

Reconstructing Family Trees from Public Records

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of EDINBURGH



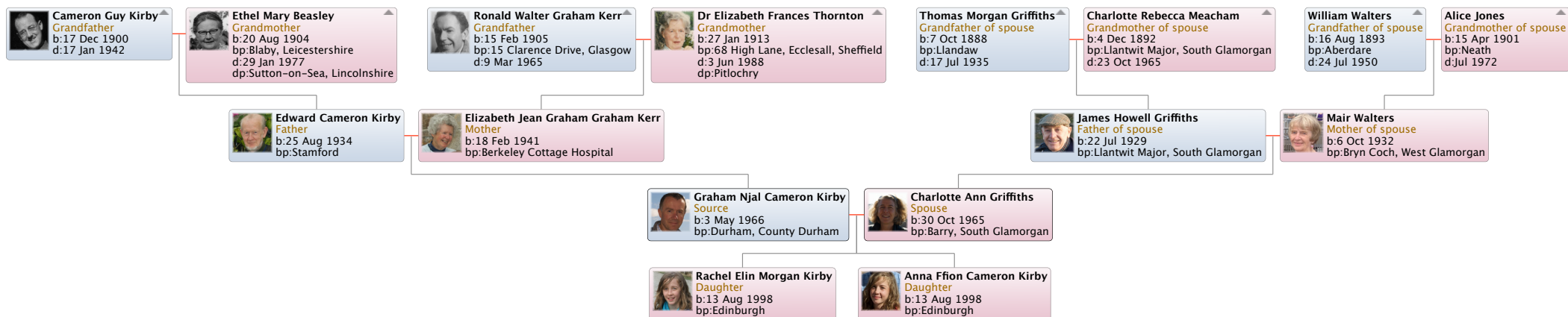
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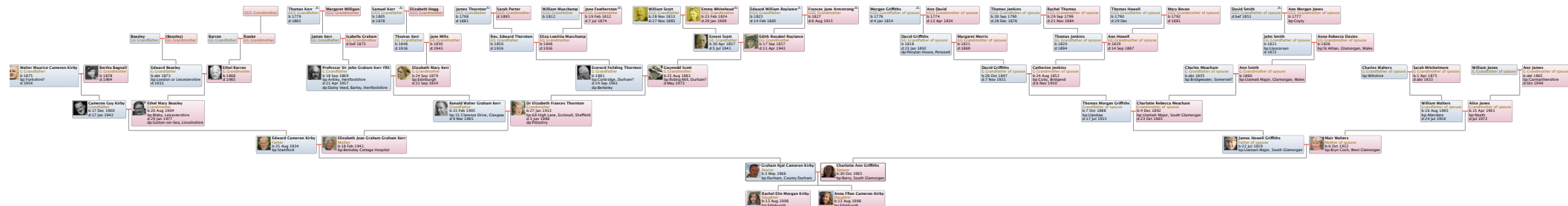
Background

