ON THE AVERAGE LONGEVITY OF PHYSICIANS.

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IMPERFECT as are our means of assessing the hygienic conditions of England and Wales before the establishment of the General Register Office, the work of various vital statisticians, of Rickman and Farr in the past and of Brownlee and others in our own time, has made it almost certain that the general expectation of life in the eighteenth and earlier centuries was less than now; we are well assured that it is still improving.

It is a matter of some interest to try to determine whether what is true for the whole population is true for some particular class of it. Dr. Brownlee, in some unpublished researches to which he has kindly allowed me access, has studied the vital statistics of the peerage, and it seemed to me that a similar investigation of one part of the medical profession—namely, physicians—might profitably be made. To this end I have utilized the rich statistical material contained in the *Roll of the Royal College of Physicians of London* compiled by Munk, whose record extends back to the foundation of the College in 1518. Down to the beginning of the seventeenth century the numbers are scanty and the particulars insufficient for statistical study. Thereafter the material is more satisfactory, and I have carried out the necessary statistical analysis in order to determine the average length of life of a physician at different dates.

The procedure has been to calculate for each individual the record of whom is sufficiently detailed (1) his age at admission as licentiate, candidate, or Fellow, and (2) his age at death. From these data the numbers exposed to risk and the numbers dying at any age have been computed, and the "mean expectation of life at age x " obtained. The results are shown in Table I. Before turning to this, attention must be paid to two points of importance. (1) The bulk of the records of birth, death, and entry are given in two forms, examples of which are as follows: (a) born 1760, entered 1787, died 1833; (b) entered 1787, died 1833, aged 73. In the building up of a life table these two entries should be treated differently, for in the first case the mean age of entry is 27 years and the mean age at death is 73 years; in the second case the corresponding mean ages are $27\frac{1}{2}$ and $73\frac{1}{2}$ years.* Unfortunately in taking out the records this point was overlooked and the two classes were treated alike. It was calculated, however, that if all the records were first treated as belonging to class (a) and then all treated as belonging to class (b)—that is, the extreme case—the difference made in the expectation of life at any age is never greater than half a year. The error introduced is thus not of any great importance. Actually treating all the data as class (a) gives the lower "expectation," and to avoid any exaggeration of length of life this was adopted. (It makes some proportion become exposed to risk half a year too early and die half a year too early.) (2) A more important question is the possibility of a bias being present tending to lengthen the expectation of life. This consists of the fact that those members whose records are most detailed may tend to be the more renowned, and hence to some extent the longer lived. There were no very definite signs of such bias to be seen in taking out the actual records, but the possibility must not be overlooked.

In Table I, it will be seen, the members have been divided into four groups according to their date of birth. The periods are, roughly, (1) the seventeenth century, (2) the first half of the eighteenth century, (3) the second half of the eighteenth century, and (4) the first quarter of the nineteenth century. No births occurring after 1825 can be used, for this would not ensure the death of all exposed to risk.

*For in the first case the physician might have died at any age between 72 years (that is, if he were born at the very end of 1760, and died at the very beginning of 1833) and 74 years (that is, if he were born at the very beginning of 1760, and died at the very end of 1833). This gives a mean age at death of 73 years. In the second case the physician died between 73 and 74 years of age—a mean age at death of $73\frac{1}{2}$ years. The same reasoning applies to age at entry.

TABLE I.

The expectation of life at different ages of physicians grouped according to their date of birth.

Age.	194 Births 1570-1689. Expectation of life* at each age in years.	176 Births 1690-1749. Expectation of life at each age in years.	307 Births 1750-1799. Expectation of life at each age in years.	126 Births 1800-1825. Expectation of life at each age in years.
35	30.3	32.1	35.3	—
40	27.0	23.9	31.3	—
45	23.2	25.4	27.2	31.9
50	19.1	22.3	23.1	26.9
55	15.5	18.6	19.4	22.0
60	13.5	15.1	16.1	17.5
65	11.3	12.1	13.2	13.7
70	9.1	8.4	11.2	10.5
75	6.7	5.8	8.6	8.4
80	4.9	4.5	6.3	5.9
85	3.6	3.7	3.9	4.2

* Complete expectation (e_x).

