A Green Form-Based Information Extraction System for Historical Documents

Tae Woo Kim
Motivation

Large Volume of Historical Documents

Automated solutions: our only hope for success
GreenFIE

• “Green”: systems that improve with use

• “FIE”: Form-based Information Extraction

• GreenFIE
  – “watches” users fill in forms
  – learns & executes rules for form filling
Extraction by Form Filling

Family

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THE ELY ANCESTRY.

SEVENTH GENERATION.

243313. Mary Eliza Warner, b. 1826, dau. of Samuel Selden Warner and Azubah Tully; m. 1850, Joel M. Gloyd (who was connected with Chief Justice Waite's family).

243311. Abigail Huntington Lathrop (widow), Boonton, N. J., b. 1810, dau. of Mary Ely and Gerard Lathrop; m. 1835, Donald McKenzie, West Indies, who was b. 1812, d. 1839. (The widow is unable to give the names of her husband's parents.) Their children:
1. Mary Ely, b. 1836, d. 1839.
2. Gerard Lathrop, b. 1836.

243312. William Gerard Lathrop, Boonton, N. J., b. 1812, d. 1882, son of Mary Ely and Gerard Lathrop; m. 1837, Charlotte Brackett Jennings, New York City, who was b. 1818, dau. of Nathan Tilestone Jennings and Maria Miller. Their children:
1. Maria Jennings, b. 1838, d. 1840.
2. William Gerard, b. 1839.
3. Donald McKenzie, b. 1840, d. 1843. (Twins.)
4. Anna Margaretta, b. 1842.
5. Anna Catherine, b. 1844.

243314. Charles Christopher Lathrop, N. Y. City, b. 1817, d. 1865, son of Mary Ely and Gerard Lathrop; m. 1836, Mary Augusta Andrus, 992 Broad St., Newark, N. J., who was b. 1825, dau. of Judge Caleb Halstead Andrus and Emma Sutherland Goble. Mrs. Lathrop died at her home, 992 Broad St., Newark, N. J., Friday morning, Nov. 4, 1899. The funeral services were held at her residence on Monday, Nov. 7, 1899, at half-past two o'clock P. M. Their children:
1. Charles Halstead, b. 1837, d. 1861.
2. William Gerard, b. 1838, d. 1861.
3. Theodore Andrus, b. 1840.
4. Emma Goble, b. 1842.

Miss Emma Goble Lathrop, official historian of the New York Chapter of the Daughters of the American Revolution, is one of the youngest members to hold office, but one whose intelligence and capability qualify her for such distinction. Miss Lathrop is not without experience; in her present home and native city, Newark, N. J., she has filled the positions of secretary and treasurer to the Girls' Friendly Society for nine years, secretary and president of the Woman's Auxiliary of Trinity Church Parish, treasurer of the St. Catherine's Guild of St. Barnabas.

4
“Green” Extraction by Form Filling

**THE ELY ANCESTRY.**

**SEVENTH GENERATION.**

24312. Mary Eliza Warner, b. 1826, dau. of Samuel Selden Warner and Azubah Tully; m. 1850, Joel M. Gloyd (who was connected with Chief Justice Waite’s family).

24321. Abigail Huntington Lathrop (widow), Boonton, N. J., b. 1810, dau. of Mary Ely and Gerard Lathrop; m. 1835, Donald McKenzie, West Indies, who was b. 1812, d. 1839. (The widow is unable to give the names of her husband’s parents.)

Their children:
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2. Gerard Lathrop, b. 1838.

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1. Maria Jennings, b. 1838, d. 1840.
2. William Gerard, b. 1839.
3. Donald McKenzie, b. 1840, d. 1843. \(\text{Twins}\).
4. Anna Margaretta, b. 1843.
5. Anna Catherine, b. 1845.

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"Register of Marriages and Baptisms."
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**Parish of Kilbarchan.**

Craig, James, and Mary Barr
John, 30 May 1743.

Craig, James, and Elizabeth Story, 1751 in Law
Elizabeth, 14 Aug. 1748.
Margaret, 3 Feb. 1751.
Robert, born 29 July 1753.

