, by courtesy of the Science and Society Picture Library. <http://www.colodion.org>

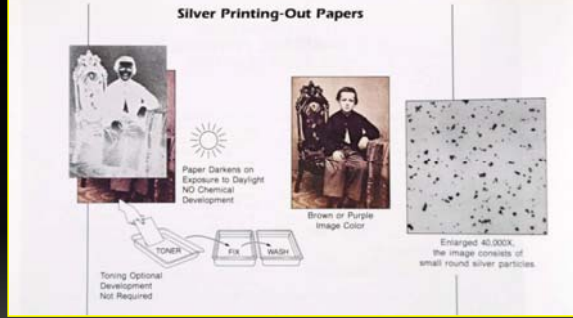
Albumen



ALBUMENIZED LIGHT-SENSITIVE PAPER  
CONTACT PRINT WITH NEGATIVE  
EXPOSE TO SUNLIGHT

The Albumen Print: Photographic Processes

Silver Printing-Out Papers



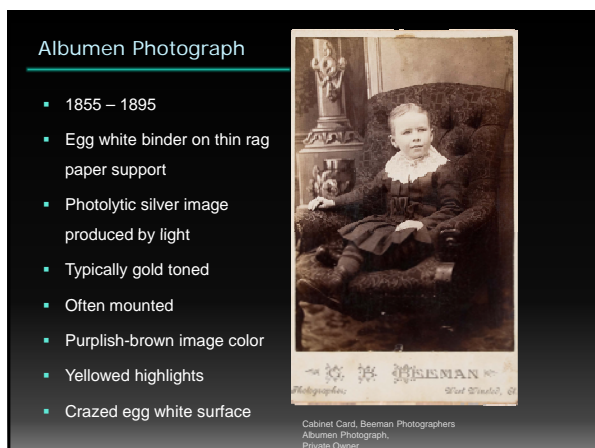
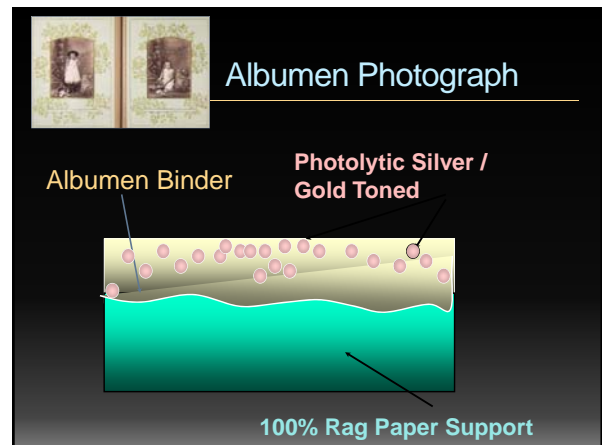
Paper Darkens on Exposure to Daylight  
NO Chemical Development

Brown or Purple Image Color

TONER

Enlarged 40,000X, the image consists of small round silver particles.

Toning Optional  
Development Not Required





### Albumen Photograph

- 1855 – 1895
- Egg white binder on thin rag paper support
- Photolytic silver image produced by light
- Typically gold toned
- Often mounted
- Purplish-brown image color
- Yellowed highlights
- Crazed egg white surface



### Silver Gelatin Printing Out Paper

- 1885 – 1940
- Gelatin binder layer
- Paper coated with baryta – glossy surface
- Photolytic silver image may fade or discolor
- Typically gold toned
- Often mounted
- Purplish-brown image color
- Gelatin may flake or abrade



### Silver Gelatin Printing Out Paper

- 1885 – 1940
- Gelatin binder layer
- Paper coated with baryta – glossy surface
- Photolytic silver image may fade or discolor
- Typically gold toned. May be retouched.
- Often mounted
- Gelatin may flake or abrade



