A N

E S S A Y

ON THE

PUBLICK DEBTS

OF

THIS KINGDOM.

WHEREIN

The Importance of discharging them is considered; the Provisions for that Purpose by the SINKING FUND, and the Progress therein hitherto made, are stated and explained; the Sufficiency of those Provisions is demonstrated; some general Mistakes about the Nature and Efficacy of this Expedient examined and removed; and the Progress of the SINKING FUND described and computed from *Midsummer*, 1727.

To which is subjoined,

An Enquiry into the General Convenience of reducing farther the Interest of our Publick Debts below 4 *per Cent. per Annum.*

In a Letter to a Member of the House of Commons.

Reprinted from the Second Edition, which was published by J. PEELE, in Pater-Noster-Row, in the Year 1726.

N. B. This Pamphlet is supposed to have been written by Sir NATHANIEL GOULD, an eminent Merchant and a Director of the Bank.

THE

PREFACE.

THERE may perhaps appear something too assuming in the attempts of an author, to inform the publick, or to direct their sentiments about matters of general importance, to admit of a better reception or entertainment from the town than what performances of this kind have of late years generally met with. I have thought therefore, that it may not be improper to mention my reason for the publication of the following sheets, as an apology for it with the reader; to whom I can with great truth and sincerity represent, that I should never have thought any knowledge which I had, or any discoveries in my power, of our circumstances with regard to our present debts, worth the publick notice, if I had not frequently met with some mistakes on this subject, which appeared to me very generally to prevail, and firmly to be insisted on and believed much to the disadvantage of our publick credit, and which at the same time I have flattered myself, might be confuted and removed, from such informations only as I should be able, on this occasion, to collect. I have so often heard it affirmed, that our publick debts have increased upon us since the provisions made for the discharge of them, that it has sometimes seemed to me to be the more common opinion even of those persons who are most interested to be rightly informed in this particular; and have almost as often heard it from hence inferred, that those provisions are therefore insufficient to answer the expectations we are supposed to have from them. And from the bad influence that the belief of this assertion, and the inference from it, must have on our publick credit, especially when it falls in with any general apprehensions for the publick peace or welfare on any other account, I have been induced to think, that as this fact is not true, nor the inference from it rightly made, it would be of general convenience that they were publickly contradicted, and proved to be otherwise; and that this were better done from that less exact and partial information which I have been able to come at upon this subject, than not done at all, or perpetually put off in expectation of its being some time done by such persons who have the exactest knowledge of our circumstances in this respect, or the best capacity for improving it for this purpose.

Nor ſhould I have been diverted from communicating the few or partial diſcoveries that the following ſheets may be thought to contain, by being told, that ſuch miſrepreſentations of our circumſtances were made with deſign only, and by perſons who better than myſelf knew the ſtate of our affairs in this reſpect; becauſe in this caſe in particular, it appears to be the publick intereſt, that the truth ſhould be as generally known as may be, and that every perſon who is or may be an adventurer in our publick funds, ſhould, as diſtinctly as can be, underſtand the proviſions that have been made for ſupporting the credit of them.

What I have farther added beyond the general deſign, by which I was at firſt engaged to write upon this ſubject, the reader will judge of on the peruſal of it. I am not inſenſible that there are ſeveral parts of this performance open to exceptions; but I have more hopes of the reader's indulgence to theſe faults as they ſhall occur to him, than I have that he will forgive the recital of them here, or my detaining him by endeavouring in this place to explain away or obviate any exceptions of this kind. I ſhall therefore mention but two particulars, in which I may be thought more than once to have offended. One is, that I have not every where uſed the utmoſt exactneſs in ſuppoſing, ſtating, or deſcribing the publick debts, or the variations in them. To this fault, as often as I have been guilty of it from any other cauſe than my want of materials for that purpoſe, I have been chiefly induced by the views of being thereby more intelligible; having preſumed that it would be better to omit any ſuch degrees of exactneſs in this reſpect, as were more than ſufficient to anſwer the general deſign of this eſſay, which would at the ſame time render it more tedious and perplexing. I have alſo, for much the ſame reaſon, been induced to content myſelf with the uſe of ſome words in what has ſeemed to me to have been their more ordinary acceptation, when applied to this ſubject; which in a longer or more elaborate enquiry, I ſhould have thought myſelf obliged to define and explain diſtinctly before I ventured upon the uſe of them.

A N

ESSAY

ON THE

PUBLICK DEBTS

OF

THIS KINGDOM.

In a Letter to a Member of the Houſe of Commons.

SIR,

UPON recollecting the converſation that was the occaſion of your deſiring my thoughts in writing on the ſubject of our Publick Debts; I have concluded, that I ſhould beſt anſwer your expectations from me in this affair, by confining my thoughts,

1. To the conſideration of what advantage to the publick may be reaſonably expected from the diſcharge of thoſe debts, and the redemption of the duties provided for the payment of their intereſt.

2. To an enquiry into the reaſons we have at preſent to expect or hope that theſe debts, or any conſiderable part of them, will within any reaſonable compaſs of time be diſcharged and paid off. And,

3. To ſuch reflections as have occurred to me upon thoſe meaſures that may for the future be entered upon, for the more ſpeedy and effectual diſcharge of our preſent debts, from the income of the Sinking Fund already provided for that purpoſe; or for ſtill farther increaſing the annual income of that fund by ſuch reductions as may yet be made in the intereſt or annuities payable for the principal ſums of which the preſent debt conſiſts.

Of the advantages that will ariſe to the publick from the diſcharge of the national debts.

As to the firſt of theſe, or the advantage ariſing to the publick by the diſcharge of the preſent debts; there ſeems to be but little room to enlarge, after the conſideration of that great annual revenue at preſent levied and applied to the payment of our debts, which, after the total diſcharge of them, will, without any loſs or injury to private perſons, be redeemed to, and become the property of, the publick. The preſent yearly expence to the Government, on account of our publick debts, computing the annual income of the Sinking Fund and the yearly intereſt of thoſe debts together, will be found to amount to little leſs than, if not to exceed, the ſum of £3,000,000. A revenue exceeding the whole farther annual expence of our civil and military government in a time of peace; and which, together with the ordinary ſupplies which our Government requires in a time of peace, may perhaps be a fund ſufficient to anſwer our utmoſt probable expences during the moſt expenſive war.

I do not think myſelf at liberty to ſuppoſe, or promiſe it as one advantage ariſing to the publick from the diſcharge of the preſent debts, that the ſeveral duties appropriated to the payment of them will, as ſoon as they are redeemed, be immediately removed or determined; for reaſons, which in the following ſheets I ſhall have a further occaſion to mention; when I ſhall recommend it to be conſidered, whether the revenues ariſing from thoſe duties, or the greateſt part of them, are not raiſed with more eaſe, greater equality, and more to the common benefit of the ſubjects of Great-Britain, than ſome part of the ſupplies that are annually voted for the current ſervice of the year; and conſequently, how far it may be reaſonable to ſubſtitute a great part of the revenues ariſing from thoſe duties, after the redemption of them, in the place of our annual taxes. But it will, I preſume, appear no ſmall convenience to the publick, ariſing from the redemption of the aforeſaid duties, that, when they ſhall be no longer appropriated to the payment of our debts, the principal difficulty will be removed, which has at any time obſtructed the removal or leſſening any of theſe duties, though the convenience of the publick may, upon other accounts, have perſuaded to it; either as ſuch duties may have appeared to give too great perplexity to perſons employed in trade, or to prevent or obſtruct any profitable branch of our commerce with foreign countries; as they may have been thought to require too ſtrict an enquiry, or

or too great ſeverity or expence in the collecting them; as by being laid on any commodities univerſally neceſſary, they may have ſeemed too great a burthen on the pooreſt of our inhabitants; or as by bearing too great a proportion to the bulk of the commodities on which they have been laid, they may have made the gain ariſing from defrauding the publick, or the temptation to attempt it, bear too great a proportion to the hazard of being diſcovered; or, as in any other reſpect they may be found to be attended with general inconvenience, or unreaſonable hardſhip on particular perſons, employments or conditions of life amongſt us.

And, however it ſhall be determined, after the diſcharge of our preſent debts, as to the continuance or removal of the whole or any part of the duties appropriated for the payment of them; the revenues ariſing from them, being redeemed, will become the property of the publick, and, if not from thenceforth removed, will be employed in the room of, and take away the occaſion for, ſuch other taxes as ſhall then appear a greater burthen to, or to be more unequally levied upon, the ſubjects of this kingdom.

Having mentioned the quantity of annual expence to the Government, occaſioned by our publick debts, it ſeems unneceſſary to proceed further in proving the importance of diſcharging them, or to deſcend to or enumerate any further inconveniencies, that upon this account we labour under. An uncomfortable employment! and which, I hope, I ſhall be excuſed from, for this further reaſon; that the inconvenience of our preſent debts, and the importance of diſcharging them, are ſo univerſally believed and felt, and ſo unanimouſly agreed to, that I know none of my fellow-ſubjects who want to be convinced of them. I ſhall proceed therefore to what I propoſed in the

Second place, to make out the probability, and repreſent the reaſons we have to hope, that the preſent publick debts will, within the compaſs of a few years, be effectually and honourably diſcharged.

Of the probability that the ſaid debts will be diſcharged in a few years by means of the Sinki Fund.

What I have chiefly propoſed under this head, is to deſcribe and explain, as far as my materials for that purpoſe will carry me, thoſe meaſures which have been already taken for the diſcharge of our publick debts by the proviſion of the Sinking Fund. To which attempt, though this proviſion has already been made as publick as our acts of parliament, and though the operation and progreſs of it, in the diſcharge of our debts, is without any difficulty to be computed, I find myſelf induced, from that general ſuſpicion of the inefficacy of this proviſion to anſwer the ends propoſed by it; and which ſeems to have prevailed amongſt ſome people, who have either not had leiſure for that purpoſe, or who have declined the trouble of collecting the materials for, or making thoſe computations from

from them which are requiſite, in order to their ſatisfaction about the uſe and efficacy of the Sinking Fund.

Of the eſtabliſhment of the Sinking Fund in the month of March, 1716.

The firſt material proviſion that was made for diſcharging the principal of our preſent debts, was enacted in the third year of his preſent Majeſty's reign, by three ſeveral acts of parliament at that time made; the firſt of which (in the order that they ſhould have been printed amongſt the ſtatutes publiſhed for that ſeſſions) is intitled, *An act for redeeming ſeveral funds of the Governour and Company of the Bank of England, purſuant to former proviſoes of redemption; and for ſecuring to them ſeveral new funds and allowances redeemable by Parliament; and for obliging them to advance further ſums, not exceeding £2,500,000 at five per cent. as ſhall be found neceſſary to be employed in leſſening the national debts and incumbrances; and for continuing certain proviſions formerly made for the expences of his Majeſty's civil government, and for the payment of annuities formerly purchaſed at the rate of five per cent. and for other purpoſes in this act mentioned*, page 331. The ſecond, intitled, *An act for redeeming the yearly fund of the South-Sea Company (being after the rate of ſix pound per cent. per annum, and ſettling on the ſaid Company a yearly fund after the rate of 5 per cent. per annum, and to raiſe for an annuity or annuities, at 5 per cent. per annum, any ſum not exceeding £2,000,000, to be employed in leſſening the national debts and incumbrances, and for making the ſaid new yearly fund and annuities to be hereafter redeemable in the time and manner thereby preſcribed*, page 375. And the third, intitled, *An act for redeeming the duties and revenues which were ſettled to pay off principal and intereſt on the orders made forth on four lottery acts, paſſed in the 9th and 10th years of her late Majeſty's reign; and for redeeming certain annuities payable on orders, according to a former act in that behalf; and for eſtabliſhing a general yearly fund, &c.* page 291.

Of the ſeveral ſums of which the Sinking Fund is compoſed.

The *Sinking Fund* of late years, (called ſo from its being underſtood to be appropriated to the ſinking and diſcharging, as far as it will go, the principal ſums of the preſent publick debt,) is made up of money ariſing yearly into the Exchequer, as the ſurplus of the produce of three ſeveral funds eſtabliſhed by the three aforeſaid acts of parliament, by the names of the Aggregate Fund, the South-Sea Fund, and the General Fund; the ſurpluſſes of which three funds, or what they annually produce more than the yearly ſums to the payment of which they are firſt appropriated, are by the laſt of the aforeſaid acts of parliament reſerved for, and made applicable only to, the diſcharge of the principal and intereſt of ſuch debts as had been before the year 1716 contracted and provided for by Parliament. The yearly ſums to the payment of which thoſe funds are firſt appropriated (except the ſum of £700,000 *per annum* to his Majeſty for the expence of his civil government) are generally the intereſt, or annuities, payable for ſeveral principal ſums, of which our publick debts conſiſt.

As

As often therefore as any of thoſe principal ſums are paid off, or the proprietors of any part of the publick debt are induced to accept of a leſs intereſt or annuity for the ſame principal ſums, the Sinking Fund is underſtood to increaſe by the yearly addition of the intereſt of ſuch ſums as are paid off, or the abatement of the annuity for ſuch part of the publick debt as is agreed to be continued at a lower rate of intereſt. But the duties, the ſurplus of which the Sinking Fund conſiſts of, not bringing in every year an equal ſum of money, the ſurplus likewiſe is not every year alike; and therefore, in order to compute in what time the preſent publick debt may be diſcharged by the Sinking Fund, it is neceſſary to enquire from what different annual ſums have of late years been produced by it, what yearly ſum it is reaſonable to ſuppoſe may for the future be produced by it at a medium, or one year with another. To which yearly ſum we are from time to time to add the yearly intereſt or annuity of ſuch principal ſums, part of the preſent publick debt, as may be paid off by it; and all ſuch abatements of intereſt of all or any part of the publick debts, as are already agreed hereafter to take place, or may for the future be agreed to by any of the creditors to the publick.

There are a great many particulars which you will ſee, Sir, I muſt want the knowledge of, in order to make this ſuppoſition with any great exactneſs. I could wiſh here to be able to ſtate the produce of the ſeveral particular duties, the exceſſes of which conſtitute and ſupply the Sinking Fund; the different ſums produced by them in different years, from the times they were ſeverally granted; to aſſign the moſt probable cauſes of their variation, and from thence infer the probability of their producing more or leſs for the future: but however unprovided I am with materials for an inquiry of this kind, it may be yet worth while to proceed in deſcribing the proportions in which any determined yearly ſum (though by miſtake) ſuppoſed to be the preſent yearly produce at a medium of the Sinking Fund, will increaſe, when applied to the payment of the publick debts; as thoſe proportions will be the ſame with thoſe in which any other ſum, with more truth or probability ſuppoſed to be produced one year with another by the Sinking Fund, will increaſe when applied to the ſame purpoſe.

Of the annual amount of the Sinking Fund.

The beſt account I have been able to get of the produce of the Sinking Fund for ſome years laſt paſt lies now before me, and ſtates the produce of the ſurpluſſes of the ſeveral funds, commonly called the Aggregate Fund, the General Fund, and the South-Sea Fund, (the ſum of which ſurpluſſes our acts of parliament call the *Sinking Fund*) to be from the 31ſt of December, 1722, to the ſame time in the year 1723, £619,000 and upward; and the produce of the ſame ſurpluſſes from thence to the 31ſt of December, 1724, to amount to upwards of £653,000. This amount

amount of the produce of the Sinking Fund for the two years above-mentioned, exceeds the produce of the ſame fund for ſome years before, by a greater ſum than can be accounted for by the diſcharge or reduction of the intereſt of any part of the publick debt before that time; and which therefore I am inclined to attribute to ſeveral proviſions about that time made by the Legiſlature, for preventing frauds in the payment, and for the more fully and effectually collecting of ſeveral duties which in part ſupply the revenues appropriated to the payment of our publick debts; and of which proviſions I would hope we may long enjoy the benefit in the increaſe of the Sinking Fund. And from hence, I ſhould think, we might venture to expect an annual produce from the Sinking Fund for the future, equal to the produce of the ſame fund at a medium for the two years above-mentioned, ending in December 1724; and increaſing by the yearly addition of the intereſt of ſuch principal ſums as may be henceforth paid off, and of the abatements of the intereſt, or annuities, of any of the publick debts when the ſame ſhall take place, that already are or may hereafter be agreed for.

Of the ſavings of intereſt that will accrue to the Sinking Fund in the year 1727.

The abatements of intereſt in the year 1727 are ſo conſiderable, and the time when they are to take place ſo near, that I believe it will be thought reaſonable to ſtep forwards to the time when the Sinking Fund will be increaſed by the addition of thoſe abatements; and from that time to conſider the progreſs that may be made in diſcharging the preſent publick debt by the Sinking Fund.

From Midſummer in the year 1727, it is already provided, that the Sinking Fund be increaſed by the reduction of the intereſt from 5 to 4 *per cent.* or an abatement of 1 *per cent. per annum* on the principal ſums following.

	l.	*s.*	*d.*
On £13,061,878, being the amount of the publick debt to the South-Sea Company, excluding £3,839,363, part of it, for which an annuity at 4 *per cent.* only is at preſent payable,	130,618	15	7
On 16,901,241*l.* 17*s.* of the South-Sea annuities, - -	169,012	8	4
On 3,775,027*l.* 17*s.* 10½, part of the debt to the Bank of England, - - - -	37,750	5	6¾
On £4,000,000, farther part of the debt to the Bank of England, purchaſed by them of the South-Sea Company, - - - - - - - -	40,000	0	0

To

	l.	*s.*	*d.*
To this, if the annual income of the Sinking Fund on the 31ſt of December, 1724, be added, ſuppoſed to be	600,000	0	0
And the increaſe of it by the diſcharge of £600,000 *per annum* of ſuch Exchequer bills as remained uncancelled on the 31ſt of December, 1724, and are made payable out of the Sinking Fund from the ſaid 31ſt of December, to the 24th of June, 1727, viz. the intereſt and charge of circulating £1,500,000 Exchequer bills at 3 *per cent.* - - - - - - - - -	45,000	0	0
	1,022,381	9	5

The amount of the ſaid ſeveral annual ſums will be upward of £1,022,000, the produce of the Sinking Fund from the 24th of June, 1727.

The produce of the *Sinking Fund* from the 24th of June, 1727, will be upwards of £1,022,000 *per annum*; and the whole of the national debts at that time will be leſs than 50 millions.

The publick debts on the 31ſt of December, 1724, are ſtated to amount to £52,363,471, or thereabouts: from which, if it be allowed me to deduct £1,500,000 Exchequer bills above ſuppoſed to be paid off by the Sinking Fund on the 24th of June, 1727, and ſuch further principal ſums as proviſion is made for the diſcharge of otherwiſe than by the Sinking Fund, the remainder to be paid off on the 24th of June, 1727, will be conſiderably leſs than 50 millions. Which ſum however, (that I may not be thought to ſtrain matters in favour of this ſcheme of diſcharging the publick debts by a Sinking Fund) I will ſuppoſe to be the principal debt to be paid off on the 24th of June, 1727, and the annual produce of the Sinking Fund to be from the ſame time one million only. I will likewiſe ſuppoſe, (as is moſt generally true) that the above-mentioned principal ſum of 50 millions, will from the ſame time carry intereſt after the rate of 4 per cent. And, becauſe there are ſome perſons ſo ſanguine as to imagine, that by force of our Sinking Fund, or ſome ſchemes formed upon it, the ſame debt may be ſtill further reduced to a lower rate of intereſt, and the Sinking Fund increaſed further by ſuch reduction; I will likewiſe ſuppoſe ſuch a ſcheme to have taken effect, and the above-mentioned principal ſum to carry 3 per cent. intereſt only, and the annual produce of the Sinking Fund to be increaſed, by an abatement of 1 per cent. intereſt on 50 millions, to £1,500,000. Upon both which ſuppoſitions, I ſhall ſubjoin a computation, deſcribing in what number of years, from Midſummer 1727, the above-mentioned principal ſum of 50 millions, or any particular part of it, may be diſcharged and paid off; in which, when I had not time to correct them, I diſcovered a ſmall miſtake or two; which I hope the reader will excuſe, when I have aſſured him, that they no where miſrepreſent the time in which the aforeſaid debt, or any part of it, may be paid off, by ſo much as two days.

Computations of the numbers of years in which the aforeſaid national debt of 50 millions may be paid off by means of the Sinking Fund, upon ſuppoſitions of its bearing the two different rates of intereſt of 4 per cent. and 3 per cent.

Computation at 4l. per Cent.

	Payments made at Midsummer every year.			*Total of all the payments from the beginning in every year.*		
	£.	*S.*	*D.*	*£.*	*S.*	*D.*
1728	1,000,000	0	0	1,000,000	0	0
	40,000	0	0			
29	1,040,000	0	0	2,040,000	0	0
	41,600	0	0			
30	1,081,600	0	0	3,121,600	0	0
	43,264	0	0			
31	1,124,864	0	0	4,246,464	0	0
	44,994	11	$2\frac{3}{8}$			
32	1,169,858	11	$2\frac{3}{8}$	5,416,322	11	$2\frac{3}{8}$
	46,794	6	$10\frac{1}{8}$			
33	1,216,652	18	$0\frac{1}{2}$	6,632,975	9	$0\frac{7}{8}$
	48,666	2	$3\frac{3}{4}$			
34	1,265,319	0	$4\frac{1}{4}$	7,898,294	9	$5\frac{1}{8}$
	50,612	15	$2\frac{1}{2}$			
35	1,315,931	15	$6\frac{3}{4}$	9,214,226	4	$11\frac{7}{8}$
	52,637	5	5			
36	1,368,569	0	$11\frac{3}{4}$	10,582,795	5	$10\frac{5}{8}$
	54,742	15	$2\frac{7}{8}$			
37	1,423,311	16	$2\frac{1}{8}$	12,006,107	2	$0\frac{3}{4}$
	56,932	9	5			
38	1,480,244	5	$7\frac{1}{2}$	13,486,351	7	$8\frac{1}{4}$
	59,209	15	$2\frac{1}{2}$			
39	1,539,454	0	10	15,025,805	8	$6\frac{1}{4}$
	61,578	3	$2\frac{3}{4}$			
40	1,601,032	4	$0\frac{3}{4}$	16,626,837	12	7
	64,041	5	$9\frac{1}{4}$			
41	1,665,073	9	10	18,291,911	2	5
	66,602	18	$9\frac{1}{2}$			
42	1,731,676	8	$7\frac{1}{2}$	20,023,587	11	$0\frac{1}{2}$
	69,267	1	$1\frac{3}{4}$			

Computation at 3l. per Cent.

	Payments made at Midsummer every Year.			*Total of all the payments from the beginning in every year.*		
	£.	*S.*	*D.*	*£.*	*S.*	*D.*
1728	1,500,000	0	0	1,500,000	0	0
	45,000	0	0			
29	1,545,000	0	0	3,045,000	0	0
	46,350	0	0			
30	1,591,350	0	0	4,636,350	0	0
	47,740	10	0			
31	1,639,090	10	0	6,275,440	10	0
	49,272	14	0			
32	1,688,363	4	0	7,963,803	14	0
	50,650	17	$4\frac{1}{2}$			
33	1,739,014	1	$4\frac{1}{2}$	9,702,817	15	$4\frac{1}{2}$
	52,170	8	$5\frac{1}{4}$			
34	1,791,184	9	$9\frac{3}{4}$	11,494,002	5	$1\frac{1}{4}$
	53,735	10	$8\frac{1}{4}$			
35	1,844,920	0	6	13,338,922	5	$7\frac{1}{4}$
	55,347	12	0			
36	1,900,267	12	6	15,239,189	18	$1\frac{1}{4}$
	57,008	0	$6\frac{3}{4}$			
37	1,957,275	13	$0\frac{3}{4}$	17,196,465	11	2
	58,718	0	$6\frac{1}{2}$			
38	2,015,993	13	$6\frac{1}{4}$	19,212,459	4	$8\frac{1}{4}$
	60,479	16	$2\frac{1}{2}$			
39	2,076,473	9	$8\frac{3}{4}$	21,289,032	14	5
	62,544	4	1			
40	2,139,017	13	$9\frac{3}{4}$	23,428,050	8	$2\frac{3}{4}$
	64,170	10	$7\frac{3}{4}$			
41	2,203,188	4	$5\frac{1}{2}$	25,631,238	12	$7\frac{1}{4}$
	66,095	12	$11\frac{1}{4}$			
42	2,269,283	17	$4\frac{3}{4}$	27,900,522	10	0
	68,078	10	$3\frac{3}{4}$			

Computation at 4l. per Cent.

	Payments made at Midsummer every year.			Total of all the payments from the beginning in every year.		
	£.	S.	D.	£.	S.	D.
1743	1,800,943	9	9¼	21,824,531	0	9¾
	72,037	14	9½			
44	1,872,981	4	6¾	23,697,512	5	3½
	74,919	4	11¾			
45	1,947,900	9	6½	25,645,412	14	10
	77,916	0	4½			
46	2,025,816	9	11	27,671,229	4	9
	81,032	13	2¾			
47	2,106,849	3	1¼	29,778,078	7	10¼
	84,273	19	3¾			
48	2,191,123	2	5	31,969,201	10	3¼
	87,644	18	6			
49	2,278,768	0	11	34,247,969	11	2¼
	91,150	14	1			
50	2,369,918	15	0	36,617,988	6	2¼
	94,796	15	0			
51	2,464,715	10	0	39,082,703	16	2¼
	98,588	12	4¾			
52	2,563,304	2	4¾	41,646,007	18	7
	102,582	3	3½			
53	2,665,836	5	8¼	44,311,844	4	3¼
	106,633	9	0½			
54	2,772,469	14	8¾	47,094,313	19	0
	110,898	15	9½			
55	2,883,368	10	6¼	49,977,682	9	6¼
	115,334	14	9¾	22,317	10	5¾
56	2,998,703	5	4	50,000,000	0	0
	1296	14	8			
	3,000,000	0	0			

Computation at 3l. per Cent.

	Payments made at Midsummer every year.			Total of all the payments from the beginning in every year.		
	£.	S.	D.	£.	S.	D.
1743	2,337,362	7	8½	30,237,884	17	8½
	70,120	17	5			
44	2,407,483	5	1½	32,645,368	2	10
	72,224	9	11½			
45	2,479,707	15	1	35,125,075	17	11
	74,391	4	7¾			
46	2,554,098	19	8¾	37,679,174	17	7¾
	76,622	19	4¾			
47	2,630,721	19	1	40,309,896	16	8¾
	78,921	13	2			
48	2,709,643	12	3	43,019,540	8	11¼
	81,289	6	2			
49	2,790,932	18	5	45,810,473	7	4¾
	83,727	19	9			
50	2,874,660	18	2	48,685,134	5	6¾
	86,239	16	8½	1,314,865	14	5¼
51½	2,960,900	14	10½	50,000,000	0	0
	39,099	5	1¼			
	3,000,000	0	0			

You

Observations on the preceeding computations.

You will be pleaſed to obſerve, Sir, that the annual income of the Sinking Fund, in this manner applied to the diſcharge of the principal of the publick debts, increaſes yearly in the ſame manner and proportion as a principal ſum put out and continued at compound intereſt, or intereſt upon intereſt, at ſuch a rate of intereſt as the principal ſum to be paid off is ſuppoſed to carry: that the increaſe of it in every year, is by the intereſt of that principal ſum which was paid off in the year next before it; and that the whole of the increaſe of it in any one year, from the beginning to apply it in diſcharge of the principal debt, is the ſum of the intereſt of all the principal ſums that have been in the year before paid off by it: and that the whole of the debt propoſed to be paid off by a Sinking Fund in this manner applied, will be compleatly diſcharged the year before the Sinking Fund itſelf is increaſed, by the addition of the whole intereſt of the debt to be paid off.

From which obſervations, it will be eaſy to compute the progreſs of any other annual ſum, greater or leſs, than what I have ſuppoſed to be the produce of the Sinking Fund in the year 1727, in the payment of a principal ſum of 50 millions, at 4 per cent. or any other rate of intereſt, or any other principal ſum which you may think it more reaſonable (as our affairs now ſtand) to provide for the payment of, by the common rules for calculating the increaſe of principal ſums continued at compound intereſt.

In the uſe of which rules, you will find, Sir, if you ſhould think it more reaſonable to ſet the income of the Sinking Fund, from the year 1727, at £800,000, or (as ſome perſons have repreſented it) at £1200,000 *per annum*, that a debt of 50 millions, carrying 4 per cent. intereſt, would in the firſt of theſe caſes be paid off in about 32 years, and in the other in 25 years and one month; or if in either caſe the Sinking Fund ſhould be ſuppoſed to be increaſed by £500,000 *per annum* added to it, from the intereſt of the ſame debt, reduced to 3 per cent. from the ſame time, it would appear that it might be fully diſcharged and paid off, by a Sinking Fund of £1,300,000 *per annum* in about 25 years, and by a Sinking Fund of £1,700,000 in 21 years and 8 months, or thereabouts.

A miſtaken opinion has of late been propagated, that the publick debts have increaſed ſince the eſtabliſhment of the Sinking Fund.

But to whatever may in this manner be obſerved or proved, relating to the efficacy or progreſs of the Sinking Fund increaſing annually by addition of the intereſt of ſuch debts as are diſcharged by it, I have heard it objected and ſtrongly inſiſted on to be true, that our publick debts have been far from decreaſing or made leſs ſince the contrivance and application of this expedient for that purpoſe; but, on the contrary, have been growing upon us, and are now conſiderably greater than they were about the time when the ſurpluſſes of ſeveral funds were firſt appropriated to the diſcharge

diſcharge of thoſe debts. And this melancholy circumſtance the ſame perſons aggravate, with obſerving, that the increaſe of our debts has been in a time of almoſt uninterrupted peace; and infer, that our debts muſt increaſe ſtill faſter upon us, in caſe of any publick troubles.

I have often wondered how ſo uncomfortable a miſtake could ſo generally prevail, againſt the teſtimony that the memory of every perſon at all acquainted with publick tranſactions of this kind muſt bear, that our publick loans of late years (except ſuch as have been made on funds provided to diſcharge the monies advanced upon them within the year,) have not been equal to the ſums that have within the ſame time been paid off; till upon further enquiry upon this ſubject, I have had put into my hands copies of accounts, ſuppoſed to be made up at the Exchequer, ſtating the totals of the publick debts for different years to be greater conſiderably from the year 1720, than in that year, and in that year to be more than in any year before it. From which accounts I cannot but think this miſtake muſt ariſe and prevail with perſons who ſatisfied themſelves with obſerving the totals only, and have not attended to the particular articles of which they were made up; but in examining the particular articles of which thoſe totals are made up, they will find that the great increaſe of figures in the deſcription of our preſent incumbrances, is not owing to any real increaſe of their true quantity.

An account of the circumſtances that have given riſe to the ſaid miſtaken opinion.

In an account now before me, of the amount of the publick debts on the 31ſt of December in ſeveral years, beginning in 1717, and ending in the year 1724, the amount of the publick debts in the firſt of thoſe years is deſcribed to be £47,894,950, and in the laſt to be £52,363,471. Of which great increaſe in the deſcription of our debts, the chief reaſons are; firſt, the ſubſcription of ſeveral irredeemable annuities for different terms of years into the South Sea Company's ſtock, in the years 1719 and 1720; by which thoſe annuities were converted into a redeemable debt from the Government, and purchaſed back from the proprietors at higher rates, or a greater number of years purchaſe, than were paid by the proprietors for the ſame annuities when they were firſt purchaſed from the Government. Before theſe ſubſcriptions made, this part of our publick incumbrances is deſcribed in the aforeſaid account, by the principal ſums originally advanced by the proprietors on the purchaſe of them; and afterwards by the quantity of redeemable debt, for which by virtue of the aforeſaid ſubſcriptions they were exchanged; which generally exceeds by four years and one half's purchaſe the ſum originally contributed by the proprietors of thoſe annuities, and which upon the whole of the ſaid annuities at thoſe different times ſubſcribed, amounts to about £3,155,858. This in the preſent view muſt, I think, be admitted to be no real increaſe of the publick incumbrances, or at leaſt not properly brought into the account

1ſt, The purchaſe of certain irredeemable annuities for different terms of years.

account of those years in which the aforesaid subscriptions were made; those subscriptions being well enough known and understood to have been of great advantage to the publick, and very much to have facilitated the discharge of the whole of our present debts; and it being very obvious, that whatever real incumbrance has been growing upon us on account of those annuities, it is to be attributed only to the increasing value of those annuities, and to be computed from the times of their being valued at higher prices, and not from the times of the subscriptions above-mentioned, by which the further increase of their value was most fortunately prevented; and about which, all that we have to wish is, that it had been done sooner.

2dly, Army-debentures.

Another article increasing in the aforesaid accounts of the publick debts from the year 1717 to the year 1724, is of army-debentures, or annuities charged and made payable out of the fund commonly called the General Fund, after the rate of 4 per cent. for such principal sums, as in pursuance of several acts of parliament for appointing commissioners to state the debt due to the army, have been certified to have been due for services in the late war, and before the year 1717. This, Sir, from 40,157*l.* 8*s.* 5*d.* which on the 31st of December, 1717, is only stated to be due from the publick under this article, is on the 31st of December, 1724, by the aforesaid accounts described to amount to upwards of £2,140,157. But as this debt was due before the year 1717, in the present inquiry, whether the publick debts are since that time increased or no, this sum is (now that the quantity of it is determined,) to be reckoned in the amount of the publick debt, as well in the year 1717 as in the year 1724; or, in other words, to be considered as due from the publick from the time it was contracted, and not from the time only when it was certified to be due.

3dly, Exchequer notes.

Another article increasing the total amount of the publick debts in the year 1724 beyond that of the year 1717, in the aforesaid accounts, is, that of £1,000,000 of Exchequer notes made out and lent to the South-Sea Company in the year 1720, and in that year added to the amount of the publick debts. This sum, on the re-payment of it by the South-Sea Company, would have been deducted from the amount of the publick debts in that year in which it was repaid, if it had not been provided by a subsequent act of parliament, that the aforesaid Exchequer notes should be cancelled and paid out of the Sinking Fund; and that the sum of £1,000,000, due from the South-Sea Company, should be applied, when paid, to the discharge of a farther million of Exchequer notes made forth in the year 1722, and upon which money was raised for the discharge of a like sum in arrear to the navy; which said sum of £1,000,000 being in this manner ultimately supplied out of the Sinking Fund, it is necessary to suppose

suppose it to have been due from the publick before the year 1716, the Sinking Fund being, as I have above observed, about that time appropriated to the discharge of such debts only as were due before that year; and consequently this sum of £1,000,000 being in the year 1717 owing, and in arrear from the Government, should also in our present inquiry about the increase of the publick debts, be in that year added to the amount of them.

Other less material articles.

As should also, for much the same kind of reasons, the following less material articles, viz.

	l.	*s.*	*d.*
Navy-annuities, a debt, though before due, not brought into the publick accounts till the year 1718,	110,312	0	0
A further provision for the sufferers at Nevis and St. Christophers, about — — — —	41,000	0	0
The increase of a deficiency on the East-India Company's fund stated in the publick accounts, to be from the year 1717 to the year 1720, about — —	67,500	0	0
A sum in the year 1723, raised for immediate service on the credit of Exchequer notes, the payment of which was at the same time provided for by a tax on the estates of Roman Catholicks, — —	100,000	0	0

To these articles are to be added the three first above-mentioned, viz.

The increase computed on the subscription of irredeemables, — — — — —	3,155,858	0	0
Of army debentures, — — —	2,100,000	0	0
And the sum raised for discharging arrears to the navy,	1,000,000	0	0
The amount of which sums together is, — —	6,574,670	0	0

And this sum, Sir, must be added to the above-mentioned total of our publick debts in the year 1717, before the comparing it with the total of the same debts in the year 1724 will truly determine how far our debts are increased or grown less from one time to another. Let this then be done. — — —

	47,894,950	0	0
	6,574,670	0	0
	54,469,620	0	0
And the aforesaid amount of our debts in 1724,	52,363,471	0	0
deducted from it, — — — —	2,106,149	0	0

The national debts have really been diminiſhed by the ſum of £2,106,149 from the year 1717 to the year 1724.

Another method of eſtimating the diminution of the national debts in the ſame period.

And it will appear, that our debts are not in reality increaſed from the year 1717, to the year 1724; but, on the contrary, are diminiſhed by the ſum of £2,106,149, or thereabouts.

The ſame thing will appear from enumerating the particulars of the real increaſe or decreaſe of our debts from one time to the other; of which, Sir, the following is very nearly a true account, viz.

	l.	*s.*	*d.*
Money at different times borrowed on the duty on coals for building churches, more than in the mean time has been paid off by the particular proviſion made for that purpoſe, — — —	92,778	2	0
Money borrowed for the ſervice of the year 1719, more than paid off by the proviſion made for that purpoſe on the 31ſt of December, 1724, — —	439,300	0	0
Money borrowed on the plate-act for the ſervice of the year 1720, — — — —	312,000	0	0
Total,	844,078	2	0

And this ſum of 844,078*l.* 2*s.* is the whole ſum that our debts can, with any propriety, be ſaid to be increaſed by from the year 1717. Such other ſums as have been ſince that time borrowed having been employed in aid of the Sinking Fund, and applied in the diſcharge of ſome other debts at a higher intereſt; of which the following (except what of this kind has been already mentioned) is likewiſe a true account, viz.

	l.	*s.*	*d.*
Borrowed in the year 1719 by lottery, — —	500,000	0	0
Advanced in the ſame year by the South-Sea Company on the increaſe of their ſtock and funds, about	544,142	0	0
Advanced in the year 1723, towards the diſcharge of the lottery annuities unſubſcribed to the South-Sea Company, about — — — —	1,000,000	0	0
Total,	2,044,142	0	0

By which ſum, together with the Sinking Fund, have been paid off from 1717 to 1724, viz.

	l.	*s.*	*d.*
Of Exchequer notes, — — —	2,924,612	0	0
Of lottery annuities unſubſcribed, — —	1,204,786	0	0

Bank

	l.	*s.*	*d.*
Bank annuities unſubſcribed, — — —	235,297	0	0
Deficiency of the Eaſt-India Company's fund, —	191,028	0	0
Beſides, there has been in the ſame time paid in part of a principal debt contracted by two lotteries in the years 1713 and 1714, by proviſion for that purpoſe at the ſame time made, about — — —	429,490	0	0
Total,	4,985,213	0	0
From whence the total of the laſt above-mentioned loans being deducted, viz. — — —	2,044,142	0	0
The remainder — — — — will be the ſum of what has been paid off from the year 1717 to the year 1724 by the Sinking Fund, or otherwiſe without the aſſiſtance of thoſe loans.	2,941,071	0	0
And from thence — — — —	2,941,071	0	0
Let us farther deduct the total of the aforeſaid articles by which our debts have really, in the mean time, been increaſed, viz. — — —	844,078	0	0
And that remainder — — — —	2,096,993	0	0

The ſaid debts have, according to this ſecond eſtimation, been diminiſhed in the ſame period by the ſum of £2,096,993.

will be the ſum by which our debts, within the aforeſaid ſeven years, appear by this computation really to have been diminiſhed; differing indeed from that ſum which I have from the firſt computation ſtated to be the decreaſe of the publick debts in the ſame time by near £10,000. But which difference, if I pretended to the utmoſt exactneſs, might be removed, by either adding to the laſt remainder, or reckoning amongſt the particulars by which our debts have decreaſed within the time aforeſaid, the value of ſuch annuities for lives as within that time have reverted to the Crown.

This ſum, perhaps, eſpecially if it be farther reduced by the deduction of one million at two different times borrowed, to ſupply the deficiencies of the proviſion for the expence of his Majeſty's civil government, conſidered as part of, and an addition to, our publick debts, may be thought too inconſiderable a diminution of our debts to be boaſted of as the effects of this expedient for ſo great a length of time. But, as it is no real objection to the truth of thoſe computations which I have made, of the progreſs of the Sinking Fund from the year 1727, I preſume it will likewiſe be no diſcouragement to our dependance on this proviſion for the payment of our debts; eſpecially after we have conſidered the great addition that will be made to the Sinking Fund in the year 1727, and

have farther obſerved the much greater diſpatch which a yearly ſum applied to the payment of any determined debt at intereſt, and increaſing annually in the manner above-deſcribed, will make in the diſcharge of ſuch a debt in a few years after the firſt application of it to that purpoſe, than it will do when it firſt begins in that manner to be applied.

Another miſtaken opinion which has lately been advanced concerning the Sinking Fund.

The little progreſs, however, hitherto made in the diminution of our debts, leads me to the examination of another opinion, which I think I have obſerved to prevail with the ſame perſons, who affirm our publick debts to have increaſed upon us; which is, that upon the ſuppoſition that ſuch debts are really increaſing upon us by new loans equal to or exceeding the diſcharges made in the ſame time by the Sinking Fund, the Sinking Fund is in ſuch caſe making no effectual progreſs at all in the diminution of our debts. It is perhaps the more material to conſider here, how far this opinion is true, for this reaſon, that though this ſuppoſition on which it is founded has not been true hitherto, it muſt be, however, admitted to be not improbable, that ſome future exigencies of the Government may make ſuch new loans neceſſary, as may exceed any ſums in the ſame compaſs of time produced by or applied to the diſcharge of our debts from the Sinking Fund. And in this caſe, upon the ſuppoſition that ſuch new loans are made upon further funds found out for payment of the intereſt of the money ſo to be advanced upon them, this opinion, that the Sinking Fund, applied as aforeſaid, would be making no effectual advance to the compleat diſcharge of the whole of our publick debts, would not be true. This will be beſt explained, if during the time that the above ſuppoſed Sinking Funds are employed in the diſcharge of the aforeſaid debt of 50 millions, the whole of our debts ſhould be ſuppoſed, by new loans upon further funds borrowed at 4 or 3 per cent. intereſt, to be increaſed by a further ſum of 50 millions, and that ſum to be diſcharged in the ſame manner, and by the ſame Sinking Funds, after the diſcharge of the firſt 50 millions; or if the account of the progreſs of the above ſuppoſed Sinking Funds be carried on, till inſtead of 50 millions they ſhall have diſcharged a principal debt of 100 millions.

Computations of the times in which another debt of 50 millions of pounds, (contracted upon new funds during the time of diſcharging the firſt debt of 50 millions by means of the Sinking Fund,) might be paid off by means of the ſaid fund, if the intereſt of money is 4 and 3 per cent.

Computation

Computation at 4l. per Cent.

	Payments made at Midſummer every year.			*Total of all the payments from the beginning in every year.*		
	£.	S.	D.	£.	S.	D.
1755				49,977,682	9	$6\frac{1}{4}$
56	2,998,703	5	4	52,976,385	14	$10\frac{1}{4}$
	119,948	2	$7\frac{1}{4}$			
57	3,118,651	7	$11\frac{1}{4}$	56,095,037	2	$9\frac{1}{2}$
	124,746	1	$1\frac{1}{4}$			
58	3,243,397	9	$0\frac{1}{2}$	59,338,434	11	10
	129,735	17	$11\frac{1}{2}$			
59	3,373,113	7	0	62,711,547	18	10
	134,924	10	8			
60	3,508,037	17	$8\frac{1}{2}$	66,219,585	16	6
	140,321	10	$3\frac{1}{2}$			
61	3,648,359	7	$11\frac{1}{2}$	69,867,945	4	$5\frac{1}{2}$
	145,934	7	6			
62	3,794,293	15	$5\frac{1}{2}$	73,662,238	19	11
	151,771	15	0			
63	3,946,065	10	$5\frac{1}{2}$	77,608,304	9	$4\frac{1}{2}$
	157,842	12	$5\frac{1}{4}$			
64	4,103,908	2	$10\frac{3}{4}$	81,712,212	12	$3\frac{1}{4}$
	164,156	6	6			
65	4,268,064	9	$4\frac{3}{4}$	85,980,277	1	8
	170,722	11	$6\frac{1}{2}$			
66	4,438,787	0	$11\frac{1}{4}$	90,419,064	2	$7\frac{3}{4}$
	177,551	9	$6\frac{3}{4}$			
67	4,616,338	10	6	95,035,402	13	$1\frac{1}{4}$
	184,653	10	$9\frac{3}{4}$			
68	4,800,992	1	$3\frac{3}{4}$	99,836,394	14	5
	192,039	13	$7\frac{3}{4}$	163,605	5	7
69	4,993,031	14	$11\frac{1}{2}$	100,000,000	0	0
	6,968	5	$0\frac{1}{2}$			
	5,000,000	0	0			

Computation at 3l. per Cent.

	Payments made at Mid-ſummer every Year.			*Total of all the payments from the beginning in every year.*		
	£.	S.	D.	£.	S.	D.
1750				48,685,134	5	$6\frac{3}{4}$
51	2,960,900	14	$10\frac{1}{2}$	51,646,034	0	$5\frac{1}{4}$
	88,827	0	$5\frac{1}{2}$			
52	3,049,727	15	4	54,695,761	15	$9\frac{1}{4}$
	91,491	16	$1\frac{3}{4}$			
53	3,141,219	11	$5\frac{3}{4}$	57,836,981	7	3
	94,236	11	$7\frac{3}{4}$			
54	3,235,456	3	$1\frac{1}{2}$	61,072,437	10	$4\frac{1}{2}$
	97,063	13	$8\frac{1}{4}$			
55	3,332,519	16	$9\frac{3}{4}$	64,404,957	7	$2\frac{1}{4}$
	99,975	11	$10\frac{3}{4}$			
56	3,432,495	8	$8\frac{1}{2}$	67,837,452	15	$10\frac{3}{4}$
	102,974	17	3			
57	3,535,470	5	$11\frac{1}{2}$	71,372,923	1	$10\frac{1}{4}$
	106,064	2	2			
58	3,641,534	8	$1\frac{1}{2}$	75,014,457	9	$11\frac{3}{4}$
	109,246	0	$7\frac{3}{4}$			
59	3,750,780	8	$9\frac{1}{4}$	78,765,237	18	9
	112,523	8	$3\frac{1}{4}$			
60	3,863,303	17	$0\frac{1}{2}$	82,628,541	15	$9\frac{1}{2}$
	115,899	2	$3\frac{3}{4}$			
61	3,979,202	19	$4\frac{1}{4}$	86,607,744	15	$1\frac{3}{4}$
	119,376	1	10			
62	4,098,579	1	$2\frac{1}{4}$	90,706,323	16	4
	122,957	7	$4\frac{1}{2}$			
63	4,221,536	8	$6\frac{3}{4}$	94,927,860	4	$10\frac{3}{4}$
	126,646	1	$9\frac{1}{4}$			
64	4,348,182	10	4	99,276,042	15	$2\frac{3}{4}$
	130,745	9	6	723,957	4	$9\frac{1}{4}$
65	4,478,927	19	10	100,000,000	0	0
	21,072	0	2			
	4,500,000	0	0			

From

From hence, Sir, it preſently appears that the above ſuppoſed Sinking Funds, in this manner increaſing by the addition of the intereſt of the principal ſums in every year paid off, and conſequently by additions in every year greater than thoſe made to it in the year before, will be ſufficient not only to diſcharge our preſent debts, but any probable addition in the mean time to be made to them by further loans on new-invented funds, in a few years after the preſent debts ſhall be diſcharged: and that the time required for the diſcharge of our debts, increaſed by any addition in this manner made, will by no means be lengthened out, or the payment of the whole of our debts by the Sinking Fund retarded or delayed in proportion to the addition to or increaſe of the debt itſelf: the total payment of our publick debts becoming by no means deſperate from any Sinking Fund, however leſs than thoſe above ſuppoſed, upon account of any determined increaſe of or additions made to them; unleſs thoſe additions are ſuppoſed to be continued increaſing in every year in the ſame or a greater proportion to one another than that in which the additions yearly made to the Sinking Fund increaſe. This is ſo true, that ſuppoſitions about the increaſe of the publick debt might be carried to the utmoſt extravagance, and ſtill appear to be provided for by the above-mentioned Sinking Fund of £1,000,000, increaſing at the rate of 4 per cent. compound intereſt; which, if it were worth while, might be ſhewed to be ſufficient, in about 105 years, to pay off a debt of 1575 millions, allowing for the increaſe of the preſent debt of 50 millions, by an addition of 15 millions in every year in which that Sinking Fund ſhould be ſo applied. Nor will this at all ſurprize perſons who have been accuſtomed to attend to the increaſe of money put out at compound intereſt, or quantities continued in geometrical progreſſion; an enquiry into which will remove all doubts about the truth of what I have here advanced.

Obſervations on the great efficacy of the Sinking Fund in diminiſhing the national debts, notwithſtanding new ſums of money ſhould in the mean time be borrowed by the publick upon new funds to pay the intereſt of them.

It would however be true, that if at any time, on the diſcharge of any part of the principal of the preſent debt, the intereſt were not added to, and applied in the further diſcharge of, the remaining debt, but another equal or greater principal ſum ſhould be borrowed on the ſame annuity; the progreſs of the Sinking Fund would by ſuch meaſures, if the ſame ſum were borrowed, be ſtopped; and, if a greater, be put backwards: but as long as theſe meaſures are not taken, or the Sinking Fund diverted or applied to any other purpoſe than the diſcharge of our debts; the full and effectual payment of all our debts by this expedient, is by no means to be deſpaired of from the increaſe of them by new loans on further duties.

But this is upon a ſuppoſition that the Sinking Fund is never charged with the intereſt of the new loans.

And that the Sinking Fund will, from time to time, be applied to the diſcharge of the publick debts, and not be diverted or applied to any other purpoſe whatſoever, is what, I think, we may ſecurely promiſe ourſelves; from conſidering that the aforeſaid fund has been appropriated to that purpoſe by the Legiſlature, and our publick faith in the ſame manner engaged

The publick faith is engaged to the proprietors of the national debt, that the Sinking Fund ſhall never be applied to any other purpoſe but that of diſcharging the ſaid national debt.

engaged to the creditors of the Government, that the ſurplus of the aforeſaid duties ſhould be applied to the diſcharge of the principal of their debts, as the funds themſelves to the payment of the intereſt or annuities contracted for: which faith of the publick in this manner engaged, I think we have all the reaſon in the world to believe will be as inviolably obſerved in this as in any other part of their contract with the proprietors of the publick debts.

The clauſe of the act of parliament, (3 Geo. 1, cap. 7, ſect 37,) by which the Sinking Fund is ſo appropriated.

This appropriation of the Sinking Fund to the purpoſe aforeſaid, you will find, Sir, to have been made by the aforeſaid acts of parliament. In the laſt of which, taking them in that order in which I have referred to them, page 320, after reciting that by the two other acts of parliaments, the ſurpluſſes of the Aggregate and South-Sea Funds are provided to be reſerved to the diſpoſition of Parliament only; it is enacted, That the ſurpluſſes of the General Fund thereby created, ſhould in like manner be accounted for and reſerved for the diſpoſition of Parliament. And then it is further enacted in the words following, "That all the monies to ariſe "from time to time, as well of or for the ſaid exceſs or ſurplus, by virtue "of the ſaid act made for redeeming the funds of the Governour and "Company of the Bank of England [viz. the Aggregate Fund] and of "or for the ſaid exceſs or ſurplus, by virtue of the ſaid act for redeeming "the funds of the ſaid Governour and Company of Merchants trading to "the South-Seas, &c. and of or for the ſaid exceſs or ſurplus of the ſaid "duties and revenues by this act appropriated as aforeſaid, [viz. the "General Fund] and the ſaid overplus monies of the ſaid general yearly "fund by this act eſtabliſhed or intended to be eſtabliſhed as aforeſaid, "ſhall be appropriated, reſerved, and employed to and for the diſcharging "the principal and intereſt of ſuch national debts and incumbrances as "were incurred before the 25th of December, 1716, and are declared to "be national debts, and are provided for by act of parliament in ſuch "manner and form as ſhall be directed and appointed by any future act "or acts of parliament to be diſcharged therewith or out of the ſame, and "to and for none other uſe, intent or purpoſe whatſoever."

The ſaid clauſe ought to be conſidered as a ſolemn contract entered into by the Government with the publick creditors.

By theſe words, I think, the ſurpluſſes therein mentioned, of which the annual income of the Sinking Fund is made up, ſufficiently appear to have been appropriated by the legiſlative power to the payment of our publick debts, till they ſhall be intirely diſcharged and paid off. Nor can this proviſion well be underſtood as made by the Government for what then appeared for publick convenience only, and conſequently to be altered by ſubſequent acts whenever it ſhall appear, or be pretended to be otherwiſe; but muſt, I think, be conſidered as a contract by the Government with the publick creditors, if the occaſion of theſe acts of parliament be attended to. In which caſe it will appear, that the ſeveral proviſions by

by theſe acts made, were enacted and propoſed to the creditors aforeſaid, as inducements to them to accept of an intereſt, or annuity, for their debts by one ſixth part leſs than that which till that time they had received; of which the moſt obvious inducement was, that what was thus deducted from the yearly intereſt of their debts, ſhould be applied for the better ſecuring and gradual diſcharge of the principal of the ſaid debts. To which ſecurity, amongſt the other benefits by the ſame acts of parliament propoſed to them, they muſt, I think, be conſidered to have intitled themſelves by their ſubſcriptions afterwards made, ſubſequent to, and in conſideration of, ſuch propoſals made to them by the Legiſlature. And whoever will be at the trouble of turning over the ſeveral ſubſequent acts of parliament relating to the publick debts, will find this proviſion for the application of the Sinking Fund frequently repeated and confirmed: and in caſes where by act of parliament application of monies in the Sinking Fund to the diſcharge of debts that were leſs obviouſly, or leſs generally, known to have been within the deſcription of the debts intended by the proviſion above-recited, ſuch debts have been, by the recitals, declared and explained to have been debts incurred before the 25th of December, 1716, and provided for by Parliament in a manner that has plainly intimated it to be underſtood by the Legiſlature, that the above-recited proviſion was an engagement, or contract, of the Government with the publick creditors, about the punctual obſervation of which from time to time they were intitled to have all poſſible ſatisfaction; or at leaſt, that the punctual application of the above-mentioned ſurpluſſes to the diſcharge of our preſent debts, was regarded by them as a matter of the higheſt conſequence to the publick welfare. And as long as the publick welfare ſhall be in the leaſt regarded, and this continues to be the only expedient for removing ſuch heavy incumbrances on our affairs, and redeeming ſo conſiderable a revenue to the uſe of the publick, I think we may confidently expect, that no perſons whatſoever, whoſe hands the adminiſtration of our affairs may at any time for the future be committed to, can ever be induced to approve of, or recommend, the application of the produce of the Sinking Fund, in any poſſible exigence of our affairs, to any other uſes than thoſe to which it ſtands now appropriated, though there were no other conſiderations to enforce it.

Therefore it cannot be ſuppoſed that any miniſters of ſtate whatſoever will ever preſume to divert the produce of the Sinking Fund from the purpoſes of its original deſtination.

For let us inquire a little, what publick exigencies can be ſuppoſed to happen, that can make it at any time adviſeable to divert or apply the produce of the Sinking Fund to any other purpoſe till after the entire payment of our publick debts. Let the expence that the circumſtances of our affairs may at any time make neceſſary, be, or be ſuppoſed to be, ever ſo much more than what can be conveniently raiſed within the year; it muſt, I think, always appear more eligible in regard to the publick intereſt, as well as more eaſy to thoſe perſons in the adminiſtration, to whom the

In any ſuppoſed exigencies of ſtate, that are likely to ariſe, it will be more expedient to raiſe money by new loans, with new funds, or taxes, to pay the intereſt of them, than to break in upon the Sinking Fund.

care of providing the neceſſary ſupplies ſhall at any time be allotted, to raiſe what ſhall be further wanted by increaſing the publick debt with further loans upon intereſt provided for by new duties, than to ſupply the ſame ſums in any way from the produce of the Sinking Fund.

The computation that I have laſt made was to ſhew, that the time in which the above ſuppoſed Sinking Fund of £1,000,000 will be ſufficient to compleat the diſcharge of the publick debts, will by no means increaſe equally to the increaſe of the principal ſum of thoſe debts by further loans on new funds: but it may be of further uſe to ſhew, how much leſs the increaſe of the publick debts, by borrowing further ſums at intereſt provided for by new funds, will retard the diſcharge of the whole of the publick debts, than the ſupplying the ſame ſums in any way from the produce of the Sinking Fund would do. Let us ſuppoſe, for inſtance, that the Government were obliged for 25 years together to increaſe the preſent debt, by a million borrowed in every year at an intereſt of 4 per cent. provided for by further funds, the above-made computation will ſhew that that additional debt of 25 millions would be paid off by a Sinking Fund of one million, applied as is therein ſuppoſed, in little more than 7 years after the diſcharge of the preſent 50 millions. But if the ſame ſum were to be ſupplied out of the produce of the Sinking Fund, it is obvious that the payment of the publick debts muſt ſtand ſtill for 25 years, and be by more than two thirds of that time retarded beyond the time in which they would otherwiſe be diſcharged, though increaſed as aforeſaid; and the greater the ſum is ſuppoſed to be, that in theſe different ways is to be ſupplied, the greater will be the proportion in which the payment of our debts will be delayed, by ſupplying ſuch expences from the Sinking Fund, more than by the other way: or if the ſums in theſe different ways ſupplied ſhould be ſuppoſed leſs, the difference of the delay in theſe two caſes will be indeed leſs: but on ſuppoſition of the ſmalleſt ſum to be theſe two different ways ſupplied, the delay ariſing to the diſcharge of the publick debt by this miſapplication of the Sinking Fund, will be at leaſt three times as great as that which will be occaſioned by increaſing the publick debt in the other method.

An illuſtration of this propoſition by an example.

The borrowing money on the income of the Sinking Fund in any form, if no more were in any one year borrowed than what had been by the Sinking Fund the year before paid off; and if that money be ſuppoſed to be borrowed at the ſame rate of intereſt that was payable for the debt before paid off; will have the ſame effect in delaying the payment of the publick debts, as the miſapplication of the revenue of the Sinking Fund the year before would have had: but if greater ſums be at any time borrowed on that fund, the payment of the publick debts will not only be ſtopped, but put backwards; and that in a manner that obviouſly leads not that were equal to the money ſo borrowed.

The borrowing money, and charging the intereſt of it on the Sinking Fund, inſtead of laying new taxes for that purpoſe, would be as pernicious an alienation of the Sinking Fund as the taking groſs ſums out of it

not only to delay the payment of the publick debts, but the taking away intirely the only ſecurity yet provided, that they ſhall ever be paid off. For which reaſon I ſhall not trouble you, Sir, with any computation of the different degrees in which different ſteps in purſuing theſe meaſures will affect us; but at once ſuppoſe it impoſſible that any perſons can propoſe to borrow money, (or much leſs to ſucceed in it) on the credit of ſchemes that themſelves deſtroy all probability of the re-payment of it; which, ſuch meaſures as theſe, muſt evidently appear to do, to thoſe that conſider, that we have already had the greateſt advantage from the reduction of intereſt that can with reaſon be hoped for in the proviſion of the preſent Sinking Fund; which if we once part with in exchange for an increaſed principal debt at a lower rate of intereſt only, it will be madneſs to expect that either ſuch a lower rate of intereſt, or any alteration in our circumſtances for the better, will admit of the ſame kind of proviſion to be made again for the payment of our debts increaſed by ſuch meaſures as theſe are.

I cannot therefore, Sir, amongſt the ordinary viciſſitudes of the affairs of any nation, not even amongſt any long and expenſive wars, that it may be neceſſary for the defence and ſafety of theſe kingdoms to carry on with our neighbours, find out that exigence of our affairs that can make the miſapplication of the Sinking Fund appear neceſſary, or probable to be put in practice; while it is ſo certain, that the lands, eſtates, expence, or commerce of Great-Britain, will yet eaſily admit of farther duties ſufficient to furniſh new funds to anſwer the intereſt of ſuch ſums as any publick occaſions that I can repreſent to myſelf can call for. Nor can I fear, that ſuch duties will not be chearfully voted and ſubmitted to, when they ſhall appear neceſſary to prevent the miſapplication of an annual ſum employed in ſo uſeful and neceſſary a ſervice to the publick, as the reduction of our debts; while that appears to be retarded ſo much more by diſcontinuing the payment of thoſe debts, than by the increaſe of them.

There is another objection to the probability of the payment of our publick debts, which, if I did not frequently meet with it, I ſhould chuſe not to mention, from my apprehenſions, that in ſtating of it as I have met with it, I ſhould be obliged to mention my ſuperiours with leſs decency, than that grateful ſenſe of the happineſs we enjoy under the preſent reign would on all other occaſions lead me to, or than you, Sir, from the ſame motives would expect from me. But as you are pleaſed to admit you have often met with it from others, you will give me leave to mention it, in my way to anſwer it. The objection I mean is, That the continuance of our publick debts is, and always muſt be, the intereſt of perſons in the adminiſtration; that the greateſt profit of their employments ariſes from hence; and that the neceſſary power and influence to ſupport themſelves in thoſe employments,

Examination of another reaſon which has lately been advanced for ſuſpecting that the miniſters of ſtate will not long continue to apply the whole of the Sinking Fund to the diſcharge of the national debt.

employments, depend greatly on their having reſerved to themſelves the diſpoſition of the various offices and employments in collecting and applying the revenues appropriated to the payment of the publick debts; which, when thoſe debts ſhall be diſcharged, can ſubſiſt no longer.

It muſt be obſerved, in anſwer to this reaſon, that both the king and the miniſters of ſtate have hitherto been anxiouſly careful to apply the Sinking Fund to its proper uſe, the diſcharge of the national debt.

Whatever truth we ſhould admit to be in this objection, we have the pleaſure of obſerving, that it appears to be equally true, from the frequent and earneſt recommendations from his Majeſty of the neceſſary meaſures for diſcharging the publick debts to the care and endeavours of the legiſlature; the ſeveral ſteps that have been taken by them; and the great and effectual proviſion that is already made for this purpoſe; that nothing can have been, or will be, more ſincerely intended and endeavoured by his Majeſty, or the perſons who have had, or ſhall have, the honour to be employed by him.

It may further be obſerved, in anſwer to the ſaid reaſon, that it is not neceſſary, or probable, that, when the national debt ſhall be all paid off, the taxes which now pay the intereſt of it will be aboliſhed.

But from the ſenſe I have juſt now profeſſed to have of the bleſſings we enjoy under the preſent government, I muſt confeſs, I ſhould with no pleaſure look forwards on that period of time, when his preſent Majeſty or his ſucceſſors ſhould be deprived of the means of ſupporting it, or even of rewarding and encouraging the fidelity and ſervices of their beſt ſubjects. The chief uſe therefore that I have propoſed to make of this objection, is to take an occaſion from it, of conſidering how far it is probable that ſuch a reform as is above ſuppoſed, of the various employments in collecting and receiving the preſent revenues, will take place on the diſcharge of the publick debts; or how far it is reaſonable that it ſhould do ſo. And this ſuppoſition being founded on a preſumption, that the particular duties now appropriated to the payment of the publick debts will, after the payment of them, be immediately removed, the reaſonableneſs of that preſumption will be the matter in queſtion.

The Government is now ſupported by other taxes, that are granted anew every year, to wit, the land-tax and the malt-tax.

These taxes might, when the national debt was all paid off, be dropt, and their place ſupplied by ſome of the duties which now pay the intereſt of the ſaid debt.

For the purpoſe of this inquiry, Sir, I ſhould propoſe it to be conſidered, that the ſupport of our government neceſſarily requires a conſiderable annual expence, that is at preſent ordinarily ſupplied by other taxes than thoſe which have been provided to anſwer the payment of the publick debts; that the preſent ordinary proviſion for that annual expence has been hitherto determined, rather by the neceſſities of the publick, than by choice; and that it yet remains to be debated, how far the duties at preſent appropriated to the payment of our debts, or part of them, may, after the diſcharge of thoſe debts, be continued and made to anſwer the ordinary annual expence of our government, more to the advantage of the publick, with leſs burden and expence to the particular eſtates of his Majeſty's ſubjects in this kingdom, and conſiſtently with a more equal and reaſonable proportion of the burthen or expence by every ſubject ſubmitted to,

to, to the benefit he receives from the ſupport of our government, than is now done by the preſent proviſion made for the aforeſaid ordinary annual expence.

It is in vain to ſuppoſe, that the neceſſary expences of a government are to be ſupplied by any taxes that are no ways burthenſome to the whole or ſome part of the community, and conſequently to which ſome objections may not be dreſſed up by perſons intereſted in avoiding them; which objections, however, when ſuch taxes appear neceſſary, it is unreaſonable to propoſe or aggravate. I ſhall not therefore point out any inequality or hardſhip that I may apprehend to be in the ordinary annual proviſion made amongſt us by a land-tax; but content myſelf with making ſome obſervations, tending to recommend the greateſt part of the duties now appropriated to the payment of our debts, as the moſt convenient and reaſonable taxes to ſupply the ordinary expence of our government, when redeemed by the payment of thoſe debts.

This would be found to be very equitable and convenient.

Upon enumerating the ſeveral duties which at different times have been provided to anſwer the demands of the publick creditors, it will appear that the greateſt part of them (whether collected by cuſtom or exciſe(have been laid upon commodities in general uſe and conſumption amongſt that part of the inhabitants of this country, whoſe circumſtances will admit of the expence.

The latter duties (which now pay the intereſt of the national debt,) are, for the moſt part, duties on the conſumption of commodities.

About theſe duties it will appear upon reflection to be generally true that they have been added to the price which thoſe commodities had before the impoſition of ſuch duties, and from thenceforth to be ultimately paid in the laſt price of ſuch commodities by the conſumer.

Upon which ſuppoſition, if the aforeſaid duties are either, by way of cuſtom or exciſe, generally collected throughout the country where ſuch commodities are conſumed; it is plain that the ſaid duties will generally be paid by every perſon reſiding in ſuch a country, nearly in proportion to his ordinary annual expence.

These are the moſt convenient taxes that can be laid in a commercial country.

And this, Sir, is the ſhare or proportion which, of all others, I think moſt eligible to be taken from every perſon reſiding in a country where great part of the inhabitants ſubſiſt by commerce, towards the publick expences of the government of that country, when it can in this manner be done, without enquiring exactly into the expence of every particular inhabitant.

For,

An advantage belonging to theſe taxes.

For, firſt, in this way the publick expence is leaſt ſenſibly felt by thoſe who really contribute towards it; every perſon being voluntary in his expence, and gratifying himſelf while he is contributing from his eſtate to the expence of the government.

A ſecond advantage belonging to them.

2. Contributions in this manner generally made by the inhabitants of a country in proportion to their expence, will be likewiſe made in a near proportion to the real value of the property of the ſame inhabitants; perhaps, a nearer than it would be done by a law made, directing the publick expences to be levied in that proportion, from the great difficulty of finding out, and plain inconvenience of exactly inquiring into the real value of every man's property for a purpoſe of this kind, in a country ſo much engaged in traffick as our's is. Nor will taxes upon our expences vary much from taxes proportioned to the value of our property, (if long continued) from what may at firſt ſight appear a reaſon for that concluſion; I mean, the different choice of the thrifty and extravagant in the proportion of their expences; the firſt of which, by contributing little himſelf to the publick expence, is providing for larger contributions by his ſucceſſors; and the other, by contributing too largely in haſte, is incapacitating himſelf for contributing at all.

Advantages of theſe taxes above direct taxes on property.

I think alſo, that in thoſe particulars in which a tax proportioned to our expences, either does, or may be contrived to, vary from one intended to levy the ſame ſum in proportion to the value of property in Great-Britain, ſuch a tax on our expences appears the more eligible.

1. A tax proportioned to the expences of perſons reſiding in Great-Britain, will collect a proportion of the income of the various profitable profeſſions and employments amongſt us, and of the annual gains of foreign and inland commerce; all which being received and enjoyed by virtue of the laws, and under the protection of this government, ſhould, together with the annual income of our property, contribute towards it.

2. It will likewiſe collect and take in a proportion of the annual income of ſuch eſtates or employments as ſupply the expence of foreigners on different accounts reſiding in Great-Britain, as well as of ſuch of his Majeſty's ſubjects who chuſe to reſide here and ſupport their expences by the income of eſtates in Ireland, or any of our colonies or plantations in America or elſewhere; from whom, in return for the protection their eſtates receive from the arms or influence of Great-Britain, ſupported at our expence, no contributions in common with the inhabitants of this kingdom can be thought unreaſonable.

Contributions

Contributions thus made by perſons reſiding in Great-Britain, in proportion to their expences, will likewiſe include a proportion of the annual income of ſuch eſtates as may be brought hither by foreigners chuſing to ſettle amongſt us, or by any of our own countrymen returning with their gains from other countries.

In ſhort, it will include a proportion of all eſtates whatſoever, whether within or without the kingdom of Great-Britain, and whether diſcovered or not diſcovered, that any way ſupply the expences of our inhabitants, in a manner (as is above obſerved,) not grievous to, or liable to be complained of by, the contributors themſelves, and with the further good œconomy of ſparing on ordinary occaſions, and increaſing, that publick ſtock, that unmoveable part of our property within this kingdom, to which in times of extraordinary danger and expence we muſt neceſſarily have recourſe.

Duties of this kind may alſo be made inſtrumental to the judicious regulation of our trade.

It may likewiſe be conſidered, in recommendation of this manner of ſupplying the ordinary expences of our government by duties in the manner above ſuppoſed, levied in proportion to our expences, what farther conveniencies to the publick may be procured by ſuch duties, over and above ſuch a ſupply to its ordinary expences; ſuch as diſcouraging the conſumption of ſuch foreign commodities as may, in a manner plainly inconvenient to the publick, interfere with, or hinder the conſumption of, the produce or manufactures of our own country; abating the extraordinary price of foreign commodities, or the exorbitant gains of forcigners by the importation of them; the diminiſhing a trade carried on with any of our neighbours, the balance of which is too evidently in their favour; the encouraging any other more profitable branch of the Britiſh commerce; or the preventing the increaſe of any particular article of expence, that may too plainly tend to debauch the manners, or abate the induſtry, of his Majeſty's ſubjects. Of this kind many are the conveniencies that may be procured to a country, by the ſame meaſures that ſupply the ordinary expences of its government. And when it ſhall be conſidered to how many publick uſes of this ſort ſeveral of the duties appropriated to the payment of our debts are ſubſervient, beſides the annual income produced by them; I believe it will appear by no means eligible, and much leſs neceſſary, that the whole of thoſe duties ſhould, immediately after the payment of the publick debts, be removed and determined; when the ſame conveniencies may be ſtill preſerved to us by the continuance of them, and the income of thoſe duties be made to ſupply ſuch of our expences as are now provided for by leſs equal, or leſs beneficial, taxes.

We may therefore conclude that it will not be expedient, when the national debt ſhall be totally diſcharged, to aboliſh all the duties that now are employed in paying the intereſt of it.

Such conſiderations as theſe, I think, are ſufficient to remove the above-mentioned ſuppoſition, that the payment of our publick debts is inconſiſtent with the intereſt of a Britiſh miniſtry; in which, however, I could

It may further be observed, in answer to the reason advanced above in page 419, that the views mentioned in that reason are too remote to influence the ministers of state for many years to come.

could still advance farther, by remarking how remote the views of any interest of this kind are placed, by the length of time that will be necessarily required for the discharge of our present debts from a Sinking Fund; and by observing, that the removal of any part of the present duties, which are any ways inconvenient to the publick, and are continued now only because appropriated to the payment of some part of our debts, will by no means imply or even admit of a reduction of officers employed in the collection of those kind of duties, either by way of custom or excise, in the several ports or districts in Great-Britain, in proportion to the income of such abolished duties; and from several other reflections that have occurred to me on this subject, if I did not think it unnecessary any farther to follow so groundless and indecent a jealousy of the integrity and publick spirit of such of my countrymen, who shall for the future deserve and attain to the favour and confidence of his Majesty or his successors.