**Parish of Kilbarchan.**

Craig, James, and Mary McDowall, in Monkland
Janet, born 12 July 1751.
James, 8 April 1757.

Craig, John, par. of Beith, and Marion Speir
Craig, John, and Janet Reid, in Forehouse
Mary, 20 Oct. 1673.

Craig, John, and Isobel Merchant
Craig, John, and Elizabeth Kirk, who came from Ireland
Elizabeth, 12 Oct. 1690.

Craig, John, and Marion Clark, in Swinelees, par. of Paisley
Samuel, 14 June 1691.

Craig, John, par. of Neilston, in Cartside, and Margaret King
Robert, 6 Dec. 1694.
Mary, 4 Dec. 1698.

Craig, John, and Margaret Robison
Katherine, 18 Jan. 1741.

Craig, John, par., and Elizabeth Storrie, in Abbey par. of Paisley

Craig, Thomas, in Kilbarchan, and Elizabeth M'Caslane
Agnes, born 8 July 1730.

Craig, Thomas, in Kilbarchan, and Janet Crawford
Thomas, born 8 Jan. 1764.

Craig, William, and Agnes Duff
Craig, William, in Kirktonue
William, 30 Sept. 1655.
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**Parish of Kilbarchan.**

Craig, James, and Mary Barr
John, 30 May 1743.
Craig, James, and Elizabeth Story, 1751 in Law
Elizabeth, 14 Aug. 1748.
Margaret, 3 Feb. 1751.
Robert, born 29 July, 1753.
Craig, James, and Mary McDowell, in Monkland
Janet, born 12 July 1751.
James, 8 April 1757.
Craig, John, par. of Beith, and Marion Speir
Craig, John, and Janet Reid, in Forehouse
Mary, 20 Oct. 1673.
Craig, John, and Isobell Merchant
Craig, John, and Elizabeth Kirk, who came from Ireland
Elizabeth, 12 Oct. 1690.
Craig, John, and Marion Clark, in Swinlees, par. of Paisley
Samuel, 14 June 1691.
Craig, John, par. of Neilston, in Cartside, and Margaret King
Robert, 6 Dec. 1694.
Mary, 4 Dec. 1698.
Craig, John, and Margaret Robison
Katherine, 18 Jan. 1741.
Craig, John, par. and Elizabeth Storie, in Abbey par. of Paisley
Agnes, born 8 July 1759.
Craig, Thomas, in Kilbarchan, and Elizabeth M’Caslane
Thane, born 8 Feb. 1694.
Craig, Thomas, in Kilbarchan, and Janet Crawford
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m. 15 June 1682.
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<td>William</td>
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Craig, James, and Mary Barr
John, 30 May 1743.
Craig, James, and Elizabeth Story, 1751 in Law
Elizabeth, 14 Aug. 1748.
Margaret, 3 Feb. 1751.
Robert, born 29 July 1753
James, 8 April 1757.
Craig, John, par. of Beith, and Marione Speir
Craig, John, and Janet Reid, in Forehouse
Mary, 20 Oct. 1673.
Craig, John, and Isobell Merchant
Craig, John, and Elizabeth Kirk, who came from Ireland
Elizabeth, 12 Oct. 1690.
Craig, John, and Marion Clark, in Schweinle, par. of Paisley
Samuel, 14 June 1691.
Craig, John, par. of Neilston, in Carside, and Margaret King
Robert, 6 Dec. 1694.
Mary, 4 Dec. 1698.
Craig, John, and Margaret Robison
Katherine, 18 Jan. 1741.
Craig, John, par., and Elizabeth Storie, in Abbey par. of Paisley
p. 30 May 1747.
Craig, Thomas, in Kilbarichan, and Elizabeth M'Caslane
Agnes, born 8 July 1759.
Craig, Thomas, in Kilbarichan, and Janet Crawford
Thomas, born 8 Jan. 1764.
Craig, William, and Agnes Duff
Craig, William, in Kirkton
William, 30 Sept. 1655.
Jean, 25 July 1638.
Craig, William, and Marion Brunne, in Locherside
Marion, 14 May 1676.
GreenFIE Rule Creation

image text

underlying OCR text

Name field

Date field

Delimiter

Jean, 6 Mar. 1698.
# Rule Creation Basics

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\n([A-Z]\{1\}[a-z]\{3\}), s(\d\{1\}\s[A-Z]\{1\}[a-z]\{2\}.\s\d\{4\})\n
\nRegister of [Redacted]
Rule Creation Basics