### Collodion Chloride Matte



Matte Collodion Chloride Photographs, Private Collection

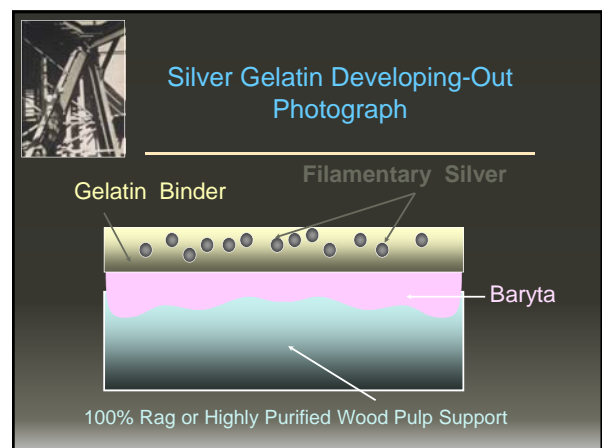
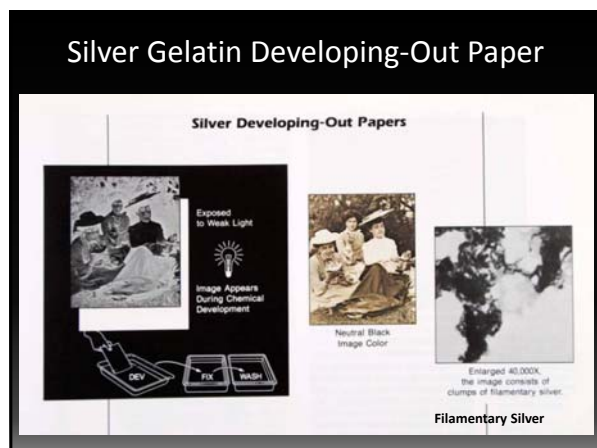
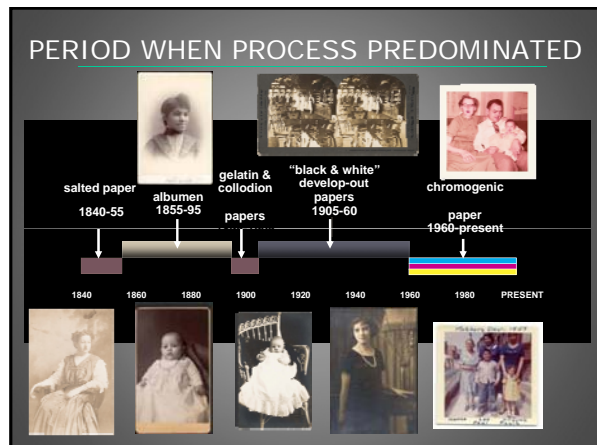
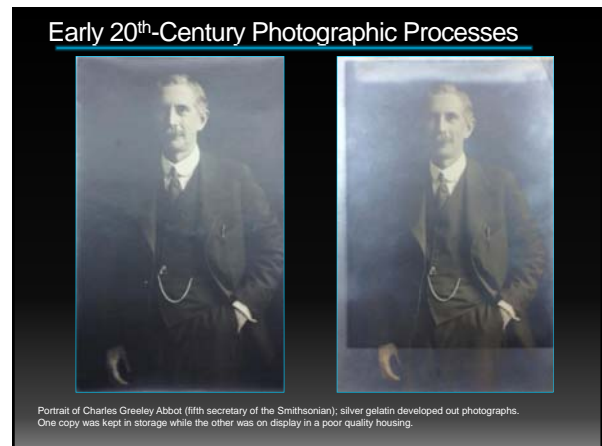


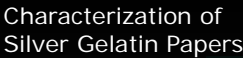
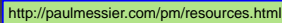
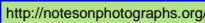
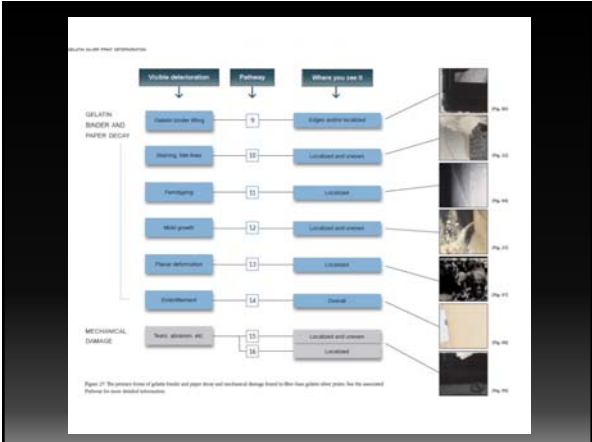
### Collodion Chloride Glossy



Glossy Collodion Chloride Photographs, Private Collection









### Silver Gelatin DOP Processing:

Exposure  
Development  
Stop Bath  
Fixation  
Washing



### Evolution of Positive Paper Prints (Photographic)

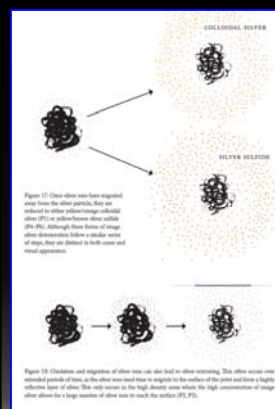
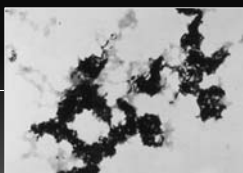
- 19<sup>th</sup> century
  - Silver print-out papers
- 20<sup>th</sup> century
  - Silver develop-out papers



### Printing-out paper



### Developing-out paper



Alfred Stieglitz, Lake George, ca. 1930. The silver-mirroring is emphasized in this photograph by the use of specular lighting.  
(Courtesy George Eastman House, Acc. No. 1974.0022.0033)

A Guide to Fiber-Based Gelatin Silver Prints Condition, Gawain Weaver (2008)

### Sulfur-Toned DOP (Gelatin)



### Sulfur-Toned DOP (Gelatin)



Image Permanence Institute  
Postcard Collection  
Sulfur-toned silver gelatin,  
hand-colored  
1921



