An Analysis of the Causes of Death in an Essex Rural District and an Examination of its Vital Statistics during the ten years 1881-90 with some Remarks upon the Occurrence of Infectious Disease

By

Richard Richmond M.B.C.M.

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Some apology is required for the taking up of a subject which is of necessity to a great extent only of local interest, with the least of a dry character. I would ask however to be forgiven for selecting the subject on the ground of the difficulty of finding in a purely Country Practice interesting clinical matter on which to work. Cases out of the ordinary routine are rare, and when they are met with, very often pass out of one's hands into those of the Specialist.

After working on an altogether different subject for three months, I was compelled from lack of clinical material to throw it up and fall back upon material which I had at hand. This consisted of copies of the Registrar's returns of births and deaths for the 10 years 1881-90 inclusive, with the yearly reports of the Medical Officers of Health for the same period. These were however very short, and usually consisted of little but tabular statements of deaths, births, and cases of infectious diseases. With the help of the Registrar, who supplied me with facts which were missing, I have been able to get a complete return of the births and deaths in the district during the period in question.

The Mortality from the Various Diseases, I have endeavoured to compare with the Mortality from the same Causes throughout England and Wales, but I have only been able to do this in the case of the first seven years.
Names of Parishes | Population
---|---
St. Dunstan | 2,781
St. Bunnies | 286
Narbonne | 166
St. Caenfield | 286
St. Caenfield | 313
St. Caenfield | 334
Takaleg | 840
Hatfield | 1,747
Hatfield | 630
Rytherd Roodling | 193
Rytherd Roodling | 484
White Roodling | 383
Marshall Roodling | 237
Hale Roodling | 190
Folatad | 1852
Stebbing | 944
Hatfield | 956
Hatfield | 276
Hatfield | 232
Hastead | 1,767
Hatfield | 674
Hatfield | 588
Hatfield | 268
Hatfield | 81
Chichester | 35
The figures for these years are taken almost exclusively from Dr. Lewes's "Statistical" in several instances. I have quoted from Dr. Shelford's work on "The Geographical Distribution of Russia."

Preliminary Remarks

The district with which this treatise is to deal is that of the Dumfries Union, situated in the north-western part of the County of Dumfries. The Union consists of 25 parishes, forming an area of 16,674 + acres the population from 1851 to 2781 + acres, from 718 to 8809. The total population of the last census was 16,674 + the total area is 73,501 acres.

The population during the past twenty years has decreased 3025 + between the census of 81 and 91, showed a decrease of 1316. The number of males was 8524 and females 8150. The only place in the district at all approaching a town is Great Dumfries; there are 3 large villages with population of between 1500 and 2000 inhabitants, viz. Troque, Dunfermline, and Kirkcudbright. These small villages have nearly 1000 inhabitants, 1 village, about 500. The rest of the villages are smaller.

The largest part of the district is on the Thelma and Ruth rivers in the catchment basin of the Blackwater. The parish of Great and Little Gallowad and all the Rotherhams, are in the basin of the Rosina and the Brandes.
of Hatfield Broad Oak & Tadley are on the Pinney Brook, a tributary of the river Lea in the Thames basin.

Nearly the whole of the district is on the gravel formation in the London Basin. The subsoil is principally London clay. The outcrops in the neighborhood of Great Bardfield & Thaxted being obscured by Horkesley clay & gravel. Along the northern boundary there is a belt of lower tertiaries sand & gravel earth. The surface throughout the district is generally undulating; the highest point (in the neighborhood of Thaxted) is about 320 ft above sea level.

There are no public sewers, properly so called; some of the larger villages have drains of irregular arrangement which empty themselves into natural watercourses. At other villages, sewage is usually conducted into ditches, ponds, etc. In the absence of drains, soot water is thrown on to garden or other conveniently placed ground. Throughout the greater part of the district, privies & cesspools are in use; there are some few earth closets & airfixed drain manure hoppers. Very few houses have hand-flushed W.C.s. There is no systematic removal of house refuse.

For the purposes of Registration the district is divided into four sub-districts: 

- Juniper
- Stebbing & Thaxted.
### Table A. Showing births in the district on both sides for the 10 years

<table>
<thead>
<tr>
<th>Year</th>
<th>1881</th>
<th>82</th>
<th>83</th>
<th>84</th>
<th>85</th>
<th>86</th>
<th>87</th>
<th>88</th>
<th>89</th>
<th>90</th>
<th>Average Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Whole district</td>
<td>28.78</td>
<td>26.87</td>
<td>29.05</td>
<td>26.57</td>
<td>26.9</td>
<td>25.84</td>
<td>25.63</td>
<td>28.70</td>
<td>25.32</td>
<td>26.41</td>
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<tr>
<td>Halford</td>
<td>28.2</td>
<td>20.86</td>
<td>27.26</td>
<td>29.09</td>
<td>24.23</td>
<td>22.80</td>
<td>24.57</td>
<td>21.56</td>
<td>23.45</td>
<td>23.93</td>
<td>26.52</td>
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<tr>
<td>Stelling</td>
<td>31.96</td>
<td>26.43</td>
<td>33.91</td>
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<td>28.05</td>
<td>26.88</td>
<td>25.12</td>
<td>27.68</td>
<td>33.74</td>
<td>34.96</td>
<td>28.83</td>
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<tr>
<td>Thaxted</td>
<td>23.57</td>
<td>28.21</td>
<td>24.06</td>
<td>26.19</td>
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<td>20.57</td>
<td>25.05</td>
<td>28.09</td>
<td>21.67</td>
<td>24.79</td>
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</table>

### England & Wales. Birth rate 10 years 1876-85. 34.4

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dunn's</td>
<td>273</td>
<td>239</td>
<td>512</td>
</tr>
<tr>
<td>Halford</td>
<td>222</td>
<td>480</td>
<td></td>
</tr>
<tr>
<td>Stelling</td>
<td>281</td>
<td>234</td>
<td>515</td>
</tr>
<tr>
<td>Thaxted</td>
<td>276</td>
<td>211</td>
<td>487</td>
</tr>
<tr>
<td>Total</td>
<td>1058</td>
<td>1240</td>
<td>2298</td>
</tr>
</tbody>
</table>

### Table B. Showing number of male & female births.

<table>
<thead>
<tr>
<th>Year</th>
<th>Male M</th>
<th>Female F</th>
<th>Male M</th>
<th>Female F</th>
<th>Male M</th>
<th>Female F</th>
<th>Male M</th>
<th>Female F</th>
<th>Male M</th>
<th>Female F</th>
<th>Male M</th>
<th>Female F</th>
<th>Male M</th>
<th>Female F</th>
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</thead>
<tbody>
<tr>
<td>1881</td>
<td>87</td>
<td>68</td>
<td>55</td>
<td>64</td>
<td>76</td>
<td>70</td>
<td>55</td>
<td>37</td>
<td>273</td>
<td>239</td>
<td>512</td>
<td></td>
<td></td>
<td></td>
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<td>70</td>
<td>50</td>
<td>50</td>
<td>258</td>
<td>222</td>
<td>480</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>83</td>
<td>92</td>
<td>66</td>
<td>63</td>
<td>50</td>
<td>83</td>
<td>70</td>
<td>48</td>
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<td>234</td>
<td>515</td>
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<tr>
<td>85</td>
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<td>69</td>
<td>56</td>
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<td>215</td>
<td>470</td>
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<tr>
<td>86</td>
<td>74</td>
<td>74</td>
<td>52</td>
<td>40</td>
<td>68</td>
<td>67</td>
<td>38</td>
<td>46</td>
<td>237</td>
<td>211</td>
<td>448</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>88</td>
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<td>63</td>
<td>58</td>
<td>63</td>
<td>39</td>
<td>243</td>
<td>247</td>
<td>490</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>89</td>
<td>77</td>
<td>68</td>
<td>48</td>
<td>63</td>
<td>53</td>
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<td>35</td>
<td>240</td>
<td>204</td>
<td>444</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| Totals | 788 | 709 | 679 | 655 | 626 | 480 | 432 | 2500 | 2266 | 4766 | Per 1000 births, 572.5 males, 478.5 females.
Births in the district during the 10 years.

The calculations in the case of the births (and all calculations which follow) are made upon the assumption, that a tenth part of the decrease, shown by the Census return, has taken place in the population during the 10 years, taking place in each successive year. This will be as near as possible the actual population.

The births during the period in question numbered 4736, of these 2500 were males and 2236 were females. The male births exceeding the female by 234.

On referring to table B it will be noticed that the number of births is greater during the earlier years than the latter; the births during the first five years were 2514, and during the second five years, 2252.