\n([A-Z]\{1\}[a-z]\{3\}), s(\d\{1\}\s[A-Z]\{1\}[a-z]\{2\}\.\s\d\{4\}\)\\.

\n([A-Z]\{1\}[a-z]\{1,5\}), s(\d\{0,2\}\s[A-Z]\{1\}[a-z]\{1,3\}\.\s\d\{1,5\}\)\\.

Jean, 6 Mar. 1698
Rule Creation Basics

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\n([A-Z]{1}[a-z]{1,5})\s(\d{0,2}\s[A-Z]{1}[a-z]{1,3}\s\d{1,5})

\n([A-Z][a-z]+(\s[A-Z](?:[c][A-Z][a-z]+[a-z]+))?(?:\s[A-Z][a-z]+)?)\s(\d{1,2} I\s[JFMASOND][a-z]{2,4}[.,]\s(\d{4}\s[d{3}d{4}])\s[.,])
Rule Creation for Simple Records

\n\d{1,2}[.,]\s([A-Z][a-z]+(?:\s[A-Z](?:[c][A-Z][a-z]+)\s[a-z]+))?(?:\s[A-Z][a-z]+)?[.,]\s\sb[,.,]\s((?::\d{1,2}|I|\[[\[]\d{1}\])\s[JFMASOND][a-z]{2,4}[.,]?\s(?:\d{4}|i\d{3})\d{4})[.,]\s(\?::\d{1,2}|I|\[[\[]\d{1}\])\s[JFMASOND][a-z]{2,4}[.,]?\s(?:\d{4}|i\d{3})\d{4})[.,]

The widow is unable to give the.
Their children:

1. Mary Ely, b. 1836, d. 1850.
2. Gerard Lathrop, b. 1838.

243312. William Gerard Lathrop,
Rule Creation for Complex Records

```
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2. Gerard Lathrop, b. 1838.
Rule Creation for Complex Records

\n\d{5,7}\[[.,]s\([\text{A-Z}\text{a-z}]+(?:\s\text{A-Z}(?[:c\text{A-Z}\text{a-z}]+\text{a-z}+)?)[.,]\s\]s\[\s\S\]{45,99}\[,\]\s\([\text{A-Z}\text{a-z}]+(?:\s\text{A-Z}(?[:c\text{A-Z}\text{a-z}]+\text{a-z}+)?)[.,]\s\]s\[\s\S\]{62,136}\[,\]\s\([\text{A-Z}\text{a-z}]+(?:\s\text{A-Z}(?[:c\text{A-Z}\text{a-z}]+\text{a-z}+)?)[.,]\s\]s\[\s\S\]{62,136}\[,\]\s\([\text{A-Z}\text{a-z}]+(?:\s\text{A-Z}(?[:c\text{A-Z}\text{a-z}]+\text{a-z}+)?)[.,]\s\]s\[\s\S\]{62,136}\[,\]\s\([\text{A-Z}\text{a-z}]+(?:\s\text{A-Z}(?[:c\text{A-Z}\text{a-z}]+\text{a-z}+)?)[.,]\s\]s\[\s\S\]{62,136}\[,\]\s\[2. \text{Gerard Lathrop, b. 1838.}\]

243312. \text{William Gerard Lathrop, Boonton, N. J., b. 1812, d. 1882,}
son of Mary Ely and Gerard Lathrop; m. \text{1837, Charlotte Brackett}
\text{Jennings, New York City, who was b. 1818, dau. of Nathan Tilestone}
\text{Jennings and Maria Miller. Their children:}

1. \text{Maria Jennings, b. 1838, d. 1840.}
2. \text{William Gerard, b. 1840.}
3. \text{Donald McKenzie, b. 1840, d. 1843.} \{ \text{Twins.} \}
4. \text{Anna Margareta, b. 1843.}
5. \text{Anna Catherine, b. 1845.}
Rule Creation for Complex Records

Field Experiments

- Experimental setup
- Development test set
- Blind test set
Results

Person Form Results for Kilbarchan Pages 33 – 35
Results

Person Form Results for Ely Pages 575 – 577
THE ELY ANCESTRY.

SEVENTH GENERATION.

James Harvey Patterson, who was b. 1817, son of Thomas Patterson and Jane Clark. Their children:

1. Thomas Ely, b. 1843.
2. Mary, b. 1844.
4. Harry, b. 1863.

243327. Rev. Ben Ezra Stiles Ely Ottumwa, Ia., b. 1828, son of Rev. Ezra Stiles Ely and Mary Ann Carswell; m. 1848, Elizabeth Eudora McElroy, West Ely, Mo., who was b. 1829, d. 1871, dau. of Abram McElroy and Mary Ford Radford; m. 2nd, 1873, Abbie Amelia Moore, Harrison, Ill., who was b. 1852, dau. of Porter Moore and Harriet Leonard. Their children:

1. Elizabeth B., b. 1849.
2. Ben-Ezra Stiles, b. 1850.
3. George Everly Montgomery, b. 1853, d. 1877.
4. Laura Elizabeth, b. 1859.
5. Laoise DeForest, b. 1861.
7. Mary Anita, b. 1865.
8. Francis Argyle, b. 1876.

243320. Harriet Clarissima Ely, b. 1848, dau. of Ezra Stiles Ely and Caroline Thompson Holmes; m. Beale Steenberger Blackford, Parkersburg, W. Va. Their children:

1. Caroline Holmes Ely.

(Mrs. Caroline Blackford, 1014 Broad St., Richmond, Va., or Rev. Robert Dixon, Rector Trinity Church, Parkersburg, Va., may be able to give the date of marriage).

243322. Zebulon DeForest Ely (831 No. 7th St., Philadelphia, Pa.), b. 1852, son of Ezra Stiles Ely and Caroline Thompson Holmes; m. 1874, Clara Vanola Major, who was b. 1856, d. 1876, dau. of William Major and Deborah A. Beatty; m. 2nd, 1878, Mamie Anna Souder, who was b. 1853, dau. of Joseph William Souder and Anna Maria Walker. Their children:

1. William Major, b. 1872, d. 1876.
2. Zebulon DeForest, b. 1872.
3. Edmund Holmes, b. 1880.
4. Edna Holmes, b. 1881.
Results

Couple Form Results for Kilbarchan Pages 33 – 35
Results

Couple Form Results for Ely Pages 575 – 577
Results

Family Form Results for Kilbarchan Pages 33 – 35
Results

Family Form Results for Ely Pages 575 – 577
# Results Summary

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Kilbarchan Family Form Problems
Kilbarchan Family Form Problems
Kilbarchan Family Form Problems

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Cochran, William, and Janet Cochran m. g July 1680
Cochran, William, and Jonet Baxter, in Forty Shillingworth
Janet, 16 July 1682.
