

XXXVI. *A View of the Relation between the celebrated Dr. Halley's Tables, and the Notions of Mr. De Buffon, for establishing a Rule for the probable Duration of the Life of Man; by Mr. William Kerfleboom, of the Hague. Translated from the French, by James Parsons, M. D. and F. R. S.*

— eo disconvenit inter

Meque et te —

Read May 31, § 1.
1753.

MY situation in life not permitting me to look over the works of the learned, was the reason, why I was not one of the first, who perused the *General and particular Natural History*, &c. of Mr. de Buffon. However a little interval of leisure allowing me to look into it, I am at a stand to find myself mention'd, in the same breath with the celebrated Dr. Halley and others, to receive our condemnation on account of the tables for determining the degrees of probability of the duration of human life: and as this passage is the occasion of my remarks, I will begin by citing it intirely here:

“ Man (says M. de Buffon, at the end of the
“ second tome) as is well known, dies at all ages;
“ and altho' it may be said in general, that his life
“ is longer than that of almost any other animal, it
“ cannot be denied, that it is at the same time more
“ variable and uncertain. Attempts have been of late
“ years made to know the degrees of these variations,
5 “ and

“ and to establish, by observations, some certainty
 “ concerning the mortality of mankind of different
 “ ages. If these observations were sufficiently exact,
 “ and a sufficient number of them made, they would
 “ be of very great use towards knowing the number
 “ of the people, of their increase, of the consumption
 “ of provisions, of the division of taxes, &c. Many
 “ ingenious men have studied this subject; and lately
 “ Mr. Deparcieux, of the Academy of Sciences, has
 “ given us an excellent work, which serves as a rule
 “ for the future, with respect to annuities for life :
 “ but, as his principal view was to calculate the mor-
 “ tality of annuitants, and that, in general, annuitants
 “ for life are men in one state, no conclusion can be
 “ drawn from it for the mortality of mankind at
 “ large. The tables, which he has given in the
 “ same work upon the mortality of the different re-
 “ ligious orders, are also very curious; but, being con-
 “ fined to a certain number of men, who live in a
 “ different manner from others, they are not yet suf-
 “ ficient to found exact probabilities with relation
 “ to the general duration of life.

“ Dr. Halley, Messieurs Graunt, Kerseboom,
 “ Sympson, &c. have also published tables of the
 “ mortality of mankind; and they have founded
 “ them upon extracts from the bills of mortality of
 “ some parishes of London, Breslaw, &c. But it ap-
 “ pears to me, that their researches, however ample,
 “ and the result of long study, can afford only very
 “ distant approaches to the knowledge of the mor-
 “ tality of mankind in general. In order to make a
 “ good table of this kind, not only the registers of
 “ the parishes of such a city as London, Paris, &c.
 “ should

“ should be made use of, where foreigners are daily
 “ coming in, and natives going out, but also those
 “ of the country ; that, by adding together the re-
 “ sults of each, the one may compensate the other.
 “ M. Dupré, de St. Maur, of the French Academy,
 “ has begun this upon twelve country parishes, and
 “ three of those of Paris : he was willing to commu-
 “ nicate these tables to me to publish them ; and I
 “ the more readily do it, because they are the
 “ only tables, upon which the probabilities of the
 “ life of mankind in general can be establish’d with
 “ any certainty.”.

As for the tables, I refer for them to the work.

§ 2. I am not at all concern’d for a defence of my
 table, which is sufficient to support itself ; but I am
 greatly surpris’d, that a philosopher should condemn
 works, which he never either saw or read : for it is
 evident, M. de Buffon never saw my *Essays on politi-
 cal Arithmetic* ; and that all, which he appears to
 know of it, is indeed very slightly drawn from M.
 Deparcieux’s work, who nevertheless knew no more
 of it, as he himself makes it appear, than what he
 found in the *Bibliothèque raisonnée* for the first three
 months of the year 1743, Tom. 30. This extract
 happens unluckily not to be made by an able hand ;
 but, on the contrary, very fit, by its confusion, and
 the irregularities, which run thro’ it, to lead into
 errors. The corrections, that were made in the second
 part of the same 30th Tome, are not even sufficient
 to secure the reader from mistakes.