In each individual year the number of births varies considerably, as will be seen by a glance at table B.

The birth rate (shown in table A) give an average yearly rate of 28.49 for the first five years and 26.38 for the second five years. The mean annual rate for the whole decennium was 27.40 per 1000 of population, which is considerably below that of the rest of Great Britain, and that of England and Wales.

Considering next the male and female births, as above stated the male exceeded the female by 234.
### Table C: Flaying birth rates in the four quarters of the year

<table>
<thead>
<tr>
<th>Year</th>
<th>1st Quarter</th>
<th>2nd Quarter</th>
<th>3rd Quarter</th>
<th>4th Quarter</th>
</tr>
</thead>
<tbody>
<tr>
<td>1881</td>
<td>27.1</td>
<td>37.1</td>
<td>25.6</td>
<td>24.4</td>
</tr>
<tr>
<td>1882</td>
<td>25.6</td>
<td>26.4</td>
<td>38.4</td>
<td>28.6</td>
</tr>
<tr>
<td>1883</td>
<td>34.1</td>
<td>31.6</td>
<td>22.8</td>
<td>25.2</td>
</tr>
<tr>
<td>1884</td>
<td>28.0</td>
<td>30.2</td>
<td>28.6</td>
<td>35.4</td>
</tr>
<tr>
<td>1885</td>
<td>27.1</td>
<td>31.3</td>
<td>33.7</td>
<td>22.2</td>
</tr>
<tr>
<td>1886</td>
<td>26.4</td>
<td>23.5</td>
<td>26.4</td>
<td>23.9</td>
</tr>
<tr>
<td>1887</td>
<td>25.3</td>
<td>30.0</td>
<td>21.3</td>
<td>21.3</td>
</tr>
<tr>
<td>1888</td>
<td>26.9</td>
<td>27.7</td>
<td>27.7</td>
<td>26.4</td>
</tr>
<tr>
<td>1889</td>
<td>25.6</td>
<td>24.4</td>
<td>23.4</td>
<td>24.6</td>
</tr>
<tr>
<td>1890</td>
<td>26.4</td>
<td>27.3</td>
<td>21.3</td>
<td>23.3</td>
</tr>
</tbody>
</table>

Average for 10 Years: 27.2, 28.9, 24.8, 24.6 per 1000 pop.

### Table D: Number of births under 1 year per 1000 registered births in each district

<table>
<thead>
<tr>
<th>Year</th>
<th>1881</th>
<th>1882</th>
<th>1883</th>
<th>1884</th>
<th>1885</th>
<th>1886</th>
<th>1887</th>
<th>1888</th>
<th>1889</th>
<th>1890</th>
<th>Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>District</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bummers</td>
<td>96</td>
<td>144</td>
<td>58</td>
<td>80</td>
<td>79</td>
<td>117</td>
<td>89</td>
<td>135</td>
<td>90</td>
<td>111</td>
<td>96</td>
</tr>
<tr>
<td>Flatfield</td>
<td>84</td>
<td>76</td>
<td>106</td>
<td>82</td>
<td>109</td>
<td>65</td>
<td>57</td>
<td>64</td>
<td>76</td>
<td>64</td>
<td>77</td>
</tr>
<tr>
<td>Hepping</td>
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<td>58</td>
<td>81</td>
<td>120</td>
<td>84</td>
<td>145</td>
<td>82</td>
<td>86</td>
<td>83</td>
<td>92</td>
</tr>
<tr>
<td>Hasted</td>
<td>138</td>
<td>64</td>
<td>164</td>
<td>64</td>
<td>68</td>
<td>69</td>
<td>84</td>
<td>89</td>
<td>113</td>
<td>106</td>
<td>91</td>
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<td>Whole District</td>
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<td>94</td>
<td>81</td>
<td>84</td>
<td>92</td>
<td>91</td>
<td>83</td>
<td>89</td>
</tr>
</tbody>
</table>

England & Wales, 10 years, 1876-85: 14.2

Signed: R. S. D. 89
The excess of male over female births held good in 8 out of the ten years. In 1887 the female excess in the male births was 23, in 1888 by 4. In 1000 births, there were 524.5 male and 474.5 female.

The birth rates in the subdistricts varied considerably and are as follows: Burnham 28.93; Stotting 28.53; Hatfield 26.52; Sandhurst 24.79. The first two subdistricts are probably the most prosperous, Sandhurst is certainly the poorest of the four. With regard to the male and female births in these subdistricts, there were 53.6 per cent of males in the Burnham subdistrict, 55.9 in Stotting, 51.1 in Hatfield.

In the second quarter of the year there were considerably more births than in the other quarters; the second quarter approached it most closely. The figures were:
- First quarter: 28.7
- Second: 28.9
- Third: 24.8
- Fourth: 24.3

In connection with the birth rates and number of births in the district, it would be interesting to compare with them the number of deaths under 1 year of age and to note how many of these were male and how many female. Accordingly, we find that there were 1439 deaths, which gives an average of 0.9 per 1000 registered births. In each individual year, the figures vary, as can be seen by glancing at Table D. The highest
Marriage rates

<table>
<thead>
<tr>
<th>Year</th>
<th>Rate</th>
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<td>1882</td>
<td>5.1</td>
</tr>
<tr>
<td>1883</td>
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<td>1889</td>
<td>4.6</td>
</tr>
<tr>
<td>1890</td>
<td>6.7</td>
</tr>
</tbody>
</table>
The marriage rate during the 10 years were uniformly low as compared with the rates for England & Wales. The average yearly rate was 5.09 per 1000 of population; the average for the first five years being 5.19 for the second five, 5.08. This is an extremely low rate, for the average rate for the years 1881-87 in England & Wales was 14.83 (from the Annual Register Statistics p. 44). Considering however the low wages of the men & the inhabitants, it is not surprising the rate is also probably largely decreased by numbers of young people leaving the district & getting married elsewhere.

Of the number of illegitimate births, I have no account.
death rate per 1000

England & Wales - Rural districts - 1881-86. 17.6.

Burrow - R. S. B. 1881-90. 16.8
Deaths during the 10 years.

The total number of deaths from all causes & at all ages was 2957, which gives an average yearly rate of 16.8 per 1000 of population. This compares favourably with the death rates in country districts throughout England & Wales for the years 1881-86, the average for which is 17.6 (Kendal's Vital Statistics p.116).

For each individual year the rates were as follows: 16.1; 17.6; 18.6; 17.9; 17.2; 18.2; 15.3; 16.9; 15.05; 16.06; in 1882, 1883, 1884, 1885 & 1886 the rate was a good deal above the average & in 1881 & 1888 it was also comparatively high.

"Preventable" mortality as in many of these instances, accounted for the increase in the rate; for example in 1881 there were 12 deaths, amongst children, from whooping cough; in 1882 there were 17 from measles & whooping cough; in 1883, 27 from diptheria; in 1884, 8 from the same cause. In 1885 an excessive number of deaths from inflammatory diseases of the chest caused a high death rate & in 1886 there was a large mortality from heart disease & amongst people of advanced age.

The summer subdistrict had the highest average rate viz. 18.12, followed being next with 17.20.
Death rates in the five subdistricts at all ages from all causes.

<table>
<thead>
<tr>
<th>Year</th>
<th>Summer</th>
<th>Hatfield</th>
<th>Stelling</th>
<th>Thaxted</th>
</tr>
</thead>
<tbody>
<tr>
<td>1881</td>
<td>15.1</td>
<td>16.1</td>
<td>18.06</td>
<td>15.2</td>
</tr>
<tr>
<td>1882</td>
<td>23.6</td>
<td>17.7</td>
<td>13.5</td>
<td>14.1</td>
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<tr>
<td>1883</td>
<td>26.9</td>
<td>16.4</td>
<td>12.3</td>
<td>17.2</td>
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<tr>
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<td>19.9</td>
<td>17.8</td>
<td>16.1</td>
<td>17.4</td>
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<td>18.9</td>
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<td>19.5</td>
</tr>
<tr>
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</tr>
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<td>1890</td>
<td>15.3</td>
<td>14.2</td>
<td>15.6</td>
<td>21.4</td>
</tr>
</tbody>
</table>

Average for years:
- Summer: 18.12
- Hatfield: 15.71
- Stelling: 16.41
- Thaxted: 17.22
Causes of the high death rate in the
Stubbings Subdivision:
The high death rate in the Stubbings Subdivision was due to the excessive mortality in the years 1882-83 vs to the mortality in 1884-88 being also above the average.
The cause of the excess in 82 was the number of deaths at the extreme of life; "debility from birth," scrofula, cancer, measles, scarletina, & rheumatic were the chief causes of death in the case of the young children. Heart disease & inflammatory chest complaints were the chief causes in the case of the old people.
In 1883 a very fatal epidemic of diphtheria caused the exceedingly high rate of that year. In 1884 there was an excessive number of deaths under 1 year from convulsions, manganism & premature birth; these three causes with the addition of whooping cough raised the death rate above the average in 1885. The years in which the rates in the Stubbings Subdivision were high, were 1885-6-7-9-10; in the first 3 years there was an unusual number of deaths from whooping cough & also in 86 (with an excessive mortality among the females in addition), 187 (with an unusual number of deaths from whooping cough). In the remaining year 90, deaths of infants & of adults from acute inflammatory diseases were greater in number than usual. The three years with high death rate in this subdivision.
Death rate at various ages per 1000 of population.