Cochran, William, and Janet Akin, in Barr
Janet, 20 Feb. 1698.
William, 26 June 1702.
William, 2 July 1704.
Cochran, William, in Sandyflat, and Anne Hall
William, 1 Nov. 1700.
Cochran, William, in Sandyflat, and Jane Henderson
Anne, 20 Mar. 1710.
Cochran, William, and Margaret Paterson
Alexander, 7 May 1710.
Cochran, William, and Margaret Gibson, 1745 in Barr
Jane, 1 Mar. 1741.
### Kilbarchan Family Form Problems

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<td>Cochran William</td>
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Cochran, William, and Janet Cochran m. g July 1680
Cochran, William, and Janet Cochran in Forty Shillingworth
Cochran, William, and Janet Akin, in Barr
Cochran, William, in Sandyflat, and Anne Hall
Cochran, William, in Sandyflat, and Jane Henderson
Cochran, William, and Margaret Paterson
Cochran, William, and Margaret Gibson, 1745 in Barr
Cochran, William, par. and Mary Swan, par. of Beith
Cochran, William, par. and Mary Swan, par. of Beith
Colquhoun, Alexander, par. of Wester Kilpatrick, and Susanna Brdish
Colquhoun, John, in Blackstoun, and Euphemia Paterson
Colquhoun, Robert, and Frances Honyman
Colquhoun, Robert, and Frances Honyman
Colquhoun, Robert, and Frances Honyman
Colquhoun, Robert, and Frances Honyman
Colquhoun, Robert, and Frances Honyman
Colquhoun, Robert, and Frances Honyman
Colquhoun, Robert, and Frances Honyman
Colquhoun, Robert, and Frances Honyman
Colquhoun, Robert, and Frances Honyman
Colquhoun, Robert, and Frances Honyman
Colquhoun, Robert, and Frances Honyman
Family Form Resolutions

- Enumerators (e.g. 1. 2., ..., n in Ely)
- Visual indentation
Lessons Learned

• Value-type generalizations
• Historical documents
  – OCR errors
  – White-space layout
  – End-of-line hyphens
• Commentary
  – Pattern exceptions
  – Skip lengths

THE ELY ANCESTRY. 419
SEVENTH GENERATION.

24129. Mary Eliza Warner, b. 1826, dau. of Samuel Selden Warner and Azubah Tully; m. 1850, Joel H. Gloyd (who was connected with Chief Justice Waite's family).
349311. Abigail Huntington Lathrop (widow), Boonton, N. J., b. 1810, dau. of Mary Ely and Gerard Lathrop; m. 1835, Donald McKenzie. West Indies, who was b. 1812, d. 1839.
(The widow is unable to give the names of her husband's parents.)
Their children:
1. Mary Ely, b. 1836, d. 1859.
2. Gerard Lathrop, b. 1838.
3. William Gerard Lathrop, Boonton, N. J., b. 1812, d. 1882, son of Mary Ely and Gerard Lathrop; m. 1827, Charlotte Brackett Jennings, New York City, who was b. 1818, dau. of Nathan Tilestone Jennings and Maria Miller. Their children:
  a. Maria Jennings, b. 1838, d. 1840.
  b. William Gerard, b. 1840.
  c. Donald McKenzie, b. 1840, d. 1843.
  d. Anna Margaretta, b. 1843.
  e. Anna Catherine, b. 1845.
4. Charles Christophor Lathrop, N. Y. City, b. 1847, d. 1865, son of Mary Ely and Gerard Lathrop; m. 1854, Mary Augusta Andrus, 992 Broad St., Newark, N. J., who was b. 1825, dau. of Judge Caleb Halstead Andruss and Emma Sutherland Goble. Mrs. Lathrop died at her home, 992 Broad St., Newark, N. J., Friday morning, Nov. 4, 1858. The funeral services were held at her residence on Monday, Nov. 7, 1858, at half-past two o'clock P. M. Their children:
  a. Charles Halstead, b. 1857, d. 1861.
  b. William Gerard, b. 1858, d. 1861.
  c. Theodore Andruss, b. 1860.
  d. Emma Goble, b. 1862.
