Figure the 6th *represents,*

A A, The Kidneys.

a a, The *Renes Succenturiati.*

b b, The *Ureters.*

c c, The Crural Veins and Arteries.

D, *Arteria Magna.*

e, *Vena Cava.*

F, The Bladder.

g g, The Spermatick Vessels, Veins and Arteries.

h h, The *Testes*, with the Branches of the Veins and Arteries.

i i, The *Epididymides.*

k k, The *Deferentia.*

l, The *Penis.*

m m, *Vesiculæ Seminales.*

n n, Two Glands, from whence a thick Juyce might be press'd out.

o, The *Balanus.*

An Estimate of the Degrees of the Mortality *of Mankind, drawn from curious* Tables *of the* Births *and* Funerals *at the City of* Breslaw; *with an Attempt to ascertain the Price of* Annuities *upon* Lives. *By Mr.* E. Halley, *R.S.S.*

THE Contemplation of the *Mortality* of *Mankind*, has besides the *Moral*, its *Physical* and *Political* Uses, both which have been some years since most judiciously considered by the curious Sir *William Petty*, in his *Natural* and *Political* Observations on the Bills of *Mortality* of *London*, owned by Captain *John Graunt*. And since in a like Treatise on the Bills of *Mortality* of *Dublin*.

Dublin. But the Deduction from those Bills of *Mortality* seemed even to their Authors to be defective: First, In that the *Number* of the People was wanting. Secondly, That the *Ages* of the People dying was not to be had. And Lastly, That both *London* and *Dublin* by reason of the great and casual Accession of *Strangers* who die therein,(as appeared in both, by the great Excess of the *Funerals* above the *Births*) rendred them incapable of being Standards for this purpose; which requires, if it were possible, that the People we treat of should not at all be changed, but die where they were born, without any Adventitious Increase from Abroad, or Decay by Migration elsewhere.

This *Defect* seems in a great measure to be satisfied by the late curious Tables of the Bills of *Mortality* at the City of *Breslaw*, lately communicated to this Honourable Society by Mr. *Justell*, wherein both the *Ages* and *Sexes* of all that die are monthly delivered, and compared with the number of the *Births*, for Five Years last past, *viz.* 1687, 88, 89, 90, 91, seeming to be done with all the Exactness and Sincerity possible.

This City of *Breslaw* is the Capital City of the Province of *Silesia*; or, as the *Germans* call it, *Schlesia*, and is scituated on the Western Bank of the River *Oder*, anciently called *Viadrus*; near the Confines of *Germany* and *Poland*, and very nigh the Latitude of *London*. It is very far from the Sea, and as much a *Mediterranean* Place as can be desired, whence the Confluence of Strangers is but small, and the Manufacture of Linnen employs chiefly the poor People of the place, as well as of the Country round about; whence comes that sort of Linnen we usually call your *Selesie Linnen*; which is the chief, if not the only Merchandize of the place. For these Reasons the People of this City seem most proper for a *Standard*; and the rather, for that the *Births* do, a ſmall matter, exceed the *Funerals*. The only thing wanting is the Number of the whole People, which in ſome meaſure I have endeavoured to ſupply by compariſon of the *Mortality* of the People of all Ages, which I ſhall from the ſaid Bills trace out with all the Acuracy poſſible.

It appears that in the Five Years mentioned, *viz.* from 87 to 91 incluſive, there were *born* 6193 Perſons, and *buried* 5869; that is, born *per Annum* 1238, and *buried* 1174; whence an *Encreaſe* of the People may be argued of 64 *per Annum*, or of about a 20th part, which may perhaps be ballanced by the Levies for the *Emperor's* Service in his Wars. But this being contingent, and the Births certain, I will ſuppoſe the People of *Breſlaw* to be encreaſed by 1238 *Births* annually. Of theſe it appears by the ſame Tables, that 348 do die *yearly* in the *firſt Year* of their *Age*, and that but 890 do arrive at a full *Years Age*; and likewiſe, that 198 do die in the *Five Years* between 1 and 6 compleat, taken at a *Medium*; ſo that but 692 of the Perſons *born* do ſurvive *Six* whole *Years*. From this *Age* the Infants being arrived at ſome degree of Firmneſs, grow leſs and leſs *Mortal*; and it appears that of the whole People of *Breſlaw* there die *yearly*, as in the following Table, wherein the upper Line ſhews the *Age*, and the next under it the *Number* of Perſons of that Age *dying yearly*.