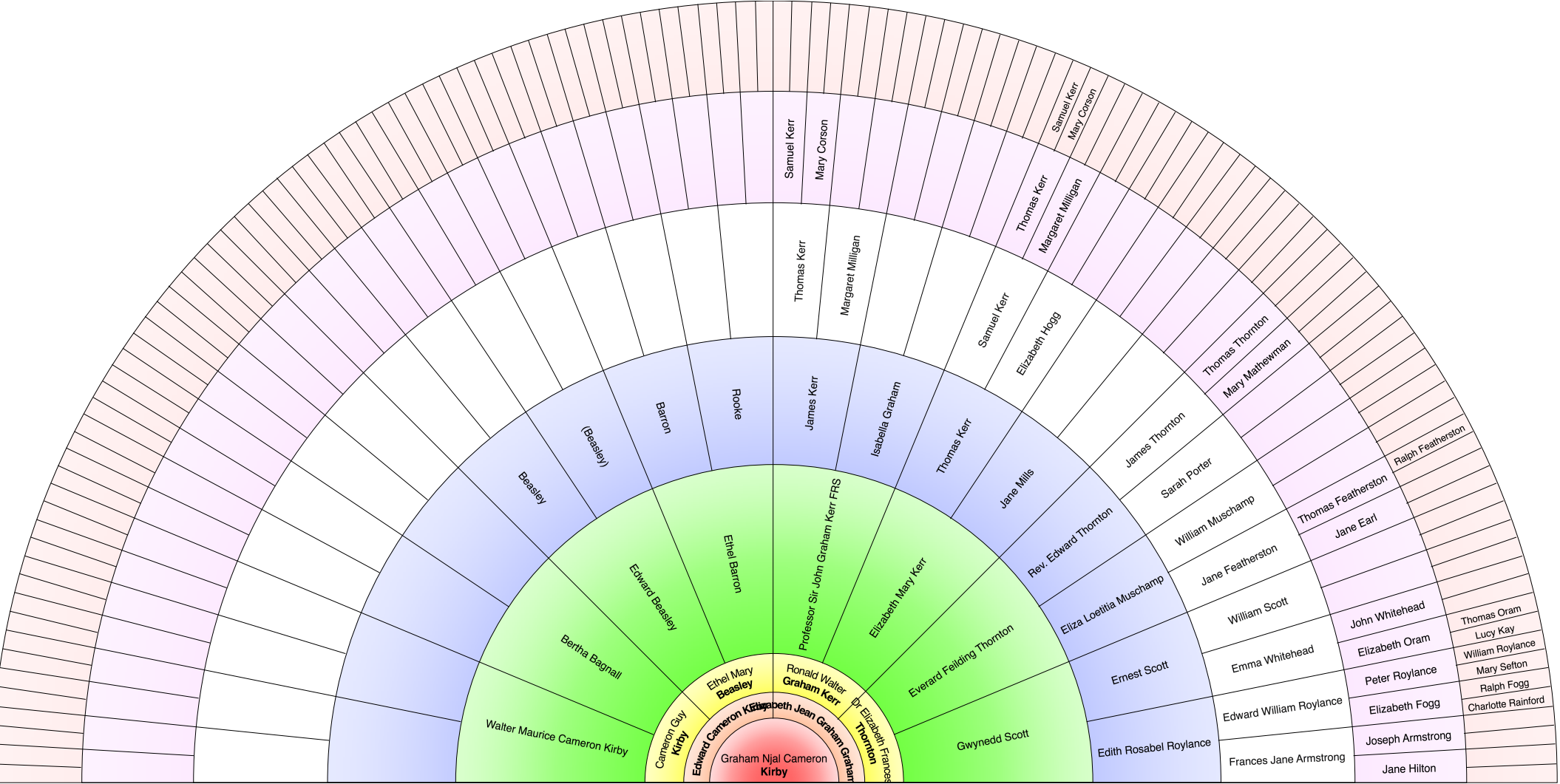
- **Digitising Scotland project**
 - Transcribe vital events records 1855-1973
 - births
 - deaths
 - marriages
 - Link records to form family tree(s)

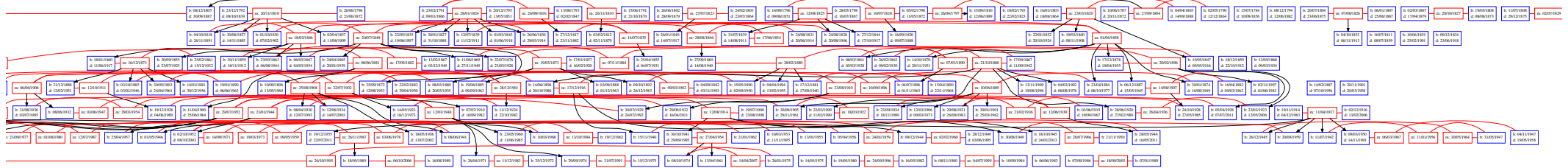
Why?