Miss Emma Goble Lathrop, official historian of the New York Chapter of the Daughters of the American Revolution, is one of the youngest members to hold office, but one whose intelligence and capability qualify her for such distinction. Miss Lathrop is not without experience; in her present home and native city, Newark, N. J., she has filled the positions of secretary and treasurer to the Girls' Friendly Society for nine years, secretary and president of the Woman's Auxiliary of Trinity Church Parish, treasurer of the St. Catherine's Guild of St. Barnabas Hospital, and manager of several of Newark's charitable institutions which her grandparents were instrumental in founding. Miss Lathrop traces her lineage back through many generations of famous progenitors on both sides. Her maternal ancestors were among the early settlers of New Jersey, among them John Ogden, who received patent in 1664 for the purchase of Elizabethtown, and who in 1673 was
Lessons Learned

• Value-type generalizations
• Historical documents
  – OCR errors
  – White-space layout
  – End-of-line hyphens
• Commentary
  – Pattern exceptions
  – Skip lengths

THE ELY ANCESTRY. 419
SEVENTH GENERATION.
2471213. Mary Eliza Warner, b. 1826, dau. of Samuel Selden Warner
and Azubah Tully; m. 1858, Joel H. Floyd (who was connected with
Chief Justice Waite's family).
2483311. Abigail Huntington Lathrop (widow), Boonton, N. J., b.
1818, dau. of Mary Ely and Gerard Lathrop; m. 1835, Donald Mcken-
ze. West Indies, who was b. 1812, d. 1839.
(The widow is unable to give the names of her husband’s parents.)
Their children:
1. Mary Ely, b. 1836, d. 1859.
2. Gerard Lathrop, b. 1840.
2483312. William Gerard Lathrop, Boonton, N. J., b. 1812, d. 1882, 
son of Mary Ely and Gerard Lathrop; m. 1827, Charlotte Brackett
Jennings, New York City, who was b. 1810, dau. of Nathan Tilestone
Jennings and Maria Miller. Their children:
1. Maria Jennings, b. 1838, d. 1840.
2. William Gerard, b. 1840.
3. Donald Mckenzie, b. 1840, d. 1843.
4. Anna Margaretta, b. 1843.
5. Anna Catherine, b. 1845.
2483314. Charles Christopher Lathrop, N. Y. City, b. 1817, d. 1865, 
son of Mary Ely and Gerard Lathrop; m. 1854, Mary Augusta Andrus,
992 Broad St., Newark, N. J., who was b. 1825, dau. of Judge Caleb
Halstead Andrus and Emma Sutherland Goble. Mrs. Lathrop died
at her home, 992 Broad St., Newark, N. J., Friday morning, Nov. 4,
1898. The funeral services were held at her residence on Monday, Nov.
7, 1898, at half-past two o’clock P. M. Their children:
2. William Gerard, b. 1858, d. 1861.
3. Theodore Andrus, b. 1860.
4. Emma Goble, b. 1862.
Miss Emma Goble Lathrop, official historian of the New York Chapter of the
Daughters of the American Revolution, is one of the youngest members to hold
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Lessons Learned

- **Value-type generalizations**
- **Historical documents**
  - OCR errors
  - White-space layout
  - End-of-line hyphens
- **Commentary**
  - Pattern exceptions
  - Skip lengths

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**THE ELY ANCESTRY. 419**

**SEVENTH GENERATION.**

- 24|219. Mary Eliza Warner, b. 1826, dau. of Samuel Selden Warner and Azubah Tully; m. 1850, Joel H. Lloyd (who was connected with Chief Justice Waite's family).
- 24|311. Abigail Huntington Lathrop (widow), Boonton, N. J., b. 1810, dau. of Mary Ely and Gerard Lathrop; m. 1835, Donald McKenzie. West Indies, who was b. 1812, d. 1839. (The widow is unable to give the names of her husband's parents.) Their children:
  - 1. Mary Ely, b. 1836, d. 1859.
  - 2. Gerard Lathrop, b. 1838.
- 24|312. William Gerard Lathrop, Boonton, N. J., b. 1812, d. 1882, son of Mary Ely and Gerard Lathrop; m. 1827, Charlotte Brackett Jennings, New York City, who was b. 1818, dau. of Nathan Tilestone Jennings and Maria Miller. Their children:
  - 1. Maria Jennings, b. 1830, d. 1840.
  - 2. William Gerard, b. 1840. ()
  - 3. Donald McKenzie, b. 1846, d. 1843. }
  - 4. Anna Margaretta, b. 1843.
  - 5. Anna Catherine, b. 1845.
