Soc. Sci. Med. Vol. 38, No. 3, pp. 401–407, 1994
Printed in Great Britain. All rights reserved

0277-9536/94 $6.00 + 0.00
Copyright © 1994 Pergamon Press Ltd

EPIDEMIOLOGY

RAILWAY SUICIDE IN ENGLAND AND WALES, 1850–1949

M. CLARKE
ICRF Cancer Studies Unit, Radcliffe Infirmary, Oxford University, Oxford OX2 6HE, U.K.

Abstract—According to the official statistics of the Registrar General, the first railway suicide occurred in 1852 and more than 10,000 suicides recorded during the period 1852–1949. Throughout this time the number of male cases always exceeded the number of female cases and the railway accounted for a greater proportion of male than female suicides in all but two years. By the early decades of the twentieth century, the railway was used in 5–6% of male suicides and 3–4% of female suicides. The incidence of railway suicide was correlated with the growth of the railway system offering some evidence for the relationship between availability of a lethal means and suicide rates.

Key words—suicide, railway, availability

INTRODUCTION

This paper will examine the validity of Durkheim's prediction that "The more the land is covered in railroads the more general becomes the habit of seeking death by throwing one's self under a train" [1]. It will also provide a brief, but detailed, history of railway suicide in England and Wales in the 100 yr following the middle of the nineteenth century. 10,042 people were recorded as using the railway as the tool with which to kill themselves during the period 1850–1949. It is important to set these deaths in the context of suicide by all methods in the period under investigation. The official statistics reveal that nearly 350,000 people died at their own hands during the century. Thus, the railway was the method of self-destruction in less than 3% of all suicides. In contrast more than 45,000 (13%) died after deliberately poisoning themselves, 61,000 (17%) committed suicide by drowning and over 76,000 (22%) chose hanging or strangulation.

Such comparisons, covering such a long time period can provide nothing more than a crude assessment of the importance of the railway as a method of suicide. In order to investigate these deaths in more detail this paper will approach the phenomenon from a number of directions. To begin with, the data that are available for suicide generally and railway suicide specifically in the 100 yr period beginning in 1850 will be outlined. Trends in railway suicide during this time period will be investigated and the influence of factors such as the sex and age of the deceased will be considered.

The paper concludes with a look at the possibility of a correlation between the development of the railway system in England and Wales and the incidence of suicide by this means. The period of investigation is convenient for this task because it not only covers a time during which the published reports of the Registrar General can be used as the source of an almost unbroken series of the annual number of suicides, but also coincides with a period of well-documented growth in railways in this country.

Since inquest verdicts were the basis upon which the official statistics of suicide were compiled, a reluctance on the part of coroners and juries to classify a death as suicide could be a major problem with the use of such statistics and is a question that must be addressed whenever they are used. The major difficulty is whether or not the official statistics can be used as a true indication of the number of suicides, since problems can arise throughout the process by which the death is investigated and classified. For example, concealment of its suicidal nature can occur prior to the death's investigation and inadequacies in this investigation, or inaccuracies in the resultant classification of the cause of death can all lead to a misrepresentation of the figure.

In the nineteenth century, concealment of the suicidal nature of the death, both by the deceased and their family or friends, was foremost among the potential problems with the suicide statistics. In some cases a medical practitioner might connive with this stance, and allow the registration of the death to occur without query by avoiding mention of suicide on the death certificate. One writer even claimed to know of a suicide by cut-throat that was registered as pneumonia! Although a suicide on the railway might not be so easily put down as due to natural causes, the possibility that it could be recorded as accidental is very real and could be likely if the investigation into the death failed to uncover the definite evidence needed for the verdict of suicide.