7 . 8 9. . 14 . 18 . 21 . 27 . 28 . . 35 .
11 . 11 . 6 . $5\frac{1}{2}$. 2 . $3\frac{1}{2}$ 5 6 $4\frac{1}{2}$ $6\frac{1}{2}$ 9 . 8 . 7 . 7 .

36 . 42 . 45 49 54 . 55 . 56 . 63
8 . $9\frac{1}{2}$ 8 . 9 . 7 . 7 . 10 11 . 9 . 9 . 10 . 12

70 71 . 72 77 81 84 . 90 91 .
$9\frac{1}{2}$ 14 9 . 11 $9\frac{1}{2}$ 6 . 7 . 3 . 4 . 2 . 1 . 1 . 1 .

98 . 99 . 100.
0 . $\frac{1}{5}$. $\frac{3}{5}$

And where no *Figure* is placed over, it is to be understood of those that die between the Ages of the preceding and consequent *Column*.

From this Table it is evident, that from the Age of 9 to about 25 there does not die above 6 *per Annum* of each *Age*, which is much about one *per Cent.* of those that are of those *Ages*: And whereas in the 14, 15, 16, 17 *Years* there appear to die much fewer, as 2 and $3\frac{1}{2}$, yet that seems rather to be attributed to Chance, as are the other Irregularities in the Series of Ages, which would rectifie themselves, were the number of Years much more considerable, as 20 instead of 5. And by our own Experience in *Christ-Church Hospital*, I am informed there die of the *Young Lads*, much about one *per Cent. per Annum*, they being of the foresaid *Ages*. From 25 to 50 there seem to die from 7 to 8 and 9 *per Annum* of each Age; and after that to 70, they growing more *crasie*, though the number be much diminished, yet the *Mortality encreases*, and there are found to die 10 or 11 of each Age *per Annum*: From thence the number of the *Living* being grown very small, they gradu-

gradually decline till there be none left to *die*; as may be ſeen at one View in the Table.

From theſe Conſiderations I have formed the *adjoyned Table*, whoſe Uſes are manifold, and give a more juſt *Idea* of the *State* and *Condition* of *Mankind*, than any thing yet extant that I know of. It exhibits the *Number* of *People* in the City of *Breſlaw* of all Ages, from the *Birth* to extream *Old Age*, and thereby ſhews the Chances of *Mortality* at all *Ages*, and likewiſe how to make a certain Eſtimate of the value of *Annuities* for *Lives*, which hitherto has been only done by an imaginary *Valuation*: Alſo the *Chances* that there are that a *Perſon* of any *Age* propoſed does live to any other *Age* given; with many more, as I ſhall hereafter ſhew. This *Table* does ſhew the *number* of *Perſons* that are living in the *Age* current annexed thereto, as follows:

Age. Curt.	Perſons.	Age. Curt.	Perſons	Age. Curt.	Perſons	Age. Curt.	Perſons	Age. Curt.	Perſons	Age. Curt.	Perſons
1	1000	8	680	15	628	22	586	29	539	36	481
2	855	9	670	16	622	23	579	30	531	37	472
3	798	10	661	17	616	24	573	31	523	38	463
4	760	11	653	18	610	25	567	32	515	39	454
5	732	12	646	19	604	26	560	33	507	40	445
6	710	13	640	20	598	27	553	34	499	41	436
7	692	14	634	21	592	28	546	35	490	42	427
Age Curt	Perſons.	Age. Curt.	Perſons	Age. Curt.	Perſons	ge Curt.	Perſons	Age. Curt.	Perſons	Age. Curt.	Perſons
43	417	50	346	57	272	64	202	71	131	78	58
44	407	51	335	58	262	65	192	72	120	79	49
45	397	52	324	59	252	66	182	73	109	80	41
46	387	53	313	60	242	67	172	74	98	81	34
47	377	54	302	61	232	68	162	75	88	82	28
48	367	55	292	62	222	69	152	76	78	83	23
49	357	56	282	63	212	70	142	77	68	84	20