Thus far I have been endeavouring to make out, that the provision already made of the present Sinking Fund is an expedient, from which we may with great confidence expect the full and effectual payment of the principal of our present debts within a few years. Upon which, Sir, if I have dwelt longer than you may have thought necessary, I hope you will be pleased to consider in excuse of it, how far I must have been led to do so, by attending to the happy influence that a general confidence in the efficacy of this expedient would have on the credit of our publick funds, especially in case that the measures lately taken by some neighbouring princes should make a rupture with them necessary to us; and how far such a general opinion of the efficacy of this scheme has a tendency to forward and increase the success of it.

An inquiry whether the Government ought, in prudence, to endeavour to procure a further reduction of the interest of the national debt.

I am now brought, Sir, to the last task that, in obedience to your commands, I have assigned myself; and am to inquire what measures it may be most for the interest of the publick to take in the application and use of the Sinking Fund from the year 1727. About which the only question that can, as I think, be put is, Whether it shall be from thenceforth adviseable for us to endeavour after a greater increase of the Sinking Fund, by a farther reduction of the interest of the publick debts? Or if it may not be then on the whole more for the publick interest, to endeavour only after such an increase of the aforesaid fund, as will be produced by the application of it from time to time to the discharge of the publick debts, and the addition of the yearly interest of such of the said debts as shall be from time to time paid off.

Before I proceed to any other consideration which it may be thought material to attend to in determining this question, I shall take leave to state the greater effect the first of these different measures would have in accelerating

rating the payment of the publick debts than the other of them. And this I chuse first to do, because in an affair of this publick concern, and where we are not to be supposed to give ourselves the trouble of the same exactness in computation that we should use in our own private affairs, I am a little apprehensive that people, when they turn their thoughts to this subject, are apt, upon any increase of the Sinking Fund, to promise themselves a farther degree of dispatch in the payment of the publick debts in proportion to such increase. For an instance, to explain my meaning: I fear, that upon stating from the above-mentioned supposition, that the Sinking Fund of £1,000,000 was increased to £1500,000 *per annum*, by an abatement of 1 per cent. interest on 50 millions, the debt supposed to be paid off by it; on stating such a case, I say, I fear it would be in haste inferred, from the Sinking Fund's being increased to half as much again as it was before, that the publick debts would be likewise paid off by the Sinking Fund so increased half as soon again, or that the publick debts would be paid off by a Sinking Fund of one million and a half *per annum* in two third parts of the time that would be taken up in discharging it by a Sinking Fund of one million *per annum* only. But this inference would not be true, by whatever means the Sinking Fund were supposed to be so increased; and least true, when the increase of the Sinking Fund is made by a reduction of the interest of the debt to be paid off by it.

Of the effect which an increase of the Sinking Fund from £1,000,000 *per annum* to £1500,000 *per annum*, by a reduction of the interest upon a debt of 50 millions from 4 per cent. to 3 per cent. would have in accelerating the time in which the said debt would be compleatly discharged.

If the aforesaid fund of £1,000,000 *per annum* were increased to £1500,000 by an addition made to it of £500,000 *per annum* provided by a new tax, or any otherwise than by an abatement of the interest of the 50 millions to be paid off, which should continue to carry 4 per cent. interest, it would be true, that while the said increased Sinking Fund is supposed to be applied to the discharge of that debt, it would pay off in every year half as much again as the Sinking Fund of one million only, beginning at the same time to be applied to the same purpose, would do in the same year; and at the end of any number of years, in which both funds are supposed to continue so applied, will have paid off a principal sum exceeding the principal sum paid off by the Sinking Fund of one million only, by one half part of the latter; or in other words, the principal sum paid off by the aforesaid greater fund will be to that paid off by the lesser, either in an equal number of years from the time they begin to be applied, or in any one year equally distant from that time, in the proportion of three to two. And in this sense the aforesaid greater fund may be said to pay off the publick debt half as fast again, as in the same time it will pay off half as much again. But from hence it is not to be inferred, that the less fund will be half as long again as the greater in discharging the same principal sum; or that the same principal sum would be paid off by the greater fund in two thirds of the time that would be taken up in discharging it by the smaller fund: and of this the plain reason will

ſoon appear on inſpecting the above-made computations; from which it may be obſerved, That the Sinking Fund applied, as we have all along ſuppoſed it, is increaſing by an addition in every year made to it of the intereſt of that principal ſum which was paid off by it in the year before; from whence both the income of the fund itſelf, and the principal ſums annually paid off by it, are in every year greater than in the year before, and increaſing in every year by an addition greater than the addition made to it in the year before: from whence it neceſſarily follows, that in a ſeries of payments made by the Sinking Fund for any number of years carried on, the payments towards the latter end of ſuch ſeries muſt be conſiderably greater than thoſe before; and that the amount of the payments for any number of years ſeparated at the latter end from the reſt of the ſeries, muſt greatly exceed the amount of the payments for any equal number of years in any other part of the ſame ſeries. And from hence it muſt appear, that the exceſs of the payments made by the greater Sinking Fund above thoſe made by the leſs in the ſame number of years, will not be a rule for determining the time in which they muſt ſeverally be employed in diſcharging the ſame principal ſums.

The time of ſuch compleat diſcharge would not be thereby diminiſhed to two thirds of what it was before.

And it will be further from the truth, in the caſe of the Sinking Fund increaſed from an abatement of the intereſt of the debt to be paid off, by an addition of an annual income equal to one half part of its income before ſuch increaſe, to ſuppoſe, that from thenceforth the debt will be diſcharged in two third parts of the time which would have been otherwiſe required; becauſe the additions from time to time made to a Sinking Fund employed in the payment of a debt carrying 3 per cent. intereſt only, do not increaſe in the ſame or ſo great a proportion, as thoſe made annually to a Sinking Fund in the diſcharge of a debt at 4 per cent. From which circumſtance the leſs Sinking Fund increaſing by this greater ratio or proportion, would in a longer ſeries than I hope we have any thing to do with in the preſent caſe, have ſo conſiderable an advantage, as to overtake the greater Sinking Fund in its payments, and from thence to be every year diſcharging a greater debt.

But it would only be leſs than before by about one ſixth part of its former quantity.

But in the caſe we have ſuppoſed, of a debt of fifty millions, the time in which we have before computed that that debt, carrying 3 per cent. intereſt, may be paid off by a Sinking Fund of £1500,000, is 23 years and one half nearly; and by the Sinking Fund of £1,000,000, the debt continuing at 4 per cent. intereſt, it may be paid off in about 28 years; ſo that the time ſaved in the diſcharge of our debts by the reduction of them to 3 per cent. intereſt, appears, on the aforeſaid ſuppoſitions, to be 4 years and a half, or thereabouts; which is ſomething leſs than one ſixth part of the time in which the ſame debt might be diſcharged without any further reduction of the intereſt.

Another

Another way of eſtimating the advantage to the publick which would ariſe from ſuch a diminution of the time in which the national debt would be diſcharged.

Another way of ſtating the advantage to the publick in this contraction of the time which our debts may take up in the diſcharge of them, from 28 to 23 years and a half, would be to find out and aſſign that annual ſum, which, added to the above-ſuppoſed Sinking Fund of £1,000,000 at the publick expence, and without any further reduction of the intereſt of the debt to be paid off, would anſwer the ſame purpoſe as the addition of £500,000 to that fund taken from the income of the publick creditors, and contract the time in which the payment of 50 millions would be compleated, from 28 years to 23 and a half. And this, Sir, will be found to be almoſt £322,000; which yearly expence to the Government for 23 years and a half, would anſwer the ſame purpoſe as the above-ſuppoſed deduction of £500,000 *per annum* from the income of the publick debts. And this advantage I chuſe to ſtate diſtinctly as it is, before I proceed farther, becauſe I think in all the diſcourſe I have met with on this publick affair, I have ſeldom heard any diſtinction made about the convenience of the ſeveral reductions of intereſt from 6 to 5 per cent. and from thence to the rate of intereſt, at 4 per cent. which is ſhortly to take place; or relating to the further reduction to 3 per cent. which we ſeem to intend and be providing for; but on the contrary, they ſeem all to be conſidered and expected alike, as of equal advantage in diſpatching the diſcharge of the publick debts; though it be at the ſame time true, that by the firſt of theſe reductions we came only to have any Sinking Fund at all; and to the ſecond of theſe reductions, together with the proviſions at the ſame time made about the unredeemable annuities, we owe it, that the total payment of our debts by this expedient begins to appear practicable. But in thoſe circumſtances in which we now are, and with thoſe views which we at preſent have of the payment of our debts within no great length of time, from the proviſions already made for that purpoſe, by the reduction of intereſt hitherto effected or contracted for; I think we are at liberty, before any further ſteps of this kind, to conſider of ſome probable conſequences that may follow upon them; which to have produced as objections to any former reductions of publick intereſt, while they appeared ſo neceſſary, might have been thought impertinent or untimely.

It is by no means a juſt concluſion, that, becauſe the former reductions of the intereſt of the publick debts from 6 per cent. to 5 per cent. and from 5 per cent. to 4 per cent. have been beneficial to the nation, therefore a further reduction of the ſaid intereſt from 4 per cent. to 3 per cent. will alſo be beneficial to it.

A reduction of the intereſt of money, if it is brought about without compulſion, is commonly eſteemed a ſign of general proſperity.

It ſeems to me to have been an opinion of late years pretty generally agreed to, (perhaps as long ſince as the celebrated Mr. Locke's performance on that ſubject) That all attempts to reduce intereſt by compulſive methods, or by force of any laws made for that purpoſe, are not only unlikely to ſucceed, but on other accounts inconvenient to the publick: but I know not if the intereſt of the publick in the reduction of it by any other means effected, has been much conſidered; or if ſuch a reduction of intereſt is not uſually expected by us with general ſatisfaction, ariſing from our regarding it as the effect of the common and natural cauſes of a lower intereſt in every country, and ſuch alterations in our circumſtances as are truly enumerated amongſt the inſtances of publick proſperity.

Of the causes of the variations of the rate of interest for money.

Mr. Locke, in his aforesaid treatise on this subject, mentions, as the natural causes of the variations of the rate of interest in any country, the variations of the proportion that the quantity of money bears in such a country to the demand for it, arising either from the quantity of debts contracted amongst the inhabitants, or of the trade carried on by them. To which occasions of a demand for money, I think should be generally added all other circumstances in the affairs of such a country, as may be there supposed ordinarily to contribute to, or be the occasion of, a greater or less demand of that kind. And as a further natural and ordinary cause of a variation any where in the rate of interest, I should chuse to add such alterations in the circumstances or situation of the affairs of the country where such a variation happens, as may make it more or less dangerous or secure to advance money upon loans in all or any of the different scenes of business, where negotiations of this kind are usually carried on; by which last cause I am apt to think, that the more sudden and sensible variations in the rate of interest have been chiefly and most frequently every where occasioned. And when a lower rate of interest is supposed to be produced amongst us, by such causes as these are, it is perhaps most reasonable that it should be regarded with general satisfaction; as it is a proof of such a situation of our affairs as is of itself, and independently on this consequence from it, an instance and part of the description of our general welfare and prosperity; and as the monied man himself has in this case an equivalent for what he may be supposed to lose by the abatement of his income, in the greater safety, with which, on such an occasion, he lends his money, or the less hazard which he runs of the repayment of it, as well as in the greater frequency of opportunities which such a situation in our affairs produces, of putting out and improving money with greater safety. But as far as a lower rate of interest may be produced amongst us, either without such compulsive methods, or the concurrence of such natural and ordinary causes for it as are above mentioned, I apprehend that it yet remains to be inquired into, if it be the interest of the publick that it should be so? and, as far as the success of any measures entered upon for this purpose may be uncertain, if it be, with regard to the publick, advisable that such a reduction of our interest should be attempted or endeavoured after? And in this case it will be allowed me, that a lower rate of interest thus produced, or supposed to be so, is no longer to be considered as a proof of, or attended with the above-mentioned instances of, our publick happiness; such a rate of interest having no tendency in itself to increase our money, or the lenders security for the repayment of it, nor, consequently, being of any effect to produce a real increase of our negotiations in advancing money; which, while no provision is made for increasing either, our capacity or disposition to lend money can by no means become greater, or more frequent, from the greater application to borrow money only.

When the interest of money is lowered in a country by the causes here mentioned, it may be considered as a sign of general prosperity.

But when the interest of money is lowered by the operation of other causes than those above-mention'd, it is not certain that it ought to be so considered.

I shall

Of the effects of stock-jobbing on the prices of the publick stocks.

I shall therefore endeavour, Sir, to describe such transactions amongst us with respect to our publick debts, as I apprehend may have been supposed to have had a great share and influence in producing amongst us lately very great and general variations in the rate of interest, and from which a still further reduction of the rate of interest may be yet expected; I mean those great adventures in the publick funds, of late years so apparently undertaken with a view to such gains, as might be quickly made by the different prices of them, and which have so much contributed to the late great and sudden variations in the market-prices of these securities. In the infancy of these adventures, the chief or only motives to them probably were those pieces of intelligence about the situation of our publick affairs, from the publication of which the adventurer might reasonably infer the general satisfaction or diffidence of the proprietors of the publick debts in their several securities. And as far as intelligence of this kind was true, and the general sense of the proprietors upon the publication of it rightly conjectured or inferred, the rise or fall of stocks produced by these adventures might be regarded as an event, which in a longer time or in a less proportion would have happened, if these adventures had not been made; and in this view may not improperly have been called the growth or declension of our publick credit. But as this practice grew upon us, it is not to be wondered at, if from the general industry of great numbers to be first acquainted with every material occurrence to the publick, and to be earliest in the improvement of their information in adventures of this nature, several variations in the prices of our funds have been produced by transactions in them, undertaken upon false or uncertain intelligence, and groundless inferences and conjectures from it; which variations have not been afterwards to be accounted for from any real alteration in the posture of our affairs, or the general sentiments of the proprietors of the publick debts; and from which therefore the real state of publick credit at such a time would be uncertainly, if not falsely, inferred or determined. The later variations in the prices of our stocks would be still more improperly described to be the growth or declension of our publick credit; which credit, since the restoration of our tranquillity, and during the absence of our apprehensions for the publick safety, can only with propriety be said not to have been disputed or called in question, and which cannot, I think, be supposed to have been of late at all attended to by the purchasers of our publick securities, at premiums and advanced prices far beyond those sums for the re-payment of which the credit of the Government is any ways depended on. In short, by whatever names we have been accustomed, or may chuse, to describe the rise or fall of our stocks, I submit it to such persons who have made any observations on the late transactions in Exchange-Alley, if they have not (and especially the rise of them) been generally occasioned by such adventures made in them, as persons have been induced to from the hopes of gain, from a further

further ſpeedy variation in the price of them, without any regard to the continuance of it; and if theſe variations are not of late come to be expected from any the moſt inconſiderable occaſions, or perhaps for no reaſon at all, but what is to be inquired for in the market, and amongſt the accounts and contracts depending there.

While this diſpoſition continues amongſt numbers to be conſtantly adventuring in the publick funds, and conſequently upon expectations that muſt be generally ſupported by the moſt inconſiderable reaſons, it is hardly to be doubted but that at any time in the abſence of our apprehenſions of any general danger, the intelligence being ſpread amongſt them that any ſcheme or propoſals were to be ſet on foot, by which the riſe of ſtocks was either intended or ſuppoſed, would generally determine theſe adventurers to expect and provide for ſuch a riſe of ſtocks, and by their contracts founded on theſe expectations in a great meaſure to produce it; to effect which purpoſe, I hardly think it material, that any further reaſonable proviſion ſhould be made in the propoſals or ſchemes themſelves, or that any thing would be further neceſſary for this purpoſe, than declaring the riſe of ſtocks to be intended by them. Such a riſe of ſtocks I am almoſt inclined to believe might be the firſt effect of any intelligence communicated in Exchange-Alley at ſuch a time as I have above ſuppoſed, that ſome propoſals were ſhortly to be made to all or great part of the publick creditors, to agree to the further reduction of their intereſt or annuities, as diſagreeable as this muſt at firſt appear to the greateſt part of the creditors themſelves. But how far ſuch a riſe of ſtocks may be in this caſe expected, and how far it may proceed in forwarding any propoſals of this nature, I ſubmit to be conjectured from the following conſiderations.

If the government were to propoſe to reduce the intereſt of the publick debts (with the conſent of the owners of them,) from 4 per cent. to 3, or $3\frac{1}{2}$, per cent. ſuch a propoſal would, probably, occaſion a riſe in the price of ſtocks.

Reaſons in ſupport of this opinion.

Firſt, Such a propoſal muſt ſuppoſe and lead our expectations to a riſe of ſtocks in general; without which, or at leaſt if the contrary ſhould happen, ſuch a propoſal could by no means be executed or complied with, it being neceſſary to the ſucceſs of this propoſal, that the market price ſhould, at the time of making it, offer the proprietor as much, or more, as, if he declined to comply with it, would be payable to him by the Government. And as the greateſt part of the proprietors of the publick debts have been at different times incorporated for the purpoſe of carrying on certain trades, from the profits of which (as I would willingly hope) 1 per cent, or more, has been annually divided over and above the income of their intereſt in the publick debts; if their annuity from the Government, when reduced and diminiſhed, continues to be valued as before, the price of that part which is not liable to any diminution from theſe propoſals, may well enough be expected to riſe in ſome proportion to ſuch a reduction of their annuity. Thus, if to the proprietors of South-Sea ſtock, for inſtance, it were propoſed that their annuities in the year 1727, ſhould be

be from thence reduced to 3 per cent. upon the ſuppoſition that their ſhares in the publick debt ſhould, after ſuch a reduction, continue to be valued, as before, at par, it might be as reaſonable to expect that the 1 per cent. continuing to be divided on every hundred pound ſtock, ſhould be from thenceforth valued in the price of it at 33*l.* 6*s.* 8*d.* as it was before to expect it ſhould be ever valued at 25*l.* And from the riſe of that part of our publick ſecurities which fall under this conſideration, ſome advance in our other ſecurities may likewiſe be expected, as the money received on the ſale of thoſe ſtocks which ſhall firſt, and in the greateſt proportion, riſe on this occaſion, is generally obſerved to be applied to the purchaſe of that part of our publick debts which is conceived to be leſs liable to variation in the prices of them.

Secondly, Such perſons as are obſerved to be conſtantly adventuring in the ſtocks from expectations of gain, either from the riſe or fall of them, muſt be generally ſuppoſed to be determined to theſe adventures by the loweſt degree of probability, that they ſhall ſucceed in them; and it is hardly therefore to be doubted, but that the ordinary adventures in our ſtocks would be made upon expectations of the riſe of them, upon the publication of any propoſals from authority that ſuppoſed the riſe of ſtocks, or implied that it was expected by our ſuperiours.

Thirdly, The riſe of ſtocks upon this occaſion would be further favoured, by the diſpoſition of thoſe proprietors who are not ordinarily engaged in adventures of this kind, to wait for the utmoſt advantage to be made of the riſe of ſtocks, whatever might be their ſentiments about continuing proprietors of the publick debts when reduced to a lower intereſt.

Fourthly, A riſe of ſtocks on this, as well as former occaſions, may be ſtill further advanced, by the ſpreading of falſe computations of the value of our ſtocks, and idle opinions about credit and circulation, and by the force of a general example, aſſiſted by the confidence of the proprietors of our publick debts in the authority by which theſe propoſals may be recommended.

And when the ſtocks ſhall be ſufficiently advanced to colour any propoſals of this nature, it is perhaps not impoſſible that the concurrence of the proprietors to ſuch propoſals ſhould be obtained; though at the ſame time they may be generally diſſatisfied with the lower rate of intereſt propoſed to them, and ſeverally determined on that account to quit their intereſt in the publick debts on the next convenient opportunity. For it is to be conſidered,

That

That the reaſon for their objecting publickly or declaring their ſentiments againſt any propoſals of this kind, is removed by the price of their ſecurities at market, where they are offered for the preſent as much, or more, for them, as, if they thought proper to decline theſe propoſals, would be payable to them by the Government; and that the general diſſatisfaction of the proprietors ſhould not determine them to take advantage of the then market price for the ſale of their ſecurities, and by that means occaſion the fall of ſtocks, and prevent the ſucceſs of theſe propoſals, may in a great meaſure be accounted for from a general inclination to have the utmoſt poſſible advantage from the riſe of ſtocks, from the difficulty of finding on ſuch an occaſion any immediate employment for their money, and their impatience of its lying by them unemployed, joined with that dependance which men generally have on their own foreſight and ſkill in the choice of the fitteſt opportunity for this purpoſe; from which motives, while the bulk of our publick ſecurities may be ſuppoſed to be kept from market, that part of them which ſhall be brought there, by the more wary or determined of the proprietors, will be found for a time provided for, by thoſe conſiderable ſums which the eſtates and credit that perſons engaged in ſuch adventures in the ſtocks as I have above deſcribed, will for a time ſupply the market with.

From the foregoing reaſons it ſeems probable that the conſent of the publick creditors might be obtained to ſuch a reduction of the intereſt of their debts.

I think, Sir, from hence it appears poſſible, that a propoſal for reducing the intereſt of our publick debts, though without any reaſonable foundation, may, as our affairs now ſtand, ſucceed even ſo far as to obtain the concurrence of the proprietors. And the inference which I would from thence make is, that it belongs to them, by whoſe influence or advice ſuch a propoſal ſhall at any time be made, firſt to conſider if there be a ſolid foundation for it, or if it be likely ſtill farther to ſucceed; and not to depend on the conſent of the proprietors, in this manner obtained, as a ſufficient proof that ſuch a propoſal was reaſonable, or as a ſecurity for the ſtill further ſucceſs of it.

Nevertheleſs ſuch a meaſure might not, upon the whole, be adviſeable.

Whenever therefore the further reduction of the intereſt of our publick debts ſhall be attempted, it ſhould be firſt enquired if the real proportion of our ordinary neceſſities for money to our capacity and diſpoſition to ſupply them, have been ſo far altered as to admit of it; and if ſuch an alteration has proceeded from thoſe reaſonable and general cauſes of it, which are likely long to continue and ſupport it. Nor will ſuch an alteration be ſafely inferred from the market-prices of our ſtocks, any further than thoſe prices are determined and produced by ſuch purchaſes only as are made with a view to the improvement of the money laid out in theſe ſecurities from the intereſt or income of them; by which purchaſes of late years the prices of our ſtocks have ſo ſeldom been determined, that perhaps it may be more reaſonable in this caſe to conclude from an enquiry into the

rate of intereſt ordinarily reſerved on private loans, or into thoſe other tranſactions in which we are uſually directed by computations upon the cuſtomary rate of intereſt amongſt us. Theſe tranſactions, however, muſt, as well as the prices of ſtocks, in this caſe be conſidered and attended to on this account, that perſons in the diſpoſition of their money will, as often as they think themſelves equally ſecure, be determined by the greater intereſt they are offered for it; from whence it muſt be expected, that when the income of our publick ſecurities, compared with the prices they are ſold for, offer a leſs improvement for our money than may with equal ſecurity be made of it by private loans or otherwiſe, the general induſtry of mankind to make the beſt improvement of their eſtates, will quickly reduce either the price of our publick ſecurities, or the rate of intereſt in ſuch private tranſactions as aforeſaid.

The reduction of the intereſt of the national debts, from 4 per cent. to $3\frac{1}{2}$ or 3 per cent. ought not to be attempted till a proportional reduction of the intereſt of money lent upon private mortgages ſhall have previouſly taken place.

I queſtion therefore, if any attempts to reduce the intereſt of our publick debts below 4 per cent. at preſent will be of any laſting convenience to the publick, or ever can be ſo till ſuch a lower rate of intereſt ſhall be preceeded by its being cuſtomarily accepted of upon private loans on unqueſtionable ſecurities. For let it be conſidered how ſuch a lower rate of intereſt can otherwiſe appear to be founded on any real variation in the proportion of our neceſſities for money to our capacity or diſpoſition to ſupply them; or if the contrary does not appear, from a higher rate of intereſt ordinarily paid at the ſame time upon private loans. And while this continues to be the caſe, how reaſonable is it to apprehend, that when the money and credit of thoſe adventurers, who firſt advanced the price of ſtock, ſhall be withdrawn, the ſame ordinary neceſſities for money, without any increaſe of the proviſion for ſupplying them, will bring the proprietors of the reduced ſecurities to expect and look out for the former annual income for their money, and thereby occaſion a declenſion in the price of theſe ſecurities proportioned to the diminution of their intereſt?

How far the continuance of thoſe adventures, by which the price of ſtocks is ſuppoſed firſt on ſuch an occaſion to be advanced, may be depended on for the ſupport of it, may be collected from the motives by which the adventurers were firſt engaged in them; and is from thence to be expected but till the utmoſt probable riſe of ſtocks from ſuch propoſals has been effected: after which that the former ſupplies from their credit and eſtates ſhould be withdrawn from market, is not all that is in this caſe to be apprehended, it being further probable that they will be from thence employed in depreciating thoſe ſecurities which were at firſt advanced by them, with a view to the ſame kind of profits from the fall, as they before expected from the riſe of ſtocks. From which, together with the freſh neceſſities which the more inconſiderate of theſe adventures will naturally produce, it would not be at all ſtrange if the price of ſtocks ſhould be carried lower,

beyond the declenſion of them in proportion to the diminution of their income, and the rate of intereſt for a time become higher than it would have been, if ſuch an attempt for the reducing it had not been made. And this conſequence of a riſe of ſtock from adventures of this kind muſt ſome time or other be expected, as far as that rate of intereſt which our real neceſſities would produce is varied from or miſrepreſented by ſuch adventures. It may not probably immediately ſucceed a riſe of ſtocks by theſe means effected; theſe adventures in a time of general tranquillity, may for a conſiderable time be protracted by further views, or the market ſupplied by a ſucceſſion of them; and this has often been the caſe, till upon the arrival of ſome intelligence about the ſituation of our affairs, which we call bad news, theſe views have been given over, and the declenſion of our ſtocks on that occaſion attributed to, and accounted for only from, that intelligence: but if the real occaſion of the great variation in our ſtocks at ſuch a time were further enquired for, it would be found to be the precipitate ſale of great quantities of ſtock, which, with ſuch views as aforeſaid, had been before bought up; and that this declenſion would as certainly, if not ſo ſuddenly, have happened from the ſame occaſion, without the intervention of ſuch intelligence, when theſe views ſhould have been on any other account given over; or when (as, I think, I have heard ſome perſons acquainted with theſe tranſactions expreſs themſelves) *the game had been played out.*

It is very much to be wiſhed that the market-price of the publick debts may be always either equal to, or greater than, their *par*, or original, or nominal, value.

It is true, indeed, that the Government by thoſe terms on which they borrow, I mean, by engaging only for the payment of the intereſt or annuities contracted for till the repayment of the principal, avoid all inconvenience from the intereſt of money advancing after their contract for the reduction of it, and leave the entire diſappointment upon the proprietors. But I ſubmit it, how far the publick can be conſidered to be unconcerned in a diſappointment of the publick creditors, obviouſly owing to their concurrence with propoſals recommended to them by authority; or in that general mutiny and diſcontent, which will be the neceſſary conſequence of ſuch a diſappointment: which from a remarkable inſtance of this nature, after the execution of the late South-Sea ſcheme in the year 1720, we muſt have obſerved to have been once regarded by the Legiſlature, as of ſufficient moment to induce them to releaſe the moſt conſiderable advantage that the publick had agreed for from that ſcheme, though ſet on foot upon the propoſals of the creditors themſelves. And if ever the publick creditors ſhould be generally diſappointed by a conſiderable diſcount upon their ſecurities, obviouſly owing to their concurrence to an abatement of intereſt recommended by publick authority, and propoſed for the convenience of the publick; I doubt if their expectations of relief from the Government could be thought leſs reaſonable. I cannot, for my own part, but think, that the general ſubmiſſion of the publick creditors in their contracts with the

the Government, to wait for the re-payment of their principal till the publick convenience will admit of it, and waving any ſuch agreement about a determined time for the re-payment of it, as in private contracts is ordinarily provided, would be far from removing their expectations of redreſs under a diſappointment of this nature; and rather apprehend, that this ſubmiſſion would be urged on ſuch an occaſion, as a meritorious inſtance of their confidence in the care and protection of our Government, and as a reaſon for their expecting in return for it, that what may be then called Publick Credit ſhould be kept up, and their ſecurities by all poſſible means preſerved at *par*, till the time when they could be diſcharged.

Of the cauſes of the ſucceſs of the firſt of the two late attempts to reduce the intereſt of the publick debt; by which it was reduced from 6 per cent. to 5 per cent.

The ſucceſs attending the reduction of ſo great a part of our debt from 6 to 5 per cent. and from thence afterwards to 4 per cent. cannot certainly be looked on as a foundation for expecting the ſame event of our endeavours to reduce intereſt ſtill further. As to the firſt of theſe reductions, we ſhall find it, on looking back, to have been attempted quickly after ſuch an alteration in the circumſtances of our affairs, as furniſhed the beſt foundation for our hopes of ſucceeding in it: at the end of a long and expenſive war, that threatened us with the loſs of every thing valuable, but more particularly of that part of our property which had been advanced for the ſervices of the publick; at a time when thoſe neceſſities of the Government were removed, which had obliged us for ſeveral years before to be continually increaſing the publick debts, and at the ſame time admitted of no proviſions for the diſcharging of them; at a time when the laſting proſperity of Great-Britain was lately ſecured to us by his preſent Majeſty's acceſſion to the throne, and, ſoon after, by the entire defeat of the laſt attempt that was likely to be made to diſturb or prevent the preſent happy eſtabliſhment. From ſuch a foundation as was then laid for the growing wealth of theſe kingdoms, from the increaſe of our people, our commerce and manufacture, and for the particular ſecurity and greater confidence of the publick creditors, it was moſt reaſonable to expect, that the abatement of publick intereſt then propoſed ſhould take place; eſpecially, when theſe propoſals were attended with the proviſions that were then firſt made, for ſecuring and rendering practicable the diſcharging the principal of the publick debts.

Of the further reduction of the ſaid intereſt from 5 per cent. to 4 per cent. which is to take place in the year 1727.

Nor do I think it unreaſonable to have expected, that by degrees, and from the fruits and ſenſible effects of this happy alteration in our circumſtances, the further reduction of publick intereſt to 4 per cent. which has ſince been agreed for, and which in the year 1727 is generally to take place, might likewiſe be effected. And, though it may be doubted, whether the effect of this laſt reduction of publick intereſt has been yet fully tried, upon recollecting how little the intereſt of the proprietors of the publick debts in this reduction was attended to by themſelves, at the time when it was agreed to; and how poſſible it is, that a far greater number of the proprietors of the preſent funds may have propoſed to quit their intereſt in them, when the

reduction is actually to take place, than will be able to find customers for it, unless at a considerable discount: yet when, on the other hand, it shall be considered, how far this reduction has been precedented by considerable loans amongst us at the same rate of interest, as well before the exigencies of our government during the late war with France, as since his Majesty's accession to the throne; I hope we may chearfully conclude, that this reduction of the publick interest may well enough be supported by the regular application of the annual income of the Sinking Fund to the discharging of our present debts. But no difficulty of finding employment for money at 4 per cent. interest, nor any private loans at a lower rate of interest amongst us, can yet, I think, lead us to expect that a further reduction of publick interest to 3 per cent. will be for any length of time submitted to.

There is no reason to think that a further reduction of the said interest to 3 per cent. will, for many years to come, be practicable.

And while this continues to be the case, and from 4 to 5 per cent. interest is every day offered upon unexceptionable securities, I should think it a more reasonable use made of recollecting the late reductions of our publick interest, to place them to the account of our present happy circumstances; and, before we proceed to expect from the late alteration in our affairs a further reduction of interest, to consider how far we are indebted to it upon that account already.

I have indeed sometimes heard it said, that the last reduction of our annuities to 4 per cent. still wants to be taken care of; and that the price of our publick securities proportioned to that rate of interest, is only to be supported by such adventures as will be encouraged by keeping in view the prospect of a still further reduction of those annuities to be attempted. From these persons I very much differ; and cannot but think that this last reduction (if no new troubles presently fall out) would be effectually supported by the future regular application of the Sinking Fund; from which, in a number of years, I should rather expect that a further reduction of interest may be naturally and reasonably produced, if the effect of this provision be not before-hand too far presumed upon and anticipated. But whoever really thinks that the further reduction of publick interest must be kept in view, in order to support the reductions already made, evidently supposes us to be proceeding in measures with regard to our publick debts, in which we must somewhere stop, and whenever we do so, repent of every step we have taken in advancing thither.

Examination of an argument in favour of a farther reduction of the said interest, drawn from the low rate of interest in some of the towns of Holland.

For want of examples amongst ourselves, as I suppose, to support our expectations of the further reduction of publick interest, I have sometimes heard the present low rate of interest in some of the trading towns of our neighbours the Hollanders, quoted to prove the probability, that the same, or something near the same, low rate of interest may be made to take place amongst us too. But I see not why the low rate of interest in that country should

should be more regarded as the standard for the rate of interest amongst us, than the higher rate of interest in other neighbouring countries, unless on account of our greater commerce and negotiation with the Hollanders. And after I have admitted that the rate of interest amongst them is on this account most likely to have some influence upon our's; I must expect it should be allowed me, that this lower rate of interest than our's having for several years prevailed amongst the Hollanders, has already had its effect with us in the reduction of our interest to that rate which we now consider it to be brought to; and that the further effect or influence of their example in the reduction of our interest, is only to be expected from the further reduction of the rate of interest below what it is at present supposed to be amongst them.

That the circumstances of our affairs are the same in all those particulars that lead to a low interest in any country with those of our before-named neighbours, is by no means, in the present inquiry, to be presumed; if they were so, our rate of interest must now be pretty nearly the same with theirs. But if our rate of interest considerably exceeds theirs, and has (which, as I have been informed, is true) for a long succession of years constantly done so; it must be inferred, that our circumstances, in some particulars that influence the rate of interest, differ much from theirs. And the constancy with which our rate of interest has been observed for a long time to have exceeded theirs, is enough to satisfy us that the occasion of it is to be enquired for in some difference in our circumstances which has continued with equal constancy, and for the same length of time; and not amongst any projects or contrivances at different times set on foot by either of us, to answer any purpose of this nature.

The true reason of the difference between the rates of interest given for money in England and in Holland.

The true and general reason of this difference between our rate of interest and theirs, has, perhaps, been long since assigned by the above-mentioned Mr. Locke, and seems most probably to be the very different proportion which the lands or property of any other kind producing a certain annual income amongst the Hollanders, taxed as that kind of property has been with them, bear to the great stocks and other personal estates of the inhabitants of that country, from that which the value of lands and other property of the same kind here bear to the personal estates in this kingdom. To this difference it seems owing, that while the Hollander can find little other employment for the money he can spare from his own adventures within his own country, than in supplying the necessities which their commerce from time to time produces, the monied inhabitant of this country, besides the opportunities offered him from the ordinary necessities of persons engaged in trade, is hardly ever without proposals for the employment of his money in supplying the wants of the proprietors of our lands, by either purchasing or advancing money upon their estates; and

and from hence is in a condition to demand and obtain a greater reward for the uſe of money than the Hollander can do, where the demand for it in his own country is ſo much leſs. This difference between us, as far as it will be allowed to have been one cauſe why our intereſt has hitherto exceeded theirs, will be allowed alſo as a reaſon why it ſhould continue to do ſo, till the inhabitants, wealth and commerce of Great-Britain, ſhall have increaſed in the ſame proportion to the extent and value of our lands, as it may be obſerved they have done in the Seven Provinces.

The expectation of a further reduction of the intereſt of the publick debt has contributed to increaſe the pernicious practice of *ſtock-jobbing*.

I cannot forbear thinking, that upon this occaſion it deſerves moſt ſeriouſly to be conſidered, how far our late expectations of continued attempts to reduce the rate of intereſt, has contributed to promote and increaſe the aforeſaid traffick in Exchange-Alley; a practice that, in the midſt of thoſe reproaches which it lies under by the name of *ſtock-jobbing*, and the moſt ſerious complaints of its ill conſequences to the kingdom upon every declenſion of our ſtocks, ſeems to me to be ſtill growing upon us. Whenever it ſhall be ſeriouſly intended to prevent or reſtrain this practice, I believe it will appear, that whatever contrivances may be provided for prohibiting the contracts in Exchange-Alley in the manner they are now made, or altering the manner of conveying our intereſt in ſtocks from one perſon to another, while they increaſe the difficulty of the moſt innocent and neceſſary tranſactions in the publick funds, will have little further effect on this practice, than to force it into ſome other channel, and perhaps increaſe the profit and employment of the banker only, by making his credit or aſſiſtance further neceſſary; and that the moſt reaſonable method of preventing it, will be removing the encouragement and temptation to it. And though our complaints of theſe adventures are then only generally made, when they ſeem to contribute to the declenſion of our ſtocks, a little enquiry will convince us, that the foundation for ſuch a *fall* of ſtocks was really laid by thoſe adventures which ſeemed to contribute to, and attended, the *riſe* of them. If during a time of general tranquillity, from unlimited expectations of the perpetual advance of publick credit, countenanced amongſt us beyond any ſufficient foundation for it, perſons are induced to ſpread their eſtates upon the utmoſt price of our publick funds, in ſuch a manner that a variation of 2 or 3 per cent. in the price of them threaten them with the loſs of the greateſt part of their eſtates; what can be expected, but from the earlieſt appearance of publick troubles, an idle rumour, (though improbable to be true,) or the apprehenſion of any ill accident, (though moſt unlikely to fall out,) ſhould determine them, in this ſituation of their affairs, to conſult their ſafety with the utmoſt precipitation, and crowd the market with the ſtock of which before they continued proprietors upon ſuch deſperate terms. A fall of ſtocks by this means occaſioned, with perſons leſs exactly acquainted with the reaſon of it, ſerves as a confirmation of every falſe report at the ſame time publiſhed to

to the prejudice of our affairs: from hence ſtill further quantities of ſtock are brought to market, and a further declenſion in the price of them occaſioned; from whence, to greater apprehenſions of publick danger, and from thence to the further fall of ſtocks, by turns producing and increaſing each other, we may have often been obſerved to proceed without any poſſibility of putting a ſtop to either of them. Upon ſuch an occaſion as this it has often, and perhaps conſtantly, happened, that ſeveral perſons propoſing to themſelves gain from the calamities of the publick, have, on a preſumption of the fall of ſtocks, contracted for the delivery of ſtock which they had not, and could propoſe to furniſh only by the purchaſe of what the growing apprehenſions of others ſhould afterwards bring to market; and of theſe adventures it has been uſual, on the fall of ſtocks, principally to complain. This is a practice, which has doubtleſs often contributed to the misfortunes of the publick on an occaſion of this nature; but which, I doubt not, would in a great meaſure be prevented for the future, if the exceſſive adventures in the purchaſe of ſtocks, in expectations of gain from the riſe of them, were firſt prevented; to which the contrary practice is chiefly owing. For it will, on enquiry, be found, that ſtock-jobbing begins from, and people have been uſually initiated into this practice by, general expectations of the riſe of ſtocks; in which when they are once habituated, and the expectations of gain from the variations in the price of ſtock are become the only end of their tranſactions, their deſpair of advantage by the riſe of ſtock is quickly changed for hopes of profit from the fall of it.

Beſides, the unreaſonable prices to which the extravagant adventures for the riſe of ſtock have carried them, muſt firſt have taught the more wary and leſs credulous adventurers to expect the fall of them, and have been the occaſion of that ſucceſs that has encouraged the continuance of theſe adventures for the fall of ſtocks: nor would the performance of their contracts, for the delivery of ſtock, which they had not, at certain times, be generally practicable, but from the contracts for the ſame time ordinarily made for purchaſing ſtock without providing the money to be paid for it.

And if it be to theſe ſanguine expectations of the riſe of ſtocks, and the adventures founded on them, that the frequent and exceſſive variations in the price of them are really and ultimately owing; how dearly do the publick pay, in every inſtance of perplexity in our affairs, for any convenience to be reaped from, or uſe to be made of, this prevailing humour in the abſence of our apprehenſions of publick danger?

The

The riſe of our ſtocks, produced by the aſſiſtance of ſuch inconſiderate adventures in the purchaſe of them as have been above deſcribed, is at beſt, of itſelf, and without attending to any conſequence from it, a matter of abſolute indifference to the publick in the abſence of general danger; but the conſequence of it in the declenſion of our ſtocks, upon the approach of publick troubles, is by no means ſo; then it is that the general diffidence in our ſecurities and wreck of publick credit is of the utmoſt diſſervice to us, by rendering difficult, if not impracticable, the raiſing ſuch ſupplies as an occaſion of this kind may neceſſarily call for; and as the variation in our publick funds at ſuch a time may be regarded by our neighbours as the meaſure of our apprehenſions from their attempts upon us, and encourage them in their preſumption on the unſettled circumſtances of our affairs: all which difficulties in our affairs on ſuch an occaſion, attended with falſe and groundleſs reports and apprehenſions of our danger, general mutiny and diſcontent, ſeditious exceptions to the conduct of our ſuperiours, and great diſtreſs and interruption to our commerce, I cannot but think we in a great meaſure owe to ſuch inconſiderate purchaſes of our publick funds during the general tranquillity; and that they might in a great degree for the future be prevented, if, by removing all encouragement to the extraordinary riſe of ſtocks, the publick funds were ſuffered to fall generally into the hands of ſuch perſons, who, ſatisfied with their income, ſhall purchaſe them as a ſupply for their ordinary expences, with money which they are not ſoon likely to have any other occaſion for.

Ill conſequences that reſult from the variations in the price of the publick funds occaſioned by ſtock-jobbing contracts.

The proprietors of our debts have, as ſuch, not deſerved ſeverity from the publick; but, as ſubjects of this kingdom, are intitled to have their intereſt regarded by the Government, as far as the publick convenience will admit of it. And in this view there may be ſome room to conſider the unequal hardſhip to the publick creditors, by the loſs of a fourth part of the annual income of their eſtates, implied in the ſucceſs of an attempt to reduce their annuities to 3 per cent. And while the convenience to the publick, to be obtained by ſuch a reduction, is ſuppoſed to be the earlier diſcharge of the publick debts; the hardſhip appears greater from this circumſtance, that what ſhall be thus annually deducted and taken from their income, will not go ſo far in anſwering this purpoſe, as two thirds of the ſame yearly ſum any other way ſupplied, and for this general convenience, more equally levied upon the ſubjects of this kingdom: £322,000 *per annum*, or thereabouts, raiſed at the general expence, and added to the Sinking Fund of £1,000,000, being, as I have before obſerved, ſufficient, on the above-made ſuppoſitions, to effect the total diſcharge of the publick debts, as ſoon as the addition of £500,000 *per annum* deducted from the intereſt of thoſe debts when reduced to 3 per cent. For it ſhould be attended to, that though the gain or convenience to the publick is to be computed upon ſuch of our debts only as from time to time remain unſatisfied,

The proprietors of the publick debts ought to be treated with lenity and tenderneſs, as perſons who have deſerved well of the publick.

unſatisfied, and as long as they remain ſo; yet ſuppoſing the continuance and general ſucceſs of this reduction of our intereſt, the loſs to the publick creditors is from the time of ſuch a reduction to be computed on the whole of the annuities that ſhall be reduced. If this, as a hardſhip on the publick creditors, ſhould not be proper in this caſe to be conſidered; it may be ſo, however, for the purpoſe of collecting what their ſentiments on this affair muſt ſome time or other be. The loſs and inconvenience to them by this reduction will be ſo ſenſibly felt, that no miſrepreſentations can poſſibly long miſlead them: the continuance of their ſubmiſſion to former abatements of their intereſt has been already accounted for, by the then late alteration in our circumſtances for the better, making the purchaſer of our reduced annuities a large amends in his greater ſecurity, and being convenient to the monied men in general in the frequency of opportunities of improving their eſtates with ſafety. But will the preſent happy ſituation of our affairs admit of a further equal alteration in our circumſtances for the better, or that ſhall in the ſame proportion increaſe our ſecurity in advancing money upon the publick credit? The former reductions of our annuities may have been recommended to the publick creditors, as the only means that could render the diſcharge of our debts practicable to the Government; but, as far as they are intereſted in it, is not that end ſufficiently obtained? or is the proſpect that the payment of the publick debts may be thereby effected ſooner, by 4 years and a half in 28, than it would be otherwiſe, of conſequence enough to the proprietor of any part of them, to induce him for that purpoſe only to part with for the future one fourth part of the annual income of his eſtate? However the reduction of publick intereſt hitherto effected may have contributed to the ſecurity of the proprietors, from the next reduction it is perhaps not unreaſonable to apprehend a contrary effect; and next to the great difficulty in the diſcharging of our debts, the moſt reaſonable foundation of our apprehenſions may be, its becoming, in the opinion of ſome perſons, a matter of too much indifference to the publick whether they are ever diſcharged or no. When the publick debts, by the further reduction of their intereſt, ſhall ſit ſo eaſy upon us, as to require but one moiety of the annual proviſion at firſt made for the payment of it, and leave the other at the ſervice of the publick, the danger ſeems to me by no means inconſiderable, that it may ſoon after be determined to employ the annual income of the Sinking Fund in the room of, and to eaſe the publick of ſome other taxes by which our ordinary expences are ſupplied; and that it may be thought as reaſonable to reſt contented with the recovery of half the annual income of the publick funds without any expence to us, as to redeem the whole of them with the trouble and expence of really diſcharging ſo conſiderable a debt.

The further reduction of the intereſt of the publick debts would be a great hardſhip on the publick creditors, and would raiſe great diſcontents amongſt them.

And if this reduction of intereſt be ſucceſsfully carried on, the loſs and inconvenience aforeſaid cannot be confined to the proprietors of our debts only,

And it would alſo be highly inconvenient to many other perſons beſides the publick creditors.

only, or to their property in the publick funds; for if it were ſo, it is plain, the price of them, after ſuch a reduction, muſt be abated in proportion to it: it muſt therefore, if it ſucceeds, take place in the intereſt of all private loans, in the profits of all the different employments of our money, and by degrees muſt affect the profits of our commerce, and ſpread itſelf throughout the kingdom: an effect, which when not produced by, or attended with the increaſe of our wealth, the revival of commerce amongſt us, the ſucceſſion of general tranquillity to a dangerous or unſettled ſituation of our affairs, or other like inſtances of general proſperity, I know not how to regard otherwiſe, than as an uncomfortable and general inconvenience in a country where the perſonal eſtates are ſo conſiderable as here they are; which, if it ſhould be thought not material to attend to, as a hardſhip or inconvenience merely to particular perſons, ſhould at leaſt put us in mind of the oppoſition that muſt ſooner or later be expected amongſt us to meaſures from which a great reduction of intereſt is apprehended.

An examination of the advantages which ſome people imagine would ariſe from ſuch a reduction.

Againſt this great and general inconvenience to the proprietors of perſonal eſtates from a lower intereſt, I would willingly place any further publick or private advantage that may ariſe from it, beſides haſtening the payment of our publick debts. The chief, if not the only, advantages of this kind that I have met with by any perſons propoſed from a lower intereſt, have been the increaſe of our foreign commerce, and the advance of the value of our lands and irredeemable annuities of any kind.

The increaſe of our foreign commerce.

As to the firſt of theſe, it muſt be admitted, that caſes may be put about the particular circumſtances of any country in which a lower rate of intereſt would have a tendency to increaſe their commerce; as it might be an inducement to ſuch perſons who could no longer ſupport themſelves, or were not contented with the income of their eſtates at ſuch a lower rate of intereſt, to engage in trade; and as it might be the means of furniſhing others with money for the purpoſe of undertaking any particular branch of trade, at ſuch intereſt and upon ſuch terms as the profit of ſuch a trade would only anſwer. But all the advantage of this kind that in our circumſtances, and in the preſent caſe, we have to expect, is to be collected only by an inquiry into the preſent ſtate of our commerce; from whence, if it cannot be made to appear that there is at preſent any profitable branch of foreign commerce neglected by us, the profit of which will, over and above the hazard and other expences of adventuring, exactly bear 3 per cent. intereſt for the money employed in it, but will not anſwer four; I ſhould think we have more reaſon to apprehend ſome ill conſequences from a ſudden reduction of intereſt amongſt us with relation to our foreign commerce, which are by no means inconſiderable: ſuch as

It is rather to be apprehended that ſuch a reduction will be hurtful to our foreign commerce, and produce the following ill conſequences.

The

The raſhly engaging unexperienced perſons in unprofitable adventures, to their own and the nation's prejudice, 1ſt ill conſequence.

The increaſing our adventures in the ſeveral branches of our preſent commerce beyond the demand for our commodities, or the poſſibility of vending them with advantage at foreign markets; and thereby rendering the whole of our foreign commerce for the future leſs profitable; and by this means, 2d ill conſequence,

The furniſhing a temptation to the more ſkilful and experienced perſons, at preſent employed in our foreign commerce, to remove with their effects and ſettle in other countries, from whence the commerce they are beſt acquainted with may be carried on with more advantage. An inconvenience which we have the greateſt reaſon to guard againſt at this particular juncture, when our neighbours in the different parts of Europe are ſo generally attempting to rival us in our foreign commerce. 3d ill conſequence.

And if amongſt theſe conſequences of the ſudden reduction of our intereſt, the money of foreigners, which either our Government or private perſons amongſt us at preſent have the uſe of, (to whom moſt certainly a higher rate of intereſt than they can have at home for it, muſt have been the general inducement for their truſting it here) ſhould be called from us, and applied to other uſes; a higher rate of intereſt than before may not only be apprehended, but an abſolute impoſſibility of ſupplying the ordinary demands of our commerce for ſome time at any rate at all. 4th ill conſequence.

Of the increaſe of the value of lands, or the price they will ſell for, by ſuch a reduction.

As to the proprietors of our lands and irredeemable annuities, I am content to admit that they may reaſonably expect a higher price to be offered for their eſtates, in ſome meaſure proportioned to, and regulated by, a lower rate of intereſt produced by, and in proportion to, any ſolid and reaſonable cauſes for it. But I think it has been with truth obſerved by Mr. Locke on this occaſion, that in this higher price of their eſtates, thoſe proprietors are only intereſted who have contracted, or want to contract, debts upon their eſtates; it being of no conſequence to the perſon who neither ſells nor mortgages his eſtate, or intends to do ſo, what price he may procure for it; and it being as plain, that the perſon who on this occaſion receives a higher price on the ſale of his eſtate, from thenceforth ſtands in the place of the monied man, poſſeſſed of a greater ſum of money indeed than he could have had before, but which will produce no greater annual income, nor, generally ſpeaking, go farther in any proviſion he has intended for himſelf or family, nor in any other uſe that he can apply it to (except the diſcharge of ſuch debts as he may have contracted) than a leſs ſum would have done when the rate of intereſt was higher. The principal, if not the only, general advantage of a lower intereſt to

This is no real publick advantage.

the proprietors of land, is therefore ſo far as they have contracted debts; which advantage to them, and to all other perſons who have contracted debts, is exactly balanced in the publick accounts by an equal loſs and inconvenience to their creditors.

Such a reduction would likewiſe, probably, be attended with a diminution of the general expences of the people, and, conſequentially, of the publick revenues ariſing from taxes on the conſumption of commodities.

I will deſire your attention, Sir, but to one conſequence more, which I think will naturally and neceſſarily follow a further reduction of our intereſt, if it can by any means be effected, or for any length of time prevail amongſt us, without the concurrence of what I have hitherto ſuppoſed to be the natural and only reaſonable cauſes of it, viz. a conſiderable diminution of our expences, which the publick, as our affairs now ſtand, and the proprietors of land in particular, ſeem to me not a little intereſted to prevent. A fourth part of the income and uſual profits of the perſonal eſtates in this kingdom, withdrawn and deducted from the whole of our ordinary annual expence, muſt occaſion a very conſiderable diminution in it, when not ſupplied by the increaſe of thoſe perſonal eſtates, or the growing wealth of our inhabitants, and muſt from thence occaſion a conſiderable diminution in the price and conſumption of our commodities. And this I apprehend will be the ſooner and more ſenſibly felt, as the intereſt of money and the profits of perſonal eſtates are more generally the funds for, and ſupply the expence of, the inhabitants of this metropolis of the kingdom, than of any other part of it; and as a variation in our faſhionable expences here is moſt likely to ſpread itſelf, by the force of our example, throughout the other parts of this kingdom, where perhaps there may not be the ſame occaſion for it; from hence it deſerves well to be conſidered, if the publick may not loſe as much, or more, in their revenues ariſing from different commodities conſumed amongſt us, as may be ſaved by the reduction of our intereſt; or if the proprietors of land may not at laſt find themſelves obliged to furniſh from their own revenues thoſe ſupplies for the ſervice of the Government, which have been hitherto furniſhed by our expences. And if it be poſſible that this diminution of our expences ſhould proceed further, in reducing the price of labour, and from thence of our neceſſary proviſions and the produce of our lands, the proprietors of thoſe eſtates muſt in their turn ſuffer from the reduction of their annual revenues.

And it might be neceſſary to increaſe the land-tax to make good the deficiencies of theſe taxes.

It might be of great publick benefit to determine immediately, by an act of parliament, the order in which the publick debts ſhould be ſucceſſively diſcharged by the application of the Sinking Fund.

From ſuch reflections as theſe, Sir, it has ſeemed to me not unreaſonable, that we ſhould at leaſt for ſome time reſt contented with ſuch reductions of publick intereſt as have been hitherto made: from whence I have been further induced to think, that it would be of conſiderable convenience to the publick, if the application of the preſent Sinking Fund, which ſtands now appropriated to the diſcharge of the publick debts in general, were by act of parliament determined as to the courſe and order in which thoſe debts ſhould be for the future diſcharged by it. Theſe meaſures

meaſures with regard to the publick debts may poſſibly have not been hitherto propoſed, on account of that advantage which the publick may have been ſuppoſed for the future to be in a condition to make in the further reduction of publick intereſt, while they reſerved to themſelves the preference of one creditor to another in the order of diſcharging them; but I ſubmit it, how far this advantage would be prudently exchanged for the following conveniencies to the publick, from determining the order in which the Sinking Fund ſhould be applied in the diſcharge of our preſent debts.

Advantages that would ariſe from ſuch a meaſure.

Firſt, The annual income of the Sinking Fund will, by this means, be more fully appropriated to the payment of the publick debts, and the application of it to that purpoſe more effectually ſecured, by entitling every particular creditor to expect the application of it in the order that ſhall be ſo determined.

Secondly, It will be of conſiderable uſe in fixing the credit of the publick funds, and the confidence of the proprietors on ſuch foundations, as will ſupport them in any time of publick difficulty, by removing all grounds for thoſe apprehenſions, which, on ſuch occaſions, are obſerved (greatly to the diſadvantage of the Government) to prevail amongſt us, that the income of the Sinking Fund will be applied to ſome other purpoſes than the diſcharge of our debts; and by giving every particular creditor an opportunity of computing and ſatisfying himſelf in the value of his intereſt in the publick funds, from the knowledge of that time when his principal will be punctually paid off.

Thirdly, It will in a great meaſure prevent ſtock-jobbing, by removing the temptation to it from the great variations in the market-prices of our debts, from ſuch extravagant premiums paid for them in a time of peace, as if the income of them was conceived to be an irredeemable annuity; and ſuch diſcounts on the other hand allowed upon them, in a time of the leaſt general apprehenſion, as if they were regarded as debts almoſt deſperate.

Fourthly, It will lay a further foundation for a greater equality in the prices of our publick debts, by giving an opportunity to the proprietors to ſuit their own convenience in the purchaſe of ſuch part of thoſe debts as are determined to be payable, as near the time as poſſible when they expect any occaſion for their money; and prevent in a great meaſure the neceſſities of the proprietors being brought to market, eſpecially in the manner in which, when any declenſion in the price of ſtocks is apprehended, it may be obſerved often to be done long before they have any real occaſion for their money.

Fifthly,

Fifthly, It will tend to the increaſe of our credit, and the facilitating both of publick and private loans at the preſent, or as far as is reaſonable to wiſh for it, at a lower rate of intereſt, by capacitating ſuch of the creditors, whoſe debts ſhall be in a leſs remote order of payment, to lend out ſuch ſums as they may have by them reſerved for diſtant uſes, in expectation of being ſupplied for ſuch diſtant occaſions by the payment of their ſhare in the publick debts in the order and at the time appointed for it.

And laſtly, ſuch a determination of the order in which the Sinking Fund ſhould be applied in the diſcharge of our publick debts, and the notice the creditors would thereby have when they ſhould be paid off, would give them an opportunity of looking out for, and providing, the moſt apt and convenient employment for their money againſt the time of receiving it; a convenience to the creditors themſelves, which, as the publick is always intereſted in the innocent improvement of our eſtates, may, I think, be eſteemed a general advantage.

A recapitulation of the ſeveral propoſitions that have been advanced and recommended in the courſe of this Eſſay.

I ſhall conclude, by putting together what I have been endeavouring to repreſent about the reduction of our publick intereſt, viz. That the general and uſual rate of intereſt in every country is determined by the proportion that the ordinary neceſſities or demands for money amongſt the inhabitants bear to their capacity and diſpoſition to ſupply them; That any other rate of intereſt produced without a variation in the proportion aforeſaid, or a foundation laid for it, is not likely to continue; That we ſeem here to have had the effect of the late happy alteration in our publick circumſtances, in ſuch reductions of our intereſt as have been made already; That the proſpects of a ſtill further reduction of publick intereſt are a continued encouragement to adventures, which, though they may be made to contribute to the producing ſuch a reduction for a time, are not to be depended on for the ſupport of it; That theſe adventures are themſelves at all times a general inconvenience, and particularly prejudicial to the publick on the approach of troubles. I have likewiſe endeavoured to repreſent, that the further reduction of publick intereſt is neither equally neceſſary, nor of equal advantage to the publick, as either of thoſe that have been already made; nor does it want to be explained, that the ſame addition to the Sinking Fund, to be now made by the next reduction of the publick intereſt below 4 per cent. will diminiſh the remaining income of the creditors in a greater proportion than thoſe before made, and be a greater inconvenience to them. I have recommended it to be conſidered, how far a reduction beginning with the publick intereſt muſt, if it ſucceeds, neceſſarily ſpread itſelf, and affect the reſt of our perſonal eſtates; and from thence the oppoſition that meaſures for reducing intereſt will ſome time meet with, where ſome real alteration in our circumſtances does not perſuade to it. I have propoſed it to be inquired, if there be any other general advantage to be obtained by a lower rate of intereſt amongſt us, than in regard

regard to our publick debts only. And from ſuch conſiderations, would ſubmit it, if it might not be convenient, that not only our meaſures for further reducing intereſt, but our expectations of it were at leaſt for ſome time ſuſpended; till after the regular application of the Sinking Fund now provided for a few years, and the intermiſſion of ſuch extraordinary adventures as aforeſaid in our publick ſtocks, we might with more certainty collect what lower of intereſt our real circumſtances will admit of.

In what little I have ſaid about the conſequences of a lower intereſt on our commerce and expences, I have referred myſelf, Sir, to ſentiments in which I have had the honour to agree with you, and muſt not pretend to have made out any thing to general ſatisfaction: if I had attempted to do ſo, I ſhould have been carried too far beyond the deſign of this eſſay; and ſhould have been obliged to examine ſome prevailing opinions on this ſubject, which ſeem to me ſo far from being reaſonable or true, that I have ſometimes thought that part of them which the private intereſt of particular perſons have not introduced amongſt us, to have been taken up merely on account of their reſemblance to paradoxes, and for that reaſon affording the greateſt amuſement in converſation.

I would not have it, from any thing I have ſaid, inferred, that I am in general againſt any expedient for the much ſpeedier diſcharge of our preſent debts; I ſhould be glad if any reaſonable method for this purpoſe could be thought of; nor would any new burthen, or variation in the preſent burthen, on the ſubjects of this kingdom, implied in any propoſals for this purpoſe, be with me an objection to them, if the means were but found out of proportioning ſuch a new burthen, either to the property or expences of our inhabitants, in ſuch a manner as would be generally ſubmitted and agreed to: and that ſuch an expedient were found out, I wiſh for this general reaſon, that whatever in publick affairs is thought of great and general importance to be done at all, ſhould be done, if poſſible, as ſoon as it appears to be ſo; that the moſt eligible methods for effecting it are ſuch as may be carried on, and finiſhed under the direction of the ſame perſons who were firſt engaged in them; and that the ſucceſs of ſuch meaſures ſhould be as little as poſſible hazarded by the different ſentiments of their ſucceſſors. But this conſideration will not go far in recommending the further increaſe of the Sinking Fund, by reducing the intereſt of the publick debts; which, upon the ſuppoſitions on which my calculations have been made, would not, if the Sinking Fund were increaſed by reducing their intereſt to 2 per cent. be paid off in leſs than 20 years and a half, or thereabouts; if to 1 per cent. in leſs than 18 years and 4 months; or if the creditors would be ſatisfied without any intereſt at all till the payment of their principal, in leſs than ſixteen years and eight months.

I am, SIR, &c.

[*End of Sir Nathaniel Gould's Eſſay on the Publick Debts of this Kingdom.*]

Article CCCLXV. In the foregoing excellent pamphlet of Sir Nathaniel Gould, pages 420 and 421, the judicious author, having occaſion to make mention of the land-tax, takes notice of the hardſhip ariſing from its inequality; but adds that, in his opinion, there was no great occaſion to dwell upon that circumſtance, becauſe there was *then* a proſpect that, by the operation of the Sinking Fund, the national debt would be wholly diſcharged in the courſe of a moderate number of years, after which he adviſes, and likewiſe ſuppoſes, that the taxes which had been before appropriated to the payment of the ſaid debt, would be employed in defraying the ordinary expences of Government, ſo as to make the annual grants of the land-tax and malt-tax become no longer neceſſary. But now (in April, 1782,) that pleaſing proſpect is at an end, and, inſtead of it, there is reaſon to apprehend, that it will be neceſſary, not only to continue the land-tax upon its preſent footing of four ſhillings in the pound, or to raiſe by it the ſum of two millions of pounds, ſterling, *per annum*, for a great number of years to come, (perhaps, for a hundred years,) but even to increaſe the ſaid tax to double its preſent quantity, or to raiſe by it the ſum of four millions of pounds, ſterling, *per annum*, in order to make good the payment of the intereſt of the prodigious ſum of money to which the national debt will, probably, have increaſed before the bleſſing of a general peace ſhall be compleatly reſtored to us;——more eſpecially, if our miniſters of ſtate ſhould reſolve to apply a million, or twelve hundred thouſand, pounds a year out of the Sinking Fund to the gradual diminution of the capital of the ſaid debt in the manner that has been above recommended. The land-tax muſt, therefore, in our preſent unfortunate circumſtances, be conſidered as a *permanent* part of the publick revenue; and conſequently the very great inequality with which it is aſſeſſed on the inhabitants of different counties in the kingdom, and even on thoſe of different diſtricts of the ſame county, is an object well worthy the attention of the Legiſlature; and, if it be really a grievance and a meaſure of great injuſtice (as, I muſt confeſs, it has always appeared to me to be, and as Sir Nathaniel Gould in the paſſages above referred to, in pages 420, 421, ſeems to have conſidered it,) it is highly fit to be ſpeedily corrected and redreſſed. I therefore hope I ſhall be excuſed, if, before I return from this political digreſſion concerning the Sinking Fund and the national debt, to the Doctrine of Life-annuities, (which is the proper ſubject of this book,) I lay before the reader ſome reflections on this ſubject of the inequality of the land-tax, and on the expediency of aſſeſſing it for the future in a more equal manner, which were firſt drawn up and publiſhed in the Publick Advertiſer in the month of January, 1780, together with a propoſal to make the intereſt of all future ſums of money that ſhould be borrowed by the publick, liable to pay land-tax in the ſame proportion with the rents of lands, to the end that all the ſubjects of the Crown, thoſe who are poſſeſſed of perſonal

perſonal property as well as thoſe who have landed eſtates, may both contribute, and be ſeen and known to contribute, in the ſame degree, in proportion to their reſpective annual incomes, to the publick expences which the exigencies of the ſtate make neceſſary. Theſe reflections are as follow:

On the expediency of an EQUAL ASSESSMENT of the LAND-TAX, and of making the annual intereſt of all new publick loans of money ſubject to the ſame tax.

CCCLXVI. It ſeems to be an indiſputable maxim, founded both on equity and good policy, that, when taxes are neceſſary to the exigencies of the ſtate, perſons poſſeſſed of equal incomes ſhould contribute equally towards them. And, whenever this maxim is departed from, even though the ground of ſuch departure may be juſt by virtue of ſome original compact in favour of the perſons who pay leſs than their ſhare of the publick taxes, it is ſure to create ſome jealouſy and uneaſineſs in the other members of the ſtate, and thereby to render the property ſo exempted ſomewhat leſs ſecure than it otherwiſe would be.

Of the very unequal aſſeſſment of the land-tax.

We have, indeed, in our government, two ſtriking inſtances of a departure from this prudent and equitable maxim, which are frequently the ſubjects of very great complaints: I mean, the ſhamefully unequal aſſeſſment of the land-tax on the lands and houſes of the kingdom, and the total exemption of all the intereſt of the publick funds from that and every other tax. By the unequal aſſeſſment of the land-tax, ſome people pay more than four ſhillings in the pound upon the rents of their lands, while others pay only eight-pence or nine-pence, or in ſome places, (as the two northern counties and the new buildings at Marybone) not more than four-pence upon theirs. And this is done by acts of parliament renewed every year, and not by any permanent and original act of parliament that could be conſidered as a plighting of the national faith to the purchaſers of land, that their lands ſhould always be taxed according to the rule of aſſeſſment then obſerved. On the contrary, the perſons who have been lightly taxed have always feared, and thoſe who have been heavily taxed have always hoped, that the Parliament would, one day or other, have a ſufficient regard to juſtice to correct this groſs inequality, and to impoſe the land-tax according to a new and equal aſſeſſment; or rather, indeed, according to a certain proportion of the rents received by every man; or, if the land is kept in the owner's hands, of the rents which were received for it when it was laſt lett, or which it might eaſily be lett for, in the judgment of the commiſſioners of the land-tax; as is done, if I miſtake not, in the caſe of

the late houſe-tax. And they all have hoped, at times, (though now, I believe, that hope is at an end) that the land-tax would be reduced to two ſhillings in the pound, and ſometimes even that it would be intirely taken off, or (to ſpeak more correctly) permitted to expire without being re-impoſed; as I am fully perſuaded it might have been, if prudent and œconomical meaſures had been purſued by our ſeveral miniſters of ſtate for theſe laſt forty years, and both this and the two laſt wars had been avoided. There is, therefore, as I apprehend, no weight in the reaſoning of thoſe who ſay that ſuch a correction of the inequality of the land-tax would be unjuſt with reſpect to thoſe purchaſers of land who have bought their land at a greater price than they otherwiſe would have done, upon an expectation that the land-tax would continue to be raiſed according to the then preſent mode of aſſeſſment. The nation is not bound to continue in the practice of impoſing this tax unequally, becauſe theſe gentlemen have flattered themſelves that they would do ſo.

I am the more confirmed in this opinion of the injuſtice of continuing the land-tax on its preſent unequal footing, becauſe it was that of Dr. Benjamin Franklin, whom I conſider as one of the moſt judicious and wiſeſt men now living upon earth, and of whoſe talents we now feel the force, ſince, by our attack upon one of the charters of the Americans, and our other alarming acts of authority againſt them, we have driven him to employ them againſt us. This truly great man uſed always to quote the continuance of the land-tax, upon its preſent very unequal footing, as a proof of the little regard that was had to juſtice and common ſenſe in our national deliberations. And I remember once in particular, that when it was ſaid that ſome people thought the correction of this inequality would be unjuſt with reſpect to thoſe who had purchaſed land upon a ſuppoſition of its continuance, he replied with ſome quickneſs, "Unjuſt! yes, it would be unjuſt; for it would be doing but half of what ſtrict juſtice would require; which would be to create a counter-inequality in the aſſeſſment of the land-tax, whereby the lands which had been heavily taxed ſhould hereafter be taxed lightly, and thoſe which had been lightly taxed ſhould hereafter be taxed heavily, for the ſpace of about fourſcore years, or for a time that ſhould be equal to the time during which the preſent unequal aſſeſſment had been permitted to continue." This counter-inequality he, perhaps, would not ſeriouſly have wiſhed to ſee eſtabliſhed; but, I think, *that* manner of expreſſing himſelf ſhewed ſtrongly his opinion of the propriety of an exact equality for the future, and his contempt of the arguments derived from its ſuppoſed injuſtice with reſpect to purchaſers.

This firſt deviation, therefore, from the rule of equal taxation in our government ought, as I conceive, to be corrected in the next land-tax act which ſhall be paſſed, there being no valid nor juſt objection to be made to ſuch correction.

CCCLXVII. But

Of the exemption of the publick funds from the payment of taxes.

CCCLXVII. But the caſe is different with reſpect to the other inſtance of a deviation from the ſame rule, to wit, the exemption of the intereſt of the publick debts from the land-tax and all other taxes. For this intereſt cannot be made ſubject to the land-tax without a direct breach of the national faith to the proprietors of it, there being expreſs clauſes in the ſeveral acts of parliament by which the loans that conſtitute theſe debts have been eſtabliſhed, which provide that the ſeveral annuities granted to the perſons who have advanced their money to the Government, ſhall be *free from all taxes, charges, and impoſitions whatſoever.** And the money ſo advanced to Government has been advanced at a lower rate of intereſt in conſequence of theſe clauſes. And much of it, I believe, has been lent to Government in the war of 1741, at the moderate intereſt of about four per cent. which, if it had been left ſubject to the land-tax (as all other perſonal eſtate is, according to the ſtrict letter of the land-tax acts, though, from the difficulty of coming at it, the tax is ſeldom actually paid upon it;) could not have been obtained for leſs than five per cent. The owners of this debt may, therefore, be ſaid to have paid the land-tax upon it in the very act of lending it on the terms propoſed to them; ſince, in conſideration of their exemption from that and other taxes, they conſented to take four, inſtead of five, per cent. for their money. Nevertheleſs, in proceſs of time, theſe original compacts grow to be in a manner forgot by the generality of mankind, who are apt to conſider this exemption of the ſtock-holders from paying the land-tax, as an unjuſt diſtinction in their favour: and the land-holders in general are apt to hold this language, partly, perhaps, from ignorance of the aforeſaid original clauſe of exemption, and partly from the bias of ſelf-intereſt, which makes them wiſh to ſee the ſtock-holders bear a ſhare of the burthen which they labour under, whether they have, or have not, been ſo exempted. I have known men of very good underſtandings and education talk in this manner, and, when they have been told of the ſaid clauſe of exemption in the ſeveral acts of parliament for borrowing the ſaid money, either refuſe to believe that there was ſuch a clauſe, or, if convinced of the exiſtence of it, deny its efficacy and validity, in point of juſtice and good policy, to entitle the ſtock-holders to be ſo exempted. This opinion and inclination in the land-owners of the kingdom, and perhaps in other claſſes of men that are not themſelves ſtock-holders, certainly contributes to make the publick funds leſs ſecure than they would be, if they had not been ſo exempted in their firſt eſtabliſh-

The ground of it.

The ſaid exemption is odious to the land-holders, and thereby leſſens the ſecurity of the ſaid funds.