<table>
<thead>
<tr>
<th>Year</th>
<th>Under 1</th>
<th>1-5</th>
<th>5-15</th>
<th>15-25</th>
<th>25-60</th>
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Average for 10 years: 2.313.101.753.088.00
were 1851-86 at 87 & in each of the years, there was an excess of mortality amongst young children from the following causes: smallpox, diphtheria, whooping cough, measles, mumps, scarlet fever, dysentery, premature birth & cramps. In this subdistrict, there is nothing to call for special remark. Dealing next with the deaths at various ages & taking first the deaths of infants under 1 year, there were 432 at this age & 250 of these were males & 182 females. This gives an average rate per 1,000 of population of 2.5% for the whole subdistrict. There was little variation in the rates in the different years of the subdistricts, the mean annual rates of Summer & Stebbing 2.4, Watford 2.3, Thaxted 2.1. The comparison between the deaths at this age & the number of registered births has been shown on a previous page. The total number of deaths at this age was 248 consisting of 136 males & 112 females. The average rate for the whole subdistrict per 1,000 was 1.3%. The rates in the individual years varied little & taking the period as a whole the rates in the subdistricts were nearly the same in each case; thus Summer & Stebbing 2.4, Watford 2.3, Thaxted 2.1. The rates in the subdistricts however, in some of the years
### Data Table: Mortality Rates at Various Ages in Sub-Districts

#### Dunmore

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were higher than in other years, showing that such variations cannot be taken as an estimate of what the mortality is, since we have seen that in the whole of the decennium there was little difference in the mean annual rate in the sub-districts. These remarks apply also to the deaths under 1 year. At this age there were 174 deaths of which 97 were males and 77 females. These figures give an average rate per annum of 1.08 per 1000 in the whole of the Union. The Burnmoor sub-district was the only one which had figures above this average. This seems to be due to the fact that in 1883 the rate reached 3.6 owing to the deaths from poliomyelitis. There was not however any great difference in the figures in any of the sub-districts as well be seen from the table in the reference book.

There were 1344 deaths at this period of life and 64 were males and 70 females. The mean annual rate for the whole district was 0.75, distributed in the sub-districts thus: Skefeyng 90; Thursley 86; Hatfield 65; and Burnmoor 50.

As this is the only period in which the female deaths exceed the male I shall mention in detail later, the various causes of death in both sexes.
There was a total of 591 deaths at this age, consisting of 310 males & 281 females. The rate per 1000 which these figures give is 3.08 for the White District & 3.3 for the Marketed Sub-District; 3.1 for Burnmorton; 2.9 Hatfield & 2.8 for Stubbington.

Out of the total number of deaths at all ages (2059) 1380 were over 60 years of age, equal to a death rate per annum of 8.00 & the rates in the sub-districts departed little from this average, for example: Burnmorton 8.7, Thirton 8.1, Stubbington 7.1 & Hatfield 7.2.

Male & female deaths at various ages.

In a table which I give on the next page I have shown the number of male & female deaths at different periods of life. These are the same as those for which the rates are shown above, with the exception that I have divided the period "under 60" into two periods, 25 & under 45 + 45 & under 60. The figures given in the table would have been of greater value, had I
Number of male & females

deaths at various ages.

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made calculations according to age distribution, it has shown the difference in mean of rates for 1000 living males & females, but this has not permitted me to do so. The points I wish to emphasize are the greater mortality amongst females between the ages of 15 & 25, & 25 & 35 & it is evident that, the females in the district being fewer than the males by 376 at the census in 1881 & 374 in 1891, calculated rates would emphasize the fact still more than the figures showing the smaller difference in the number of deaths.

Under the age of 1 year the number of male deaths exceed the female by 68 & in the succeeding periods 1 & under 5, & 5 & under 15 there is still an excess of female deaths, viz. 24 & 20 respectively. In the next period 15 & under 25 the female are in excess of the male deaths by 6; in the next period the males are again in the majority, but this majority is small, being only 7 & of the 12 deaths from accident causes were deducted this would be converted into a minority. In the remaining two periods 25 & under 60 & 60 & upwards, there males are in excess by 22 & 26 respectively.

With cause of death at the periods when
the female mortality from "disease" cases exceeded the male. I purpose dealing in detail of taking the female deaths first at the period 15 and under 25. we find that the majority of deaths are due to phthisis pulmonary; 40 out of 70 deaths are thus certified; 2 are also due to tubercular menigitis; 1 to tubercular peritoneal; 1 to abdominal phthisis. the following are the remaining causes of death: heart disease 6, confinement 5, septicaemia 4, epilepsy 3, typhoid fever 2, rheumatic fever 2, one death to each of the following causes: post-partum haemorrhage, cerebral convulsions, inflammation of uterine car & menigitis, abscess of uterine car & menigitis, peritonitis, pneumonia, tumour of brain, stinging sore throat, kickst & bronchitis, chronic brain disease, chronic laryngitis.

comparing with these, the male deaths, we find phthisis pulmonary again the principal cause of death. this was the certified cause in 27 instances; 8 deaths were caused by accidents; 14 were due to heart disease; 3 to Bright's disease; 2 to peritonitis, pneumonia, tubercular menigitis, menigitis, scrofulous abscess, pyaemia & typhoid fever respectively; & 1 to each.
of the following causes; scarlet fever, "Marasmus,"
Idiocy & general paralysis, Syphilis, Small-pox,
acute Bronchitis, Brain fever, & Rheumatic fever.
The total number of deaths was 64.
In comparing the deaths of males & females at the
period with which we are dealing, the most noteworthy
point seems to be the greater liability amongst
females to Phthisis Pulmonalis. The number of
figures from which we have to draw our comparison
are small, but to my mind it is not unlikely
that they represent the truth. We are all
familiar with the anaemia in chlorotic girls, who
develops Phthisis as a result of her impoverished
Blood Supply. What conditions could be more
suitable for the development of the Tubercle
bacillus in the lung tissue, than those which
accompany & are part of the anaemia state?
Is it not extremely probable that anaemia in young
females, accounts for many of the deaths from
Phthisis, which I have mentioned above as having
taken place & for the excess over the male deaths?
In other respects, the difference between the
mortality in the two sexes is not great, though
there were a greater number of deaths from heart
disease among females, & I shall show later...
As in the last period, the principal cause of death was in this instance also, pneumonia; pulmonary. 0
58 male & 40 female deaths, were thus certified.

67 male deaths. The other male deaths were: 13 from Heart Disease;
12 from accidental causes; 7 from Bright's Disease;
6 from pneumonia; 5 from peritonitis; 3 from
Rheumatic fever; 7 from Eclampsia; 3 from Apoplexy;
3 from enteritis; 3 sudden deaths (inquests); 2 from
Pulmonary disease of bowel; 2 from intussusception &
the rest from the following causes: Rheumatism com-
monly by Bright's Disease, Rheumatism & Strang
hemigingi, Perforated ulceration, ulcers of parietal
Cerebro, General paralysis, Cancer of uterus,
General sarcoma, Peritone, pneumonia, smallpox,
Diabetes, asthma, bronchitis, Throat fever, Cancer of
larynx, Cancer of liver, "Drunken Haemorrhage", acute
inflammation of liver, perforation of bowels, rechaumia,
perihepatic liquors, bone of humerus joint, Gangrene of
lung & extravasation of urine.