Nevertheless M. de Buffon, without even reading
 the work, might have known more of it, though

written in a language, which he is very likely a stranger to ; since Mr. Eames has given an excellent extract of the first essay in English, printed in N^o 450 of the *Transactions* of the Royal Society of London, of which this philosopher is a member ; and also because Mr. Van Rixtel has inserted an extract of the two succeeding ones in N^o 468. of the said *Transactions*. Besides which, M. de la Chapelle has given, in his 13th Tome of the *Nouvelle Bibliothèque* for the month of December in the year 1742, a very ample and judicious extract of the three essays together. I have also confirm'd my observations by a very interesting and sensible proof, upon that part of London called the city, which is printed in the first three months of the year 1743, Tom. 14. of the *Nouvelle Bibliothèque* ; and likewise in the second three months of the year 1745 of the *Bibliothèque raisonnée*, is inserted a small piece relative to my observations and proofs. I take the liberty of referring every reader, who may not understand the Low-Dutch language, to those several pieces cited ; and my table of the degrees of the probability of the duration of the life of man will support itself very well against the hasty judgment of M. de Buffon, who certainly has too much candour not to acknowledge, after a mature deliberation of those pieces mention'd, that they contain something more than “ very distant approaches to the knowledge of the “ mortality of mankind in general.”

§ 3. I would say much the same of that excellent piece of the learned Dr. Halley, if my surprize did not increase; the more I reflect, that this work ought to be thoroughly known to a member of the Royal Society of London ; and that this very member nevertheless makes so careless a judgment upon it.

it. This reflection leads me to another kind of defence of that famous deceased author; which is to make M. de Buffon sensible, that “ nearly the same “ degrees of probability of the duration of the life of “ man in general” are in the table of Dr. Halley, which he would have us think are in the extracts of M. Dupré’s observations or tables, which he has published. For this purpose I constructed a table parallel to that of Dr. Halley, which begins with 1000 lives of one year old, and which I found, in the reduction of the great general numbers of Dupré’s tables, to have also the smaller numbers analogous; that is, by beginning also with 1000 lives of a year old. Both tables are laid down as follows:

Halley’s Table.			Dupré’s, reduced.		
Years of Age	Number of Lives	Number of Deaths fr. Year to Yr.	Years of Age	Number of Lives	Number of Deaths fr. Year to Yr.
1	1000	145	1	1000	136
2	855	57	2	864	56
3	798	38	3	808	40
4	760	28	4	768	29
5	732	22	5	739	23
6	710	18	6	716	17
7	692	12	7	699	14
8	680	10	8	685	9
9	670	9	9	676	6
10	661	8	10	670	5
11	653	7	11	665	6
12	646	6	12	659	4
13	640	6	13	655	4
14	634	6	14	651	5
15	628	6	15	646	6
16	622	6	16	640	6

Halley's Table.

Dupre's, reduc'd.

Years of Age	Num- ber of Lives	Number of Deaths fr Year to Yr	Years of Age	Num- ber of Lives	Number of Deaths fr. Year to Yr.
17	616	6	17	634	6
18	610	6	18	628	6
19	604	6	19	622	8
20	598	6	20	614	5
21	592	6	21	609	10
22	586	7	22	599	7
23	579	6	23	592	7
24	573	6	24	585	11
25	567	7	25	574	8
26	560	7	26	566	8
27	553	7	27	558	8
28	546	7	28	550	6
29	539	8	29	544	13
30	531	8	30	531	5
31	523	8	31	526	10
32	515	8	32	516	8
33	507	8	33	508	7
34	499	9	34	501	16
35	490	9	35	485	10
36	481	9	36	475	9
37	472	9	37	466	9
38	463	9	38	457	5
39	454	9	39	452	23
40	445	9	40	429	5
41	436	9	41	424	11
42	427	9	42	413	7
43	417	10	43	406	6
44	407	10	44	400	18

Halley's

Halley's Table.