Age.	Perſons.
7	5547
14	4584
21	4270
28	3964
35	3604
42	3178
49	2709
56	2194
63	1694
70	1204
77	692
84	253
100	107
	34000
	Sum Total.

Thus it appears, that the whole People of *Breſlaw* does conſiſt of 34000 *Souls*, being the Sum *Total* of the Perſons of all Ages in the *Table*: The firſt uſe hereof

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is to ſhew the Proportion of *Men* able to bear *Arms* in any *Multitude*, which are thoſe between 18 and 56, rather than 16 and 60; the one being generally too weak to bear the *Fatigues* of *War* and the Weight of *Arms*, and the other too craſie and infirm from *Age*, notwithſtanding particular Inſtances to the contrary. Under 18 from the *Table*, are found in this City 11997 Perſons, and 3950 above 56, which together make 15947. So that the Reſidue to 34000 being 18053 are Perſons between thoſe *Ages*. At leaſt one half thereof are Males, or 9027 : So that the whole Force this City can raiſe of *Fencible Men*, as the *Scotch* call them, is about 9000, or $\frac{9}{34}$, or ſomewhat more than a quarter of the *Number* of *Souls*, which may perhaps paſs for a Rule for all other places.

The *Second Uſe* of this Table is to ſhew the differing degrees of *Mortality*, or rather *Vitality* in all *Ages* ; for if the number of Perſons of any *Age* remaining after one year, be divided by the difference between that and the number of the Age propoſed, it ſhews the *odds* that there is, that a Perſon of that Age does not die in a *Year*. As for Inſtance, a Perſon of 25 *Years* of *Age* has the odds of 560 to 7 or 80 to 1, that he does not *die* in a *Year* : Becauſe that of 567, living of 25 years of Age, there do die no more than 7 in a *Year*, leaving 560 of 26 Years old.

So likewiſe for the *odds*, that any Perſon does not die before he attain any propoſed *Age*: Take the *number* of the remaining Perſons of the Age propoſed, and divide it by the difference between it and the number of thoſe of the *Age* of the Party propoſed; and that ſhews the *odds* there is between the Chances of the Party's living or dying. As for Inſtance ; What is the *odds* that a Man of 40 lives 7 Years : Take the number of Perſons of 47 years, which in the Table is 377, and ſub-

ſubſtract it from the number of Perſons of 40 years, which is 445, and the *difference* is 68: Which ſhews that the *Perſons dying* in that 7 years are 68, and that it is 377 to 68 or $5\frac{1}{2}$ to 1, that a Man of 40 does live 7 Years. And the like for any other *number* of *Years*.

Uſe III. But if it be enquired at what number of *Years*, it is an even Lay that a Perſon of any *Age* ſhall die, this Table readily performs it: For if the *number* of Perſons *living* of the *Age* propoſed be *halfed*, it will be found by the *Table* at what Year the ſaid *number* is reduced to half by *Mortality*; and that is the Age, to which it is an even Wager, that a Perſon of the *Age* propoſed ſhall arrive before he *die*. As for Inſtance; A Perſon of 30 Years of *Age* is propoſed, the number of that Age is 531, the half thereof is 265, which number I find to be between 57 and 58 Years; ſo that a Man of 30 may reaſonably expect to live between 27 and 28 Years.