- 24|314. Charles Christopher Lathrop, N. Y. City, b. 1847, d. 1865, son of Mary Ely and Gerard Lathrop; m. 1854, Mary Augusta Andrus, 992 Broad St., Newark, N. J., who was b. 1825, dau. of Judge Caleb Halstead Andrus and Emma Sutherland Goble. Mrs. Lathrop died at her home, 992 Broad St., Newark, N. J., Friday morning, Nov. 4, 1898. The funeral services were held at her residence on Monday, Nov. 7, 1898, at half-past two o'clock P. M. Their children:
  - 1. Charles Halstead, b. 1857, d. 1861.
  - 2. William Gerard, b. 1858, d. 1861.
  - 4. Emma Goble, b. 1862.

Miss Emma Goble Lathrop, official historian of the New York Chapter of the Daughters of the American Revolution, is one of the youngest members to hold office, but one whose intelligence and capability qualify her for such distinction. Miss Lathrop is not without experience; in her present home and native city, Newark, N. J., she has filled the positions of secretary and treasurer to the Girls' Friendly Society for nine years, secretary and president of the Woman's Auxiliary of Trinity Church Parish, treasurer of the St. Catherine's Guild of St. Barnabas Hospital, and manager of several of Newark's charitable institutions which her grandparents were instrumental in founding. Miss Lathrop traces her lineage back through many generations of famous progenitors on both sides. Her maternal ancestors were among the early settlers of New Jersey, among them John Ogden, who received patent in 1664 for the purchase of Elizabethtown, and who in 1673 was
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  – OCR errors
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Lessons Learned

• Value-type generalizations
• Historical documents
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  – End-of-line hyphens
• Commentary
  – Pattern exceptions
  – Skip lengths
Lessons Learned

• Value-type generalizations
• Historical documents
  – OCR errors
  – White-space layout
  – End-of-line hyphens
• Commentary
  – Pattern exceptions
  – Skip lengths
Lessons Learned

• Value-type generalizations
• Historical documents
  – OCR errors
  – White-space layout
  – End-of-line hyphens
• Commentary
  – Pattern exceptions
  – Skip lengths

THE ELY ANCESTRY. 41V
SEVENTH GENERATION.
21249. Mary Eliza Warner, b. 1826, dau. of Samuel Selden Warner
and Azebah Tully; m. 1850, Joel M. Lloyd (who was connected with
Chief Justice Waite's family).
21251. Abigail Huntington Latrope [widow], Boonton, N. J., b.
1810, dau. of Mary Ely and Gerard Latrope; m. 1835, Donald McKen-
zie. West Indies, who was b. 1812, d. 1839.
(The widow is unable to give the names of her husband's parents.)
Their children:
1. Mary Ely, b. 1836, d. 1859.
2. Gerard Latrope, b. 1838.
21252. William Gerard Latrope, Boonton, N. J., b. 1812, d. 1882,
son of Mary Ely and Gerard Latrope; m. 1837, Charlotte Brackett
Jennings, New York City, who was b. 1810, dau. of Nathan Tulestone
Jennings and Maria Miller. Their children:
1. Maria Jennings, b. 1838, d. 1840.
2. William Gerard, b. 1840.
3. Donald McKenzie, b. 1840, d. 1843.
4. Anna Marguerita, b. 1843.
5. Anna Catherine, b. 1845.
21253. Charles Christopher Latrope, N. Y. City, b. 1847, d. 1865,
son of Mary Ely and Gerard Latrope; m. 1856, Mary Augusta Andrus,
992 Broad St., Newark, N. J., who was b. 1825, dau. of Judge Caleb
Halstead Andrus and Emma Sutherland Goble. Mrs. Latrope died
at her home, 992 Broad St., Newark, N. J., Friday morning, Nov. 4,
1880. The funeral services were held at her residence on Monday, Nov.
7, 1880, at half-past two o'clock P. M. Their children:
2. William Gerard, b. 1858, d. 1861.
3. Theodore Andrus, b. 1860.
4. Emma Goble, b. 1862.
Miss Emma Goble Latrope, official historian of the New York Chapter of the
Daughters of the American Revolution, is one of the youngest members to hold