For the last group (1800-1825) it was possible only to take out the records of Fellows (the earlier groups comprise extra-licentiates, licentiates, and candidates as well). The Roll compiled by Munk gives no records of members born later than 1800, so that to obtain the details for this last group recourse had to be made to the annual lists of the College and to the obituary notices in contemporary numbers of the *British Medical Journal* and the *Lancet*. After the Medical Act of 1858 the numbers of members of lower rank became so great that the births and deaths are rarely recorded, while the task of going through the annual lists would have been very heavy. It was, however, possible to obtain details of sufficiently large numbers of Fellows to carry on the table till 1825, but the expectation of life cannot be calculated for this period before 45 years of age, for the age of entry as a Fellow is naturally more advanced and the numbers exposed to risk before age 45 are very small.

As would be anticipated, the expectation of life has steadily increased between the earliest period (1570-1689) and the last (1800-1825). At ages 45 and 50 the increase is as much as eight to nine years; in other words, whereas the "average" physician of 45 years of age in the seventeenth century might expect to live to be 68 (according to these data), his prototype at the beginning of the nineteenth century might expect to live to be 77. If he were 60 years of age in the nineteenth century he might expect four more years of life than his ancestor in the seventeenth century. The increases shown between one period and that immediately following it are somewhat erratic, more especially in the last four age groups, where several times an actual decrease occurs. This is probably due in part to the smallness of the sample, so that the numbers exposed to risk at these later ages became too reduced to give consistent results.

A comparison of interest can be made between the average duration of life of these physicians, at different dates, and the average duration of life of English peers at the same periods. The data relating to the latter have been worked out by Dr. Brownlee, to whom I am again indebted for permission to use these hitherto unpublished figures. The comparison is set out in Table II.

At each period, it will be seen, the physicians of 35, 40, and 45 years of age had an expectation of one to two years' more life than the peers of corresponding age. At the later ages, in the 1570-1689 period, there is little difference between the two classes until the age of 75 is reached. At and beyond that age the peers hold a distinct superiority. In the period 1690-1749 the physicians continue to have the greater expectation up till 65 years of age. At 70 and beyond the peers have again the superiority. In the last period (the dates are not quite identical for the two classes) the physicians continue to

TABLE II.

Comparison of the expectation of life of physicians and peers* at different dates.

Age.	1570-1689.		1690-1749.		1750-1799.		1750-1809.
	Physicians.	Peers.	Physicians.	Peers.	Physicians.	Peers.	
35	30.3	28.6	32.1	31.0	35.3	33.7	
40	27.0	25.1	28.9	27.6	31.3	29.8	
45	23.2	21.9	25.4	23.6	27.2	26.0	
50	19.1	18.8	22.3	20.3	23.1	22.4	
55	15.5	15.7	18.6	17.2	19.1	18.7	
60	13.5	13.4	15.1	14.2	16.1	15.3	
65	11.3	11.2	12.1	11.8	13.2	12.2	
70	9.1	9.2	8.4	9.5	11.2	9.4	
75	6.7	7.6	5.8	7.5	8.6	7.3	
80	4.9	6.6	4.5	5.8	6.3	5.6	
85	3.6	5.7	3.7	4.5	3.9	4.2	

* These figures relate only to married peers. The expectation of life for married classes is, however, usually greater than that for the unmarried, so that all peers would possibly be at a still greater disadvantage in comparison with the physicians.

have the larger expectation until the final age of 85 years, when their expectation is 0.3 of a year less than that of the peers.

These variations may again be partly due to the small numbers of physicians exposed to risk at the later ages (the largest group is that of 1750-1799); on the whole, it does appear that the physicians are the better lives, and more especially so at the earlier ages. Perhaps they more easily follow a simple life and more easily pursue "the even tenor of their way" (in spite of a life of harder work); or possibly they constitute a "select" class even in comparison with the peers—to enter at all upon the profession of medicine demands a certain level of health. It is possible, too, that by the age of 35 years, at which age the expectation of life is first calculated, the physician has acquired some immunity to diseases such as tuberculosis. On the other hand, constant contact with all forms of disease would, it might be thought, expose the physician to greater risks than those run by a normal population.