Dupré's, reduced.

Years of Age	Num- ber of Lives	Number of Deaths fr. Year to Yr.	Years of Age	Num- ber of Lives	Number of Deaths fr. Year to Yr.
45	397	10	45	382	8
46	387	10	46	374	6
47	377	10	47	368	9
48	367	10	48	359	6
49	357	11	49	353	21
50	346	11	50	332	5
51	335	11	51	327	9
52	324	11	52	318	5
53	313	11	53	313	7
54	302	10	54	306	4
55	292	10	55	302	19
56	282	10	56	283	7
57	272	10	57	276	11
58	262	10	58	265	5
59	252	10	59	260	30
60	242	10	60	230	5
61	232	10	61	225	10
62	222	10	62	215	9
63	212	10	63	206	13
64	202	10	64	197	13
65	192	10	65	184	13
66	182	10	66	171	7
67	172	10	67	164	13
68	162	10	68	151	6
69	152	10	69	145	22
70	142	11	70	123	6
71	131	11	71	117	15
72	120	11	72	102	7

Halley's

Halley's Table.

Dupre's, reduc'd.

Years of Age	Number of Lives	Number of Deaths fr. Year to Yr.	Years of Age	Number of Lives	Number of Deaths fr. Year to Yr.
73	109	11	73	95	9
74	98	10	74	86	15
75	88	10	75	71	6
76	78	10	76	65	7
77	68	10	77	58	9
78	58	9	78	49	3
79	49	8	79	46	14
80	41	7	80	32	3
81	34	6	81	29	5
82	28	5	82	24	4
83	23	3	83	20	3
84	20		84	17	

Sum total of Dr. Halley's table . . . 34000

Sum total of M. Dupré's table reduced . 33911

In the whole matter, all the difference between these two tables consists in this, that Dr. Halley's is more perfect, more compact, and more conformable to those observations, which conduct us all to the idea of a progression nearly arithmetical, which the great number of researches enables us to unfold by little and little, in the representation of the strength of human life, when that strength is become more uniform.

§ 4. If M. de Buffon will compare the table given by himself of the probability of the duration of life, which is founded upon that of M. Dupré de St. Maur, with

with that given by M. Deparcieux, in his ingenious work constructed upon that of Dr. Halley, he will find a like conformity between them. It is M. Deparcieux's thirteenth table, which I have before me. What follows, in Halley's column, I set down, in order to compare it with M. de Buffon's table.

Deparcieux upon
Halley.

De Buffon upon Dupré
of St. Maur.

Years of Age	Lives at a Me- dium.		Years of Age	Duration of Life.	
	Years	M ^s .		Years	Months
1	33	6	1	33	
2	38	0	2	38	
3	39	9	3	40	
4	40	9	4	41	
5	41	3	5	41	6
6			6	42	
7			7	42	3
8			8	41	6
9			9	40	10
10	40	5	10	40	2
11			11	39	6
12			12	38	9
13			13	38	1
14			14	37	5
15	37	6	15	36	9

Deparcieux

Deparcieux upon
Halley.

De Buffon upon Dupré
of St. Maur.

Years of Age	Lives at a Medium.			Years of Age	Duration of Life.	
	Years	Months			Years	Months
16				16	36	0
17				17	35	4
18				18	34	8
19				19	34	0
20	34	2		20	33	5
21				21	32	11
22				22	32	4
23				23	31	10
24				24	31	3
25	30	11		25	30	9
26				26	30	2
27				27	29	7
28				28	29	0
29				29	28	6
30	27	11		30	28	0
31				31	27	6
32				32	26	11
33				33	26	3
34				34	25	7
35	25	0		35	25	0
36				36	24	5
37				37	23	10
38				38	23	3

Deparcieux

Deparcieux upon
Halley.