### Silver Gelatin

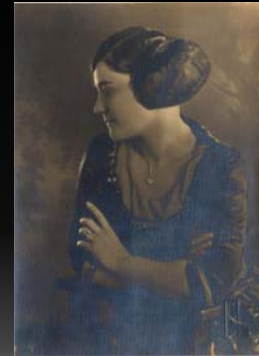
- 1895 – 1960
- Paper support coated with baryta
- Silver image
- Gelatin binder
- Image fading
- Silver mirroring



Gilcrease Museum, Silver Gelatin Photograph, 4327 - 3886

### Silver Gelatin

- 1895 – 1960
- Paper support coated with baryta
- Silver image
- Gelatin binder
- Image fading
- Silver mirroring



Gilcrease Museum, Silver Gelatin Photograph, 4327 - 3060

### Silver Gelatin

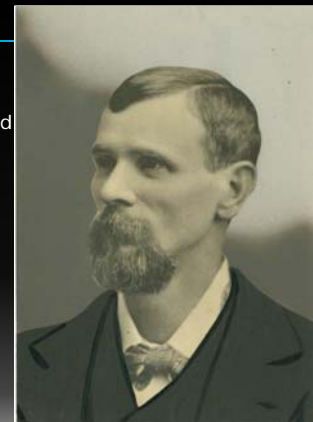
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Anonymous  
Silver Gelatin Developing-Out Photograph  
Private Owner

### Silver Gelatin

- 1895 – 1960
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- Image fading
- Silver mirroring



Tarleton Law Library  
University of Texas School of Law

### Deterioration of Silver Image Material

High humidity and air pollutants can oxidize metallic silver image into invisible silver ions ( $\text{Ag}^+$ ) = **Fading**



Miss Katharine Harley, former champion of the U.S. won at Chevy Chase, 1908  
Silver Gelatin Developing Out Photograph  
Library of Congress



Sibyl Marston, 1910-1920  
Silver Gelatin Developing Out Photograph  
Library of Congress



Swimming. Aeroplane swimming, Pittsburgh, Feb. 16, 1910  
Silver Gelatin Developing Out Photograph  
Library of Congress

### Deterioration of Silver Image Material

Pollutants can reduce the silver ions to metallic silver at the surface of the gelatin = **Silver Mirroring**



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Pollutants can reduce the silver ions to metallic silver at the surface of the gelatin = **Silver Mirroring**

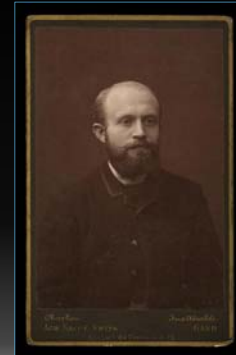
If the silver ions come into contact with sulfur they can form silver sulfide = **Yellowing**

### Non-Silver Print Materials

■ Carbon Print  
1865 - 1950

■ Cyanotype  
1880 - 1920

■ Platinotype  
1880 - 1930



### Cyanotype

- 1842 - 1890
- No binder layer
- Based on light sensitivity of iron salts
- Blue pigment image
- May fade in light



### Platinum Print

- 1890 - 1920
- No binder layer
- Based on light sensitivity of iron salts
- Platinum image
- Image will not fade
- Paper support may yellow



Image from the Image Permanence Institute, Graphics Atlas, [www.graphicalis.org](http://www.graphicalis.org)

### Platinum Print

- 1890 - 1920
- No binder layer
- Based on light sensitivity of iron salts
- Platinum image
- Image will not fade
- Paper support may yellow



Feeding the Ducks, Gertrude Kasebier  
Platinum Photograph  
UD Museums, University of Delaware

### Platinum Print

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- No binder layer
- Based on light sensitivity of iron salts
- Platinum image
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Feeding the Ducks, Gertrude Kasebier  
Platinum Photograph  
UD Museums, University of Delaware

### Photograph Process Identification – Review

- Surface sheen
- Image tonality
- 30X magnification
- Mounting style
- Image fading
- Binder layer cracking
- Binder abrasion



Images from the Image Permanence Institute, Graphics Atlas:  
www.graphicsatlas.org

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Feeding the Ducks, Gertrude Kasebier  
Gum Bichromate Photograph  
UD Museums Collection, University of Delaware

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Father's Day, Roma  
SE 10000 100  
10000 10000

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Self Portrait, Heather Brown  
June 2012 workshop at the Center for Alternate  
Photography in NY

# Caring for Photographs

## Webinar 2: Technological Development of Photography-Part 1

Instructor: Debra Hess Norris


**"HOMEWORK"** (1) Identify one type of photographic print in your institution's collection (or your personal collection). The more historic the photograph the better! Read about the type and process of this type of photograph print using the Graphic Atlas (<http://www.graphicatlantype.org>). Based on what you have read, tell us what type of photographic process was used for your print:

(2) Briefly describe the condition of the photographic print you selected:

(3) Briefly describe what you think the preservation needs are of the photographic print you selected.

(4) What is the significance of the photograph you selected?

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Anonymous  
Cyanotype  
Private Owner