An indication as to whether a more modern population of doctors is a select class in comparison with the whole male population can be gained by use of the occupational death rates, for 1910-12, for physicians, surgeons, and other registered practitioners. From these rates the expectation of life can be calculated for this class by the method devised by Dr. E. C. Snow (Cmd. 1010). A slight adjustment is necessary to obtain the years of life lived over 75. The death rate is given for age group 75 years and over. It is required for 85 years and over. The procedure has been to divide it in the same proportion as the death rates for all English males of 75-85 years and 85 years and over bear to one another. This, if anything, will probably understate the expectation of life for the doctors, but the error can be only very slight, and an alternative method of obtaining their expectation gave very closely similar results.

In Table III comparison is made between the expectation of life for practitioners, thus calculated, and the expectation of life for all English males (1) based upon mortality in 1838-54, and (2) mortality in 1910-12.

It will be seen that the medical class has a longer expectation of life—a year at 35 years of age—than all English males (1910-12 mortality), and thus they are to some extent a select population or exposed to less risks of mortality. The physicians on the Roll of the College at the earlier dates would be a still more select population, for they might be said to represent Harley Street, while the 1910-12 mortality represents rather the general practitioners. Dr. William Guy, from an examination of length of life of members of the medical profession dying between 1848 and 1853, came to the conclusion that "the duration of life is greater among physicians and surgeons than among the

TABLE III.

Expectation of life of all English males based upon mortality (1) in 1838-54 and (2) 1910-12, and of physicians, surgeons, and registered practitioners based upon mortality of 1910-12.

Age.	Mortality 1838-1854. Expectation of life (years).	Mortality 1910-12. Expectation of life (years).	Physicians, Surgeons, and Registered Practitioners. Mortality 1910-12. Expectation of life (years).
35	29.4	31.7	32.7
40	26.1	27.7	
45	22.8	23.9	24.7
50	19.5	20.3	
55	16.5	16.9	17.6
60	13.5	13.8	
65	10.8	11.0	11.4
70	8.5	8.5	
75	6.5	6.5	6.5
80	4.9	4.9	
85	3.7	3.7	3.3

general practitioners of medicine and surgery"—but his data were scanty (On the Duration of Life among Medical Men, *Journal of the Statistical Society*, vol. xvii, 1854). By referring to the expectation of life of physicians whose births fall between 1690 and 1749 (Table II) it can be seen that they are superior in length of life to their brethren dying in 1910-12 (Table III).

Realizing thus how select is the class in question it is not so surprising to observe that the physicians born in the seventeenth century have a longer expectation at nearly every age after 35 years than all English males dying in the second quarter of the nineteenth century. The peers do not hold a similar advantage (except at the later ages) till the period 1690-1749. On the other hand, the physicians born in this period are superior in length of life to all English males dying in the early years of the present century. Or, if mortality in 1910-12 be roughly translated into births between 1810 and 1875, the expectation of life at ages 35 and over of males born between these dates is inferior to the expectation of this select class of physicians born over one hundred years earlier.

In conclusion, I wish to express my indebtedness to Dr. M. Greenwood, at whose suggestion and with whose kindly advice this paper was undertaken; and likewise to the Royal College of Physicians for the facilities readily placed at my disposal.

POST-GRADUATE STUDY IN LONDON.

RESUMED DISCUSSION.

THE discussion on post-graduate education in London, held under the auspices of the Fellowship of Medicine and Post-Graduate Association, which was adjourned on March 18th,¹ was resumed at the house of the Royal Society of Medicine on April 8th. There was again a good attendance.

Sir W. ARBUTHNOT LANE, who presided, said that many helpful suggestions had been made in the first part of the discussion, and these it was hoped to incorporate in the work of the Fellowship. That the Fellowship had met a need was proved by the increasing number of practitioners who took advantage of its facilities.

Sir THOMAS HORDER, in opening the discussion, said that there was general agreement on two points: the need in London of post-graduate education, and the desirability of extending the present efforts of the Fellowship. He shared the view already expressed that the post-graduate habit in this country needed stimulating. The sooner it was cultivated in Great Britain the better. It would be lamentable if the habit had to be forced upon the profession from outside, yet it was within the bounds of possibility that the public or a wiser Government than had yet appeared might

¹ BRITISH MEDICAL JOURNAL, March 28th (p. 613).