* Thus, for example, in the ſtatute of the 21ſt of George the Second, chap. ii, ſect. 15, it is enacted, "That all the ſeveral and reſpective annuities, payable in purſuance of this act, after the rate of four pounds *per centum per annum*, on all and every the principal ſums for which the ſame are payable, *ſhall be free from all taxes, charges, and impoſitions whatſoever*."

ment, but had been left liable (like all other property, both real and perſonal,) to pay their proportion of the land-tax: for then, as both the claſſes would conſtantly and viſibly have contributed at the ſame time to the relief of the exigencies of the ſtate, the land-holders would have had no pretence to grudge the ſtock-holders the enjoyment of the intereſt of their money, which would, in every view, have been as much their rightful property as the rents of freehold land are the property of their reſpective owners.

It would tend to the ſecurity of the publick funds, if the proprietors of them would conſent to make the intereſt of them liable to the land-tax.

This diminution of the ſecurity of the publick funds, ariſing from their being thus exempted from taxes, appears to me to be a matter of ſo much importance, (as their ſecurity evidently depends, in a conſiderable degree, on the opinion the nation at large entertains of the juſtice of continuing them) that I ſhould be ready, with reſpect to my little property in them, to give up my right to the ſaid exemption, and make it liable to pay the land-tax at that which may be ſuppoſed to be the medium rate at which it is levied upon the lands of the kingdom, which I have heard people eſtimate at about eighteen pence in the pound, or, at moſt, two ſhillings, when the land-tax is called four ſhillings in the pound, or (to ſpeak more correctly) when the ſum raiſed by the land-tax in England and Wales, (excluſive of Scotland) is about two millions: for it is ſuppoſed that an equal aſſeſſment of the land-tax in England and Wales at eighteen-pence or two ſhillings in the pound, would raiſe the ſaid ſum of two millions. This, therefore, would be the rate at which property in the publick funds ought to be charged to the land-tax, if it could, conſiſtently with juſtice and the preſervation of the national faith, be charged to it at all. And at this rate, I ſay, I would freely conſent to have my property there charged, notwithſtanding my aforeſaid right to an exemption, if all the other proprietors of ſtock, or a majority of them, were willing to do the ſame: and this, not ſo much from a motive of publick ſpirit (though I hope that motive is not without its influence) as from a deſire of rendering the remaining part of the intereſt due to me, the eighteen ſhillings and ſixpence in the pound, more ſecure: for then nothing but the moſt ſhameleſs and bare-faced injuſtice could ever prompt any land-holder to wiſh for, or encourage, any attempt to get rid of the publick debt by any other method than that of fairly paying it off. But ſuch a general conſent of the ſtock-holders to let their ſtock be made liable to pay the land-tax, is what we can hardly expect to ſee; more eſpecially as many of them are foreigners, reſident in Holland and Switzerland, who will probably conceive themſelves to be no way obliged to pay taxes for the ſupport of our government. And to ſubject their ſtock to the land-tax by act of parliament, without their conſent, or even with the conſent of ſome, but not all of them, would undoubtedly be a breach of the national faith, and an act of bankruptcy, *pro tanto*. With reſpect, therefore, to the immenſe publick debt already ſubſiſting, I do not expect, or wiſh, to ſee any endeavours uſed by publick

But this is hardly to be expected.

Nor can ſuch a meaſure be taken, conſiſtently with juſtice, without their conſent.

publick authority to carry this meaſure, of making it liable to the land-tax, into execution. But with reſpect to the loans of the preſent year, 1780, and of the following years, (if more ſuch are to be expected,) I muſt own I ſhould like to ſee it tried. It would certainly have the good effect of increaſing the ſecurity of the money ſo lent, for the reaſon already ſuggeſted: and it would be no immediate diminution of the intereſt received and enjoyed for the ſaid money; becauſe the intereſt which would be given by Government for the money, when liable to this tax, would be proportionably greater than if lent under a clauſe of exemption. And yet Government would be no loſer by it, ſince it would receive back, in the ſhape of a tax on the ſaid intereſt, the additional intereſt it would be obliged to give on this account. This, it may be ſaid, is mere trifling and doing nothing, ſince you give with one hand what you take back with the other. But the advantage reſulting from it is this: the land-holder, and the ſtock-holder, whoſe ſtock is originally made liable to this tax, will ever after run the ſame fortune, and experience the ſame increaſe or diminution of their reſpective incomes, as the affairs of the ſtate are proſperous or unfortunate. If, contrary to all preſent appearance, the land-tax ſhould ever again be leſs than four ſhillings in the pound, the ſtock-holder upon this new eſtabliſhment would enjoy a proportional diminution of the tax upon his property: and, on the other hand, if it ſhould become neceſſary, in the courſe of this moſt ruinous and unhappy war, to make the land-tax double or treble of what it now is, (which ſeems to be a much more likely event than the former) the ſtock-holder will pay a double or treble tax as well as the owner of land, and viſibly bear his proportion of the common burthen, and thereby eſcape the dangerous envy of being conſidered as a kind of foreigner, or neutral perſon unconcerned in the welfare or calamities of his country.

But it would be a uſeful meaſure in the government, to make the intereſt of all *future* publick loans of money liable to the land-tax.

An ingenious and publick-ſpirited writer of ſome letters that have appeared in the Whitehall Evening Poſt, dated from Windſor, and which have been lately collected and publiſhed in a pamphlet printed for Dodſley, has recommended a meaſure of this kind, with reſpect to the publick debt already exiſting, and has given very powerful reaſons in ſupport of it, which, together with the many other important particulars contained in thoſe letters, are well worth the moſt ſerious attention of the publick. But, as ſuch a ſtep would be attended with conſiderable difficulties, I cannot but doubt whether it be, upon the whole, adviſeable.

But the meaſure which I have here ventured to recommend, and which relates only to the ſtock hereafter to be created, would be attended with the ſame advantages, as far as it went, and would not be liable to any of the ſame objections.

And,

It would, probably, be expedient to admit the owners of ſuch ſtock in the publick funds as ſhould be made liable to pay the land-tax, to a right of voting for members of parliament.

And, perhaps, if this meaſure were adopted, either with reſpect to the intereſt of future loans of money, or to that of the money already due to the publick creditors, it might be adviſeable at the ſame time to admit the ſtock-holders who would thus become contributors to the land-tax, to a right of voting for members of the Houſe of Commons, by whom the ſaid tax is granted. Every proprietor of ſuch ſtock, who was of the male ſex, and a native of Great Britain, or Ireland, or any of the Britiſh dominions, and had been in poſſeſſion of an annuity of 10 pounds a year, ſtanding in his own name, in any of the publick funds for more than a whole year, and had reſided for more than a year together in any particular county in England, Wales, or Scotland, might, as I imagine, without any inconvenience, be permitted to vote at the election of the knights of the ſhire, or commiſſioners of the ſhire, in which he had ſo reſided. Perhaps the offer of ſuch a privilege might induce ſome of the preſent proprietors of the publick funds to conſent that the intereſt of their ſhares of the national debt ſhould for the future be made liable to the land-tax: more eſpecially, if they ſhall apprehend themſelves to be under a kind of neceſſity (from the enormity of the preſent load upon the publick revenue,) of making ſome ſacrifice of this nature, or of giving up a part of their annual income, ariſing from the funds, in order to preſerve the remainder; which the *Earl of Stair*, in his very able and moſt intereſting pamphlet on the State of the Publick Revenue, publiſhed about January, 1782, and intitled, *Facts, and Conſequences*, &c. poſitively declares it will be abſolutely neceſſary that they ſhould do.

When the ſtock-holders ſhould have thus become liable to the land-tax, and, in conſideration of their thereby contributing, like the owners of land, to the common burthens of the nation, ſhould have been admitted to a ſhare in the election of the national repreſentative, the ſecurity of their property in the publick funds would be rendered as compleat as any laws, or publick regulations, can make it: though they would ſtill have reaſon to wiſh, at leaſt as heartily as any other claſs of men in the kingdom, that the bleſſing of peace may ſpeedily be reſtored to us, and that then the Government may adopt ſuch meaſures of vigour for increaſing the publick revenue, and ſuch meaſures of œconomy in the management of it, as may enable them gradually to diſcharge ſome part of this enormous debt, and thereby render the payment of the remainder of it leſs precarious.

[*End of the reflections on the Land-tax and the Intereſt of the National Debt.*]

CCCLXVIII. I now return from theſe political digreſſions to the Doctrine of Life-Annuities, which is the proper ſubject of this treatiſe.

And, as I have gone through every thing that has appeared to be neceſſary to the illuſtration of the doctrine of annuities for ſingle lives, I ſhall now proceed to ſubjoin the like ſhort and convenient expreſſions for the values of annuities dependent on more than one life as were given above, in Art. 86 *et ſeq.* for the values of annuities depending on a ſingle life.

A ſhort expreſſion of the value of an annuity of one pound per annum *for a given number of years, depending on the joint continuance of two lives of given ages, according to a given table of the probabilities of the duration of human life, and a given rate of the intereſt of money.*

CCCLXIX. Let r be, as before, the ſum of one pound together with its intereſt for one year according to the given rate of intereſt. And let N be the number of years in the age of the younger of the two perſons on the joint continuance of whoſe lives the annuity is to depend; and $N+a$ the number of years in the age of the older of the ſaid perſons; and E the greateſt number of years through which it is ſuppoſed to be poſſible for human life to be extended, according to the table of the probabilities of the duration of human life adopted for the calculation; which number is in Monſieur de Parcieux's table 94 years. Let n be any number of years not greater than $E-\overline{N+a}$, or $E-N-a$, or than the greateſt number of years during which it is poſſible that the older of the two lives may be prolonged. And let the annuity of one pound *per annum* be granted for the term of n years, provided both the ſaid perſons of the ages of N years and $N+a$ years ſhall ſo long live, but otherwiſe to ceaſe upon the death of either of them. Let P be the number of perſons repreſented in Monſieur de Parcieux's table of the probabilities of the duration of human life, (or in ſuch other table of thoſe probabilities as is thought proper by the calculator to be adopted as the ground of his calculation,) as being all living together at the ſaid age of N years; and P' the number of perſons repreſented in the ſaid table to be living at the age of $N+1$ years; and P'' the number living at the age of $N+2$ years; and P''' the number living at the age of $N+3$ years; and P^{IV}, P^{V}, P^{VI}, P^{VII}, P^{VIII}, P^{IX}, P^{X}, &c. the numbers living at the ſeveral following ages of $N+4$ years, $N+5$ years, $N+6$ years, $N+7$ years, $N+8$

$N+8$ years, $N+9$ years, $N+10$ years, &c. respectively. And let $\mathcal{Q}$ be the number of persons represented in the said table as living at the age of $N+a$ years; and $\mathcal{Q}^{\text{I}}$ the number of persons represented there as living at the age of $N+a+1$ years; and $\mathcal{Q}^{\text{II}}$ the number living at the age of $N+a+2$ years; and $\mathcal{Q}^{\text{III}}$ the number living at the age of $N+a+3$ years; and $\mathcal{Q}^{\text{IV}}$, $\mathcal{Q}^{\text{V}}$, $\mathcal{Q}^{\text{VI}}$, $\mathcal{Q}^{\text{VII}}$, $\mathcal{Q}^{\text{VIII}}$, $\mathcal{Q}^{\text{IX}}$, $\mathcal{Q}^{\text{X}}$, &c. the numbers living at the several following ages of $N+a+4$ years, $N+a+5$ years, $N+a+6$ years, $N+a+7$ years, $N+a+8$ years, $N+a+9$ years, $N+a+10$ years, &c. respectively.

Then will the present value of an annuity of one pound a year, to be enjoyed during the space of n years, in case both the said lives, of the ages of N years and $N+a$ years, shall so long continue, be equal to the expression $\frac{\pounds 1}{P\mathcal{Q}} \times$ the series $\frac{P^{\text{I}} \times \mathcal{Q}^{\text{I}}}{P\mathcal{Q} \times r} + \frac{P^{\text{II}} \times \mathcal{Q}^{\text{II}}}{P\mathcal{Q} \times r^2} + \frac{P^{\text{III}} \times \mathcal{Q}^{\text{III}}}{P\mathcal{Q} \times r^3} + \frac{P^{\text{IV}} \times \mathcal{Q}^{\text{IV}}}{P\mathcal{Q} \times r^4} + \frac{P^{\text{V}} \times \mathcal{Q}^{\text{V}}}{P\mathcal{Q} \times r^5} + \frac{P^{\text{VI}} \times \mathcal{Q}^{\text{VI}}}{P\mathcal{Q} \times r^6} + \frac{P^{\text{VII}} \times \mathcal{Q}^{\text{VII}}}{P\mathcal{Q} \times r^7} +$ &c. continued to n terms, or to the term $\frac{P^n \times \mathcal{Q}^n}{P\mathcal{Q} \times r^n}$, or equal to the expression $\frac{\pounds 1}{P\mathcal{Q}} \times$ the series $\frac{P^{\text{I}} \times \mathcal{Q}^{\text{I}}}{r} + \frac{P^{\text{II}} \times \mathcal{Q}^{\text{II}}}{r^2} + \frac{P^{\text{III}} \times \mathcal{Q}^{\text{III}}}{r^3} + \frac{P^{\text{IV}} \times \mathcal{Q}^{\text{IV}}}{r^4} + \frac{P^{\text{V}} \times \mathcal{Q}^{\text{V}}}{r^5} + \frac{P^{\text{VI}} \times \mathcal{Q}^{\text{VI}}}{r^6} + \frac{P^{\text{VII}} \times \mathcal{Q}^{\text{VII}}}{r^7} +$ &c. continued to n terms, or to the term $\frac{P^n \times \mathcal{Q}^n}{r^n}$. This is evident from Problem III, and its second Corollary, Art. XLIV, XLV, XLVI, and XLVIII, pages 42, 43, 44, 45, 46, 47, 48.

The expression of the value of an annuity of one pound a year for the *whole* joint continuance of two lives of given ages.

CCCLXX. If n years is the greatest number of years through which it is possible (according to the table of the probabilities of the duration of human life adopted in the calculation,) for the older of the two given lives, or the life of the age of $N+a$ years, to be extended, or, in other words, if n is equal to $E-N-a$, the said expression $\frac{\pounds 1}{P\mathcal{Q}} \times$ the series $\frac{P^{\text{I}} \times \mathcal{Q}^{\text{I}}}{r} + \frac{P^{\text{II}} \times \mathcal{Q}^{\text{II}}}{r^2} + \frac{P^{\text{III}} \times \mathcal{Q}^{\text{III}}}{r^3} + \frac{P^{\text{IV}} \times \mathcal{Q}^{\text{IV}}}{r^4} + \frac{P^{\text{V}} \times \mathcal{Q}^{\text{V}}}{r^5} + \frac{P^{\text{VI}} \times \mathcal{Q}^{\text{VI}}}{r^6} + \frac{P^{\text{VII}} \times \mathcal{Q}^{\text{VII}}}{r^7} +$ &c. continued to n terms, or to the

the term $\frac{P^n \times \mathcal{Q}^n}{r^n}$, (which term will in this case be $\frac{P^{E-N-a} \times \mathcal{Q}^{E-N-a}}{r^n}$,) will be the value of an annuity of one pound *per annum* for the whole joint continuance of the two given lives of N years and $N+a$ years: but, if n is less than the said complement of $N+a$ years to E, or to the utmost duration of human life, the said expression will be less than the value of an annuity of one pound *per annum* for the whole joint continuance of the two given lives of the ages of N years and $N+a$ years, and will be the value of an immediate, but imperfect, life-annuity of one pound *per annum* during n years of the joint continuance of the lives of two persons of the said ages. This is evident from Art. XLVIII, XLIX, LI, pages 48, 49, 50, 51, 52, 53.

An example of the computation of the value of an immediate and compleat life-annuity of one pound per annum *for the whole joint continuance of the lives of two persons of given ages, by means of the foregoing expression.*

CCCLXXI. Let it be required to find the value of an annuity of one pound *per annum* for the whole joint continuance of the lives of two persons of the ages of 75 years and 80 years, according to Monsieur de Parcieux's table of the probabilities of the duration of human life, and upon a supposition that the interest of money is 3 per cent.

Here n, or the number of years through which the annuity is to continue, in case both the lives (of which the older is of the age of fourscore years,) shall last so long, is the greatest possible number of years through which, according to Monsieur de Parcieux's table, a life of fourscore years of age can be extended, that is, (94 — 80 years, or) 14 years. Therefore the series $\frac{P^{\text{I}} \times \mathcal{Q}^{\text{I}}}{r} + \frac{P^{\text{II}} \times \mathcal{Q}^{\text{II}}}{r^2} + \frac{P^{\text{III}} \times \mathcal{Q}^{\text{III}}}{r^3} + \frac{P^{\text{IV}} \times \mathcal{Q}^{\text{IV}}}{r^4} + \frac{P^{\text{V}} \times \mathcal{Q}^{\text{V}}}{r^5} + \frac{P^{\text{VI}} \times \mathcal{Q}^{\text{VI}}}{r^6} + \frac{P^{\text{VII}} \times \mathcal{Q}^{\text{VII}}}{r^7} +$ &c. in the foregoing expression must be continued to 14 terms; which terms may be computed as follows.

Here P is $= 211$, $P^{\text{I}} = 192$, $P^{\text{II}} = 173$, $P^{\text{III}} = 154$, $P^{\text{IV}} = 136$, $P^{\text{V}} = 118$, $P^{\text{VI}} = 101$, $P^{\text{VII}} = 85$, $P^{\text{VIII}} = 71$, $P^{\text{IX}} = 59$, $P^{\text{X}} = 48$, $P^{\text{XI}} = 38$, $P^{\text{XII}} = 29$, $P^{\text{XIII}} = 22$, and $P^{\text{XIV}} = 16$; and $\mathcal{Q}$ is $= 118$, $\mathcal{Q}^{\text{I}} = 101$, $\mathcal{Q}^{\text{II}} = 85$, $\mathcal{Q}^{\text{III}} = 71$, $\mathcal{Q}^{\text{IV}} = 59$, $\mathcal{Q}^{\text{V}} = 48$,

$Q^{V} = 48$, $Q^{VI} = 38$, $Q^{VII} = 29$, $Q^{VIII} = 22$, $Q^{IX} = 16$, $Q^{X} = 11$, $Q^{XI} = 7$, $Q^{XII} = 4$, $Q^{XIII} = 2$, and $Q^{XIV} = 1$. And r is $= 1.03$, and $\frac{1}{r} = \frac{1}{1.03} = .9708$, and $\frac{1}{r^2} = .9425$, $\frac{1}{r^3} = .9151$, $\frac{1}{r^4} = .8884$, $\frac{1}{r^5} = .8626$, $\frac{1}{r^6} = .8374$, $\frac{1}{r^7} = .8130$, $\frac{1}{r^8} = .7894$, $\frac{1}{r^9} = .7664$, $\frac{1}{r^{10}} = .7440$, $\frac{1}{r^{11}} = .7224$, $\frac{1}{r^{12}} = .7013$, $\frac{1}{r^{13}} = .6809$, and $\frac{1}{r^{14}} = .6611$. Therefore the expression $\frac{\pounds 1}{P \times Q} \times$ the series

$$\frac{P^{I} \times Q^{I}}{r} + \frac{P^{II} \times Q^{II}}{r^2} + \frac{P^{III} \times Q^{III}}{r^3} + \frac{P^{IV} \times Q^{IV}}{r^4} + \frac{P^{V} \times Q^{V}}{r^5}$$
$$+ \frac{P^{VI} \times Q^{VI}}{r^6} + \frac{P^{VII} \times Q^{VII}}{r^7} + \frac{P^{VIII} \times Q^{VIII}}{r^8} + \frac{P^{IX} \times Q^{IX}}{r^9}$$
$$+ \frac{P^{X} \times Q^{X}}{r^{10}} + \frac{P^{XI} \times Q^{XI}}{r^{11}} + \frac{P^{XII} \times Q^{XII}}{r^{12}} + \frac{P^{XIII} \times Q^{XIII}}{r^{13}}$$

$+ \frac{P^{XIV} \times Q^{XIV}}{r^{14}}$ will be equal to $\frac{\pounds 1}{211 \times 118} \times$ the series

$$192 \times 101 \times .9708 + 173 \times 85 \times .9425 + 154 \times 71 \times .9151$$
$$+ 136 \times 59 \times .8884 + 118 \times 48 \times .8626 + 101 \times 38 \times .8374$$
$$+ 85 \times 29 \times .8130 + 71 \times 22 \times .7894 + 59 \times 16 \times .7664$$
$$+ 48 \times 11 \times .7440 + 38 \times 7 \times .7224 + 29 \times 4 \times .7013$$
$$+ 22 \times 2 \times .6809 + 16 \times 1 \times .6611 = \frac{\pounds 1}{24{,}898} \times \text{the series}$$

$$19{,}392 \times .9708 + 14{,}705 \times .9425 + 10{,}934 \times .9151$$
$$+ 8024 \times .8884 + 5664 \times .8626 + 3838 \times .8374$$
$$+ 2465 \times .8130 + 1562 \times .7894 + 944 \times .7664$$
$$+ 528 \times .7440 + 266 \times .7224 + 116 \times .7013$$
$$+ 44 \times .6809 + 16 \times .6611 = \frac{\pounds 1}{24{,}898} \times \text{the series}$$

$$18{,}825.7536 + 13{,}859.4625 + 10{,}005.7034 + 7{,}288.4336$$
$$+ 4{,}885.7664 + 3{,}213.9412 + 2004.0450 + 1233.0428$$
$$+ 723.4816 + 392.8320 + 192.1584 + 81.3508$$
$$+ 29.9596$$

$+ 29.9596 + 10.5776 = \frac{\pounds 1}{24{,}898} \times 62{,}746.5085 = \pounds 1 \times \frac{62746.5085}{24{,}898} = \pounds 1 \times 2.5201 = \pounds 2.5201$. Therefore the value of an annuity of one pound a year for the whole joint continuance of two lives of the ages of 75 years and 80 years, when the interest of money is 3 per cent. is £2.5201, or 2*l.* 10*s.* 5*d.* Q.E.I.

Note. This value 2.5201 exceeds the value found for the same annuity in Art. XLIX, to wit, £2.5197, by £,0004. But this very small difference (which begins only in the fourth and last place of decimal fractions,) is rather to be considered as a proof of the agreement of the two calculations with each other than of an error in either of them, and probably has arisen from the different order in which the arithmetical operations have been performed in them, the terms of the series having been separately divided by 24898 in Art. XLIX, and the several quotients thence arising added together into one sum, whereas in this latter calculation the same terms have been all added together into one sum without such division, and then the said sum has been divided by 24898.

An example of the computation of the value of an immediate, but imperfect, life-annuity, depending on the joint continuance of the lives of two persons of given ages, by means of the same expression.

CCCLXXII. Let it be required to find the value of an annuity of one pound *per annum* for the first five years of the joint continuance of the lives of two persons of the ages of 75 years and 80 years, according to the same table of the probabilities of the duration of human life, and the same rate of interest, as in the last example.

For this purpose we need only take the first five terms of the foregoing series $\frac{P^{I} \times Q^{I}}{r} + \frac{P^{II} \times Q^{II}}{r^2} + \frac{P^{III} \times Q^{III}}{r^3} + \frac{P^{IV} \times Q^{IV}}{r^4}$ + &c. and multiply their sum into the fraction $\frac{\pounds 1}{P \times Q}$; and the product will be the value of the proposed annuity. These terms are $192 \times 101 \times .9708 + 173 \times 85 \times .9425 + 154 \times 71 \times .9151 + 136 \times 59 \times .8884 + 118 \times 48 \times .8626$; which are equal to

19392 × .9708 + 14,705 × .9425 + 10,934 × .9151 + 8024 × .8834 + 5664 × .8626 = 18,825.7536 + 13,859.4625 + 10,005.7034 + 7,288.4336 + 4,885.7664 = 54,865.1195;

which being multiplied into the fraction $\frac{\pounds 1}{P \times Q}$, or $\frac{\pounds 1}{211 \times 118}$, or $\frac{\pounds 1}{24,898}$, is $= \pounds 1 \times \frac{54,865.1195}{24,898} = \pounds 1 \times 2.2035 = \pounds 2.2035$.

Therefore the value of an annuity of one pound *per annum* for the first five years of the joint continuance of the lives of two persons of the ages of 75 years and 80 years, according to the foregoing suppositions concerning the duration of human life and the interest of money, is £2.2035, or 2*l*. 4*s*. c*d*. $\frac{3}{4}$. Q.E.I.

CCCLXXIII. And, if the annuity to be purchased is a remote one, or is to be paid at the distance of more than one year, a short expression of its value, similar to the foregoing expressions, may be found as follows.

A short and general expression of the value of a remote annuity of one pound per annum *for a given number of years, depending on the joint continuance of two lives of given ages, when the rate of the interest of money is also given.*

Let r be, as before, the value of one pound together with its interest for a year at the given rate of the interest of money. And let m be the number of years at the end of which the annuity is to commence, so that the first payment of it shall be made at the end of $m+1$ years. And let N be the number of years in the age of the younger of the two persons upon the joint continuance of whose lives the annuity is to depend; and let $N+a$ be the number of years in the age of the older of the said persons; at the time of purchasing the said annuity. And let E be, as before, the whole number of years through which it is possible, according to the table of probabilities adopted in the calculation, for human life to be extended; which in Monsieur de Parcieux's table is 94 years. Then will $N+a+m$ be the number of years in the age of the older of the said two persons at the time of the commencement of the said annuity, and $N+a+m+1$ the number of years in his age at the time when the first

first payment of the said annuity will become due; and $E-\overline{N+a+m}$, or $E-N-a-m$, will be the greatest possible number of years through which the life of the said older person can be extended after he shall have attained the age of $N+a+m$ years, and the annuity shall have commenced. Let n be any number of years not greater than $E-N-a-m$; and let P be the number of persons represented in Monsieur de Parcieux's table of the probabilities of the duration of human life, (or in such other table of those probabilities as shall be adopted as the ground of the calculation) as being alive at the age of N years, or of the younger of the said two persons, and Q be the number represented there as living at the age of $N+a$ years, or of the older of the said persons; and out of the P persons represented in the said table as living at the age of N years, let $Pm+1$, $Pm+11$, $Pm+111$, $Pm+1v$, $Pm+v$, &c. be the numbers of persons represented therein as living at the subsequent ages of $N+m+1$ years, $N+m+2$ years, $N+m+3$ years, $N+m+4$ years, $N+m+5$ years, &c. or at the ends of $m+1$ years, $m+2$ years, $m+3$ years, $m+4$ years, $m+5$ years, &c. from the time of purchasing the annuity; and out of the Q persons represented therein as living at the age of $N+a$ years, let $Qm+1$, $Qm+11$, $Qm+111$, $Qm+1v$, $Qm+v$, &c. be the numbers of persons represented therein as living at the subsequent ages of $N+a+m+1$ years, $N+a+m+2$ years, $N+a+m+3$ years, $N+a+m+4$ years, $N+a+m+5$ years, &c. or at the ends of $m+1$ years, $m+2$ years, $m+3$ years, $m+4$ years, $m+5$ years, &c. from the time of purchasing the annuity; and so on for all the following ages in the table.

Then will the value of an annuity of one pound *per annum*, to commence at the distance of m years, (so that the first payment of it shall be made at the end of $m+1$ years,) and to continue during n years, provided two persons, who are of the ages of N years and $N+a$ years at the time of purchasing the annuity, shall so long live, but which shall cease as soon as either of the said persons shall die;—I say, the value of such a remote annuity will be equal to the following expression, to wit,

$$\frac{\pounds 1}{P \times Q} \times \text{the series } \frac{Pm+1 \times Qm+1}{rm+1} + \frac{Pm+11 \times Qm+11}{rm+2} + \frac{Pm+111 \times Qm+111}{rm+3} + \frac{Pm+1v \times Qm+1v}{rm+4} + \frac{Pm+v \times Qm+v}{rm+v} + \text{&c. continued to } n \text{ terms,}$$

or to the term $\frac{Pm+n \times Qm+n}{rm+n}$. This is evident from Art. 111, page 53.

An

An example of the computation of the value of a remote life-annuity, depending upon the joint continuance of two lives of given ages, by means of the foregoing expreſſion.

CCCLXXIV. Let it be required to find the value of an annuity of one pound *per annum* during the joint lives of two perſons of the ages of 75 and 80 years, but which ſhall not commence till five years after the purchaſe of it, ſo that the firſt payment of it ſhall not become due until the end of ſix years, or till the younger of the ſaid two perſons (if he ſhall be then living,) ſhall have attained the age of fourſcore and one years, and the older of the ſaid perſons (if he ſhall be then living,) ſhall have attained the age of fourſcore and ſix years; and which ſhall then continue during the whole remainder of the joint continuance of the lives of the ſaid two perſons; the intereſt of money being 3 per cent. (as in the laſt example,) and the probabilities of the duration of human life being ſuch as they are repreſented to be in Monſieur de Parcieux's table of them.

Here N, or the number of years in the age of the younger of the ſaid two perſons, is 75; and $N+a$, or the number of years in the age of the older of the ſaid two perſons, is 80; and m, or the number of years before the propoſed annuity is to commence, is 5; and conſequently $N+a+m$, or the number of years in the age of the older of the ſaid two perſons, at the time when the annuity is to commence, is 85. E, or the greateſt number of years through which human life can be extended, is, according to Monſieur de Parcieux's table of probabilities, 94 years; and conſequently $E-\overline{|N+a+m}$, or the greateſt number of years through which it is poſſible that the life of the older of the ſaid two perſons can be extended after the annuity ſhall have commenced, is $94-85$, or 9, years. Therefore 9 years is likewiſe the greateſt number of years through which it is poſſible that the lives of both the ſaid perſons ſhould continue together in being. Therefore n, or the greateſt number of years through which it is poſſible the annuity may continue, will be equal to 9 years; becauſe, the annuity, when once it has taken place, is ſuppoſed to continue during the whole remainder of the joint continuance of the lives of the ſaid two perſons. And conſequently the ſeries $\frac{P_{m+1}\times Q_{m+1}}{r^{m+1}}+\frac{P_{m+11}\times Q_{m+11}}{r^{m+2}}+\frac{P_{m+111}\times Q_{m+111}}{r^{m+3}}+\frac{P_{m+1v}\times Q_{m+1v}}{r^{m+4}}+\frac{P_{m+v}\times Q_{m+v}}{r^{m+5}}+$ &c. will conſiſt of nine terms. Theſe terms may be computed as follows.

Since

Since m is $=$ v, we ſhall have $m+1=$ vi, and $m+11=$ vii, $m+111=$ viii, $m+1v=$ ix, $m+v=$ x, $m+vi=$ xi, $m+vii=$ xii, $m+viii=$ xiii, and $m+ix=$ xiv; and in like manner $m+1=6$, $m+2=7$, $m+3=8$, $m+4=9$, $m+5=10$, $m+6=11$, $m+7=12$, $m+8=13$, and $m+9=14$. Therefore the ſeries $\frac{P_{m+1}\times Q_{m+1}}{r^{m+1}}+\frac{P_{m+11}\times Q_{m+11}}{r^{m+2}}+\frac{P_{m+111}\times Q_{m+111}}{r^{m+3}}+\frac{P_{m+1v}\times Q_{m+1v}}{r^{m+4}}+\frac{P_{m+v}\times Q_{m+v}}{r^{m+5}}+\frac{P_{m+vi}\times Q_{m+vi}}{r^{m+6}}+\frac{P_{m+vii}\times Q_{m+vii}}{r^{m+7}}+\frac{P_{m+viii}\times Q_{m+viii}}{r^{m+8}}+\frac{P_{m+ix}\times Q_{m+ix}}{r^{m+9}}$ is equal to $\frac{P_{vi}\times Q_{vi}}{r^6}+\frac{P_{vii}\times Q_{vii}}{r^7}+\frac{P_{viii}\times Q_{viii}}{r^8}+\frac{P_{ix}\times Q_{ix}}{r^9}+\frac{P_{x}\times Q_{x}}{r^{10}}+\frac{P_{xi}\times Q_{xi}}{r^{11}}+\frac{P_{xii}\times Q_{xii}}{r^{12}}+\frac{P_{xiii}\times Q_{xiii}}{r^{13}}+\frac{P_{xiv}\times Q_{xiv}}{r^{14}}$.

But r is, as before, $=1.03$; and conſequently $\frac{1}{r}$ is $=\frac{1}{1.03}=.9708$, and $\frac{1}{r^6}$ is $=.8374$, and $\frac{1}{r^7}=.8130$, and $\frac{1}{r^8}=.7894$, and $\frac{1}{r^9}=.7664$, and $\frac{1}{r^{10}}=.7440$, and $\frac{1}{r^{11}}=.7224$, and $\frac{1}{r^{12}}=.7013$, and $\frac{1}{r^{13}}=.6809$, and $\frac{1}{r^{14}}=.6611$. And P is $=211$, and Q is $=118$, and P_{vi} is $=101$, $P_{vii}=85$, $P_{viii}=71$, $P_{ix}=59$, $P_{x}=48$, $P_{xi}=38$, $P_{xii}=29$, $P_{xiii}=22$, and $P_{xiv}=16$; and Q_{vi} is $=38$, and $Q_{vii}=29$, and $Q_{viii}=22$, and $Q_{ix}=16$, and $Q_{x}=11$, and $Q_{xi}=7$, and $Q_{xii}=4$, and $Q_{xiii}=2$, and $Q_{xiv}=1$. Therefore the expreſſion $\frac{\mathcal{L}\,1}{P\times Q}\times$ the ſeries $\frac{P_{vi}\times Q_{vi}}{r^6}$

$$\frac{P^{VI} \times Q^{VI}}{r^6} + \frac{P^{VII} \times Q^{VII}}{r^7} + \frac{P^{VIII} \times Q^{VIII}}{r^8} + \frac{P^{IX} \times Q^{IX}}{r^9}$$
$$+ \frac{P^{X} \times Q^{X}}{r^{10}} + \frac{P^{XI} \times Q^{XI}}{r^{11}} + \frac{P^{XII} \times Q^{XII}}{r^{12}} + \frac{P^{XIII} \times Q^{XIII}}{r^{13}}$$
$$+ \frac{P^{XIV} \times Q^{XIV}}{r^{14}} \text{ is equal to } \frac{\pounds 1}{211 \times 118} \times \text{the series } 101 \times 38 \times .8374$$
$$+ 85 \times 29 \times .8130 + 71 \times 22 \times .7894 + 59 \times 16 \times .7664$$
$$+ 48 \times 11 \times .7440 + 38 \times 7 \times .7224 + 29 \times 4 \times .7013$$
$$+ 22 \times 2 \times .6809 + 16 \times 1 \times .6611 = \frac{\pounds 1}{211 \times 118} \times \text{the}$$
series $3838 \times .8374 + 2465 \times .8130 + 1562 \times .7894$
$+ 944 \times .7664 + 528 \times .7440 + 266 \times .7224 + 116 \times .7013$
$+ 44 \times .6809 + 16 \times .6611 = \frac{\pounds 1}{211 \times 118} \times$ the series
$3213.9412 + 2004.0450 + 1233.0428 + 723.4816 + 392.8320$
$+ 192.1584 + 81.3508 + 29.9596 + 10.5776 = \frac{\pounds 1}{211 \times 118}$
$\times 7881.3890 = \frac{\pounds 1}{24,898} \times 7881.3890 = \pounds 1 \times \frac{7881.3890}{24,898} = \pounds 1 \times$
$.3165 = \pounds 0.3165 = 6s.\ 4d.$ Therefore $6s.\ 4d.$ is the value of a remote annuity of one pound *per annum*, that is to commence at the distance of five years, (or whereof the first payment is to be made at the end of six years,) and that is to continue during the joint lives of two persons who, at the time of purchasing it, are of the ages of 75 and 80 years; according to Monsieur de Parcieux's table of the probabilities of life, and when the interest of money is 3 per cent. Q.E.I.

CCCLXXV. The foregoing examples are, I presume, sufficient to illustrate the manner of computing the values of annuities, whether immediate or remote, that are to depend on the joint continuance of two lives of given ages. But, when a whole table of the values of such annuities is to be computed, it is not necessary to make a new calculation, similar to that given above in Art. CCCLXXI, for every different year of human

human life; but the values of these annuities for different pairs of lives whose ages differ from each other by the same number of years, may be deduced one from another by an easy arithmetical process similar to that of Mr. Morgan, above explained in Art. C, CI, CII, pages 109, 110, 111, 112, by which the value of an annuity for a single life of any given age is deduced from that of the like annuity for a life that is one year older. This method, (as well as that explained above in Art. C, CI, CII,) has been given by Mr. Morgan in his learned treatise on the Doctrine of Assurances and Annuities for Lives, page 73, and may be explained as follows.

A short and easy method of deducing from the value of an annuity of one pound a year during the joint continuance of any two given lives, the value of a like annuity for the joint continuance of two other lives that are one year younger than the former lives.

CCCLXXVI. Let the number of years in the age of the younger of the two given lives be called N, and the number of years in the age of the older of the said lives be called $N+a$. Then will the numbers of years in the ages of two lives that are younger than the given lives by a year, be $N-1$ years and $N+a-1$ years.

Let the value of an annuity of one pound a year for the joint continuance of the two given lives of the ages of N years and $N+a$ years be $\overset{\pounds}{V}$; and the value of the like annuity of one pound a year for the joint continuance of two other lives that are one year younger than the two given lives, and which consequently are of the ages of $N-1$ years and $N+a-1$ years, be $\overset{\pounds}{Y}$.

Let P be the number of persons who are supposed, in the table of the probabilities of the duration of human life which is adopted as the ground of the calculation, to be living at the age of the younger of the two given lives, that is, at the age of N years, and $P+d$ the number of persons who are therein represented as living at the age which is younger than the former age by one year, that is, at the age of $N-1$ years; and let Q be the number of persons who are therein represented as living at the age of the older of the two given lives, or at the age of $N+a$ years, and $Q+e$ the number of persons represented as living at the age which is younger than the said older age by one year, or at the age of $N+a-1$ years.

And let r be the value of one pound together with its intereſt for one year, according to the rate of intereſt ſuppoſed in the calculation.

Then will $\overset{£}{Y}$, or the value of an annuity of one pound a year for the joint continuance of two lives that are of the ages of $N-1$ years and $N+a-1$ years, or are reſpectively younger than the two given lives by one year, be equal to $\frac{1}{r} \times \frac{P \times Q}{\overline{P+d} \times \overline{Q+e}} \times \frac{£}{\overline{1+V}|$, or to the quantity which ariſes by adding one pound to $\overset{£}{V}$, the value of an annuity of one pound a year for the joint continuance of the two given lives of the ages of N years and $N+a$ years, and then multiplying the ſum $\overline{1+V}|£$, firſt, into the fraction $\frac{1}{r}$, and, ſecondly, into the fraction $\frac{P \times Q}{\overline{P+d} \times \overline{Q+e}}$. This may be demonſtrated in the manner following.

DEMONSTRATION.

CCCLXXVII. It is evident from Art. CCCLXX, that $\overset{£}{V}$, or the value of an annuity of one pound a year for the joint continuance of two lives of the given ages of N years and $N+a$ years, is (if we make uſe of the notation uſed in Art. CCCLXIX, CCCLXX,) equal to the expreſſion $\frac{£1}{P \times Q} \times$ the ſeries $\frac{P^{I} \times Q^{I}}{r} + \frac{P^{II} \times Q^{II}}{r^2} + \frac{P^{III} \times Q^{III}}{r^3} + \frac{P^{IV} \times Q^{IV}}{r^4} +$ &c. continued to $E-N-a$ terms, and that $\overset{£}{Y}$, or the value of a like annuity of one pound a year for the joint continuance of two lives of the ages of $N-1$ years and $N+a-1$ years, is equal to the expreſſion $\frac{£1}{\overline{P+d} \times \overline{Q+e}} \times$ the ſeries $\frac{P \times Q}{r} + \frac{P^{I} \times Q^{I}}{r^2} + \frac{P^{II} \times Q^{II}}{r^3} + \frac{P^{III} \times Q^{III}}{r^4} + \frac{P^{IV} \times Q^{IV}}{r^5} +$ &c. continued to $E-N-a+1$ terms.

Now

Now this laſt expreſſion (which is $= \overset{£}{Y}$,) may be derived from the former (which is $= \overset{£}{V}$,) by adding $\overset{£}{1}$ to it, and then multiplying the ſum, firſt, into the fraction $\frac{1}{r}$, and, ſecondly, into the fraction $\frac{P \times Q}{\overline{P+d} \times \overline{Q+e}}$.

For, if we add $\overset{£}{1}$ to the expreſſion $\frac{£1}{P \times Q} \times$ the ſeries $\frac{P^{I} \times Q^{I}}{r} + \frac{P^{II} \times Q^{II}}{r^2} + \frac{P^{III} \times Q^{III}}{r^3} + \frac{P^{IV} \times Q^{IV}}{r^4} +$ &c. continued to $E-N-a$ terms, it will become equal to $\overset{£}{1} + \frac{£1}{P \times Q} \times$ the ſeries $\frac{P^{I} \times Q^{I}}{r} + \frac{P^{II} \times Q^{II}}{r^2} + \frac{P^{III} \times Q^{III}}{r^3} + \frac{P^{IV} \times Q^{IV}}{r^4} +$ &c. continued to $E-N-a$ terms, $= \frac{£1}{P \times Q} \times P \times Q + \frac{£1}{P \times Q} \times$ the ſeries $\frac{P^{I} \times Q^{I}}{r} + \frac{P^{II} \times Q^{II}}{r^2} + \frac{P^{III} \times Q^{III}}{r^3} + \frac{P^{IV} \times Q^{IV}}{r^4} +$ &c. continued to $E-N-a$ terms, $= \frac{£1}{P \times Q} \times$ the ſeries $P \times Q + \frac{P^{I} \times Q^{I}}{r} + \frac{P^{II} \times Q^{II}}{r^2} + \frac{P^{III} \times Q^{III}}{r^3} + \frac{P^{IV} \times Q^{IV}}{r^4} +$ &c. continued to $E-N-a+1$ terms. And this quantity, being multiplied by $\frac{1}{r}$, will become equal to $\frac{£1}{P \times Q} \times$ the ſeries $\frac{P \times Q}{r} + \frac{P^{I} \times Q^{I}}{r^2} + \frac{P^{II} \times Q^{II}}{r^3} + \frac{P^{III} \times Q^{III}}{r^4} + \frac{P^{IV} \times Q^{IV}}{r^5} +$ &c. continued to $E-N-a+1$ terms; and,

being further multiplied by the fraction $\frac{P \times Q}{P+d \times |Q+e}$, it will become equal to $\frac{\overset{\pounds}{1}}{P+d| \times \overline{Q+e}} \times$ the series $\frac{P \times Q}{r} + \frac{P^{\text{I}} \times Q^{\text{I}}}{r^2} + \frac{P^{\text{II}} \times Q^{\text{II}}}{r^3} + \frac{P^{\text{III}} \times Q^{\text{III}}}{r^4} + \frac{P^{\text{IV}} \times Q^{\text{IV}}}{r^5} +$ &c. continued to $E-N-a+1$ terms, that is, to $\overset{\pounds}{Y}$. Therefore $\frac{1}{r} \times \frac{P \times Q}{P+d| \times |Q+e} \times \frac{\overset{\pounds}{1}}{1+V|}$ is $= \overset{\pounds}{Y}$. QED.

CCCLXXVIII. I will now proceed to give a few examples of this method of deducing the values of annuities for joint lives from thoſe of annuities for joint lives that are one year older, by which it will become familiar to the reader.

Examples of the foregoing method.

CCCLXXIX. Let us therefore ſuppoſe that the intereſt of money is $3\frac{1}{2}$ per cent. and that the two lives for whoſe joint continuance an annuity of one pound a year is to be granted are, ſucceſſively, of the ages of 83 years and 93 years, of 82 years and 92 years, of 81 years and 91 years, of 80 years and 90 years, of 79 years and 89 years, of 78 years and 88 years, of 77 years and 87 years, of 76 years and 86 years, of 75 years and 85 years, of 74 years and 84 years, of 73 years and 83 years, of 72 years and 82 years, of 71 years and 81 years, and of 70 years and 80 years; in all which pairs of lives the difference of the two ages is conſtantly 10 years. And let the probabilities of the duration of human life be ſuppoſed to be ſuch as they are repreſented to be in Monſieur de Parcieux's table of them.

CCCLXXX. Then, in the firſt place, we muſt compute the value of an annuity of one pound a year for the joint continuance of the two oldeſt lives, to wit, thoſe of the ages of 83 years and 93 years, by means of the expreſſion $\frac{\overset{\pounds}{1}}{P \times Q} \times$ the ſeries $\frac{P^{\text{I}} \times Q^{\text{I}}}{r} + \frac{P^{\text{II}} \times Q^{\text{II}}}{r^2} + \frac{P^{\text{III}} \times Q^{\text{III}}}{r^3} + \frac{P^{\text{IV}} \times Q^{\text{IV}}}{r^4} +$ &c. continued to $E-N-a$ terms, which is given for that purpoſe in Art. CCCLXX.

Here

Here r is $= 1.035$; and E is 94 years; N, or the number of years in the age of the younger of the two lives, is 83; a, or the difference of the ages of the two lives, is 10 years; $N+a$, or the number of years in the age of the older of the two lives, is 93; $E-N-a$ is $94-93$ years, or 1 year; P, or the number of perſons living at the age of the younger life, or the age of 83 years, is 71; P^{I}, or the number of perſons living at the age of 84 years, is 59; Q, or the number of perſons living at the age of the older of the two lives, or at the age of 93 years, is 2; and Q^{I}, or the number of perſons living at the age of 94 years, is 1; and Q^{II}, Q^{III}, Q^{IV}, &c. or the numbers of perſons living at the ages of 95 years, 96 years, 97 years, &c. are equal to 0. Therefore all the terms of the ſeries $\frac{P^{\text{I}} \times Q^{\text{I}}}{r} + \frac{P^{\text{II}} \times Q^{\text{II}}}{r^2} + \frac{P^{\text{III}} \times Q^{\text{III}}}{r^3} + \frac{P^{\text{IV}} \times Q^{\text{IV}}}{r^4} +$ &c. after the firſt term $\frac{P^{\text{I}} \times Q^{\text{I}}}{r}$, are equal to 0; and conſequently the expreſſion $\frac{\overset{\pounds}{1}}{P \times Q} \times$ the ſeries $\frac{P^{\text{I}} \times Q^{\text{I}}}{r} + \frac{P^{\text{II}} \times Q^{\text{II}}}{r^2} + \frac{P^{\text{III}} \times Q^{\text{III}}}{r^3} + \frac{P^{\text{IV}} \times Q^{\text{IV}}}{r^4} +$ &c. is $= \frac{\overset{\pounds}{1}}{P \times Q} \times \frac{P^{\text{I}} \times Q^{\text{I}}}{r}$ $= \frac{\overset{\pounds}{1}}{71 \times 2} \times \frac{59 \times 1}{1.035} = \frac{\overset{\pounds}{1}}{142} \times \frac{59}{1.035} = £1 \times \frac{59}{142 \times 1.035} = £1 \times \frac{59}{146.970} = £1 \times .401,442 = £0.401,442$. Therefore, according to Monſieur de Parcieux's table of the probabilities of the duration of human life, the value of an annuity of one pound a year for the joint continuance of two lives of the ages of 83 years and 93 years, when the intereſt of money is $3\frac{1}{2}$ per cent. is £0.401,442, or 8s. $\frac{1}{4}d$. QEI.

CCCLXXXI. Having thus found the value of an annuity of one pound a year for the joint continuance of the oldeſt pair of lives by means of the expreſſion $\frac{\overset{\pounds}{1}}{P \times Q} \times$ the ſeries $\frac{P^{\text{I}} \times Q^{\text{I}}}{r} + \frac{P^{\text{II}} \times Q^{\text{II}}}{r^2} + \frac{P^{\text{III}} \times Q^{\text{III}}}{r^3} + \frac{P^{\text{IV}} \times Q^{\text{IV}}}{r^4} +$ &c. given for that purpoſe in

Art.

Art. CCCLXX, we may now proceed to find the values of a like annuity for the joint continuance of all the younger pairs of lives above-mentioned, by means of the expreſſion $\frac{1}{r} \times \frac{P\,\mathcal{Q}}{\overline{P+d|} \times \overline{|\mathcal{Q}+e}} \times \overline{1+V|}\,\mathcal{L}$. This may be done in the manner following.

CCCLXXXII. To find the value of an annuity of one pound a year for the joint continuance of two lives of the ages of 82 years and 92 years, we muſt proceed as follows.

The value of an annuity of one pound a year for the joint continuance of two lives of the ages of 83 years and 93 years has been found to be $\overset{\mathcal{L}}{0.401,442}$. Therefore $\overset{\mathcal{L}}{V}$ is $= \overset{\mathcal{L}}{0.401,442}$. The numbers of perſons living at the ages of 83 years and 82 years are 71 and 85; and the numbers of perſons living at the ages of 93 years and 92 years are 2 and 4. Therefore P is $= 71$, and $P+d$ is $= 85$, and $\mathcal{Q}$ is $= 2$, and $\mathcal{Q}+e$ is $= 4$. And r is $= 1.035$. Therefore $\frac{1}{r} \times \frac{P \times \mathcal{Q}}{\overline{P+d|} \times \overline{|\mathcal{Q}+e}} \times \overline{1+V|}\,\mathcal{L}$ is $= \frac{1}{1.035} \times \frac{71 \times 2}{85 \times 4} \times \mathcal{L}1.401,442 = \frac{1}{1.035} \times \frac{71}{85 \times 2} \times \mathcal{L}1.401,442 = \frac{1}{1.035} \times \frac{71}{170} \times \mathcal{L}1.401,442 = \frac{1}{1.035 \times 170} \times 71 \times \mathcal{L}1.401,442 = \frac{1}{175.950} \times \mathcal{L}99.502,382 = \frac{99.502,382}{175.950} = \mathcal{L}0.565,515$. Therefore $\overset{\mathcal{L}}{Y}$, or the value of an annuity of one pound a year for the joint continuance of two lives of the ages of 82 years and 92 years, is $= \mathcal{L}0.565,515$, or 11*s.* 3*d.* $\frac{3}{4}$. QEI.

CCCLXXXIII. When the two lives are of the ages of 81 years and 91 years, we ſhall have $\overset{\mathcal{L}}{V} = \overset{\mathcal{L}}{0.565,515}$, and conſequently $\overset{\mathcal{L}}{1} + \overset{\mathcal{L}}{V} = \mathcal{L}1.565,515$. And P will be $= 85$, and $P+d = 101$, and $\mathcal{Q} = 4$, and $\mathcal{Q}+e = 7$. Therefore $\frac{1}{r} \times \frac{P \times \mathcal{Q}}{\overline{P+d|} \times \overline{|\mathcal{Q}+e}} \times \overline{1+V|}\,\mathcal{L}$ will be

be $= \frac{1}{1.035} \times \frac{85 \times 4}{101 \times 7} \times \mathcal{L}1.565,515 = \frac{1}{1.035} \times \frac{340}{707} \times \mathcal{L}1.565,515 = \frac{340 \times \overset{\mathcal{L}}{1.565,515}}{1.035 \times 707} = \frac{340 \times \overset{\mathcal{L}}{1.565,515}}{731.745} = \frac{\overset{\mathcal{L}}{532.275,100}}{731.745} = \mathcal{L}0.727,405$. Therefore $\overset{\mathcal{L}}{Y}$, or the value of an annuity of one pound a year for the joint continuance of two lives of the ages of 81 years and 91 years, is $= \mathcal{L}0.727,405$, or 14*s.* 6*d.* $\frac{1}{2}$ QEI.

CCCLXXXIV. When the two lives are of the ages of 80 years and 90 years, we ſhall have $\overset{\mathcal{L}}{V} = \overset{\mathcal{L}}{0.727,405}$, and conſequently $\overset{\mathcal{L}}{1} + \overset{\mathcal{L}}{V} = \mathcal{L}1.727,405$. And P will be $= 101$, $P+d = 118$, $\mathcal{Q} = 7$, and $\mathcal{Q}+e = 11$. Therefore $\frac{1}{r} \times \frac{P \times \mathcal{Q}}{\overline{P+d|} \times \overline{|\mathcal{Q}+e}} \times \overline{1+V|}\,\mathcal{L}$ will be $= \frac{1}{1.035} \times \frac{101 \times 7}{118 \times 11} \times \mathcal{L}1.727,405 = \frac{707}{1.035 \times 118 \times 11} \times \mathcal{L}1.727,405 = \frac{\overset{\mathcal{L}}{1221.275,335}}{1.035 \times 118 \times 11} = \frac{\overset{\mathcal{L}}{1221.275,335}}{1.035 \times 1298} = \frac{\overset{\mathcal{L}}{1221.275,335}}{1343.430} = \overset{\mathcal{L}}{0.909,072}$. Therefore $\overset{\mathcal{L}}{Y}$, or the value of an annuity of one pound a year for the joint continuance of two lives of the ages of 80 years and 90 years, is $= \mathcal{L}0.909,072$, or 18*s.* 2*d.* $\frac{1}{4}$. QEI.

CCCLXXXV. When the two lives are of the ages of 79 years and 89 years, we ſhall have $\overset{\mathcal{L}}{V} = \overset{\mathcal{L}}{0.909,072}$, and conſequently $\overset{\mathcal{L}}{1} + \overset{\mathcal{L}}{V} = \mathcal{L}1.909,072$. And P will be $= 118$, and $P+d = 136$, and $\mathcal{Q} = 11$, and $\mathcal{Q}+e = 16$. Therefore $\frac{1}{r} \times \frac{P \times \mathcal{Q}}{\overline{P+d|} \times \overline{|\mathcal{Q}+e}} \times \overline{1+V|}\,\mathcal{L}$

will

will be $= \frac{1}{1.035} \times \frac{118 \times 11}{136 \times 16} \times £1.909,072 = \frac{£1298 \times 1.909,072}{1.035 \times 136 \times 16}$

$= \frac{£1298 \times 1.909,072}{1.035 \times 2176} = \frac{2477.975,456}{2252.160} = £1.100,266.$ Therefore $\overset{£}{Y}$, or the value of an annuity of one pound a year for the joint continuance of two lives of the ages of 79 years and 89 years, is £1.100,266, or 1*l.* 2*s.* 0*d.* Q E I.

CCCLXXXVI. When the two lives are of the ages of 78 years and 88 years, we shall have $\overset{£}{V} = \overset{£}{1.100,266}$, and consequently $\overset{£}{1} + \overset{£}{V} = £2.100,266$. And P will be $= 136$, and $P + d = 154$, and $\mathfrak{Q} = 16$, and $\mathfrak{Q} + e = 22$. Therefore $\frac{1}{r} \times \frac{P \times \mathfrak{Q}}{\overline{P+d|} \times \overline{|\mathfrak{Q}+e}} \times \overline{1+V|}\,£$ will be $= \frac{1}{1.035} \times \frac{136 \times 16}{154 \times 22} \times £2.100,266 = \frac{1}{1.035} \times \frac{2176}{3388}$ $\times £2.100,266 = \frac{£4570.178,816}{3506.580} = £1.303,315.$ Therefore $\overset{£}{Y}$, or the value of an annuity of one pound a year for the joint continuance of two lives of the ages of 78 years and 88 years, is £1.303.315, or 1*l.* 6*s.* 0*d.* $\frac{3}{4}$. Q E I.

CCCLXXXVII. When the two lives are of the ages of 77 and 87 years, we shall have $\overset{£}{V} = \overset{£}{1.303,315}$, and consequently $\overset{£}{1} + \overset{£}{V} = £2.303,315$. And P will be $= 154$, and $P + d = 173$, and $\mathfrak{Q} = 22$, and $\mathfrak{Q} + e = 29$. Therefore $\frac{1}{r} \times \frac{P \times \mathfrak{Q}}{\overline{P+d|} \times \overline{|\mathfrak{Q}+e}} \times \overline{1+V|}\,£$ will be $= \frac{1}{1.035} \times \frac{154 \times 22}{173 \times 29} \times £2.303,315, = \frac{1}{1.035} \times \frac{3388}{173 \times 29}$ $\times £2.303,315, = \frac{1}{1.035} \times \frac{3388}{5017} \times £2.303,315, = \frac{3388}{5192.595} \times$ £2 303,315

$£2.303,315 = \frac{£7803.631,220}{5192.595} = £1.502,838.$ Therefore $\overset{£}{Y}$, or the value of an annuity of one pound a year for the joint continuance of two lives of the ages of 77 years and 87 years, is £1.502,838, or 1*l.* 10*s.* $\frac{1}{2}$*d.* Q E I.

CCCLXXXVIII. When the two lives are of the ages of 76 and 86 years, we shall have $\overset{£}{V} = \overset{£}{1.502,838}$, and consequently $\overset{£}{1} + \overset{£}{V} = £2.502,838$. And P will be $= 173$, $P + d = 192$, and $\mathfrak{Q} = 29$, and $\mathfrak{Q} + e = 38$. Therefore $\frac{1}{r} \times \frac{P \times \mathfrak{Q}}{\overline{P+d|} \times \overline{|\mathfrak{Q}+e}} \times \overline{1+V|}\,£$ will be $= \frac{1}{1.035} \times \frac{173 \times 29}{192 \times 38} \times £2.502,838 = \frac{1}{1.035} \times \frac{5017}{7296} \times$ $£2.502,838 = \frac{£12556.738,246}{7551.360} = £1.662,844.$ Therefore $\overset{£}{Y}$, or the value of an annuity of one pound a year for the joint continuance of two lives of the ages of 76 years and 86 years, is £1.662,844, or 1*l.* 13*s.* 3*d.* Q E I.

CCCLXXXIX. When the two lives are of the ages of 75 years and 85 years, we shall have $\overset{£}{V} = \overset{£}{1.662,844}$, and consequently $\overline{1+V|}\,£ = £2.662,844$. And P will be $= 192$, and $P + d = 211$, and $\mathfrak{Q} = 38$, and $\mathfrak{Q} + e = 48$. Therefore $\frac{1}{r} \times \frac{P \times \mathfrak{Q}}{\overline{P+d|} \times \overline{|\mathfrak{Q}+e}} \times \overline{1+V|}\,£$ will be $= \frac{1}{1.035} \times \frac{192 \times 38}{211 \times 48} \times £2.662,844 = \frac{1}{1.035} \times \frac{7296}{211 \times 48}$ $\times £2.662,844 = \frac{1}{1.035} \times \frac{7296}{10128} \times £2.662,844 = \frac{7296 \times £2.662,844}{10482.480}$ $= \frac{£19,428.109,824}{10482.480} = £1.853,388.$ Therefore $\overset{£}{Y}$, or the value of an annuity of one pound a year for the joint continuance of two lives of the ages of 75 years and 85 years, is £1.853,388, or 1*l.* 17*s.* 0*d.* $\frac{3}{4}$. Q E I.

CCCXC. When the two lives are of the ages of 74 years and 84 years, we shall have $\overset{£}{V} = \overset{£}{1.853,388}$, and consequently $\overline{1+V}|\,£ = £2.853,388$. And P will be $= 211$, and $P+d = 231$, and $\mathcal{Q} = 48$, and $\mathcal{Q}+e = 59$. Therefore $\frac{1}{r} \times \frac{P \times \mathcal{Q}}{\overline{P+d}| \times |\overline{\mathcal{Q}+e}} \times \overline{1+V}|\,£$ will be $= \frac{1}{1.035} \times \frac{211 \times 48}{231 \times 59} \times £2.853,388 = \frac{1}{1.035} \times \frac{10128}{13629} \times £2.853,388 = \frac{\overset{£}{28,899.113,664}}{14,106.015} = £2.048,708$. Therefore $\overset{£}{Y}$, or the value of an annuity of one pound a year for the joint continuance of two lives of the ages of 74 years and 84 years, is $£2.048,708$, or 2*l.* 0*s.* 11*d.* $\frac{3}{4}$. Q E I.

CCCXCI. When the two lives are of the ages of 73 years and 83 years, we shall have $\overset{£}{V} = \overset{£}{2.048,708}$, and consequently $\overline{1+V}|\,£ = £3.048,708$. And P will be $= 231$, and $P+d = 251$, and $\mathcal{Q} = 59$, and $\mathcal{Q}+e = 71$. Therefore $\frac{1}{r} \times \frac{P \times \mathcal{Q}}{\overline{P+d}| \times |\overline{\mathcal{Q}+e}} \times \overline{1+V}|\,£$ will be $= \frac{1}{1.035} \times \frac{231 \times 59}{251 \times 71} \times £3.048,708 = \frac{1}{1.035} \times \frac{13629}{17821} \times £3.048,708 = \frac{\overset{£}{41,550.841,332}}{18,444.735} = £2.252,720$. Therefore $\overset{£}{Y}$, or the value of an annuity of one pound a year for the joint continuance of two lives of the ages of 73 years and 83 years, is $£2.252,720$, or 2*l.* 5*s.* $\frac{1}{2}$*d.* Q E I.

CCCXCII. When the two lives are of the ages of 72 years and 82 years, we shall have $\overset{£}{V} = \overset{£}{2.252,720}$, and consequently $\overline{1+V}|\,£ = £3.252,720$. And P will be $= 251$, and $P+d = 271$, and $\mathcal{Q} = 71$, and $\mathcal{Q}+e = 85$. Therefore $\frac{1}{r} \times \frac{P \times \mathcal{Q}}{\overline{P+d}| \times |\overline{\mathcal{Q}+e}} \times \overline{1+V}|\,£$ will be $= \frac{1}{1.035} \times \frac{251 \times 71}{271 \times 85} \times £3.252,720 = \frac{1}{1.035} \times \frac{17821}{23035} \times £3.252,720 = \frac{\overset{£}{57,966.723,120}}{23,841.225} = £2.431,365$. Therefore $\overset{£}{Y}$, or the value of an annuity of one pound a year for the joint continuance of two lives of the ages of 72 years and 82 years, is $= £2.431,365$, or 2*l.* 8*s.* 7*d.* $\frac{1}{4}$ Q E I.

CCCXCIII. When the two lives are of the ages of 71 years and 81 years, we shall have $\overset{£}{V} = \overset{£}{2.431,365}$, and consequently $\overline{1+V}|\,£ = £3.431,365$. And P will be $= 271$, and $P+d = 291$, and $\mathcal{Q} = 85$, and $\mathcal{Q}+e = 101$. Therefore $\frac{1}{r} \times \frac{P \times \mathcal{Q}}{\overline{P+d}| \times |\overline{\mathcal{Q}+e}} \times \overline{1+V}|\,£$ will be $= \frac{1}{1.035} \times \frac{271 \times 85}{291 \times 101} \times £3.431,365 = \frac{1}{1.035} \times \frac{23035}{29391} \times £3.431,365 = \frac{\overset{£}{79,041.492,775}}{30,419.685} = £2.598,366$. Therefore $\overset{£}{Y}$, or the value of an annuity of one pound a year for the joint continuance of two lives of the ages of 71 years and 81 years, is $= £2.598,366$, or 2*l.* 11*s.* 11*d.* $\frac{1}{2}$. Q E I.

CCCXCIV. When the two lives are of the ages of 70 years and 80 years, we shall have $\overset{£}{V} = \overset{£}{2.598,366}$, and consequently $\overline{1+V}|\,£ = £3.598,366$. And P will be $= 291$, and $P+d = 310$, and $\mathcal{Q} = 101$, and $\mathcal{Q}+e = 118$. Therefore $\frac{1}{r} \times \frac{P \times \mathcal{Q}}{\overline{P+d}| \times |\overline{\mathcal{Q}+e}} \times \overline{1+V}|\,£$ will be $= \frac{1}{1.035} \times \frac{291 \times 101}{310 \times 118} \times £3.598,366 = \frac{1}{1.035} \times \frac{29,391}{36,580} \times £3.598,366 = \frac{\overset{£}{105,759.605,106}}{37,860.300} = £2.793,416$. Therefore $\overset{£}{Y}$, or the value of an annuity of one pound a year for the joint continuance of two lives of the ages of 70 years and 80 years, is $= £2.793,416$, or 2*l.* 15*s.* 10*d.* $\frac{1}{2}$. Q E I.

End of the examples of the foregoing method.

 CCCXCV. The

CCCXCV. The foregoing examples are, I presume, sufficient to illustrate, and render familiar to the reader, the method given in Art. CCCLXXVI of deriving the values of annuities for two joint lives from those of equal annuities for two joint lives one year older than the former by means of the expression $\frac{1}{r} \times \frac{P \times Q}{\overline{P+d} \times \overline{Q+e}} \times \overline{1+V}|\mathcal{L}$.

A remark on the foregoing method of computing a table of the values of annuities for two joint lives.

And this is undoubtedly the best method that can be taken for the purpose of computing a table of these annuities. Yet it is liable to the inconvenience mentioned above in Art. CXCIV, page 208, as belonging to the other method above explained in Art. C, CI, CII, by which the values of annuities for single lives are successively deduced from the values of annuities for the next older lives by means of the expression $\frac{1}{r} \times \frac{P}{P+d} \times \overline{1+V}|\mathcal{L}$, to wit, that, as the values of these annuities are deduced by it one from another in regular succession from the older ages to the younger, any error that should happen to be made in computing the value of any one of them would affect the values of all the following life-annuities, which would belong to younger ages than those in which the error arose. But this inconvenience Mr. Morgan has enabled us to remove by giving us a method of examining and proving the truth of our calculations, as fast as we make them, which is similar to the method given by him for the like purpose in the case of annuities for single lives, which has been stated and explained above in Art. CXCV, CXCVI, CXCVII, and CXCVIII. This method is as follows.

Of Mr. Morgan's method of proving the truth of the computations of the values of annuities for two joint lives, that are made by means of the foregoing expression, $\frac{1}{r} \times \frac{P \times Q}{\overline{P+d} \times \overline{Q+e}} \times \overline{1+V}|\mathcal{L}$, *as fast as they are made.*

CCCXCVI. Let N be (as before, in Art. CCCLXXVI,) the number of years in the age of the younger of any two given lives, upon the joint continuance of which an annuity of one pound *per annum* is to depend; and $N+a$ be the number of years in the older of the said lives. And let P, P^{I}, P^{II}, P^{III}, P^{IV}, P^{V}, P^{VI}, &c. be the numbers of persons represented in the table of the probabilities of life that is adopted as the ground of the calculation, as living at the ages of N years, $N+1$ years,

years, $N+2$ years, $N+3$ years, $N+4$ years, $N+5$ years, $N+6$ years, &c. respectively; and Q, Q^{I}, Q^{II}, Q^{III}, Q^{IV}, Q^{V}, Q^{VI}, &c. be the numbers of persons represented therein as living at the ages of $N+a$ years, $N+a+1$ years, $N+a+2$ years, $N+a+3$ years, $N+a+4$ years, $N+a+5$ years, $N+a+6$ years, &c. respectively. Also let A be the number of persons represented in the said table as living at the youngest age in the said table; (which in Monsieur de Parcieux's table of these probabilities is the age of 3 years:) and let K be the number of persons represented therein as living at the age which is greater than the said youngest age by a years. And let the number of years by which the age of N years, or of the younger of the two given lives, exceeds the youngest age in the table, be m years. Then will the age of $N-m$ years be the youngest age in the table, at which the number of persons represented in the table as living is A; and $N-m+a$ will be the number of years in the age which exceeds the said youngest age by a years, and at which the number of persons represented in the table as living is K.

CCCXCVII. These things being premised, it is evident, in the first place, That the present value of a single future payment of one pound, to be received at the end of m years in case two persons, who are now of the ages of $N-m$ years (or the youngest age in the table,) and $N-m+a$ years, shall both be then alive, is $\frac{\mathcal{L}1}{r^m} \times \frac{P \times Q}{A \times K}$. This is evident from Problem III, Art. XLV, pages 44, 45, 46.

Preliminary propositions necessary to the demonstration of the principal proposition on which Mr. Morgan's method is founded.

In the second place, it follows from Art. CCCLXXIII, that the value of a remote annuity of one pound a year, that is to commence at the distance of m years, (or whereof the first payment is to be received at the end of $m+1$ years,) and that is to continue during the joint lives of two persons of the ages of $N-m$ years (or the youngest age in the table,) and $N-m+a$ years, will be $\frac{\mathcal{L}1}{A \times K}$ × the series $\frac{P^{I} \times Q^{I}}{rm+1} + \frac{P^{II} \times Q^{II}}{rm+2} + \frac{P^{III} \times Q^{III}}{rm+3} + \frac{P^{IV} \times Q^{IV}}{rm+4} + \frac{P^{V} \times Q^{V}}{rm+5} +$ &c. continued to the end of the table, and consequently will be $=$ $\mathcal{L}1$ × the series $\frac{P^{I} \times Q^{I}}{A \times K \times rm+1} + \frac{P^{II} \times Q^{II}}{A \times K \times rm+2} + \frac{P^{III} \times Q^{III}}{A \times K \times rm+3} + \frac{P^{IV} \times Q^{IV}}{A \times K \times rm+4}$

$+ \frac{P^{IV} \times Q^{IV}}{A \times K \times r^{m+4}} + \frac{P^{V} \times Q^{V}}{A \times K \times r^{m+5}}$ + &c. continued to the end of the table. Let the value of this remote annuity be called $\overset{\pounds}{R}$.

And, in the third place, it is evident that the value of an immediate life-annuity of one pound a year (or one of which the firſt payment is to be received at the end of a year,) that is to continue during the joint lives of two perſons of the ages of N years and $N + a$ years, is $= \frac{\overset{\pounds}{1}}{P \times Q} \times$ the ſeries $\frac{P^{I} \times Q^{I}}{r} + \frac{P^{II} \times Q^{II}}{r^2} + \frac{P^{III} \times Q^{III}}{r^3} + \frac{P^{IV} \times Q^{IV}}{r^4} + \frac{P^{V} \times Q^{V}}{r^5}$ + &c. continued to the end of the table. Let this value be (as before,) called $\overset{\pounds}{V}$.

The ſaid principal propoſition itſelf.

CCCXCVIII. Now, if the laſt of theſe three quantities (which is $= \overset{\pounds}{V}$) be multiplied into the firſt of them, to wit, $\frac{\overset{\pounds}{1}}{r^m} \times \frac{P \times Q}{A \times K}$, or the preſent value of a future ſingle payment of one pound, to be received at the end of m years in caſe of the joint continuance of two lives of the ages of $N - m$ years and $N - m + a$ years, the product thence ariſing will be equal to the ſecond of them, (to wit, $\pounds 1 \times$ the ſeries $\frac{P^{I} \times Q^{I}}{A \times K \times r^{m+1}} + \frac{P^{II} \times Q^{II}}{A \times K \times r^{m+2}} + \frac{P^{III} \times Q^{III}}{A \times K \times r^{m+3}} + \frac{P^{IV} \times Q^{IV}}{A \times K \times r^{m+4}} + \frac{P^{V} \times Q^{V}}{A \times K \times r^{m+5}}$ + &c. continued to the end of the table,) or to $\overset{\pounds}{R}$, or to the value of a remote annuity of one pound a year, that is to commence at the diſtance of m years, or ſo that the firſt payment of it ſhall be received at the end of $m + 1$ years, and that ſhall continue during the joint lives of two perſons of the ages of $N - m$ years (or the youngeſt age in the table,) and $N - m + a$ years.

DEMONSTRATION.