Even if the investigation successfully determined the true cause of death, the desire to avoid mention of suicide could influence the verdict. In the nineteenth century this was done both because of the stigma attached to suicide and also to allow the burial of the deceased to take place at an ordinary Christian

Service. Such a Service was prohibited if the inquest returned a verdict of suicide not tempered by the addition of a rider indicating that the person was insane at the time of their fatal action. Even as legal and moral opprobrium softened, many inquest injuries and coroners continued to feel that the family and friends of the suicide victim might prefer an 'accident' or 'open' verdict. It was recently claimed that coroners still 'bend over backwards' so as not to return a verdict of suicide [2].

Bearing these difficulties in mind some researchers reject the use of official suicide statistics altogether; while others add in the figures for those deaths that may have been suicides such as open verdicts and adult accidental poisonings. A similar approach for railway suicide might be to add in any accidental deaths where the deceased was alone, but such data are not available between 1850 and 1949. On the other hand, it has been argued that the inaccuracies in official statistics are fairly constant for demographic criteria such as age and sex groups so that useful comparisons can be made by considering the relative size rather than the absolute values of suicide rates. Using the statistics of deaths recorded as suicide, without adding in other fatalities, will be satisfactory for this purpose. A 'true' rate, representing all suicidal deaths and satisfying everyone's definition of suicide can never be found and, in the author's view, it is better to simply use the cases classified as suicide at inquests which are then used in the preparation of the national mortality statistics.

MATERIALS AND METHODS

From 1837, national mortality statistics were compiled and published in annual reports by the Registrar General but the statistics for suicide did not appear in these reports for some years. The data published in the sixth annual report of the Registrar General, which gave a retrospective analysis of suicides in 1840, were the first formal presentation of such statistics in England and Wales [3]. These provided separate totals for deaths by firearms, cutting, jumping from height, drowning, hanging, suffocation and poisoning. There was no subdivision for railway deaths and whether any such suicides feature in the group by 'other causes' cannot be determined. In the annual reports after this one, some information was given on deaths by causes such as poisoning, drowning, wounds and exposure to cold, but deaths on the railway were not separately tabulated. Even if they had been, the number of railway suicides would not have been available since the published statistics showed the number of violent deaths as an aggregate of the number of suicides, accidents and homicides. They were not divided to show the contribution of these different types of death.

Sufficient subdivision of the mortality statistics to show the number of railway suicides did not come until the annual report for 1856 which included special tables for violent deaths in the previous 5 yr. The published tables separated the sexes and were also divided to show suicide and homicide apart from other violent deaths. They also gave the immediate cause of death and the railway was one of these. Two years later, in the 1858 report, a new nosology was introduced to the abstracts generally. This distinguished suicide from other causes of death, and gave the first of a since unbroken series of annual values for the number of male and female suicides in England and Wales. It divided suicide into the six categories of gunshot, cutting, poisoning, drowning, hanging and other, so that railway suicides, if there were any, were irretrievably contained within the last group. Another set of occasional tables in 1867 provided similar information to those of a decade earlier for the five years from 1863 to 1867 and, therein, the annual number of railway suicides is available [4]. Fortunately, from 1868 until 1949, the Registrar General's reports carried a special analysis of violent deaths and the many and various types of suicide were shown. These included railway suicides as one of the methods which also ranged from the very common hanging, drowning and poisoning mentioned earlier to some unique methods such as swallowing a door key and sticking a pencil into the heart. The railway suicides were generally not further subdivided to show how the death occurred but a distinction was sometimes made between deaths by being run over and those by jumping from a train. Such subdivision was more common in the nineteenth century. After 1949, the Registrar General reports dropped the special tables for violent deaths and reverted to a small number of categories of suicide which did not separately list railway deaths. Currently, they are incorporated in the classification showing suicides by jumping or lying in front of a moving object.

RESULTS AND DISCUSSION

Secular trends

Turning to the actual statistics, it is first necessary to consider the overall incidence of suicide so that the patterns of railway suicide over time can be set in this context. In the early 1850s, there were about 750 suicides a year among men, and 300 among women. This rose to 2100 and 700, respectively, by the 1890s and continued to increase during the twentieth century with the two large drops indicating the effect of the World Wars on reducing the number of officially certified suicides. By the end of the 1940s there were approx. 3000 male suicides each year and 1700 female.