94 female deaths. In addition to the 100 deaths from pneumonia the
following were certified: Heart Disease 15,
Bright's Disease 6, Peritonitis 5, Eclampsia 5
Pneumonia 4, Anaemia 3, Cancer of liver 2
Cancer of Breast 2, Boas Abscess 2, Cancer of Brain 2, + 1 to each of the following causes: Paralysis, Softening of Brain, Paralysis, Carcinoma, Malignant Disease, Cancer of Liver & Stomach, Perforated Carcin, Intestinal Obstruction, Septicemia Abscess, Obstetric Peritonitis, Chronic Peritonitis & Abortion, Pyrexia Peritonitis, & Pleurisy, Chronic ulceration of pylorus & perforation, Chronic Alcoholism, also Cancer uteri 5, perforate Peritonitis 2, Pel Partum Haemorrhage 2, Confusion + Septicaemia 2, Pregnancy + Broken Heart 1, + the same number in each of the following: Abdominal tumour + ascites, "milk fever", postmorteum labour, Heart disease, Phlethora, & phlebitis, Abdominal tumour, Pregnancy + asphyxia, complicated labour & exhaustion, Confusion + Heart disease, Childbirth + Aneurysm, Peripheral Convulsions, Placenta praevia, Premature Confusion + Heart disease, Confusion + Pleurisy, Childbirth with maternal infection.

I have drawn attention to the great number of deaths from bilateral in males of the age of 25- under 45 + also to the great number of deaths of females from Heart disease at the same age; there is another cause of male mortality, which
is about amongst females, that is, accidents or injuries, though this is more than counterbalanced by the deaths resulting from some of the "accidents" of childbirth and cancer, diseases of the breast victories.

The various causes of death and the number of deaths from those causes.

Old age

Under this term or others expressing similar meaning (such as "senile decay," "senile degeneration," "general decay," "natural decay") there were 420 deaths certified during the 10 years. The number in the different years, i.e. between 31 and 51 years, was equal to a mean annual death rate per 1000 of 2.49.

From these causes 340 deaths were certified, and nearly an equal number were due to heart disease.

Pneumonia.

Heart disease. 326.

Phthisis pulmonalis. Nearly a tenth of the total number of deaths were due to phthisis pulmonalis only 341. In addition to these there were 37 deaths from other tubercular diseases.

Apoplexy.

Cancer.

Lymphatic cancer.

There was a total of 172 deaths from lymphatic cancer, consisting of 65 from whooping cough, 51 from bronchitis, 31 from diarrhoea, 19 from measles...
12 from Scarlet Fever, 10 from Typhoid Fever, 3 from Smallpox and 1 from Typhus Fever. The death rate for the principal infectious diseases had a yearly average of 1.2 per 1,000 of population.

Under these terms there were 64, 68, 69 and 64 deaths in the order named opposite. Under "Mortality from Birth" I have included the deaths of children from "Mortality of Infancy" and "Mortality of Infancy". The term marasmus was applied in 2 instances to adults.

35 deaths were certified as due to cerebral meningitis, 18 to tubercular meningitis; in addition there were 3 from cerebrospinal meningitis.

The following list of the causes of death, given in their order of frequency, completes the remainder:

Paraletic, 32; also there, in which the kind of paraletic was named, hydrophobia; ataxia; cerebral spinal; moderate sclerosis, 1; paraletic agitans, 1; disseminated sclerosis of brain and cord, 1; 1 from infantile paraletic, cerebral softening 27, 25; typhoid fever, 25; epilepsy, 28; peritonitis, 23. 23 from tuberculosis; 1 from puerperal; 1 from hepatitis, 12.

12 from paralytic, 12 from Typhoid Fever, 12 from smallpox, 12 from Typhus Fever. The death rate for the principal infectious diseases had a yearly average of 1.2 per 1,000 of population.

Under these terms, there were 64, 68, 69 and 64 deaths in the order named opposite. Under "Mortality from Birth" I have included the deaths of children from "Mortality of Infancy" and "Mortality of Infancy". The term marasmus was applied in 2 instances to adults.

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Diabetes Mellitus 11
Obstruction of bowel 11
Biparietis 10
Laryngitis 9
"Cephalic Bicee" 8
Bacterial Conjunctivitis 6
Laryngocoele 5
Aneurysm 6
Rheumatoid Arthritis 6
Meningitis 6
Acute Appendicitis 6
Abdominal Tumour 6
Spondylitis 5
Varicose Hemia 4
Intussusception 4
"Bentitin" 4
Interosseous Fracture 4
Supranumerary Nictitans 4
Enterosis 4
Lupus 4
Osteo of Knee 4
Asthma 4
Emigration of Throat 4
Fear 4
Gastric Ulcer Haeorrhage 4
Post Partum Haemorrhage 3
Duodenal Ulcer 3
"Hernie" 3
Congenital Syphilis 3
Inflammation of Brain 3
"Coronitis" 3
Synechæ 3
Echæma 3
Puerperal Convulsions 3
Emigration of Throat 3
Bronchio 3
Aleurinism 3
Epistaxis 3
Gastritis 3
Pancreatic Bicære 2
Varnian 2
"Famine" 2
Inflammation of Throat 2
Mania 2
Retention of urine 2
Abdominal Abscess 2
Structure of Oesophagus 2
Cerebral Thrombosis 2
Hæmoriætes 2
"Raneous" 2
1 from each of the following:

Haemorrhage & Syphils
Restlessness of Stomach
Sedanence of lungs
Deafness & Tinnitus
Rheumatism
Obstructed & Salivary Tubules
Pyrexia
Prolapse of Uterus
Acute Fibrin
Acute Otitis
Pneumonia
Acute Rhinitis
Pneumonia
Acute Tonsillitis
Acute Otitis
Acute Pericarditis
Acute Appendicitis
Acute Peritonitis
Acute Diarrhoea
Acute Peritonitis
Bronchitis, Pneumonia + Pleurisy

England & Wales 1881-87. 3.5 per 10000

Lunnon. R.S. District 1881-90. 1.2 " "
Remarks upon the commoner causes of death, dealing more particularly with inflammatory diseases of the chest, heart disease, Phthisis, Cancer, & Tymotic disease.

As before mentioned, the most common cause of death was "old age," but even this I shall not stay longer than to say, that in many instances, the primary cause of death is probably not stated.

Second as regards numbers were the deaths from Bronchitis, Pneumonia & Pleurisy. The numbers in the various years were:

1881 - 43  1884 - 31  1887 - 36  1890 - 41
82 - 31  86 - 45  88 - 37  89 - 18
83 - 23  86 - 37  89 - 18

The mean annual death rate per 1000 calculated from these figures is 1.2, which is less by 2.3 per 1000 than the average for England & Wales during the seven years 1881-87. By the figures than the average from 1871-80. (Note the last p. 21.)

Age of death.

68 deaths took place under the age of 1 year; 42 were at the age of 1 and under 5; 9 at the age of 5 and under 15; 4 at the age of 15 and under 25; 11, 25, 35, 45, and 60 and 60 years of age and upwards.
Bronchitis: Distributed between the sexes, there were 128 male deaths + 104 female deaths from Bronchitis. Under 1 year there were 40 male deaths & 20 females, at the next period, 16 male & 23 female deaths. The great majority of the remaining deaths were of the age of 60 upwards; 15 males of 61 miles & 50 females. Roughly speaking 42 per cent of the deaths were under the age of 5 & 47 per cent were over 60.

As a complication, Bronchitis was certified as complicating other diseases in the following instances:

- Heart Disease 19 cases.
- Brain fever 1 case.
- Pneumonia 10 cases.
- Scarlet fever 10 cases.
- Diphtheria 9 cases.
- Measles 7 cases.
- Influenza 4 cases.
- Tuberculosis 3 cases.
- Pneumonia 2 cases.
- Influenza 2 cases.
- Diphtheria 2 cases.

In 7 of the cases of heart disease, Bronchitis was given as the primary cause of death, but in the remaining 12 cases, it was given as the secondary cause.

In the cases of measles & whooping cough, Bronchitis was certified as the secondary cause, but in the case,
of croupus as the primary cause and also in the cases of dilatation of the heart. In two of the cases of croup it was stated to be secondary, in the other case as the primary cause of death. In the cases of pneumonia it was stated as the primary cause in both instances, and this applies to one of the cases of Bright's disease and to those of bronchitis, scarlet fever, meningitis, &c. In the second case of pneumonia of the remaining cases intstitus was given as the secondary cause of death.

Of the 26 deaths from pneumonia, 57 were males. Under 1 year of age there were 9 deaths (6 male & 3 female) at the age of 1-5, under 6, there were 11 deaths (7 male & 4 female).