office, but one whose intelligence and capability qualify her for such distinction.
Miss Latrope is not without experience; in her present home and native city, New-
ark, N. J., she has filled the positions of secretary and treasurer to the Girls'
Friendly Society for nine years, secretary and president of the Woman's Auxiliary
of Trinity Church Parish, treasurer of the St. Catherine's Guild of St. Barnabas
Hospital, and manager of several of Newark's charitable institutions which her
grandparents were instrumental in founding. Miss Latrope traces her lineage
back through many generations of famous progenitors on both sides. Her maternal
ancestors were among the early settlers of New Jersey, among them John Ogden,
who received patent in 1664 for the purchase of Elizabethtown, and who in 1673 was
Lessons Learned

• Value-type generalizations
• Historical documents
  – OCR errors
  – White-space layout
  – End-of-line hyphens
• Commentary
  – Pattern exceptions
  – Skip lengths

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THE ELY ANCESTRY. No. 47
SEVENTH GENERATION.
292143. *Mary Eliza Warner*, b. 1826, dau. of Samuel Selden Warner and Azubah Tully; m. 1859, Joel H. Lloyd (who was connected with Chief Justice Waite's family).
292311. Abigail Huntington Lathrop (widow), Boonton, N. J., b. 1810, dau. of Mary Ely and Gerard Lathrop; m. 1835, Donald McKenzie. West Indies, who was b. 1812, d. 1839. [The widow is unable to give the names of her husband's parents.]

Their children:
1. Mary Ely, b. 1836, d. 1859.
2. Gerard Lathrop, b. 1838.
3. Abigail Lathrop, b. 1842. Willian Gerard Lathrop, Boonton, N. J., b. 1812, d. 1892, son of Mary Ely and Gerard Lathrop; m. 1857, Charlotte Brackett Jennings, New York City, who was b. 1818, dau. of Nathan Tilestone Jennings and Maria Miller. Their children:
   a. Maria Jennings, b. 1838, d. 1842.
   b. William Gerard, b. 1840.
   c. Donald McKenzie, b. 1840, d. 1843.
4. Anna Margaretta, b. 1843.
5. Anna Catherine, b. 1845.

292314. Charles Christopher Lathrop, New York City, b. 1817, d. 1865, son of Mary Ely and Gerard Lathrop; m. 1857, Mary Augusta Andrus, 992 Broad St., Newark, N. J., who was b. 1825, dau. of Judge Caleb Halstead Andrus and Emma Sutherland Goble. Mrs. Lathrop died at her home, 992 Broad St., Newark, N. J., Friday morning, Nov. 4, 1899. The funeral services were held at her residence on Monday, Nov. 7, 1899, at half-past two o'clock P. M. Their children:
2. William Gerard, b. 1859, d. 1861.
3. Theodore Andrus, b. 1860.
4. Emma Goble, b. 1862.

Miss Emma Goble Lathrop, official historian of the New York Chapter of the Daughters of the American Revolution, is one of the youngest members to hold office, but one whose intelligence and capability qualify her for such distinction. Miss Lathrop is not without experience; in her present home and native city, Newark, N. J., she has filled the positions of secretary and treasurer to the Girls' Friendly Society for nine years, secretary and president of the Woman's Auxiliary of Trinity Church Parish, treasurer of the St. Catherine's Guild of St. Barnabas Hospital, and manager of several of Newark's charitable institutions which her grandparents were instrumental in founding. Miss Lathrop traces her lineage back through many generations of famous progenitors on both sides. Her maternal ancestors were among the early settlers of New Jersey, among them John Ogden, who received patent in 1664 for the purchase of Elizabeth town, and who in 1673 was
Conclusion

• GreenFIE is “green”
  – Learns from examples
  – Improves itself with use

• GreenFIE diminishes labor
  – 333 records extracted with 150 user actions
  – 19.6 records per user action (Kilbarchan, Person)

• Future work: tech-transfer to FamilySearch