One of the reasons for the rising number of suicides over time was, of course, the increased population from which these deaths can come and to compensate for this the rate of suicide within the entire population can be calculated. In the mid-nineteenth century the suicide rate for men was between 80 and

85 per million, but was closer to 30 for women. By the early twentieth century the male rate had increased to more than 160 per million and the female rate had also risen, but more slowly, to about 50. The rate among men has remained fairly steady since then, albeit with marked falls in the two World Wars, and by 1949 it stood at just over 140 per million. In contrast there was a continued rise in the rate of self-destruction among women to 75 per million in 1949. This gradual decrease in the difference between the sexes is also a feature of self-killing if the absolute number of suicides is looked at, since the proportion of all suicides that were men declined from about 73% in the 1850s to 62% a century later.

Figure 1 shows the annual number of railway suicides for both sexes where these data were available from the Registrar General reports and there is, therefore, a lack of data in the years 1857–1862. From the figure, the predominance of male cases is clear but there was a decline in the proportion of males from about 82% in the 1860s to 72% in the 1940s.

The first railway suicide to be officially recorded in the reports of the Registrar General was a male in 1852. In fact, all 10 of the railway suicides which appeared in his special tables for violent deaths between 1852 and 1856 were men. The first female suicides to be recorded were not until 1864, when there were five such cases. At about this time Farr commented on the number of railway suicides in his appendix to the Registrar General's report by writing "the unhappy victims threw themselves on the railways and converted the trains into steam juggernauts" [5].

After the 1860s there was an erratic, but steady, rise in the number of railway suicides by men. It was noted that the railway had "only of late years come into use as a method of suicide" but "is now on the increase" [6]. The increase in railway suicide in men was not, however, mirrored by women and the annual number of female cases continued to hover at around 10 each year until the mid-1890s. In the early twentieth century the number of railway suicides rose among both sexes, reaching a high in 1912 for both men (170 cases) and women (39 cases).

The onset of the First World War led to an immediate fall in the number of male suicides on the railway. After the war, the number of such deaths gradually climbed back towards pre-war levels and then continued to rise to reach their maximum for the 100 yr 1850–1949 in 1934 when there were 215 railway suicides by men. Subsequently, the number of these deaths went into decline and this was accentuated by the Second World War, with the annual average for the four years after the war being 113 deaths. Looking at the incidence of railway suicide among women, the wars had much less of an effect and the number of these deaths usually remained between 25 and 45 a year in the first-half of the twentieth century. The year with most female railway suicides was 1946, when 56 women took their lives in this way.

Figure 2 presents the proportion of all suicides where the method used was the railway. This shows that the contribution of the railway to suicides by men rose from less than 1% in the 1850s to a peak of more than 6% in the years immediately before the First World War. It was noted above that the war years were marked by a sharp decline in the number of suicides by all methods and of suicides on the railway in particular. This figure reinforces this point for the railway suicides as the decrease in the contribution of this method of self-killing shows that it was more severely effected by the war than were some of the other methods. For example, although the number of male suicides by cutting and gunshot did decline in the 1914–1918 period they became more common in comparison to other methods.

After the war, the pattern for the contribution of the railway to male suicides in general is similar to that seen for the number of railway suicides. There was an almost immediate return to pre-war levels and then a gradual decline which was accelerated by the Second World War and from which the railway as a means of suicide for men had not recovered by 1949.