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Number of Deaths</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-5</td>
<td>18</td>
</tr>
<tr>
<td>6-10</td>
<td>25</td>
</tr>
<tr>
<td>11-15</td>
<td>3</td>
</tr>
<tr>
<td>16-20</td>
<td>43</td>
</tr>
<tr>
<td>21-25</td>
<td>27</td>
</tr>
<tr>
<td>26-30</td>
<td>48</td>
</tr>
<tr>
<td>31-35</td>
<td>31</td>
</tr>
<tr>
<td>36-40</td>
<td>43</td>
</tr>
<tr>
<td>41-45</td>
<td>23</td>
</tr>
<tr>
<td>46-50</td>
<td>20</td>
</tr>
</tbody>
</table>

In the majority of instances, the term "pneumonia" was used in certifying. In 6 instances the term bronchopneumonia was used. In three, enteric pneumonia. In five instances, the pneumonia was described as double.

In 7 cases of whooping cough pneumonia was stated as a secondary cause of death. In 3 cases it was stated as primary.
Pericarditis as secondary cause. In two cases of typhoid, it was once given as the primary, and once as the secondary cause of death.

In the following it was mentioned as the secondary cause: Peritonitis 2 cases, Heart disease 3, Rheumatic arthritis 2, cerebrospinal, cerebro-softening, Paralysis, Rheumatic diarrhoea, Influenza, Tuberculosis, Typhus, acute, and other, (in a second case of asphyxia as primary) each 1 case.

Two cases were certified as Miliary pneumonia. Myocarditis; Pleurisy, Pneumonia, & Myocarditis, and then as pneumonia & Haemoptysis.

Of the 6 cases of pleuro-pneumonia one (male) was at the age of 25, four were between 45 and 60 (2 males and 2 females) and one was over 60 (male). In 2 cases already there was an inflammatory heart affection in addition.

The 6 deaths from this cause were 5 males and 1 female between 25-40, 2 males and 2 females between 45-60, 1 male over 60. It was stated as the secondary cause of death in one case in which "pernicious" was primary, and then as primary in the case of a male 79 in which "Thrombosis of cerebral arteries" was secondary cause.
Phthisis pulmonalis.

The 271 deaths from this cause were distributed between the sexes thus, 150 male and 121 females. Roughly speaking one in every eleven deaths during the 10 years was due to phthisis.

In the various years the number of deaths varied from 22 to 36; the lowest figure (22) were in 1881 & 88, the highest (34, 36 & 34) in 1884, 85 & 88. The average number of deaths in each year was 27. The male deaths exceeded the female in each year, except in 1881 & 89 when they were 105 by 85 respectively. The excess of male deaths varied from 2 to 11.

Age at death.

The greatest number of deaths took place between the age of 15 to 25 viz 67. Between the ages of 25 to 35, 35 to 50 and 50 to 80, there were very nearly an equal number of deaths viz 58, 59 & 58. Under the age of 15 there were 29 deaths.

During the age periods mentioned, the male deaths exceed the female except between 15 to 25 at this period we find 40 female & only 27 male deaths. Under 15 the numbers were very nearly equal viz 15 & 14, but between 25 to 35 the male deaths exceed the female by 18.

(M. 88. F. 29)
During the period 35-50 the figures are more nearly equal (m.31. F. 28) but above the age of 50 the male exceed the female by 18 (m.38. F. 20)

During the first five years of the decade, the deaths amounted 141, and during the second five years 120.

The death rate for the whole Union averaged 1.56 per 1000, and for the four subdistricts the mean annual rates were: Thanto 1.92, Skibbing 1.705, Bynumow 1.68, and Hatfield 1.05.

The northern part of the district thus had a higher death rate than the southern, but this does not apply to the ten previous years (1871-80) for which the mortality was as follows: Bumnow 1.20, Thanto 1.65, Skibbing 1.57, and Hatfield 1.34.

There is therefore little difference in the figure for the three first mentioned subdistricts, but Hatfield had certainly fewer deaths from phthisis during the ten years 1871-80 than the other subdistricts.

In addition to these deaths from phthisis, there were 12 deaths from "Tuberculosis," 18 from tubercular meningitis, 4 from tubercular of head, 3 from tubercular peritonitis, 20 from Tuberculosis.
Phthisis pulmonalis

England & Wales. 1881-87. 17.73 per 10000.

Dunmore. R. S. District. 1881-90. 15.62 per 10000.

England & Wales. 1871-80. 21.16 per 10000

Dunmore. R. S. District 1871-80. 16.05 per 10000.

"Other Tubercular Diseases"

England & Wales. 1881-87. 7.02 per 10000.

Dunmore. R. S. District. 1881-90. 3.36 per 10000.
This gives a death rate from "tubercular " of 3.36 per 10,000 as compared with England & Wales 7.02 per 10,000 (ibid. 213). With regard to the prevalence of phthisis in the district compared with England & Wales and calculating from the figures given by Dr. Westlake (ibid. 213) the death rate per 10,000 (England & Wales) for the years 1871-85 was 17.73. The death rate per 10,000 in the district for the 10 years was 15.62 which is therefore below the average. Furthermore, during the years 1871-80 the mortality was also below the average being 16.05 per 10,000 as compared with 21.16 (England & Wales) (ibid. 213).

On page 16 of his book Dr. Haviland makes the statement that in all the divisions that were exposed to the free and unimpeded affluence of the prevailing sea winds in all their strength and force, there was found the lowest mortality from heart disease, but that in the case of phthisis such divisions had the highest mortality. In the same page he includes the Eastern Counties as being in one of the least affected divisions. Now is it then that this division has a mortality from phthisis below the average? Instead of saying so much
stress on configuration of the land, position as regards exposure to winds, the amount of shelter possessed by different areas, should we look to the question of whether the people live in densely populated places or in country districts? Do there not a higher death rate from phthisis in some of our large manufacturing towns than in the rural districts? Then forming comparisons should all these things be taken into account. Especially, when phthisis is spread by contact, have not heredity, predisposition, occupation, nature of soil, and exposure to winds?

Heart Disease.
The information which can be gleaned from the death certificates, as regards the variety of cause was incomplete, as out of a total of 326 deaths, 230 were certified as due to "heart disease." The seat of the disease was more truly stated in the following instances: In 145 cases it was due to "coronary disease"; in 2 cases of angina pectoris.
16 cases of dilatation, 4 of fatty degeneration, and 2 of Congenital Malformation. In 10 instances the term valvular disease was used, in 21 "cardiac degeneration," in 6 "failure of heart," in 2 "inflammation of heart," and in 3 instances the terms cardiac dysrhythmia, cardiac insufficiency, and cardiac insufficiency were used.

The deaths were distributed between the sexes thus, 171 males and 155 females. In every 1000 deaths from heart disease these figures amount to 528 male and 472 female. The following table shows the male and female deaths at different ages:

<table>
<thead>
<tr>
<th>Age</th>
<th>Males</th>
<th>Females</th>
</tr>
</thead>
<tbody>
<tr>
<td>Under 10</td>
<td>16</td>
<td>20</td>
</tr>
<tr>
<td>10-20</td>
<td>32</td>
<td>19</td>
</tr>
<tr>
<td>20-30</td>
<td>124</td>
<td>106</td>
</tr>
<tr>
<td>30-40</td>
<td>60</td>
<td></td>
</tr>
<tr>
<td>40-50</td>
<td>50</td>
<td></td>
</tr>
<tr>
<td>50-60</td>
<td>40</td>
<td></td>
</tr>
<tr>
<td>60-70</td>
<td>30</td>
<td></td>
</tr>
<tr>
<td>70-80</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>80-90</td>
<td>10</td>
<td></td>
</tr>
</tbody>
</table>

If it is permissible to draw any deductions from so comparatively small a number of figures, this table is instructive. In the case of children under 10 years of age one would presume that the cause of death (the heart lesion was being stated) would be some inflammatory, valvular lesion, or an inflammatory affection of the peri-cardium or endocardium. These we knew to follow acute Rheumatism and bearing in mind the cause of the acute Rheumatism, exposure to damp, cold, or both, we find that what would be expected that male children are more
fame to fatal heart disease than female children's
male children probably being more exposed and
more liable to expose themselves to the necessary
condition than female children. Between the
age of 10 and 25 the case becomes altered, for
the female deaths are 7 to the male only 3.
This I would account for by the fact that there
is so often a delicacy in the maturing female
which the male of similar age as a rule, free from
I am not able to explain why there should be
more female deaths at the next period (25 + 50)
indeed it is that the fatal results from valvular
lesions contracted earlier in life, occur sooner in
the female than the male, owing to varying condition
of the heart muscle during the child-bearing period.
Between 50 + 60 the male deaths exceed the female
by 3 to over 60 by 15. This last period is
probably more a period of "Degeneration", as valvular
lesions in my experience prove fatal at an earlier age
of males seem to be more liable than females
to these degrading processes over 60 years of age.
The number of deaths for 1000 living males was 1.35
and the number of females per 1000 living females was 1.25.
I have no means of ascertaining the death rate from heart disease in England & Wales for the period with which we are dealing, but Dr. Haviland states that the mean death rate per 10,000 persons for the years 1851-70 was 13.00. Now the death rate per 10,000 in the Summer R.S. District during 1881-90 amounted to 18.8. Haviland asserts (p. 14) that those divisions to which the sea winds have ready access, have the lowest divisional mortality. The Eastern Counties he says to be one of these again at p. 28, he says that "the geographical distribution of heart disease in Britain affords the best illustration possible of the value of a sound knowledge of ventilation exposure to the fact that ..." he says, "...that the facilities for constant change in the air, there is coincident with these, a low mortality from heart disease."