De Buffon upon Dupré
of St. Maur.

Years of Age.	Duration of Life.			Years of Age.	Duration of Life.	
	Years.	Months.			Years.	Months.
39				39	22	8
40	22	4		40	22	1
41				41	21	6
42				42	20	11
43				43	20	4
44				44	19	9
45	19	8		45	19	3
46				46	18	9
47				47	18	2
48				48	17	8
49				49	17	2
50	17	3		50	16	7
51				51	16	0
52				52	15	6
53				53	15	0
54				54	14	6
55	14	10		55	14	0
56				56	13	5
57				57	12	10
58				58	12	3
59				59	11	8
60	12	5		60	11	1

Deparcieux upon
Halley.

De Buffon upon Dupre
of St. Maur.

Years of Age.	Duration of Life.			Years of Age.	Duration of Life.	
	Years.	Months.			Years.	Months.
61				61	10	6
62				62	10	0
63				63	9	6
64				64	9	0
65	9	11		65	8	6
66				66	8	0
67				67	7	6
68				68	7	0
69				69	6	7
70	7	7		70	6	2
71				71	5	8
72				72	5	4
73				73	5	0
74				74	4	9
75	5	7		75	4	6
76				76	4	3
77				77	4	1
78				78	3	11
79				79	3	9
80	4	6		80	3	7
81				81	3	5
82				82	3	3
83				83	3	2
84	3	6		84	3	1

§ 5. It is therefore sufficiently demonstrated, that Dr. Halley's table ought not, in M. de Buffon's opinion, to be excluded from the class of those, which "are the only tables, upon which the probabilities of the life of mankind in general can be established with any certainty;" far from being comprised, in his severe judgment, among those of authors, "whose researches, however ample, and the result of long study, can afford only distant approaches to the knowledge of the mortality of mankind in general."

§ 6. M. de Buffon begins his table of the probabilities of life with a term, which precedes that of a year old, called *zero d'âge*; and from M. Dupré's observations, assigns to it a duration of 8 years. I first thought it an error of the press; but there is no room for this doubt, after what M. de Buffon says, "We see by this table (says he) that one may reasonably hope, that is, lay an even wager, that an infant just born, or who has *no age*, will live eight years: that an infant, who is a year old, will live thirty-three years," &c. This little space of eight years struck me; because all the observations, which I know, are very far from it. I had therefore recourse to the source, to the observations of Mr. Dupré himself, and I found it was a mistake of M. de Buffon; the mean life of infants of *no age* being, according to M. Dupré's tables, twenty-and-five years and upward; and, from the observations of Justel, which Dr. Halley made use of, the mean life of a child of *no age* is above twenty-and-seven years.

§ 7. I might make an end here, if the subject did not absolutely require my offering a word concerning the nature of both Justel's and M. Dupré's observations.

The remark has not escaped the sagacity of Dr. Halley himself: it is, "that they want the essential; " which is, the number of living persons, among " whom the observations upon the dead are made." If M. de Buffon had made the same reflections upon M. Dupré's tables, he would have found the irreparable defect of them, as well as Dr. Halley did in Justel's observations; and he would have attended more, without doubt, to the method proposed by Monsr. Deparcieux.

§ 8. I shall put an end to this treatise by a word or two, which relates to Dr. Short's displeasure against me. This may perhaps be unnecessary, after the laborious and judicious extract of his book in the *Journal Britannique*, of the month of July 1750. However since Dr. Short joins with those, who inconsiderately have accused me of partiality to such or such a city, he will have with them my defence (to say no more) in my letter to Mr. Eames, and in the piece already quoted in the *Nouvelle Bibliothèque*, Tom. XIV. Artic. 8. Let him read, and he will return from his prejudice: if not,

Curentur dubii medicis majoribus ægri.

Hague, May 11,
1753.

Wm. Kerseboom.