- To produce resource for further research
 - patterns of migration within Scotland
 - social mobility
 - impact of developing welfare state
 - impact of industrialisation
 - distributions of occupations
 - long-term impacts of serious viruses
 - genetic influences on disease
 - effects of occupation on health
 - ...









Scottish Public Records

	Records	Estimated Size
Births	14 million	1.9 GB
Deaths	11 million	2.3 GB
Marriages	4.2 million	0.8 GB

- About 18 million individuals

Problem: Data Acquisition

- Data exists as scanned images
- Need to extract the text so it can be processed
- Transcription: image to text

18 68. BIRTHS in the Central of District in the Parish of Glasgow

(1.) (2.) (3.) (4.) (5.) (6.)

No.	Name and Surname.	When and Where Born.	Sex.	Name, Surname, & Rank or Profession of Father. Name, and Maiden Surname of Mother. Date and Place of Marriage.	Signature and Qualification of Informant, and Residence, if out of the House in which the Birth occurred.	When and Where Registered, and Signature of Registrar.
1360	Charles Rennie	1868	M.	William McIntosh	W. McIntosh	1868
	McIntosh	June		Police Clerk	Father	June 25 th
		Eleventh			Present	at Glasgow
		11 h. 15 m. A.M.		Margaret McIntosh		Arch. Hood
				M. S. Rennie		Asst. Registrar
		71 Pearson Street				18
		Glasgow		1862 August 4 th Glasgow		
1361	Rosa Ann	1868	F.	William Caldwell	Mary Caldwell	1868
	Caldwell	May		Iron Moulder	mother	June 25 th
		Thirtieth				at Glasgow
		1 h. 10 m. A.M.		Mary Caldwell		Arch. Hood
				M. S. McCaffrey		Asst. Registrar
		12 North Street				18
		Glasgow		1866 January 8 th Glasgow		
1362	Walter Dalgliesh	1868	M.	Walter Dalgliesh Jackson	W. Jackson	1868
	Jackson	June		Railway Clerk	Father	June 26 th
		Eighteenth			Present	at Glasgow
		1 h. 0 m. P.M.		Jane Jackson		Arch. Hood
				M. S. Dunlop		Asst. Registrar
		68 North St. Mungie				18
		Spec. Glasgow		1864 June 15 th Glasgow		

B

James Davidson Registrar

BIRTHS in the Central of District in the 1868

(1.) (2.) (3.) (4.)

No.	Name and Surname.	When and Where Born.	Sex.	Name, Surname, & Rank or Profession of Father. Name, and Maiden Surname of Mother. Date and Place of Marriage.	
1360	Charles Rennie	1868	M	William McIntosh	
	McIntosh	June		Police Clerk	
		Perth			
		11 h 15 m A.M.		Margaret McIntosh	
				W. S. Rennie	
		70 Parson Street			
		Glasgow		1862 August 4 th Glasgow	
	Rose Ann	1868	F	William Caldwell	
	Caldwell	May		Iron Moulder	
		21 1/2 10			