Uſe IV. By what has been ſaid, the *Price* of *Inſurance* upon *Lives* ought to be regulated, and the difference is diſcovered between the *price* of enſuring the *Life* of a *Man* of 20 and 50, for Example: it being 100 to 1 that a Man of 20 dies not in a year, and but 38 to 1 for a Man of 50 Years of Age.

Uſe V. On this depends the Valuation of *Annuities* upon *Lives*; for it is plain that the *Purchaſer* ought to pay for only ſuch a part of the value of the *Annuity*, as he has Chances that he is living; and this ought to be computed yearly, and the Sum of all thoſe yearly Values being added together, will amount to the value of the *Annuity* for the *Life* of the Perſon propoſed. Now the preſent value of Money payable after a term of years, at any given rate of Intereſt, either may be had from Tables already computed; or almoſt as compendiouſly,

by

by the Table of Logarithms: For the Arithmetical Complement of the Logarithm of Unity and its yearly Intereſt (that is, of 1, 06 for Six *per Cent.* being 9, 974694.) being multiplied by the number of years propoſed, gives the preſent value of One Pound payable after the end of ſo many years. Then by the foregoing Propoſition, it will be as the number of Perſons living after that term of years, to the number dead; ſo are the Odds that any one Perſon is Alive or Dead. And by conſequence, as the Sum of both or the number of Perſons living of the Age firſt propoſed, to the number remaining after ſo many years, (both given by the Table) ſo the preſent value of the yearly Sum payable after the term propoſed, to the Sum which ought to be paid for the Chance the perſon has to enjoy ſuch an Annuity after ſo many Years. And this being repeated for every year of the perſons Life, the Sum of all the preſent Values of thoſe Chances is the true Value of the Annuity. This will without doubt appear to be a moſt laborious Calculation, but it being one of the principal Uſes of this Speculation, and having found ſome *Compendia* for the Work, I took the pains to compute the following Table, being the ſhort Reſult of a not ordinary number of Arithmetical Operations; It ſhews the Value of Annuities for every Fifth Year of Age, to the Seventieth, as follows.

Age.	Years Purchaſe.	Age.	Years Purchaſe.	Age.	Years Purchaſe.
1	10,28	25	12,27	50	9,21
5	13,40	30	11,72	55	8,51
10	13,44	35	11,12	60	7,60
15	13,33	40	10,57	65	6,54
20	12,78	45	9,91	70	5,32

This ſhews the great Advantage of putting Money into the preſent *Fund* lately granted to their Majeſties, giving 14 *per Cent. per Annum*, or at the rate of 7 years purchaſe for a Life; when young Lives, at the uſual rate of Intereſt, are worth above 13 years Purchaſe. It ſhews likewiſe the Advantage of young Lives over thoſe in Years; a Life of Ten Years being almoſt worth $13\frac{1}{2}$ years purchaſe, whereas one of 36 is worth but 11.

Uſe V. Two Lives are likewiſe valuable by the ſame Rule; for the number of Chances of each ſingle Life, found in the Table, being multiplied together, become the Chances of the Two Lives. And after any certain Term of Years, the Product of the two remaining Sums is the Chances that both the Perſons are living. The Product of the two Differences, being the numbers of the Dead of both Ages, are the Chances that both the Perſons are dead. And the two Products of the remaining Sums of the one Age multiplied by thoſe dead of the other, ſhew the Chances that there are that each Party ſurvives the other: Whence is derived the Rule to eſtimate the value of the Remainder of one Life after another. Now as the Product of the Two Numbers in the Table for the Two Ages propoſed, is to the difference between that Product and the Product of the two numbers of Perſons deceaſed in any ſpace of time, ſo is the value of a Sum of Money to be paid after ſo much time, to the value thereof under the Contingency of Mortality. And as the aforeſaid Product of the two Numbers anſwering to the Ages propoſed, to the Product of the Deceaſed of one Age multiplied by thoſe remaining alive of the other; So the Value of a Sum of Money to be paid after any time propoſed, to the value of the Chances that the one Party has that he ſurvives the other whoſe number of Deceaſed you made uſe of, in the ſecond Term of the proportion. This perhaps may