On p. 33 we find the mean annual mortality of the entire series of 27 central counties during the years 1851-60 was 11.9 per 10,000 living; the mean annual mortality of 20 inland counties was 12.5, & of the six midland counties 15.1. The Summer R.S. District is an exception to this rule which Dr. Haviland lays down, at any rate from the 10 years with which we are dealing, lying as it does in one of his "exposed" divisions.
In looking for the cause of the high mortality from heart disease, the first thing that strikes one is that exposure which many of the inhabitants have to endure, in account of their occupation, must have something to do with it. There is certainly a further cause, and that is that the poor people of the district are in many instances badly housed. The majority of cottages are built of both and plastered or covered with thatch, and it is an every day experience during wet weather to hear complaints of the dampness of the walls. In driving along the roads one can always see thatched roofs falling in from want of repair. The worst often falling off the walls from dampness. One going inside one finds often damp brick floors, walls, and the roof of straw sodden with moisture. Is it surprising that Rheumatism with consequent heart disease is so common occurrence?

**Apoplexy.**

Of 187 deaths certified as due to apoplexy, 97 were females and 90 were males. 170 of the deaths were men 65 and over, 89 of these were females. 81 males. The remaining 17 deaths were between 45 and 60, 9 were males, 8 females.
Cancer.

As before mentioned there were 146 deaths from this cause. They were distributed between the sexes thus: 91 females and 55 males. There were 10 female deaths between the age of 25-45 and 3 males at that age. Above the age of 45 there were 81 female and 52 male deaths. The average rate per 1000 from the Whole district was 84. This average was exceeded in two of the Subdistricts viz. Sumner & Theatre, the average for the former being 102, & the latter 85. In the other Subdistricts, overlooking that field, the figures were 71 & 73 respectively. The uterus was the most common seat of the disease in 23 cases. These were certified as such, chiefly approaching this manner, were those in which the disease was situated in the stomach & liver, 22 in the former and 21 in the latter. There were 15 cases of Cancer of the Rectum, 10 of the Bowel, 7 of the Uterus, 5 of oesophagus, 5 of face, 4 of abdomen, 3 of tongue, 3 of lip, 2 of upper jaw, 2 of liver, 2 of bladder & 1 in each of the following situations: throat, lungs, axillary glands, ovaria, scrotum, hand & by force. In 15 cases the seat of the disease was not stated.

In the first half of the decade there were 67 deaths & in the second half 84. This increase
Cancer.

England and Wales, 1881-87, 5.58 per 10,000.

Wimmen R. S. District 1881-90, 8.4 per 10,000.

England and Wales, 1871-80, 4.73 per 10,000.

Wimmen R. S. District 1871-80, 3.88 per 10,000.
However, this was largely owing to the number of deaths in 1886-87 being above the average.

In comparing the cancer death rate with the rate in England and Wales, taking the death rates for females for the purposes of the comparison, we find that whereas the rate for England and Wales (male & female) for 1881-87 was only 5.58 per 10,000 of population the rate in the Union was 8.44; the rate for females was 10.74 as compared with 7.09 (E&W) for males 6.21 against 4.00 per 10,000 (E&W). The difference in these figures is very marked.

I am not able to throw any light upon the cause of this high death rate from cancers, because the data of the Registrar-General's Reports of Districts described by Havelock(1895) as presenting a high mortality from cancer, and including the Eastern Counties under this head.

In order to ascertain whether cancer was increasing or decreasing in the district I have obtained from the Registrar the number of deaths during the years 1871-80 and find that the mortality during these years was much less than during the succeeding 10 years (1881-90) it amounted only to 3.88 per 10,000 as compared with England and Wales for the same period 4.73. The number of deaths was exactly doubled during the 10 years with which we are dealing.
Premature Birth

England & Wales 1881-87.  4.83 per 10,000

Birmingham 1881-90  3.69 per 10,000
Premature Birth.

There were 64 cases certified as being due to premature birth, giving a death rate per 10000 per annum of 3.69 which is 1.04 below the average for the years 1881-87 for England & Wales (Registrar-General 216.8 per 10000 births) and for 1887 the Registrar-General gives the average 2.7.

Mortality from Birth etc.

Under such terms as mortality from birth, debility, asthenia, insanity, stillbirth, malnutrition, there were 63 deaths certified. Probably a number of these were due to being prematurely born, but that as a primary cause was not mentioned. Inconsequent feeding habits has to account for a number of deaths of infants in our district that will be much at the age at which the above deaths took place, as later, 5 or 6 months, enable their infants to artificial feeding is rare. The age at which artificial feeding does more harm is somewhat later. Of the deaths are perhaps covered by the term "marasmas" to which 60 deaths were due. 61 deaths were also certified as due to convulsions, no primary cause being stated.

Marausmas.

The mean annual death rate per 10000 from Bright's disease was .27 & from nervous diseases (not including epilepsy) .45. These latter combined .21 from paralytic disease & .24 from cerebrum disease. The death rate from epilepsy was .1.2 & from brain diseases .063. Bright's disease...
Injuries etc. 95 deaths were the subject of coroners' inquiries. 81 of these, 28 (males) were due to injuries accidentally received from machinery or other implements used in agriculture. In 38 instances the verdict returned was that death had occurred in a natural way (24 of these were males, 14 females); 13 persons were drowned (7 males, 6 females); there were 6 suicides (5 males, 1 female); 4 children died from burns & also 1 female adult; 2 infants were suffocated in bed & one was overlaid by another; there was one death from lightning & in one case a verdict of "not known" was returned.

Infectious disease in the district during the 10 years.

The average annual death from the principal epidemic disease, throughout the Union was 11 per 1000 of pop. In the various years the rate was: 1. 1.51. 2.42. 1.24. 57. 69. 69. 1.28. 704. 909. The years in which the epidemic death rate was highest were 1881. 2. 83. 84. 88. In the first named year the rate was increased by 12 deaths from whooping cough; in the second by 10 from measles & 8 from whooping cough; in 83, 27 from hightonia made the rate the highest of the 10 years; there were again 10 deaths
In 1884 from Smallpox, and in the remaining year 1888 there were 18 deaths fromishness cough.

Smallpox.

In the year 1881 I find from the reports of the Local Off. of Health that there were 3 separate outbreaks with a total of 13 cases. The first outbreak occurred in one of the villages in the north-western part of the district. Two of the cases were members of the same family. One case was a child and had contracted the modified form of the disease. The patient, his children, and another who lived with him, became infected. The third patient had the croupous type of disease and succumbed about the 15th day. The second outbreak occurred in Summer and the case (of the croupous type) died rapidly, after removal to the isolation of the workhouse. Two cases were contracted by a child, not removed, having been revaccinated in entering upon their duties. No satisfactory information could be obtained as to the origin of the case.

The third outbreak occurred at Halsworth, consisting of three cases, the infection having been brought by a member of the household from London.

Until the year 1885 no further cases are mentioned. The reports for the years 1882 to 1885 are incomplete.
Macmillan as that for 1882 is only for the second half of the year & that for 1883 does not deal with the first 6 months of the year. So that I cannot say whether any cases occurred then. The attack in 1885 originated with an imported case from Foregate St. of the confluent type which ended fatally.
7 other cases were mentioned as having followed this one, but no other details are given. All evidently recovered. One case is mentioned as having occurred in 1886 in St. Barmes, but no particulars are given. There is no history of any case having occurred since then one.  Of the total number of cases viz. 22, 18 are shown to have resulted from infection brought from heaven on the neighborhood. In four cases the source of infection was not discovered. In none of the three outbreaks in 1881 did the disease spread from the families. The first contracted it. The members of the family, first attacked, were all revaccinated after the patient had taken the disease in the confluent form & he had never been vaccinated. The two nurses who took the disease whilst nursing the case at the Workhouse had both been revaccinated & consequently had it only in a modified form. No mention of vaccination is made in the third outbreak, but...
Measles

England & Wales 1881-87 . .43 per 1000

Summar R.J. District 1881-90 . .15 per 1000

Scarlet Fever

England & Wales 1881-87 . .39 per 1000

Summar R.J. District 1881-90 . .68 per 1000
all three cases were removed to the Union Infirmary
then isolated. In detail, I only add that the disease was confined to one family in each.