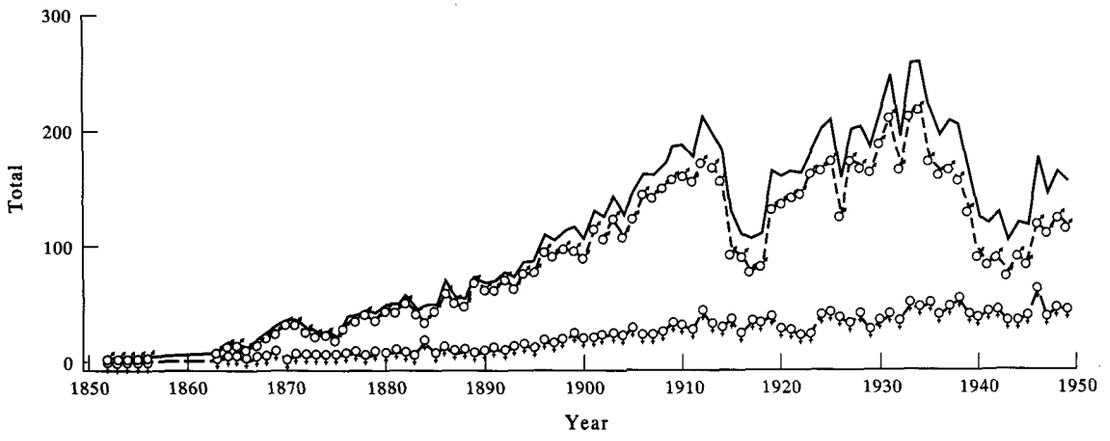

Fig. 1. Suicides on the railway, England and Wales, 1852–1949.

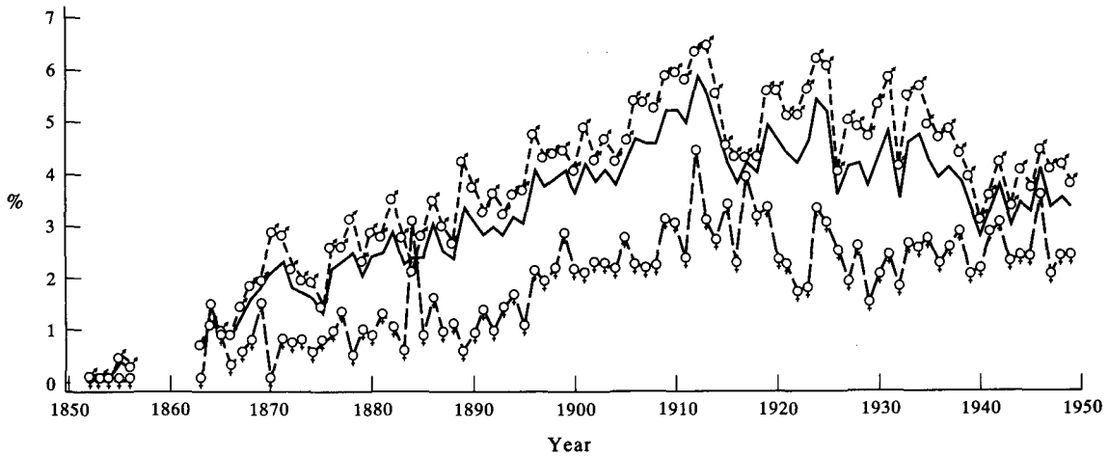

Fig. 2. Suicides on the railway, England and Wales, 1852–1949 (as a percentage of all suicides).

Looking at the contribution of the railway to suicide by women through the period, it can be seen that this was less than the corresponding value for men in every year except two—1864 and 1884. Thus, not only did numerically fewer women than men chose to kill themselves on the railway, this was also true of the contribution that this method made to suicide generally. Since, if all of the sex difference in Fig. 1 had simply been a result of the lower incidence of female self-destruction we would expect the plots for the two sexes to overlap. For example, this is the case with suicide by jumping from height, a method used by 2–3% of male suicides each year during 1850–1949 and by 2–4% of female. In contrast drowning was much more prevalent among women, with less than 20% of male suicides each year dying in that way compared to 25–35% of female.

Returning to the railway suicides, women, like men, show a gradual increase in the relative importance of this method through the nineteenth century, with a rise to around 3% by 1914, when a noticeable difference between the sexes is found. The contribution of the railway to female suicides did not decrease, nor did the incidence of this type of self-killing. In fact if the other methods of suicide are looked at it is found that the fall in the total number of female suicides during the First World War was principally a result of a decline in the incidence of fatal self-poisoning. Following the war, the contribution of the railway to the total number of female suicides continued to hover between 2 and 3% and the Second World War had no noticeable effect.