For $\frac{\overset{\pounds}{1}}{r^m} \times \frac{P \times Q}{A \times K} \times \frac{\overset{\pounds}{1}}{P \times Q} \times$ the ſeries $\frac{P^{I} \times Q^{I}}{r} + \frac{P^{II} \times Q^{II}}{r^2} + \frac{P^{III} \times Q^{III}}{r^3} + \frac{P^{IV} \times Q^{IV}}{r^4} + \frac{P^{V} \times Q^{V}}{r^5}$ + &c. continued to the

end of the table, is $= \frac{\overset{\pounds}{1}}{r^m} \times \frac{1}{A \times K} \times$ the ſame ſeries $\frac{P^{I} \times Q^{I}}{r} + \frac{P^{II} \times Q^{II}}{r^2} + \frac{P^{III} \times Q^{III}}{r^3} + \frac{P^{IV} \times Q^{IV}}{r^4} + \frac{P^{V} \times Q^{V}}{r^5}$ + &c. continued to the end of the table, $= \pounds 1 \times$ the ſeries $\frac{P^{I} \times Q^{I}}{A \times K \times r^{m+1}} + \frac{P^{II} \times Q^{II}}{A \times K \times r^{m+2}} + \frac{P^{III} \times Q^{III}}{A \times K \times r^{m+3}} + \frac{P^{IV} \times Q^{IV}}{A \times K \times r^{m+4}} + \frac{P^{V} \times Q^{V}}{A \times K \times r^{m+5}}$ + &c. continued to the end of the table, $= \overset{\pounds}{R}$. QED.

Mr. Morgan's method itſelf, derived from the foregoing propoſition.

CCCXCIX. If, therefore, in computing a table of the ſeveral values of an annuity of one pound a year for the joint continuance of ſeveral ſucceſſive pairs of lives whoſe ages differ from each other by the ſame number of years, or a years, we at the ſame time compute the correſponding values of the expreſſion $\frac{\overset{\pounds}{1}}{r^m} \times \frac{P \times Q}{A \times K}$ and of the expreſſion $\pounds 1 \times$ the ſeries $\frac{P^{I} \times Q^{I}}{A \times K \times r^{m+1}} + \frac{P^{II} \times Q^{II}}{A \times K \times r^{m+2}} + \frac{P^{III} \times Q^{III}}{A \times K \times r^{m+3}} + \frac{P^{IV} \times Q^{IV}}{A \times K \times r^{m+4}} + \frac{P^{V} \times Q^{V}}{A \times K \times r^{m+5}}$ + &c. continued to the end of the table, or of $\overset{\pounds}{R}$, and then multiply the expreſſion $\frac{\overset{\pounds}{1}}{r^m} \times \frac{P \times Q}{A \times K}$ into $\overset{\pounds}{V}$, or the value of the annuity for two lives which we have before computed, and it ſhall appear that the product thereby obtained is equal to $\overset{\pounds}{R}$, or to $\pounds 1 \times$ the ſeries $\frac{P^{I} \times Q^{I}}{A \times K \times r^{m+1}} + \frac{P^{II} \times Q^{II}}{A \times K \times r^{m+2}} + \frac{P^{III} \times Q^{III}}{A \times K \times r^{m+3}} + \frac{P^{IV} \times Q^{IV}}{A \times K \times r^{m+4}} + \frac{P^{V} \times Q^{V}}{A \times K \times r^{m+5}}$ + &c. continued to the end of the table, we may ſafely conclude that the value of $\overset{\pounds}{V}$ has been accurately computed.

CCCC. To

An explanation of the manner of applying the foregoing rule, or method, of Mr. Morgan to the proof of the truth of the computations of a table of the values of annuities for two joint lives.

CCCC. To make the manner of applying this rule of Mr. Morgan more apparent, it will be proper to ſet down again in regular order, in a new table, the values of the life-annuities for the joint continuance of two given lives, which we have computed above in Art. CCCLXXX, CCCLXXXI, CCCLXXXII, &c.—CCCXCIV, from Monſieur de Parcieux's table by means of the expreſſion $\frac{1}{1.035} \times \frac{P \times Q}{\overline{P+d}| \times \overline{|Q+e}} \times \overline{1+V}|\mathcal{L}$.

And, as, in obtaining the ſaid values one from another by means of that expreſſion, we proceeded upwards, or from the older lives to the younger, it will be convenient to ſet down the ſaid values in the ſame order in the ſaid new table in a column adjoining to two other columns that contain the numbers of years in the two ages correſponding to the ſaid values. After theſe three columns, (containing the years in the ages of the two given lives, and the values of the correſponding annuities,) I ſhall ſet down, in a fourth column, the ſeveral ſucceſſive values of the expreſſion $\frac{\mathcal{L}}{\frac{1}{rm} \times \frac{P \times Q}{A \times K}}$, or the preſent values of a ſingle payment of one pound, to be received at the ends of 81 years, 80 years, 79 years, 78 years, and every following leſſer number of years down to 70 years, in caſe two perſons of the ages of 3 years (which is the youngeſt age in the table,) and 13 years ſhall be then living. And then, in a fifth column, I ſhall ſet down the ſums of the terms in the foregoing ſeries of values contained in the fourth column, as they ariſe; ſo that every term in this fifth column that is even with any two given ages in the firſt and ſecond columns, ſhall be equal to the ſum of all the terms in the fourth column that correſpond to the ages that are older than the ſaid two given ages. Thus, for example, the term in the fifth column that is even with the ages of 75 years and 85 years in the firſt and ſecond columns, is equal to the ſum of all the terms in the fourth column that correſpond to the ages that are older than the ages of 75 and 85 years. Theſe ſums, contained in this fifth column, will be equal to the values of remote annuities of one pound a year for the joint continuance of the lives of two perſons of the ages of 3 years and 13 years, that are to commence at the diſtances of 80 years, 79 years, 78 years, 77 years, &c. down to 70 years, or ſo that the firſt payments of them ſhall become due at the ends of 81 years, 80 years,

80 years, 79 years, 78 years, &c. down to 71 years; and they will comprize all the different values of the quantity which in Art. CCCXCVII is called $\frac{\mathcal{L}}{R}$, that relate to remote periods that are greater than 70 years. For they are the ſums of the ſucceſſive values of the expreſſion $\frac{\mathcal{L}}{\frac{1}{rm} \times \frac{P \times Q}{A \times K}}$, which, it is evident, are the ſame with the terms of the ſeries $\frac{P^{I} \times Q^{I}}{A \times K \times rm+1} + \frac{P^{II} \times Q^{II}}{A \times K \times rm+2} + \frac{P^{III} \times Q^{III}}{A \times K \times rm+3} + \frac{P^{IV} \times Q^{IV}}{A \times K \times rm+4} + \frac{P^{V} \times Q^{V}}{A \times K \times rm+5}$ + &c. continued to the end of the table, which ſeries is $= \frac{\mathcal{L}}{R}$.

And, laſtly, in a ſixth column, I ſhall ſet down the products that ariſe by multiplying the terms of the third column, or the values of the life-annuities for the joint continuance of two lives of the ſeveral ages ſet down in the firſt and ſecond columns, by the correſponding terms, or terms that are placed even with them, in the fourth column, or by the values of ſingle future payments of one pound, depending on the joint continuance of two lives of the ages of 3 years and 13 years.

And, when we have thus obtained the numbers that are to be placed in theſe ſeveral columns, we muſt compare thoſe in the ſixth column with thoſe that ſtand even with them in the fifth column: and ſo far as we find them to be equal to the ſaid numbers in the fifth column, we may conclude that the numbers in the third column, or the values of an annuity of one pound for two joint lives of the ages ſet down in the firſt and ſecond columns, have been rightly computed.

CCCCI. The only difficulty that can occur in forming a table of this kind is in the computation of the ſucceſſive values of the expreſſion $\frac{\mathcal{L}}{\frac{1}{rm} \times \frac{P \times Q}{A \times K}}$. But this will be found to be a work of no great labour, and may be performed in the manner following. Of the computation of the ſucceſſive values of the expreſſion $\frac{\mathcal{L}}{\frac{1}{rm} \times \frac{P \times Q}{A \times K}}$.

CCCCII. A is the number of perſons repreſented in Monſieur de Parcieux's table of probabilities as living at the age of 3 years, which is 1000; and K is the number of perſons therein repreſented as living at the age of 13 years, which is 860. Therefore $A \times K$ is $= 1000 \times 860 = 860{,}000$. And r is $= 1.035$; and therefore (by Mr. Smart's ſecond table of compound intereſt, page 60 *et ſeq.*) $\frac{1}{r}$ is $= .966{,}183{,}57$;

and $\frac{1}{r^{81}}$ is $= .061{,}635{,}61$; $\frac{1}{r^{80}}$ is $= .063{,}792{,}85$;

$\frac{1}{r^{79}}$ is $= .066{,}025{,}60$; $\frac{1}{r^{78}}$ is $= .068{,}336{,}50$;

$\frac{1}{r^{77}}$ is $= .070{,}728{,}27$; $\frac{1}{r^{76}}$ is $= .073{,}203{,}76$;

$\frac{1}{r^{75}}$ is $= .075{,}765{,}90$; $\frac{1}{r^{74}}$ is $= .078{,}417{,}70$;

$\frac{1}{r^{73}}$ is $= .081{,}162{,}32$; $\frac{1}{r^{72}}$ is $= .084{,}003{,}00$;

$\frac{1}{r^{71}}$ is $= .086{,}943{,}11$; $\frac{1}{r^{70}}$ is $= .089{,}986{,}12$;

$\frac{1}{r^{69}}$ is $= .093{,}135{,}63$; $\frac{1}{r^{68}}$ is $= .096{,}395{,}38$;

and $\frac{1}{r^{67}}$ is $= .099{,}769{,}22$. And the values of P and Q when m is $= 81$, or the numbers of perſons repreſented in Monſieur de Parcieux's table of probabilities as living at the ages of (81 + 3 years, or) 84 years and (81 + 13 years, or) 94 years, are 59 and 1; and the following values of P and Q at the following leſſer ages of 83 years and 93 years, 82 years and 92 years, 81 years and 91 years, 80 years and 90 years, 79 years and 80 years, 78 years and 88 years, 77 years and 87 years, 76 years and 86 years, 75 years and 85 years, 74 years and 84 years, 73 years and 83 years, 72 years and 82 years, 71 years and 81 years, and 70 years and 80 years, are 71 and 2, 85 and 4, 101 and 7, 118 and 11, 136 and 16, 154 and 22, 173 and 29, 192 and 38, 211 and 48, 231 and 59, 251 and 71, 271 and 85, 291 and 101, and, laſtly, 310 and 118.

CCCCIII. Therefore

CCCCIII. Therefore the firſt value of the expreſſion $\frac{\pounds 1}{r^m} \times \frac{P \times Q}{A \times K}$, or that which it has when m is $= 81$, is $= \pounds 0.061{,}635{,}61 \times \frac{59 \times 1}{860{,}000}$

$= \frac{\pounds 59 \times 0.061{,}635{,}61}{860{,}000} = \frac{\pounds 3.636{,}400}{860{,}000} = \pounds 0.000{,}004{,}22.$

The ſecond value of the expreſſion $\frac{\pounds 1}{r^m} \times \frac{P \times Q}{A \times K}$, or that which it has when m is $= 80$, is $= \pounds 0.063{,}792{,}85 \times \frac{71 \times 2}{860{,}000} =$

$\frac{\pounds 142 \times 0.063{,}792{,}85}{860{,}000} = \frac{\pounds 9.058{,}584}{860{,}000} = \pounds 0.000{,}010{,}53.$

The third value of the expreſſion $\frac{\pounds 1}{r^m} \times \frac{P \times Q}{A \times K}$, or that which it has when m is $= 79$, is $= \pounds 0.066{,}025{,}60 \times \frac{85 \times 4}{860{,}000} =$

$\frac{\pounds 340 \times 0.066{,}025{,}60}{860{,}000} = \frac{\pounds 34 \times 0.066{,}025{,}60}{86{,}000} = \frac{\pounds 2.244{,}870}{86{,}000} = \pounds 0.000{,}026{,}10.$

The fourth value of the expreſſion $\frac{\pounds 1}{r^m} \times \frac{P \times Q}{A \times K}$, or that which it has when m is $= 78$, is $= \pounds 0.068{,}336{,}50 \times \frac{101 \times 7}{860{,}000} =$

$\frac{\pounds 707 \times 0.068{,}336{,}50}{860{,}000} = \frac{\pounds 48.313{,}905}{860{,}000} = \pounds 0.000{,}056{,}17.$

The fifth value of $\frac{£1}{rm} \times \frac{P \times Q}{A \times K}$ is $= £0.070,728,27 \times$

$\frac{118 \times 11}{860,000} = \frac{1298 \times £0.070,728,27}{860,000} = \frac{£91.805,094}{860,000} = £0.000,106,75.$

The sixth value of $\frac{£1}{rm} \times \frac{P \times Q}{A \times K}$ is $= £0.073,203,76 \times$

$\frac{136 \times 16}{860,000} = \frac{2176 \times £0.073,203,76}{860,000} = \frac{£159.291,381}{860,000} £0.000,185,22.$

The seventh value of $\frac{£1}{rm} \times \frac{P \times Q}{A \times K}$ is $= £0.075,765,90 \times$

$\frac{154 \times 22}{860,000} = \frac{3388 \times £0.075,765,90}{860,000} = \frac{£256.694,869}{860,000} = £0.000,298,48.$

The eighth value of $\frac{£1}{rm} \times \frac{P \times Q}{A \times K}$ is $= £0.078,417,70 \times$

$\frac{173 \times 29}{860,000} = \frac{5017 \times £0.078,417,70}{860,000} = \frac{£393.421,600}{860,000} = £0.000,457,46.$

The ninth value of $\frac{£1}{rm} \times \frac{P \times Q}{A \times K}$ is $= £0.081,162,32 \times$

$\frac{192 \times 38}{860,000} = \frac{7296 \times £0.081,162,32}{860,000} = \frac{£592.160,286}{860,000} = £0.000,688,55.$

The

The tenth value of $\frac{£1}{rm} \times \frac{P \times Q}{A \times K}$ is $= £0.084,003,00 \times$

$\frac{211 \times 48}{860,000} = \frac{10,128 \times £0.084,003}{860,000} = \frac{£850\,782,384}{860,000} = £0.000,989,28.$

The eleventh value of $\frac{£1}{rm} \times \frac{P \times Q}{A \times K}$ is $= £0.086,943,11 \times$

$\frac{231 \times 59}{860,000} = \frac{13629 \times £0.086,943,11}{860,000} = \frac{£1184.947,646}{860,000} = £0.001,377,84.$

The twelfth value of $\frac{£1}{rm} \times \frac{P \times Q}{A \times K}$ is $= £0.089,986,12 \times$

$\frac{251 \times 71}{860,000} = \frac{17821 \times £0.089,986,12}{860,000} = \frac{£1603.642,644}{860,000} = £0.001,864,70.$

The thirteenth value of $\frac{£1}{rm} \times \frac{P \times Q}{A \times K}$ is $= £0.093,135,63 \times$

$\frac{271 \times 85}{860,000} = \frac{23035 \times £0.093,135,63}{860,000} = \frac{£2145.379,237}{860,000} = £0.002,494,62.$

The fourteenth value of $\frac{£1}{rm} \times \frac{P \times Q}{A \times K}$ is $= £0.096,395,38 \times$

$\frac{291 \times 101}{860,000} = \frac{29391 \times £0.096,395,38}{860,000} = \frac{£2833.156,513}{860,000} = £0.003,294,36.$

And

And the fifteenth value of $\frac{£}{\frac{1}{r^m}} \times \frac{P \times Q}{A \times K}$ is $= £0.099,769,22 \times \frac{310 \times 118}{860,000} = \frac{£}{\frac{36580 \times 0.099,769,22}{860,000}} = \frac{£}{\frac{3649.558,067}{860,000}} = £0.004,243,67.$

CCCCIV. Theſe ſeveral ſucceſſive values of the expreſſion $\frac{£}{\frac{1}{r^m}} \times \frac{P \times Q}{A \times K}$, if ranged in order, will be as follows.

£
0.000,004,22,
0.000,010,53,
0.000,026,10,
0.000,056,17,
0.000,106,75,
0.000,185,22,
0.000,298,48,
0:000,457,46,
0.000,688,55,
0.000,989,28,
0.001,377,84,
0.001,864,70,
0.002,494,62,
0.003,294,36,
0.004,243,67.

Theſe numbers therefore will conſtitute the fourth column of the enſuing table.

CCCCV. The

CCCCV. The ſums that ariſe by the continual addition of theſe numbers will be as follows. The ſums of the ſaid ſucceſſive values of the expreſſion $\frac{£}{\frac{1}{r^m}} \times \frac{P \times Q}{A \times K}$.

£
0.000,004,22,
0.000,014,75,
0.000,040,85,
0.000,097,02,
0.000,203,77,
0.000,388,99,
0.000,687,47,
0.001,144,93,
0.001,833,48,
0 002,822,76,
0.004,200,60,
0.006,065,30,
0.008,559,92,
0.011,854,28,
0.016,097,95.

Theſe numbers therefore will conſtitute the fifth column of the enſuing table.

CCCCVI. This

CCCCVI. This table is as follows.

TABLE XXVIII.

Conſiſting of ſix columns of numbers; in the firſt of which the numbers of years in the ſeveral ages of human life, that differ from each other by a year, from the age of 84 years to the age of 70 years, incluſively, are ſet down in regular order; and in the ſecond column are ſet down the numbers of years in the ſeveral ages of human life, that differ from each other by a year, from the age of 94 years to the age of 80 years, incluſively; and in the third column are ſet down the ſeveral values of an annuity of one pound a year for the joint continuance of the lives of two perſons of the ages ſet down in the firſt and ſecond columns even with the ſaid values; computed from Monſieur de Parcieux's table of the probabilities of the duration of human life, upon a ſuppoſition that the intereſt of money is 3½ per cent. and in the fourth column are ſet down the preſent values of a ſingle payment of one pound, to be received at the ends of 81 years, 80 years, 79 years, 78 years, and every following leſſer number of years down to 67 years, incluſively, if two perſons of the ages of 3 years and 13 years ſhall both be living at the ends of the ſaid years; and in the fifth column are ſet down the numbers that ariſe by the continual addition of the numbers ſet down in the fourth column; ſo that each number in the ſaid fifth column is equal to the ſum of all the numbers in the ſaid fourth column that are placed above it, or that correſpond to the preceeding, or older, ages; and in the ſixth and laſt column are ſet down the products that ariſe by multiplying the terms of the third column, (or the values of a life-annuity of one pound a year for the joint continuance of two lives of the ages ſet down in the firſt and ſecond columns,) by the correſponding terms of the fourth column, reſpectively.

Years in the age of the younger life.	*Years in the age of the older life.*	*Values of an annuity of one pound a year for the joint continuance of both lives.*	*Preſent values of a ſingle payment of one pound, to be received at the ends of 81 years, 80 years, 79 years, 78, 77, 76, &c. years, in caſe two perſons of the ages of 3 years and 13 years ſhall both be living at the ends of thoſe years reſpectively.*	*Sums of the values in the fourth column.*	*Products of the multiplication of the numbers in the third and fourth columns.*
		£	£	£	£
84	94	0.000,000	0.000,004,22		
83	93	0.401,442	0.000,010,53	0.000,004,22	0,000,004,22
82	92	0.565,515	0.000,026,10	0.000,014,75	0.000,014,76
81	91	0.727,405	0.000,056,17	0.000,040,85	0.000,040,85
80	90	0.909,072	0.000,106,75	0.000,097,02	0.000,097,04
79	89	1.100,266	0.000,185,22	0.000,203,77	0.000,203,79
78	88	1.303,315	0.000,298,48	0.000,388,99	0.000,389,01
77	87	1.502,838	0.000,457,46	0.000,687,47	0.000,687,48
76	86	1.662,844	0.000,688,55	0.001,144,93	0.001,144,95
75	85	1.853,388	0.000,989,28	0.001,833,48	0.001,833,51
74	84	2.048,708	0.001,377,84	0.002,822,76	0.002,822,89
73	83	2.252,720	0.001,864,70	0.004,200,60	0.004,200,64
72	82	2.431,365	0.002,494,62	0.006,065,30	0.006,065,33
71	81	2.598,366	0.003,294,36	0.008,559,92	0.008,559,95
70	80	2.793,416	0.004,243,67	0.011,854,28	0.011,854,33

SCHOLIUM.

CCCCVII. In the foregoing table I have computed only the first fourteen values (reckoning from the oldest ages to the younger,) of an annuity of one pound a year for the joint continuance of the lives of two persons whose ages differ from each other by 10 years. It would not have been difficult (as the reader must perceive,) to compleat the table by computing the values of an annuity of one pound a year for the joint continuance of all the younger lives whose ages differ from each other by the same difference of 10 years, down to the value of a like annuity for the joint continuance of two lives of the ages of 3 years and 13 years. But this was not necessary to the design with which the foregoing computations were undertaken; which was only to shew how such a table might be formed by means of the expression $\frac{1}{r} \times \frac{P \times Q}{\overline{P+d|} \times \overline{|Q+e}} \times \overline{1+V|}\,\pounds$, and how the several numbers thereby obtained might be verified, as fast as they were computed, by multiplying them into the corresponding values of the expression $\frac{\pounds\,1}{rm} \times \frac{P \times Q}{A \times K}$, or the corresponding numbers that are set down in the fourth column of the said table, and comparing the products thence arising with the numbers in the fifth column. This, I apprehend, is made sufficiently manifest by the computation of the fourteen values set down in the foregoing table: and therefore I have declined the trouble of continuing these computations any further.

CCCCVIII. Nevertheless, as it will be of great convenience to such persons as have occasion to deal in the purchase of annuities for joint lives, to have a *compleat* table of the values of an annuity of one pound for the joint continuance of two lives whose ages differ from each other by 10 years, (of which the foregoing table contains only the first fourteen numbers,) and likewise to have other tables of the values of the like annuities for the joint continuance of two lives whose ages differ from each other by more, or less, than 10 years, I have caused the foregoing table to be compleated by another hand under the inspection of the learned Mr. Morgan, above-mentioned, (the present actuary of the Society for Equitable Assurances on Lives and Survivorships,) and also nine other tables of the same kind to be computed from Monsieur de Parcieux's table

table of the probabilities of the duration of human life upon a supposition that the interest of money is $3\frac{1}{2}$ per cent. (as it is supposed to be in the foregoing table,) to wit, a table of the values of an annuity of one pound a year for the lives of two persons of equal ages, another of the values of the like annuity for the lives of two persons whose ages differ from each other by five years, a third for two lives whose ages differ by 20 years, a fourth for two lives whose ages differ by 30 years, and a fifth, sixth, seventh, eighth, and ninth, table, for two lives whose ages differ by 40 years, 50 years, 60 years, 70 years, and 80 years. These tables have all been computed by means of the expression $\frac{1}{r} \times \frac{P \times Q}{\overline{P+d|} \times \overline{|Q+e}} \times \overline{1+V|}\,\pounds$, in the same manner as the fourteen numbers above computed in Table XXVIII; and the computations have also been verified in the same manner, to wit, by computing the successive values of the expression $\frac{\pounds\,1}{rm} \times \frac{P \times Q}{A \times K}$, and by finding the sums of those successive values, and, lastly, by multiplying the values of the several annuities into the corresponding values of the expression $\frac{\pounds\,1}{rm} \times \frac{P \times Q}{A \times K}$, and observing that the products thereby obtained were equal to the corresponding sums of the successive values of $\frac{\pounds\,1}{rm} \times \frac{P \times Q}{A \times K}$.

But I have not thought it necessary to cause all these latter numbers (which serve only to prove the truth of the computations) to be printed; and therefore I shall present the reader with only the values of the annuities themselves, as was done in the tables of the values of an annuity of one pound a year for a single life given above in Art. cci, Tables XII, XIII, XIV, XV, —— XXIII, pages 221, 222, 223, —— 232. And, as it is most usual, in exhibiting tables of the values of life-annuities, to begin with those of the younger ages and proceed on to those of older ages, I shall observe the same order in setting down the values contained in the following tables, notwithstanding they were computed one from another by proceeding in a contrary order, or from the older ages to the younger. These tables are as follows.

TABLE XXIX.

Containing the values of an annuity of one pound a year for the joint continuance of the lives of two persons of the same age, when the interest of money is 3½ per cent.------Computed from Monsieur de Parcieux's table of the probabilities of the duration of human life.

Years in the age of the first life.	Years in the age of the second life.	Values of an annuity of one pound a year for the joint continuance of both lives.	Years in the age of the first life.	Years in the age of the second life.	Values of an annuity of one pound a year for the joint continuance of both lives.	Years in the age of the first life.	Years in the age of the second life.	Values of an annuity of one pound a year for the joint continuance of both lives.
		£			£			£
3	3	15.785,24	34	34	14.172,18	65	65	5.699,541
4	4	16.363,93	35	35	14.008,32	66	66	5.373,930
5	5	16.731,89	36	36	13.838,74	67	67	5.061,732
6	6	16.994,35	37	37	13.663,10	68	68	4.764,788
7	7	17.170,57	38	38	13.437,90	69	69	4.485,940
8	8	17.287,49	39	39	13.203,01	70	70	4.229,522
9	9	17.378,30	40	40	12.957,85	71	71	3.967,857
10	10	17.397,65	41	41	12.701,78	72	72	3.735,261
11	11	17.338,47	42	42	12.434,14	73	73	3.506,636
12	12	17.194,84	43	43	12.154,19	74	74	3.285,035
13	13	17.045,84	44	44	11.861,14	75	75	3.075,111
14	14	16.891,22	45	45	11.554,15	76	76	2.843,825
15	15	16.730,68	46	46	11.232,32	77	77	2.625,379
16	16	16.563,92	47	47	10.933,91	78	78	2.429,124
17	17	16.432,30	48	48	10.620,90	79	79	2.223,694
18	18	16.296,21	49	49	10.330,55	80	80	2.057,238
19	19	16.155,41	50	50	10.025,94	81	81	1.906,337
20	20	16.009,67	51	51	9.743,490	82	82	1.785,767
21	21	15.900,58	52	52	9.484,577	83	83	1.649,026
22	22	15.788,72	53	53	9.213,854	84	84	1.471,612
23	23	15.673,96	54	54	8.930,288	85	85	1.301,203
24	24	15.556,18	55	55	8.669,387	86	86	1.148,822
25	25	15.435,19	56	56	8.396,670	87	87	1.041,569
26	26	15.310,85	57	57	8.111,004	88	88	0.873,177
27	27	15.183,00	58	58	7.847,174	89	89	0.708,630
28	28	15.051,43	59	59	7.571,510	90	90	0.551,722
29	29	14.915,97	60	60	7.282,755	91	91	0.410,100
30	30	14.776,38	61	61	6.979,449	92	92	0.299,890
31	31	14.632,46	62	62	6.659,908	93	93	0.241,546
32	32	14.483,96	63	63	6.356,826	94	94	0.000,000
33	33	14.330,63	64	64	6.037,443			

TABLE XXX.

Containing the values of an annuity of one pound a year for the joint continuance of the lives of two persons whose ages differ from each other by 5 years; when the interest of money is 3½ per cent.----Computed from Monsieur de Parcieux's table of the probabilities of theduration of human life.

Years in the age of the younger life.	Years in the age of the older life.	Values of an annuity of one pound a year for the joint continuance of both lives.	Years in the age of the younger life.	Years in the age of the older life.	Values of an annuity of one pound a year for the joint continuance of both lives.	Years in the age of the younger life.	Years in the age of the older life.	Values of an annuity of one pound a year for the joint continuance of both lives.
		£			£			£
3	8	16.510,17	32	37	14.035,08	61	66	6.065,430
4	9	16.854,05	33	38	13.843,23	62	67	5.748,630
5	10	17.051,58	34	39	13.643,78	63	68	5.447,890
6	11	17.155,02	35	40	13.436,29	64	69	5.150,625
7	12	17.171,55	36	41	13.220,25	65	70	4.858,151
8	13	17.154,48	37	42	12.995,13	66	71	4.567,925
9	14	17.120,70	38	43	12.739,85	67	72	4.299,865
10	15	17.048,09	39	44	12.473,04	68	73	4.040,373
11	16	16.933,54	40	45	12.193,97	69	74	3.792,444
12	17	16.795,58	41	46	11.901,38	70	75	3.560,612
13	18	16.652,69	42	47	11.616,67	71	76	3.314,346
14	19	16.504,62	43	48	11.317,93	72	77	3.088,057
15	20	16.351,08	44	49	11.025,10	73	78	2.876,561
16	21	16.213,13	45	50	10.718,15	74	79	2.663,173
17	22	16.090,90	46	51	10.416,04	75	80	2.477,972
18	23	15.904,95	47	52	10.137,24	76	81	2.292,901
19	24	15.835,08	48	53	9.845,200	77	82	2.129,559
20	25	15.701,10	49	54	9.556,736	78	83	1.964,259
21	26	15.583,33	50	55	9.273,595	79	84	1.770,303
22	27	15.462,37	51	56	8.994,268	80	85	1.595,707
23	28	15.338,05	52	57	8.718,822	81	86	1.437,314
24	29	15.210,20	53	58	8.449,496	82	87	1.316,220
25	30	15.078,62	54	59	8.167,754	83	88	1.149,833
26	31	14.943,13	55	60	7.889,259	84	89	0.969,173
27	32	14.803,51	56	61	7.597,410	85	90	0.793,411
28	33	14.659,54	57	62	7.290,800	86	91	0.630,011
29	34	14.510,98	58	63	7.002,970	87	92	0.495,243
30	35	14.357,56	59	64	6.700,900	88	93	0.351,339
31	36	14.199,03	60	65	6.382,877	89	94	0.000,000

TABLE XXXI.

Containing the values of an annuity of one pound a year for the joint continuance of the lives of two persons whose ages differ from each other by 10 years; when the interest of money is 3½ per cent.----Computed from Monsieur de Parcieux's table of the probabilities of the duration of human life.

Years in the age of the younger life.	Years in the age of the older life.	Values of an annuity of one pound a year for the joint continuance of both lives.	Years in the age of the younger life.	Years in the age of the older life.	Values of an annuity of one pound a year for the joint continuance of both lives.	Years in the age of the younger life.	Years in the age of the older life.	Values of an annuity of one pound a year for the joint continuance of both lives.
		£			£			£
3	13	16.366,17	31	41	13.500,30	59	69	5.611,286
4	14	16.585.56	32	42	13.282,31	60	70	5.336,698
5	15	16.688,70	33	43	13.055,10	61	71	5.054,106
6	16	16.732,59	34	44	12.818,10	62	72	4.784,148
7	17	16.749,69	35	45	12.570,68	63	73	4.523,082
8	18	16.734,46	36	46	12.312,20	64	74	4.260,822
9	19	16.703,36	37	47	12.063,41	65	75	3.999,072
10	20	16.634,79	38	48	11.784,38	66	76	3.728,183
11	21	16.547,42	39	49	11.513,43	67	77	3.470,693
12	22	16.418,12	40	50	11.229,92	68	78	3.233,054
13	23	16.284,59	41	51	10.953,88	69	79	2,996,397
14	24	16.146,60	42	52	10.685,81	70	80	2.793,419
15	25	16.003,93	43	53	10.405,59	71	81	2.598,368
16	26	15.856,33	44	54	10.112,29	72	82	2.431,367
17	27	15.723,54	45	55	9.825,467	73	83	2.252,722
18	28	15.586,50	46	56	9.525,226	74	84	2.048,709
19	29	15.444,98	47	57	9.227,309	75	85	1.853,389
20	30	15.298,75	48	58	8.935,094	76	86	1.662,845
21	31	15.167,59	49	59	8.645,309	77	87	1.502,839
22	32	15.032,49	50	60	8.341,630	78	88	1.303,316
23	33	14.893,27	51	61	8.038,570	79	89	1.100,267
24	34	14.749,68	52	62	7.735,712	80	90	0.909,073
25	35	14.601,50	53	63	7.437,175	81	91	0.727,405
26	36	14.448,46	54	64	7.123,728	82	92	0.565,515
27	37	14.290,29	55	65	6.808,550	83	93	0.431,442
28	38	14.104,15	56	66	6.496,025	84	94	0.000,000
29	39	13.910,74	57	67	6.186,700			
30	40	13.709,61	58	68	5.894,503			

TABLE XXXII.

Containing the values of an annuity of one pound a year for the joint continuance of the lives of two persons whose ages differ from each other by 20 years; when the interest of money is 3½ per cent.----Computed from Monsieur de Parcieux's table of the probabilities of the duration of human life.

Years in the age of the younger life.	Years in the age of the older life.	Values of an annuity of one pound a year for the joint continuance of both lives.	Years in the age of the younger life.	Years in the age of the older life.	Values of an annuity of one pound a year for the joint continuance of both lives.	Years in the age of the younger life.	Years in the age of the older life.	Values of an annuity of one pound a year for the joint continuance of both lives.
		£			£			£
3	23	15.560,29	27	47	12.402,10	51	71	5.515,096
4	24	15.772,84	28	48	12.146,36	52	72	5.249,786
5	25	15.876,39	29	49	11.900,87	53	73	4.984,023
6	26	15.925,03	30	50	11.644,53	54	74	4.719,681
7	27	15.929,42	31	51	11.398,29	55	75	4.469,896
8	28	15.902,97	32	52	11.162,98	56	76	4.202,853
9	29	15.861,35	33	53	10.917,97	57	77	3.943,096
10	30	15.784,00	34	54	10.662,54	58	78	3.706,498
11	31	15.667,99	35	55	10.417,61	59	79	3.462,599
12	32	15.510,67	36	56	10.162,63	60	80	3.246,444
13	33	15.347,68	37	57	9.896,823	61	81	3.039,033
14	34	15.178,75	38	58	9.625,224	62	82	2.848,658
15	35	15.003,54	39	59	9.342,070	63	83	2.646,551
16	36	14.821,70	40	60	9.046.436	64	84	2.409,133
17	37	14.651,58	41	61	8.737.294	65	85	2.173,497
18	38	14.452,13	42	62	8.413,488	66	86	1.953,728
19	39	14.244,52	43	63	8.095,180	67	87	1.766,127
20	40	14.028,29	44	64	7.761,737	68	88	1.527,607
21	41	13.821,31	45	65	7.411,735	69	89	1.292,917
22	42	13.605,76	46	66	7.064,716	70	90	1.065,724
23	43	13.381,12	47	67	6.733,989	71	91	0.846,497
24	44	13.146,84	48	68	6.408,777	72	92	0.646,370
25	45	12.902,34	49	69	6.102,706	73	93	0.444,598
26	46	12.646,97	50	70	5.807,267	74	94	0.000,000

TABLE XXXIII.

Containing the values of an annuity of one pound a year for the joint continuance of the lives of two persons whose ages differ from each other by 30 years; when the interest of money is 3½ per cent.----Computed from Monsieur de Parcieux's table of the probabilities of the duration of human life.

Years in the age of the younger life.	*Years in the age of the older life.*	*Values of an annuity of one pound a year for the joint continuance of both lives.*	*Years in the age of the younger life.*	*Years in the age of the older life.*	*Values of an annuity of one pound a year for the joint continuance of both lives.*	*Years in the age of the younger life.*	*Years in the age of the older life.*	*Values of an annuity of one pound a year for the joint continuance of both lives.*
		£			£			£
3	33	14.605,10	24	54	10.805,23	45	75	4.717,841
4	34	14.761,38	25	55	10.556,78	46	76	4.427,255
5	35	14.812,79	26	56	10.298,13	47	77	4.152,480
6	36	14.810,22	27	57	10.028,53	48	78	3.892,549
7	37	14.763,70	28	58	9.769,124	49	79	3.631,597
8	38	14.662,37	29	59	9.499,177	50	80	3.399,171
9	39	14.542,30	30	60	9.217,864	51	81	3.182,288
10	40	14.384,49	31	61	8.924,272	52	82	2.990,528
11	41	14.186,34	32	62	8.617,370	53	83	2.779,762
12	42	13.945,55	33	63	8.317,989	54	84	2.533,005
13	43	13.694,31	34	64	8.005,274	55	85	2.295,974
14	44	13.432,04	35	65	7.678,014	56	86	2.071,761
15	45	13.158,08	36	66	7.356,765	57	87	1.876,901
16	46	12.871,77	37	67	7.042,733	58	88	1.628,765
17	47	12.611,02	38	68	6.726,106	59	89	1.381,241
18	48	12,338,55	39	69	6.419,790	60	90	1.137,781
19	49	12.075,74	40	70	6.126,861	61	91	0.903,979
20	50	11.801,15	41	71	5.828,088	62	92	0.686,040
21	51	11.551,46	42	72	5.547,756	63	93	0.467,103
22	52	11.312,81	43	73	5.267,684	64	94	0.000,000
23	53	11.064,30	44	74	4.990,020			

TABLE XXXIV.

Containing the values of an annuity of one pound a year for the joint continuance of the lives of two persons whose ages differ from each other by 40 years; when the interest of money is 3½ per cent.---Computed from Monsieur de Parcieux's table of the probabilities of the duration of human life.

Years in the age of the younger life.	*Years in the age of the older life.*	*Values of an annuity of one pound a year for the joint continuance of both lives.*	*Years in the age of the younger life.*	*Years in the age of the older life.*	*Values of an annuity of one pound a year for the joint continuance of both lives.*	*Years in the age of the younger life.*	*Years in the age of the older life.*	*Values of an annuity of one pound a year for the joint continuance of both lives.*
		£			£			£
3	43	12.995,63	21	61	8.987,406	39	79	3.742,057
4	44	13.020,79	22	62	8.674,708	40	80	3.511,390
5	45	12.944,45	23	63	8.369,404	41	81	3.291,726
6	46	12.812,26	24	64	8.050,492	42	82	3.092,312
7	47	12.655,71	25	65	7.716,753	43	83	2.873,803
8	48	12.464,90	26	66	7.388,815	44	84	2.619,179
9	49	12.274,57	27	67	7.067,833	45	85	2.369,586
10	50	12.047,58	28	68	6.755,442	46	86	2.133,182
11	51	11.804,02	29	69	6.453,925	47	87	1.931,165
12	52	11.543,45	30	70	6.166,483	48	88	1.669,911
13	53	11.271,87	31	71	5.873,947	49	89	1.412,744
14	54	10.988,55	32	72	5.600,948	50	90	1.159,767
15	55	10.714,92	33	73	5.329,415	51	91	0.919,313
16	56	10.429,73	34	74	5.061,816	52	92	0.697,812
17	57	10.145,47	35	75	4.801,680	53	93	0.473,412
18	58	9.870,862	36	76	4.525,229	54	94	0.000,000
19	59	9.584,837	37	77	4.259,330			
20	60	9.286,549	38	78	4.003,965			

TABLE XXXV.

Containing the values of an annuity of one pound a year for the joint continuance of the lives of two persons whose ages differ from each other by 50 years; when the interest of money is 3½ per cent.--- Computed from Monsieur de Parcieux's table of the probabilities of the duration of human life.

Years in the age of the younger life.	*Years in the age of the older life.*	*Values of an annuity of one pound a year for the joint continuance of both lives.*	*Years in the age of the younger life.*	*Years in the age of the older life.*	*Values of an annuity of one pound a year for the joint continuance of both lives.*
		£			£
3	53	10.680,23	24	74	5.075,965
4	54	10.628,92	25	75	4.811,044
5	55	10.513,03	26	76	4.529,340
6	56	10.350,53	27	77	4.257,630
7	57	10.148,69	28	78	4.033,127
8	58	9.938,555	29	79	3.742,189
9	59	9.709,814	30	80	3.512,640
10	60	9.449,236	31	81	3.294,317
11	61	9.154,806	32	82	3.096,568
12	62	8.824,696	33	83	2.880,142
13	63	8.501,682	34	84	2.628,121
14	64	8.164,376	35	85	2.382,003
15	65	7.811,534	36	86	2.150,472
16	66	7.463,965	37	87	1.950,898
17	67	7.132,382	38	88	1.689,411
18	68	6.809,136	39	89	1.429,589
19	69	6.496,404	40	90	1.175,112
20	70	6.197,247	41	91	0.931,818
21	71	5.900,765	42	92	0.706,129
22	72	5.623,758	43	93	0.477,775
23	73	5.348,020	44	94	0.000.000

TABLE XXXVI.

Containing the values of an annuity of one pound a year for the joint continuance of the lives of two persons whose ages differ from each other by 60 years; when the interest of money is 3½ per cent.--- Computed from Monsieur de Parcieux's table of the probabilities of the duration of human life.

Years in the age of the younger life.	*Years in the age of the older life.*	*Values of an annuity of one pound a year for the joint continuance of both lives.*	*Years in the age of the younger life.*	*Years in the age of the older life.*	*Values of an annuity of one pound a year for the joint continuance of both lives.*
		£			£
3	63	8.049,257	20	80	3.526,172
4	64	7.882,630	21	81	3.306,196
5	65	7.643,727	22	82	3.106,801
6	66	7.382,707	23	83	2.888,572
7	67	7.107,740	24	84	2.634,545
8	68	6.828,138	25	85	2.386,279
9	69	6.554,273	26	86	2.152,327
10	70	6.281,256	27	87	1.949,808
11	71	5.989,106	28	88	1.688,533
12	72	5.702,314	29	89	1.428,905
13	73	5.416,621	30	90	1.174,597
14	74	5.134,386	31	91	0.931,450
15	75	4.858,956	32	92	0.705,886
16	76	4.566,065	33	93	0.477,648
17	77	4.288,874	34	94	0.000,000
18	78	4.028,814			
19	79	3.761,967			

TABLE XXXVII.

Containing the values of an annuity of one pound a year for the joint continuance of the lives of two perſons whoſe ages differ from each other by 70 years; when the intereſt of money is 3½ per cent.--- Computed from Monſieur de Parcieux's table of the probabilities of the duration of human life.

Years in the age of the younger life.	Years in the age of the older life.	Values of an annuity of one pound a year for the joint continuance of both lives.	Years in the age of the younger life.	Years in the age of the older life.	Values of an annuity of one pound a year for the joint continuance of both lives.
		£			£
3	73	5.137,907	14	84	2.656,044
4	74	4.956,842	15	85	2.402,893
5	75	4.746,962	16	86	2.163,852
6	76	4.503,802	17	87	1.959,233
7	77	4.258,192	18	88	1.695,616
8	78	4.022,334	19	89	1.433,647
9	79	3.777,677	20	90	1.176,850
10	80	3.557,527	21	91	0.933,060
11	81	3.341,255	22	92	0.706,947
12	82	3.137,624	23	93	0.478,200
13	83	2.914,904	24	94	0.000,000

TABLE XXXVIII.

Containing the values of an annuity of one pound a year for the joint continuance of the lives of two perſons whoſe ages differ from each other by 80 years; when the intereſt of money is 3½ per cent.--- Computed from Monſieur de Parcieux's table of the probabilities of the duration of human life.

Years in the age of the younger life.	Years in the age of the older life.	Values of an annuity of one pound a year for the joint continuance of both lives.	Years in the age of the younger life.	Years in the age of the older life.	Values of an annuity of one pound a year for the joint continuance of both lives.
		£			£
3	83	2.783,857	9	89	1.432,098
4	84	2.574,553	10	90	1.180,457
5	85	2.351,322	11	91	0.937,542
6	86	2.133,541	12	92	0.709,889
7	87	1.940,957	13	93	0.479,721
8	88	1.686,249	14	94	0.000,000

CCCCIX. According to Monſieur de Parcieux's table of the probabilities of the duration of human life, (which begins with the age of 3 years, and ends with the age of 94 years, and ſuppoſes the utmoſt poſſible extent of human life to be ſomewhat leſs than 95 years,) it is evident that only one pair of lives can be found whoſe ages will differ from each other by 90 years, to wit, two lives of the ages of 3 and 93 years. And the value of an annuity of one pound a year for the joint continuance of two lives of theſe ages, upon a ſuppoſition that the intereſt of money is $3\frac{1}{2}$ per cent. is £0.468,599.

Remarks on the great number of tables (of the ſame kind as thoſe above-computed,) that would be neceſſary in order to exhibit the values of annuities for two joint lives in all their poſſible varieties.

CCCCX. It would evidently be a work of great uſe and convenience to thoſe perſons who have occaſion to ſell or purchaſe annuities for two joint lives, to compute as many more tables, of the ſame kind as the ten foregoing ones, as there may be taken different numbers of years for the difference of the ages of the two lives upon which the annuity is to depend; ſo that, for example, if the difference of the ages of any two lives was 23 years, or 27 years, inſtead of 20 years, or 30 years, the value of an annuity of one pound a year during the joint continuance of both the lives ſhould be accurately exhibited in ſome one or other of the tables, in the ſame manner as the values of the like annuities are exhibited in the foregoing tables when the difference of the ages is either 0, or 5 years, or 10 years, or 20, 30, 40, 50, 60, 70, or 80, years. But this would require an immenſe quantity of calculation. For, in order to have the exact values of an annuity of one pound a year for two joint lives in all the poſſible varieties in which the ages of the two lives may be combined together, when the intereſt of money is $3\frac{1}{2}$ per cent. (as it is ſuppoſed to be in the ten foregoing tables,) it would be neceſſary to compute no fewer than 93 different tables, or 83 more than the ten that are above computed. For, beſides the ſaid ten tables, which exhibit thoſe values when the ages of the two lives are equal, and when they differ from each other by 5 years, or 10 years, or 20 years, or 30 years, or 40 years, or 50 years, or 60 years, or 70 years, or 80 years, it would be neceſſary to compute an eleventh table of the ſame kind that ſhould exhibit the values of a like annuity for the joint continuance of two lives whoſe ages differed from each other by one year; and a twelfth table of the ſame kind when the difference of the ages is two years; and a thirteenth table of the ſame kind when the difference of the ages is three years; and, in general, a new table of the ſame

ſame kind for every new difference that can be taken between the ſaid two ages; which differences (if we reckon 0 for one of them, or include the caſe of two lives of equal ages,) will, all together, (or including the ten differences in the tables above-computed,) amount to the number of 93, if the youngeſt life ſet down in the table of probabilities is of the age of one year; or, if we make uſe of Monſieur de Parcieux's table of probabilities, (in which the youngeſt age is that of 3 years,) will amount to the number of 91. And, if we were deſirous of having the values of the like annuities for two joint lives in all their poſſible varieties when the intereſt of money is either 2 per cent. or $2\frac{1}{2}$ per cent. or 3 per cent. or 4 per cent. or $4\frac{1}{2}$ per cent. or 5 per cent. or 6 per cent. or 7 per cent. or 8 per cent. or 9 per cent. or 10 per cent. as well as when it is $3\frac{1}{2}$ per cent. (as we have the values of the like annuities for ſingle lives of all ages for all thoſe different rates of intereſt in the tables exhibited above in pages 221, 222, — — — 232,) it would be neceſſary to compute the ſame number of tables of this kind, to wit, 93, or 91, tables, for each of theſe rates of intereſt; which would make, in all, 12 times 93, or 12 times 91, ſuch tables, or more than eleven hundred ſuch tables. Now the computation of ſuch a prodigious number of tables would be a buſineſs of ſo much length and labour that it, probably, will never be undertaken; though, perhaps, it might be worth the while of the Government, or of ſome of the ſocieties for making inſurances upon lives, or of the dean and chapter of ſome rich cathedral church, whoſe lands are leaſed out upon lives, or of ſome other wealthy body of men, to whom ſuch tables might be peculiarly uſeful, to cauſe *two, or three*, ſets of theſe tables to be computed for *two, or three*, of the moſt common and uſeful rates of intereſt, as, for example, for $3\frac{1}{2}$ per cent. 4 per cent. and $4\frac{1}{2}$ per cent. If this were to be undertaken and carefully performed, under ſuch encouragement, it would, I doubt not, be allowed on all hands to be a work of great merit and of general advantage to the publick.

A method of finding by Interpolation *the values of ſuch annuities for two joint lives, as are not contained in any of the foregoing tables.*

CCCCXI. But in the mean while, and until ſuch tables ſhall be publiſhed, it will be deſireable to find out, if poſſible, ſome tolerably eaſy method of deriving the values of ſuch annuities for two joint lives as are *not* ſet down in the foregoing ten tables, from the values of thoſe which *are* therein exhibited. Now this may be done to a moderate degree of exactneſs, ſufficient for common purpoſes, by a kind of *Interpolation*, which may be explained in the following manner.

CCCCXII. The

The principles of the ſaid method of Interpolation.

CCCCXII. The principles upon which this method of interpolation is founded are as follows.

In the firſt place it is evident beyond a doubt, that the value of an annuity for the joint continuance of any two given lives is greater than the value of the like annuity for two other lives whereof the younger is of the ſame age with the younger of the two former lives, and the older is older than the older of the two former lives: or, in other words, the value of an annuity for two joint lives of N years and $N+n$ years is greater than the value of the ſame annuity for two joint lives of the ages of N years and $N+n+e$ years. Thus, for example, the value of an annuity of one pound a year for two joint lives of the ages of 23 years and 30 years is greater than the value of the like annuity for two joint lives of the ages of 23 years and 40 years.

In the ſecond place it ſeems highly probable, that, if we take a moderate number of lives that are ſucceſſively older the one than the other by one year, and combine them, one after another, with another life that is younger than any of them, the values of an annuity for theſe ſucceſſive pairs of joint lives, (in all of which the youngeſt life is of the ſame age,) will be nearly in arithmetical proportion, as well as the ages of the older lives in theſe ſucceſſive pairs of lives, which are ſuppoſed to increaſe by the equal difference of one year. Thus, if the younger life in each of theſe pairs of lives is of the age of N years, and the ſeveral older lives, with which this life is to be ſucceſſively combined, are of the ages of $N+n$ years, $N+n+1$ years, $N+n+2$ years, $N+n+3$ years, $N+n+4$ years, $N+n+5$ years, &c. it is probable that the values of an annuity

for two joint lives of the ages of N years and $N+n$ years,
and for two joint lives of the ages of N years and $N+n+1$ years,
and for two joint lives of the ages of N years and $N+n+2$ years,
and for two joint lives of the ages of N years and $N+n+3$ years,
and for two joint lives of the ages of N years and $N+n+4$ years,
and for two joint lives of the ages of N years and $N+n+5$ years, &c.

will form, pretty nearly, an arithmetical progreſſion, as well as the older ages, $N+n$ years, $N+n+1$ years, $N+n+2$ years, $N+n+3$ years, $N+n+4$ years, $N+n+5$ years, &c. themſelves: only the ſeries of thoſe values will be a decreaſing progreſſion, whereas the ſeries of the older ages is an increaſing one. This, I ſay, ſeems probable, (though it is not abſolutely evident,) and will be found to be ſufficiently near the truth, when the number of the terms in theſe progreſſions is not greater than 11, to be the foundation of a very uſeful method of approximating to the values of theſe joint annuities.

CCCCXIII. Theſe

CCCCXIII. Theſe things being premiſed, let it be propoſed to find the value of an annuity of one pound a year for the joint continuance of two lives of the ages of N years and $N+a$ years, in which a, the difference of the two ages, is not either 5 years, or 10 years, or 20 years, or 30 years, or 40 years, or 50 years, or 60 years, or 70 years, or 80 years, (which are the differences of the two ages in the foregoing tables,) but ſome intermediate number of years between ſome two of theſe differences, that are contiguous to each other. The ſaid method itſelf.

Let the greateſt difference (amongſt the differences ſet down in the foregoing tables, which are either 5 years, or 10 years, or ſome multiple of 10 years,) than which the given difference a is greater, be $10\times m$, or $10m$. Then, it is evident, the next greater difference, or the leaſt difference (amongſt the differences ſet down in the foregoing tables,) that is greater than the difference a, will be $10\times m+1$, or $10m+10$. Therefore (by the firſt principle above-mentioned,) the value of the propoſed annuity of one pound a year for the joint continuance of two lives of the ages of N years and $N+a$ years will be of an intermediate magnitude between the value of a like annuity for two joint lives of the ages of N years and $N+10m$ years, and the value of a like annuity for two joint lives of the ages of N years and $N+10m+10$ years; both which values may be found in ſome of the foregoing ten tables. And thus we may obtain, by means of the firſt principle above-mentioned, two limits of the value of the propoſed annuity, between which we may be ſure it is of an intermediate magnitude.

And, by the ſecond principle above-mentioned, we may make a nearer approximation to its true value by reaſoning as follows.

The eleven following values of an annuity of one pound a year for two joint lives, (of which eleven values we can find the firſt and the laſt in the ten foregoing tables,) will form, pretty nearly, a decreaſing arithmetical progreſſion; to wit, the values of the ſaid annuity for two joint lives of the ages of

N years and $N+10m$ years,
N years and $N+10m+1$ years,
N years and $N+10m+2$ years,
N years and $N+10m+3$ years,
N years and $N+10m+4$ years,
N years and $N+10m+5$ years,

N years and $N + 10m + 6$ years,
N years and $N + 10m + 7$ years,
N years and $N + 10m + 8$ years,
N years and $N + 10m + 9$ years,
and N years and $N + 10m + 10$ years.

Subtract therefore the laſt of theſe values from the firſt, and divide the difference by 10; and the quotient thence ariſing will be the quantity which muſt be continually added to the laſt value, or ſubtracted from the firſt value, in order to form an arithmetical progreſſion of terms between the firſt value and the laſt. Let theſe continual additions, or ſubtractions, be made. And, amongſt the terms thereby obtained, that which correſponds to the ages of N years and $N + a$ years (which latter age muſt be equal to one of the intermediate ages between $N + 10m$ years and $N + 10m + 10$ years,) will be a near value of the propoſed annuity of one pound a year for two joint lives of the ages of N years and $N + a$ years. Q E I.

Examples of the foregoing method of diſcovering the values of the above-mentioned intermediate, or omitted, annuities for two joint lives by Interpolation.

First example. CCCCXIV. As an example of this method of interpolation, let the two lives for whoſe joint continuance an annuity of one pound a year is to be granted, be of the ages of 70 years and 77 years.

Then it is evident, in the firſt place, that the value of this annuity is not contained in any of the foregoing ten tables; becauſe 7 years is not the difference of the two ages in any of them.

But, in the ſecond place, we may obſerve that the value of an annuity of one pound a year for the joint continuance of two lives of the ages of 70 years and 77 years muſt be leſs than the value of a like annuity for the joint continuance of two lives of the ages of 70 years and 75 years, but greater than the value of the like annuity for the joint continuance of two lives of the ages of 70 years and 80 years.

In the third place we may obſerve that the values of the two latter annuities, (between which the value of the propoſed annuity lies,) to wit, the values of an annuity of one pound a year for the joint continuance of two lives of the ages of 70 years and 75 years and of a like annuity for the joint continuance of two lives of the ages of 70 years and 80 years, are both contained in the foregoing tables; the former of theſe values being contained in Table XXX, in which the difference of the ages is 5 years, and the latter of them being contained in Table XXXI, in which the

the difference of the ages is 10 years. The former of theſe values appears in Table XXX to be = £3.560,612; and the latter of them appears in Table XXXI to be = £2.793,419. Therefore the value of the propoſed annuity of one pound a year for the joint continuance of two lives of the ages of 70 years and 77 years is of an intermediate magnitude between £3.560,612 and £2.793,419.

In the fourth place we may reaſonably ſuppoſe that the values of an annuity of one pound a year for the joint continuance of the ſix following pairs of lives, to wit,

two lives of the ages of 70 years and 75 years,
two lives of the ages of 70 years and 76 years,
two lives of the ages of 70 years and 77 years,
two lives of the ages of 70 years and 78 years,
two lives of the ages of 70 years and 79 years,
and two lives of the ages of 70 years and 80 years,

will form, pretty nearly, an arithmetical progreſſion, or will decreaſe by nearly equal differences. Therefore, if we ſubtract the laſt of them, which is = £2.793,419, from the firſt, or £3.560,612, and divide the remainder, to wit, £0.767,193, by 5, the quotient, £0.153,438, will be the common difference by which theſe terms will decreaſe; and conſequently, if this quotient be either continually added to the laſt term, £2.793,419, or continually ſubtracted from the firſt term, £3.560,612, we ſhall thereby obtain the values of the intermediate terms of the progreſſion. If we proceed by addition, theſe intermediate terms will be as follows, to wit,

£		£		£
2.793,419	+	0.153,438,	or	2.946,857,
2.946,857	+	0.153,438,	or	3.100,295,
3.100,295	+	0.153,438,	or	3.253,732,
and 3.253,732	+	0.153,438,	or	3.407,171;

and, if we proceed by ſubtraction, they will be as follows, to wit,

£		£		£
3.560,612	—	0.153,438,	or	3.407,174,
3.407,174	—	0.153,438,	or	3.253,736,
3.253,736	—	0.153,438,	or	3.100,298,
and 3.100,298	—	0.154,438,	or	2.946,860.

 Therefore

Therefore the values of an annuity of one pound a year for the joint continuance of two lives of the ages of

70 years and 76 years,
70 years and 77 years,
70 years and 78 years,
and 70 years and 79 years,

Will be nearly equal to

£
3.407,174,
3.253,736,
3.100,298,
and 2.946,860;

of which values the second, to wit, £3.253,736, is that we were in search of. Q E I.

Note. This value, £3.253,736, (which is the third term of the arithmetical progression, consisting of six terms, whose first and last terms are £3.560,612 and £2.793,419) might have been found separately, or without finding the other intermediate terms of the said progression, by dividing the difference of the extreme terms, to wit, £0.767,193, by 5, so as to find the common difference of the terms, or £0.153,438, and then subtracting twice the said difference, or £0.306,876, from the first, or greatest, term, £3.560,612. For £3.560,612 — £0.306,876, is = £3.253,736.

Second example.

CCCCXV. As another example of this method of Interpolation, let us suppose the ages of the two lives, for the joint continuance of which an annuity of one pound a year is to be granted, to be 59 years and 70 years.

Here we must observe in the first place, that the value of an annuity of one pound a year for two joint lives of the ages of 59 years and 70 years must be somewhat less than the value of a like annuity for two joint lives of the ages of 59 and 69 years; which appears by Table XXXI to be = £5.611,286.

In

In the second place we must observe that the value of the said annuity of one pound a year for the joint continuance of two lives of the ages of 59 years and 70 years will be greater than the value of a like annuity for the joint continuance of two lives of the ages of 59 years and 79 years; which appears by Table XXXII to be = £3.462,599. Therefore the value of the said annuity of one pound a year for two joint lives of the ages of 59 years and 70 years is greater than £3.462,599, but less than £5.611,286. And it will evidently be much nearer to the greater of these values, or £5.611,286, than to the lesser value, £3.462,599.

In the third place, in order to make a nearer approach to the value of this annuity, we must suppose that the values of an annuity of one pound a year for the eleven following pairs of lives, to wit,

for two lives of the ages of 59 years and 69 years,
two lives of the ages of 59 years and 70 years,
two lives of the ages of 59 years and 71 years,
two lives of the ages of 59 years and 72 years,
two lives of the ages of 59 years and 73 years,
two lives of the ages of 59 years and 74 years,
two lives of the ages of 59 years and 75 years,
two lives of the ages of 59 years and 76 years,
two lives of the ages of 59 years and 77 years,
two lives of the ages of 59 years and 78 years,
and two lives of the ages of 59 years and 79 years,

will form, pretty nearly, an arithmetical progression, or decrease by nearly equal differences. And, if they do so decrease, the difference between the first and second of those values will be nearly the tenth part of the difference between the first and the last values. Now the first of these values has been shewn to be = £5.611,286, and the last of them has been shewn to be = £3.462,599: and the difference of these values is £2.148,687; of which the tenth part is £0.214,868. Therefore the second of the foregoing eleven values will be = £5.611,286 — £0.214,868, or £5.396,418. Therefore the value of an annuity of one pound a year for two joint lives of the ages of 59 years and 70 years, will be, nearly, equal to £5.396,418. Q E I.

CCCCXVI. There is another way of obtaining a near value of this annuity by means of the foregoing tables, besides this of Interpolation; but which differs very little from it, and is founded on exactly the same principles. It is as follows.

It

It appears by Table XXX, (in which the difference of the ages of the two lives is 5 years,) that the value of an annuity of one pound a year for the joint continuance of two lives of the ages of 59 years and 64 years is £6.700,900. And we have ſeen that the value of a like annuity for the joint continuance of two lives of the ages of 59 and 69 years is £5.611,286; which is leſs than £6.700,900 by the difference £1.089,614.

Now we may reaſonably ſuppoſe that the values of an annuity of one pound a year for the joint continuance of the ſeven following pairs of lives, to wit,

two lives of the ages of 59 years and 64 years,
two lives of the ages of 59 years and 65 years,
two lives of the ages of 59 years and 66 years,
two lives of the ages of 59 years and 67 years,
two lives of the ages of 59 years and 68 years,
two lives of the ages of 59 years and 69 years,
and two lives of the ages of 59 years and 70 years,

will form, pretty nearly, an arithmetical progreſſion, or will decreaſe by equal differences. And, if they do ſo decreaſe, the difference between the firſt of them (which is = £6.700,900,) and the laſt, (which is the value ſought,) will be equal to ſix times their common difference; and conſequently, if we can find the common difference of theſe values, the laſt of them may be derived from the firſt by ſubtracting from it ſix times the ſaid common difference. And it may alſo be derived from the ſixth value (which we have ſeen to be = £5.611,286,) by ſubtracting from it the ſaid common difference itſelf. We muſt therefore inquire what is the ſaid common difference.

Now, ſince the firſt of theſe values (which are ſuppoſed to form an arithmetical progreſſion,) is = £6.700,900, and the ſixth of them is = £5.611,286, it follows that the common difference of theſe values muſt be a fifth part of the difference of £6.700,900 and £5.611,286, that is, a fifth part of £1.089,614, and therefore will be = £0.217,922. Therefore ſix times the ſaid common difference will be = (ſix times £0.217,922, or) £1.307,532; which, being ſubtracted from £6.700,900, or the firſt of the foregoing ſeven values, leaves £5.393,368 for the laſt of the ſaid values, or the value of an annuity of one pound a year for two joint lives of the ages of 59 years and 70 years. Q E I.

Or, if we ſubtract the common difference, £0.217,922, itſelf, from £5.611,286, or the ſixth of the foregoing values, the remaining quantity, £5.393,364,

£5.393,364, will be the laſt of the ſaid ſeven values, or the value of an annuity of one pound a year for two joint lives of the ages of 59 years and 70 years. Q E I.

Note. Theſe values £5.393,368 and £5.393,364 are ſo nearly equal to the value found for this annuity in the laſt article, to wit, £5.396,418, that the difference is not worth attending to. But, if it were, we ought to conſider the value laſt obtained, to wit, £5.393,368, as being nearer to the exact value of the propoſed annuity than £5.396,418, becauſe it is obtained by means of an arithmetical progreſſion conſiſting of fewer terms than the other, in Art. ccccxv, by means of which the former value, £5.396,418, had been found.

CCCCXVII. As a third example of this method of Interpolation, let the ages of the two lives, upon the joint continuance of which an annuity of one pound a year is to depend, be 26 years and 53 years; the difference of which is 27 years. Third example.

Here we muſt obſerve, in the firſt place, that the value of this annuity is leſs than the value of a like annuity for two joint lives of the ages of 26 years and 46 years, and greater than the value of a like annuity for two joint lives of the ages of 26 years and 56 years; whence it follows, by Tables XXXII and XXXIII, that it is leſs than £12.646,97, and greater than £10.298,13.

In the ſecond place we may reaſonably ſuppoſe that the values of an annuity of one pound a year for the joint continuance of the following eleven pairs of lives, to wit,

two lives of the ages of 26 years and 46 years,
two lives of the ages of 26 years and 47 years,
two lives of the ages of 26 years and 48 years,
two lives of the ages of 26 years and 49 years,
two lives of the ages of 26 years and 50 years,
two lives of the ages of 26 years and 51 years,
two lives of the ages of 26 years and 52 years,
two lives of the ages of 26 years and 53 years,
two lives of the ages of 26 years and 54 years,
two lives of the ages of 26 years and 55 years,
and two lives of the ages of 26 years and 56 years,

will

will form, pretty nearly, an arithmetical progreſſion, or will decreaſe by nearly equal differences. And, if they do ſo decreaſe, their common difference will be nearly a tenth part of the difference of the extreme terms. Now the extreme terms are £12.646,97 and £10.298,13, the difference of which is £2.348,84; and the tenth part of this difference is £0.234,884. Therefore £0.234,884, is the common difference of the terms; and conſequently £10.298,13 + 3 × £0.234,884, (or £10.298,13 + £0.704,652,) or £11.002,78 will be the value of the laſt term but three, or of the eighth term, or will be the value of the propoſed annuity of one pound a year for two joint lives of the ages of 26 years and 53 years. QEI.

CCCCXVIII. Theſe three examples will, I preſume, be ſufficient to illuſtrate this method of deriving the values of ſuch annuities for two joint lives as *are not* contained in the foregoing ten tables, from the values of the annuities that *are* contained in thoſe tables, by Interpolation. And therefore I ſhall not add any more examples of this method with *that* deſign.

Other examples of the foregoing method of Interpolation, *which ſerve to ſhew to what degree of exactneſs the near values of theſe annuities for two joint lives, that are obtained by means of it, may be ſuppoſed to co-incide with their true values.*

CCCCXIX. But it will be neceſſary to give a few more inſtances of this method of Interpolation with *another* view, namely, in order to ſhew that the values of annuities for two joint lives which are obtained by means of it, are pretty nearly equal to their true values, and may conſequently be uſed, on all common occaſions, inſtead of the ſaid true values, without any ſenſible inconvenience. Now this will beſt appear by computing, by means of this method of Interpolation, a few of the near values of an annuity of one pound a year for the joint continuance of two lives whoſe ages differ from each other by 5 years, and then comparing the ſaid near values of theſe annuities, thereby obtained, with the exact values of the ſame annuities exhibited above in Table XXX, page 493.

First example. CCCCXX. Let it therefore be required, in the firſt place, to find, by this method of Interpolation, a near value of an annuity of one pound a year for the joint continuance of two lives of the ages of 10 years and 15 years; the exact value of which annuity appears in Table XXX to be £17.048,09.

Now

Now it appears by Table XXIX that the value of an annuity of one pound a year for two joint lives that are both of the ſame age of 10 years, is £17.397,65. And it appears from Table XXXI that the value of a like annuity of one pound a year for two joint lives of the ages of 10 years and 20 years is £16.634,79. Therefore, according to this method of Interpolation, the value of an annuity of one pound a year for two joint lives of the ages of 10 years and 15 years will be nearly equal to an arithmetical mean proportional between £17.397,65 and £16.634,79, and conſequently will be nearly equal to $\left(\frac{\text{£}17.397,65 + \text{£}16.634,79}{2}, \text{ or } \frac{\text{£}34.032,44}{2}, \text{ or}\right)$ £17.016,22. QEI.

The difference between this near value, £17.016,22, of the propoſed annuity, and £17.048,09, its exact value, is £0.031,87, which is leſs than one 534th part of the ſaid true value.

CCCCXXI. Let the two lives be of the ages of 20 years and 25 years. Second example.

Then will the exact value of an annuity of one pound a year for theſe two joint lives, according to Table XXX, be £15.701,10.

The near value of the ſame annuity will, according to the foregoing method of Interpolation, be an arithmetical mean proportional between £16.009,67, which appears by Table XXIX to be the value of a like annuity for two joint lives that are both of the age of 20 years, and £15.298,75, which appears by Table XXXI to be the value of a like annuity for two joint lives of the ages of 20 years and 30 years; and conſequently the ſaid near value will be $\left(= \frac{\text{£}16.009,67 + \text{£}15.298,75}{2}, = \frac{\text{£}31.308,42}{2}\right)$ = £15.654,21. QEI.

The difference between this near value, £15.654,21, of the propoſed annuity, and its more exact value, £15.701,10, is £0.046,89, which is leſs than the 334th part of the ſaid exact value.

Third example. CCCCXXII. Let the two lives be of the ages of 30 years and 35 years.

Then will the exact value of an annuity of one pound a year for these two joint lives, according to Table XXX, be £14.357,56.

And the near value of the same annuity will, according to the foregoing method of Interpolation, be an arithmetical mean proportional between the value of a like annuity for two joint lives that are both of the same age of 30 years, which appears by Table XXIX to be £14.776,38, and the value of a like annuity for two joint lives of the ages of 30 years and 40 years, which appears by Table XXXI to be £13.709,61; and consequently it will be $= \left(\frac{\text{£}14.776,38 + \text{£}13.709,61}{2} = \frac{\text{£}28.485,99}{2} =\right)$ £14.242,99. QEI.

The difference between this near value, £14.242,99, of the proposed annuity, and its more exact value, £14.357,56, is £0.114,57; which is less than the 125th part of the said exact value.

Fourth example. CCCCXXIII. Let the two lives be of the ages of 40 years and 45 years.

Then will the exact value of an annuity of one pound a year for these two joint lives, according to Table XXX, be £12.193,97.

The value of an annuity of one pound a year for two joint lives that are both of the age of 40 years, appears by Table XXIX to be £12.957,85; and the value of a like annuity for two joint lives of the ages of 40 years and 50 years appears by Table XXXI to be £11.229,92. Therefore the value of the like annuity for two joint lives of the ages of 40 years and 45 years is nearly equal to an arithmetical mean between £12.957,85 and £11.229,92, and consequently is nearly equal to $\left(\frac{\text{£}12.957,85 + \text{£}11.229,92}{2},\right.$ or $\frac{\text{£}24.187,77}{2}$, or$\left.\right)$ £12.093,88. QEI.

The

The difference between this near value, £12.093,88, of the proposed annuity, and its more exact value, £12.193,97, is £0.100,09; which is less than the 121st part of the said exact value.

Fifth example. CCCCXXIV. In like manner, if the two lives are of the ages of 50 years and 55 years, the exact value of an annuity of one pound during their joint continuance, given in Table XXX, is £9.273,595; and the near value of the same annuity, obtained by the foregoing method of Interpolation, will be an arithmetical mean between £10.025,94 and £8.341,632, and consequently will be equal to $\frac{\text{£}18.367,572}{2}$, or £9.183,786. QEI.

The difference between this near value, £9.183,786, of the proposed annuity, and its more exact value, £9.273,595, is £0.089,809; which is less than the 103d part of the said exact value.

Sixth example. CCCCXXV. If the two lives are of the ages of 60 years and 65 years, the exact value of the annuity will be £6.382,877; and the near value of it will be $= \left(\frac{\text{£}7.282,755 + \text{£}5.336,698}{2} = \frac{\text{£}12.619,453}{2} =\right)$ £6.309,726; which differs from the exact value, £6.382,877, by £0.073,151, which is less than the 87th part of the said exact value.

Seventh example. CCCCXXVI. If the two lives are of the ages of 70 years and 75 years, the exact value of the annuity will be £3.560,612; and the near value of it will be $= \left(\frac{\text{£}4.229,522 + \text{£}2.793,419}{2} = \frac{\text{£}7.022,941}{2} =\right)$ £3.511,470; which differs from the exact value, £3.560,612, by £0.049,142; which is less than the 72d part of the said exact value.

Eighth example. CCCCXXVII. And, if the two lives are of the ages of 80 years and 85 years, the exact value of the annuity will be £1.595,707; and the near value of it will be $= \left(\frac{\text{£}2.057,238 + \text{£}0.909,073}{2} = \frac{\text{£}2.966,311}{2} =\right)$

£1.483,155; which differs from the exact value, £1.595,707, by £0.112,552, which is less than the 14th part of the said exact value.

Conclusions from the foregoing examples.

First conclusion.