may be better understood, by putting N for the number of the younger Age, and n for that of the Elder; Y, y the deceased of both Ages respectively, and R, r for the Remainders; and $R+Y=N$ and $r+y=n$. Then shall Nn be the whole number of Chances; $Nn-Yy$ be the Chances that one of the two Persons is living, Yy the Chances that they are both dead; Ry the Chances that the elder Person is dead and the younger living; and rY the Chances that the elder is living and the younger dead. Thus two Persons of 18 and 35 are proposed, and after 8 years these Chances are required. The Numbers for 18 and 35 are 610 and 490, and there are 50 of the First Age dead in 8 years, and 73 of the Elder Age. There are in all 610 x 490 or 298900 Chances; of these there are 50 x 73 or 3650 that they are both dead. And as 298900, to 298900 —3650, or 295250: So is the present value of a Sum of Money to be paid after 8 years, to the present value of a Sum to be paid if either of the two live. And as 560 x 73, so are the Chances that the Elder is dead, leaving the Younger; and as 417 x 50, so are the Chances that the Younger is dead, leaving the Elder. Wherefore as 610 x 490 to 560 x 73, so is the present value of a Sum to be paid at eight years end, to the Sum to be paid for the Chance of the Youngers Survivance; and as 610 x 490 to 417 x 50, so is the same present value to the Sum to be paid for the Chance of the Elders Survivance.

This possibly may be yet better explained by expounding these Products by Rectangular Parallelograms, as in *Fig.* 7. wherein *A B* or *C D* represents the number of persons of the younger Age, and *D E*, *B H* those remaining alive after a certain term of years; whence *C E* will answer the number of those dead in that time: So *A C*, *B D* may represent the number

 of

of the Elder Age ; *A F*,*B I* the Survivors after the same term; and *C F*, *D I*, those of that Age that are dead at that time. Then shall the whole Parallelogram *A B C D* be *Nn*, or the Product of the two Numbers of persons, representing such a number of Persons of the two Ages given ; and by what was said before, after the Term proposed the Rectangle *H D* shall be as the number of Persons of the younger Age that survive, and the Rectangle *A E* as the number of those that die. So likewise the Rectangles *A I*, *F D* shall be as the Numbers, living and dead, of the other Age. Hence the Rectangle *H I* shall be as an equal number of both Ages surviving. The Rectangle *FE* being the Product of the deceased, or *Y y*, an equal number of both dead. The Rectangle *G D* or *R y*, a number living of the younger Age, and dead of the Elder: And the Rectangle *A G* or *r Y* a number living of the Elder Age, but dead of the younger. This being understood, it is obvious, that as the whole Rectangle *A D* or *N n* is to the *Gnomon* *FA B D E G* or *Nn— Y y*, so is the whole number of Persons or Chances, to the number of Chances that one of the two Persons is living: And as *A D* or *N n* is to *FE* or *Y y*, so are all the Chances, to the Chances that both are dead; whereby may be computed the value of the Reversion after both Lives. And as *A D* to *G D* or *R y*, so the whole number of Chances, to the Chances that the younger is living and the other dead ; whereby may be cast up what value ought to be paid for the Reversion of one Life after another, as in the case of providing for Clergy-mens Widows and others by such Reversions. And as *A D* to *A G* or *r Y*, so are all the Chances, to those that the Elder survives the younger. I have been the more particular, and perhaps tedious, in this matter, because it is the Key to the Case of Three Lives, which of it self would not have been so easie to comprehend.