Another way to look at the changing pattern of self-destruction over time is in relation to the living population and this can be done by calculating an annual mortality rate. For railway suicides among men this increased from around 1 per million in the 1860s to 9 in 1913. The war reduced this to just over 5. Thereafter the rate rose again to a peak of 11 per million in 1934, but then fell back to half this in the late 1940s. Among females the rate of death by railway suicide was considerably lower. Less than one woman in a million killed herself on the railway in every year of the nienteenth century except 1884 and 1899. In the twentieth century, the rate lay between 1 and 2 per million in most years and was at its maximum, at just over 2.5 per million in 1946.

Age

The data presented thus far have focused on the sex differences. The number of suicides in the reports of the Registrar General were also divided by age. A separation of railway suicide by age-groups was undertaken by the Registrar General throughout the period for which these data are available. However, the groups used did vary over time and, after 1921, the Registrar General's tables even contained provision for the recording of suicides among children less than one year old! Typically, however, the ages were split into 5 or 10 yr bands for the range 15–75 yr old.

In Tables 1 and 2 the data have been collapsed into three age groups by sex—those aged less than 35 yr, 35–64 and older than 65. These groups are presented for 5 yr in each decade since the 1850s in order to illustrate secular trends. These tables illustrate the number of railway suicides within each age group, the percentage of all suicides within that age group that this represents, and the proportion of the total number of railway suicides that fall within each age group.

Table 1 shows how the contribution of railway suicides to all male suicides rose from less than 1% to around 5% in the early twentieth century, before declining to less than 4%. This rise and slight fall is seen for each of the three age groups, but this contribution is found to decrease across the ages. This is also shown if the distribution by age group is looked at within the railway cases. It is clear that railway suicide is relatively more common among the young than is the case with suicide in general.

Examining the equivalent data for women (Table 2) the much smaller numbers pose a problem. However a similar pattern can be seen. There is an increase through the time period in the contribution

Table 1. Age structure of railway suicides England and Wales, 1850–1949

Males	Railway suicides				Suicides by all methods			
Years	< 35	35–64	65 +	Total	< 35	35–64	65 +	Total
1852–56	3 (0) {30}	6 (0) {60}	1 (0) {10}	10 (0) {100}	917 {24}	2414 {62}	546 {14}	3877 {100}
1863–67	14 (1) {27}	36 (1) {71}	1 (0) {2}	51 (1) {100}	1067 {22}	3150 {64}	688 {14}	4905 {100}
1873–77	42 (3) {32}	74 (2) {57}	14 (1) {11}	130 (2) {100}	1366 {22}	3744 {61}	1030 {17}	6140 {100}
1883–87	79 (5) {35}	130 (3) {58}	14 (1) {6}	223 (3) {100}	1708 {22}	4904 {62}	1281 {16}	7893 {100}
1893–97	143 (6) {36}	228 (4) {58}	24 (2) {6}	395 (4) {100}	2493 {25}	6257 {62}	1382 {14}	10,132 {100}
1903–07	236 (8) {37}	351 (4) {56}	45 (3) {7}	632 (5) {100}	3066 {23}	8296 {63}	1771 {13}	13,133 {100}
1913–17	212 (8) {37}	322 (5) {56}	38 (2) {7}	572 (5) {100}	2512 {22}	7112 {63}	1606 {14}	11,230 {100}
1923–27	232 (10) {30}	478 (5) {61}	75 (3) {10}	785 (5) {100}	2354 {16}	9983 {67}	2594 {17}	14,931 {100}
1933–37	277 (8) {30}	520 (5) {57}	118 (3) {13}	915 (5) {100}	3359 {19}	11,251 {62}	3535 {19}	18,145 {100}
1943–47	82 (6) {18}	282 (4) {62}	94 (3) {21}	458 (4) {100}	1497 {12}	7009 {59}	3474 {29}	11,980 {100}

Figures in ( ) are the proportion of all suicides that were railway suicides.
Figures in { } are the proportion of railway suicides and all suicides in the stated age group.

of the railway to suicide within each of the age groups. There is also a predominance of young women killing themselves on the railway. More than half of the women committing suicide in this way were aged less than 35 yr at the turn of the century. It should be noted though that suicide by all methods is more common among young women than young men—about 35% of female suicide were less than 35 yr of age compared to 25% of male cases.