CCCCXXVIII. From these examples we may conclude that, when the difference of the ages of two lives is 5 years, and the age of the older of them is not greater than 75 years, the near value of an annuity of one pound a year for the joint continuance of both lives, that is derived, by the foregoing method of Interpolation, from the values, (given in Tables XXIX and XXXI,) of a like annuity for two joint lives both of the same age with the younger of the two proposed lives, and of a like annuity for two joint lives whose ages differ by 10 years, and of which the younger is of the same age with the younger of the two proposed lives; ——I say, we may conclude that the said near value of the said annuity, so obtained, will differ from the true value of the same annuity by less than the 72d part of the said true value; and that, while the age of the older life is not greater than 65 years, the difference of the said near and true values will be less than an 103d part of the said true value. For, I presume, it cannot be doubted that, what we have found to be true concerning the differences of these values in the foregoing examples of two lives of the ages, of 10 years and 15 years, of 20 years and 25 years, of 30 years and 35 years, of 40 years and 45 years, of 50 years and 55 years, of 60 years and 65 years, of 70 years and 75 years, and of 80 years and 85 years, will be true with respect to all other lives of ages that lie between the ages herein specified, and which differ from each other by the same difference of 5 years; as, for example, of two lives of the ages of 13 years and 18 years, 23 years and 28 years, 33 years and 38 years, 43 years and 48 years, &c. But, if any person should doubt of this conclusion, he may easily satisfy himself of the truth of it by applying this method of interpolation to the discovery of the near values of as many of these latter annuities as he shall think fit, by means of Tables XXIX and XXXI, in the manner above exemplified in the preceeding articles, and then comparing the near values, thereby obtained, with the true values of the same annuities exhibited in Table XXX.

Second conclusion.

CCCCXXIX. And, secondly, we may conclude with a good degree of probability, that, since the near values of the annuities contained in Table XXX, for the joint continuance of two lives whose ages differ from each other by 5 years, which are obtained by this method of Interpolation, differ from the true values of the same annuities by such small quantities as a 72d, or a 103d, part, of the said true values, the near values of other annuities for two joint lives, where the difference of the ages is greater or less

less than 5 years, obtained by the same method of Interpolation, will differ from their true values by almost as small quantities, or by quantities not very different from the 72d part, or the 103d part, of the said true values. For in both cases the near values of the annuities sought are obtained by supposing that the principle laid down in Art. CCCCXII is nearly true, or that the values of eleven annuities of one pound a year for the joint continuance of eleven pairs of lives of the following ages, to wit,

N years and N years,
N years and $N + 1$ years,
N years and $N + 2$ years,
N years and $N + 3$ years,
N years and $N + 4$ years,
N years and $N + 5$ years,
N years and $N + 6$ years,
N years and $N + 7$ years,
N years and $N + 8$ years,
N years and $N + 9$ years,
and N years and $N + 10$ years,

form, pretty nearly, an arithmetical progression, or decrease by nearly equal differences. If therefore we find upon trial (as we have done in the foregoing examples,) that the near value of an annuity for two joint lives of the ages of N and $N + 5$ years obtained in this manner, differs but by a small quantity from its true value, we may conclude with a high degree of probability, that the near values of the other intermediate annuities, (as, for example, of annuities for two joint lives of the ages of N years and $N + 3$ years or of the ages of N years and $N + 7$ years,) that are obtained in the same manner, will differ from their true values either by as small quantities, or by quantities that will be very little greater than the said difference between the near value and the true value of the said annuity for two joint lives of the ages of N years and $N + 5$ years, which is the middlemost annuity of the whole eleven.

Third conclusion.

CCCCXXX. And, if this conclusion be just, (which, I think, it is hardly possible to doubt of,) the near values of annuities for two joint lives, obtained by this method of Interpolation, may be considered as differing from their true values by only about the 72d part of the said true values, when the age of the older life is not greater than 75 years, and by only about the 103d part of the said true values when the age of the older life is not greater than 65 years, and by a much smaller part of the said true values when the age of the older life is only 30 or 20 years.

CCCCXXXI. Now

The values of annuities for two joint lives, obtained by the foregoing method of Interpolation, are sufficiently exact for ordinary purposes.

CCCCXXXI. Now either the 103d part of the true value of an annuity, or the 72d part of it, is too small a difference to be of much importance in the bargains that are made for the purchase of life-annuities. And consequently this method of finding the values of annuities for two joint lives by Interpolation between the values of other contiguous annuities that have been already computed, may justly be considered as a very useful and a sufficient supplement to the want of such compleat tables of the values of these joint annuities, adapted to all the possible differences of ages in the two lives, as are mentioned in Art. cccccx.

End of the explanation and illustration of the foregoing method of finding the values of annuities for two joint lives by Interpolation.

CCCCXXXII. I shall now present the reader with another set of tables of the values of annuities for two joint lives, of the same kind as those above exhibited in Art. cccccviii, and which I have procured to be computed, (like the former,) under the inspection of the learned Mr. Morgan, from Monsieur de Parcieux's table of the probabilities of the duration of human life, upon a supposition that the interest of money is $4\frac{1}{2}$ per cent. These tables are as follows.

TABLE

TABLE XXXIX.

Containing the values of an annuity of one pound a year for the joint continuance of the lives of two persons of the same age, when the interest of money is $4\frac{1}{2}$ per cent.----Computed from Monsieur de Parcieux's table of the probabilities of the duration of human life.

Years in the age of the first life.	*Years in the age of the second life.*	*Values of an annuity of one pound a year for the joint continuance of both lives.*	*Years in the age of the first life.*	*Years in the age of the second life.*	*Values of an annuity of one pound a year for the joint continuance of both lives.*	*Years in the age of the first life.*	*Years in the age of the second life.*	*Values of an annuity of one pound a year for the joint continuance of both lives.*
		£			£			£
3	3	13.570,765	34	34	12.659,86	65	65	5.423,067
4	4	14.072,22	35	35	12.536,31	66	66	5.123,340
5	5	14.395,92	36	36	12.407,78	67	67	4.834,997
6	6	14.631,71	37	37	12.273,92	68	68	4.559,660
7	7	14.795,55	38	38	12.095,25	69	69	4.300,488
8	8	14.910,24	39	39	11.907,44	70	70	4.061,770
9	9	15.004,20	40	40	11.709,84	71	71	3.816,915
10	10	15.037,76	41	41	11.501,77	72	72	3.599,136
11	11	15.004,12	42	42	11.282,46	73	73	3.384,355
12	12	14.897,33	43	43	11.051,13	74	74	3.175,568
13	13	14.785,69	44	44	10.806,91	75	75	2.977,377
14	14	14.668,91	45	45	10.548,84	76	76	2.757,619
15	15	14.546,70	46	46	10.275,91	77	77	2.549,448
16	16	14.418,73	47	47	10.023,25	78	78	2.362,120
17	17	14.321,26	48	48	9.755,940	79	79	2.165,060
18	18	14.219,84	49	49	9.508,360	80	80	2.005,385
19	19	14.114,20	50	50	9.246,458	81	81	1.860,452
20	20	14.004,10	51	51	9.003,958	82	82	1.744,983
21	21	13.926,24	52	52	8.782,414	83	83	1.613,537
22	22	13.846,16	53	53	8.549,082	84	84	1.441,788
23	23	13.763,77	54	54	8.302,844	85	85	1.276,351
24	24	13.678,93	55	55	8.076,876	86	86	1.128,148
25	25	13.591,50	56	56	7.839,037	87	87	1.024,200
26	26	13.501,34	57	57	7.588,114	88	88	0.859,738
27	27	13.408,28	58	58	7.356,793	89	89	0.698,585
28	28	13.312,16	59	59	7.113,508	90	90	0.544,507
29	29	13.212,80	60	60	6.856,915	91	91	0.405,106
30	30	13.109,99	61	61	6.585,462	92	92	2.296,467
31	31	13.003,53	62	62	6.297,341	93	93	0.239,234
32	32	12.893,19	63	63	6.023,531	94	94	0.000,000
33	33	12.778,72	64	64	5.732,893			

TABLE XL.

Containing the values of an annuity of one pound a year for the joint continuance of the lives of two persons whose ages differ from each other by 5 years; when the interest of money is 4½ per cent.----Computed from Monsieur de Parcieux's table of the probabilities of the duration of human life.

Years in the age of the younger life.	*Years in the age of the older life.*	*Values of an annuity of one pound a year for the joint continuance of both lives.*	*Years in the age of the younger life.*	*Years in the age of the older life.*	*Values of an annuity of one pound a year for the joint continuance of both lives.*	*Years in the age of the younger life.*	*Years in the age of the older life.*	*Values of an annuity of one pound a year for the joint continuance of both lives.*
		£			£			£
3	8	14.219,29	32	37	12.556,49	61	66	5.756,635
4	9	14.525,27	33	38	12.407,81	62	67	5.466,931
5	10	14.707,65	34	39	12.252,17	63	68	5.191,171
6	11	14.810,7[illegible]	35	40	12.089,10	64	69	4.917,419
7	12	14.839,89	36	41	11.918,07	65	70	4.646,949
8	13	14.840,94	37	42	11.738,52	66	71	4.377,326
9	14	14.828,32	38	43	11.531,14	67	72	4.127,800
10	15	14.782,57	39	44	11.312,59	68	73	3.885,426
11	16	14.700,60	40	45	11.082,06	69	74	3.653,183
12	17	14.598,23	41	46	10.838,70	70	75	3.435,590
13	18	14.491,45	42	47	10.600,65	71	76	3.203,078
14	19	14.379,98	43	48	10.349,18	72	77	2.988,987
15	20	14.263,55	44	49	10.102,06	73	78	2.788,448
16	21	14.160,62	45	50	9.840,830	74	79	2.585,274
17	22	14.071,49	46	51	9.582,860	75	80	2.408,860
18	23	13.979,20	47	52	9.345,367	76	81	2.231,987
19	24	13.883,53	48	53	9.094,623	77	82	2.075,853
20	25	13.784,30	49	54	8.846,134	78	83	1.917,420
21	26	13.699,50	50	55	8.601,572	79	84	1.730,370
22	27	13.612,10	51	56	8.359,590	80	85	1.561,668
23	28	13.521,96	52	57	8.120,294	81	86	1.408,369
24	29	13.428,91	53	58	7.885,844	82	87	1.291,505
25	30	13.332,79	54	59	7.638,860	83	88	1.129,847
26	31	13.233,41	55	60	7.393,970	84	89	0.953,637
27	32	13.130,57	56	61	7.135,517	85	90	0.781,712
28	33	13.024,06	57	62	6.861,983	86	91	0.621,495
29	34	12.913,66	58	63	6.605,043	87	92	0.489,284
30	35	12.799,11	59	64	6.333,493	88	93	0.347,978
31	36	12.680,15	60	65	6.045,498	89	94	0.000,000

TABLE XLI.

Containing the values of an annuity of one pound a year for the joint continuance of the lives of two persons whose ages differ from each other by 10 years; when the interest of money is 4½ per cent.----Computed from Monsieur de Parcieux's table of the probabilities of the duration of human life.

Years in the age of the younger life.	*Years in the age of the older life.*	*Values of an annuity of one pound a year for the joint continuance of both lives.*	*Years in the age of the younger life.*	*Years in the age of the older life.*	*Values of an annuity of one pound a year for the joint continuance of both lives.*	*Years in the age of the younger life.*	*Years in the age of the older life.*	*Values of an annuity of one pound a year for the joint continuance of both lives.*
		£			£			£
3	13	13.534,84	31	41	12.132,94	59	69	5.339,366
4	14	14.344,57	32	42	11.959,77	60	70	5.087,882
5	15	14.446,47	33	43	11.777,89	61	71	4.827,611
6	16	14.498,41	34	44	11.586,69	62	72	4.578,320
7	17	14.528,31	35	45	11.385,50	63	73	4.336,530
8	18	14.531,10	36	46	11.173,61	64	74	4.092,576
9	19	14.520,95	37	47	10.969,90	65	75	3.848,068
10	20	14.478,80	38	48	10.737,84	66	76	3.593,607
11	21	14.420,71	39	49	10.512,31	67	77	3.350,952
12	22	14.326,17	40	50	10.274,39	68	78	3.126,500
13	23	14.227,96	41	51	10.042,43	69	79	2.902,025
14	24	14.125,85	42	52	9.816,964	70	80	2.709,443
15	25	14.019,61	43	53	9.579,450	71	81	2.523,916
16	26	13.908,99	44	54	9.328,882	72	82	2.365,251
17	27	13.811,42	45	55	9.083,299	73	83	2.194,845
18	28	13.710,22	46	56	8.824,214	74	84	1.999,081
19	29	13.605,12	47	57	8.566,170	75	85	1.811,170
20	30	13.495,90	48	58	8.312,358	76	86	1.627,327
21	31	13.400,16	49	59	8.059,770	77	87	1.473,044
22	32	13.301,14	50	60	7.793,079	78	88	1.279,463
23	33	13.198,65	51	61	7.525,773	79	89	1.081,750
24	34	13.092,47	52	62	7.257,462	80	90	0.895,079
25	35	12.982,38	53	63	6.992,041	81	91	0.717,247
26	36	12.868,14	54	64	6.711,295	82	92	0.558,568
27	37	12.749,48	55	65	6.427,546	83	93	0.397,601
28	38	12.605,79	56	66	6.144,923	84	94	0.000,000
29	39	12.455,44	57	67	5.863,955			
30	40	12.297,99	58	68	5.597,977			

TABLE XLII.

Containing the values of an annuity of one pound a year for the joint continuance of the lives of two persons whose ages differ from each other by 20 years; when the interest of money is 4½ per cent.----Computed from Monsieur de Parcieux's table of the probabilities of the duration of human life.

Years in the age of the younger life.	*Years in the age of the older life.*	*Values of an annuity of one pound a year for the joint continuance of both lives.*	*Years in the age of the younger life.*	*Years in the age of the older life.*	*Values of an annuity of one pound a year for the joint continuance of both lives.*	*Years in the age of the younger life.*	*Years in the age of the older life.*	*Values of an annuity of one pound a year for the joint continuance of both lives.*
		£			£			£
3	23	13.566,18	27	47	11.235,80	51	71	5.249,784
4	24	13.764,63	28	48	11.025,14	52	72	5.006,611
5	25	13.869,97	29	49	10.823,13	53	73	4.761,978
6	26	13.928,96	30	50	10.610,56	54	74	4.517,666
7	27	13.950,52	31	51	10.406,55	55	75	4.286,359
8	28	13.946,14	32	52	10.212,00	56	76	4.037,427
9	29	13.929,47	33	53	10.008,01	57	77	3.794,414
10	30	13.882,15	34	54	9.793,822	58	78	3.572,788
11	31	13.801,26	35	55	9.588,700	59	79	3.343,173
12	32	13.684,05	36	56	9.373,704	60	80	3.139,598
13	33	13.561,85	37	57	9.148,020	61	81	2.943,841
14	34	13.434,35	38	58	8.916,202	62	82	2.764,131
15	35	13.301,20	39	59	8.672,806	63	83	2.572,536
16	36	13.162,05	40	60	8.416,828	64	84	2.345,809
17	37	13.033,30	41	61	8.147,138	65	85	2.119,938
18	38	12.878,23	42	62	7.862,472	66	86	1.908,778
19	39	12.715,57	43	63	7.581,639	67	87	1.728,597
20	40	12.544,83	44	64	7.285,200	68	88	1.497,798
21	41	12.382,05	45	65	6.971,573	69	89	1.269,895
22	42	12.211,23	46	66	6.659,066	70	90	1.048,546
23	43	12.031,83	47	67	6.360,345	71	91	0.834,287
24	44	11.843,25	48	68	6.065,302	72	92	0.638,300
25	45	11.644,84	49	69	5.786,990	73	93	0.440,344
26	46	11.435,90	50	70	5.517,470	74	94	0.000,000

TABLE XLIII.

Containing the values of an annuity of one pound a year for the joint continuance of the lives of two persons whose ages differ from each other by 30 years; when the interest of money is 4½ per cent.----Computed from Monsieur de Parcieux's table of the probabilities of the duration of human life.

Years in the age of the younger life.	*Years in the age of the older life.*	*Values of an annuity of one pound a year for the joint continuance of both lives.*	*Years in the age of the younger life.*	*Years in the age of the older life.*	*Values of an annuity of one pound a year for the joint continuance of both lives.*	*Years in the age of the younger life.*	*Years in the age of the older life.*	*Values of an annuity of one pound a year for the joint continuance of both lives.*
		£			£			£
3	33	12.892,77	24	54	9.910,650	45	75	4.518,077
4	34	13.047,91	25	55	9.702,397	46	76	4.247,671
5	35	13.112,32	26	56	9.484,074	47	77	3.991,243
6	36	13.130,47	27	57	9.254,869	48	78	3.748,011
7	37	13.110,84	28	58	9.034,348	49	79	3.502,708
8	38	13.043,28	29	59	8.803,302	50	80	3.284,035
9	39	12.959,63	30	60	8.560,832	51	81	3.079,666
10	40	12.842,64	31	61	8.305,940	52	82	2.899,153
11	41	12.689,53	32	62	8.037,502	53	83	2.699,676
12	42	12.497,79	33	63	7.774,945	54	84	2.464,370
13	43	12.296,06	34	64	7.498,687	55	85	2.237,648
14	44	12.083,66	35	65	7.207,393	56	86	2.022,653
15	45	11.859,89	36	66	6.920,335	57	87	1.835,846
16	46	11.623,98	37	67	6.638,708	58	88	1.596,108
17	47	11.410,32	38	68	6.353,241	59	89	1.356,043
18	48	11.185,18	39	69	6.076,191	60	90	1.119,059
19	49	10.967,99	40	70	5.810,588	61	91	0.890,743
20	50	10.739,19	41	71	5.538,183	62	92	0.677,405
21	51	10.532,33	42	72	5.282,170	63	93	0.462,633
22	52	10.334,98	43	73	5.025,291	64	94	0.000,000
23	53	10.128,01	44	74	4.769,599			

TABLE XLIV.

Containing the values of an annuity of one pound a year for the joint continuance of the lives of two perſons whoſe ages differ from each other by 40 years; when the intereſt of money is 4½ per cent.--- Computed from Monſieur de Parcieux's table of the probabilities of the duration of human life.

Years in the age of the younger life.	*Years in the age of the older life.*	*Values of an annuity of one pound a year for the joint continuance of both lives.*	*Years in the age of the younger life.*	*Years in the age of the older life.*	*Values of an annuity of one pound a year for the joint continuance of both lives.*	*Years in the age of the younger life.*	*Years in the age of the older life.*	*Values of an annuity of one pound a year for the joint continuance of both lives.*
		£			£			£
3	43	11.664,55	21	61	8.361,570	39	79	3.606,689
4	44	11.706,30	22	62	8.087,980	40	80	3.390,203
5	45	11.657,84	23	63	7.820,090	41	81	3.183,644
6	46	11.559,58	24	64	7.538,184	42	82	2.996,187
7	47	11.439,70	25	65	7.240,908	43	83	2.789,655
8	48	11.288,63	26	66	6.947,583	44	84	2.547,150
9	49	11.138,05	27	67	6.659,348	45	85	2.308,580
10	50	10.953,87	28	68	6.377,813	46	86	2.082,011
11	51	10.754,12	29	69	6.105,244	47	87	1.888,493
12	52	10.538,20	30	70	5.844,810	48	88	1.636,142
13	53	10.311,44	31	71	5.578,317	49	89	1.386,792
14	54	10.073,02	32	72	5.329,295	50	90	1.140,577
15	55	9.842,622	33	73	5.080,618	51	91	0.905,794
16	56	9.600,677	34	74	4.834,663	52	92	0.689,009
17	57	9.358,650	35	75	4.594,865	53	93	0.468,882
18	58	9.124,664	36	76	4.338,334	54	94	0.000,000
19	59	8.879,210	37	77	4.090,833			
20	60	8.621,334	38	78	3.852,445			

TABLE XLV.

Containing the values of an annuity of one pound a year for the joint continuance of the lives of two perſons whoſe ages differ from each other by 50 years; when the intereſt of money is 4½ per cent.--- Computed from Monſieur de Parcieux's table of the probabilities of the duration of human life.

Years in the age of the younger life.	*Years in the age of the older life.*	*Values of an annuity of one pound a year for the joint continuance of both lives.*	*Years in the age of the younger life.*	*Years in the age of the older life.*	*Values of an annuity of one pound a year for the joint continuance of both lives.*
		£			£
3	53	9.769,927	24	74	4.848,025
4	54	9.740,534	25	75	4.603,719
5	55	9.652,684	26	76	4.342,180
6	56	9.522,340	27	77	4.089,075
7	57	9.355,740	28	78	3.851,485
8	58	9.181,316	29	79	3.606,634
9	59	8.989,406	30	80	3.391,199
10	60	8.767,436	31	81	3.185,907
11	61	8.513,132	32	82	3.000,036
12	62	8.224,342	33	83	2.795,513
13	63	7.940,830	34	84	2.555,537
14	64	7.642,510	35	85	2.320,372
15	65	7.327,995	36	86	2.098,610
16	66	7.016,758	37	87	1.907,556
17	67	6.718,992	38	88	1.655,071
18	68	6.427,600	39	89	1.403,200
19	69	6.144,730	40	90	1.155,588
20	70	5.873,408	41	91	0.918,076
21	71	5.603,355	42	92	0.697,208
22	72	5.350,681	43	93	0.473,203
23	73	5.098,132	44	94	0.000.000

TABLE XLVI.

Containing the values of an annuity of one pound a year for the joint continuance of the lives of two perſons whoſe ages differ from each other by 60 years; when the intereſt of money is 4½ per cent.--- Computed from Monſieur de Parcieux's table of the probabilities of the duration of human life.

Years in the age of the younger life.	*Years in the age of the older life.*	*Values of an annuity of one pound a year for the joint continuance of both lives.*	*Years in the age of the younger life.*	*Years in the age of the older life.*	*Values of an annuity of one pound a year for the joint continuance of both lives.*
		£			£
3	63	7.519,867	20	80	3.404,081
4	64	7.378,607	21	81	3.197,263
5	65	7.169,216	22	82	3.009,860
6	66	6.938,290	23	83	2.803,637
7	67	6.693,300	24	84	2.561,759
8	68	6.442,915	25	85	2.324,537
9	69	6.196,954	26	86	2.100,434
10	70	5.950,820	27	87	1.906,501
11	71	5.685,410	28	88	1.654,218
12	72	5.423,923	29	89	1.402,532
13	73	5.162,329	30	90	1.155,084
14	74	4.902,882	31	91	0.917,714
15	75	4.648,840	32	92	0.696,969
16	76	4.376,827	33	93	0.473,078
17	77	4.118,650	34	94	0.000,000
18	78	3.875,876			
19	79	3.625,462			

TABLE XLVII.

Containing the values of an annuity of one pound a year for the joint continuance of the lives of two perſons whoſe ages differ from each other by 70 years; when the intereſt of money is 4½ per cent.--- Computed from Monſieur de Parcieux's table of the probabilities of the duration of human life.

Years in the age of the younger life.	*Years in the age of the older life.*	*Values of an annuity of one pound a year for the joint continuance of both lives.*	*Years in the age of the younger life.*	*Years in the age of the older life.*	*Values of an annuity of one pound a year for the joint continuance of both lives.*
		£			£
3	73	4.898,531	14	84	2.582,455
4	74	4.734,189	15	85	2.340,580
5	75	4.541,851	16	86	2.111,582
6	76	4.316,868	17	87	1.915,651
7	77	4.088,644	18	88	1.661,118
8	78	3.868,953	19	89	1.407,168
9	79	3.639,892	20	90	1.157,288
10	80	3.433,726	21	91	0.919,296
11	81	3.230,664	22	92	0.698,015
12	82	3.039,329	23	93	0.473,624
13	83	2.828,899	24	94	0.000,000

TABLE XLVIII.

Containing the values of an annuity of one pound a year for the joint continuance of the lives of two perſons whoſe ages differ from each other by 80 years; when the intereſt of money is $4\frac{1}{2}$ per cent.---- Computed from Monſieur de Parcieux's table of the probabilities of the duration of human life.

Years in the age of the younger life.	*Years in the age of the older life.*	*Values of an annuity of one pound a year for the joint continuance of both lives.*	*Years in the age of the younger life.*	*Years in the age of the older life.*	*Values of an annuity of one pound a year for the joint continuance of both lives.*
		£			£
3	83	2.702,580	9	89	1.405,610
4	84	2.503,721	10	90	1.160,806
5	85	2.290,611	11	91	0.923,697
6	86	2.082,129	12	92	0.700,914
7	87	1.897,819	13	93	0.475,131
8	88	1.651,923	14	94	0.000,000

CCCCXXXIII. According

CCCCXXXIII. According to Monſieur de Parcieux's table of the probabilities of the duration of human life (which begins with the age of 3 years, and ends with the age of 94 years, and ſuppoſes the utmoſt poſſible extent of human life to be ſomewhat leſs than 95 years,) it is evident that only two pairs of lives can be found whoſe ages will differ from each other by 90 years, to wit, two lives of the ages of 3 years and 93 years, and two lives of the ages of 4 years and 94 years. And an annuity for the joint continuance of this latter pair of lives cannot, according to this table of probabilities, be of any value, becauſe it is ſuppoſed to be certain, according to this table, that the older life, to wit, the life of 94 years, will be extinct before the end of the year, or before the payment of the annuity will become due. Therefore the only two lives, whoſe ages differ from each other by 90 years, for the joint continuance of which an annuity can be of any value, are two lives of the ages of 3 years and 93 years. And the value of an annuity of one pound a year for the joint continuance of two lives of theſe ages, when the intereſt of money is $4\frac{1}{2}$ per cent. is £0.464,115.

The value of an annuity of one pound a year for two joint lives of the ages of 3 years and 93 years.

CCCCXXXIV. When the intereſt of money is $4\frac{1}{2}$ per cent. and the difference of the ages of the two lives is not either 0, or 5 years, or 10 years, or 20 years, or 30 years, or 40, 50, 60, 70, 80, or 90, years, but ſome intermediate number of years lying between ſome two of theſe differences that are contiguous to each other, we muſt have recourſe to the method of interpolation above explained in Art. CCCCXIII, in order to obtain a near value of an annuity of one pound a year for their joint continuance; as we did above when the intereſt of money was ſuppoſed to be $3\frac{1}{2}$ per cent. For this method of interpolation will be equally applicable to the diſcovery of theſe near values of annuities for two joint lives at one rate of the intereſt of money as at another.

When the value of an annuity for two joint lives, (upon a ſuppoſition that the intereſt of money is $4\frac{1}{2}$ per cent.) is not contained in any of the foregoing tables, recourſe muſt be had to the method of *interpolation* above-deſcribed.

CCCCXXXV. We may therefore, by the help of the two foregoing ſets of tables, together with the method of interpolation above-explained, diſcover either the true values, or tolerably near values, of all annuities for the joint continuance of two lives of any ages whatſoever, when the intereſt of money is either $3\frac{1}{2}$ per cent. or $4\frac{1}{2}$ per cent.

End of the directions for finding the values of annuities for two joint lives when the intereſt of money is $3\frac{1}{2}$ per cent. and $4\frac{1}{2}$ per cent.

Of the values of annuities for two joint lives, when the intereſt of money is 3 per cent. 4 per cent. and 5 per cent.

Theſe values may alſo be found to a tolerable degree of exactneſs by means of the two foregoing ſets of tables.

The conjectural ſuppoſition by means of which the ſaid values may be deduced from the values of the ſame annuities when the intereſt of money is $3\frac{1}{2}$ per cent. and $4\frac{1}{2}$ per cent. which are given in the two foregoing ſets of tables.

CCCCXXXVI. And from the values of theſe annuities for two joint lives when the intereſt of money is $3\frac{1}{2}$ per cent. and $4\frac{1}{2}$ per cent. we may find tolerably near values of the ſame annuities when the intereſt of money is 3 per cent. 4 per cent. and 5 per cent. by ſuppoſing that the values of an annuity for the joint continuance of any two given lives at the five following different rates of intereſt, to wit, 3 per cent. $3\frac{1}{2}$ per cent. 4 per cent. $4\frac{1}{2}$ per cent. and 5 per cent. (which differ from each other by only $\frac{1}{2}$ per cent.) form, pretty nearly, an arithmetical progreſſion, or decreaſe by nearly equal differences. For, if this ſuppoſition be true, the third value of the annuity, or that which it has when the intereſt of money is 4 per cent. will be nearly equal to an arithmetical mean proportional between the ſecond value of it, or that which it has when the intereſt of money is $3\frac{1}{2}$ per cent. and the fourth value of it, or that which it has when the intereſt of money is $4\frac{1}{2}$ per cent. which two extreme values may be found in the two foregoing ſets of tables. We, therefore, need only ſubtract the fourth value of the annuity, or that which it has when the intereſt of money is $4\frac{1}{2}$ per cent. from the ſecond value of it, or that which it has when the intereſt of money is $3\frac{1}{2}$ per cent. and divide the remainder by 2; and, if the quotient, thence ariſing, be ſubtracted from the ſecond value of the annuity, or that which it has when the intereſt of money is $3\frac{1}{2}$ per cent. the remainder will be nearly equal to the third value of it, or that which it has when the intereſt of money is 4 per cent. And, in like manner, if we ſubtract the ſaid quotient from the fourth value of the annuity, or that which it has when the intereſt of money is $4\frac{1}{2}$ per cent. the remainder will be the fifth value of the annuity, or that which it has when the intereſt of money is 5 per cent. and, if we add the ſaid quotient to the ſecond value of the annuity, or that which it has when the intereſt of money is $3\frac{1}{2}$ per cent. the ſum will be equal to the firſt value of it, or that which it has when the intereſt of money is 3 per cent.

An example of the method of deducing the former values from the latter.

Thus, for example, if it were required to aſſign the values of an annuity of one pound a year for two joint lives of the ages of 25 years and 35 years, when the intereſt of money is 3 per cent. 4 per cent. and 5 per cent. by means of the two foregoing ſets of tables, which exhibit the values of this annuity only when the intereſt of money is $3\frac{1}{2}$ per cent. and $4\frac{1}{2}$ per cent. we muſt proceed in the following manner.

The value of an annuity of one pound a year for the joint continuance of two lives of the ages of 25 years and 35 years, when the intereſt of money is $3\frac{1}{2}$ per cent. appears by Table XXXI, page 494, to be = £14.601,50;

£14.601,50; and the value of the ſame annuity, when the intereſt of money is $4\frac{1}{2}$ per cent. appears by Table XLI to be = £12.982,38. The difference between £14.601,50 and £12.982,38 is £1.619,12; and half this difference is £0.809,56. Therefore the value of this annuity when the intereſt of money is 4 per cent. will be nearly equal to £14.601,50 — £0.809,56, or £13.791,94; and the value of it when the intereſt of money is 5 per cent. will be nearly equal to £12.982,38 — £0.809,56, or £12.172,82; and the value of it when the intereſt of money is 3 per cent. will be nearly equal to £14.601,50 + £0.809,56, or £15.411,06. Therefore the values of an annuity of one pound a year for the joint continuance of two lives of the ages of 25 years and 35 years, when the intereſt of money is 3 per cent. 4 per cent. and 5 per cent. are nearly equal to £15.411,06, £13.791,94, and £12.172,82. Q.E.I.

Of the ſimilarity of this method of deducing the ſaid former values from the latter, to the method of *interpolation* deſcribed above in Art. 413.

CCCCXXXVII. In the foregoing article we have ſhewn how to derive a near value of any given annuity upon a ſuppoſition that the intereſt of money is 3 per cent. 4 per cent. and 5 per cent. from the two values of the ſame annuity when the intereſt of money is $3\frac{1}{2}$ per cent. and $4\frac{1}{2}$ per cent. which two values are either given exactly in ſome of the tables of the two foregoing ſets of tables, or may be derived, by the aforeſaid method of Interpolation, from the values which are there ſet down. And the method of doing this (and which we have deſcribed in the laſt article,) is very ſimilar to the aforeſaid method of Interpolation (deſcribed above in Art. CCCCXIII,) and may itſelf likewiſe be called with propriety *a method of Interpolation*, as it proceeds (like the former method,) on a ſuppoſition that the unknown value of the propoſed annuity, when the intereſt of money is 4 per cent. is nearly equal to an arithmetical mean between the two known values of the ſame annuity when the intereſt of money is $3\frac{1}{2}$ per cent. and $4\frac{1}{2}$ per cent. or conſiſts in the *interpolation*, or *interpoſition*, of an arithmetical mean between thoſe two known values. Indeed, as to the manner of determining the other two unknown values of the propoſed annuity, or thoſe which it has when the intereſt of money is 3 per cent. and 5 per cent. the word *Interpolation* is not quite ſo proper for it; becauſe they are not found by *interpolating*, or *interpoſing*, any new terms between the two known values of the ſaid annuity (which it has when the intereſt of money is $3\frac{1}{2}$ per cent. and $4\frac{1}{2}$ per cent.) but by adding new terms, at both ends, to the arithmetical progreſſion, (conſiſting of three terms) whereof the two known values of the annuity (which it has when the intereſt of money is $3\frac{1}{2}$ per cent. and $4\frac{1}{2}$ per cent.) are the firſt and laſt terms, and the arithmetical mean between thoſe two known values is the middle term. With reſpect, therefore, to theſe values of the propoſed annuity, which it has when the intereſt of money is 3 per cent. and 5 per cent. and which are thus determined

mined to a moderate degree of exactneſs by *continuing* the aforeſaid arithmetical progreſſion (conſiſting of the aforeſaid three terms,) at both its ends, we ought rather to call this method of proceeding *the method of Continuation* than *the method of Interpolation*. And therefore, perhaps, it may be proper to call this whole method of finding all the ſaid three unknown values of the propoſed annuity, (which it has when the intereſt of money is 3 per cent. 4 per cent. and 5 per cent.) taken together, *the method of Interpolation and Continuation*. But, by whatever name we call them, the two parts of this method are both founded on the ſame principle, or ſuppoſition, to wit, "that, when three rates of the intereſt of money are taken that are ſucceſſively greater the one than the other by only one half per cent. (as either the rates of 3 per cent. $3\frac{1}{2}$ per cent. and 4 per cent. or of $3\frac{1}{2}$ per cent. 4 per cent. and $4\frac{1}{2}$ per cent. or of 4 per cent. $4\frac{1}{2}$ per cent. and 5 per cent.) the values of an annuity for two joint lives of any given ages at theſe three rates of intereſt, will form, pretty nearly, an arithmetical progreſſion, or will decreaſe by nearly equal differences;" which ſuppoſition (though I do not know any method of demonſtrating it,) has ſo great an appearance of probability that, I imagine, it is hardly poſſible to doubt the truth of it.

This method may be called, with propriety, *the method of interpolation and continuation*.

Of the degree of exactneſs *to which the near values of annuities for two joint lives, when the intereſt of money is* 3 *per cent.* 4 *per cent. and* 5 *per cent. that are deduced, by the foregoing* method of Interpolation and Continuation, *from the values of the ſame annuities when the intereſt of money is* $3\frac{1}{2}$ *per cent. and* $4\frac{1}{2}$ *per cent. may, upon reaſonable grounds, be ſuppoſed to be true.*

CCCCXXXVIII. But, though it can hardly be doubted that the near values of an annuity for two joint lives of any given ages when the intereſt of money is 3 per cent. and 4 per cent. and 5 per cent. that are obtained by the foregoing method of *Interpolation and Continuation* from the values of the ſame annuity when the intereſt of money is $3\frac{1}{2}$ per cent. and $4\frac{1}{2}$ per cent. are not very different from their true values, yet it would be deſireable (if it can be done,) to diſcover to *what degree of exactneſs* we may conſider theſe near values of the propoſed annuity as agreeing, or co-inciding, with its correſpondent true values.

CCCCXXXIX. Now, to do this in the moſt ſatisfactory manner, it would be neceſſary to compute the exact values of an annuity of one pound a year for ſeven or eight pairs of joint lives of different ages when the

the intereſt of money is 3 per cent. and 4 per cent. and 5 per cent. and then to compare the ſaid exact values with the near values of the ſame annuity, at the ſame rates of the intereſt of money, that are derived, by means of the foregoing method of Interpolation and Continuation, from the values of the ſame annuity when the intereſt of money is $3\frac{1}{2}$ per cent. and $4\frac{1}{2}$ per cent. which are given in the two foregoing ſets of tables: upon which compariſon I have no doubt that the differences between the ſaid near values and exact values would be found to be very inconſiderable. But this compariſon I am not at preſent able to make, not being poſſeſſed of the exact values of any annuities for two joint lives at the intereſt of 3 per cent. 4 per cent. or 5 per cent. computed from Monſieur de Parcieux's table of the probabilities of the duration of human life. And I do not think it an object of ſufficient importance to make it worth while, on this account only, to procure any of theſe exact values to be computed.

CCCCXL. But we may form a very probable conjecture concerning the degree of exactneſs to which the aforeſaid near values of annuities for two joint lives at 3 per cent. 4 per cent. and 5 per cent. (which are obtained, by the foregoing method of *interpolation and continuation*, from the values of the ſame annuities at the intereſts of $3\frac{1}{2}$ per cent. and $4\frac{1}{2}$ per cent.) agree, or co-incide, with their exact values, by ſuppoſing what, I imagine, it is hardly poſſible to doubt of, to wit, that there is ſuch an analogy between the values of annuities for two joint lives and the values of annuities for ſingle lives of the ſame ages with the older of the two joint lives, that, if the near values of annuities for ſingle lives at the intereſts of 3 per cent. 4 per cent. and 5 per cent. (that are obtained from the exact values of the ſame annuities at the intereſts of $3\frac{1}{2}$ per cent. and $4\frac{1}{2}$ per cent. by the foregoing method of *interpolation and continuation*,) are found to agree, or co-incide, with their true values to a certain degree of exactneſs, ſo as (for example,) to differ from the ſaid true values by only a 200th, or an 100th, part of the ſaid true values, it may be concluded that the near values of annuities for two joint lives (of which the older is of the ſame age with the ſingle life with which it is compared,) at the ſame intereſts of 3 per cent. 4 per cent. and 5 per cent. (that are obtained, by the ſaid method of interpolation and continuation, from the exact values of the ſame annuities at the intereſts of $3\frac{1}{2}$ per cent. and $4\frac{1}{2}$ per cent.) will likewiſe agree, or co-incide, with their true values to the ſame, or very nearly the ſame, degree of exactneſs as the near values and the true values of the correſponding annuities for ſingle lives were found to do, or ſo as to differ from the ſaid true values by only about a 200th, or a 100th, part of the ſaid true values. Thus, for example, if we ſhould derive the value of an annuity of one pound a year for a ſingle life of the age of 35 years, when the intereſt of money is 4 per cent. from the two values of the

A probable method of diſcovering the ſaid degree of exactneſs.

the ſame annuity for the ſame life when the intereſt of money is $3\frac{1}{2}$ per cent. and $4\frac{1}{2}$ per cent. by the foregoing method of interpolation, or by taking an arithmetical mean between thoſe two values; and, upon comparing this near value of the ſaid annuity with its exact value, (which is contained above in Table XVI, page 225,) we ſhould find the difference between them to be only a 200th, or a 100th, part of the ſaid exact value; we may conclude that the near value of an annuity of one pound a year for two joint lives of the ages of 25 years and 35 years, when the intereſt of money is 4 per cent. that is derived from the exact values of the ſame annuity for the ſame two joint lives, when the intereſt of money is $3\frac{1}{2}$ per cent. and $4\frac{1}{2}$ per cent. by the foregoing method of interpolation, or by taking an arithmetical mean between the ſaid two exact values, will alſo differ from the true value of the ſame annuity by only about a 200th, or a 100th, part of the ſaid true value. If this concluſion be allowed to be juſt, (and it certainly appears ſo highly probable, that it ſeems difficult to doubt of the truth of it,) we may then try the degree of exactneſs to which this method of *interpolation and continuation* exhibits the values of annuities for two joint lives when the intereſt of money is 3 per cent. 4 per cent. and 5 per cent. by applying it to the determination of the values of the like annuities for ſingle lives (of the ſame ages as the older lives in the correſponding joint lives,) when the intereſt of money is 3 per cent. 4 per cent. and 5 per cent. and comparing the near values of the ſaid annuities for ſingle lives, thereby obtained, with the exact values of the ſame annuities for ſingle lives at the ſame rates of intereſt, which are exhibited above in Tables XIV, XVI, and XVIII. Of this I ſhall now proceed to give a few inſtances.

An example of the ſaid method.

CCCCXLI. In the firſt place therefore, let us ſuppoſe that the two lives for whoſe joint continuance an annuity of one pound a year is to be granted, are of the ages of 25 years and 35 years.

We have ſeen in Art. cccexxxvi, that the two exact values of this annuity, when the intereſt of money is $3\frac{1}{2}$ per cent. and $4\frac{1}{2}$ per cent. are £14.601,50 and £12.982,38, and that the near values of the ſame annuity, when the intereſt of money is 3 per cent. 4 per cent. and 5 per cent. that are derived from the ſaid two exact values by the foregoing method of interpolation and continuation, are £15.411,06, £13.791,94, and £12.172,82. We are therefore to endeavour to determine, (by a reaſonable conjecture founded on the analogy juſt now ſuppoſed to take place between the values of annuities for joint lives and the values of annuities for ſingle lives,) *to what degree of exactneſs* theſe three near values, £15.411,06, £13.791,94, and £12.172,82, of the aforeſaid annuity when the

the intereſt of money is 3 per cent. 4 per cent. and 5 per cent. agree, or co-incide, with the true values of the ſame annuity at the ſame rates of intereſt. Now, in order to lay a ground for a conjecture of this kind, we may proceed as follows.

The value of an annuity of one pound a year for a ſingle life of the age of 35 years, when the intereſt of money is 3 per cent. appears by Table XIV, page 223, to be £18.464,13; and the values of the ſame annuity, when the intereſt of money is $3\frac{1}{2}$ per cent. 4 per cent $4\frac{1}{2}$ per cent. and 5 per cent. appear by Tables XV, XVI, XVII, and XVIII, to be £17.206,612, £16.084,014, £15.078,39, and £14.174,54. Theſe are the true, or exact, values of this annuity at theſe five different rates of intereſt.

Now let the firſt, third, and fifth values of this annuity be derived from the ſecond and fourth values of it, to wit, £17.206,612 and £15.078,39, by the aforeſaid method of *interpolation and continuation*. This may be done in the manner following. The exceſs of the ſecond term, £17.206,612, of this progreſſion above the fourth term, £15.078,39, is = £2.128,222; and half this difference is £1.064,111. Therefore the firſt of the ſaid five terms (which are ſuppoſed, for the preſent purpoſe, to conſtitute a decreaſing arithmetical progreſſion,) will be = £17.206,612 + £1.064,111, or £18.270,723; and the third term will be = £17.206,612 — £1.064,111, or £16.142,501; and the fifth term will be £15.078,39 — £1.064,111, or £14.014,279; and conſequently the values of the propoſed annuity of one pound a year for the life of a perſon of the age of 35 years, when the intereſt of money is 3 per cent. 4 per cent. and 5 per cent. will be nearly equal to £18.270,723, £16.142,501, and £14.014,279. Now, if we compare theſe three near values of this annuity, at theſe three different rates of intereſt, with the three exact values of the ſame annuity at the ſame rates of intereſt, (which we have ſeen to be £18.464,13, £16.084,014, and £14.174,54,) we ſhall find, that the firſt near value, to wit, £18.270,723, is leſs than the correſponding true value, £18.464,13, by the difference £0.193,407, which is leſs than the 95th part of the ſaid true value; and that the ſecond near value, to wit, £16.142,501, is greater than the correſponding true value, £16.084,014, by the difference £0.058,487, which is leſs than the 275th part of the ſaid true value; and that the third near value, £14.014,279, is leſs than the correſponding true value, £14.174,54, by the difference, £0.160,261, which is leſs than the 88th part of the ſaid true value. Thus it appears that the near values of an annuity of one pound a year for a ſingle life of the age of 35 years, when the intereſt of money is 3 per cent. 4 per cent. and 5 per cent. which are obtained by this method of *interpolation and continuation*, differ from the correſponding true values of it

it by leſs than the 95th, the 275th, and the 88th, parts of the ſaid true values reſpectively. And from hence we may conclude (by means of the analogy above-mentioned between the values of annuities for ſingle lives and the values of annuities for joint lives,) that the near values of an annuity of one pound a year for two joint lives of the ages of 25 years and 35 years, when the intereſt of money is 3 per cent. 4 per cent. and 5 per cent. which were obtained in Art. cccxxxv by the ſame method of *interpolation and continuation*, to wit, £15.411,06, £13.791,94, and £12.172,82, will likewiſe differ from the correſponding true values of the ſame annuity at thoſe three rates of intereſt, by only about the 95th part, the 275th part, and the 88th part, of the ſaid true values reſpectively.

Another example of the ſaid method.

CCCCXLII. In the ſecond place, Let us ſuppoſe the two lives to be of the ages of 25 years and 45 years.

The value of an annuity of one pound a year for two joint lives of theſe ages, when the intereſt of money is $3\frac{1}{2}$ per cent. appears by Table XXXII, page 495, to be £12.902,34; and the value of the ſame annuity for the ſame joint lives, when the intereſt of money is $4\frac{1}{2}$ per cent. appears by Table XLII to be £11.644,84. The difference of theſe values is £1.257,50; and half this difference is £0.628,75. Therefore, according to the foregoing method of *interpolation and continuation*, the value of the ſame annuity for the ſame joint lives, when the intereſt of money is 3 per cent. will be nearly equal to (£12.902,34 + £0.628,75, or) £13.531,09; and the value of it, when the intereſt of money is 4 per cent. will be nearly equal to (£12.902,34 — £0.628,75, or) £12.273,59; and the value of it, when the intereſt of money is 5 per cent. will be nearly equal to (£11.644,84 — £0.628,75, or) £11.016,09.

Now, in order to form a probable conjecture concerning the degree of exactneſs to which theſe near values of the aforeſaid annuity for two joint lives agree with its correſponding true values, let us derive the values of a like annuity of one pound a year for a ſingle life of the age of 45 years when the intereſt of money is 3 per cent. 4 per cent. and 5 per cent. from the values of it when the intereſt of money is $3\frac{1}{2}$ per cent. and $4\frac{1}{2}$ per cent. by the ſame method of *interpolation and continuation*; and then compare the near values, thereby obtained, with the correſpondent true values of the ſame annuity at the ſame rates of intereſt, (to wit, 3 per cent. 4 per cent. and 5 per cent.) as exhibited above in Tables XIV, XVI, and XVIII. This may be done as follows.

The

The value of an annuity of one pound a year for a life of the age of 45 years, when the intereſt of money is $3\frac{1}{2}$ per cent. appears by Table XV to be £14.716,120; and the value of the ſame annuity for the ſame life, when the intereſt of money is $4\frac{1}{2}$ per cent. appears by Table XVII to be £13.163,92. The difference of theſe values is £1.552,200; and half the ſaid difference is £0.776,100. Therefore the value of an annuity of one pound a year for a life of the age of 45 years, when the intereſt of money is 3 per cent. will be nearly equal to (£14.716,120 + £0.776,100, or) £15.492,220; and the value of the ſame annuity for the ſame life, when the intereſt of money is 4 per cent. will be nearly equal to (£14.716,120 — £0.776,100, or) £13.940,020; and the value of the ſame annuity for the ſame life, when the intereſt of money is 5 per cent. will be nearly equal to (£13.163,92 — £0.776,100, or) £12.387,820.

Now the true values of this annuity, when the intereſt of money is 3 per cent. 4 per cent. and 5 per cent. appear by Tables XIV, XVI, and XVIII, to be £15.608,74, £13.904,190, and £12.487,42. Therefore the firſt of the foregoing near values of the ſaid annuity, to wit, £15.492,220, falls ſhort of the correſponding true value of it, £15.608,74, by the difference, £0.116,520, which is leſs than the 133d part of the ſaid true value; and the ſecond near value of the ſaid annuity, to wit, £13.940,020, exceeds the correſponding true value of it, to wit, £13.904,190, by the difference, £0.035,830, which is leſs than the 388th part of the ſaid true value; and the third near value of the ſaid annuity, to wit, £12.387,820, is leſs than the correſponding true value of it, to wit, £12.487,42, by the difference, £0.099,600, which is leſs than the 125th part of the ſaid true value. We may therefore conclude (by means of the analogy above-mentioned between the values of annuities for ſingle lives and the values of annuities for joint lives,) that the three near values of an annuity of one pound a year for two joint lives of the ages of 25 years and 45 years, when the intereſt of money is 3 per cent. 4 per cent. and 5 per cent. which were obtained above by the ſaid method of *interpolation and continuation*, to wit, £13.531,09, £12.273,59, and £11.016,09, will differ from the correſponding true values of the ſame annuity by only about the 133d part, the 388th part, and the 125th part, of the ſaid true values reſpectively.

A third example of the ſame method.

CCCCXLIII. As a third example of this method of determining by analogy the degree of exactneſs of the values of annuities for two joint lives, when the intereſt of money is 3 per cent. 4 per cent. and 5 per cent. which are obtained by the foregoing method of *interpolation and continuation*, let us ſuppoſe the two lives to be of the ages of 20 years and 70 years.

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The value of an annuity of one pound a year for two joint lives of these ages, when the interest of money is $3\frac{1}{2}$ per cent. appears by Table XXXV, page 495, to be £6.197,247; and the value of the same annuity for the same joint lives, when the interest of money is $4\frac{1}{2}$ per cent. appears by Table XLV to be £5.873,408. The difference of these values is £0.323,839; and half this difference is £0.161,919. Therefore, according to the foregoing method of *interpolation and continuation*, the values of the same annuity for the same joint lives, when the interest of money is 3 per cent. 4 per cent. and 5 per cent. will be nearly equal to (£6.197,247 + £0.161,919, or) £6.359,166, (£6.197,247 — £0.161,919, or) £6.035,328, and (£5.873,408 — £0.161,919, or) £5.711,489, respectively.

Now, in order to form a conjecture concerning the degree of exactness of these near values of an annuity of one pound a year for these two joint lives of the ages of 20 years and 70 years, when the interest of money is 3 per cent. 4 per cent. and 5 per cent. we must derive the values of a like annuity for a single life of the age of 70 years, at the same rates of the interest of money, from the values of it, when the interest of money is $3\frac{1}{2}$ per cent. and $4\frac{1}{2}$ per cent. by the same method of *interpolation and continuation*, and then compare the near values, thereby obtained, with the corresponding true values of the same annuity for a single life of the same age of 70 years, at the same rates of interest, as they are exhibited above in Tables XIV, XVI, and XVIII. This may be done as follows.

The value of an annuity of one pound a year for a single life of the age of 70 years, when the interest of money is $3\frac{1}{2}$ per cent. appears by Table XV to be £6.575,357; and the value of the same annuity for the same life, when the interest of money is $4\frac{1}{2}$ per cent. appears by Table XVII to be £6.220,54. The difference of these values is £0.354,817; and half the said difference is £0.177,408. The sum of £6.575,357 and £0.177,408 is £6.752,765; and the difference of £6.575,357 and £0.177,408 is £6.397,949; and the difference of £6.220,54 and £0.177,408 is £6.043,132. Therefore £6.752,765 will be a near value of an annuity of one pound a year for a single life of the age of 70 years, when the interest of money is 3 per cent. and £6.397,949 will be a near value of the same annuity for the same life, when the interest of money is 4 per cent. and £6.043,132 will be a near value of the same annuity for the same life, when the interest of money is 5 per cent.

Now the true values of an annuity of one pound a year for a single life of the age of 70 years, when the interest of money is 3 per cent. 4 per cent. and 5 per cent. appear by Tables XIV, XVI, and XVIII, to be £6.765,920, £6.393,749, and £6.055,280; which differ from the foregoing near values of the same annuity, obtained by the method of *interpolation*

interpolation and continuation, to wit, £6.752,765, £6.397,949, and £6.043,132, by only £0.013,155, £0.004,200, and £0.012,148, which are less than the 514th part, the 1522d part, and the 498th part, of the said true values £6.765,920, £6.393,749, and £6.055,280, respectively. We may therefore conclude (by means of the analogy above-mentioned between the values of annuities for single lives and the values of annuities for joint lives,) that the three near values of an annuity of one pound a year for two joint lives of the ages of 20 years and 70 years, when the interest of money is 3 per cent. 4 per cent. and 5 per cent. which were obtained above by the said method of *interpolation and continuation*, to wit, £6.359,166, £6.035,328, and £5.711,489, will differ from the corresponding true values of the same annuity by only about the 514th, the 1522d, and 498th, part of the said true values.

Conclusion drawn from the three foregoing examples, concerning the degree of exactness of the near values of annuities for two joint lives obtained by means of the foregoing method of *Interpolation and Continuation.*

CCCCXLIV. It appears from the three foregoing examples, that the near values of an annuity of one pound a year for a single life of either 35 years, or 45 years, or 70 years, of age, when the interest of money is 3 per cent. 4 per cent. and 5 per cent. which are obtained by the foregoing method of *interpolation and continuation*, differ but little from the corresponding true values of the same annuity; and further, that the differences of the near values of the said annuity, when the interest of money is 4 per cent. (which are obtained by *interpolation*, or by interposing arithmetical means between the values of the same annuity, when the interest of money is $3\frac{1}{2}$ per cent. and $4\frac{1}{2}$ per cent.) from its correspondent true values, are much smaller than the differences of the near values of the said annuity from its true values, when the interest of money is 3 per cent. and 5 per cent. in which cases the said near values are not obtained by *interpolation*, but by *continuation*. Therefore, if the foregoing analogy between the values of annuities for single lives and the values of annuities for joint lives be allowed to subsist, it will follow, that the near values of annuities for two joint lives, when the interest of money is 3 per cent. 4 per cent. and 5 per cent. which are obtained, by the foregoing method of *interpolation and continuation*, from the values of the like annuities when the interest of money is $3\frac{1}{2}$ per cent. and $4\frac{1}{2}$ per cent. will likewise differ but little from the true values of the same annuities; and that the differences of the near values of such annuities from their true values, will be still less, when the interest of money is 4 per cent. than when it is 3 per cent, or 5 per cent. But in all the three rates of interest the said near values of these annuities will be *near enough* to their true values for most of the common purposes of business.

End of the explanation and illustration of the foregoing method of Interpolation and Continuation.

Of the values of annuities for two joint lives, when the intereſt of money is either lower than 3 per cent. or higher than 5 per cent.

CCCCXLV. We have ſeen in the foregoing articles how, by the help of the two ſets of tables of the values of annuities for two joint lives, given above in Art. CCCCVIII and CCCCXXXII, (which are founded on a ſuppoſition that the intereſt of money is $3\frac{1}{2}$ per cent. and $4\frac{1}{2}$ per cent.) we may find tolerably near values of the ſame annuities when the intereſt of money is 3 per cent. or 4 per cent. or 5 per cent. by means of the foregoing method of *Interpolation and Continuation*. But what ſhall we do, may the reader aſk, when the intereſt of money is not 3, 4, or 5, per cent. but 2 per cent. or 6 per cent. or 7 per cent. or 8, or 9, or 10, per cent? Will the ſame method of Interpolation and Continuation enable us to find the values of annuities for two joint lives at theſe ſeveral rates of intereſt to a tolerable degree of exactneſs? or, in other words, may it be ſuppoſed that the values of an annuity of one pound a year for two joint lives of given ages at the ſeveral following rates of intereſt of money, to wit, 2 per cent. $2\frac{1}{2}$ per cent. 3 per cent. $3\frac{1}{2}$ per cent. 4 per cent. $4\frac{1}{2}$ per cent. 5 per cent. $5\frac{1}{2}$ per cent. 6 per cent. $6\frac{1}{2}$ per cent. 7 per cent. $7\frac{1}{2}$ per cent. 8 per cent. $8\frac{1}{2}$ per cent. 9 per cent. $9\frac{1}{2}$ per cent. and 10 per cent. (as well as at the intereſts of 3 per cent. $3\frac{1}{2}$ per cent. 4 per cent. $4\frac{1}{2}$ per cent. and 5 per cent.) will form, pretty nearly, an arithmetical progreſſion, or decreaſe by nearly equal differences? For, if this ſuppoſition is true, it is evident that, when any two of the terms of this progreſſion are known, all the other terms may be derived from them by additions, or ſubtractions, of the common difference, by which the terms decreaſe; and conſequently the values of the propoſed annuity at all the other rates of intereſt may be deduced in this manner from its values when the intereſt of money is $3\frac{1}{2}$ per cent. and 4 per cent. which are exhibited in the two foregoing ſets of tables. In anſwer to this queſtion I muſt obſerve, that it does not ſeem probable that this ſuppoſition will be nearly true in ſuch a variety of different rates of intereſt. For we have, in the laſt article, ſeen reaſon to conclude, that the near values of an annuity for two joint lives of given ages when the intereſt of money is 3 per cent. and 5 per cent. which are obtained by means of this ſuppoſition, differ much more from its correſponding true values than the near value of it, (obtained by means of the ſame ſuppoſition,) when the intereſt of money is 4 per cent, differs from its true value. And therefore we have reaſon to conclude, that the near values of the ſame annuity when the intereſt of money is $2\frac{1}{2}$ per cent. or 2 per cent, or $5\frac{1}{2}$ per cent. or 6 per cent, or 7, 8, 9, or 10 per cent. that would be obtained by means of this ſuppoſition, would differ ſtill more from its correſponding true values, and, probably, would differ from them too much to make it adviſeable to neglect the differences and conſider the ſaid near values, in practice, as equal to the correſponding true values: at leaſt we may well ſuppoſe this to be the caſe at the very

very high intereſts of 8, 9, and 10 per cent. It ſeems deſirable, therefore, to diſcover, if poſſible, ſome other method of finding a tolerably near value of an annuity for two joint lives of given ages, when the intereſt of money is either lower than 3 per cent. or higher than 5 per cent, that may exempt us from the neceſſity of computing its exact value by means of the expreſſion

$$\frac{\text{£}1}{P \times Q} \times \text{the ſeries } \frac{P_{\text{I}} \times Q_{\text{I}}}{r} + \frac{P_{\text{II}} \times Q_{\text{II}}}{r^2} + \frac{P_{\text{III}} \times Q_{\text{III}}}{r^3} + \frac{P_{\text{IV}} \times Q_{\text{IV}}}{r^4} + \frac{P_{\text{V}} \times Q_{\text{V}}}{r^5} + \frac{P_{\text{VI}} \times Q_{\text{VI}}}{r^6} + \frac{P_{\text{VII}} \times Q_{\text{VII}}}{r^7} + \text{&c. continued to the end of}$$

the table of the probabilities of the duration of human life; the computation of which, when the two lives are young, is very tedious. Now one method of doing this to a moderate degree of exactneſs (though not to ſo great a degree of exactneſs as might be deſired) is as follows.

A method of approximating to the value of an annuity of one pound a year for the joint continuance of two lives of given ages, without computing the expreſſion $\frac{1}{P \times Q} \times$ *the ſeries* $\frac{P_{\text{I}} \times Q_{\text{I}}}{r} + \frac{P_{\text{II}} \times Q_{\text{II}}}{r^2} + \frac{P_{\text{III}} \times Q_{\text{III}}}{r^3} + \frac{P_{\text{IV}} \times Q_{\text{IV}}}{r^4} + \frac{P_{\text{V}} \times Q_{\text{V}}}{r^5} +$ *&c. (continued to the end of the table of the probabilities,) which is accurately equal to it.*

CCCCXLVI. It is evident that the ſeries $\frac{P_{\text{I}} \times Q_{\text{I}}}{r} + \frac{P_{\text{II}} \times Q_{\text{II}}}{r^2} + \frac{P_{\text{III}} \times Q_{\text{III}}}{r^3} + \frac{P_{\text{IV}} \times Q_{\text{IV}}}{r^4} + \frac{P_{\text{V}} \times Q_{\text{V}}}{r^5} +$ &c. continued to the end of the table of probabilities, will conſiſt of the ſame number of terms as the ſeries $\frac{Q_{\text{I}}}{r} + \frac{Q_{\text{II}}}{r^2} + \frac{Q_{\text{III}}}{r^3} + \frac{Q_{\text{IV}}}{r^4} + \frac{Q_{\text{V}}}{r^5} +$ &c. continued likewiſe to the end of the table of probabilities: becauſe, when all the perſons who are repreſented in the table of probabilities as living at the age of the older of the two lives, and whoſe number is originally Q, ſhall be dead, the annuity (which is to depend on the joint continuance of both the lives,) muſt neceſſarily ceaſe, notwithſtanding ſeveral of the perſons who are there repreſented as living at the age of the younger of the two lives, and whoſe number is originally P, may be ſtill alive.

CCCCXLVII. Since

CCCCXLVII. Since therefore the two ſerieſes $\frac{Q_I}{r} + \frac{Q_{II}}{r^2} + \frac{Q_{III}}{r^3} + \frac{Q_{IV}}{r^4} + \frac{Q_V}{r^5}$ + &c. and $\frac{P_I \times Q_I}{r} + \frac{P_{II} \times Q_{II}}{r^2} + \frac{P_{III} \times Q_{III}}{r^3} + \frac{P_{IV} \times Q_{IV}}{r^4} + \frac{P_V \times Q_V}{r^5}$ + &c. conſiſt of the ſame number of terms;—and, ſince they alſo have the ſame quantities for the denominators of their ſeveral terms, to wit, the quantities r, r^2, r^3, r^4, r^5, &c.—and the numerators of the terms of the former ſeries, to wit, Q_I, Q_{II}, Q_{III}, Q_{IV}, Q_V, &c. are involved in, or are factors of, the numerators of the terms of the latter ſeries, to wit, $P_I \times Q_I$, $P_{II} \times Q_{II}$, $P_{III} \times Q_{III}$, $P_{IV} \times Q_{IV}$, $P_V \times Q_V$, &c.—it ſeems reaſonable to ſuppoſe that the value of the whole latter ſeries may, in ſome way or other, be deduced from the value of the whole former ſeries, to a tolerable degree of exactneſs, ſo as to make it unneceſſary to take the trouble of computing all the terms of the latter ſeries and then adding them up into one ſum. And, if this ſhall appear to be practicable, it will follow, that the value of an annuity of one pound a year for the joint continuance of two lives of any given ages, may be deduced from the value of an annuity of the like amount for the older of the ſame two lives ſingly; which value we ſhall always be able to find in one of the twelve tables above exhibited in Art. CCI, pages 221, 222, 223, &c. —— 232. And thus the ſaid tables of the values of annuities for ſingle lives may be made ſubſervient to the diſcovery of the values of the like annuities for two joint lives. For let $\overset{\pounds}{A}$ be the value of an annuity of one pound a year for the older of the two lives ſingly; and let $\overset{\pounds}{B}$ be the value of an annuity of one pound a year for the joint continuance of both lives. Then will $\overset{\pounds}{A}$ be equal to $\frac{1}{Q} \times$ the ſeries $\frac{Q_I}{r} + \frac{Q_{II}}{r^2} + \frac{Q_{III}}{r^3} + \frac{Q_{IV}}{r^4} + \frac{Q_V}{r^5}$ + &c. and $\overset{\pounds}{B}$ will be equal to $\frac{1}{P \times Q} \times$ the ſeries $\frac{P_I \times Q_I}{r} + \frac{P_{II} \times Q_{II}}{r^2} + \frac{P_{III} \times Q_{III}}{r^3} + \frac{P_{IV} \times Q_{IV}}{r^4} + \frac{P_V \times Q_V}{r^5}$ + &c. and conſequently the ſeries $\frac{Q_I}{r} + \frac{Q_{II}}{r^2} + \frac{Q_{III}}{r^3} + \frac{Q_{IV}}{r^4} + \frac{Q_V}{r^5}$ + &c. will be $= Q \times \overset{\pounds}{A}$, and the ſeries

ſeries $\frac{P_I \times Q_I}{r} + \frac{P_{II} \times Q_{II}}{r^2} + \frac{P_{III} \times Q_{III}}{r^3} + \frac{P_{IV} \times Q_{IV}}{r^4} + \frac{P_V \times Q_V}{r^5}$ + &c. will be $= P \times Q \times \overset{\pounds}{B}$. If therefore we can derive the latter ſeries from the former, we ſhall thereby obtain the value of $P \times Q \times \overset{\pounds}{B}$; which, being divided by $P \times Q$, will give us $\overset{\pounds}{B}$, or the value of an annuity of one pound a year for the two propoſed joint lives.

We muſt therefore endeavour to find a method of deriving the value of the ſeries $\frac{P_I \times Q_I}{r} + \frac{P_{II} \times Q_{II}}{r^2} + \frac{P_{III} \times Q_{III}}{r^3} + \frac{P_{IV} \times Q_{IV}}{r^4} + \frac{P_V \times Q_V}{r^5}$ + &c. from the value of the ſeries $\frac{Q_I}{r} + \frac{Q_{II}}{r^2} + \frac{Q_{III}}{r^3} + \frac{Q_{IV}}{r^4} + \frac{Q_V}{r^5}$ + &c. which is equal to $Q \times \overset{\pounds}{A}$. Now this may be done to a certain moderate degree of exactneſs, by means of a conjectural ſuppoſition that has an appearance of great probability, in the manner following.

CCCCXLVIII. Put S for the value of the ſimple ſeries $\frac{Q_I}{r} + \frac{Q_{II}}{r^2} + \frac{Q_{III}}{r^3} + \frac{Q_{IV}}{r^4} + \frac{Q_V}{r^5}$ + &c. and the Greek capital Σ for the value of the compound ſeries $\frac{P_I \times Q_I}{r} + \frac{P_{II} \times Q_{II}}{r^2} + \frac{P_{III} \times Q_{III}}{r^3} + \frac{P_{IV} \times Q_{IV}}{r^4} + \frac{P_V \times Q_V}{r^5}$ + &c. and put $g = \frac{Q_I}{r}$, and $b = \frac{Q_{II}}{r^2}$, and $i = \frac{P_I \times Q_I}{r}$, and $k = \frac{P_{II} \times Q_{II}}{r^2}$. And let G denote the value of an infinite ſeries of terms in geometrical proportion, of which $\frac{Q_I}{r}$ and $\frac{Q_{II}}{r}$, or g and b, are the two firſt terms, and the Greek capital Γ denote the value of an infinite ſeries of terms in geometrical proportion, of which $\frac{P_I \times Q_I}{r}$ and $\frac{P_{II} \times Q_{II}}{r^2}$, or i and k, are the two firſt terms.

Then

Then will the infinite geometrical ſeries G, or $g + h + \frac{hh}{g} + \frac{h3}{gg} + \frac{h4}{g3} + \frac{h5}{g4} + \frac{h6}{g5}$ + &c. be $= \frac{gg}{g-h}$, and the infinite geometrical ſeries Γ, or $i + \frac{kk}{i} + \frac{k3}{ii} + \frac{k4}{i3} + \frac{k5}{i4} + \frac{k6}{i5}$ + &c. be $= \frac{ii}{i-k}$; as will be evident from Art. LXXX, pages 91, 92.

CCCCXLIX. Now it ſeems reaſonable to ſuppoſe that the geometrical ſeries G, or $g + h + \frac{hh}{g} + \frac{h3}{gg} + \frac{h4}{g3} + \frac{h5}{g4} + \frac{h6}{g5}$ + &c. *ad infinitum*, will bear, pretty nearly, the ſame proportion to the ſimple ſeries S, or $\frac{Q1}{r} + \frac{Q11}{r2} + \frac{Q111}{r3} + \frac{Q1v}{r4} + \frac{Q\text{v}}{r5} + \frac{Q\text{vi}}{r6} + \frac{Q\text{vii}}{r7}$ + &c. continued to the end of the table of probabilities, (of which ſeries the two firſt terms, $\frac{Q1}{r}$ and $\frac{Q11}{r2}$, are the ſame with the two firſt terms, g and h, of the ſaid geometrical ſeries,) as the geometrical ſeries Γ, or $i + k + \frac{k2}{i} + \frac{k3}{ii} + \frac{k4}{i3} + \frac{k5}{i4} + \frac{k6}{i5}$ + &c. *ad infinitum*, bears to the compound ſeries Σ, or $\frac{P1 \times Q1}{r} + \frac{P11 \times Q11}{r2} + \frac{P111 \times Q111}{r3} + \frac{P1v \times Q1v}{r4} + \frac{P\text{v} \times Q\text{v}}{r5} + \frac{P\text{vi} \times Q\text{vi}}{r6} + \frac{P\text{vii} \times Q\text{vii}}{r7}$ + &c. continued to the end of the table of probabilities, of which ſeries the two firſt terms $\frac{P1 \times Q1}{r}$ and $\frac{P11 \times Q11}{r2}$, are the ſame with the two firſt terms, i and k, of the ſaid geometrical ſeries. And, if this ſuppoſition is true, the ſeries Σ, or $\frac{P1 \times Q1}{r} + \frac{P11 \times Q11}{r2} + \frac{P111 \times Q111}{r3} + \frac{P1v \times Q1v}{r4} + \frac{P\text{v} \times Q\text{v}}{r5} + \frac{P\text{vi} \times Q\text{vi}}{r6}$ + $\frac{P\text{vii} \times Q\text{vii}}{r7}$ + &c. will be nearly equal to $\frac{\Gamma \times S}{G}$.

But we have ſeen in Art. XLVII, that the ſeries Σ, or $\frac{P1 \times Q1}{r} + \frac{P11 \times Q11}{r2} + \frac{P111 \times Q111}{r3} + \frac{P1v \times Q1v}{r4} + \frac{P\text{v} \times Q\text{v}}{r5} + \frac{P\text{vi} \times Q\text{vi}}{r6} + \frac{P\text{vii} \times Q\text{vii}}{r7}$ + &c. is $= P \times Q \times \overset{\text{£}}{B}$, and the ſeries S, or $\frac{Q1}{r} + \frac{Q11}{r2} + \frac{Q111}{r3} + \frac{Q1v}{r4} + \frac{Q\text{v}}{r5} + \frac{Q\text{vi}}{r6} + \frac{Q\text{vii}}{r7}$ + &c. is $= Q \times \overset{\text{£}}{A}$. Therefore $P \times Q \times \overset{\text{£}}{B}$ will be nearly equal to $\frac{\Gamma \times Q \times \overset{\text{£}}{A}}{G}$.

But the ſeries G is $= \frac{gg}{g-h}$, and the ſeries Γ is $= \frac{ii}{i-k}$; as we have ſeen in Art. CCCCXLVIII. Therefore $P \times Q \times \overset{\text{£}}{B}$ will be nearly equal to $\frac{Q \times \overset{\text{£}}{A} \times \frac{ii}{i-k}}{\frac{gg}{g-h}}$, or $Q \times \overset{\text{£}}{A} \times \frac{ii}{i-k} \times \frac{g-h}{gg}$, or $Q \times \overset{\text{£}}{A} \times \frac{ii}{gg} \times \frac{g-h}{i-k}$; and $\overset{\text{£}}{B}$, or the value of an annuity of one pound a year for the two joint lives whoſe ages correſpond to the numbers P and Q, will be nearly equal to $\frac{Q \times \overset{\text{£}}{A}}{P \times Q} \times \frac{ii}{gg} \times \frac{g-h}{i-k}$, or $\frac{\overset{\text{£}}{A}}{P} \times \frac{ii}{gg} \times \frac{g-h}{i-k}$.

