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 Kersseboom, *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, 1753. § 1. 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 eftablifh, by obfervations, fome certainty
" concerning the mortality of mankind of different
" ages. If thefe obfervations were fufficiently exact,
" and a fufficient number of them made, they would
" be of very great ufe towards knowing the number
" of the people, of their increafe, of the confumption
" of provifions, of the divifion of taxes, &c. Many
" ingenious men have ftudied this fubject; and lately
" Mr. Deparcieux, of the Academy of Sciences, has
" given us an excellent work, which ferves as a rule
" for the future, with refpect 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 ftate, no conclufion can be
" drawn from it for the mortality of mankind at
" large. The tables, which he has given in the
" fame work upon the mortality of the different re-
" ligious orders, are alfo very curious; but, being con-
" fined to a certain number of men, who live in a
" different manner from others, they are not yet fuf-
" ficient to found exact probabilities with relation
" to the general duration of life.

" Dr. Halley, Meffieurs Graunt, Kerffeboom,
" Sympfon, &c. have alfo publifhed tables of the
" mortality of mankind; and they have founded
" them upon extracts from the bills of mortality of
" fome parifhes of London, Breflaw, &c. But it ap-
" pears to me, that their refearches, however ample,
" and the refult of long ftudy, can afford only very
" diftant approaches to the knowlege of the mor-
" tality of mankind in general. In order to make a
" good table of this kind, not only the regifters of
" the parifhes of fuch a city as London, Paris, &c.
" fhould

" fhould be made ufe of, where foreigners are daily
" coming in, and natives going out, but alfo thofe
" of the country; that, by adding together the re-
" fults of each, the one may compenfate the other.
" M. Dupré, de St. Maur, of the French Academy,
" has begun this upon twelve country parifhes, and
" three of thofe of Paris : he was willing to commu-
" nicate thefe tables to me to publifh them ; and I
" the more readily do it, becaufe they are the
" only tables, upon which the probabilities of the
" life of mankind in general can be eftablifh'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 fufficient to fupport itfelf; but I am
greatly furprifed, that a philofopher fhould condemn
works, which he never either faw or read : for it is
evident, M. de Buffon never faw my *Effays on politi-
cal Arithmetic*; and that all, which he appears to
know of it, is indeed very flightly drawn from M.
Deparcieux's work, who neverthelefs knew no more
of it, as he himfelf makes it appear, than what he
found in the *Bibliotheque raifonnée* for the firft 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 confufion, and
the irregularities, which run thro' it, to lead into
errors. The corrections, that were made in the fecond
part of the fame 30th Tome, are not even fufficient
to fecure the reader from miftakes.

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

H h   written

written in a language, which he is very likely a
ftranger to; fince Mr. Eames has given an excellent
extract of the firft effay in Englifh, printed in N°
450 of the *Tranfactions* of the Royal Society of Lon-
don, of which this philofopher is a member; and
alfo becaufe Mr. Van Rixtel has inferted an extract
of the two fucceeding ones in Nᵒ 468. of the faid
Tranfactions. Befides which, M. de la Chapelle has
given, in his 13th Tome of the *Nouvelle Bibliotheque*
for the month of December in the year 1742, a very
ample and judicious extract of the three effays toge-
ther. I have alfo confirm'd my obfervations by a very
interefting and fenfible proof, upon that part of Lon-
don called the city, which is printed in the firft three
months of the year 1743, Tom. 14. of the *Nouvelle
Bibliotheque*; and likewife in the fecond three months
of the year 1745 of the *Bibliotheque raifonnée*, is inferted
a fmall piece relative to my obfervations and proofs. I
take the liberty of referring every reader, who may not
underftand the Low-Dutch language, to thofe feveral
pieces cited; and my table of the degrees of the pro-
bability of the duration of the life of man will fup-
port itfelf very well againft the hafty judgment of M.
de Buffon, who certainly has too much candour not
to acknowlege, after a mature deliberation of thofe
pieces mention d, that they contain fomething more
than " very diftant approaches to the knowlege of the
" mortality of mankind in general."

§ 3. I would fay much the fame of that excel-
lent piece of the learned Dr. Halley, if my furprize
did not increafe, 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 mem-
ber neverthelefs makes fo carelefs a judgment upon
it.

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

Halley's

Halley's Table. Dupré'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 confifts in this, that Dr. Halley's is more perfect, more compact, and more conformable to thofe obfervations, which conduct us all to the idea of a progreffion nearly arithmetical, which the great number of refearches enables us to unfold by little and little, in the reprefentation of the ftrength of human life, when that ftrength is become more uniform.

§ 4. If M. de Bufton will compare the table given by himfelf 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. Depar-
cieux'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 Medium.		Years of Age	Duration of Life.	
	Years	Mᵒs.		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

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.

§ 5. It is therefore fufficiently demonftrated, that Dr. Halley's table ought not, in M. de Buffon's opinion, to be excluded from the clafs of thofe, which " are the only tables, upon which the probabilities " of the life of mankind in general can be eftablifhed " with any certainty;" far from being comprifed, in his fevere judgment, among thofe of authors, " whofe " refearches, however ample, and the refult of long " ftudy, can afford only diftant approaches to the " knowlege 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 obfervations, affigns to it a duration of 8 years. I firft thought it an error of the prefs; but there is no room for this doubt, after what M. de Buffon fays, " We " fee by this table (fays he) that one may reafon- " ably hope, that is, lay an even wager, that an in- " fant juft 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 fpace of eight years ftruck me; becaufe all the obfervations, which I know, are very far from it. I had therefore recourfe to the fource, to the obfervations of Mr. Dupré himfelf, and I found it was a miftake 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 obfervations of Juftel, which Dr. Halley made ufe of, the mean life of a child of *no age* is above twenty-and-feven years.

§ 7. I might make an end here, if the fubject did not abfolutely require my offering a word concerning the nature of both Juftel's and M. Dupré's obfervations.

The

The remark has not efcaped the fagacity of Dr.
Halley himfelf: it is, " that they want the effential;
" which is, the number of living perfons, among
" whom the obfervations upon the dead are made."
If M. de Buffon had made the fame reflections upon
M. Dupré's tables, he would have found the irreparable
defect of them, as well as Dr. Halley did in Juftel's
obfervations; and he would have attended more,
without doubt, to the method propofed by Monf.
Deparcieux.

§ 8. I fhall put an end to this treatife by a word
or two, which relates to Dr. Short's difpleafure againft
me. This may perhaps be unneceffary, after the labo-
rious and judicious extract of his book in the *Journal
Britannique*, of the month of July 1750. However
fince Dr. Short joins with thofe, who inconfiderately
have accufed me of partiality to fuch or fuch a city,
he will have with them my defence (to fay no more)
in my letter to Mr. Eames, and in the piece already
quoted in the *Nouvelle Bibliotheque*, 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. Kerffeboom.

XXXVII.