1880. MARRIAGES in the District of Hamilton in the County of Fawcote

No.	When, Where, and How Married.	Signatures of Parties. Rank or Profession whether Single or Widowed, and Relationship (if any).	Age.	Usual Residence.	Name, Surname, and Rank or Profession of Father. Name, and Maiden Surname of Mother.	If a regular Marriage, Signatures of officiating Minister and Witnesses. If irregular, Date of Conviction, Decree of Declarator, or Sheriff's Warrant.	When & Where Registered, and Signature of Registrar.
123	1880. on the <u>Third</u> day of <u>August</u> at <u>85 Row-traders</u> <u>Hamilton</u>	<u>Signed,</u> <u>James Keir Hardie</u> <u>Miners-Secretary</u> <u>(Bachelor)</u>	<u>23</u>	<u>Rowan's</u> <u>Buildings</u> <u>Row-traders</u> <u>Hamilton</u>	<u>William Kithen</u> <u>Coal Miner</u> <u>Mary Hardie</u> <u>M. S. Kerr</u>	<u>(Signed)</u> <u>George Bell</u> <u>E. W. Minister</u> <u>Edw. W. McManis</u> <u>W. R. Minister</u> <u>(Signed)</u>	1880. <u>August 6th</u> <u>at Hamilton</u>
	<u>After Banns</u> <u>according to the forms</u> <u>of the United Presbyterian</u> <u>Church and Evangelical</u> <u>Union, Church</u>	<u>Signed,</u> <u>Lillias Wilson</u> <u>Dressmaker</u> <u>(Spinster)</u>	<u>17</u>	<u>85 Row-traders</u> <u>Hamilton</u>	<u>Duncan Wilson</u> <u>Coal Miner</u> <u>Sarah Wilson</u> <u>M. S. Miller</u>	<u>William Hillan</u> <u>Witness</u> <u>Andrew Forrest</u> <u>Russell</u> <u>Witness</u>	<u>William Hillan</u> <u>Post-Registrar.</u> <u>M</u>
124	1880. on the <u>Fifth</u> day of <u>August</u> at <u>Quart House</u> <u>Hamilton</u>	<u>Signed,</u> <u>James Bladen</u> <u>his x mark</u> <u>H. M. Hamilton</u> <u>Coal Miner</u> <u>(Bachelor)</u>	<u>34</u>	<u>25 Whitehill</u> <u>Road</u> <u>Burnbank</u> <u>Hamilton</u>	<u>James Bladen</u> <u>Coal Miner</u> <u>Mary Bladen</u> <u>M. S. Wood</u> <u>(Both deceased)</u>	<u>(Signed)</u> <u>Henry M. Hamilton</u> <u>Minister at Hamilton</u>	1880. <u>August 9th</u> <u>at Hamilton</u>
	<u>After Publication</u> <u>according to the forms</u> <u>of the Church of</u> <u>Scotland</u>	<u>Signed,</u> <u>Margaret Watson</u> <u>her x mark</u> <u>H. M. Hamilton</u> <u>(Widow)</u>	<u>34</u>	<u>25 Whitehill</u> <u>Road</u> <u>Burnbank</u> <u>Hamilton</u>	<u>James Docherty</u> <u>Coal Miner</u> <u>Mary Docherty</u> <u>M. S. Robertson</u> <u>(Both deceased)</u>	<u>(Signed)</u> <u>James F. McIntyre</u> <u>Witness</u> <u>Margaret M. McIntyre</u> <u>her mark x</u> <u>H. M. Hamilton</u> <u>Witness</u>	<u>William Peter</u> <u>Post-Registrar.</u> <u>M</u>
		(2.)	(3.)	(4.)	(5.)	(6.)	(7.)
						<u>William M. M. M.</u>	<u>Registrar.</u>

1880. MARRIAGES in the District of Stann

No.	When, Where, and How Married.	Signatures of Parties. Rank or Profession whether Single or Widowed, and Relationship (if any).	Age.	
123	1880.	<i>Signed,</i>		<i>23</i>
	on the <i>Third</i>	<i>James Keith Hardie</i>	<i>23</i>	<i>1</i>
	day of <i>August</i>			<i>24</i>
	at <i>85 Corn Traders</i>	<i>Miners' Secretary</i>		<i>25</i>
	<i>Hamilton</i>	<i>Bachelor</i>		
	<i>After Banns</i>	<i>Signed,</i>	<i>26</i>	<i>2</i>
	according to the Form	<i>Lilias Wilson</i>	<i>17</i>	<i>3</i>
	at the United Presbyterian			
	Church and Evangelical Union, Church	<i>Dressmaker</i> <i>(Spinster)</i>		