VII. If Three Lives are proposed, to find the value of an Annuity during the continuance of any of those three Lives. The Rule is, *As the Product of the continual multiplication of the Three Numbers, in the Table, answering to the Ages proposed, is to the difference of that Product and of the Product of the Three Numbers of the deceased of those Ages, in any given term of Years ; So is the present value of a Sum of Money to be paid certainly after so many Years, to the present value of the*

same

same Sum to be paid, provided one of those three Persons be living at the Expiration of that term. Which proportion being yearly repeated, the Sum of all those present values will be the value of an Annuity granted for three such Lives. But to explain this, together with all the Cases of Survivance in three Lives: Let N be the Number in the Table for the Younger Age, n for the Second, and ν for the Elder Age; let Y be those dead of the Younger Age in the term proposed, y those dead of the Second Age, and υ those of the Elder Age; and let R be the Remainder of the younger Age, r that of the middle Age, and ϱ the Remainder of the Elder Age. Then shall $R+Y$ be equal to N, $r+y$ to n, and $\varrho+\upsilon$ to ν, and the continual Product of the three Numbers $N n \nu$ shall be equal to the continual Product of $\overline{R+Y} \times \overline{r+Y} \times \overline{\varrho+\upsilon}$, which being the whole number of Chances for three Lives is compounded of the eight Products following. (1) $R r \varrho$, which is the number of Chances that all three of the Persons are living. (2) $r \varrho Y$, which is the number of Chances that the two Elder Persons are living, and the younger dead. (3) $R \varrho y$ the number of Chances that the middle Age is dead, and the younger and Elder living. (4) $R r \upsilon$ being the Chances that the two younger are living, and the elder dead. (5) $\varrho Y y$ the Chances that the two younger are dead, and the elder living. (6) $r Y \upsilon$ the Chances that the younger and elder are dead, and the middle Age living. (7) $R y \upsilon$, which are the Chances that the younger is living, and the two other dead. And Lastly and Eightly, $Y y \upsilon$, which are the Chances that all three are dead. Which latter substracted from the whole number of Chances $N n \nu$, leaves $N n \nu - Y y \upsilon$ the Sum of all the other Seven Products; in all of which one or more of the three Persons are surviving.

To make this yet more evident, I have added *Fig.* 8. wherein these Eight several Products are at one view exhibited. Let the rectangled Parallelepipedon $A B C D E F G H$ be constituted of the sides $A B$, $G H$, *&c.* proportional to N the number of the younger Age; $A C$, $B D$, *&c.* proportional to n; and $A G$, $C E$, *&c.* proportional to the number of the Elder, or ν. And the whole Parallelepipedon shall be as the Product $N n \nu$, or our whole number of Chances. Let $B P$ be as R, and $A P$ as Y: let $C L$ be as r, and $L n$ as y; and $G N$ as ϱ, and $N A$ as υ; and let the Plain $P R e a$ be made parallel to the

plain

plain *ACGE*; the plain *NVbY* parallel to *ABCD*; and the plain *LXTQ* parallel to the plain *ABGH*. And our first Product *R r ϱ* shall be as the Solid *STWIFZ e b*. The Second, or *r ϱ Y* will be as the Solid *EYZ e QSMI*. The Third, *R ϱ y*, as the Solid *RHOVWIST*. And the Fourth, *R r υ*, as the Solid *Z a b DWXIK*. Fifthly, *ϱ Y y*, as the Solid *GQRSIMNO*. Sixthly, *r Y υ*, as *IKLMGYZA*. Seventhly. *R y υ*, as the Solid *IKPOBXVW*. And Lastly, *AIKLMNOP* will be as the Product of the 3 numbers of persons dead, or *Y y υ*. I shall not apply this in all the cases thereof for brevity sake; only to shew in one how all the rest may be performed, let it be demanded what is the value of the Reversion of the younger Life after the two elder proposed. The proportion is as the whole number of Chances, or *N n ν* to the Product *R y υ*, so is the certain present value of the Sum payable after any term proposed, to the value due to such Chances as the younger person has to bury both the elder, by the term proposed; which therefore he is to pay for. Here it is to be noted, that the first term of all these Proportions is the same throughout, *viz.* *N n ν*. The Second changing yearly according to the Decrease of *R*, *r*, *ϱ*, and Encrease of *Y*, *y*, *υ*. And the third are successively the present values of Money payable after one, two, three, *&c.* years, according to the rate of Interest agreed on. These numbers, which are in all cases of Annuities of necessary use, I have put into the following Table, they being the Decimal values of One Pound payable after the number of years in the Margent, at the rate of *6 per Cent.*