**Measles**

The information at my command as regards the occurrence of measles is limited, as I am unable to say whether the disease was confined to one family or not.

**Scarlet Fever**

The total number of known cases of scarlet fever was 35, with 13 deaths, equal to a death rate of 0.68 per 1000 per annum, which is small compared with the average for 1881-87 for England and Wales (39) (Rees and W. J. 173). It is probable that this death rate referred by many doctors to the actual number except in the last year (1880) when the Infection Disease Act came into force. The reason of this is, that the majority of the people did not have it known that they had a case of infectious disease in their house, from the
inconvenience it puts them to for the isolation which is put upon them as soon as the fact becomes known to the sanitary officers. In my experience of 3 years as such, I have had numerous examples of the truth of this, especially in the case of a mild attack of scarlet fever, in which the patient is so soon well that perhaps a medical man has never been called in.

Nearly the whole of the disease seems to have suffered at various times; Broxted was the first to suffer from an epidemic in 1881; thirteen cases were found at the time of the first visit. The infection was said to have been contracted in London. Nine other cases followed. There were 8 other infected cases in other parts of the Union, but the total connected with the Broxted case, is not mentioned.

Thirteen cases occurred at Great Barrington during these months, 16 at Great Barrington, 7 other cases in other parishes. The disease was of a mild character. Nearly all cases were investigated. Measles or ordinary colds were taken for measles or ordinary colds or then recovered after. In 1883 Felsted had a record of 10 cases, Tolsey 16. There were 9 cases in 4 other parishes. Whitehall (another parish) had the greatest number of cases, in 1884, viz., 11, 2 in another parish, 7 each. There were
1885. 12 cases in four other parishes. Hatfield has the greatest number of cases, in 1885 only 39; there were 8 in Elst Lanner, and 16 in 8 other parishes.

1886. Hatfield this year has 10 cases, Little Bardfield 15 or in addition there 7 cases in four other parishes.

1887. In this year there was an epidemic at El Saxon amounting to 27 cases, 15 of these proved fatal.

The disease was of a more severe type than any other of the outbreaks, as in the whole remaining number of cases, during the 10 years, there were only 7 deaths.

There were also in this year 14 cases, at the Grammar School at Felsted, 5 at Toddington, 5 at El Lanner, 5 at Brasted. The epidemic at El Saxon originated in a family of whom the parents had been to London. There scarlet fever was epidemic at the time of the R.C.O. Assembly Hotel in that town.

The infection in the case at Brasted was supposed to have been brought by a girl who had been nursing her sister's child in London, then ill with scarlet fever. The other cases could all be accounted for.

1888. El Saxon headed the list with 8 cases, and there were 14 in 6 other parishes. In 1889 there were only 8 cases distributed in 3 parishes, but in the next year there was again an increase in the number of cases, particularly at the end of the year, owing to an epidemic.
at Stebbing, which continued to progress thermo-dermically for several months. Up to Dec 31st there were 38 cases. In the earlier part of the year there were 9 cases in 4 other parishes & 1 at Stebbing in June. Being at this time myself W.O.H. I made careful inquiries in the endeavour to cancel the epidemic at the end of the year with these cases, but I was unable to find certain evidence of the connection. I was however able to satisfy myself that there had been cases as far back as August, in an adjoining part of the parish & that these children infected neighbors. Who, later, introduced the disease into the school. Then disengaging, but I could not prove the connection between the case in June (a visitor from Bunking) & those in August, though the visitor was staying with the clergyman who conducted the Sunday school attended by the children attacked in August. The clergyman did not conduct the school after the case in his house declared itself. I had to leave the matter in this state pending announcement that the visitation (the June case) had in some way or other been the means of infecting the children attending the Sunday School.
as I have said before, nearly the whole of the
parishes suffered to a greater or less extent from
attacks of scarlet fever during the time in question;
6 out of 25 parishes escaped entirely so
far as was known from the evidence of the Medical
officers and case of infectious disease. It is
probable that if the truth were known, they did not
altogether escape. In no one of the 10 years was
the district quite free from the disease, though
in 1859 there were only 6 cases. The northern,
southern, eastern, western, and central parts
each in turn bear the brunt with the greatest
number of cases. The parish in the north
which has been most severely visited is
not usually severe, and which
has been visited by the disease,
is less to be condemned. In the great
instances it was
a much more severe type of disease, than
that which was usually prevalent, and which
has been traced to have been freshly introduced
into the parish. From the foregoing facts, one
is led to the conclusion that the infection in
these outbreaks was not always introduced
fresh, but that it was retained within the district
and in turn was carried to the various villages.
The amount of communication between different
parts of the district is not great, and in a general
way it is usual that such communications
is carried on by tradesmen's carts, etc. Bhamo is the centre to which most traffic flows. The people also go there are all the people who represent the majority of the population, only those engaged in agricultural labour. These people seldom leave the neighbourhood of their homes due to infection from diseases spread among them, wards of accessibility travel slowly except to their immediate neighbors. The communication between the spread of infection in a town or in a purely agricultural scattered district must be very marked, an epidemic which would soon travel, assuming a great number of children, in an urban population, would take a very much longer time to be so, in the case of a district such as the one with which we are dealing.

Into the question of how the infection is retained, we have not the time to discuss, nor have I any facts at my disposal which throw any fresh light upon the subject.

Diphtheria.

This is the fate more of medical officers of R. D. Districts, the Bhamo District for this 10 years has the exception to the rule. For example, we find the total cases to be 168 and of these 51 died,
that is a case mortality of 30.3 per cent.
In 1881 there is no record of any cases. In only
in 1882 but in 1883 there were
56 cases, & 27 if these had a fatal termination.
In 1884 there were 33 cases with 10 deaths.
In 1885 there were 22 cases, four of which were fatal.
In 1886, 21 cases with 2 deaths; in 1887, 2 cases;
in 1888, 5 cases, 1 death; in 1889, 7 cases; &
in 1890, 21 cases, with 5 deaths.
If we add to these deaths the number of
deaths certified as due to Cramps (broncho-pneumonia,
therefore pleurisy, pneumonia) the total number
for the 10 years could reach 75. This gives an
average death rate per annum of 0.42 per
1000. The average annual death rate from the
principal epidemic diseases being only 0.11.
Out of the total 168 cases, 68 occurred in
El Bummer, 27 in Westfield, 16 in Whistle
Rock, 12 in El Roster. The remaining
45 cases were distributed through 14 different
parishes. The most noteworthy point about
these figures, is the fact that diphtheria has been
more prevalent in El Bummer than in any other
part of the District. Some attention is next drawn
to the fact that the greatest number of cases occurred
in the year 1883 and during the following three years, 
(1884-5 & 6), the figures showed a gradual decrease, 
(56, 33, 22 & 21). During the next three years, there 
were in all only 14 cases, of which 1 of these alone 
was fatal; therefore during these years, the disease 
seems to have been partly quiescent. In 1890 however 
the figures again rise to 21, 11 burnmoss having 13 cases. 
After looking at Curries' way, in which the figures among 
them are so, one is seriously inclined to blame the 
epidemics of 11 burnmoss in 1883, for the cases which 
occurred in the three following years. This epidemic 
was the subject of a Local Government Board inquiry 
and the report was embodied in a Report by Dr. Aing 
which I have in front of me. His report is burnmoss 
was made in May 18th 1883. This Robert Cassells 
heinently, who dealt with these cases which has occurred 
known to his mind. The following I extract from his 
Report: since the beginning of the year there has 
thetical, as far as was known, 36 cases in the Rural 
Santary, Distriet 5 20 had proven fatal; 23 cases 
had occurred in 11 burnmoss with the remaining 13 
in neighbouring parishes. Of these not laying cases 
the present Minister showed no connection with the 
burnmoss cases. With regard to one point of 6 cases 
in the kind of flat field broods oak (the first I know 

Announced after the coming home of the wild 
Convolvalt from Scotland in about 1898)
In questions whether the infection may not have been conveyed from Bummar by the wind. The spot where the outbreak occurred was 6 miles S. W. from Bummar. A chief near close to three cases developed scarlet fever, but an American is made of very rash in the other 6 cases, 5 of which died. Returning to the Bummar cases, he next incidentally mentions, that he had told by a resident practitioner, that he had habitually in the autumn and with cases of some threat characterized by blemishes like patches of red state that fatal blemishes appeared to have been very rare in the town, from the death register for the sub-district only, inclusive, 2 cases during the previous 10 years, 2 that the last was in 1878. We next proceed to deal with the probable origin of the disease after carefully reviewing all the possible sources. Finally concludes that it was caused by an escape of sewer gas into a closet in the rear side of one of the public schools. In 8 out of the 10 families invaded, the first attacked attended the said school, and in 7, the first attacked was a boy.