-Page 47-

1880. DEATHS in the District of St. Mary in the Burgh of Dundee

No.	Name and Surname. Rank or Profession, and whether Single, Married, or Widowed.	When and Where Died.	Sex.	Age.	Name, Surname, & Rank or Profession of Father. Name, and Maiden Surname of Mother.	Cause of Death, Duration of Disease, and Medical Attendant by whom certified.	Signature & Qualification of Informant, and Residence, if not of the House in which the Death occurred.	When and where Registered, and Signature of Registrar.
139	George McIntosh Railway Guard.	1880, February sixteenth. Found at Edinburgh Inverkeithing.	Male	43 Years	George McIntosh, Master.	Accidentally Drowned from fall of a Railway Train and portion of Tay Bridge into the River Tay, on December 28, 1879. Not certified.	Geo McIntosh Father. 121 Hawthill.	1880, February 17 th At Dundee.
	Married to Isabella Butters.	About 8h. A.M. No. 25 Hawthill. Dundee.			Martha McIntosh. Mrs. J. McCarlane (Deceased.)			Wm. Anderson. Registrar.
	James McIntosh Watchmaker (Journeyman) (Legitimate) Married to Elizabeth McMaster.	1880, February sixteenth. 8h. 20m. P.M. 179 Lochee Road Dundee.	Male	20 Years	Robert McIntosh, Household Labourer.	Consumption. 6 Months.	Robert McIntosh Father. 1 South Mid Street Lochee. (Present.)	1880, February 17 th At Dundee.
	David Jobson Gen. Merchant.	1880, February seventeenth. Found in River Tay about 10h. A.M. Married to Mary Watson Miller.	Male	41 Years	David Jobson, House Merchant. (Deceased.) Mary Jobson Mrs. J. Fender (Deceased.)	Accidentally Drowned from fall of a Railway Train and portion of Tay Bridge into the River Tay, on December 28, 1879. Not certified.	James Jobson Brother. 10 Wellington Terrace Broughty Ferry.	1880, February 17 th At Dundee.

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Wm. Anderson. Registrar.

141	Married to	Quardec.		
	Elizabeth McMaster			
	David	1880.	Mo.	21
	JOHNSON.	February		years.
	Seventeenth.			
	Oil Merchant.	Found in River Tay,		
		about 10 A.M.		
	Married to	Mo. 3 - 31st		
	Mary Watson Miller	Place, Quardec.		

Problem: Classification

- cerebral haemorrhage
- cancer of colon
- heart failure
- effusion on the brain caused by excessive drinking and exposure to cold
- drowned by a smack on boat having been culpably negligently or recklessly navigated or steered by angus mcpherson
boatman,portree
- drowning possibly through his falling asleep or getting insensible through liquor on the sea shore at low water and being afterwards covered by the sea on the tide flowing

Problem: Tree Reconstruction

- From the set of certificates, need to work out:
 - how many people there were
 - what were the relationships between them

Problem: Tree Reconstruction

- Match up information on certificates
 - may be ambiguous
 - bits may be missing
 - mistakes
 - people moving to or away from Scotland

Problem: Tree Reconstruction

- Birth Certificate 3826756
 - Jane Smith, born 1/3/1889
- Marriage Certificate 573734
 - Janet Smyth, born 11/3/1889
- How many people?

Problem: Scale

- Even assuming you can decide, there are a lot of possible pairs to match...
 - 3 people mentioned on a birth certificate
 - 6 on a marriage certificate
- $3 \times 14 \text{ million} \times 6 \times 4 \text{ million} = 10^{15}$
- If we could check a pair in a microsecond this would take 32 years
- Also need to check births against births & deaths, deaths against deaths, births, marriages, ...

Problem: Evaluating Correctness

- How do you know whether the reconstructed tree is correct?
- In general, you can't
 - the whole point of doing this automatically is that we don't have time for experts to do it
 - but can get experts to look at some parts
- For intended research purposes, doesn't matter as long as it's reasonably close

Problem:

Understanding Results

- Sometimes we won't be able to make good automatic matching decisions
 - need to record this uncertainty and let researchers know about it
- How to present this in a way that's easy to understand?
 - multiple possible family trees for a given person

Links

- digitisingscotland.cs.st-andrews.ac.uk
- www.scotlandspeople.gov.uk
- graham.kirby@st-andrews.ac.uk