But g is $= \frac{Q1}{r}$, and h is $= \frac{Q11}{r2}$, and i is $= \frac{P1 \times Q1}{r}$, and k is $= \frac{P11 \times Q11}{r2}$. Therefore $i = g \times P1$, and k is $= h \times P11$. Conſequently ii is $= gg \times P1 \times P1$, and $i - k$ is $= g \times P1 - h \times P11$, and $\frac{ii}{gg} \times \frac{g-h}{i-k}$ is $=$

is $= \frac{gg \times P^{I} \times P^{I}}{gg} \times \frac{g-h}{g \times P^{I} - h \times P^{II}} = P^{I} \times P^{I} \times \frac{g-h}{g \times P^{I} - h \times P^{II}}$,

Therefore $\frac{\overset{£}{A}}{P} \times \frac{ii}{gg} \times \frac{g-h}{i-k}$ is $= \frac{\overset{£}{A}}{P} \times P^{I} \times P^{I} \times \frac{g-h}{g \times P^{I} - h \times P^{II}} = \overset{£}{A} \times \frac{P^{I}}{P} \times \frac{P^{I} \times \overline{g-h}}{g \times P^{I} - h \times P^{II}} = \overset{£}{A} \times \frac{P^{I}}{P} \times \frac{g \times P^{I} - h \times P^{I}}{g \times P^{II} - h \times P^{II}}$. Therefore $\overset{£}{B}$, or the value of an annuity of one pound a year for the two joint lives whose ages correspond to the numbers P and Q, will be nearly equal to $\overset{£}{A} \times \frac{P^{I}}{P} \times \frac{g \times P^{I} - h \times P^{I}}{g \times P^{I} - h \times P^{II}}$, or may be derived from $\overset{£}{A}$, or the value of the like annuity for a single life of the age corresponding to Q, by multiplying it into the fraction $\frac{P^{I}}{P} \times \frac{g \times P^{I} - h \times P^{I}}{g \times P^{I} - h \times P^{II}}$. QEI.

Examples of the foregoing method of approximating to the values of annuities for two joint lives.

CCCCL. I shall now proceed to try the truth of this expression, $\overset{£}{A} \times \frac{P^{I}}{P} \times \frac{g \times P^{I} - h \times P^{I}}{g \times P^{I} - h \times P^{II}}$, by applying it to the computation of the values of an annuity of one pound a year for the joint continuance of two lives of some of the ages set down in the tables above exhibited in Art. cccccviii and ccccxxxii. And, if we shall find that the values of those annuities which we shall obtain by means of this expression, differ but little from the values of them contained in those tables, (which have been accurately computed,) we shall have reason to conclude that the same expression will give us the like approximations to the true values of annuities for two joint lives in other instances.

Examples of the said method, upon a supposition that the interest of money is $3\frac{1}{2}$ per cent.

First example; in which the difference of the ages of the two lives is 10 years.

CCCCLI. Let us therefore suppose that the two lives for the joint continuance of which an annuity of one pound a year is to be purchased, are of the ages of 10 years and 20 years; and that the interest of money is $3\frac{1}{2}$ per cent. and that the table of probabilities of the duration of human life, by which the calculation is to be governed, is that of Monsieur de Parcieux.

Then

Then we shall have (by Table XV.) $\overset{£}{A}$, or the value of an annuity of one pound a year for a single life of the age of 20 years, $= \overset{£}{19.440,616}$, and $P = 880$, $P^{I} = 872$, $P^{II} = 866$, $Q = 814$, $Q^{I} = 806$, $Q^{II} = 798$, $r = 1.035$, $\frac{1}{r}\left(= \frac{1}{1.035}\right) = 0.966,183$, $\frac{1}{r^2} = 0.933,510$; and consequently $g\left(= \frac{Q^{I}}{r} = 806 \times .966,183\right) = 778.743,498$, and $h\left(= \frac{Q^{II}}{r^2} = 798 \times .933,510\right) = 744.940,980$. Therefore $g \times P^{I}$ will be $(= 778.743,498 \times 872) = 679,064.330,256$, and $h \times P^{I}$ will be $= 744.940,980 \times 872) = 649,588.534,560$, and $h \times P^{II}$ will be $(= 744.940,980 \times 866) = 643,629.006,720$; and consequently $g \times P^{I} - h \times P^{I}$ will be $(= 679,064.330,256 - 649,588.534,560) = 29,475.795,696$, and $g \times P^{I} - h \times P^{II}$ will be $(= 679,064.330,256 - 643,629.006,720) = 35,435.323,536$. Therefore $\frac{g \times P^{I} - h \times P^{I}}{g \times P^{I} - h \times P^{II}}$ will be $= \frac{29,475.795,696}{35,435.323,536} =$ (nearly) $\frac{29,475.795,696}{35,435} = .8318$; and $\frac{P^{I}}{P} \times \frac{g \times P^{I} - h \times P^{I}}{g \times P^{I} - h \times P^{II}}$ will be $=$ (nearly) $\frac{P^{I}}{P} \times .8318 \left(= \frac{872}{880} \times .8318 = \frac{109}{110} \times .8318 = \frac{90.6662}{110}\right) = .8242$. Therefore $\overset{£}{A} \times \frac{P^{I}}{P} \times \frac{g \times P^{I} - h \times P^{I}}{g \times P^{I} - h \times P^{II}}$ will be $\left(= \overset{£}{A} \times .8242 = \overset{£}{19.440,616} \times .8242\right) = \overset{£}{16.022,955}$. QEI.

Difference between the foregoing near value and the true value of this annuity.

The true value of this annuity for two joint lives appears by Table XXXI, page 494, to be $\overset{£}{16.634,79}$; which is greater than the near value of it just now found, to wit. $\overset{£}{16.022,955}$, by the difference $\overset{£}{0.611,835}$, which is somewhat less than a 27th part of the said true value.

CCCCLII. Now let the two lives be of the ages of 20 years and 30 years.

Second example; in which the difference of the two lives is likewise 10 years.

In this case $\overset{£}{A}$ will be the value of an annuity of one pound a year for a single life of the age of 30 years, and therefore (by Table XV.) will be

be = 18.068,798. And P will be = 814, P^{I} = 806, P^{II} = 798, Q = 734, Q^{I} = 726, Q^{II} = 718, r = 1.035, $\frac{1}{r}\left(=\frac{1}{1.035}\right)$ = 0.966,183, and $\frac{1}{r^2}$ = 0.933,510. Therefore $\frac{Q^{I}}{r}$ will be (= 726 × .966,183) = 701.418,858, and $\frac{Q^{II}}{r^2}$ will be = (=718 × .933,510) = 670.260,180, that is, g will be = 701.448,858, and h will be = 670.260,180. Therefore $g \times P^{I}$ will be (= 701.448,858 × 806) = 565,367.779,548, and $h \times P^{I}$ will be (=670.260,180 × 806) = 540,229.705,080, and $h \times P^{II}$ will be (= 670.260,180 × 798) = 534,867.623,640; and consequently $g \times P^{I} - h \times P^{I}$ will be (= 565,367.779,548 − 540,229.705,080) = 25,138 074,468, and $g \times P^{I} - h \times P^{II}$ will be (= 565,367.779,548 − 534,867.623,640) = 30,500.155,808. Therefore $\frac{g \times P^{I} - h \times P^{I}}{g \times P^{I} - h \times P^{II}}$ will be = $\frac{25,138.074,468}{30,500.155,908}$ = (nearly) $\frac{25,138.074,468}{30,500}$ = .8241; and $\frac{P^{I}}{P} \times \frac{g \times P^{I} - h \times P^{I}}{g \times P^{I} - h \times P^{II}}$ will be $\left(=\frac{P^{I}}{P} \times .8241 = \frac{806}{814} \times .8241 = \frac{403}{407} \times .8241 = \frac{332\ 1123}{407}\right)$ = .8160. Therefore $\overset{£}{A} \times \frac{P^{I}}{P} \times \frac{g \times P^{I} - h \times P^{I}}{g \times P^{I} - h \times P^{II}}$ will be = $\overset{£}{A} \times .8160 = \overset{£}{18.068,798} \times .8160 = \overset{£}{14.7441}$. QEI.

Difference between the foregoing near value and the true value of this annuity.

The true value of this annuity for the ſaid joint lives of the ages of 20 years and 30 years appears by Table XXXI, page 494, to be £15.298,75; which is greater than the value juſt now found for it, to wit, £14.7441, by the difference £0.554,65, which is leſs than the 27th part of the ſaid true value, £15.298,75.

Five more examples of the ſame method, in all which the difference of the ages of the two lives is the ſame as in the two former examples, to wit, 10 years.

CCCCLIII. If we derive in the ſame manner the values of an annuity of one pound a year for the joint continuance of the five following pairs of lives, to wit, two lives of the ages of 30 years and 40 years, two lives of the ages of 40 years and 50 years, two lives of the ages of 50 years and 60 years, two lives of the ages of 60 years and 70 years, and two lives of the ages of 70 years and 80 years, from the values of the ſame annuity for ſingle lives of the ſame ages as the older lives in each of theſe pairs of lives reſpectively, that is, for ſingle lives of the ages of 40 years, 50 years, 60 years,

years, 70 years, and 80 years, (which values appear by Table XV to be £16.104,542, £13.183,083, £10.104,074, £6.575,357, and £3.661,781,); —I ſay, if we derive near values of the ſaid annuity for the ſaid pairs of joint lives from theſe values of the ſame annuity for the ſaid ſingle lives by means of the aforeſaid expreſſion $\overset{£}{A} \times \frac{P^{I}}{P} \times \frac{g \times P^{I} - h \times P^{I}}{g \times P^{I} - h \times P^{II}}$, thoſe near values will be found to be as follows; to wit,

for two joint lives of the ages of 30 years and 40 years, £12.865,18;
for two joint lives of the ages of 40 years and 50 years, £10.917,67;
for two joint lives of the ages of 50 years and 60 years, £7.680,967;
for two joint lives of the ages of 60 years and 70 years, £5.074,649;
and for two joint lives of the ages of 70 years and 80 years, £2.645,883.

The true values of the laſt five annuities.

CCCCLIV. Now it appears from Table XXXI, that the true values of theſe laſt five annuities for joint lives are as follows, to wit,

for two joint lives of the ages of 30 years and 40 years, £13.709,61;
for two joint lives of the ages of 40 years and 50 years, £11.229,92;
for two joint lives of the ages of 50 years and 60 years, £8.341,630;
for two joint lives of the ages of 60 years and 70 years, £5.336,698;
and for two joint lives of the ages of 70 years and 80 years, £2.793,419.

The differences between their foregoing near values and their true values.

CCCCLV. The difference between the near value, £12.865,18, of the firſt of theſe annuities, and its true value, £13.709,61, is £0.844,43; which is leſs than a 16th part of the ſaid true value.

The difference between the near value, £10.917,67, of the ſecond of theſe annuities, and its true value, £11.229,92, is £0.312,25; which is leſs than a 35th part of the ſaid true value.

The difference between the near value, £7.680,967, of the third of theſe annuities, and its true value, £8.341,630, is £0.660,663; which is leſs than a 12th part of the ſaid true value.

The

The difference between the near value, £5.074,649, of the fourth of the foregoing annuities, and its true value, £5.336,698, is £0.262,049; which is leſs than the 20th part of the ſaid true value.

And the difference between the near value, £2.645,883, of the fifth and laſt of the foregoing annuities, and its true value, £2.793,419, is £0.147,536; which is leſs than the 19th part of the ſaid true value.

CCCCLVI. In all theſe examples it appears that the near values of annuities for two joint lives, obtained by means of the expreſſion $\overset{£}{A} \times \frac{P_1}{P} \times \frac{g \times P_1 - h \times p_1}{g \times P_1 - h \times P_{11}}$, are leſs than their reſpective true values, and that the differences of the ſaid near values and true values are in ſome caſes about a 35th part of the ſaid true values reſpectively, and in other caſes a 27th, a 20th, a 19th, and a 16th part of the ſaid true values, and in ſome caſes almoſt a 12th part of them.

Five other examples of the foregoing method of finding near values of annuities for two joint lives; in which the difference of the ages of the two lives is 30 years.

CCCCLVII. Let us now examine the near values of ſome annuities for two joint lives, that are obtained by means of the ſaid expreſſion, $\overset{£}{A} \times \frac{P_1}{P} \times \frac{g \times P_1 - h \times p_1}{g \times P_1 - h \times P_{11}}$, when the difference of the ages of the two lives is conſiderably greater than 10 years. Let this difference, therefore, be 30 years; and let us derive, by means of the ſaid expreſſion, $\overset{£}{A} \times \frac{P_1}{P} \times \frac{g \times P_1 - h \times p_1}{g \times P_1 - h \times P_{11}}$, near values of an annuity of one pound a year for the five following pairs of joint lives, upon a ſuppoſition that the intereſt of money is (as it was ſuppoſed to be in the foregoing examples,) 3 ½ per cent. to wit,

two lives of the ages of 10 years and 40 years,
two lives of the ages of 20 years and 50 years,
two lives of the ages of 30 years and 60 years,
two lives of the ages of 40 years and 70 years,
and two lives of the ages of 50 years and 80 years,

from

from the values of a like annuity of one pound a year for ſingle lives of the ages of 40 years, 50 years, 60 years, 70 years, and 80 years, reſpectively, which are given above in Table XV, to wit, £16.104,542, £13.183,083, £10.104,074, £6.575,357, and £3,661,781. Theſe near values will be found to be as follows; to wit,

The near values of the ſaid annuities.

for two joint lives of the ages of 10 years and 40 years, £13.892,33;
for two joint lives of the ages of 20 years and 50 years, £11.068,05;
for two joint lives of the ages of 30 years and 60 years, £8.560,176;
for two joint lives of the ages of 40 years and 70 years, £5.931,793;
and for two joint lives of the ages of 50 years and 80 years, £3.320,420.

Their true values.

CCCCLVIII. Now it appears from Table XXXIII, that the true values of theſe laſt five annuities for two joint lives are as follows; to wit,

for two joint lives of the ages of 10 years and 40 years, £14.384,49;
for two joint lives of the ages of 20 years and 50 years, £11.801,15;
for two joint lives of the ages of 30 years and 60 years, £9.217,864;
for two joint lives of the ages of 40 years and 70 years, £6.126,861;
and for two joint lives of the ages of 50 years and 80 years, £3.399,171.

The differences between their ſaid near values and true values.

CCCCLIX. The difference between the near value, £13.892,33, of the firſt of theſe annuities and its true value, £14.384,49, is £0.492,16; which is leſs than the 29th part of the ſaid true value.

The difference between the near value, £11.068,05, of the ſecond annuity, and its true value, £11.801,15, is £0.733,10; which is leſs than the 16th part of the ſaid true value.

The difference between the near value, £8.560,176, of the third annuity, and its true value, £9.217,864, is £0.657,688; which is leſs than the 14th part of the ſaid true value.

The difference between the near value, £5.931,793, of the fourth annuity, and its true value, £6.126,861, is £0.195,068; which is leſs than the 31ſt part of the ſaid true value.

And

And the difference between the near value, £3.320,420, and the true value, £3.399,171, of the fifth and laſt annuity, is £0.078,751; which is leſs than the 43d part of the ſaid true value.

CCCCLX. In theſe five examples it appears that the near values of annuities for two joint lives, whoſe ages differ from each other by 30 years, obtained by means of the expreſſion $\overset{£}{A} \times \frac{P_I}{P} \times \frac{g \times P_I - h \times P_I}{g \times P_I - h \times P_{II}}$, are leſs than their reſpective true values, (as was the caſe with the near values of the annuities mentioned in Art. CCCCLI, &c. —— CCCCLVI) and that the differences of the ſaid near values and true values are in ſome caſes leſs than the 43d part of the ſaid true values reſpectively, and in other caſes a 31ſt, a 29th, and a 16th part of the ſaid true values, and in ſome caſes about a 14th part of them.

Theſe differences are rather ſmaller than the differences of the near values and true values of the annuities for two joint lives whoſe ages differ from each other by only 10 years, which are mentioned in Art. CCCCLVI.

Examples of the ſaid method, upon a ſuppoſition that the intereſt of money is 4½ per cent.

CCCCLXI. We will next examine the near values of annuities for two joint lives, which may be obtained by means of the expreſſion $\overset{£}{A} \times \frac{P_I}{P} \times \frac{g \times P_I - h \times P_I}{g \times P_I - h \times P_{II}}$, when the intereſt of money is 4½ per cent.

Examples in which the differences of the ages of the two lives is 10 years.

Let there be ſeven pairs of lives whoſe ages differ from each other by 10 years, to wit,

two lives of the ages of 10 years and 20 years,
two lives of the ages of 20 years and 30 years,
two lives of the ages of 30 years and 40 years,
two lives of the ages of 40 years and 50 years,
two lives of the ages of 50 years and 60 years,
two lives of the ages of 60 years and 70 years,
and two lives of the ages of 70 years and 80 years.

When

When the intereſt of money is 4½ per cent. the near values of an annuity of one pound a year for the joint continuance of theſe ſeveral pairs of lives, that may be derived by means of the expreſſion $\overset{£}{A} \times \frac{P_I}{P} \times \frac{g \times P_I - h \times P_I}{g \times P_I - h \times P_{II}}$, from the values of the like annuity of one pound a year for ſingle lives of the ages of 20 years, 30 years, 40 years, 50 years, 60 years, 70 years, and 80 years, (which values appear by Table XVII to be £16.623,93, £15.690,92, £14.254,42, £11.920,73, £9.346,46, £6.220,54, and £3.532,59,) will be found to be as follows; to wit,

The near values of an annuity of one pound a year for the ſaid ſeven pairs of joint lives,

The near value of an annuity of one pound a year for two joint lives of the ages of 10 years and 20 years, will be £14.655,20;
for two joint lives of the ages of 20 years and 30 years, £13.359,42;
for two joint lives of the ages of 30 years and 40 years, £11.594,96;
for two joint lives of the ages of 40 years and 50 years, £10.126,50;
for two joint lives of the ages of 50 years and 60 years, £7.329,817;
for two joint lives of the ages of 60 years and 70 years, £4.889,327;
and for two joint lives of the ages of 70 years and 80 years, £2.580,00.

CCCCLXII. Now it appears from Table XLI that the true values of theſe ſeven annuities of one pound a year for two joint lives are as follows; to wit,

The true values of the ſame annuity for the ſame pairs of joint lives.

for two joint lives of the ages of 10 years and 20 years, £14.478,80;
for two joint lives of the ages of 20 years and 30 years, £13.495,90;
for two joint lives of the ages of 30 years and 40 years, £12.297,99;
for two joint lives of the ages of 40 years and 50 years, £10.274,39;
for two joint lives of the ages of 50 years and 60 years, £7.793,079;
for two joint lives of the ages of 60 years and 70 years, £5.087,882;
and for two joint lives of the ages of 70 years and 80 years, £2.709,443.

The differences between the said near values and true values.

CCCCLXIII. The difference between the near value, £14.655,20, of the first of these annuities, and its true value, £14.478,80, (which, it is worth observing, is, less than the near value, though in all the former examples the true values of the annuities have been greater than their near values,) is £0.176,40; which is less than the 82d part of the said true value.

The difference between the near value, £13.359,42, of the second annuity, and its true value, £13.495,90, is £0.136,48; which is less than the 98th part of the said true value.

The difference between the near value, £11.594,96, of the third annuity, and its true value, £12.297,99, is £0.703,03; which is less than the 17th part of the said true value.

The difference between the near value, £10.126,50, of the fourth annuity and its true value, £10.274,39, is £0.147,89; which is less than the 69th part of the said true value.

The difference between the near value, £7.329,817, of the fifth annuity, and its true value, £7.793,079, is £0.463,262; which is less than the 17th part of the said true value.

The difference between the near value, £4.889,327, of the sixth annuity, and its true value, £5.087,882, is £0.198,555; which is less than the 25th part of the said true value.

And the difference between the near value, £2.580,00, of the seventh and last annuity, and its true value, £2.709,443, is £0.129,443; which is less than the 20th part of the said true value.

A remark on the said differences.

These differences are smaller than those of the near values and the true values of the annuities mentioned in Art. CCCCLVII and CCCCLVIII, for two joint lives whose ages differ from each other by 30 years, when the interest of money is $3\frac{1}{2}$ per cent. and are smaller in a still greater degree than the differences of the near values and the true values of the annuities for two joint lives, mentioned in Art. CCCCLVI, whose ages differ by only 10 years, when the interest of money is $3\frac{1}{2}$ per cent.

CCCCLXIV. We

CCCCLXIV. We will now examine the near values of some annuities for two joint lives, that are obtained by means of the expression $\overset{£}{A} \times \frac{P_I}{P} \times \frac{g \times P_I - b \times P_I}{g \times P_I - b \times P_{II}}$, when the difference of the ages of the two lives is 30 years, and the interest of money (as in the two preceeding articles,) is $4\frac{1}{2}$ per cent.

Five other examples of the foregoing method of finding the values of annuities for two joint lives; in which the difference of the ages of the two lives is 30 years.

Now, when the interest of money is $4\frac{1}{2}$ per cent. the near values of an annuity of one pound a year for the five following pairs of joint lives, to wit,

two joint lives of the ages of 10 years and 40 years,
two joint lives of the ages of 20 years and 50 years,
two joint lives of the ages of 30 years and 60 years,
two joint lives of the ages of 40 years and 70 years,
and two joint lives of the ages of 50 years and 80 years,

which may be obtained by means of the expression $\overset{£}{A} \times \frac{P_I}{P} \times \frac{g \times P_I - b \times P_I}{g \times P_I - b \times P_{II}}$, will be found to be as follows; to wit,

The near values of the said five annuities.

for two joint lives of the ages of 10 years and 40 years, £12.446,40;
for two joint lives of the ages of 20 years and 50 years, £10.248,45;
for two joint lives of the ages of 30 years and 60 years, £8.075,146;
for two joint lives of the ages of 40 years and 70 years, £5.655,547;
and for two joint lives of the ages of 50 years and 80 years, £3.214,679.

CCCCLXV. Now it appears from Table XLIII, that the true values of these last five annuities for two joint lives are as follows; to wit,

Their true values.

for two joint lives of the ages of 10 years and 40 years, £12 842,64;
for two joint lives of the ages of 20 years and 50 years, £10.739,19;
for two joint lives of the ages of 30 years and 60 years, £8.560,832;
for two joint lives of the ages of 40 years and 70 years, £5.810,588;
and for two joint lives of the ages of 50 years and 80 years, £3.284,035.

 CCCCLXVI. All

CCCCLXVI. All these true values are greater than the near values of the same annuities obtained in Art. CCCCLXIV by means of the expression $\mathcal{A} \times \frac{P_I}{P} \times \frac{g \times P_I - h \times P_I}{g \times P_I - h \times P_{II}}$, as was the case with respect to the true values of the annuities mentioned in all the preceeding examples, except the first example in Art. CCCCLXII, in which it appeared that the true value of an annuity of one pound a year for two joint lives of the ages of 10 years and 20 years, when the interest of money is $4\frac{1}{2}$ per cent, to wit, £14.478,80, was less than its near value, £14.655,20, obtained by means of the expression $\mathcal{A} \times \frac{P_I}{P} \times \frac{g \times P_I - h \times P_I}{g \times P_I - h \times P_{II}}$. This remarkable exception I do not know how to account for.

The differences between the said near values and true values.

CCCCLXVII. The difference between the near value, £12.446,40, of the first of the five last-mentioned annuities for two joint lives, and its true value, £12.842,64, is £0.396,24; which is less than the 32d part of the said true value.

The difference between the near value, £10.248,45, of the second of the said five annuities, and its true value, £10.739,19, is £0.490,74; which is less than the 21st part of the said true value.

The difference between the near value, £8.075,146, of the third annuity, and its true value, £8.560,832, is £0.485,686; which is less than the 17th part of the said true value.

The difference between the near value, £5.655,547, of the fourth annuity, and its true value, £5.810,588, is £0.155,041; which is less than the 37th part of the said true value.

And the difference between the near value, £3.214,679, of the fifth and last annuity, and its true value, £3.284,035, is £0.069,356; which is less than the 47th part of the said true value.

A table

A table of the foregoing near values of an annuity of one pound a year for different pairs of joint lives, and of the corresponding true values of the same annuity, and of the differences of the said near values and true values, and of the fractions that express the proportions of the said differences to the said true values.

CCCCLXVIII. If the near values and true values of all the annuities mentioned in the foregoing articles, from Art. CCCCLI to the last article, inclusively, be ranged in regular order in two contiguous columns, and their differences be set down in a third column adjoining to the second column, and the fractions that express the proportions of the said differences to the said true values, be set down in a fourth column adjoining to the said third column, the said several numbers will be as follows.

The near values of an annuity of one pound a year for two joint lives of several different ages, obtained by means of the expression $\mathcal{A} \times \frac{P_I}{P} \times \frac{g \times P_I - h \times P_I}{g \times P_I - h \times P_{II}}$, *when the interest of money is* $3\frac{1}{2}$ *per cent.*	*The true values of the same annuity for the same joint lives, when the interest of money is* $3\frac{1}{2}$ *per cent.*	*The differences of the said near and true values.*	*The proportions of the said differences to the said true values.*
£	£	£	
16.022,955	16.634,79	0.611,835	$\frac{1}{27}$
14.7441	15.298,75	0.554,65	$\frac{1}{27}$
12.865,18	13.709,61	0.844,43	$\frac{1}{16}$
10.917,67	11.229,92	0.312,25	$\frac{1}{35}$
7.680,967	8.341,630	0.660,663	$\frac{1}{12}$
5.074,649	5.336,698	0.262,049	$\frac{1}{20}$
2.645,883	2.793,419	0.147,536	$\frac{1}{19}$
£	£	£	
13.892,33	14.384,49	0.492,16	$\frac{1}{29}$
11.068,05	11.801,15	0.733,10	$\frac{1}{16}$
8.560,176	9.217,864	0.657,688	$\frac{1}{14}$
5.931,793	6.126,861	0.195,068	$\frac{1}{31}$
3.320,420	3.399,171	0.078,751	$\frac{1}{43}$

The near values of the same annuity for the same joint lives, obtained by means of the same expression $\pounds A \times \frac{P_1}{P} \times \frac{g \times P_1 - h \times P_1}{g \times P_1 - h \times P_{11}}$ *when the interest of money is* $4\frac{1}{2}$ *per cent.*	*The true values of the same annuity for the same joint lives, when the interest of money is* $4\frac{1}{2}$ *per cent.*	*The differences of the said near and true values.*	*The proportions of the said differences to the said true values.*
£	£	£	
14.655,20	14.478,80	0.176,40	$\frac{1}{82}$
13.359,42	13.495,90	0.136,48	$\frac{1}{98}$
11.594,96	12.297,99	0.703,03	$\frac{1}{17}$
10.126,50	10.274,39	0.147,89	$\frac{1}{69}$
7.329,817	7.793,079	0.463,262	$\frac{1}{16}$
4.889,327	5.087,882	0.198,555	$\frac{1}{25}$
2.580,00	2.709,443	0.129,443	$\frac{1}{20}$
£	£	£	
12.446,40	12.842,64	0.396,24	$\frac{1}{32}$
10.248,45	10.739,19	0.490,74	$\frac{1}{21}$
8.075,146	8.560,832	0.485,686	$\frac{1}{17}$
5.655,547	5.810,588	0.155,041	$\frac{1}{37}$
3.214,679	3.284,035	0.069,356	$\frac{1}{47}$

A second table of the same kind as the last, in which the near values of the annuities for two joint lives are derived from the former near values of them, exhibited in the last table, by multiplying the said former near values into the fraction $\frac{104}{100}$.

CCCCLXIX. If the foregoing near values of an annuity of one pound a year for two joint lives (which were obtained by means of the expression $\pounds A \times \frac{P_1}{P} \times \frac{g \times P_1 - h \times P_1}{g \times P_1 - h \times P_{11}}$) be increased in the proportion of 104 to 100, or be multiplied into the fraction $\frac{104}{100}$, we shall thereby obtain a second

cond set of near values of the said annuity for the same joint lives, that will, for the most part, differ less than the foregoing near values of it from its corresponding true values. This will appear upon tryal, by computing these second near values, (which will be equal to $\pounds A \times \frac{104}{100} \times \frac{P_1}{P} \times \frac{g \times P_1 - h \times P_1}{g \times P_1 - h \times P_{11}}$) and placing them one under another in a column (as the former near values were placed in the last article,) and then setting down the corresponding true values of the same annuity in a second column adjoining to the former, and the differences between the said near values and true values in a third column adjoining to the second, and the fractions that express the proportions of the said differences to the said true values in a fourth column adjoining to the third. This may be done in the manner following.

The near values of an annuity of one pound a year for two joint lives of several different ages, obtained by means of the expression $\pounds A \times \frac{104}{100} \times \frac{P_1}{P} \times \frac{g \times P_1 - h \times P_1}{g \times P_1 - h \times P_{11}}$ *when the interest of money is* $3\frac{1}{2}$ *per cent.*	*The true values of the same annuity for the same joint lives.*	*The differences of the said near and true values.*	*The proportions of the said differences to the said true values.*
£	£	£	
16.663,86	16.634,79	0.029,07	$\frac{1}{572}$
15.333,86	15.298,75	0.035,11	$\frac{1}{435}$
13.379,78	13.709,61	0.329,83	$\frac{1}{41}$
11.354,37	11.229,92	0.124,45	$\frac{1}{90}$
7.988,205	8.341,630	0.353,425	$\frac{1}{23}$
5.277,634	5.336,698	0.059,064	$\frac{1}{90}$
2.751,718	2.793,419	0.041,701	$\frac{1}{66}$
£	£	£	
14.448,02	14.384,49	0.063,53	$\frac{1}{226}$
11.510,77	11.801,15	0.290,38	$\frac{1}{40}$
8.902,583	9.217,864	0.315,281	$\frac{1}{29}$
6.169,064	6.126,861	0.042,203	$\frac{1}{145}$
3.453,236	3.399,171	0.054,065	$\frac{1}{62}$

The near values of the same annuity for the same joint lives, obtained by means of the same expression $\mathcal{L}A \times \frac{104}{100} \times \frac{P1}{P} \times \frac{g \times P1 - h \times P1}{g \times P1 - h \times P11}$, *when the interest of money is* $4\frac{1}{2}$ *per cent.*	*The true values of the same annuity for the same joint lives, when the interest of money is* $4\frac{1}{2}$ *per cent.*	*The differences of the said near values and true values.*	*The proportions of the said differences to the said true values.*
£	£	£	
15.241,40	14.478,80	0.762,60	$\frac{1}{18}$
13.893,89	13.495,90	0.397,99	$\frac{1}{33}$
12.057,85	12.297,99	0.240,14	$\frac{1}{51}$
10.531,56	10.274,39	0.257,17	$\frac{1}{39}$
7.623,009	7.793,079	0.170,070	$\frac{1}{45}$
5.084,900	5.087,882	0.002,982	$\frac{1}{1705}$
2.683,200	2.709,443	0.026,243	$\frac{1}{103}$
£	£	£	
12.944,256	12.842,64	0.101,61	$\frac{1}{126}$
10.658,38	10.739,19	0.080,81	$\frac{1}{132}$
8.398,151	8.560,832	0.162,681	$\frac{1}{52}$
5.881,768	5.810,588	0.071,180	$\frac{1}{81}$
3.343,266	3.284,035	0.059,231	$\frac{1}{55}$

A remark on the near values contained in the last table.

CCCCLXX. By these instances it appears that the expression $\mathcal{L}A \times \frac{104}{100} \times \frac{P1}{P} \times \frac{g \times P1 - h \times P1}{g \times P1 - h \times P11}$ almost always gives us the value of an annuity of one pound a year for two joint lives to a considerably greater degree of exactness than the expression $\mathcal{L}A \times \frac{P1}{P} \times \frac{g \times P1 - h \times P1}{g \times P1 - h \times P11}$, and, in most cases, to a sufficient degree of exactness for practical purposes. And from its answering so well to the instances here given, it seems reasonable to suppose that it will give the values of annuities for two joint lives to nearly the same

same degree of exactness in other instances, or where the ages of the two joint lives are different from those above-supposed: and this it seems likely to do as well at one rate of the interest of money as at another; though for want of tables of the true values of annuities for two joint lives at any other rates of interest than $3\frac{1}{2}$ per cent. and $4\frac{1}{2}$ per cent. to try it by, the foregoing examples are confined to annuities at only those two rates of interest. And therefore I think upon the whole, I may venture to recommend the said expression $\mathcal{L}A \times \frac{104}{100} \times \frac{P1}{P} \times \frac{g \times P1 - h \times P1}{g \times P1 - h \times P11}$, as a tolerably convenient approximation to the value of an annuity of one pound a year for two joint lives, when the interest of money is either less than 3 per cent. or greater than 5 per cent. and consequently the value of such annuity cannot be found in either of the two foregoing sets of tables for two joint lives in Art. ccccviii and ccccxxxii, nor be derived from the values exhibited in those tables by either the method of *Interpolation* explained in Art. ccccxii, ccccxiii, &c. —— ccccxxxi, or the method of *Interpolation and Continuation* explained in Art. ccccxxxvi, ccccxxxvii, &c.

I now proceed to consider the values of annuities that depend on the joint continuance of *three* lives.

Of the values of annuities depending on the joint continuance of three lives.

A short expression of the value of an annuity of one pound a year depending on the joint continuance of three lives of given ages.

CCCCLXXI. Let r be, as before, the sum of one pound, together with its interest for a year, according to any given rate of interest. And let N be the number of years in the age of the younger of the three persons on the joint continuance of whose lives the annuity is to depend; and $N + a$ the number of years in the age of the next older of the said three persons; and $N + a + b$ the number of years in the age of the oldest of the said three persons; and E the greatest number of years through which it is supposed to be possible for human life to be extended, according to the table of probabilities of the duration of human life adopted for the calculation; which number is in Monsieur de Parcieux's table 94 years. Let n be any number of years not greater than $E - N + a + b$, or $E - N - a - b$, or than the greatest number of years during which it is possible that the oldest of the three lives may be prolonged. And let an annuity of one pound *per annum* be granted for the term of n years, provided all the three persons aforesaid, of the ages of N years, $N + a$ years, and $N + a + b$ years, shall so long live, but otherwise to cease upon the death

death of either of them. Let P be the number of persons represented in Monsieur de Parcieux's table of the probabilities of the duration of human life, (or in such other table of those probabilities as is thought proper by the calculator to be adopted as the ground of his calculation,) as being all living together at the said first, or youngest, age of N years; and P^{I} the number of persons represented in the said table to be living at the age of $N + 1$ years; and P^{II} the number living at the age of $N + 2$ years; and P^{III} the number living at the age of $N + 3$ years; and P^{IV}, P^{V}, P^{VI}, P^{VII}, P^{VIII}, P^{IX}, P^{X}, &c. the numbers living at the several following ages of $N + 4$ years, $N + 5$ years, $N + 6$ years, $N + 7$ years, $N + 8$ years, $N + 9$ years, $N + 10$ years, &c. respectively. And let Q be the number of persons represented in the said table as living at the second, or next older, age of $N + a$ years; and Q^{I} the number of persons represented there as living at the age of $N + a + 1$ years; and Q^{II} the number living at the age of $N + a + 2$ years; and Q^{III} the number living at the age of $N + a + 3$ years; and Q^{IV}, Q^{V}, Q^{VI}, Q^{VII}, Q^{VIII}, Q^{IX}, Q^{X}, &c. the numbers living at the several following ages of $N + a + 4$ years, $N + a + 5$ years, $N + a + 6$ years, $N + a + 7$ years, $N + a + 8$ years, $N + a + 9$ years, $N + a + 10$ years, &c. respectively. And let R be the number of persons represented in the said table as living at the third, or oldest, age of $N + a + b$ years; and R^{I} the number of persons represented there as living at the age of $N + a + b + 1$ years; and R^{II} the number living at the age of $N + a + b + 2$ years; and R^{III} the number of persons living at the age of $N + a + b + 3$ years; and R^{IV}, R^{V}, R^{VI}, R^{VII}, R^{VIII}, R^{IX}, R^{X}, &c. the numbers living at the several following ages of $N + a + b + 4$ years, $N + a + b + 5$ years, $N + a + b + 6$ years, $N + a + b + 7$ years, $N + a + b + 8$ years, $N + a + b + 9$ years, $N + a + b + 10$ years, &c. respectively.

These things being supposed, the present value of an annuity of one pound a year, to be enjoyed during the space of n years, in case all the said three lives, of the ages of N years, $N + a$ years, and $N + a + b$ years, shall so long continue, will be equal to the expression, $\frac{£1}{P \times Q \times R}$ × the series $\frac{P^{I} \times Q^{I} \times R^{I}}{r} + \frac{P^{II} \times Q^{II} \times R^{II}}{r^2} + \frac{P^{III} \times Q^{III} \times R^{III}}{r^3} +$ $\frac{P^{IV} \times Q^{IV} \times R^{IV}}{r^4} + \frac{P^{V} \times Q^{V} \times R^{V}}{r^5} + \frac{P^{VI} \times Q^{VI} \times R^{VI}}{r^6} +$ $\frac{P^{VII} \times Q^{VII} \times R^{VII}}{r^7}$ + &c. continued to n terms, or to the term $\frac{P^{n} \times Q^{n} \times R^{n}}{r^n}$, or equal to the expression, $\frac{£1}{P \times Q \times R}$ + the series

$\frac{P^{I} \times Q^{I} \times R^{I}}{r} + \frac{P^{II} \times Q^{II} \times R^{II}}{r^2} + \frac{P^{III} \times Q^{III} \times R^{III}}{r^3} + \frac{P^{IV} \times Q^{IV} \times R^{IV}}{r^4}$ $+ \frac{P^{V} \times Q^{V} \times R^{V}}{r^5} + \frac{P^{VI} \times Q^{VI} \times R^{VI}}{r^6} + \frac{P^{VII} \times Q^{VII} \times R^{VII}}{r^7}$ + &c. continued to n terms, or to the term $\frac{P^{n} \times Q^{n} \times R^{n}}{r^n}$, or (dropping, for the sake of brevity, the marks × of the several multiplications,) equal to the expression $\frac{£1}{P\,Q\,R}$ × the series $\frac{P^{I}\,Q^{I}\,R^{I}}{r} + \frac{P^{II}\,Q^{II}\,R^{II}}{r^2} + \frac{P^{III}\,Q^{III}\,R^{III}}{r^3}$ $+ \frac{P^{IV}\,Q^{IV}\,R^{IV}}{r^4} + \frac{P^{V}\,Q^{V}\,R^{V}}{r^5} + \frac{P^{VI}\,Q^{VI}\,R^{VI}}{r^6} + \frac{P^{VII}\,Q^{VII}\,R^{VII}}{r^7}$ + &c. continued to n terms, or to the term $\frac{P^{n}\,Q^{n}\,R^{n}}{r^n}$. This is evident from Prob. III, and its 6th and 7th Corollaries, Art. LIII, LIV, LV, LVI, pages 53, 54, 55, 56, 57.

CCCCLXXII. If n years is the greatest number of years through which it is possible (according to the table of the probabilities of the duration of human life adopted in the calculation,) for the oldest of the three given lives, or the life of the age of $N + a + b$ years, to be extended; or, in other words, if n is equal to $E - N - a - b$, the said expression $\frac{£1}{P\,Q\,R}$ × the series $\frac{P^{I}\,Q^{I}\,R^{I}}{r} + \frac{P^{II}\,Q^{II}\,R^{II}}{r^2} + \frac{P^{III}\,Q^{III}\,R^{III}}{r^3} +$ $\frac{P^{IV}\,Q^{IV}\,R^{IV}}{r^4} + \frac{P^{V}\,Q^{V}\,R^{V}}{r^5} + \frac{P^{VI}\,Q^{VI}\,R^{VI}}{r^6} + \frac{P^{VII}\,Q^{VII}\,R^{VII}}{r^7}$ + &c. continued to n terms, or to the term $\frac{P^{n}\,Q^{n}\,R^{n}}{r^n}$, (which term in this case will be $\frac{P^{E-N-a-b} \times Q^{E-N-a-b} \times R^{E-N-a-b}}{r^n}$) will be the value of an annuity of one pound *per annum* for the whole joint continuance of the three given lives of the ages of N years, $N + a$ years, and $N + a + b$ years. But, if n is less than $E - N - a - b$, or the complement of $N + a + b$ (the number of years in the age of the oldest life) to E, or to the utmost possible duration of human life, the said expression will be less than the value of an annuity of one pound a year for the whole joint continuance of the said three lives, of the ages of N years, $N + a$ years, and $N + a + b$ years, and will be the value of an immediate, but

imperfect, life-annuity of one pound *per annum* during n years of the joint continuance of the ſaid three lives

An example of the computation of the value of an immediate and compleat life-annuity of one pound per annum *for the whole joint continuance of the lives of three perſons of given ages, by means of the foregoing expreſſion.*

CCCCLXXIII. Let it be required to find the value of an annuity of one pound *per annum* for the whole joint continuance of the lives of three perſons of the ages of 75 years, 80 years, and 85 years, according to Monſieur de Parcieux's table of the probabilities of the duration of human life, and upon a ſuppoſition that the intereſt of money is 3 per cent.

Here n, or the number of years through which the annuity is to continue, in caſe all the three lives (of which the oldeſt is of the age of 85 years,) ſhall laſt ſo long, is the greateſt poſſible number of years through which, according to Monſieur de Parcieux's table, a life of the age of 85 years can be extended, that is (94 — 85 yeays, or) 9 years. Therefore the ſeries $\frac{P^{I}\,Q^{I}\,R^{I}}{r} + \frac{P^{II}\,Q^{II}\,R^{II}}{r^2} + \frac{P^{III}\,Q^{III}\,R^{III}}{r^3} + \frac{P^{IV}\,Q^{IV}\,R^{IV}}{r^4}$ + &c. in the foregoing expreſſion, muſt be continued to 9 terms; which terms may be computed as follows.

Here P is $= 211$, P^{I} is $= 192$, $P^{II} = 173$, $P^{III} = 154$, $P^{IV} = 136$, $P^{V} = 118$, $P^{VI} = 101$, $P^{VII} = 85$, $P^{VIII} = 71$, and $P^{IX} = 59$; and Q is $= 118$, $Q^{I} = 101$, $Q^{II} = 85$, $Q^{III} = 71$, $Q^{IV} = 59$, $Q^{V} = 48$, $Q^{VI} = 38$, $Q^{VII} = 29$, $Q^{VIII} = 22$, and $Q^{IX} = 16$; and R is $= 48$, $R^{I} = 38$, $R^{II} = 29$, $R^{III} = 22$, $R^{IV} = 16$, $R^{V} = 11$, $R^{VI} = 7$, $R^{VII} = 4$, $R^{VIII} = 2$, and $R^{IX} = 1$. And r is $= 1.03$, and $\frac{1}{r} = \frac{1}{1.03} = .9708$, and $\frac{1}{r^2} = .9425$, and $\frac{1}{r^3} = .9151$, $\frac{1}{r^4} = .8884$, $\frac{1}{r^5} = .8626$, $\frac{1}{r^6} = .8374$, $\frac{1}{r^7} = .8130$, $\frac{1}{r^8} = .7894$, and $\frac{1}{r^9} = .7664$. Therefore the expreſſion

$\frac{£1}{P\,Q\,R}$ × the ſeries $\frac{P^{I}\,Q^{I}\,R^{I}}{r} + \frac{P^{II}\,Q^{II}\,R^{II}}{r^2} + \frac{P^{III}\,Q^{III}\,R^{III}}{r^3} + \frac{P^{IV}\,Q^{IV}\,R^{IV}}{r^4} + \frac{P^{V}\,Q^{V}\,R^{V}}{r^5} + \frac{P^{VI}\,Q^{VI}\,R^{VI}}{r^6} + \frac{P^{VII}\,Q^{VII}\,R^{VII}}{r^7} + \frac{P^{VIII}\,Q^{VIII}\,R^{VIII}}{r^8} + \frac{P^{IX}\,Q^{IX}\,R^{IX}}{r^9}$ will be equal to $\frac{£1}{211 \times 118 \times 48}$ × the ſeries

$$
\begin{aligned}
& 192 \times 101 \times 38 \times .9708 \\
+\ & 173 \times 85 \times 29 \times .9425 \\
+\ & 154 \times 71 \times 22 \times .9151 \\
+\ & 136 \times 59 \times 16 \times .8884 \\
+\ & 118 \times 48 \times 11 \times .8626 \\
+\ & 101 \times 38 \times 7 \times .8374 \\
+\ & 85 \times 29 \times 4 \times .8130 \\
+\ & 71 \times 22 \times 2 \times .7894 \\
+\ & 59 \times 16 \times 1 \times .7664 \\
= & \frac{£1}{24,898 \times 48} \times \text{the ſeries} \\
& 19392 \times 38 \times .9708 \\
+\ & 14705 \times 29 \times .9425 \\
+\ & 10934 \times 22 \times .9151 \\
+\ & 8024 \times 16 \times .8884 \\
+\ & 5664 \times 11 \times .8626 \\
+\ & 3838 \times 7 \times .8374 \\
+\ & 2465 \times 4 \times .8130 \\
+\ & 1562 \times 2 \times .7894 \\
+\ & 944 \times 1 \times .7664 \\
= & \frac{£1}{24,898 \times 48} \times \text{the ſeries} \\
& 38 \times 18,825.7536 \\
+\ & 29 \times 13,859.4625 \\
+\ & 22 \times 10,005.7034 \\
+\ & 16 \times 7,288.4336 \\
+\ & 11 \times 4,885.7664 \\
+\ & 7 \times 3,213.9412
\end{aligned}
$$

$$
\begin{array}{rl}
 & 4 \times 2004.0450 \\
+ & 2 \times 1233.0428 \\
+ & 1 \times 723.4816 \\
= & \frac{\pounds 1}{1,195,104} \times \text{the series} \\
 & 715,378.6368 \\
+ & 401,924.4125 \\
+ & 220,125.4748 \\
+ & 116,614.9376 \\
+ & 53,743.4304 \\
+ & 22,497.5884 \\
+ & 8,016.1800 \\
+ & 2,466.0856 \\
+ & 723.4816
\end{array}
$$

$= \frac{\pounds 1}{1.195,104} \times 1,541,490.2277 = \frac{\pounds 1,541,490.2277}{1,195,104} = \pounds 1.2898$. Therefore the value of an annuity of one pound a year for the whole joint continuance of three lives of the ages of 75 years, 80 years, and 85 years, when the intereſt of money is 3 per cent. is 1.2898, or £.1 5s. 9¼d. QE I.

SCHOLIUM.

CCCCLXXIV. When three, or more, lives are combined together, the differences that may be taken between their ſeveral ages are ſo immenſely numerous that it is totally impracticable to form tables that ſhall exhibit the values of all, or even any conſiderable part of, the ſeveral annuities that may be ſuppoſed to depend on them. And conſequently, whenever the values of ſuch annuities are wanted, it will be neceſſary to take the trouble of computing them.

And, if the accurate value of ſuch an annuity is wanted, I believe there is no other way of finding it but that which has been above ſet forth by computing the expreſſion, $\frac{\pounds 1}{P\,Q\,R} \times$ the ſeries $\frac{P^{I}\,Q^{I}\,R^{I}}{r} + \frac{P^{II}\,Q^{II}\,R^{II}}{r^2}$

$+ \frac{P^{III}\,Q^{III}\,R^{III}}{r^3} + \frac{P^{IV}\,Q^{IV}\,R^{IV}}{r^4} + \frac{P^{V}\,Q^{V}\,R^{V}}{r^5} + \frac{P^{VI}\,Q^{VI}\,R^{VI}}{r^6} +$ $\frac{P^{VII}\,Q^{VII}\,R^{VII}}{r^7} +$ &c. continued to the end of the table of probabilities of the duration of human life; as was done in the foregoing example. But this method of obtaining it is in all caſes rather tedious, even when the oldeſt life is a very old one: but when the three lives are all young, the computation is ſo very long and troubleſome that few perſons will, probably, care to undertake it. It ſeems therefore to be highly expedient to endeavour to find out ſome leſs difficult method of obtaining the value of an annuity of this kind by a tolerable approximation. Now this may be done to a moderate degree of exactneſs by a method analogous to that explained in Art. CCCCXLVI, CCCCXLVII, CCCCXLVIII, CCCCXLIX, whereby the value of an annuity of one pound a year for two joint lives of given ages was derived from the value of the ſame annuity for the older of the two ſingle lives by means of the expreſſion $\overset{\pounds}{A} \times \frac{P_1}{P} \times \frac{g \times P_1 - h \times P_I}{g \times P_1 - h \times P_{II}}$. For we ſhall find, upon examination, that the value of an annuity of one pound a year for three joint lives of given ages may be derived in the like manner from the value of the ſame annuity for the joint continuance of the two older lives, by means of an expreſſion exactly ſimilar to the aforeſaid expreſſion $\overset{\pounds}{A} \times \frac{P_1}{P} \times \frac{g \times P_1 - h \times P_I}{g \times P_1 - h \times P_{II}}$. For if $\overset{\pounds}{B}$ is the value of an annuity of one pound a year for the joint continuance of the two older of the three lives, and g is $= \frac{Q^{I}\,R^{I}}{r}$, and $h = \frac{Q^{II}\,R^{II}}{r^2}$, the value of an annuity of one pound a year for the joint continuance of all the three lives will be, nearly, equal to $\overset{\pounds}{B} \times \frac{P_1}{P} \times \frac{g \times P_1 - h \times P_I}{g \times P_1 - h \times P_{II}}$; as may be ſhewn in the manner following.

A method

A method of deriving the value of an annuity of one pound a year for the joint continuance of three lives of any given ages, from the value of the same annuity for the joint continuance of the two older of the said lives, by approximation.

CCCCLXXV. Let S be put for the series $\frac{Q^{I}\,R^{I}}{r} + \frac{Q^{II}\,R^{II}}{r^2} + \frac{Q^{III}\,R^{III}}{r^3} + \frac{Q^{IV}\,R^{IV}}{r^4} + \frac{Q^{V}\,R^{V}}{r^5} + \frac{Q^{VI}\,R^{VI}}{r^6} + \frac{Q^{VII}\,R^{VII}}{r^7}$ + &c. continued to the end of the table of the probabilities of the duration of human life. And let the Greek capital letter Σ be put for the series $\frac{P^{I}\,Q^{I}\,R^{I}}{r} + \frac{P^{II}\,Q^{II}\,R^{II}}{r^2} + \frac{P^{III}\,Q^{III}\,R^{III}}{r^3} + \frac{P^{IV}\,Q^{IV}\,R^{IV}}{r^4} + \frac{P^{V}\,Q^{V}\,R^{V}}{r^5} + \frac{P^{VI}\,Q^{VI}\,R^{VI}}{r^6} + \frac{P^{VII}\,Q^{VII}\,R^{VII}}{r^7}$ + &c. continued likewise to the end of the same table of probabilities.

Then it is evident that $\overset{\pounds}{B}$, or the value of an annuity of one pound a year for the joint continuance of the two older lives (which answer to the letters Q and R,) will be $= \frac{\pounds^{I}}{Q\,R} \times S$; and that $\overset{\pounds}{C}$, or the value of the same annuity for the joint continuance of all the three lives, will be $= \frac{\pounds^{I}}{P\,Q\,R} \times \Sigma$.

Let i be put $= \frac{P^{I}\,Q^{I}\,R^{I}}{r}$, and k be put $= \frac{P^{II}\,Q^{II}\,R^{II}}{r^2}$.

Then, since g was taken $= \frac{Q^{I}\,R^{I}}{r}$, and h was taken $= \frac{Q^{II}\,R^{II}}{r^2}$, we shall have $i = g \times P^{I}$, and $k = h \times P^{II}$.

Let G be put for the infinite geometrical progression $g + h + \frac{h\,h}{g} + \frac{h^3}{gg} + \frac{h^4}{g^3} + \frac{h^5}{g^4} + \frac{h^6}{g^5}$ + &c. of which the two first terms, g and h, are respectively equal to, $\frac{Q^{I}\,R^{I}}{r}$ and $\frac{Q^{II}\,R^{II}}{r^2}$, the two first terms of the series S. And let the Greek capital letter Γ be put for the infinite geometrical progression $i + k + \frac{k\,k}{i} + \frac{k^3}{i\,i} + \frac{k^4}{i^3} + \frac{k^5}{i^4} + \frac{k^6}{i^5}$ + &c. of which the two first terms, i and k, are respectively equal to, $\frac{P^{I}\,Q^{I}\,R^{I}}{r}$ and $\frac{P^{II}\,Q^{II}\,R^{II}}{r^2}$, the two first terms of the series Σ.

Then will G be $= \frac{g\,g}{g-h}$; and Γ will be $= \frac{i\,i}{i-k}$.

CCCCLXXVI. These things being premised, it seems reasonable to conjecture that the geometrical progression $g + h + \frac{h\,h}{g} + \frac{h^3}{g\,g} + \frac{h^4}{g^3} + \frac{h^5}{g^4} + \frac{h^6}{g^5}$ + &c. *ad infinitum*, or G, will bear pretty nearly the same proportion to its kindred series S, (of which the two first terms, $\frac{Q^{I}\,R^{I}}{r}$ and $\frac{Q^{II}\,R^{II}}{r^2}$, are respectively equal to its two first terms g and h,) as the geometrical progression $i + k + \frac{k\,k}{i} + \frac{k^3}{i\,i} + \frac{k^4}{i^3} + \frac{k^5}{i^4} + \frac{k^6}{i^5}$ + &c. *ad infinitum* bears to its kindred series Σ, of which the two first terms, $\frac{P^{I}\,Q^{I}\,R^{I}}{r}$ and $\frac{P^{II}\,Q^{II}\,R^{II}}{r^2}$, are respectively equal to its two first terms, i and k. And, if this conjecture is well-founded, we shall have Σ nearly $\frac{\Gamma \times S}{G}$, and consequently nearly $= \frac{\frac{i\,i}{i-k} \times S}{\frac{g\,g}{g-h}} = \frac{i\,i}{i-k} \times S \times \frac{g-h}{g\,g} =$

A conjectural supposition upon which this method of approximation is founded.

$\frac{g \times P^{I} \times g \times P^{I}}{g \times P^{I} - h \times P^{II}} \times S \times \frac{g-h}{gg} = \frac{gg \times P^{I} \times P^{I}}{g \times P^{I} - h \times P^{II}} \times S \times \frac{g-h}{gg} = \frac{P^{I} \times P^{I}}{g \times P^{I} - h \times P^{II}} \times S \times \overline{g-h} = \frac{P^{I}}{g \times P^{I} - h \times P^{II}} \times S \times \overline{g-h} \times P^{I} = \frac{P^{I}}{g \times P^{I} - h \times P^{II}} \times S \times \overline{g \times P^{I} - h \times P^{II}} = P^{I} \times S \times \frac{g \times P^{I} - h \times P^{I}}{g \times P^{I} - h \times P^{II}}$.

But $\overset{\pounds}{B}$ is $= \frac{f^{I}}{\mathcal{Q}R} \times S$; and consequently S is $= \overset{\pounds}{B} \times \mathcal{Q}R$. Therefore $P^{I} \times S \times \frac{g \times P^{I} - h \times P^{I}}{g \times P^{I} - h \times P^{II}}$ is $= P^{I} \times \overset{\pounds}{B} \times \mathcal{Q}R \times \frac{g \times P^{I} - h \times P^{I}}{g \times P^{I} - h \times P^{II}}$; and consequently Σ is, nearly, $= P^{I} \times \overset{\pounds}{B} \times \mathcal{Q}R \times \frac{g \times P^{I} - h \times P^{I}}{g \times P^{I} - h \times P^{II}}$.

Therefore $\overset{\pounds}{C}$, or $\frac{f^{I}}{P\mathcal{Q}R} \times \Sigma$, is nearly $= \frac{f^{I}}{P\mathcal{Q}R} \times P^{I} \times \overset{\pounds}{B} \times \mathcal{Q}R \times \frac{g \times P^{I} - h \times P^{I}}{g \times P^{I} - h \times P^{II}} = \frac{I}{P} \times P^{I} \times \overset{\pounds}{B} \times \frac{g \times P^{I} - h \times P^{I}}{g \times P^{I} - h \times P^{II}} = \overset{\pounds}{B} \times \frac{P^{I}}{P} \times \frac{g \times P^{I} - h \times P^{I}}{g \times P^{I} - h \times P^{II}}$; that is, the value of an annuity of one pound a year for the joint continuance of all the three lives will be, nearly, equal to $\overset{\pounds}{B} \times \frac{P^{I}}{P} \times \frac{g \times P^{I} - h \times P^{I}}{g \times P^{I} - h \times P^{II}}$, or may be derived from $\overset{\pounds}{B}$, the value of the same annuity for the joint continuance of the two older lives, by multiplying it into the fraction $\frac{P^{I}}{P} \times \frac{g \times P^{I} - h \times P^{I}}{g \times P^{I} - h \times P^{II}}$. QED.

CCCCLXXVII. This expreſſion $\overset{\pounds}{B} \times \frac{P^{I}}{P} \times \frac{g \times P^{I} - h \times P^{I}}{g \times P^{I} - h \times P^{II}}$ will, I believe, be almoſt always leſs than the true value of $\overset{\pounds}{C}$. But in what *degree*,

gree, or within what *limits*, it will differ from it, I do not know. But, that we may form ſome tolerable conjecture upon the ſubject, I will now proceed to apply this expreſſion to the computation of the values of a few annuities for three joint lives, of which the learned Mr. Morgan has given us the true values to five places of figures, computed ſtrictly by means of the above-mentioned expreſſion, $\frac{f^{I}}{P\mathcal{Q}R} \times$ the ſeries $\frac{P^{I}\mathcal{Q}^{I}R^{I}}{r} + \frac{P^{II}\mathcal{Q}^{II}R^{II}}{r^{2}} + \frac{P^{III}\mathcal{Q}^{III}R^{III}}{r^{3}} + \frac{P^{IV}\mathcal{Q}^{IV}R^{IV}}{r^{4}} + \frac{P^{V}\mathcal{Q}^{V}R^{V}}{r^{5}} + \frac{P^{VI}\mathcal{Q}^{VI}R^{VI}}{r^{6}} + \frac{P^{VII}\mathcal{Q}^{VII}R^{VII}}{r^{7}} +$ &c. continued to the end of the table of the probabilities of the duration of human life. Theſe true values are contained in the ſeventh table of Mr. Morgan's treatiſe on the doctrine of annuities, page 273. They are the values of an annuity of one pound a year for three joint lives of equal ages, from the age of 60 years to the age of 91 years, incluſive of both. And they are computed from the Northampton table of the probabilities of the duration of human life, upon a ſuppoſition that the intereſt of money is 4 per cent. This table is as follows.

TABLE

TABLE XLIX.

Containing the true values of an annuity of one pound a year for the joint continuance of three lives of equal ages, from the age of 60 years to the age of 91 years, both included; when the intereſt of money is 4 per cent.

Computed from the Northampton table of the probabilities of the duration of human life.

Years in the age of the firſt life.	*Years in the age of the ſecond life.*	*Years in the age of the third life.*	*Values of an annuity of 1l. a year for the joint continuance of all the three lives.*	*Years in the age of the firſt life.*	*Years in the age of the ſecond life.*	*Years in the age of the third life.*	*Values of an annuity of 1l. a year for the joint continuance of all the three lives.*
			£				£
60	60	60	4.7826	76	76	76	1.9089
61	61	61	4.6115	77	77	77	1.7846
62	62	62	4.4382	78	78	78	1.5843
63	63	63	4.2626	79	79	79	1.3906
64	64	64	4.0849	80	80	80	1.2121
65	65	65	3.9050	81	81	81	1.0685
66	66	66	3.7230	82	82	82	1.0117
67	67	67	3.5390	83	83	83	0.9617
68	68	68	3.3533	84	84	84	0.8981
69	69	69	3.1662	85	85	85	0.7906
70	70	70	2.9780	86	86	86	0.7690
71	71	71	2.7895	87	87	87	0.7568
72	72	72	2.6015	88	88	88	0.5368
73	73	73	2.4160	89	89	89	0.3233
74	74	74	2.2352	90	90	90	0.1346
75	75	75	2.0636	91	91	91	0.1202

CCCCLXXVIII. Mr.

CCCCLXXVIII. Mr. Morgan has alſo given us, in his valuable treatiſe on annuities before-mentioned, pages 74, 75, and 76, a compleat table of the true values of an annuity of one pound a year for the joint continuance of two lives of equal ages, when the intereſt of money is 4 per cent. computed ſtrictly from the aforeſaid Northampton table of the probabilities of the duration of human life, for every age of life from the age of one year to that of 91 years, incluſively. This table is as follows.

TABLE L.

Containing the true values of an annuity of one pound a year for the joint continuance of two lives of equal ages, from the age of one year to the age of 91 years, incluſively; when the intereſt of money is 4 per cent.

Computed from the Northampton table of the probabilities of the duration of human life.

Years in the age of the firſt life.	*Years in the age of the ſecond life.*	*Values of an annuity of 1l. a year for the joint continuance of both lives.*	*Years in the age of the firſt life.*	*Years in the age of the ſecond life.*	*Values of an annuity of 1l. a year for the joint continuance of both lives.*
		£			£
1	1	10.5432	14	14	13.5638
2	2	11.3227	15	15	13.3673
3	3	12.5931	16	16	13.1616
4	4	13.1723	17	17	12.9461
5	5	13.6352	18	18	12.7201
6	6	13.9355	19	19	12.5346
7	7	14.1320	20	20	12.3928
8	8	14.2031	21	21	12.2985
9	9	14.2356	22	22	12.2038
10	10	14.1709	23	23	12.1089
11	11	14.0530	24	24	12.0139
12	12	13.9311	25	25	11.9191
13	13	13.7516	26	26	11.8242

Years in the age of the first life.	Years in the age of the second life.	Values of an annuity of 1l. a year for the joint continuance of both lives.
		£
27	27	11.7292
28	28	11.6351
29	29	11.5422
30	30	11.4500
31	31	11.3007
32	32	11.1462
33	33	10.9880
34	34	10.8240
35	35	10.6538
36	36	10.4782
37	37	10.2962
38	38	10.1073
39	39	9.9110
40	40	9.7065
41	41	9.5532
42	42	9.3960
43	43	9.2358
44	44	9.0723
45	45	8.9054
46	46	8.7350
47	47	8.5608
48	48	8.3829
49	49	8.2008
50	50	8.0779
51	51	7.9599
52	52	7.7818
53	53	7.6006
54	54	7.4165
55	55	7.2294
56	56	7.0392
57	57	6.8459
58	58	6.6494
59	59	6.4497
60	60	6.2468
61	61	6.0407
62	62	5.8313
63	63	5.6188
64	64	5.4031
65	65	5.1843
66	66	4.9626
67	67	4.7381
68	68	4.5111
69	69	4.2821
70	70	4.0516
71	71	3.8203
72	72	3.5893
73	73	3.3605
74	74	3.1364
75	75	2.9192
76	76	2.7182
77	77	2.5427
78	78	2.2976
79	79	2.0694
80	80	1.8570
81	81	1.6868
82	82	1.5998
83	83	1.5144
84	84	1.4143
85	85	1.244,62
86	86	1.213,51
87	87	1.132,87
88	88	0.840,92
89	89	0.554,77
90	90	0.298,169
91	91	0.240,383

CCCCLXXIX. And

CCCCLXXIX. And the Northampton table of the probabilities of the duration of human life, from which the two foregoing tables of the values of an annuity of one pound for two and three joint lives were computed, is given us likewise in Mr. Morgan's aforesaid treatise on annuities, page 267, and is as follows.

TABLE LI.

Representing the probabilities of the duration of human life at the several ages therein mentioned, from the age of one year to the age of 92 years, inclusively; as deduced by Dr. Price from observations on the bills of mortality at Northampton.

Age.	Persons living.	Age.	Persons living.	Age.	Persons living.	Age.	Persons living.
1 year.	849	25	475	49	293	73	99
2 years.	722	26	467	50	284	74	91
3	672	27	459	51	275	75	83
4	646	28	451	52	267	76	75
5	625	29	443	53	259	77	67
6	609	30	435	54	251	78	60
7	596	31	428	55	243	79	53
8	586	32	421	56	235	80	46
9	577	33	414	57	227	81	39
10	570	34	407	58	219	82	32
11	564	35	400	59	211	83	26
12	558	36	393	60	203	84	21
13	553	37	386	61	195	85	17
14	548	38	379	62	187	86	13
15	543	39	372	63	179	87	10
16	538	40	365	64	171	88	8
17	533	41	357	65	163	89	6
18	528	42	349	66	155	90	4
19	522	43	341	67	147	91	2
20	515	44	333	68	139	92	1
21	507	45	325	69	131	93	0
22	499	46	317	70	123		
23	491	47	309	71	115		
24	483	48	301	72	107		

CCCCLXXX. By the help of these two last tables we may apply the expression $\overset{\text{£}}{B} \times \frac{P^{\text{I}}}{P} \times \frac{g \times P^{\text{I}} - h \times P^{\text{I}}}{g \times P^{\text{I}} - h \times P^{\text{II}}}$ to the discovery of near values of the several annuities for three joint lives of equal ages, of which we have seen the true values above in Table XLIX, Art. CCCCLXXVII. This may be done in the manner following.

CCCCLXXXI. When the three lives are all of the same age, Q and R will be equal to P, and Q^{I} and R^{I} will be equal to P^{I}, and Q^{II} and R^{II} will be equal to P^{II}. Therefore in this case g, or $\frac{Q^{\text{I}} R^{\text{I}}}{r}$, will be $= \frac{P^{\text{I}} P^{\text{I}}}{r}$, and h, or $\frac{Q^{\text{II}} R^{\text{II}}}{r^2}$, will be $= \frac{P^{\text{II}} P^{\text{II}}}{r^2}$; and consequently $g \times P^{\text{I}}$ will be $= \frac{P^{\text{I}} P^{\text{I}}}{r} \times P^{\text{I}} = \frac{P^{\text{I}} \times P^{\text{I}} \times P^{\text{I}}}{r}$; and $h \times P^{\text{I}}$ will be $= \frac{P^{\text{II}} P^{\text{II}}}{r^2} \times P^{\text{I}} = \frac{P^{\text{II}} \times P^{\text{II}} \times P^{\text{I}}}{r^2}$; and $h \times P^{\text{II}}$ will be $= \frac{P^{\text{II}} P^{\text{II}}}{r^2} \times P^{\text{II}} = \frac{P^{\text{II}} \times P^{\text{II}} \times P^{\text{II}}}{r^2}$. Therefore $g \times P^{\text{I}} - h \times P^{\text{I}}$ will be $= \frac{P^{\text{I}} \times P^{\text{I}} \times P^{\text{I}}}{r} - \frac{P^{\text{II}} \times P^{\text{II}} \times P^{\text{I}}}{r^2} = \frac{P^{\text{I}} \times P^{\text{I}} \times P^{\text{I}} \times r}{r^2} - \frac{P^{\text{II}} \times P^{\text{II}} \times P^{\text{I}}}{r^2} = \frac{P^{\text{I}} \times P^{\text{I}} \times P^{\text{I}} \times r - P^{\text{II}} \times P^{\text{II}} \times P^{\text{I}}}{r^2}$; and $g \times P^{\text{I}} - h \times P^{\text{II}}$ will be $= \frac{P^{\text{I}} \times P^{\text{I}} \times P^{\text{I}}}{r} - \frac{P^{\text{II}} \times P^{\text{II}} \times P^{\text{II}}}{r^2} = \frac{P^{\text{I}} \times P^{\text{I}} \times P^{\text{I}} \times r}{r^2} - \frac{P^{\text{II}} \times P^{\text{II}} \times P^{\text{II}}}{r^2} = \frac{P^{\text{I}} \times P^{\text{I}} \times P^{\text{I}} \times r - P^{\text{II}} \times P^{\text{II}} \times P^{\text{II}}}{r^2}$; and consequently $\frac{g \times P^{\text{I}} - h \times P^{\text{I}}}{g \times P^{\text{I}} - h \times P^{\text{II}}}$ will be $= \frac{\frac{P^{\text{I}} \times P^{\text{I}} \times P^{\text{I}} \times r - P^{\text{II}} \times P^{\text{II}} \times P^{\text{I}}}{r^2}}{\frac{P^{\text{I}} \times P^{\text{I}} \times P^{\text{I}} \times r - P^{\text{II}} \times P^{\text{II}} \times P^{\text{II}}}{r^2}}$

$= \frac{P^{\text{I}} \times P^{\text{I}} \times P^{\text{I}} \times r - P^{\text{II}} \times P^{\text{II}} \times P^{\text{I}}}{P^{\text{I}} \times P^{\text{I}} \times P^{\text{I}} \times r - P^{\text{II}} \times P^{\text{II}} \times P^{\text{II}}}$. Therefore $\overset{\text{£}}{B} \times \frac{P^{\text{I}}}{P} \times \frac{g \times P^{\text{I}} - h \times P^{\text{I}}}{g \times P^{\text{I}} - h \times P^{\text{II}}}$, or the near value of an annuity of one pound a year for the three joint lives, will, in this case of an equality of the three ages, be $= \overset{\text{£}}{B} \times \frac{P^{\text{I}}}{P} \times \frac{P^{\text{I}} \times P^{\text{I}} \times P^{\text{I}} \times r - P^{\text{II}} \times P^{\text{II}} \times P^{\text{I}}}{P^{\text{I}} \times P^{\text{I}} \times P^{\text{I}} \times r - P^{\text{II}} \times P^{\text{II}} \times P^{\text{II}}}$; which I take to be the most convenient form to which this expression can be reduced.

An example of the computation of the near value of an annuity of one pound a year for the joint continuance of three lives of equal ages, by means of the foregoing expression.

CCCCLXXXII. Let it now be required, by means of this expression, $\overset{\text{£}}{B} \times \frac{P^{\text{I}}}{P} \times \frac{P^{\text{I}} \times P^{\text{I}} \times P^{\text{I}} \times r - P^{\text{II}} \times P^{\text{II}} \times P^{\text{I}}}{P^{\text{I}} \times P^{\text{I}} \times P^{\text{I}} \times r - P^{\text{II}} \times P^{\text{II}} \times P^{\text{II}}}$, to find a near value of an annuity of one pound a year for three joint lives all of the age of 60 years, when the interest of money is 4 per cent. according to the foregoing Northampton table of the probabilities of the duration of human life; of which annuity we have seen above, in Table XLIX, that the true value is £4.7826.

Now it appears from Table L, Art. CCCCLXXVIII, that $\overset{\text{£}}{B}$, or the value of an annuity of one pound a year for the joint continuance of two lives that are both of the same age of 60 years, when the interest of money is 4 per cent. and according to the Northampton table of the probabilities of the duration of human life, is £6.2468. And it appears by the said table of probabilities, that the number of persons therein supposed to be living at the several ages of 60 years, 61 years, and 62 years, are 203, 195, and 187. Therefore P is $= 203$, $P^{\text{I}} = 195$, and P^{II} is $= 187$.

Also, since the interest of money is supposed to be 4 per cent. r will be $= 1.04$.

Therefore $P^{\text{I}} \times P^{\text{I}} \times P^{\text{I}} \times r$ will be $(= 195 \times 195 \times 195 \times 1.04 = 7{,}414{,}875 \times 1.04) = 7{,}711{,}470.00$; and $P^{\text{II}} \times P^{\text{II}} \times P^{\text{I}}$ will be $(= 187 \times 187 \times 195 = 34{,}969 \times 195) = 6{,}818{,}955$; and $P^{\text{II}} \times P^{\text{II}} \times P^{\text{II}}$ will be $(= 187 \times 187 \times 187 = 34{,}969 \times 187) = 6{,}539{,}203$. Therefore

$P^{I} \times P^{I} \times P^{I} \times r - P^{II} \times P^{II} \times P^{I}$ will be $(= 7,711,470 - 6,818,955) = 892,515$; and $P^{I} \times P^{I} \times P^{I} \times r - P^{II} \times P^{II} \times P^{II}$ will be $(= 7,711,470 - 6,539,203) = 1,172,267$; and consequently $\frac{P^{I} \times P^{I} \times P^{I} \times r - P^{II} \times P^{II} \times P^{I}}{P^{I} \times P^{I} \times P^{I} \times r - P^{II} \times P^{II} \times P^{II}}$ will be $= \frac{892,515}{1,172,267} = 0.761,35$. Therefore $\frac{P^{I}}{P}$ × the fraction $\frac{P^{I} \times P^{I} \times P^{I} \times r - P^{II} \times P^{II} \times P^{I}}{P^{I} \times P^{I} \times P^{I} \times r - P^{II} \times P^{II} \times P^{II}}$ will be $\left(= \frac{P^{I}}{P} \times 0.761,35 = \frac{195}{203} \times 0.761,35 = \frac{148.46325}{203}\right) = 0.731,34$; and $\overset{£}{B} \times \frac{P^{I}}{P} \times \frac{P^{I} \times P^{I} \times P^{I} \times r - P^{II} \times P^{II} \times P^{I}}{P^{I} \times P^{I} \times P^{I} \times r - P^{II} \times P^{II} \times P^{II}}$ will be $(= B \times 0.731,34 = 6.2468 \times 0.731,34) = 4.5685$. Therefore 4.5685 is a near value of the propoſed annuity of one pound a year for the joint continuance of three lives, all of the age of 60 years, when the intereſt of money is 4 per cent. according to the Northampton table of the probabilities of the duration of human life. Q E I.