From the foregoing facts then we may conclude that blemishes has been during 10 years in question unusually prevalent in Bummar.
Compared with the Athen. village in the Manor of how are we to account for this? Its sanitary condition is far from satisfactory. Sewers have been laid at various times to drain different small sections of the town, they have a comparatively short course & discharge at convenience into the nearest ditches among the gardens & outlying cottages on the lower side of the main street; these sewers are not generally ventilated. There are a number of hand-flushed closets, but these stand over ill-made drains; many closets have clogged. Many of the drains are made of bricks & precautions of sewage matter into the wells is a thing of uncommon occurrence. With such conditions as these, one can hardly be surprised at cases of dysentery constantly cropping up.

Of the other case during the decade, there is no account of their origin except in the case of an accident at Hatfield Heath in 1886, when there was traced to infection from a neighbouring parish, in 1890 there several cases arose in a school in St. Humbore owing to infection introduced from an outlying farm house. From my own experience in the district it is of common occurrence to have isolated outbreaks of the disease arising from the...
existence of a nuisance in close proximity to a dwelling house, some of these outbuildings are of a most malignant character. Cesspools are permitted to be kept near them. Close to doors on windows & collections of filth are made by the cottagers at places. From these the odours arising from decaying matter, must enter the house & for these two causes alone there are cases which owe their origin here, open. Surrounded in obscurity, as the precise origin of diphtheria undeniably is, the conditions under which Bacilli flourish have been severely tolerated. Clear, during my experience of the district, stumps of rut-soil & of cottage wells, the overflowing of slopes from brick stones & the position of surroundings, creates thereby, are amongst the conditions which certainly have something to do with the causation of diphtheria. Cases not infrequently arise from their presence. The remedy in these cases is more easy to apply, than in the instance of st barrenom which requires draining by means of a system applied to the town generally, to replace the present imperfect & inadequate drains.

I have no information at my disposal for comparing the prevalence of diphtheria in the district with
Diphtheria

England & Wales 1881-87.  0.15 per 1000.

Warner R.J. Diphtheria 1881-90  0.42 per 1000.
Other Rural districts, but the death rates per 1000 in England & Wales as a whole during a number of years, are given on p. 173 of Dr. North's work. The rates in the years in question are very much below those in our own district. The average for the years 1881-87 was 15, which is much exceeded by the average for the 10 years in our district viz. 42.

I have mentioned that infectious diseases, especially smallpox, in the years 1883-4 and 5 and 6, were prevalent. Quoting from the Registrar-General's annual summary for 1887, there is that this applies to the whole country. He also says that, an area having its base in the South Eastern Counties, Sussex, Hampshire, Surrey, Kent, and stretching upwards along the eastern side of England through Middlesex, Hertfordshire, Essex, Cambridgeshire, and Bedfordshire, occasionally reaching Norfolk, Buckingham, and Hertfordshire, was shown to be more liable to smallpox than other parts of the country. (a second area having its area in north Wales & Shropshire is also mentioned). The summer of 1883 is within the first area & as I have shown thoroughly deserves the name of having a high mortality from smallpox.
Whooping Cough

England & Wales (Rural Districts), 1881-87. 0.35 per 1,000

London, R.S. District
1881-90 0.37 per 1,000

Typhoid Fever

England & Wales, 1881-87. 0.265 per 1,000

London, R.S. District 1881-90 0.057 per 1,000
Whooping Cough.
The average annual death per 1000 for the 10 years 1880-89 was 0.37, which is only slightly above the average for England & Wales. The Registrar gives for the 6 years 1882-87, 0.35 in Rural districts.

Typhoid Fever.
There were in all 57 cases of Typhoid fever recorded, of these 10 were fatal. The death rate per annum is 0.057, which is small in comparison with the death rate in England & Wales during the 6 years 1882-87 (0.265). (Registrar p. 184).

More than a sixth of the number of cases were fatal, according to the above figures, so that probably there were cases which never came under notice. In only one outbreak was there any approach to an epidemic that was as celebrated in 1884 when there were 13 cases traced to the drinking of contaminated well water at Netfield Road Oak Tree (18 cases recorded). In addition, several cases of continued fever as far as my knowledge goes, this parish is the one which has been most troubled in former years from outbreaks of this fever. Between 1870 & 1880 there were several epidemics at Thatched,
Scirrhous

England & Wales, 1852-67.

<table>
<thead>
<tr>
<th>District</th>
<th>Rate per 10,000</th>
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<tr>
<td>Rural District</td>
<td>54</td>
</tr>
<tr>
<td>Warramoo R.S.</td>
<td>178</td>
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</tbody>
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But the insanitary area in which the fever mostly occurred was visited by a fire which destroyed the cottage & effectively stamped out the disease. 

A severe epidemic occurred at Westfold Broad Oak in 1879 which lasted 14 months & as this is outside the paper I shall not remark upon it. It will suffice to say that the village is often visited by attacks of typhoid & that the forms of fever & it is probably due to an excessively polluted subsoil with its consequence polluted wells etc. The authorities are unwilling to spend money on a sewage scheme & so lay all this unwillingness must, I see, much the liability to attacks of typhoid fever.

Diarrhoea.
The deaths from this cause (31 in number) were distributed almost equally between young children, old people; the number of deaths in each year varies little - there was never any excessive mortality. The average annual rate per 1000 from these figures is 0.78, which is below the average for rural districts in England & Wales from the years 1882-87 (0.54).

Puerperal Fever.
Under the term "confinement + septicaemia" there were 4 deaths certified & also 1, as "post-
<table>
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<tr>
<th></th>
<th>England &amp; Wales. 1881-87</th>
<th>4.80 to 1000 births</th>
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<tbody>
<tr>
<td></td>
<td>Dummers R.S. District</td>
<td>1.04 to 1000 births</td>
</tr>
<tr>
<td>Accident of child birth</td>
<td>England &amp; Wales. 1881-87</td>
<td>2.09 to 1000 births</td>
</tr>
<tr>
<td></td>
<td>Dummers R.S. District</td>
<td>2.51 to 1000 births</td>
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</table>
parturition perinixis." This gives an annual number of deaths of mothers from this cause to 1000 births, of 104, which is much less than the yearly average number, according to the Registrar Generals Returns for the year 1851–57, which was 4·80 (which would be 126). Besides these deaths there were 15 others connected with childbirth; three of these were certified as "Confinement & pleurisy," "Confinement & kidney congestion" and "Puerperal labour & heart disease." The remaining 12 were: post partum haemorrhage 3, periparal convulsions 3, and each of the following causes—childbirth & Caesarean, confinement & sepsis, complicated labour—exhaustion, placenta praevia, pulmonary embolism, & "childbirth." These deaths from the accidents of childbirth give a death rate of 0·51 per 1000 births, which is somewhat higher than the average rate for England & Wales 1851–57 - 0·09 (which would be 2·06).

The remaining causes of death have been already enumerated and they do not call for special remark.
Conclusion

As this paper has already exceeded the limits originally assigned to it, I will not lengthen it by bringing the chief facts together in concluding, as I intended. The points of interest I have sufficiently emphasized in passing & to say more of them would be repetition, which would perhaps add little to what must have been long ago trying to read. I am too little at home with figures & the further I progressed the more I felt I was dealing with material which requires better hands than mine to make it of interest. But if I may be allowed to say it, the failure has not been the result of want of work, for the paper throughout its length has required much time (often obtained under difficulties) & a great deal of patience. I can only say that I regret that this time & patience has not been expended on a work which would have been of greater usefulness than this one.

Signed

Richard Richmond
mB. CM.

At Hardfield
Essex
April 24th 1893
I hereby declare that the thesis, which I this day forward, has been entirely composed & the work done by myself.

Signed

Richard Richmond.

Brook House,
GT Hardfield,
Braintree.
April 24th, 1893

Richmond on
Causes of death in Egypt
A fair thesis may be
Accepted with one then
of 1711
I hereby certify that Mr. Richmond Richmond of Great Bardfield, Esq., has held the office and acted as Medical Officer for the Bardfield District in the Dunmow Union from the 13th day of May 1890.

Solicitor

Solicitor to the Guardians of the above named Union.