Availability

The question of whether the availability of a particular method can influence suicide not only by that method but also the overall incidence of suicide

Table 2. Age structure of railway suicides England and Wales, 1850–1949

Females	Railway suicides				Suicides by all methods			
Years	< 35	35–64	65 +	Total	< 35	35–64	65 +	Total
1852–56	0 (0) {..}	0 (0) {..}	0 (0) {..}	0 (0) {..}	531 {35}	827 {54}	168 {11}	1526 {100}
1863–67	3 (1) {27}	8 (1) {73}	0 (0) {0}	11 (1) {100}	613 {34}	973 {54}	203 {11}	1789 {100}
1873–77	7 (1) {41}	9 (1) {53}	1 (0) {6}	17 (1) {100}	681 {33}	1120 {55}	239 {12}	2040 {100}
1883–87	18 (2) {50}	17 (1) {47}	1 (0) {3}	36 (1) {100}	963 {37}	1398 {54}	246 {9}	2607 {100}
1893–97	30 (2) {56}	22 (1) {41}	2 (1) {4}	54 (2) {100}	1311 {38}	1821 {53}	309 {9}	3441 {100}
1903–07	53 (4) {56}	39 (2) {41}	3 (1) {3}	95 (2) {100}	1493 {35}	2402 {56}	358 {8}	4253 {100}
1913–17	63 (5) {49}	58 (2) {45}	7 (2) {5}	128 (3) {100}	1330 {31}	2577 {60}	417 {10}	4324 {100}
1923–27	54 (4) {37}	87 (2) {60}	5 (1) {3}	146 (2) {100}	1492 {24}	4027 {65}	649 {11}	6168 {100}
1933–37	70 (4) {34}	119 (2) {58}	15 (1) {7}	204 (2) {100}	1850 {22}	5538 {65}	1138 {13}	8526 {100}
1943–47	49 (4) {28}	110 (2) {63}	16 (1) {9}	175 (2) {100}	1116 {15}	4765 {65}	1470 {20}	7351 {100}

Figures in ( ) are the proportion of all suicides that were railway suicides.
Figures in { } are the proportion of railway suicides and all suicides in the stated age group.

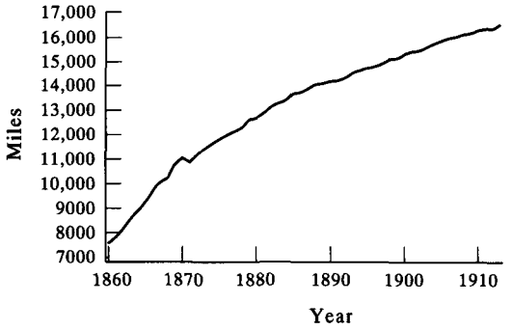

Fig. 3. Number of rail miles open, England and Wales, 1860–1913.

is one that has been addressed for a number of methods of suicide in recent years. For example, a correlation has been shown between the detoxification of domestic gas and the decline in suicides during the 1950s and 1960s in England and Wales. Similarly, in the U.S., it has been shown that those states with laxer gun control legislation have higher overall rates of suicide.