This value of the propoſed annuity is leſs than its true value £4.7826, (given above in Table XLIX,) by the difference £0.2141, which is about a 22d part of the ſaid true value, £4.7826.

Near values of an annuity of one pound a year for three equal joint lives of the ages of 61 years, 62 years, 63 years, 64 years, &c. to the age of 91 years, inclusively, computed from the ſame expreſſion.

CCCCLXXXIII. If the values of an annuity of one pound a year for the joint continuance of three equal lives of the ages of 61 years, 62 years, 63 years, 64 years, &c. to the age of 91 years, inclusively, are computed in the ſame manner by means of the ſaid expreſſion, $\overset{£}{B} \times \frac{P^{I}}{P} \times \frac{g \times P^{I} - b \times P^{I}}{g \times P^{I} - b \times P^{II}}$, or $\overset{£}{B} \times \frac{P^{I}}{P} \times \frac{P^{I} \times P^{I} \times P^{I} \times r - P^{II} \times P^{II} \times P^{I}}{P^{I} \times P^{I} \times P^{I} \times r - P^{II} \times P^{II} \times P^{II}}$; they will be found to be as follows; to wit.

for three equal joint lives of the age of 61 years, = 4.3992,
of the age of 62 years, = 4.2281,
of the age of 63 years, = 4.0555,
of the age of 64 years, = 3.8814,
of the age of 65 years, = 3.7059,

of the age of 66 years, = 3.5293,
of the age of 67 years, = 3.3516,
of the age of 68 years, = 3.1730,
of the age of 69 years, = 2.9942,
of the age of 70 years, = 2.8153,
of the age of 71 years, = 2.6370,
of the age of 72 years, = 2.4600,
of the age of 73 years, = 2.2857,
of the age of 74 years, = 2.1156,
of the age of 75 years, = 1.9513,
of the age of 76 years, = 1.7961,
of the age of 77 years, = 1.6861,
of the age of 78 years, = 1.5067,
of the age of 79 years, = 1.3398,
of the age of 80 years, = 1.1842,
of the age of 81 years, = 1.0439,
of the age of 82 years, = 0.98201,
of the age of 83 years, = 0.92350,
of the age of 84 years, = 0.87917,
of the age of 85 years, = 0.72954,
of the age of 86 years, = 0.72759,
of the age of 87 years, = 0.69995,
of the age of 88 years, = 0.50505,
of the age of 89 years, = 0.31932,
of the age of 90 years, = 0.12872,
and of the age of 91 years, = 0.12019.

Theſe near values, we may obſerve, are all leſs than the true values of the ſame annuities, given above in Table XLIX. And this will be found to be the caſe in moſt inſtances, except when ſome of the lives are very young; and then it ſometimes happens that the near values of an annuity for three joint lives, obtained by the foregoing expreſſion, is greater than its true value.

The differences of the foregoing near values of an annuity of one pound a year for three joint lives and the corresponding true values of the same annuity.

CCCCLXXXIV. The differences of these near values of the aforesaid annuities for three equal joint lives from their true values contained above in Table XLIX, are as follows; to wit,

£.		£.		£.
4.6115	—	4.3992	=	0.2123;
4.4382	—	4.2281	=	0.2101;
4.2626	—	4.0555	=	0.2071;
4.0849	—	3.8814	=	0.2035;
3.9050	—	3.7059	=	0.1991;
3.7230	—	3.5293	=	0.1937;
3.5390	—	3.3516	=	0.1874;
3.3533	—	3.1730	=	0.1803;
3.1662	—	2.9942	=	0.1720;
2.9780	—	2.8153	=	0.1627;
2.7895	—	2.6370	=	0.1525;
2.6015	—	2.4600	=	0.1415;
2.4160	—	2.2857	=	0.1303;
2.2352	—	2.1156	=	0.1196;
2.0636	—	1.9513	=	0.1123;
1.9089	—	1.7961	=	0.1128;
1.7846	—	1.6861	=	0.0985;
1.5843	—	1.5067	=	0.0776;
1.3906	—	1.3398	=	0.0508;
1.2121	—	1.1842	=	0.0279;
1.0685	—	1.0439	=	0.0246;
1.0117	—	0.982,01	=	0.029,69;
0.9617	—	0.923,50	=	0.038,20;
0.8981	—	0.879,17	=	0.078,93;
0.7606	—	0.729,54	=	0.031,06;
0.7690	—	0.727,59	=	0.041,41;
0.7568	—	0.699,95	=	0.056,85;
0.5368	—	0.505,05	=	0.031,75;

0.3233	—	0.319,32	=	0.003,98;
0.1346	—	0.128,72	=	0.005,88;
0.1202	—	0.120,19	=	0.000,01.

CCCCLXXXV. And the proportions of these differences to the said true values themselves are expressed by the following fractions, to wit,

The proportions of the foregoing differences to the said several true values, respectively.

$\frac{1}{21}, \frac{1}{21}, \frac{1}{20}, \frac{1}{20}, \frac{1}{19}, \frac{1}{19}, \frac{1}{18}, \frac{1}{18}, \frac{1}{18}, \frac{1}{18}, \frac{1}{18}, \frac{1}{18}$,

$\frac{1}{18}, \frac{1}{18}, \frac{1}{18}, \frac{1}{20}, \frac{1}{27}, \frac{1}{43}, \frac{1}{43}, \frac{1}{34}, \frac{1}{25}, \frac{1}{11}, \frac{1}{24}, \frac{1}{18}$,

$\frac{1}{13}, \frac{1}{16}, \frac{1}{81}, \frac{1}{22}$, and $\frac{1}{12020}$.

A conclusion from the foregoing examples in favour of the usefulness of the foregoing expression, when the ages of the three lives are equal to each other and are not less than 60 years.

These fractions (though they are not so small as might have been wished,) are sufficiently small to make the foregoing near values of an annuity of one pound a year for three equal joint lives of the ages of 60 years, 61 years, 62 years, &c. to the end of life, of very considerable use in practice. And therefore we may conclude from them that, in estimating annuities for three equal joint livesin the latter period of human life, after the age of 60 years, the expression

$$B^{£} \times \frac{P_I}{P} \times \frac{P_I \times P_I \times P_I \times r - P_{II} \times P_{II} \times P_I}{P_I \times P_I \times P_I \times r - P_{II} \times P_{II} \times P_{II}}, \text{ or } B^{£} \times \frac{P_I}{P} \times \frac{g \times P_I - b \times P_I}{g \times P_I - b \times P_{II}},$$

may safely be adopted, as a means of determining the values of such annuities to a tolerable degree of exactness.

An inquiry into the usefulness of the said expression in other cases.

CCCCLXXXVI. But it may be doubted, perhaps, whether this expression will be equally useful in determining the values of annuities for three joint lives, when the ages of the lives are younger than 60 years, and when the three lives are not all of equal ages. Now, in order to form some judgement upon this matter, it will be necessary to try this approximation in some other instances, in which the three lives shall be much younger than 60 years of age, and likewise in some instances in which the three lives shall not be all of equal ages. And with this view I shall now present the reader

reader with four more tables of values of annuities for three joint lives, of which the two former contain the accurate value of an annuity of one pound a year for three equal joint lives of the ages of 5 years, 10 years, 15 years, 20 years, 25 years, 30 years, 35, 40, 45, 50, 55, 60, 65, and 70 years, and for three lives of unequal ages that differ from each other by 10 years and 20 years, and of which the youngeſt lives are of the ages of 5 years, 10 years, 15 years, 20 years, 25 years, 30 years, 35, 40, 45, 50, 55, 60, 65, 70, and 75 years, and the two latter contain the near values of the annuities mentioned in the two former tables, which reſult from the expreſſion $\frac{\pounds}{B} \times \frac{P_I}{P} \times \frac{g \times P_I - b \times P_I}{g \times P_I - b \times P_{II}}$. The two firſt tables have been communicated to me by Dr. Price, and the two latter have been computed by an able arithmetician, who was employed for that purpoſe by Mr. Morgan, of the Society for equitable Aſſurances near Black-friars Bridge. In all the four tables the intereſt of money is ſuppoſed to be 4 per cent. and the table of the probabilities of the duration of human life, upon which the calculations are founded, is not that of Monſieur de Parcieux, (ſo often mentioned in the courſe of this work,) nor yet the Northampton table of thoſe probabilities given above in Art. CCCCLXXIX, but a new table derived from the ſaid Northampton table by Dr. Price, and called by him "*The new Northampton Table of thoſe probabilities*," being an improvement on the ſaid former Northampton table, and (as I am informed,) differing but little from it. Theſe four tables are as follows.

TABLE

TABLE LII.

Containing the true values of an annuity of one pound a year for the joint continuance of the lives of three perſons all of the ſame age, at the ſeveral ages of 5 years, 10 years, 15 years, 20 years, 25 years, 30 years, 35 years, 40 years, 45 years, 50 years, 55 years, 60 years, 65 years, and 70 years; when the intereſt of money is 4 per cent.

Computed from Dr. Price's new Northampton table of the probabilities of the duration of human life.

Years in the age of the firſt life.	*Years in the age of the ſecond life.*	*Years in the age of the third life.*	*Values of an annuity of one pound a year for the joint continuance of the three lives.*
			£.
5	5	5	11.1704
10	10	10	12.2006
15	15	15	11.2746
20	20	20	10.3429
25	25	25	9.796,42
30	30	30	9.221,10
35	35	35	8.585,22
40	40	40	7.865,05
45	45	45	7.126,40
50	50	50	6.317,17
55	55	55	5.550,60
60	60	60	4.755,03
65	65	65	3.914,00
70	70	70	2.995,84

TABLE

TABLE LIII.

Containing the true values of an annuity of one pound a year for the joint continuance of the lives of three persons of unequal ages, that differ from each other by 10 *years and* 20 *years, when the age of the youngest life is either* 5 *years, or* 10 *years, or* 15 *years, or* 20 *years, or* 25 *years, or* 30 *years, or* 35, *or* 40, 45 50, 55, 60, 65, 70, *or* 75 *years; upon a supposition that the interest of money is* 4 *per cent.*

Computed from Dr. Price's new Northampton table of the probabilities of the duration of human life.

Years in the age of the first, or youngest, life.	*Years in the age of the second life.*	*years in the age of the third, or oldest, life.*	*Values of an annuity of one pound a year for the joint continuance of the three lives.*
			£.
5	15	25	10.6551
10	20	30	10.4379
15	25	35	9.738,56
20	30	40	8.986,72
25	35	45	8.313,10
30	40	50	7.570,83
35	45	55	6.816,07
40	50	60	5.994,15
45	55	65	5.145,62
50	60	70	4.219,37
55	65	75	3.297,98
60	70	80	2.408,48
65	75	85	1.623,48
70	80	90	1.122,51
75	85	95	0.169,378

TABLE

TABLE LIV.

Containing approximations to the values of the annuities for three equal joint lives mentioned above in Table LII; when the interest of money is 4 *per cent.*

Computed from Dr. Price's new Northampton table of the probabilities of the duration of human life, by means of the expression $\frac{£}{B} \times \frac{P_I}{P} \times \frac{g \times P_I - h \times P_I}{g \times P_I - h \times P_{II}}$, *or* $\frac{£}{B} \times \frac{P_I}{P} \times \frac{P_I \times P_I \times P_I \times r - P_{II} \times P_{II} \times P_I}{P_I \times P_I \times P_I \times r - P_{II} \times P_{II} \times P_{II}}$, *given above in Art.* CCCCLXXVI *and* CCCCLXXXI.

Years in the age of the first life.	*Years in the age of the second life.*	*Years in the age of the third life.*	*Values of an annuity of one pound a year for the joint continuance of the three lives.*
			£.
5	5	5	10.4912
10	10	10	12.3942
15	15	15	11.4322
20	20	20	10.2377
25	25	25	9.667,62
30	30	30	9.073,29
35	35	35	8.426,20
40	40	40	7.691,08
45	45	45	6.941,47
50	50	50	6.118,36
55	55	55	5.342,53
60	60	60	4.543,77
65	65	65	3.718,59
70	70	70	2.839,99

TABLE LV.

Containing approximations to the values of the annuities for three joint lives of different ages, mentioned above in Table LIII; when the intereſt of money is 4 per cent.

Computed from Dr. Price's new Northampton table of the probabilities of the duration of human life, by means of the expreſſion $B^{£} \times \frac{P_1}{P} \times \frac{g \times P_1 - h \times P_1}{g \times P_1 - h \times P_{11}}$, *given above in Art.* CCCCLXXVI.

Years in the age of the firſt, or youngeſt, life.	*Years in the age of the ſecond life.*	*years in the age of the third, or oldeſt, life.*	*Values of an annuity of one pound a year for the joint continuance of the three lives.*
			£.
5	15	25	9.1325
10	20	30	10.5080
15	25	35	9.858,45
20	30	40	8.756,27
25	35	45	8.068,36
30	40	50	7.343,65
35	45	55	6.594,61
40	50	60	5.786,88
45	55	65	4.947,33
50	60	70	4.044,10
55	65	75	3.181,57
60	70	80	2.332,36
65	75	85	1.604,14
70	80	90	1.093,25
75	85	95	0.169,378

CCCCLXXXVII. The

The differences of the true values of the annuities for three equal joint lives in Table LII and the near values of the ſame annuities in Table LIV.

CCCCLXXXVII. The differences between the true values of the annuities for three equal joint lives, mentioned in Table LII, and the near values of the ſame annuities which are contained in Table LIV, are as follows; to wit,

£.		£.		£.
11.1704	—	10.4912	=	0.6792;
— 12.2006	+	12.3940	=	0.1936;
— 11.2746	+	11.4322	=	0.1576;
10.3429	—	10.2377	=	0.1052;
9.796,42	—	9.667,62	=	0.128,80;
9.221,10	—	9.073,29	=	0.147,81;
8.585,22	—	8.426,20	=	0.159,02;
7.865,05	—	7.691,08	=	0.173,97;
7.126,40	—	6.941,47	=	0.184,93;
6.317,17	—	6.118,36	=	0.198,81;
5.550,60	—	5.342,53	=	0.208,07;
4.755,03	—	4.543,77	=	0.211,26;
3.914,00	—	3.718,59	=	0.195,41;
2.995,84	—	2.839,99	=	0.155,85.

A comparison of the ſaid near values with the corresponding true values.

CCCCLXXXVIII. It may be here obſerved that all the foregoing near values of annuities for three equal joint lives, contained in Table LIV, and which were obtained by means of the expreſſion $B^{£} \times \frac{P_1}{P} \times \frac{P_1 \times P_1 \times P_1 \times r - P_{11} \times P_{11} \times P_1}{P_1 \times P_1 \times P_1 \times r - P_{11} \times P_{11} \times P_{11}}$, or $B^{£} \times \frac{P_1}{P} \times \frac{g \times P_1 - b \times P_1}{g \times P_1 - b \times P_{11}}$, are not leſs than the true values of the ſame annuities reſpectively, (as was the caſe with the near values of annuities for three equal joint lives of the ages of 60 years, 61 years, &c. to 91 years, obtained above in Art. CCCCLXXXII and CCCCLXXXIII by means of the ſame expreſſion;) but two of the ſaid near values, to wit, £12.3940 and £11.4322, (which relate to the ages of 10 years and 15 years,) are greater than the correſponding true values, £12.2006 and 11.2746.

A remark on the magnitude of the said differences with respect to one year's annuity.

CCCCLXXXIX. It may also be observed that all the foregoing differences between the true values and the near values of those annuities, except the first difference £0.6792, (which relates to the age of 5 years, and is much greater than any of the others,) are less than £0.25, or a quarter of a year's annuity; which, with a view to practical purposes, can hardly be considered as a very important error.

The proportions of the said differences to the several corresponding true values of the said annuities.

CCCCXC. The proportions of the foregoing differences to their several corresponding true values are expressed by the following fractions; to wit, $\frac{1}{16}$, $\frac{1}{63}$, $\frac{1}{71}$, $\frac{1}{98}$, $\frac{1}{76}$, $\frac{1}{62}$, $\frac{1}{53}$, $\frac{1}{45}$, $\frac{1}{38}$, $\frac{1}{31}$, $\frac{1}{26}$, $\frac{1}{22}$, $\frac{1}{20}$, and $\frac{1}{19}$. These fractions are, for the most part, considerably less than the fractions in Art. CCCCLXXXV, which express the proportions of the differences of the near values and true values of the former set of annuities for three equal joint lives, (where the ages were 60 years and upwards,) to their corresponding true values. We may therefore conclude that the expression $\overset{£}{B} \times \frac{P_I}{P} \times \frac{P_I \times P_I \times P_I \times r - P_{II} \times P_{II} \times P_I}{P_I \times P_I \times P_I \times r - P_{II} \times P_{II} \times P_{III}}$, or $\overset{£}{B} \times \frac{P_I}{P} \times \frac{g \times P_I - h \times P_I}{g \times P_I - h \times P_{II}}$, will be as useful, or rather more so, in computing the values of annuities for three equal joint lives, when the lives are under the age of 60 years as when they go beyond it.

The differences between the true values of the annuities for three joint lives of unequal ages, mentioned in Table LIII, and the near values of the same annuities in Table LV.

CCCCXCI. The differences between the true values of the annuities for three joint lives of unequal ages which differ from each other by 10 years and 20 years, given above in Table LIII, and the near values of the same annuities which are contained in Table LV, are as follows; to wit,

£		£		£
10.6551	—	9.1325	=	1.5226;
— 10.4379	+	10.5080	=	0.0701;
— 9.738,56	+	9.858,45	=	0.119,89;
				8.986,72

£		£		£
8.986,72	—	8.756,27	=	0.230,45;
8.313,10	—	8.068,36	=	0.244,74;
7.570,83	—	7.343,65	=	0.227,18;
6.816,07	—	6.594,61	=	0.221,46;
5.994,15	—	5.786,88	=	0.207,27;
5.145,62	—	4.947,33	=	0.198,29;
4.219,37	—	4.044,10	=	0.175,27;
3.297,98	—	3.181,57	=	0.116,41;
2.408,48	—	2.332,36	=	0.076,12;
1.623,48	—	1.604,14	=	0.019,34;
1.122,51	—	1.093,25	=	0.029,26;
0.169,378	—	0.169,378	=	0.000,000.

A comparison of the said near values with the corresponding true values.

CCCCXCII. In looking over the near values and true values contained in the foregoing article we may observe, that the near values are, for the most part, less than the corresponding true values; but not constantly so: for the near values £10.5080 and £9.858,45, (the former of which relates to three lives of the ages of 10, 20, and 30 years, and the latter to three lives of the ages of 15, 25, and 35 years,) are greater than the corresponding true values, £10.4379 and £9.738,56: which agrees pretty much with what was observed in Art. CCCCLXXXVIII concerning the near values and the true values contained in Art. CCCCLXXXVII.

A remark on the magnitude of the said differences with respect to one year's annuity.

CCCCXCIII. It may also be observed that all the foregoing differences between the near values in Table LV and the corresponding true values in Table LIII, contained in Art. CCCCXCI, except the first difference, £1.5226, (which relates to three lives of the ages of 5 years, 15 years, and 25 years, and which is vastly greater than any of the others,) are less than £0.25, or a quarter of a year's annuity; which (as was before observed) is no very important variation from the truth.

The proportions of the said differences to the several corresponding true values of the said annuities.

CCCCXCIV. And the proportions of the foregoing differences (contained in Art. CCCCXCI) to their several corresponding true values are expressed

preſſed by the following fractions; to wit, $\frac{1}{7}$, $\frac{1}{148}$, $\frac{1}{81}$, $\frac{1}{38}$, $\frac{1}{33}$, $\frac{1}{33}$, $\frac{1}{30}$, $\frac{1}{28}$, $\frac{1}{25}$, $\frac{1}{24}$, $\frac{1}{28}$, $\frac{1}{31}$, $\frac{1}{83}$, and $\frac{1}{38}$.

These fractions are for the moſt part ſomewhat greater than the fractions in Art. ccccxc, but ſomewhat leſs than thoſe in Art. cccclxxxv, which expreſs the proportions of the differences of the near values and true values of the former ſet of annuities for three equal joint lives (where the ages were 60 years and upwards,) to their correſponding true values. We may therefore conclude that the expreſſion $\frac{\pounds}{B} \times \frac{P_1}{P} \times \frac{g \times P_1 - b \times P_1}{g \times P_1 - b \times P_{11}}$ will be as uſeful, or rather more ſo, in computing the values of annuities for three joint lives whoſe ages differ from each other by 10 years and 20 years, throughout all the periods of life, or, at leaſt, when the youngeſt life is not younger than 10 years, as in computing the values of annuities for three equal joint lives of the age of 60 years, or upwards.

A general concluſion, from all the foregoing trials, in favour of the uſefulneſs of the expreſſion $\frac{\pounds}{B} \times \frac{P_1}{P} \times \frac{g \times P_1 - b \times P_1}{g \times P_1 - b \times P_{11}}$.

CCCCXCV. And from all theſe trials, taken together, it ſeems reaſonable to conjecture, that the expreſſion $\frac{\pounds}{B} \times \frac{P_1}{P} \times \frac{g \times P_1 - b \times P_1}{g \times P_1 - b \times P_{11}}$ will always give us a tolerable approximation to the true value of an annuity for three joint lives of any ages whatſoever.

Another method of approximating to the value of an annuity for the joint continuance of three lives of given ages.

Of Mr. Thomas Simpſon's method of finding a near value of an annuity for three joint lives.

CCCCXCVI. The late very learned mathematician, Mr. Thomas Simpſon, of Woolwich Academy, in his book entitled, *Select Exerciſes in the Mathematicks*, page 279, has given us another method of finding a near value of an annuity for the joint continuance of three lives of any given ages, which is exceedingly ſhort and ſimple, and which alſo (as he informs us in the ſame book, page 312,) gives the quantity ſought to a very conſiderable degree of exactneſs, ſo as ſeldom to differ from the true value of the annuity by

by more than an eighth part of a years annuity. This method may be deſcribed as follows.

A deſcription of the ſaid method.

CCCCXCVII. Let the propoſed annuity, of which we are to find the value, be an annuity of one pound a year, as in all the foregoing inſtances. And let it be ſuppoſed that we have tables of the values of an annuity of one pound a year for ſingle lives of all ages, already computed to our hands; and likewiſe that we have tables of the values of an annuity of one pound a year for the joint continuance of two lives, computed to our hands, which contain a ſufficient variety of different ages of the two lives to enable us to find, (by the help of the method of Interpolation above explained in Art. ccccxi, &c. —— ccccxxxi,) the value of ſuch an annuity for any two propoſed lives of any given ages whatſoever to a conſiderable degree of exactneſs.

Theſe things being ſuppoſed, we muſt, in the firſt place, find (by the tables, or by the rules given for finding the values of annuities for two joint lives,) the value of the propoſed annuity of one pound a year for the joint continuance of the two oldeſt of the three given lives. This value, it is evident, will be equal to the value of the ſame annuity of one pound a year for a ſingle life that is ſtill older than either of the ſaid two oldeſt of the three given lives. Let this fourth life be found by means of a table of the values of an annuity of one pound a year for ſingle lives, by looking along the column containing the values of ſuch an annuity till we meet with one that is equal, or nearly equal, to the ſaid value of the ſame annuity of one pound a year for the joint continuance of the ſaid two oldeſt of the three given lives. For the age correſponding to this value will be the age of this fourth, or imaginary, life.

And, laſtly, find the value of a like annuity of one pound a year for the joint continuance of this fourth, or imaginary, life, and the firſt, or youngeſt of the three given lives.

This laſt value will be nearly equal (as Mr. Simpſon aſſures us) to the value of the propoſed annuity of one pound a year during the joint continuance of the three given lives. Q.E.I.

A more conciſe manner of expreſſing the foregoing deſcription.

CCCCXCVIII. This may be expreſſed more conciſely in the following manner. Call the youngeſt life *A*, the next *B*, and the third, or oldeſt, *C*. And let *D* be the fourth, or imaginary, life, an annuity for which is equal

equal in value to the ſame annuity for the joint continuance of the lives *B* and *C*.

Then, in the firſt place, we muſt find the value of an annuity of one pound a year for the joint continuance of the lives *B* and *C*. And, ſecondly, we muſt find the ſingle life *D*, an annuity for which is equal in value to the ſame annuity for the two joint lives *B* and *C*. And, thirdly, we muſt find the value of an annuity of one pound a year for the joint continuance of the two lives *D* and *A*. This laſt value will be nearly equal to the value ſought, or the value of an annuity of one pound a year for the joint continuance of all the three given lives. Q E I.

An example of the foregoing method of approximating to the value of an annuity for three joint lives.

CCCCXCIX Let us ſuppoſe the three given lives to be all of the ſame age of 60 years, as in the example given above in Art. CCCCLXXXII; and let the annuity be, as before, an annuity of one pound a year. And let it be required to find the value of this annuity for the joint continuance of theſe three lives of the age of 60 years, according to the Northampton table of the probabilities of the duration of human life given above in Art. CCCCLXXIX, Table XLI, and upon a ſuppoſition that the intereſt money is 4 per cent. To find this value by the foregoing method, we muſt proceed as follows.

The value of an annuity of one pound a year during the joint continuance of two of theſe lives, upon the ſuppoſitions here made, appears from Table L, Art. CCCCLXXVIII, to be £6.2468. We muſt therefore look into Mr. Morgan's table of the values of an annuity of one pound a year for ſingle lives in his treatiſe on the doctrine of annuities, pages 64, 65, 66, in order to find a value equal, or nearly equal, to the ſaid value £6.2468, that table of Mr. Morgan having been formed from the aforeſaid Northampton table of the probabilities of the duration of human life, and upon a ſuppoſition that the intereſt of money is 4 per cent. And we ſhall there find that the value that comes neareſt to £.6.2468 is £.6.263,15, which anſwers to the age of 70 years, or is the value of an annuity of one pound a year for a ſingle life of the age of 70 years. We muſt therefore, in the laſt place, ſeek for the value of an annuity of one pound a year for the joint continuance of two lives of the ages of 70 years and 60 years. Now the value of ſuch an annuity appears by Mr. Morgan's ſixth table (in the Appendix to his

his aforeſaid Treatiſe on Annuities, pages 271, 272) to be, nearly, £.4.858. Therefore £.4.858 will (according to Mr. Simpſon's aſſertion,) be nearly equal to the value of an annuity of one pound a year for the joint continuance of the three given lives, all of the age of 60 years. Q E I.

CCCCC. This near value, £4.858, of the ſaid annuity of one pound a year for the ſaid three equal joint lives of the age of 60 years, is ſomewhat greater than its true value, which we have ſeen above, in Table XLIX, to be £.4.7826. But the difference between them is but trifling, being only £.0.0754, which is leſs than the 63d part of the ſaid true value £.4.7826, and leſs alſo than £.0.0833, or than the 12th part of a pound, or than the 12th part of a year's annuity, or than a month's annuity.

The difference between the foregoing near value of an annuity for three equal joint lives (obtained by Mr. Simpſon's method,) and the true value of the ſame annuity.

CCCCCI. The former near value of this annuity for three equal joint lives of the age of 60 years, which was obtained in Art. CCCCLXXXII, by means of the expreſſion $B \times \frac{\pounds}{P} \times \frac{P_I}{P} \times \frac{P_I \times P_I \times P_I \times r - P_{II} \times P_{II} \times P_I}{P_I \times P_I \times P_I \times r - P_{II} \times P_{II} \times P_{II}}$, or $B \times \frac{\pounds}{P} \times \frac{P_I}{P} \times \frac{g \times P_I - b \times P_I}{g \times P_I - b \times P_{II}}$, was £4.585; which is leſs than the true value £4.7826, and differs from it by the quantity £0.1976, which is greater than the difference £0.0754. Therefore in the preſent inſtance Mr. Simpſon's method of approximating to the values of theſe annuities comes nearer to the truth than the other method. But whether or no it does ſo in general, can only be known by trying it in a variety of inſtances, and comparing the values reſulting from it with the true values of the ſame annuities. With this view I ſhall preſent the reader with the two following tables of near values of the two ſets of annuities, whoſe true values have been ſet down in Tables LII and LIII, computed according to the foregoing method of Mr. Simpſon; which we may afterwards compare with the ſaid true values. Theſe tables of near values are as follows.

This near value (obtained by Mr. Simpſon's method,) is more exact than the former near value of the ſame annuity, obtained in Art. CCCCLXXXII.

Two tables of near values of annuities for three joint lives, computed by Mr. Simpſon's method of approximation.

TABLE LVI.

Containing approximations to the values of the annuities for three equal joint lives mentioned above in Table LII; when the intereſt of money is 4 per cent.

Computed from Dr. Price's new Northampton table of the probabilities of the duration of human life, by the foregoing method of Mr. Thomas Simpſon, of Woolwich.

Years in the age of the first life.	Years in the age of the ſecond life.	Years in the age of the third life.	Values of an annuity of one pound a year for the joint continuance of the three lives.
			£.
5	5	5	11.2119
10	10	10	12.2447
15	15	15	11.3543
20	20	20	10.4653
25	25	25	9.902,20
30	30	30	9.321,74
35	35	35	8.718,71
40	40	40	7.939,79
45	45	45	7.274,62
50	50	50	6.403,16
55	55	55	5.656,00
60	60	60	4.900,62
65	65	65	3.969,56
70	70	70	3.099,22

TABLE LVII.

Containing approximations to the values of the annuities for three joint lives of different ages, mentioned above in Table LIII; when the intereſt of money is 4 per cent.

Computed from Dr. Price's new Northampton table of the probabilities of the duration of human life, by the foregoing method of Mr. Thomas Simpſon, of Woolwich.

Years in the age of the firſt, or youngeſt, life.	Years in the age of the ſecond life.	years in the age of the third, or oldeſt, life.	Values of an annuity of one pound a year for the joint continuance of the three lives.
			£.
5	15	25	10.5974
10	20	30	10.4853
15	25	35	9.872,64
20	30	40	9.037,79
25	35	45	8.426,81
30	40	50	7.622,29
35	45	55	6.944,67
40	50	60	6.003,39
45	55	65	5.243,74
50	60	70	4.285,36
55	65	75	3.397,35
60	70	80	2.362,16
65	75	85	1.575,23
70	80	90	1.043,73

The differences of the true values of the annuities for three equal joint lives, in Table LII, and the near values of the same annuities (obtained by Mr. Simpson's method,) in Table LVI.

CCCCCII. The differences between the near values of annuities for three equal joint lives in Table LVI, and the true values of the same annuities in Table LII, are as follows; to wit,

—	11.1704	+	11,2119	=	0.0415;
—	12.2006	+	12.2447	=	0.0441;
—	11.2746	+	11.3543	=	0.0797;
—	10.3429	+	10.4653	=	0.1224;
—	9.796,42	+	9.902,20	=	0.105,78;
—	9.221,10	+	9.321,74	=	0.100,64;
—	8.585,22	+	8.718,71	=	0.133,49;
—	7.865,05	+	7.939,79	=	0.074,74;
—	7.126,40	+	7.274,62	=	0.148,22;
—	6.317,17	+	6.403,16	=	0.085,99;
—	5.550,60	+	5.656,00	=	0.105,40;
—	4.755,03	+	4.900,62	=	0.145,59;
—	3.914,00	+	3.969,56	=	0.055,56;
—	2.995,84	+	3.099,22	=	0.103,38.

A comparison between the said near values and the corresponding true values.

CCCCCIII. It is remarkable that all the near values in the foregoing article (which were obtained by Mr. Simpson's method,) are greater than the true values of the same annuities respectively; whereas the near values of them obtained above in Art. CCCCLXXXVI, Table LIV, by means of the expression $\frac{£}{B} \times \frac{P^{I}}{P} \times \frac{P^{I} \times P^{I} \times P^{I} \times r - P^{II} \times P^{II} \times P^{I}}{P^{I} \times P^{I} \times P^{I} \times r - P^{II} \times P^{II} \times P^{II}}$, or $\frac{£}{B} \times \frac{P^{I}}{P} \times \frac{g \times P^{I} - h \times P^{I}}{g \times P^{I} - h \times P^{II}}$, were, for the most part, less than the said true values.

The proportions of the foregoing differences of the true and near values of the said annuities to the said true values, respectively.

CCCCCIV. The proportions of the foregoing differences in Art. CCCCCII to their corresponding true values are expressed by the following fractions;

fractions; to wit, $\frac{1}{269}$, $\frac{1}{290}$, $\frac{1}{141}$, $\frac{1}{84}$, $\frac{1}{92}$, $\frac{1}{91}$, $\frac{1}{64}$, $\frac{1}{105}$, $\frac{1}{48}$, $\frac{1}{73}$, $\frac{1}{52}$, $\frac{1}{32}$, $\frac{1}{70}$, and $\frac{1}{28}$.

CCCCCV. All these fractions, except the fourth, $\frac{1}{84}$, are considerably less than the fractions in Art. CCCCXC, which express the proportions of the differences of the former near values of the same annuities (which were obtained by means of the expression $\frac{£}{B} \times \frac{P^{I}}{P} \times \frac{P^{I} \times P^{I} \times P^{I} \times r - P^{II} \times P^{II} \times P^{I}}{P^{I} \times P^{I} \times P^{I} \times r - P^{II} \times P^{II} \times P^{II}}$, or $\frac{£}{B} \times \frac{P^{I}}{P} \times \frac{g \times P^{I} - h \times P^{I}}{g \times P^{I} - h \times P^{II}}$) from their several true values respectively, to the said true values. Therefore in these instances, as well as in the example given in Art. CCCCXCIX, Mr. Simpson's method of approximation seems to be preferable to the former method by means of the said expression.

All the foregoing near values of annuities for three equal joint lives (obtained by Mr. Simpson's method,) except one, are more exact than the near values obtained above in Art. CCCCLXXXVI, Table LIV.

The differences between the true values of annuities for three joint lives of different ages, in Table LIII, and the near values of the same annuities (obtained by Mr. Simpson's method,) in Table LVII.

CCCCCVI. The differences between the near values of annuities for three joint lives of different ages, contained above in Table LVII, and the true values of the same annuities in Table LIII, are as follows; to wit,

	£.		£.		£.
	10.6551	—	10.5974	=	0.0577;
—	10.4379	+	10.4853	=	0.0474;
—	9.738,56	+	9.872,64	=	0.134,08;
—	8.986,72	+	9.037,79	=	0.051,05;
—	8.313,10	+	8.426,81	=	0.113,71;
—	7.570,83	+	7.622,29	=	0.051,46;
—	6.816,07	+	6.994,67	=	0.128,60;
—	5.994,15	+	6.003,39	=	0.009,24;
—	5.145,62	+	5.243,74	=	0.098,12;
—	4.219,37	+	4.285,36	=	0.065,99;
—	3.297,98	+	3.397,35	=	0.099,37;
				+	2.408,48

$$\dagger \quad 2.408,48 \;-\; 2.362,16 \;=\; 0.046,32\,;$$
$$\dagger \quad 1.623,48 \;-\; 1.575,23 \;=\; 0.048,25\,;$$
$$\dagger \quad 1.122,51 \;-\; 1.043,73 \;=\; 0.078,78.$$

All the foregoing near values of annuities for three joint lives, of different ages, (which were obtained by Mr. Simpson's method,) except the first and the three last, are greater than the true values of the same annuities, respectively.

CCCCCVII. It is remarkable that all the near values set down in Table LVII and in the foregoing article, (and which were obtained by Mr. Simpson's method of approximation,) except the first and the three last, are greater than the several true values of the same annuities, respectively; as was observed in Art. cccccIII concerning all the near values, without any exception, that are set down in Table LVI and in Art. cccccII, and which were likewise obtained by Mr. Simpson's method of approximation; whereas the near values of these annuities obtained above by means of the expression $\frac{\pounds}{B} \times \frac{P^1}{P} \times \frac{g \times P^1 - b \times P^1}{g \times P^1 - b \times P^{11}}$, and set down in Table LV and Art. ccccxci, are, for the most part, less than the said true values, respectively.

The proportions of the foregoing differences to the corresponding true values.

CCCCCVIII. The proportions of the foregoing differences in Art. ccccccvi to their corresponding true values are expressed by the following fractions; to wit, $\frac{1}{184}$, $\frac{1}{220}$, $\frac{1}{72}$, $\frac{1}{176}$, $\frac{1}{73}$, $\frac{1}{147}$, $\frac{1}{53}$, $\frac{1}{648}$, $\frac{1}{52}$, $\frac{1}{63}$, $\frac{1}{33}$, $\frac{1}{51}$, $\frac{1}{33}$, and $\frac{1}{14}$.

All the foregoing near values of annuities for three joint lives of different ages, (obtained by Mr. Simpson's method,) except the first and the two last, are more exact than the near values of the same annuities obtained above in Art. CCCCLXXXVI, Table LV.

CCCCCIX. All these fractions, except the third, to wit, $\frac{1}{72}$, and the two last, to wit, $\frac{1}{33}$, and $\frac{1}{14}$, are considerably less than the fractions in Art. ccccxciv, which express the proportions of the differences of the former near values of the same annuities (which were obtained by means of the expression $\frac{\pounds}{B} \times \frac{P^1}{P} \times \frac{g \times P^1 - b \times P^1}{g \times P^1 - b \times P^{11}}$) from their several true values respectively to their said true values. Therefore in the greater part of these instances, as well as in those of the annuities for three equal joint lives contained

tained in Table LVI, and in the example given in Art. ccccxcix, this method of Mr. Simpson seems to be preferable, in point of exactness, to the former method of approximation by means of the expression $\frac{\pounds}{B} \times \frac{P^1}{P} \times \frac{g \times P^1 - b \times P^1}{g \times P^1 - b \times P^{11}}$. And it is certainly much shorter and easier in practice than that other method, which (as we have seen above in Art. ccccLXXXII) requires a good deal of calculation. And therefore I think it must be considered, upon the whole, as the better method of the two. Yet, as there are now and then some instances in which the other method comes nearer to the truth than this, I think it is convenient to be possessed of both methods, to the end that in doubtful cases we may resort to one of them as a kind of confirmation of the result obtained by the other to a moderate degree of exactness.

Mr. Simpson's method of approximation seems, therefore, upon the whole, to be preferable to the former method of approximation by means of the expression $\frac{\pounds}{B} \times \frac{P^1}{P} \times \frac{g \times P^1 - b \times P^1}{g \times P^1 - b \times P^{11}}$.

Of the degree of exactness to which it may reasonably be conjectured that Mr. Simpson's method of approximation will give, in most cases, the value of an annuity for three joint lives.

CCCCCX. The only thing that seems wanting to make Mr. Simpson's method satisfactory, is a demonstration of its truth, or an investigation of it in some way or other. But this is what Mr. Simpson has not given us. For he only says (in his *Select Exercises*, page 312,) "That the "reasonableness of this method of proceeding is evident from the nature "of the subject, without calling in the assistance of any kind of computa- "tion; and that, in a number of examples respecting lives of different "ages, he scarce ever found the error to exceed an eighth part of a year's "purchase." And this account of the degree of exactness to which this method of Mr. Simpson gives the values of these annuities is confirmed by the foregoing trials; since of all the fourteen differences in Art. ccccci (which relate to annuities for three equal joint lives) only the seventh difference, to wit £0.133,49, the ninth, to wit, £.0.148,22, and the twelfth, to wit, £.0.145,59, are greater than £0.125,00, or an eighth part of a year's annuity; and of all the fourteen differences in Art. ccccvi, (which relate to annuities for three joint lives of different ages, which differ from each other by 10 years and 20 years,) only the third difference, to wit, £.0.134,08, and the seventh difference, to wit, £.0.128,60, are greater than £.0.125,00, or an eighth part of a year's annuity. It seems probable, therefore, that the differences of the near values of annuities for three joint lives, that would be obtained by this method of Mr. Simpson in any other instances, (in which the ages of the lives were different from those above-supposed,) from the true values of the same annuities, respectively, would seldom be greater than £.0.125,00, or one eighth part of a year's annuity; and consequently, that this method of Mr. Simpson will, in all those

thoſe caſes be a very uſeful method of approximating to the values of ſuch annuities. And with this I ſhall conclude what I had to offer concerning the valuation of annuities for the joint continuance of three lives of given ages.

[*End of the doctrine of the valuation of annuities for the joint continuance of three lives.*]

Of the values of annuities that depend on the continuance of the longeſt of two, or more, lives of given ages.

CCCCCXI. Having now gone through the doctrine of the valuation of annuities depending on the *joint* continuance of two, or more, lives of given ages, it remains that I ſhew how to eſtimate the values of annuities that depend on the continuance of *any one* out of two, or more, lives of given ages.

The principles upon which the determination of theſe values is founded, are explained above in Prob. IV. and its corollaries, Art. LVIII, LIX, LX, &c. —— —— LXXVI, pages 58, 59, 60, &c. —— —— 90. It is there ſhewn in Coroll. IV, pages 63, 64, 65, 66, "That the value of "an annuity of one pound a year for the lives of two perſons of given ages "and the life of the longer liver of them, is equal to the exceſs of the ſum "of two ſeparate annuities of one pound a year each, for the ſingle lives "of the ſame perſons, above the value of a like annuity of one pound a "year for their joint lives." And it is ſhewn in Coroll. XI. Art. LXXVI, pages 83, 84, 85, &c. —— —— 90, "That the value of an annuity of "one pound a year for the lives of three perſons of given ages, and the "life of the longeſt liver of them, is equal to the exceſs of the ſum of the "four following values, to wit, 1ſt. the value of an annuity of one pound "a year for the life of the firſt of the ſaid three perſons; 2dly, the value "of a like annuity for the life of the ſecond of them; 3dly, the value of a "like annuity for the life of the third of them; and, 4thly, the value of a "like annuity for the joint lives of all the three, above the ſum of the three "following values, to wit, 1ſt. the value of a like annuity of one pound a "year during the joint lives of the firſt and ſecond perſons; 2dly, the va-

"lue

"lue of the like annuity during the joint lives of the firſt and third perſons; "and, 3dly, the value of a like annuity during the joint lives of the ſe-"cond and third perſons." Therefore, if A be put for the value of an annuity of one pound a year for the life of the younger of two perſons of given ages, and B for the value of a like annuity of one pound a year for the life of the older of the ſaid two perſons, and AB be put for the value of a like annuity of one pound a year for the joint continuance of both lives; I ſay, if theſe are ſuppoſed to be the values of A, B, and AB, the value of a like annuity of one pound a year for the lives of both the ſaid perſons and the life of the longer liver of them, will be equal to $A + B - AB$. And, if C be put for the value of a like annuity of one pound a year for the life of a third perſon that is older than either of the two former perſons, and AC be put for the value of an annuity of one pound a year for the joint continuance of the firſt and third lives, and BC be put for the value of a like annuity of one pound a year for the joint continuance of the ſecond and third lives, and ABC be put for the value of a like annuity of one pound a year for the joint continuance of all the three lives; I ſay, if theſe are ſuppoſed to be the values of A, B, C, AB, AC, BC, and ABC, the value of an annuity of one pound a year for the life of the longer liver of the ſaid three perſons will be equal to $A + B + C + ABC - AB - AC - BC$, or $A + B + C - AB - AC - BC + ABC$. And, in like manner the value of an annuity for the longeſt of four, or more, lives may be deduced from the values of the like annuities for the ſame ſingle lives and for their joint continuance, by the principles laid down above in Prob. IV. and its corollaries, pages 58, 59, 60, &c. —— ——90, whatever the number of lives may be. But it is ſeldom thought neceſſary, in treating of this ſubject of life-annuities, to ſuppoſe the lives to be more than three.

An example of the computation of the value of an annuity of one pound a year for the longeſt of two lives of given ages, by means of the expreſſion $A + B - AB$.

CCCCCXII. Let the younger life be ſuppoſed to be of the age of 20 years, and the older of the age of 30 years. And let the intereſt of money be ſuppoſed to be $3\frac{1}{2}$ per cent. and the probabilities of the duration of human life to be ſuch as they are repreſented to be in Monſieur de Parcieux's table.

Then will A, or the value of an annuity of one pound a year for the firſt, or younger life, be $= £19.440,616$; and B, or the value of a like annuity of one pound a year for the ſecond, or older, life, will be $= £18.068,798$; and AB, or the value of a like annuity of one pound a year for the joint continuance of both lives, will be $= £15.298,75$; as appears by Tables XV and XXXI, in pages 224 and 494. Therefore

$A + B - AB$, or the value of an annuity of one pound a year for the longer of the two given lives of the ages of 20 years and 30 years, will be $=$ £19.440,616 $+$ £18.068,798 $-$ £15.298,750 ($=$ £37.509,414 $-$ £15.298,750) $=$ £22.210,664. Q. E. I.

An example of the computation of the value of an annuity of one pound a year for the longeſt of three lives of given ages, by means of the expreſſion $A + B + C - AB - AC - BC + ABC$.

CCCCXIII. Let the youngeſt life be ſuppoſed (as in the laſt example) to be of the age of 20 years, and the ſecond life to be of the age of 30 years; and let the third, or oldeſt, life be of the age of 40 years. And let the intereſt of money be ſuppoſed (as in the laſt example) to be 3 ½ per cent. and the probabilities of the duration of human life to be ſuch as they are repreſented to be in Monſieur de Parcieux's table of them.

Then, in the firſt place, it appears from Table XV, page 224, that A, or the value of an annuity of one pound a year for the firſt, or youngeſt, life (which is of the age of 20 years) is $=$ £19.440,616; and that B, or the value of an annuity of one pound a year for the ſecond life (which is of the age of 30 years) is $=$ £18.068,798; and that C, or the value of an annuity of one pound a year for the third, or oldeſt, life (which is of the age of 40 years) is $=$ £16.104,542. Therefore $A + B + C$ will be ($=$ £19.440,616 $+$ £18.068,798 $+$ £16.104,542) $=$ £53.613,956.

In the ſecond place, it appears from Table XXXI, page 494, that, when the intereſt of money is 3 ½ per cent. the value of an annuity of one pound a year for two joint lives of the ages of 20 years and 30 years is £15.298,75; and the value of a like annuity for two joint lives of the ages of 30 years and 40 years is £13.709,61. And it appears from Table XXXII, page 495, that the value of an annuity of one pound a year for two joint lives of the ages of 20 years and 40 years (when the intereſt of money is at the ſame rate of 3 ½ per cent.) is £14.028,29. Therefore AB is $=$ £15.298,75, and BC is $=$ £13.709,61, and AC is $=$ £14.028,29; and conſequently $AB + BC + AC$ is ($=$ £15.298,75 $+$ £13.709,61 $+$ £14.028,29) $=$ £43.036,65. Therefore $A + B + C - AB - BC - AC$, or $A + B + C - AB - AC - BC$, is ($= A + B + C$ $-$ £43.036,65 $=$ £53.613,956 $-$ 43.036,65) $=$ £10.577,306.

In the laſt place we muſt find the value of ABC, or of an annuity of one pound a year for the joint continuance of the three given lives of the ages of 20 years, 30 years, and 40 years. Now this may be done to a moderate degree of exactneſs by means of Mr. Simpſon's method of approximation, (above explained in Art. cccexcvii, cccexcviii, pages 591, 592) in the manner following.

The

The value of an annuity of one pound a year for the joint continuance of the two older lives (which are of the ages of 30 years and 40 years) has been ſeen to be £13.709,61. We muſt therefore look into Table XV, page 224, in order to find the age of the ſingle life, for which an annuity of one pound a year will be worth the ſame ſum, or nearly the ſame ſum, as is the value of the ſame annuity of one pound a year for the joint continuance of the ſaid two older lives, (of the ages of 30 years and 40 years) to wit, the ſum of £13.709,61. Now it appears from Table XV, page 224, that the value of an annuity of one pound a year for a ſingle life of the age of 48 years (when the intereſt of money is 3 ½ per cent.) is £13.793,859, which is but little greater than £13.709,61. Therefore 48 years is, pretty nearly, the age ſought. We muſt therefore now ſeek the value of an annuity of one pound a year for the joint continuance of two lives of the ages of 20 years and 48 years. This may be done in the manner following.

It appears from Table XXXII, page 495, that, when the intereſt of money is 3 ½ per cent. the value of an annuity of one pound a year for the joint continuance of two lives of the ages of 20 years and 40 years is £14.028,29; and it appears from Table XXXIII, page 496, that, at the ſame rate of intereſt, the value of a like annuity of one pound a year for the joint continuance of two lives of the ages of 20 years and 50 years is £11.801,15. The difference of theſe two values, (or £14.028,29 $-$ £11.801,15) is £2.227,14; and the fifth part of this difference is £0.445,428. Therefore, if we ſuppoſe the values of an annuity of one pound a year for the ſix following pairs of joint lives, to wit,

two joint lives of the ages of 20 years and 40 years,
two joint lives of the ages of 20 years and 42 years,
two joint lives of the ages of 20 years and 44 years,
two joint lives of the ages of 20 years and 46 years,
two joint lives of the ages of 20 years and 48 years,
and two joint lives of the ages of 20 years and 50 years,

to form, pretty nearly, an arithmetical progreſſion, or to decreaſe by, nearly, equal differences, the difference of the laſt value but one from the laſt value will be equal to one fifth part of the difference of the firſt value from the laſt, that is, to £0.445,428. Therefore by adding £0.445,428 to the laſt value, which is £11.801,15, we ſhall obtain, pretty nearly, the laſt value but one, or the value of an annuity of one pound a year for the joint continuance of two lives of the ages of 20 years and 48 years; which value will therefore be, nearly $=$ £12.246,578. This therefore is, pretty nearly, equal to the value of ABC, or of an annuity of one pound a year for the joint continuance of the three lives originally propoſed, which are of the ages of 20 years, 30 years, and 40 years. Therefore $A + B + C - AB - AC - BC + ABC$ will be nearly equal to ($A + B + C - AB$ $= AC$

— AC — BC + £12.246,578, or to £10.577,306 + £12.246,578, or) £22.823,884; that is, the value of an annuity of one pound a year for the longeſt of three lives of the ages of 20 years, 30 years, and 40 years, when the intereſt of money is $3\frac{1}{2}$ per cent. will be, nearly, equal to £22.823,884.

CONCLUSION.

CCCCCXIV. I have now gone through every thing that ſeemed to me to be neceſſary to compleat the object of this treatiſe, which was to explain in a clear and familiar manner *the principles* of the doctrine of life-annuities. Much more, indeed, might be added to it concerning *the application* of this doctrine to a variety of uſeful queſtions concerning life-annuities, that may often occur in the courſe of men's dealings with each other; ſuch as the methods of finding the values of an annuity for one or more lives of given ages, that ſhall take place in caſe of the failure of one or more other lives of given ages, or in caſe of the failure, of one, or more, other lives of given ages, before a third ſet of lives of given ages, or that ſhall depend on a variety of other contingencies. But for the ſolution of queſtions of this kind I ſhall refer my reader to Mr. Thomas Simpſon's *Doctrine of Life-Annuities*, and to his *Select Exerciſes in the Mathematicks*, and to Dr. Price's *Obſervations on Reverſionary Payments*, and Mr. Morgan's *Doctrine of Annuities and Aſſurances on Lives and Survivorſhips*, and to various other learned and uſeful tracts on this ſubject. I am contented with having explained the fundamental principles of the doctrine, and with having preſented the reader with a compleat ſet of tables of the values of life-annuities for ſingle lives at the ſeveral different rates of the intereſt of money at which Mr. Smart has given us tables of the values of annuities for terms of years, to wit, 2 per cent. $2\frac{1}{2}$ per cent. 3 per cent. $3\frac{1}{2}$ per cent. 4 per cent. $4\frac{1}{2}$ per cent. 5 per cent. 6 per cent. 7 per cent. 8 per cent. 9 per cent. and 10 per cent. all fairly computed from Monſieur de Parcieux's table of the probabilities of the duration of human life, without having recourſe to Mr. de Moivre's Hypotheſis, or any other inaccurate ſuppoſition, in order to facilitate the computation; and likewiſe with a conſiderable number of tables of the values of annuities for two joint lives at the two different rates of intereſt of $3\frac{1}{2}$ per cent and $4\frac{1}{2}$ per cent all fairly computed likewiſe from the ſaid table of Monſieur de Parcieux; and with having furniſhed the reader with rules for finding tolerably near values of other annuities, for two joint lives, and likewiſe of annuities for *three* joint lives, of any ages whatſoever, at the ſame, or any other, rates of intereſt; by all which, I flatter myſelf, the foregoing treatiſe will be juſtly intitled to be conſidered as a *uſeful appendix*, or *ſupplement*, to Mr. John Smart's very valuable *tables of intereſt*.

FINIS.

APPENDIX.

AS the tables of the values of remote life-annuities that were computed for the bill mentioned above in the ſcholium, page 34, (which was brought into the Houſe of Commons by the late Mr. Dowdeſwell in the year 1773,) have never been publiſhed, I preſume they will be thought to make no improper addition to thoſe which have been inſerted in the preceeding work. Nor can I ſuppoſe that a copy of that bill itſelf, to which the ſaid tables of the values of remote life-annuities were annexed, will be unwelcome to ſuch of my readers as ſhall approve the ſcope and view of it, which was "to encourage the poor to induſtry and frugality "by accommodating them with a ſafe and convenient method of "laying out what little money they could ſave out of the earnings "of their labour." I ſhall therefore now proceed to add to the foregoing ſheets an exact copy of this bill, in its laſt form, as it paſſed the Houſe of Commons, after a variety of amendments and improvements made in it, with great care and pains, by the gentlemen who were concerned for its ſucceſs, and alſo a copy of the tables of the values of remote life-annuities which were annexed to the ſaid bill, and were conſidered as a part of it. This bill was as follows.

A BILL,

A

BILL,

INTITULED

An ACT for the better Support of Poor Perſons in certain Circumſtances, by enabling Pariſhes to grant them Annuities for Life, upon Purchaſe, and under certain Reſtrictions.

The preamble.

WHEREAS it often happens that perſons engaged as journeymen in manufactures and handicraft trades, and likewiſe houſehold ſervants, labourers, and divers other perſons, get more money, as the wages of their labour and ſervice, than is ſufficient for their preſent maintenance, and might eaſily, if they were ſo minded, lay by, out of their ſaid gettings, a ſufficient ſum to provide for their ſupport in their old age:

And whereas it would be highly uſeful, both to the ſaid perſons themſelves and to the nation in general, that they ſhould endeavour to make ſuch proviſion for their ſupport, in the latter periods of their lives, as they would thereby become more ſober and virtuous in their ordinary courſe of life, and more induſtrious in the proſecution of their ſeveral callings and employments;

employments, which would tend to the increaſe of the riches and manufactures of this kingdom:

And whereas it is probable that many of the ſaid perſons might be induced to lay up ſome part of their earnings in their youth and middle age, in order to make ſuch proviſion for their old age, if a convenient opportunity were offered them of employing the money they ſhould ſo lay up in a ſafe and advantageous manner:

And whereas the moſt ſafe and advantageous way, in which the ſaid frugal and induſtrious perſons can employ the ſeveral ſums of money, which they may be able to ſave out of their wages, for the ſupport of their old age, ſeems to be to purchaſe therewith annuities for their lives, which ſhould commence at ſome remote period, when their ſtrength and ability to work will be conſiderably impaired; and the poor's rates of the ſeveral pariſhes in England and Wales ſeem likely both to be, and to be thought by the ſaid induſtrious and frugal perſons, a ſufficient and convenient fund to ſecure, at all events, the payment of ſuch life-annuities as aforeſaid, to the ſeveral perſons who ſhall have purchaſed them, in caſe any deficiency ſhould happen in the fund created for the payment of the ſaid annuities, by the monies that ſhall have been paid for the purchaſe of them; be it therefore enacted by the king's moſt excellent majeſty, by and with the advice and conſent of the lords ſpiritual and temporal, and commons, in this preſent parliament aſſembled, and by the authority of the ſame, That, from and after the fifth day of July, one thouſand ſeven hundred and ſeventy-three, the plan and method herein-after preſcribed, for granting annuities to ſuch induſtrious and frugal perſons for their lives, ſhall take place and be carried into execution, in all pariſhes and townſhips which maintain their own poor, within England and Wales, and the town of Berwick upon Tweed, where there ſhall be two churchwardens, and two or more overſeers of the poor, or one churchwarden, and three or more overſeers of the poor, and where the ſame ſhall have been approved by a majority of the inhabitants of the ſaid pariſhes or townſhips, who are liable to be charged to the poor's rates of the ſame, aſſembled at two different pariſh meetings, held in the churches of the ſaid pariſhes or townſhips, after due notice given thereof, and at the diſtance of, at leaſt, twenty-one days one from the other, ſubject to the rules and regulations herein-after preſcribed; ſuch majority in number being alſo charged, in the laſt rate made for the relief of the poor of the ſaid pariſh or townſhip, in a ſum greater than that which was aſſeſſed in the ſaid rate upon the reſt of the inhabitants aſſembled at the ſaid meeting; and ſuch notice ſhall expreſs the times of both the ſaid meetings, and ſhall be publiſhed in the reſpective pariſh churches, on a Sunday immediately after divine ſervice, and affixed upon the door of the ſaid pariſh church,

After July 5, 1773, the following plan ſhall take place in all pariſhes and townſhips in England, in which the majority of the inhabitants, both in number and value, ſhall adopt it in two different pariſh-meetings held for the purpoſe after due publick notice.

church, by the clerk of the ſaid pariſh, or the perſon acting as ſuch, who is and are hereby required to publiſh and affix the ſame, upon the requeſt of any perſon deſirous of purchaſing any ſuch annuity; and the rector, vicar, or perpetual curate of any ſuch pariſh or townſhip, together with the churchwardens and overſeers of the poor in the ſame, ſhall be, and they are hereby, authoriſed and required to receive, on the behalf of all the ſaid inhabitants of ſuch pariſh or townſhip ſo liable, as is aforeſaid, to be charged to the poor's rate of the ſame, from any perſon to whom the ſaid inhabitants ſhall have agreed to grant a like annuity in manner herein-after mentioned, any ſum of money that ſuch perſon ſhall have agreed to pay them for the purchaſe of the ſame; and to grant to ſuch perſon, in the name and on the part of the ſaid rateable inhabitants of the ſame pariſh or townſhip, an annuity for the life of the grantee, equivalent to the purchaſe-money, to commence at ſuch future period of ſuch grantee's life, as ſhall have been ſettled between the ſaid inhabitants and the ſaid purchaſer, ſubject to the reſtrictions herein-after mentioned; and the poor's rate of ſuch pariſh or townſhip ſhall be, and they are hereby declared to be, ſubject by ſuch grant to the payment of the annuity thereby granted, from time to time, as the ſame ſhall become due and payable; and, if it ſhall happen that the rector, vicar, or perpetual curate of any ſuch pariſh or townſhip, ſhall be abſent from ſuch pariſh or townſhip, when the grant of any ſuch annuity ſhall be demanded, and ſhall continue to be abſent from the ſame for the ſpace of thirty days from the ſame time, it ſhall and may be lawful for the churchwardens and overſeers of the poor of the ſaid pariſh or townſhip, and they are hereby impowered and required, after the expiration of the ſaid thirty days from ſuch demand being made, notwithſtanding the abſence of ſuch rector, vicar, or perpetual curate, to make grants of ſuch annuities, without the concurrence of ſuch rector, vicar, or perpetual curate; and ſuch grants ſhall be, and are hereby declared to be, as good, valid, and effectual, as if ſuch rector, vicar, or perpetual curate, had been preſent, and concurred in the making thereof.

The rector, or vicar, or perpetual curate, of the pariſh, together with the church wardens and overſeers thereof, ſhall have power to make grants of life-annuities to any inhabitants thereof for certain reaſonable prices to be paid by the ſaid grantees, under certain reſtrictions.

And the poors rates of ſuch pariſhes ſhall become liable, in conſequence of theſe grants, to the payment of ſuch annuities, when they become due.

And in caſe of the abſence of the rector, vicar, or perpetual curate, for the ſpace of 30 days together, the ſaid grants may be made by the church wardens and overſeers of the poor without them.

And for obviating all doubts that may ariſe touching the value of ſuch life-annuities, and the money to be paid for the purchaſe thereof, be it further enacted by the authority aforeſaid, That in all pariſhes and townſhips within the cities of London and Weſtminſter, or of Southwark, the ſaid annuities ſhall be granted according to the reſpective rates herein-after mentioned and expreſſed in the ſet of tables hereunto annexed, No. I. and in all other pariſhes and townſhips within England, Wales, and the town of Berwick upon Tweed, the ſaid annuities ſhall be granted according to the reſpective prices herein-after mentioned and expreſſed in the ſet of tables hereunto annexed, No. II; and if any ſuch life-annuity ſhall be granted to any

The prices to be paid for ſuch annuities ſhall be thoſe which are contained in the tables hereunto annexed; of which the firſt ſet, called No. I, ſhall relate to annuities granted in the cities of London, Weſtminſter, and the borough of Southwark; and the ſecond ſet, called No. II, ſhall relate to thoſe granted in all other parts of England and Wales.

any perſon under the age of fifteen years, the ſame price ſhall be paid for ſuch annuity as if the grantee thereof was fifteen years of age.

No ſum leſs than 5l. ſhall be employed in the purchaſe of any of theſe annuities. And no annuity ſhall be greater than 20l. *per annum*.

Provided always, That no ſmaller ſum than five pounds of lawful money of Great Britain ſhall be laid out in the purchaſe of any of the ſaid annuities, nor ſhall any perſon be allowed to purchaſe any annuity or annuities from any one pariſh or townſhip, to a greater amount than twenty pounds per annum; nor ſhall any of the ſaid annuities commence after the grantee thereof ſhall have attained his age of ſeventy-five years; nor ſhall it commence for the life of any man, before he ſhall have attained the age of fifty years, nor for the life of any woman before ſhe ſhall have attained the age of thirty-five years; nor ſhall any ſuch annuity be granted to any perſon for any other life than that of the grantee.

Annuities granted to men ſhall not take place till they ſhall be 50 years old, nor to women till they ſhall be 35 years old.

These annuities ſhall not be granted without the conſent of ſuch a majority of the pariſhioners preſent at the meetings in which they are granted, as pays more to the poor's rate than the other pariſhioners there preſent.

And be it further enacted, That no ſuch annuity ſhall be granted, in any pariſh or townſhip, where the number of inhabitants aſſeſſed towards the relief of the poor ſhall exceed the number of eighteen, unleſs twelve, at the leaſt, of ſuch inhabitants ſhall be preſent in a veſtry, or other publick meeting to be held for that purpoſe; and in pariſhes or townſhips where the whole number of inhabitants, liable to be aſſeſſed as aforeſaid, ſhall be leſs than nineteen, no ſuch annuity ſhall be granted, unleſs at a veſtry or other publick meeting, where two-thirds of ſuch inhabitants ſhall be preſent; nor ſhall any ſuch annuity be granted, at any of the ſaid meetings, unleſs the major part of the inhabitants ſo aſſembled, being alſo charged in the laſt poor's rate, as aforeſaid, in a ſum greater than what is aſſeſſed in the ſame rate upon the reſt of the inhabitants there aſſembled, ſhall agree to grant the ſame; and no ſuch meeting ſhall be held for granting ſuch annuities, unleſs previous notice of holding a meeting for that purpoſe ſhall be publiſhed in the pariſh church upon two Sundays immediately after divine ſervice, and a written copy of ſuch notice affixed upon the door of ſuch church previous to the firſt publication thereof, as aforeſaid; and the clerk of the ſaid pariſh, or the perſon acting as ſuch, is and are hereby required to publiſh and affix the ſame, at the requeſt of any perſon deſirous of purchaſing ſuch annuity; and no ſuch annuity ſhall be granted to any perſon who ſhall not (in the opinion of the majority of ſuch inhabitants ſo aſſembled) appear to have a legal ſettlement within the pariſh or townſhip upon which the ſame ſhall be charged.

Nor ſhall they be granted to any perſons but ſuch as are ſuppoſed to have a legal ſettlement in the pariſh.

Provided nevertheleſs, That if any annuity ſhall have been granted in the manner directed by this act, ſuch grant ſhall be valid and binding upon the pariſh, or townſhip, granting the ſame; and the annuity thereby granted ſhall be regularly paid, according to the purport and true meaning of ſuch grant,

Yet, if, through miſtake, they are granted in the manner directed in this act, to inhabitants of the pariſh who have not a legal ſettlement in it, they ſhall nevertheleſs be valid and binding.

grant, notwithſtanding it ſhall afterwards be diſcovered that, at the time of making ſuch grant, the grantee thereof was not legally ſettled in ſuch pariſh or townſhip.

And be it further enacted, That the ſaid annuities ſhall be granted by deeds of grant, fairly written or printed on parchment, and ſigned and ſealed by the churchwardens and overſeers of the poor, and by the rector, vicar, or perpetual curate (unleſs he ſhall be abſent as aforeſaid) of the pariſh, or townſhip, in behalf of which ſuch annuities ſhall be granted, and may be made in the form, or to the effect, following:

The deeds of grant ſhall be made out on parchment.

The form of the deeds by which theſe annuities ſhall be granted.

"AT a public meeting of the inhabitants of the pariſh or townſhip "of in the county of "holden in the veſtry of the church of the ſaid pariſh or townſhip, on the "day of in the year of the reign "of our ſovereign lord King George the Third, and in the year of our "Lord Chriſt after due "notice of the ſaid meeting being firſt given.

"*A. B.* rector (or vicar, or perpetual curate, as it may happen to be) "of the pariſh or townſhip of aforeſaid, in the county "aforeſaid, *C. D.* and *E. F.* churchwardens of the ſaid pariſh or townſhip, "*G. H. I. K.* and *L. M.* overſeers of the poor of the ſaid pariſh or town-"ſhip; To all to whom this preſent writing ſhall come, ſend greeting: "Whereas *N. O.* of the ſaid pariſh or townſhip aforeſaid, Bricklayer, (or "houſhold ſervant to P. Q. Eſquire, of the ſaid pariſh or townſhip, or day-"labourer or otherwiſe, *according to his proper addition or employment*) "appearing to us to be a perſon lawfully ſettled in the ſaid pariſh or town-"ſhip, and intitled to be relieved by the poors rate raiſed in the ſame, in "caſe he ſhould become poor and helpleſs, and now of the the age of "years, hath paid unto the hands of us the rector, or vicar, or "perpetual curate, churchwardens, and overſeers of the poor of the pariſh "or townſhip, aforeſaid, the ſum of pounds of lawful "money of Great Britain, as the price of an annuity for his life, that ſhall "begin when he is years of age, that is, at the end "of years from this preſent time, and in the year of our "our Lord Chriſt to be paid "to him, or his certain attorney, by the rector, churchwardens, and over-"ſeers of the poor of the ſaid pariſh or townſhip for the time being, by "equal quarterly payments to be made at the four following feaſt days; "to wit, the feaſt day of the annunciation of the Bleſſed Virgin Mary, the "feaſt day of Saint John the Baptiſt, the feaſt day of Saint Michael the "Archangel,

2 change of Settlement
1 A thence to B &c

" Archangel, and the feaſt day of the Nativity of our Lord Chriſt, or " within ſeven days after each of the ſaid feaſt days, according to the ſtatute " of the thirteenth year of the reign of King George the Third, in that " behalf made and provided: NOW know ye, that we the rector, (vicar, or " perpetual curate,) churchwardens, and overſeers of the poor of the ſaid " pariſh or townſhip, in conſideration of the ſaid ſum of pounds, " to us in hand paid, (the receipt whereof is hereby acknowledged,) and " in purſuance of the ſtatute aforeſaid, do by this preſent writing, in the " behalf of the inhabitants of the ſaid pariſh or townſhip of " give and grant unto the ſaid *N. O.* an annuity or yearly penſion of " of of lawful money of Great Britain, which ſhall " commence on the feaſt day of that ſhall be in " the year of our Lord Chriſt " and continue to be paid to the ſaid *N. O.* from thence forwards during " his life, by equal quarterly payments, at the four feaſt days above men- " tioned, or within ſeven days after each of them reſpectively: and fur- " ther, by virtue of the ſtatute aforeſaid, we do bind and engage the rates " of the ſaid pariſh or townſhip, that ſhall hereafter be raiſed therein for " the relief of the poor thereof, for the full and due payment of the ſaid " annuity of to the ſaid *N. O.* by equal quarterly " payments, on the four feaſt days above-mentioned, or within ſeven days " after each of them reſpectively, from the ſaid feaſt day of " to the feaſt day or day of payment that ſhall happen " next before the death of the ſaid *N. O.* including both the ſaid days. " In witneſs whereof, we have hereunto ſet our hands, and have fixed our " common ſeal, this day of in the " year of the reign of our ſovereign lord George the Third, and in the " year of our Lord Chriſt

A. B. *Rector, or Vicar, or perpetual Curate, of the ſaid Pariſh or Townſhip.*

The Common Seal of the Pariſh of in the County of

C. D. } *Churchwardens.*
E. F. }
G. H. } *Overſeers of the Poor.*
I. K. }
L. M. }

And in caſe of the abſence of the rector, vicar, or perpetual curate as aforeſaid, ſuch grant ſhall be made in the names of the churchwardens and overſeers of the poor only; and ſuch abſence of the rector, vicar, or perpetual curate, ſhall be ſpecified in the ſame, and the charges and expences attending

ing the making out every ſuch grant ſhall be defrayed by the perſon to whom ſuch annuity ſhall be granted, who ſhall pay to the ſaid pariſh officers the ſum of two ſhillings and ſixpence for the ſame, and no more.

Such deed of grant ſhall be made out by the ſaid grantors for the ſum of 2s. 6d. to be paid them by the grantee.

And be it further enacted, That, in every ſuch deed of grant, the pounds, ſhillings, and pence, thereby granted, and the date of the year of our Lord Chriſt in which ſuch annuity is to commence, ſhall be written in words at length, and not in figures; and ſuch deeds of grant, immediately after the ſame ſhall be ſigned and ſealed as aforeſaid, ſhall be delivered to the grantee of the annuity thereby granted, to be kept by him or her, as the proof of his or her right to ſuch annuity.

The amount of theſe annuities, and the dates of their commencement, ſhall be written in theſe deeds in words at length.

And be it further enacted by the authority aforeſaid, That the rector, vicar, or perpetual curate, and the churchwardens and overſeers of the poor of every ſuch pariſh or townſhip, ſhall, and they are hereby required to cauſe a copy of every ſuch deed of grant to be entered in a book, to be kept in the pariſh cheſt for that purpoſe, and to ſeal and ſign the ſaid copy in the ſame manner as the original deed is hereby directed to be ſigned and ſealed, (both which ſhall be executed at a public meeting of the inhabitants of the pariſh or townſhip, to be holden for that purpoſe;) and the grantee of the ſaid annuity ſhall, at the ſame time ſign and ſeal an acknowledgement in writing, which ſhall be put at the bottom of the ſaid copy, in the words or to the effect following:

A copy of every ſuch deed of grant ſhall be entered by the grantors of it in a book to be kept in the pariſh for that purpoſe; and an acknowledgement of its being a true copy, ſhall be ſigned and ſealed by the grantee of the annuity.