Years

Years.	Present value of 1 *l.*	Years.	Present value of 1 *l.*	Years.	Present value of 1 *l.*
1	0,9434	19	0,3305	37	0,1158
2	0,8900	20	0,3118	38	0,1092
3	0,8396	21	0,2941	39	0,1031
4	0,7921	22	0,2775	40	0,0972
5	0,7473	23	0,2618	45	0,0726
6	0,7050	24	0,2470	50	0,0543
7	0,6650	25	0,2330	55	0,0406
8	0,6274	26	0,2198	60	0,0303
9	0,5919	27	0,2074	65	0,0227
10	0,5584	28	0,1956	70	0,0169
11	0,5268	29	0,1845	75	0,0126
12	0,4970	30	0,1741	80	0,0094
13	0,4688	31	0,1643	85	0,0071
14	0,4423	32	0,1550	90	0,0053
15	0,4173	33	0,1462	95	0,0039
16	0,3936	34	0,1379	100	0,0029
17	0,3714	35	0,1301		
18	0,3503	36	0,1227		

It were needless to advertise, that the great trouble of working so many Proportions will be very much alleviated by using Logarithms; and that instead of using $N n \nu - Y y \upsilon$ for the Second Term of the Proportion in finding the value of Three Lives, it may suffice to use only $Y y \upsilon$, and then deducting the Fourth Term so found out of the Third, the Remainder shall be the present value sought; or all these Fourth Terms being added together, and deducted out of the value of the certain Annuity for so many Years, will leave the value of the contingent Annuity upon the Chance of Mortality of all those three Lives. For Example; Let there be Three Lives of 10, 30, and 40 years of Age proposed, and the Proportions will be thus:

As 661 in 531 in 445 or 156190995, or $N n \nu$
to 8 in 8 in 9, or 576, or $Y y \upsilon$ for the first year, so 0, 9434. to 0,00000348
to 15 in 16 in 18, or 4320, for the second year, so 0, 8900. to 0,00002462
to 21 in 24 in 28, or 14112 for the third year, so 0, 8396. to 0,00008123
to 27 in 32 in 38, for the fourth year, so 0, 7921. to 0,00016650
to 33 in 41 in 48, for the fifth year, so 0, 7473 to 0,00031071
to 39 in 50 in 58, for the sixth year, so 0, 7050 to 0,00051051

And

And ſo forth to the 60th year, when we ſuppoſe the elder Life of Forty certainly to be expired; from whence till Seventy we muſt compute for the Firſt and Second only, and from thence to Ninety for the ſingle youngeſt Life. Then the Sum Total of all theſe Fourth Proportionals being taken out of the value of a certain Annuity for 90 Years, being 16,58 years Purchaſe, ſhall leave the juſt value to be paid for an Annuity during the whole term of the Lives of three Perſons of the Ages propoſed. And note, that it will not be neceſſary to compute for every year ſingly, but that in moſt caſes every 4th or 5th year may ſuffice, interpoling for the intermediate years *ſecundum artem.*

It may be objected, that the different *Salubrity* of places does hinder this Propoſal from being *univerſal*; nor can it be denied. But by the number that die, being 1174. *per Annum* in 34000, it does appear that about a 30th part die yearly, as Sir *William Petty* has computed for *London*; and the number that die in Infancy,is a good Argument that the Air is but indifferently ſalubrious. So that by what I can learn, there cannot perhaps be one better place propoſed for a Standard. At leaſt 'tis deſired that in imitation hereof the Curious in other Cities would attempt ſomething of the ſame nature, than which nothing perhaps can be more uſeful.

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