If a similar investigation is to be made for the railway as the means of suicide a reliable guide to availability is needed and this must exist over a sufficient time period to allow adequate analyses to be carried out. The number of accidental deaths does not provide such a guide because comparing the number of deaths in railway accidents with the number of suicides on the railway, they were approx. 10 times as many of the former in the nineteenth century. But this difference declined as the railways became safer and the number of suicides increased, so that by the end of the 1940s there were only 2–3 times as many accidental as suicidal deaths. These improvements in safety, however, were principally concerned with working practices on the railway and reduced the likelihood of accidents while having little if any effect on the access to, and use of, the railway by potential suicides.

Because the greatest influence on the number of fatal accidents on the railway in the period after the middle of the nineteenth century was improved safety rather than the size of the railway, these statistics do not provide an accurate guide to the growth of the railway in this country. Therefore, they cannot be used to assess whether there was a link between the size of the railway system and the incidence of railway suicide.

Two statistics which could be used however are the number of miles of open railway track (Fig. 3) and the number of passengers carried (Fig. 4). Data on both of these variables are available for the period 1860–1913. After the First World War, changes in the method of keeping these statistics make comparisons difficult [7].

In 1860 there were just over 7500 miles of track open in England and Wales and this increased every year except between 1870 and 1871 when the fall was attributed to a slight change in the way in which the statistics were collected. By 1913, 16,400 miles of track were open, representing an increase of 116% since 1860. Similarly the number of passengers (excluding season-ticket holders) conveyed on the railway rose steadily, but much more rapidly, throughout the period. From 137 million in 1860 to nearly 1300 million in 1913—an increase of over 800%.

So that the data relating to the expanding railway system can be compared with that on railway suicides, Fig. 5 illustrates the number of suicides in the same period.

As mentioned above the lack of adequate suicide statistics in the early reports of the Registrar General mean that the plots start in 1863. If the total number of male railway suicides for the three years 1863–1865 ($N = 28$) is compared with that for 1911–1913 ($N = 489$) a rise of 1600% is observed. For women the values for the same 3 yr periods show an increase of 1000% from 8 suicides to 90.

Thus, both the incidence of suicide and the two guides to its availability show increases over the time period, with the size of the rise in the number of passengers being closer to the rise in suicides. We might have expected the quantity of railway track to be the better guide to the actual availability of this means of self-destruction but the national total is perhaps too crude a statistic to adequately represent how much opportunity an extra mile of track would give to the potential suicide. The number of passengers carried is, on the other hand, a good representation of how much contact the public had with this method of self-destruction. However, a significant correlation is found when both the amount of railway track or the number of railway passengers are compared with the number of railway suicides.

The knowledge of the railway as a method of self-destruction could also play an important role in determining the incidence of suicide. Part of the reason for the increase in railway suicides during the nineteenth century was imitation. When these deaths received wide and sensational publicity in the newspapers of the time they could well serve as the trigger for copy-cat cases [8]. In 1936, it was noted that some

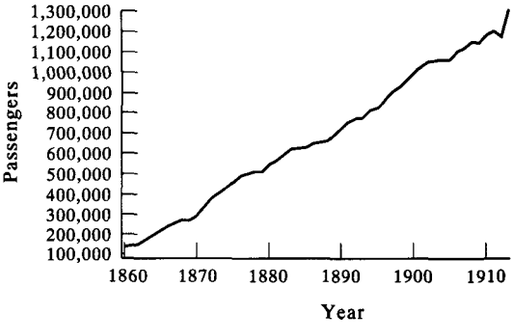

Fig. 4. Number of railway passengers, England and Wales, 1860–1913.

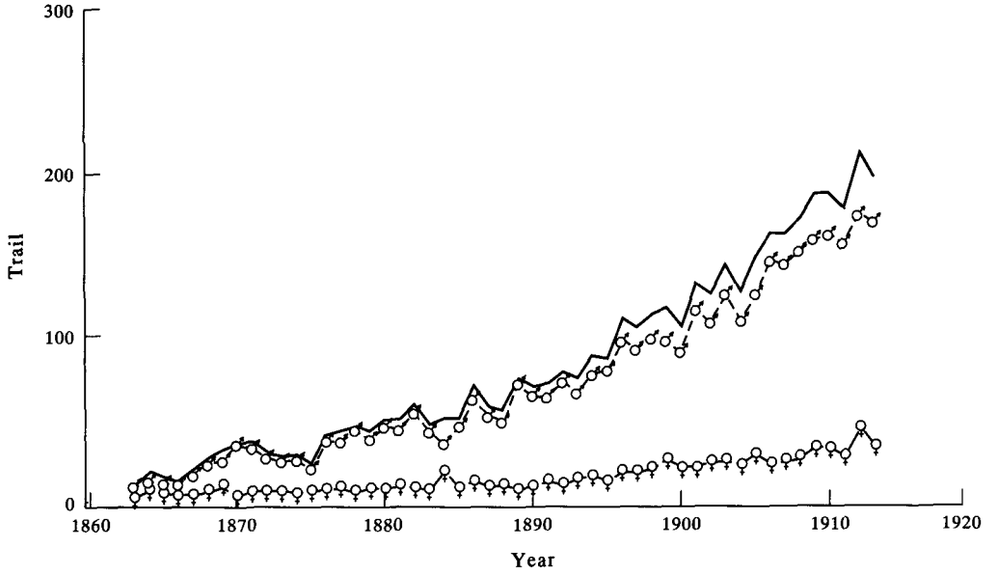

Fig. 5. Suicides on the railway, England and Wales, 1860–1913.

of the deaths on the London Underground could have been the result of imitation [9].

Another possible explanation for the link between the growth of the railway and the number of suicides upon it was raised by suicide writers of the nineteenth century [10, 11]. The commentators ascribed the increase in both of these to a third factor—the development of a nation in general. Thus, they argued that the extent and quality of the railway system was a guide to how developed a country was, and the more developed a nation the greater the recourse of her population to suicide. This may be part of the explanation for the increase in suicide generally through the period but, if the availability of the railway as a means of suicide did not have an influence, we would expect the contribution of railway deaths to the total number of suicides to remain constant. Figures 1 and 2 show that this was not so. Suicide on the railway increased both in terms of the number of deaths and the proportion of all suicides using this method of self-killing.

To conclude, therefore, Durkheim does seem to have been right in predicting a correlation between the spread of the railway and the incidence of railway suicide and it is likely that Shakespeare's phrase "the sight of means to do ill deeds, makes ill deeds done" [12] is true for the railway. However, whether the increased number of these deaths resulted from people killing themselves on the railway instead of by some other means; or whether those choosing the railway would not have made use of another method if their chosen one had been unavailable is not clear. Studies which look at official statistics, with all their faults, from a time well removed from the present can rarely answer such questions with clarity and it must be to investigations of cases histories that we turn for guidance.

REFERENCES

1. Durkheim E. *Suicide*, p. 292. Routledge & Kegan Paul, London, 1966.
2. Watts C. A. The suicide profile [letter]. *Br. Med. J.* **3**, 42, 1975.
3. Registrar General. *Sixth Annual Report*, pp. 241–259. HMSO, London, 1845.
4. Registrar General. *Thirtieth Annual Report*, pp. 174–204. HMSO, London, 1869.
5. Registrar General. *Thirty-first Annual Report*, p. 203. HMSO, London, 1870.
6. Ogle W. *Suicides in England and Wales*, p. 19. Edward Stanford, London, 1886.
7. Smith D. N. *The Railway and Its Passengers: A Social History*, p. 12. David & Charles, Newton Abbot, 1988.
8. Anderson O. *Suicide in Victorian and Edwardian England*, p. 371. Clarendon Press, Oxford, 1987.
9. Read C. S. The problem of suicide. *Br. Med. J.* **1**, 631–635, 1936.
10. Morselli H. *Suicide*, pp. 157–158. C. Kegan Paul & Co. London, 1881.
11. Westcott W. W. *Suicide*, p. 96. H. K. Lewis, London, 1885.
12. Shakespeare W. *King John*, Act IV, scene ii, v. 219.