I N. O. *of the pariſh or townſhip of in the county of do acknowledge, that the above is a true copy of the deed of grant of a certain life-annuity, which has been this day granted to me by the rector, vicar, or perpetual curate, churchwardens, and overſeers of the poor of the ſaid pariſh or townſhip, or by the churchwardens and overſeers of the poor,* in caſe of the abſence of the rector, vicar, or perpetual curate, as aforeſaid.

N. O.

Which ſaid copy ſhall be made at the expence of the inhabitants of the ſaid pariſh or townſhip, ard be paid for out of the money received as the price of the ſaid annuity, from the ſaid grantee thereof, without any new expence to the ſaid grantee: and if it ſhall at any time happen, that any original deed of grant, delivered as aforeſaid, ſhall be loſt or deſtroyed, the copy thereof ſo entered as aforeſaid ſhall be deemed ſufficient evidence that ſuch grant had been made, and ſhall intitle ſuch grantee to receive his annuity according to the purport of ſuch copy. And, if ſuch grantee ſhall deſire to have a copy of ſuch deed of grant made from the ſaid pariſh copy, inſtead of the original deed ſo loſt or deſtroyed, the rector, vicar, or perpetual curate,

And, if the grantee of the annuity ſhall loſe his deed of grant of it, ſuch copy of the ſaid deed in the pariſh book ſhall be ſufficient evidence of it.

And the pariſh-officers ſhall give the grantee a new copy of the loſt deed of grant of his annuity from ſuch pariſh-copy of it, for the ſum of 2s. 6d.

curate, churchwardens, and overſeers of the poor of the ſaid pariſh or town-ſhip for the time being, ſhall cauſe ſuch copy to be made out upon parchment, and ſhall ſign the ſame, in atteſtation of its being a true copy from the ſaid copy in the pariſh book, and ſhall deliver ſuch atteſted copy to ſuch grantee, without requiring any new conſideration-money for the ſame, or any fee or reward, except the neceſſary expence of making out ſuch new copy; for which they ſhall take the ſum of two ſhillings and ſixpence, and no more: and the ſaid new copy, ſo atteſted, ſhall be ſufficient evidence that ſuch grant had been made, and ſhall intitle the grantee to receive his annuity from the ſaid pariſh or townſhip, according to the purport of ſuch atteſted copy, notwithſtanding the copy in the pariſh book ſhould afterwards happen to be loſt or deſtroyed.

And the ſaid new copy of the ſaid deed of grant ſhall be ſufficient evidence of its having been made, although the copy in the pariſh-book ſhould afterwards be loſt.

And be it further enacted by the authority aforeſaid, That, previous to the holding of any meeting in purſuance of this act, the overſeers of the poor for the pariſh or townſhip where ſuch meeting ſhall be held, ſhall cauſe proper books to be provided and kept in the public cheſt, belonging to ſuch pariſh or townſhip; in which books all orders, proceedings, and accounts, relating to the execution of this act, ſhall be fairly entered at length, by ſome perſon to be appointed by the reſpective churchwardens and overſeers of the poor; and the names of all the perſons who ſhall give a vote for, or againſt, the making of any order, or the coming to any reſolution relating to the execution of this act, ſhall be entered in one of the ſaid books, and the perſons agreeing to, or concurring in, ſuch order or reſolution ſhall ſign the ſame; and an account of all monies received or payed in purſuance of this act ſhall alſo be entered in one of the ſaid books, expreſſing particularly the times of all ſuch receipts and payments, the perſon to, or from, whom the ſame were paid or received, and for what purpoſes; which accounts ſhall be balanced and cloſed once in every year, as near as conveniently may be to the time for holding the petty ſeſſions for appointing overſeers of the poor for ſuch reſpective pariſh or townſhip, and (being ſigned by the rector, vicar, or perpetual curate, and the churchwardens and overſeers of the poor, for each ſuch pariſh or townſhip,) ſhall be laid before the juſtices of the peace at ſuch petty ſeſſions, who ſhall examine ſuch accounts with the vouchers thereto; and, if the ſame ſhall appear to ſuch juſtices to be juſt and true accounts, they ſhall certify the ſame in writing upon ſuch accounts; and a duplicate of every ſuch account ſhall be tranſmitted by the reſpective overſeers of the poor to the clerk of the peace for the county, riding, or diviſion, wherein ſuch pariſh or townſhip is ſituated, (whether the ſame be a town-corporate, having excluſive juriſdiction or not,) before the next general quarter ſeſſions of the peace; and each and every clerk of the peace is hereby required to cauſe every ſuch account to be filed amongſt the records of his office.

The overſeers of the poor ſhall enter all proceedings relating to the execution of this act, in proper books to be provided for that purpoſe.

An account of all the monies received and paid by virtue of this act ſhall be entered in one of theſe books. And the accounts ſhall be balanced once in every year, and laid before the juſtices of the peace at the petty ſeſſions, to be examined by them; and ſhall be certified by the ſaid juſtices to be juſt and true, if found to be ſo.

And a duplicate of every ſuch account ſhall be tranſmitted to the clerk of the peace for the county, before the next general quarter ſeſſions of the peace.

And

And be it further enacted, That no deed of grant, or any of the copies thereof herein before directed to be made, nor any power of attorney for accepting and tranſferring ſtock, and for the receiving the dividends due thereon, ſhall be charged or chargeable with any ſtamp-duty whatſoever, but ſhall be good, valid, and effectual, to all intents and purpoſes, without any ſtamp being impreſſed thereon.

No ſtamp-duty ſhall be paid for the ſaid deeds of grant, or the copies of them.

And be it further enacted, That if any grantee of any ſuch life-annuity ſhall conſent that the ſame may be made unalienable, and thereupon a clauſe for that purpoſe, expreſſing his conſent that it ſhould be made ſo, ſhall be inſerted in the deed of grant delivered to him, and in the copy thereof kept in the pariſh regiſter of the ſaid grants of life-annuities, and which he ſhall have acknowledged to be a true copy of his ſaid grant in the manner above directed, in ſuch caſe the ſaid annuity ſhall be payable to the ſaid grantee alone, or his certain attorney, during his life, without any power in him to alienate, or aſſign, it to any perſon, or in any manner, whatſoever; and every aſſignment of ſuch annuity that ſhall afterwards be made by the ſaid grantee to any other perſon, ſhall be totally void in law and equity, and of no effect or operation whatſoever.

The ſaid annuities may, with the conſent of the grantees thereof expreſſed in the deeds of grant, be made unalienable.

And be it further enacted, That if any grantee of any of the ſaid annuities that ſhall not have conſented as above to make his ſaid annuity unalienable, ſhall be deſirous of ſelling or diſpoſing of any ſuch annuity to any other perſon, he ſhall, in the firſt place, make an offer to ſell the ſame to the rector, vicar, or perpetual curate, churchwardens and overſeers of the poor, and other inhabitants chargeable to the poors rates of the ſaid pariſh or townſhip where the ſame was bought, at the price which ſuch annuity ſhall be then worth, according to the rates herein-after mentioned, or at any lower price; which offer ſhall be made at a veſtry or other publick meeting of the inhabitants of the ſaid pariſh or townſhip, notice of which meeting ſhall be given on two different Sundays, in the ſame manner as herein-before directed, concerning meetings for granting the ſaid annuities; and, if, upon ſuch offer being made, the major part of the rateable inhabitants ſo aſſembled, being alſo charged in the laſt poors rate as aforeſaid, in a ſum greater than what is aſſeſſed in the ſame rate upon the reſt of the inhabitants there aſſembled, ſhall think proper to purchaſe the ſame, the rector, vicar, or perpetual curate, and the churchwardens and overſeers of the poor of ſuch pariſh or townſhip, or the churchwardens and overſeers of the poor only, in the abſence of ſuch rector, vicar, or perpetual curate as aforeſaid, ſhall be, and are hereby, authoriſed and required to buy up the ſaid annuity, at the ſaid price, or at any lower price as ſhall be agreed for, and to defray the expence of ſuch purchaſe out of the fund created by the monies received from the grantees of the ſaid life-annuities; and in caſe the major part of the inhabitants

And, when they are not made unalienable, they ſhall not be alienated before an offer has been made of them to the pariſh by which they have been granted, at the values ſet down in the tables hereunto annexed.

But, if the pariſh refuſes to buy them in, the grantees ſhall be at liberty during the ſpace of ſix months to ſell them to any other perſons.

inhabitants, ſo aſſembled as aforeſaid, ſhall not agree with the ſaid grantee for the purchaſe of the ſaid annuity, the grantee thereof ſhall, for the ſpace of ſix months from the time of ſuch refuſal or non-agreement, be at liberty to ſell and aſſign his ſaid annuity to any perſon whatſoever, by a deed duly ſealed and delivered in the preſence of two credible witneſſes, and ſigned by the ſaid witneſſes, in atteſtation of their having ſeen the ſame ſo ſigned and delivered: and after the expiration of the ſaid ſix months, the ſaid grantee ſhall not have power to ſell or aſſign ſuch annuity to any perſon whatſoever, unleſs he ſhall again make an offer thereof, in the manner before preſcribed, to the rector, vicar, or perpetual curate, and churchwardens and overſeers of the poor, and other rateable inhabitants of the ſaid pariſh or townſhip; but in caſe of their refuſal or non-agreement to purchaſe the ſame, ſuch grantee ſhall again be at liberty, during the ſpace of ſix months from ſuch refuſal or non-agreement, to aſſign ſuch annuity to any perſon whatſoever: and ſo, in like manner, as often as he ſhall be deſirous of ſelling the ſaid annuity, he ſhall acquire a right ſo to do, for the ſpace of ſix months after making ſuch offer, and the refuſal of the ſame, or non-agreement, as aforeſaid. And all aſſignments made of ſuch annuities by the grantees thereof, otherwiſe than according to the rules herein preſcribed, ſhall be utterly void and of no effect. But, when any of the ſaid annuities ſhall have been aſſigned by the grantee thereof to any other perſon, the ſaid perſon, to whom it ſhall have been ſo aſſigned, ſhall be at liberty to aſſign it to whom he ſhall think fit, and in whatever time and manner he ſhall think fit, agreeable to the uſual rules of law, without being obliged to make a previous offer of it to the pariſh officers and rateable inhabitants of the pariſh, or townſhip, in which it was granted, as is required of the grantee thereof; and every ſubſequent aſſignee thereof ſhall have the ſame liberty.

After any ſuch annuity ſhall have been ſold, or aſſigned once, it may be aſſigned again without making any previous offer of it to the pariſh.

If any perſon ſhall make any fraudulent alteration in any of the ſaid pariſh deeds of grant, or, knowing any ſuch fraudulent alteration to have been made, ſhall receive any money upon the ſame, he ſhall thereby become guilty of felony without benefit of clergy. And, upon his conviction the annuity ſhall ceaſe.

And be it further enacted, That, if any perſon ſhall at any time make, or cauſe to be made, any alteration in any deed of grant of any ſuch annuity, or any copy thereof which ſhall be made out as aforeſaid, ſo as to make the annual ſum thereby granted appear to be greater than it really was, or the time of the commencement of ſuch annuity appear to be earlier than that which was appointed by the ſaid deed, or ſhall know that any ſuch alteration has been made in ſuch deed or copy, and having made, or cauſed to be made, ſuch alteration, or knowing the ſame to have been made therein, ſhall demand and receive of the pariſh officers of the pariſh or townſhip in which ſuch annuity was granted, any part of ſuch annuity, according to the purport of ſuch fraudulent alteration, every perſon ſo offending, and being convicted thereof, ſhall be deemed and adjudged guilty of felony, and ſhall ſuffer death as a felon, without benefit of clergy; and, upon ſuch conviction, ſuch annuity ſhall ceaſe and determine.

And

And be it further enacted, That if any perſon ſhall forge or frame, or cauſe to be forged or framed, any deed of grant of any ſuch pariſh annuity as is above mentioned, with an intent to defraud the inhabitants of the pariſh or townſhip, in which ſuch deed ſhall purport ſuch annuity to have been granted, and ſhall for that purpoſe counterfeit, or cauſe to be counterfeited, the names of the pariſh officers which are herein required to be ſubſcribed to every ſuch deed of grant, and, by means of ſuch forged deed, ſhall obtain from the ſaid officers of the pariſh, or townſhip, in which ſuch forged deed ſhall purport the ſaid annuity to have been granted, any ſum of money whatſoever, as part of ſuch pretended annuity, every perſon ſo offending, and being convicted thereof, ſhall be deemed and adjudged guilty of felony, and ſhall ſuffer death as a felon, without benefit of clergy.

If any perſon ſhall forge, or cauſe to be forged, any ſuch deed of grant, and ſhall, by means of ſuch forged deed, obtain from the officers of any pariſh any ſum of money, he ſhall thereby become guilty of felony without benefit of clergy.

And be it further enacted, That if any perſon ſhall, by any means whatſoever, get poſſeſſion of any real deed of grant of any ſuch annuity, or any copy thereof, given by the pariſh, or townſhip, wherein ſuch annuity is granted, as is above mentioned, without having a right to the annuity thereby granted, either as the grantee thereof, or the lawful aſſignee thereof, by one or more aſſignment or aſſignments thereof, in the manner above preſcribed, and ſhall falſely pretend to be the perſon lawfully intitled to ſuch annuity, and under ſuch pretence ſhall produce any ſuch deed of grant to the pariſh officers of the pariſh or townſhip in which ſuch annuity was granted, and in conſequence thereof ſhall demand and obtain, from the ſaid officers, any ſum of money whatſoever, as a part of ſuch annuity, every perſon ſo offending, and being convicted thereof, ſhall be deemed and adjudged to be guilty of felony.

And, if any perſon ſhall, by any means, get poſſeſſion of any *real* deed of grant of ſuch an annuity, belonging to another perſon, and ſhall, by falſely pretending that he is the perſon to whom the ſaid annuity belongs, obtain payment of any of the money due upon it, he ſhall thereby become guilty of felony.

And be it further enacted, That the ſeveral perſons intitled to the ſaid annuities ſhall apply to the ſaid officers of the pariſhes, or townſhips, in which the ſame have been reſpectively granted, for the payment thereof, as ſoon as they conveniently can, after the ſeveral quarterly feaſt days in which they are made payable; and if any ſuch annuitant ſhall neglect to apply (either by himſelf or his lawful attorney) for the payment of his annuity, to the ſaid officers of the pariſh or townſhip in which the ſame was granted, for more than the ſpace of one year and a quarter, ſo that five or more quarterly payments thereof ſhall be in arrear, he ſhall not be entitled to receive more than the four laſt quarterly payments of ſuch annuity, and ſhall forfeit his right to all the former payments ſo in arrear.

Any grantee of any one of theſe annuities who ſhall neglect to apply for payment of it for more than five quarters of a year, ſhall forfeit all the arrears due to him, except thoſe of the laſt four quarters of a year.

Provided always, That nothing in this clauſe ſhall extend, or be conſtrued to extend, to any grantee, who, from being beyond the ſeas, or any unavoidable incapacity, ſhall have been diſabled from making his demand within

A proviſoe in favour of perſons beyond the ſeas, or who ſhall have been under any unavoidable incapacity of making application for the payment of their ſaid annuities in due time.

the time ſo limited, and ſhall make ſuch demand within ſix months after his return from abroad, or the removal of ſuch incapacity.

The money paid for the purchaſe of theſe pariſh-annuities ſhall be the property of the inhabitants of the pariſh that are chargeable to the poors rates; and ſhall be inveſted in the three per cent. bank annuities in their name.

And be it further enacted, That the money to be received by the rector, vicar, or perpetual curate, and the churchwardens and overſeers of the poor of every pariſh or townſhip, in which any ſuch annuities ſhall be granted, ſhall be the property of all the inhabitants of ſuch pariſh or townſhip, chargeable to the poors rates. And the reſpective rectors, vicars, or perpetual curates, churchwardens, and overſeers of the poor ſhall, and they are hereby required as ſoon as conveniently may be, after the receipt of any ſuch purchaſe-money, to lay out the ſame in the purchaſe of ſome of the public annuities, eſtabliſhed by authority of parliament, and payable at the bank of England, after the rate of three *per centum per annum:* which money ſo laid out, ſhall ſtand in the books of the governor and company of the ſaid bank, in the name of the rector, vicar, or perpetual curate, churchwardens, overſeers of the poor, and inhabitants of ſuch pariſh or townſhip, chargeable to the poors rates of the ſame; who ſhall be, and are hereby declared to be, a body politick and corporate, having perpetual ſucceſſion for the ſeveral purpoſes of this act, and ſhall be known by the name of *The Rector, Vicar, or perpetual Curate, Churchwardens, Overſeers of the Poor, and Inhabitants of ſuch Pariſh or Townſhip, chargeable to the Poors Rates of the ſame*, and ſhall have and uſe a common ſeal, on which ſeal ſhall be engraven the name of ſuch pariſh or townſhip, and the county, city, or town in which the ſame is ſituated, and ſuch ſeal ſhall be carefully kept in the cheſt of ſuch pariſh or townſhip. And the rector, vicar, or perpetual curate of ſuch pariſh or townſhip, and the churchwardens and overſeers of the poor thereof, or a majority of them, ſhall be, and are hereby conſtituted and declared to be, *the acting members* of ſuch body corporate, and ſhall have power to purchaſe the ſaid bank annuities, in the name of the whole body, and to receive the dividends of intereſt that ſhall become due thereupon, and to ſell and transfer the ſaid annuities whenſoever they ſhall think fit.

Name.

And the ſaid inhabitants ſhall be a body politick and corporate for the ſeveral purpoſes of this act, and ſhall have a corporate name and a common ſeal.

And the rector, vicar, or perpetual curate, of the pariſh, and the churchwardens and overſeers of the poor, or a majority of them, ſhall be *the acting members* of every ſuch body corporate.

And, for the more eaſy tranſacting the buſineſs relating to the ſaid bank annuities, **be it further enacted**, That the rector, vicar, or perpetual curate, and the churchwardens and overſeers of the poor of every ſuch pariſh or townſhip, or the majority of them, ſhall, and they are hereby impowered, with the concurrence of a majority of the rateable inhabitants aſſembled at a pariſh meeting, (ſuch majority in number being alſo charged in the laſt rate made for the relief of the poor of the ſaid pariſh or townſhip, in a ſum greater than that which was aſſeſſed in the ſame rate upon the reſt of the inhabitants aſſembled at the ſaid meeting,) upon notice given as aforeſaid, to conſtitute and appoint any perſon or perſons that they ſhall think proper, to be

The ſaid corporations may appoint agents, or attornies, to tranſact their buſineſs at the Bank of England.

be their agent or attorney, agents or attornies, to purchaſe, ſell, or transfer, in their ſtead and place, and in the behalf of the ſaid body politick and corporate, the ſaid bank annuities, or to receive the dividends of intereſt due thereupon; which appointment ſhall be by a letter, or power, of attorney for that purpoſe, in writing, ſealed and delivered by a majority of them, the ſaid rector, vicar, or perpetual curate, churchwardens and overſeers of the poor in manner herein-after directed, and likewiſe ſigned by them in preſence of two credible witneſſes, who ſhall likewiſe ſign their names thereto, in atteſtation of their having ſeen the ſaid power ſo ſigned, ſealed, and delivered; and ſhall continue in force until it ſhall be expreſsly revoked by another inſtrument in writing, made and executed in the ſame manner, by ſuch rector, vicar, or perpetual curate, churchwardens and overſeers of the poor, or the major part of them, as aforeſaid, and atteſted by the ſame number of ſubſcribing witneſſes, as the ſaid letter, or power, of attorney is hereby directed to be atteſted by. And every ſuch letter, or power, of attorney ſhall (during the time it ſhall continue in force) be ſufficient to impower the perſon to whom it was given, (if it ſhall purport ſo to impower him) to purchaſe and accept any ſtock in the ſaid bank-annuities, for, and in behalf of, the ſaid body politick and corporate; and likewiſe to receive, in the ſame behalf, all the dividends of intereſt that ſhall become due on the ſtock of ſuch body; and likewiſe to ſell and transfer all, or any part of, the ſtock which ſhall belong to ſuch body corporate, either at the time of executing ſuch letter of attorney, or at any time after, while ſuch letter of attorney ſhall continue in force.

And be it further enacted, That all the money which ſhall be paid for the purchaſe of any of the ſaid life-annuities, and which is herein before directed to be inveſted in the three *per centum* bank annuities, ſhall be kept and uſed as a fund, for the payment of the ſaid life-annuities, as they ſhall become due, and ſhall not be applied to any other uſe, or purpoſe, whatſoever; and the reſpective rectors, vicars, or perpetual curates, and churchwardens and overſeers of the poor of every pariſh or townſhip, in which ſuch life-annuities ſhall be granted, ſhall, and they are hereby required, either by themſelves or their lawful attorney, impowered in the manner before-mentioned, to receive the dividends of intereſt that ſhall become due upon the ſaid fund or ſtock of the ſaid bodies politick and corporate reſpectively, in the ſaid bank annuities, as often and as ſoon as they ſhall become due and payable, and to inveſt the money, ariſing by ſuch dividends, immediately in the purchaſe of new ſtock in the ſaid bank-annuities, ſo as thereby to encreaſe ſuch pariſh fund continually, and enable it to furniſh the payments of the ſeveral life-annuities charged thereupon, and to pay out of the ſaid dividends ſuch annuities as ſhall be then due to the perſons entitled to receive the ſame, by equal quarterly payments in every year, at the four feaſt-days before-mentioned,

The aforeſaid money ſo inveſted in the three per cent. bank-annuities ſhall be kept and uſed as a fund for the payment of the ſaid pariſh life-annuities, and ſhall be applied to no other uſe or purpoſe whatſoever.

or within ſeven days after each of the ſaid feaſt days reſpectively; and in caſe ſuch dividends ſhall not be ſufficient for that purpoſe, to pay the ſame out of the fund ſo veſted in bank-annuities; and for that purpoſe to ſell and transfer, from time to time, whenever it ſhall be neceſſary, ſo much of the ſaid fund or ſtock of the ſaid pariſhes or townſhips reſpectively, in the ſaid bank annuities, as ſhall be ſufficient to enable them to make the ſaid payments.

Excepting only the neceſſary charges of managing this fund; which may be defrayed out of it.

Provided always, and be it hereby further enacted, That it ſhall and may be lawful for the ſaid rector, vicar, or perpetual curate, and churchwardens and overſeers of the poor in every ſuch pariſh or townſhip, to defray the neceſſary charges and expences of inveſting the money received from the purchaſers of the ſaid life-annuities in the ſaid bank-annuities, and of receiving the dividends thereof, and inveſting them in the purchaſe of freſh ſtock in the ſame, and of ſelling and transferring the ſame, and of preparing the ſaid letters of attorney for the tranſaction of this buſineſs, and of procuring the aforeſaid books for entering and regiſtering copies of the grants of the ſaid annuities, or any other books neceſſary for carrying this act into execution, and of every other thing neceſſary to be done by any other perſon than themſelves in the execution of this act, out of the monies received by them from time to time from the purchaſers of ſuch life-annuities, or out of the dividends payable out of the ſaid ſtock or fund, they keeping an exact account of the particulars of the ſaid charges and expences; any thing to the contrary hereof above-mentioned in any-wiſe notwithſtanding.

Sums of money given by charitable perſons in aid of the funds to be eſtabliſhed by this act ſhall be employed in the purchaſe of three per cent. bank-annuities in the ſame manner as the money paid for the purchaſe of the ſaid life-annuities.

And be it further enacted, That if any ſum or ſums of money ſhall be given by charitable perſons, or otherwiſe, for the purpoſe of enlarging the ſaid original fund of any pariſh or townſhip, and enabling it with more certainty to furniſh the ſeveral payments of the life-annuities charged thereupon, without any more particular directions from the donor or donors, as to the manner of applying the ſame, the rector, vicar, or perpetual curate, churchwardens, and overſeers of the poor of ſuch pariſh or townſhip, ſhall, and they are hereby authoriſed and required to, inveſt the money ariſing by ſuch gifts, or otherwiſe, in the ſaid bank-annuities, in the ſame manner as the money contributed by the purchaſers of the ſaid life-annuities is herein-before directed to be inveſted, and to employ and uſe ſuch money as an additional fund for the payment of the ſaid life-annuities, in the ſame manner as they are herein-before authoriſed and required to employ the aforeſaid original fund, contributed by the purchaſers of the ſaid life-annuities.

If theſe funds ſhould prove inſufficient for the payment of the life-annuities that ſhall have been granted by virtue of this act, the deficiencies ſhall be made good out of the poors rate.

And, for ſecuring the payment of the ſaid life-annuities, **be it further enacted,** That if it ſhall at any time happen in any pariſh or townſhip, where ſuch

ſuch life-annuities ſhall have been granted, that the aforeſaid original fund ariſing from the contributions of the purchaſers of the ſaid life-annuities, together with the ſaid additional fund, ſhall not be ſufficient to furniſh the quarterly payments of the ſaid life-annuities, the churchwardens and overſeers of the poor ſhall, and they are hereby required to, make the ſaid payments out of any other money in their hands, raiſed for the relief of the poor of ſuch pariſh or townſhip; and if ſuch money in their hands be not ſufficient for that purpoſe, they ſhall, and are hereby required to, make ſuch an addition to the rates, which they are impowered to make, by a ſtatute made in the forty-third year of the reign of Queen Elizabeth, intituled, *An Act for the Relief of the Poor*, as ſhall be ſufficient to ſupply the deficiencies of the ſaid funds, and to enable them to compleat the ſaid quarterly payments of the ſaid life-annuities, and to defray the neceſſary charges and expences of executing this act; which ſaid additional rate ſhall be made, levied, and recovered, under the ſame regulations and reſtrictions, and by the ſame ways and means, as the rates made for the relief of the poor are, by the ſaid laſt-mentioned ſtatute, or any ſubſequent act or acts of parliament, directed to be made, levied, and recovered.

And, on the other hand, if after the extinction of all the life-annuities that have been granted in any pariſh, there ſhall remain any part of the ſaid pariſh-fund in the ſaid three per cent. bank-annuities, ſuch fund ſhall be employed in aid of the poors rate in the ſaid pariſh.

And be it further enacted by the authority aforeſaid, That, if any of the capital ſtock of any pariſh or townſhip, in the ſaid bank annuities, ſhall remain, after all the annuities ſhall become extinct, the intereſt of ſuch ſtock ſhall be applied in aid of the rate to be raiſed and levied for the relief of the poor of the ſaid pariſh or townſhip, from time to time, as ſuch intereſt ſhall become due; and it ſhall and may be lawful for the rector, vicar, or perpetual curate, churchwardens, and overſeers of the poor of ſuch pariſh or townſhip, with the advice and conſent of the inhabitants of ſuch pariſh or townſhip, rateable towards the relief of the poor, or the major part of them, aſſembled in veſtry, or other publick meeting for that purpoſe, (due notice of the ſaid meeting being given in manner herein-before directed,) to ſell and diſpoſe of ſuch capital ſtock, and to apply the money ariſing by ſuch ſale, either in repairing, amending, or new-building any alms-houſes, in ſuch pariſh or townſhip, or furniſhing them in a more convenient manner, or in building or furniſhing new alms-houſes, or in any other manner for the benefit of the poor of ſuch pariſh or townſhip, as the rector, vicar, or perpetual curate, churchwardens, and overſeers of the poor, and inhabitants ſo aſſembled, ſhall order and direct.

The acting members of theſe corporations who ſhall have any of the money belonging to the funds in their hands at the time of their removal from the pariſh or the expiration of their offices.

And be it further enacted by the authority aforeſaid, That every ſuch rector, vicar, or perpetual curate, concerned in the execution of this act, who ſhall remove from any ſuch pariſh, and every churchwarden, or overſeer of the poor, at the time of going out of his office, and the executors or adminiſtrators

ces in it, ſhall pay over the ſame to their ſucceſſors within one month after ſuch removal or expiration of their offices. And their executors or adminiſtrators ſhall do the ſame after their deaths.

ministrators of every such rector, vicar, or perpetual curate, churchwarden, or overseer of the poor, who shall happen to die, during the time he shall be concerned in the execution of this act, shall deliver in a true and perfect account of, and shall pay, or cause to be paid, all monies remaining in his or their hands, for the purposes of this act, to the rector, vicar, or perpetual curate, churchwardens, or overseers of the poor, for such parish or township, within one month after any such removal, going out of office, or death; and in case of neglect or refusal so to do, it shall and may be lawful for any two justices of the peace for the county or place where the offender shall reside, to make inquiry concerning the same, in a summary way, either by confession of the party, or by the testimony of any credible witness or witnesses upon oath, (which oath such justices are hereby impowered to administer;) and to cause the money remaining in the hands of such rector, vicar, or perpetual curate, churchwarden, overseer of the poor, executor, or administrator respectively, to be recovered by distress and sale of his goods and chattels, rendering the overplus to the owner of such goods and chattels, after deducting the charges attending such distress and sale; and such justices are hereby impowered to cause the books and accounts beforementioned to be brought, and such witnesses to be summoned to appear before them as they shall think necessary for their information: and if any person shall refuse to appear, or to give evidence, or to produce such books and accounts, as aforesaid, to such justices, it shall and may be lawful for such justices to impose any fine or fines upon such person and persons so offending as they shall think fit, (so as no such fine shall exceed the sum of ten pounds upon any one person for one offence,) and to levy such fines by distress and sale of the offenders goods and chattels; and, if no such distress can be found, it shall and may be lawful for such justices to commit the offender to the common gaol of the county or place, for any time not exceeding six months, unless such fine shall be sooner paid.

And, in case of neglect or refusal so to do, any two justices of the peace for the county in which the offender shall reside, may inquire into the matter in a summary way, and compel him to do justice.

And be it further enacted by the authority aforesaid, That, if any such annuity shall be behind and unpaid for the space of seven days after the same shall become due, and have been demanded, it shall and may be lawful for any one justice of the peace, for the county or place where the parish or township from which such annuity shall be so due and unpaid shall be situate, to make enquiry concerning the same, in a summary way, either by confession of the party, or by the testimony of any credible witness or witnesses upon oath, (which oath such justice is hereby impowered to administer,) and to cause the money so due to be levied by warrant under his hand and seal, by distress and sale of the goods and chattels of any one of the churchwardens or overseers of the poor of such parish, rendering the overplus to the owner of such goods and chattels, after deducting the charges attending such distress and sale.

And, in case the churchwardens and overseers of the poor shall neglect, or refuse, to pay any annuity for the space of seven days after it shall have become due and been demanded, any one justice of the peace of the county in which the parish is situated, may inquire into the matter in a summary way, and compel them to do justice.

And

And whereas, by sundry acts of parliament, several parishes and townships have been united into several corporations, and the management, maintenance, and regulation of the poor of such parishes and townships is thereby vested in the governors, guardians, and acting members of such corporations respectively; **be it enacted** by the authority aforesaid, That in all places where such corporations exist, and where the plan and method herein-before prescribed for granting annuities to industrious and frugal persons, shall have been approved by the majority of a general court, to be called and held for that purpose, the power of granting life-annuities in pursuance of this act to persons appearing to be legally settled in any parish or township, so incorporated as aforesaid, shall be vested in the governors, guardians, and acting members of the corporation, to which such parish or township does respectively belong, and not in the rector, vicar, or perpetual curate, churchwardens, and overseers of the poor, and rateable inhabitants, of such parish or township; and the governors, guardians, and acting members of such corporation, assembled in a general court, or the major part of them so assembled, are hereby impowered to agree, according to the respective prices expressed in the set of tables hereunto annexed, No. 2, for the sale of any annuity or annuities for life, to any person or persons, appearing to them to have a lawful settlement in any parish or township, within the limits of the jurisdiction of the said corporation, the purchase-money not being less, nor the annuity or annuities greater, than the sums before limited, nor the commencement of any such annuity at any other age than as before limited for other parishes and townships; and upon such agreement made, the said governors, guardians, and acting members, are hereby impowered and required to receive the purchase-money for, and to do every act for granting and securing such life-annuity or annuities by deeds, to be executed by them in the same form and manner as other deeds are executed by them, for vesting the purchase-money received by them in the purchase of three *per cent.* bank annuities, in the name of the said corporation, for receiving the dividends, and transferring the said stock, so purchased by them, for paying, or causing to be paid, the life-annuities so granted by them, and for re-purchasing the same in the manner before directed, which the several rectors, vicars, or perpetual curates, churchwardens, and overseers of the poor of other parishes and townships, are by this act impowered or required to do; for all and every the purposes before mentioned, and in the same form and manner, as near as the institution of such corporation, and the several regulations touching its manner of acting and proceeding, will admit. And in case at any time the fund or funds for securing such life-annuities shall prove deficient, the governors, guardians, and acting members of every such corporation, are hereby respectively impowered and required to pay the same out of any money in their hands, applicable to the maintenance

The foregoing regulations shall extend to such parishes and townships as have been united together, by acts of parliament, into several corporations for the purposes of maintaining and managing their poor.

And they shall be carried into execution by the governors, guardians, and acting members of such corporations.

nance of the poor of the parish or township in which such annuitant appeared to have been lawfully settled at the time of granting such annuity, or to make, or cause to be made, a sufficient rate upon such inhabitants within the limits of the jurisdiction of the said corporation, as would have been liable to contribute to the relief of the poor of such parish or township; and the said governors, guardians, and acting members of the said corporations, are hereby further impowered and required to compel the several persons concerned in the receipt and payment of money, upon account of such life-annuities, to produce and pass their accounts of all monies received and paid by them, in such manner, and by such means, as the several accountants are compellable to account for other monies received and paid by them, by the said several acts of parliament; and no consent of the rateable inhabitants of the said several parishes and townships shall be requisite to make valid, or confirm any of the said proceedings of the governors, guardians, and acting members of such corportions.

And the aforesaid penal clauses against persons guilty of frauds with respect to annuities granted by single parishes shall extend to persons guilty of the like frauds with respect to annuities granted by the said corporations consisting of several parishes united together.

And be it further enacted by the authority aforesaid, That every clause, provision, and regulation herein contained, as well with respect to persons who shall alter, forge, frame, in manner before mentioned, or, not being the owner thereof, shall get possession of, and demand and obtain money for, any grant, or copy of any grant, of any annuity, to be granted by virtue of this act, by rectors, vicars, or perpetual curates, churchwardens, and overseers of the poor, as with respect to every other matter or thing directed to be done by them in the execution hereof, shall, in every case where, and as far as it can be made applicable, extend, and take place, also with respect to such grants, or copies of grants, of annuities, which, in pursuance hereof, shall be granted by the said corporations.

And be it further enacted by the authority aforesaid, That in all parishes and townships, which have not been united into several corporations, for the management, maintenance, and regulation of their poor, the following form shall be observed in all powers of attorney to be executed by the rector, vicar, or perpetual curate, churchwardens, and overseers of the poor of such parishes or townships, for the acceptance of stock, and the receipt of dividends due thereupon; that is to say,

The form of the powers of attorney which shall be granted by single parishes for the acceptance of stock in the three per cent. bank-annuities and the receipt of dividends due thereupon.

The Parish of *in the County of*

" KNOW all men by these presents, That we, the rector, *(vicar, or perpetual curate, as the case may happen,)* churchwardens and overseers of the poor, and rateable inhabitants of the parish of
" in the county of in vestry assembled, by virtue
" of

" of an act of parliament of the thirteenth year of the reign of his Majesty
" King George the Third, (intituled, *An Act for the better Support of*
" *Poor Persons in certain Circumstances, by enabling Parishes to grant them*
" *Annuities for Life upon Purchase, and under certain Restrictions,*) do make,
" constitute, and appoint, *A. B.* of the parish of
" in the county of Gentleman, our true and
" lawful attorney, for us, in our names, and on our behalf, to accept all
" transfers that are, or may, at any time or times, be made unto us, the
" said rector, *(vicar, or perpetual curate, as the case may happen,)* church-
" wardens, overseers of the poor, and rateable inhabitants of the parish
" of in the county of and
" our successors, of any interest or shares in the capital, or joint, stock of
" three *per cent.* reduced, *(or consolidated,)* bank annuities, *(as the case may*
" *happen)*; and also, on our behalf, to receive, and give receipts for, all divi-
" dends and interest that shall grow due and payable, on our interest or
" share in the above-said capital, or joint-stock, or on any part thereof, for
" the time being, and to do all lawful acts requisite for effecting the pre-
" mises, hereby ratifying and confirming all that our said attorney shall do
" therein by virtue hereof. In witness whereof, we, the acting members
" of the said body corporate, have hereunto set our hands, and affixed
" our common seal, the day of
" in the year of our Lord

Signed, sealed, and delivered in the presence of *N. O.* of Gentleman, *R. S.* of Yeoman.

D. E. Rector of the Parish of in the County of

J. R., *S. M.* Churchwardens of the said Parish.

T. N., *E. A.*, *F. M.* Overseers of the Poor of the said Parish.

The Common Seal of the Parish of in the County of

And in all such parishes or townships the following form shall be observed in all powers of attorney, for the transfer of all such stock as shall have been purchased by them; that is to say,

The Parish of *in the County of*

The form of the powers of attorney which ſhall be granted by ſingle pariſhes for the ſelling and transferring of ſtock in the ſaid 3 per cent. bank-annuities.

" KNOW all men by theſe preſents, That we, the rector, *(vicar, or perpetual curate, as the caſe may happen,)* churchwardens, overſeers of the poor, and rateable inhabitants of the pariſh of in the county of in veſtry aſſembled, by virtue of an act of parliament, of the thirteenth year of the reign of his Majeſty King George the Third, (intituled, *An Act for the better Support of Poor Perſons in certain Circumſtances, by enabling Pariſhes to grant them Annuities for Life, upon Purchaſe, and under certain Reſtrictions,)* do make, conſtitute, and appoint *A. B.* of the pariſh of in the county of Gentleman, our true and lawful attorney, for us, in our names, and on our behalf, to ſell, aſſign, and transfer or any part thereof, being part of [*or* all] the intereſt or ſhare in the capital, or joint ſtock, of three *per cent.* reduced *(or conſolidated)* bank-annuities, *(as the caſe may happen)* ſtanding in the names of us the rector, *(vicar, or perpetual curate, as the caſe may happen,)* churchwardens, overſeers of the poor, and rateable inhabitants of the ſaid pariſh of in the county of and to receive the conſideration-money, and to give diſcharges and receipts for the ſame, and to do all lawful acts requiſite for effecting the premiſes, hereby ratifying and confirming all that our ſaid attorney ſhall do herein by virtue hereof. In witneſs whereof, we, the acting members of the ſaid body corporate, have hereunto ſet our hands, and affixed our common ſeal, the day of in the year of our Lord

Signed, ſealed, and delivered in the preſence of *N. O.* of Gentleman, *R. S.* of Yeoman.

D. E. Rector of the Pariſh of in the County of

F. R. } Churchwardens of
S. M. } the ſaid Pariſh.

T. N. }
E. A. } Overſeers of the Poor of the ſaid Pariſh.
F. M. }

The Common Seal of the Pariſh of in the County of

TABLES

SHEWING THE VALUES,

IN A SINGLE PRESENT PAYMENT,

OF AN

ANNUITY OF ONE POUND,

PAYABLE QUARTERLY,

For the Lives of Perſons of all Ages, from 15 to 73;

Such Annuity being ſuppoſed to commence at any Age, not younger than 35 nor older than 75 Years.

DIRECTIONS

FOR USING THE FOLLOWING

TABLES.

Drawn up by the Rev. Dr. Richard Price, of Newington-Green, near Iſlington, in the County of Middleſex.

THESE tables give the preſent payments that ought to be made (reckoning the intereſt at three per cent.) by perſons of all ages, from 15 to 73, for a life-annuity of one pound, payable quarterly, (that is, five ſhillings each quarter,) to commence at any given age not leſs than 35, nor exceeding 75.

For inſtance. Table the firſt, in the ſecond ſet of tables, ſhews, that the payment due from a perſon whoſe age is between $14\frac{1}{4}$ and $15\frac{1}{4}$ is £4 0s. 1d. for a life-annuity of one pound, payable quarterly, to commence when he attains to 43 years of age, or (more exactly) at the end of 28 years and a quarter from the day on which the payment is made. In like manner the ſame table ſhews, that the preſent payment due from a perſon of the ſame age, for the ſame annuity, is *one pound*, ſuppoſing the firſt quarterly payment of the annuity to be made at the end of forty-five years and a quarter, or not till he attains to 66 years of age; and *ſix ſhillings*, if he chuſes to wait for the firſt quarterly payment 55 years and a quarter, or till he attains to 70 years of age.

A life-annuity therefore of £2. to commence at theſe different periods, muſt be worth double theſe ſums; and a life-annuity of £10. muſt be worth ten times theſe ſums.

Univerſally

Universally therefore. In order to find from the following tables the preſent money that ought to be given for any annuity payable quarterly to purchaſers of given ages, after attaining any other given ages----*Multiply the value in the table for the given age, by the number of pounds in the propoſed annuity, and the product will be the anſwer.*

Example. From table 7th, in the ſecond ſet of tables, (calculated for the country,) it will appear by inſpection, that the value to a purchaſer aged 21, of an annuity of £1. for life, payable quarterly, to commence at 50 years of age, is £3. 1*s.* 2*d.* If therefore the annuity is £5. its value will be this ſum multiplyed by 5, or £15. 5*s.* 10*d.* If the annuity is £20. its value will be the ſame multiplyed by 20, or £61. 3*s.* 4*d.*

Second Example. Suppoſe a perſon whoſe age is 25, to apply for an annuity (payable quarterly) of £10. for his life, after attaining his 55th year. From table 11, in the ſecond ſet of tables, it appears, that, if the annuity had been one pound, its preſent value would have been £2. 9*s.* therefore the annuity being £10. its value is £2. 9*s.* multiplied by 10, or £24. 10*s.*

The value of the ſame annuity, according to table 11, in the firſt ſet of tables, calculated for London, is £1. 14*s.* 3*d.* multiplied by 10, or £17. 2*s.* 6*d.*

Again. Suppoſe a perſon of a given age to deſire to be informed "what annuity, as a proviſion for old age, he can purchaſe with a given ſum of money, of which he is in poſſeſſion."— In order to diſcover the anſwer, look over the table for the given age, and find there the given ſum; or, if it be not found exactly, find the ſum neareſt to it; and the correſpondent age will ſhew, that with the given ſum he may purchaſe an annuity of one pound for life, to commence at that age.——In like manner, the ages correſponding to half, a third, a fourth, &c. of the ſum will ſhew, that it will purchaſe for him an annuity of £2. £3. £4. &c. to commence at thoſe ages reſpectively.

Example. A poor perſon, aged 22, has ſaved by his induſtry the the ſum of £5. and with this in his hands, he applies for ſuch an annuity, to commence in ſome future year of his life, as it can purchaſe for him.

By looking over the table for the age of 22, or table 8 in the ſecond ſet of tables, it will appear, that £4. 19*s.* 11*d.* or, very nearly the ſum he offers, will purchaſe for him an annuity of one pound for his life, to

to commence at the age of 44 years; and it appears alſo from the ſame table, that £2. 10*s.* 3*d.* (or about half his money,) will purchaſe the ſame annuity, to commence when he is 53; and that £1. 4*s.* 2*d.* (or about a quarter of his money,) will purchaſe the ſame annuity, to commence when he is 61; and that 19*s.* 7*d.* (or about a fifth part of his money,) will purchaſe the ſame annuity, to commence when he is 63. If, therefore, he thinks an annuity of one pound for his life, to commence at 44, too little, he may be offered for £5. 0*s.* 6*d.* £4. 16*s.* 8*d.* £4 17*s.* 11*d.* (that is for ſums nearly equal to £5.) an annuity of £2. for life, to commence at 53, or of £4. for life, to commence at 61, or of £5. for life, to commence at 63. From table 8, in the firſt ſet of tables, it will in the ſame way appear, that in London £5. would intitle ſuch a perſon to a life-annuity of either £2. to commence at 49, or of £4. to commence at 57, or of £5. to commence at 59, or four years earlier than by the ſecond ſet of tables, which are calculated for the country.

Obſervation 1ſt. The payments of perſons who happen to die before the age agreed on for the commencement of their annuities, are in theſe tables ſuppoſed to be an advantage ſhared amongſt ſurvivors, without which the money advanced would be inſufficient to bear the expence of the annuities.

Theſe tables alſo ſuppoſe, that annuitants will be intitled to nothing for any part of that quarter of the year in which they ſhall happen to die.

Obſervation 2d. It ſhould be remembered, that the firſt of the three columns in theſe tables is intended to be an explanation of the column next to it, and to expreſs with more preciſion the time at which the calculations ſuppoſe the annuity to commence. —— Thus, if it were only expreſſed in table 1ſt, that a perſon, whoſe age is exactly $14\frac{3}{4}$, would be entitled, for a preſent payment of £2. 7*s.* 11*d.* to an annuity, payable quarterly, of £1. for life, to commence at the age of 50, it would only apper that the annuity was to commence ſome time or other after he had attained to that age, or entered his 51ſt year. But the firſt column removes this uncertainty, by ſpecifying, that the firſt quarterly payment is to be made at the end of 35 years and a quarter after purchaſing, or exactly upon his attaining the age of 50. In like manner; ſuppoſing his age 15, 15 and a quarter, or 15 and a half, the ſame column, by ſpecifying that the annuity was to commence at the end of 35 years and $\frac{1}{4}$, would ſhew, that the firſt payment was to be made when he came to be a quarter of a year, half a year, or three quarters of a year, turned of 50.

Obſervation

Observation 3d. When there is any uncertainty with reſpect to the preciſe age of a purchaſer, a younger age ſhould always be taken, rather than an older, in order to guard againſt the loſſes to pariſhes, that would ariſe from intitling perſons to higher annuities than are adequate to their payments. Much, however, will not depend on determining the age of any purchaſer to greater exactneſs than half a year, or a year.

Obſervation 4th. A conſiderable difference will be found at all ages under 45 or 50 years between the values in the following tables for London, and for the country. The reaſon is, that the inhabitants of London, and of great towns in general, are much more ſhort-lived than the inhabitants of ſmall towns, and country pariſhes and villages. This appears from undeniable obſervations, and has created the neceſſity of calculating diſtinct tables for London and the country.

It may be proper to add, for the ſatisfaction of thoſe who may wiſh to examine the following tables, that they have been calculated in the method explained and demonſtrated, by Mr. Maſeres, in a pamphlet intitled, *A Propoſal for eſtabliſhing Life-Annuities in Pariſhes, for the Benefit of the induſtrious Poor*; or by a rule in Dr. Price's Treatiſe on Annuities, Queſt. 6th, page 17th.——In calculating the ſecond ſet of tables, the probabilities of life at Northampton, as given in Table 4th, page 323, of the ſaid Treatiſe of Dr. Price, have been combined with the values of lives in Table 6th, page 325. And in calculating the firſt ſet of tables, the probabilities and values of lives have been taken from Mr. Simpſon's tables given in pages 332, and 334, of the ſame Treatiſe, or in page 254, and 260, of Mr. Simpſon's Select Exerciſes, with no other than the following difference.——The tables which have been mentioned give the values of lives in yearly payments only. An annuity, payable quarterly, is worth three eighths of a years purchaſe, or 7s. 6d. more than an annuity payable yearly. Three eighths, therefore, or, in decimals, .375, have been always added to the values of lives taken from theſe tables, in order to obtain from thence the values in the following tables.

FIRST

FIRST SET OF TABLES.

Intended for the Uſe of LONDON.

TABLE I.

Shewing the Payment due (reckoning Intereſt at 3 per Cent.) for a Life-Annuity of One Pound, payable Quarterly. To commence at any Age from 35 to 75.

Age of the Purchaſer from $14\frac{3}{4}$ to $15\frac{1}{2}$.

To commence at the end of Years after purchaſing.			Value of an annuity of £1. in one preſent payment. £.	s.	d.
$20\frac{1}{4}$,	or at Age	35	5	10	8
$21\frac{1}{4}$,	— —	36	5	3	5
$22\frac{1}{4}$,	— —	37	4	16	6
$23\frac{1}{4}$,	— —	38	4	9	8
$24\frac{1}{4}$,	— —	39	4	3	5
$25\frac{1}{4}$,	— —	40	3	17	3
$26\frac{1}{4}$,	— —	41	3	11	7
$27\frac{1}{4}$,	— —	42	3	6	0
$28\frac{1}{4}$,	— —	43	3	1	2
$29\frac{1}{4}$,	— —	44	2	16	7
$30\frac{1}{4}$,	— —	45	2	12	3
$31\frac{1}{4}$,	— —	46	2	8	0
$32\frac{1}{4}$,	— —	47	2	4	5
$33\frac{1}{4}$,	— —	48	2	0	10
$34\frac{1}{4}$,	— —	49	1	17	8
$35\frac{1}{4}$,	— —	50	1	14	7
$36\frac{1}{4}$,	— —	51	1	11	10
$37\frac{1}{4}$,	— —	52	1	9	0
$38\frac{1}{4}$,	— —	53	1	6	6
$39\frac{1}{4}$,	— —	54	1	4	0
$40\frac{1}{4}$,	— —	55	1	2	0

To commence at the end of Years after purchaſing.			Value of an annuity of £1. in one preſent payment. £.	s.	d.
$41\frac{1}{4}$,	or at Age	56	1	0	0
$42\frac{1}{4}$,	— —	57	0	18	2
$43\frac{1}{4}$,	— —	58	0	16	4
$44\frac{1}{4}$,	— —	59	0	14	11
$45\frac{1}{4}$,	— —	60	0	13	5
$46\frac{1}{4}$,	— —	61	0	12	1
$47\frac{1}{4}$,	— —	62	0	10	10
$48\frac{1}{4}$,	— —	63	0	9	9
$49\frac{1}{4}$,	— —	64	0	8	8
$50\frac{1}{4}$,	— —	65	0	7	9
$51\frac{1}{4}$,	— —	66	0	6	9
$52\frac{1}{4}$,	— —	67	0	6	0
$53\frac{1}{4}$,	— —	68	0	5	2
$54\frac{1}{4}$,	— —	69	0	4	7
$55\frac{1}{4}$,	— —	70	0	4	0
$56\frac{1}{4}$,	— —	71	0	3	6
$57\frac{1}{4}$,	— —	72	0	3	0
$58\frac{1}{4}$,	— —	73	0	2	7
$59\frac{1}{4}$,	— —	74	0	2	2
$60\frac{1}{4}$,	— —	75	0	1	11

TABLE II.

For the Uſe of LONDON.

Shewing the Payment due (reckoning Intereſt at 3 per Cent.) for a Life-Annuity of One Pound, payable Quarterly. To commence at any Age from 35 to 75.

Age of the Purchaſer from 15 ¾ to 16 ¼.

To commence at the end of Years after purchaſing.			Value of an annuity of £1. in one preſent payment. £.	s.	d.	To commence at the end of Years after purchaſing.			Value of an annuity of £1. in one preſent payment. £.	s.	d.
19 ¼,	or at Age	35	5	15	3	40 ¼,	or at Age	56	1	0	11
20 ¼,	— —	36	5	7	11	41 ¼,	— —	57	0	18	11
21 ¼,	— —	37	5	0	6	42 ¼,	— —	58	0	17	2
22 ¼,	— —	38	4	13	8	43 ¼,	— —	59	0	15	6
23 ¼,	— —	39	4	6	11	44 ¼,	— —	60	0	14	0
24 ¼,	— —	40	4	0	9	45 ¼,	— —	61	0	12	7
25 ¼,	— —	41	3	14	7	46 ¼,	— —	62	0	11	4
26 ¼,	— —	42	3	9	2	47 ¼,	— —	63	0	10	2
27 ¼,	— —	43	3	3	10	48 ¼,	— —	64	0	9	1
28 ¼,	— —	44	2	19	1	49 ¼,	— —	65	0	8	0
29 ¼,	— —	45	2	14	5	50 ¼,	— —	66	0	7	2
30 ¼,	— —	46	2	10	4	51 ¼,	— —	67	0	6	3
31 ¼,	— —	47	2	6	3	52 ¼,	— —	68	0	5	6
32 ¼,	— —	48	2	2	9	53 ¼,	— —	69	0	4	9
33 ¼,	— —	49	1	19	3	54 ¼,	— —	70	0	4	2
34 ¼,	— —	50	1	16	2	55 ¼,	— —	71	0	3	8
35 ¼,	— —	51	1	13	2	56 ¼,	— —	72	0	3	2
36 ¼,	— —	52	1	10	5	57 ¼,	— —	73	0	2	8
37 ¼,	— —	53	1	7	8	58 ¼,	— —	74	0	2	3
38 ¼,	— —	54	1	5	3	59 ¼,	— —	75	0	1	11
39 ¼,	— —	55	1	2	11						

TABLE III.

For the Uſe of LONDON.

Shewing the Payment due (reckoning Intereſt at 3 per Cent.) for a Life-Annuity of One Pound, payable Quarterly. To commence at any Age from 35 to 75.

Age of the Purchaſer from 16 ¾ to 17 ¼.

To commence at the end of Years after purchaſing.			Value of an annuity of £1. in one preſent payment. £.	s.	d.	To commence at the end of Years after purchaſing.			Value of an annuity of £1. in one preſent payment. £.	s.	d.
18 ¼,	or at Age	35	6	0	7	39 ¼,	or at Age	56	1	1	9
19 ¼,	— —	36	5	12	7	40 ¼,	— —	57	0	19	9
20 ¼,	— —	37	5	5	1	41 ¼,	— —	58	0	17	9
21 ¼,	— —	38	4	17	7	42 ¼,	— —	59	0	16	2
22 ¼,	— —	39	4	10	11	43 ¼,	— —	60	0	14	7
23 ¼,	— —	40	4	4	2	44 ¼,	— —	61	0	13	2
24 ¼,	— —	41	3	18	0	45 ¼,	— —	62	0	11	10
25 ¼,	— —	42	3	11	11	46 ¼,	— —	63	0	10	8
26 ¼,	— —	43	3	6	9	47 ¼,	— —	64	0	9	6
27 ¼,	— —	44	3	1	7	48 ¼,	— —	65	0	8	5
28 ¼,	— —	45	2	17	0	49 ¼,	— —	66	0	7	4
29 ¼,	— —	46	2	12	4	50 ¼,	— —	67	0	6	6
30 ¼,	— —	47	2	8	5	51 ¼,	— —	68	0	5	8
31 ¼,	— —	48	2	4	6	52 ¼,	— —	69	0	5	0
32 ¼,	— —	49	2	1	1	53 ¼,	— —	70	0	4	4
33 ¼,	— —	50	1	17	9	54 ¼,	— —	71	0	3	10
34 ¼,	— —	51	1	14	9	55 ¼,	— —	72	0	3	4
35 ¼,	— —	52	1	11	9	56 ¼,	— —	73	0	2	11
36 ¼,	— —	53	1	9	0	57 ¼,	— —	74	0	2	5
37 ¼,	— —	54	1	6	3	58 ¼,	— —	75	0	2	0
38 ¼,	— —	55	1	4	0						

TABLE IV.

For the Uſe of LONDON.

Shewing the Payment due, (reckoning Intereſt at 3 per Cent.) for a Life-Annuity of One Pound, payable Quarterly. To commence at any Age from 35 to 75.

Age of the Purchaſer from 17 ¾ to 18 ½.

To commence at the end of Years after purchaſing.				Value of an annuity of £1. in one preſent payment. £.	s.	d.
17 ¼,	or at Age		35	6	5	8
18 ¼,	—	—	36	5	17	7
19 ¼,	—	—	37	5	9	6
20 ¼,	—	—	38	5	2	1
21 ¼,	—	—	39	4	14	8
22 ¼,	—	—	40	4	8	0
23 ¼,	—	—	41	4	1	3
24 ¼,	—	—	42	3	15	5
25 ¼,	—	—	43	3	9	7
26 ¼,	—	—	44	3	4	5
27 ¼,	—	—	45	2	19	3
28 ¼,	—	—	46	2	14	10
29 ¼,	—	—	47	2	10	5
30 ¼,	—	—	48	2	6	7
31 ¼,	—	—	49	2	2	10
32 ¼,	—	—	50	1	19	6
33 ¼,	—	—	51	1	16	2
34 ¼,	—	—	52	1	13	2
35 ¼,	—	—	53	1	10	2
36 ¼,	—	—	54	1	7	7
37 ¼,	—	—	55	1	5	0
38 ¼,	or at Age		56	1	2	9
39 ¼,	—	—	57	1	0	6
40 ¼,	—	—	58	0	18	8
41 ¼,	—	—	59	0	16	10
42 ¼,	—	—	60	0	15	3
43 ¼,	—	—	61	0	13	9
44 ¼,	—	—	62	0	12	4
45 ¼,	—	—	63	0	11	1
46 ¼,	—	—	64	0	9	11
47 ¼,	—	—	65	0	8	9
48 ¼,	—	—	66	0	7	9
49 ¼,	—	—	67	0	6	9
50 ¼,	—	—	68	0	6	0
51 ¼,	—	—	69	0	5	3
52 ¼,	—	—	70	0	4	7
53 ¼,	—	—	71	0	4	0
54 ¼,	—	—	72	0	3	6
55 ¼,	—	—	73	0	3	0
56 ¼,	—	—	74	0	2	7
57 ¼,	—	—	75	0	2	2

TABLE

TABLE V.

For the Uſe of LONDON.

Shewing the Payment due (reckoning Intereſt at 3 per Cent.) for a Life-Annuity of One Pound, payable Quarterly. To commence at any Age from 35 to 75.

Age of the Purchaſer from 18 ¾ to 19 ½.

To commence at the end of Years after purchaſing.				Value of an annuity of £1. in one preſent payment. £.	s.	d.
16 ¼,	or at Age		35	6	11	6
17 ¼,	—	—	36	6	2	9
18 ¼,	—	—	37	5	14	7
19 ¼,	—	—	38	5	6	5
20 ¼,	—	—	39	4	19	1
21 ¼,	—	—	40	4	11	9
22 ¼,	—	—	41	4	5	1
23 ¼,	—	—	42	3	18	5
24 ¼,	—	—	43	3	12	9
25 ¼,	—	—	44	3	7	2
26 ¼,	—	—	45	3	2	1
27 ¼,	—	—	46	2	17	0
28 ¼,	—	—	47	2	12	9
29 ¼,	—	—	48	2	8	6
30 ¼,	—	—	49	2	4	10
31 ¼,	—	—	50	2	1	1
32 ¼,	—	—	51	1	17	10
33 ¼,	—	—	52	1	14	7
34 ¼,	—	—	53	1	11	7
35 ¼,	—	—	54	1	8	7
36 ¼,	—	—	55	1	6	2
37 ¼,	or at Age		56	1	3	8
38 ¼,	—	—	57	1	1	6
39 ¼,	—	—	58	0	19	4
40 ¼,	—	—	59	0	17	8
41 ¼,	—	—	60	0	16	0
42 ¼,	—	—	61	0	14	5
43 ¼,	—	—	62	0	12	11
44 ¼,	—	—	63	0	11	7
45 ¼,	—	—	64	0	10	4
46 ¼,	—	—	65	0	9	2
47 ¼,	—	—	66	0	8	1
48 ¼,	—	—	67	0	7	1
49 ¼,	—	—	68	0	6	2
50 ¼,	—	—	69	0	5	6
51 ¼,	—	—	70	0	4	9
52 ¼,	—	—	71	0	4	2
53 ¼,	—	—	72	0	3	7
54 ¼,	—	—	73	0	3	1
55 ¼,	—	—	74	0	2	7
56 ¼,	—	—	75	0	2	3

TABLE

TABLE VI.

For the Use of LONDON.

Shewing the Payment due (reckoning Interest at 3 per Cent.) for a Life-Annuity of One Pound, payable Quarterly. To commence at any Age from 35 to 75.

Age of the Purchaser from 19 ¾ to 20 ½.

To commence at the end of Years after purchasing.			Value of an annuity of £1. in one present payment. £.	s.	d.
15 ¼,	or at Age	35	6	17	1
16 ¼,	— —	36	6	8	3
17 ¼,	— —	37	5	19	5
18 ¼,	— —	38	5	11	4
19 ¼,	— —	39	5	3	3
20 ¼,	— —	40	4	15	11
21 ¼,	— —	41	4	8	8
22 ¼,	— —	42	4	2	3
23 ¼,	— —	43	3	15	10
24 ¼,	— —	44	3	10	3
25 ¼,	— —	45	3	4	8
26 ¼,	— —	46	2	19	10
27 ¼,	— —	47	2	14	11
28 ¼,	— —	48	2	10	10
29 ¼,	— —	49	2	6	8
30 ¼,	— —	50	2	3	0
31 ¼,	— —	51	1	19	5
32 ¼,	— —	52	1	16	2
33 ¼,	— —	53	1	12	11
34 ¼,	— —	54	1	10	0
35 ¼,	— —	55	1	7	2
36 ¼,	or at Age	56	1	4	10
37 ¼,	— —	57	1	2	5
38 ¼,	— —	58	1	0	5
39 ¼,	— —	59	0	18	5
40 ¼,	— —	60	0	16	8
41 ¼,	— —	61	0	15	0
42 ¼,	— —	62	0	13	6
43 ¼,	— —	63	0	12	1
44 ¼,	— —	64	0	10	10
45 ¼,	— —	65	0	9	7
46 ¼,	— —	66	0	8	6
47 ¼,	— —	67	0	7	5
48 ¼,	— —	68	0	6	7
49 ¼,	— —	69	0	5	8
50 ¼,	— —	70	0	5	0
51 ¼,	— —	71	0	4	4
52 ¼,	— —	72	0	3	10
53 ¼,	— —	73	0	3	3
54 ¼,	— —	74	0	2	10
55 ¼,	— —	75	0	2	5

TABLE

TABLE VII.

For the Use of LONDON.

Shewing the Payment due (reckoning Interest at 3 per Cent.) for a Life-Annuity of One Pound, payable Quarterly. To commence at any Age from 35 to 75.

Age of the Purchaser from 20 ¾ to 21 ½.

To commence at the end of Years after purchasing.			Value of an annuity of £1. in one present payment. £.	s.	d.
14 ¼,	or at Age	35	7	3	5
15 ¼,	— —	36	6	13	11
16 ¼,	— —	37	6	5	0
17 ¼,	— —	38	5	16	1
18 ¼,	— —	39	5	8	1
19 ¼,	— —	40	5	0	1
20 ¼,	— —	41	4	12	10
21 ¼,	— —	42	4	5	7
22 ¼,	— —	43	3	19	5
23 ¼,	— —	44	3	13	3
24 ¼,	— —	45	3	7	9
25 ¼,	— —	46	3	2	2
26 ¼,	— —	47	2	17	7
27 ¼,	— —	48	2	12	11
28 ¼,	— —	49	2	8	10
29 ¼,	— —	50	2	4	10
30 ¼,	— —	51	2	1	3
31 ¼,	— —	52	1	17	9
32 ¼,	— —	53	1	14	6
33 ¼,	— —	54	1	11	2
34 ¼,	— —	55	1	8	6
35 ¼,	or at Age	56	1	5	10
36 ¼,	— —	57	1	3	6
37 ¼,	— —	58	1	1	1
38 ¼,	— —	59	0	19	3
39 ¼,	— —	60	0	17	5
40 ¼,	— —	61	0	15	8
41 ¼,	— —	62	0	14	0
42 ¼,	— —	63	0	12	7
43 ¼,	— —	64	0	11	3
44 ¼,	— —	65	0	10	0
45 ¼,	— —	66	0	8	10
46 ¼,	— —	67	0	7	10
47 ¼,	— —	68	0	6	10
48 ¼,	— —	69	0	6	0
49 ¼,	— —	70	0	5	2
50 ¼,	— —	71	0	4	7
51 ¼,	— —	72	0	3	11
52 ¼,	— —	73	0	3	5
53 ¼,	— —	74	0	2	11
54 ¼,	— —	75	0	2	7

TABLE

TABLE VIII.

For the Use of LONDON.

Shewing the Payment due (reckoning Intereſt at 3 per Cent.) for a Life-Annuity of One Pound, payable Quarterly. To commence at any Age from 35 to 75.

Age of the Purchaſer from 21 ¾ to 22 ½.

To commence at the end of Years after purchaſing.			Value of an annuity of £1. in one preſent payment. £.	s.	d.
13 ¼,	or at Age	35	7	9	6
14 ¼,	— —	36	6	19	11
15 ¼,	— —	37	6	10	4
16 ¼,	— —	38	6	1	6
17 ¼,	— —	39	5	12	7
18 ¼,	— —	40	5	4	8
19 ¼,	— —	41	4	16	8
20 ¼,	— —	42	4	9	9
21 ¼,	— —	43	4	2	9
22 ¼,	— —	44	3	16	8
23 ¼,	— —	45	3	10	7
24 ¼,	— —	46	3	5	3
25 ¼,	— —	47	3	0	0
26 ¼,	— —	48	2	15	5
27 ¼,	— —	49	2	11	0
28 ¼,	— —	50	2	7	0
29 ¼,	— —	51	2	3	0
30 ¼,	— —	52	1	19	5
31 ¼,	— —	53	1	15	11
32 ¼,	— —	54	1	12	10
33 ¼,	— —	55	1	9	8
34 ¼,	or at Age	56	1	7	1
35 ¼,	— —	57	1	4	5
36 ¼,	— —	58	1	2	3
37 ¼,	— —	59	1	0	0
38 ¼,	— —	60	0	18	2
39 ¼,	— —	61	0	16	4
40 ¼,	— —	62	0	14	9
41 ¼,	— —	63	0	13	1
42 ¼,	— —	64	0	11	9
43 ¼,	— —	65	0	10	5
44 ¼,	— —	66	0	9	3
45 ¼,	— —	67	0	8	1
46 ¼,	— —	68	0	7	2
47 ¼,	— —	69	0	6	3
48 ¼,	— —	70	0	5	6
49 ¼,	— —	71	0	4	9
50 ¼,	— —	72	0	4	2
51 ¼,	— —	73	0	3	6
52 ¼,	— —	74	0	3	0
53 ¼,	— —	75	0	2	7

TABLE IX.

For the Use of LONDON.

Shewing the Payment due (reckoning Intereſt at 3 per Cent.) for a Life-Annuity of One Pound, payable Quarterly. To commence at any Age from 35 to 75.

Age of the Purchaſer from 22 ¾ to 23 ½.

To commence at the end of Years after purchaſing.			Value of an annuity of £1. in one preſent payment. £.	s.	d.
12 ¼,	or at Age	35	7	16	6
13 ¼,	— —	36	7	6	2
14 ¼,	— —	37	6	16	5
15 ¼,	— —	38	6	6	9
16 ¼,	— —	39	5	18	0
17 ¼,	— —	40	5	9	2
18 ¼,	— —	41	5	1	3
19 ¼,	— —	42	4	13	4
20 ¼,	— —	43	4	6	8
21 ¼,	— —	44	4	0	0
22 ¼,	— —	45	3	13	11
23 ¼,	— —	46	3	7	11
24 ¼,	— —	47	3	2	10
25 ¼,	— —	48	2	17	9
26 ¼,	— —	49	2	13	4
27 ¼,	— —	50	2	9	0
28 ¼,	— —	51	2	5	1
29 ¼,	— —	52	2	1	2
30 ¼,	— —	53	1	17	8
31 ¼,	— —	54	1	14	1
32 ¼,	— —	55	1	11	2
33 ¼,	or at Age	56	1	8	2
34 ¼,	— —	57	1	5	8
35 ¼,	— —	58	1	3	1
36 ¼,	— —	59	1	1	0
37 ¼,	— —	60	0	19	0
38 ¼,	— —	61	0	17	2
39 ¼,	— —	62	0	15	4
40 ¼,	— —	63	0	13	10
41 ¼,	— —	64	0	12	3
42 ¼,	— —	65	0	10	11
43 ¼,	— —	66	0	9	7
44 ¼,	— —	67	0	8	6
45 ¼,	— —	68	0	7	5
46 ¼,	— —	69	0	6	6
47 ¼,	— —	70	0	5	8
48 ¼,	— —	71	0	5	0
49 ¼,	— —	72	0	4	4
50 ¼,	— —	73	0	3	9
51 ¼,	— —	74	0	3	2
52 ¼,	— —	75	0	2	8

TABLE X.

For the Uſe of LONDON.

Shewing the Payment due (reckoning Intereſt at 3 per Cent.) for a Life-Annuity of One Pound, payable Quarterly. To commence at any Age from 35 to 75.

Age of the Purchaſer from 23 ¾ to 24 ¼.

To commence at the end of Years after purchaſing.			Value of an annuity of £1. in one preſent payment. £.	s.	d.
11 ¼,	or at Age	35	8	3	9
12 ¼,	— —	36	7	13	3
13 ¼,	— —	37	7	2	8
14 ¼,	— —	38	6	13	0
15 ¼,	— —	39	6	3	5
16 ¼,	— —	40	5	14	8
17 ¼,	— —	41	5	5	11
18 ¼,	— —	42	4	18	3
19 ¼,	— —	43	4	10	7
20 ¼,	— —	44	4	4	0
21 ¼,	— —	45	3	17	4
22 ¼,	— —	46	3	11	6
23 ¼,	— —	47	3	5	8
24 ¼,	— —	48	3	0	9
25 ¼,	— —	49	2	15	9
26 ¼,	— —	50	2	11	5
27 ¼,	— —	51	2	7	1
28 ¼,	— —	52	2	3	2
29 ¼,	— —	53	1	19	4
30 ¼,	— —	54	1	16	0
31 ¼,	— —	55	1	12	6
32 ¼,	or at Age	56	1	9	8
33 ¼,	— —	57	1	6	9
34 ¼,	— —	58	1	4	4
35 ¼,	— —	59	1	2	0
36 ¼,	— —	60	0	19	11
37 ¼,	— —	61	0	17	11
38 ¼,	— —	62	0	16	2
39 ¼,	— —	63	0	14	5
40 ¼,	— —	64	0	12	11
41 ¼,	— —	65	0	11	4
42 ¼,	— —	66	0	10	1
43 ¼,	— —	67	0	8	10
44 ¼,	— —	68	0	7	10
45 ¼,	— —	69	0	6	10
46 ¼,	— —	70	0	6	0
47 ¼,	— —	71	0	5	2
48 ¼,	— —	72	0	4	6
49 ¼,	— —	73	0	3	11
50 ¼,	— —	74	0	3	4
51 ¼,	— —	75	0	2	10

TABLE

TABLE XI.

For the Uſe of LONDON.

Shewing the Payment due (reckoning Intereſt at 3 per Cent.) for a Life-Annuity of One Pound, payable Quarterly. To commence at any Age from 35 to 75.

Age of the Purchaſer from 24 ¼ to 25 ½.

To commence at the end of Years after purchaſing.			Value of an annuity of £1. in one preſent payment. £.	s.	d.
10 ¼,	or at Age	35	8	12	1
11 ¼,	— —	36	8	0	8
12 ¼,	— —	37	7	10	0
13 ¼,	— —	38	6	19	3
14 ¼,	— —	39	6	9	8
15 ¼,	— —	40	6	0	1
16 ¼,	— —	41	5	11	4
17 ¼,	— —	42	5	2	8
18 ¼,	— —	43	4	15	3
19 ¼,	— —	44	4	7	11
20 ¼,	— —	45	4	1	3
21 ¼,	— —	46	3	14	8
22 ¼,	— —	47	3	9	1
23 ¼,	— —	48	3	3	6
24 ¼,	— —	49	2	18	8
25 ¼,	— —	50	2	13	10
26 ¼,	— —	51	2	9	6
27 ¼,	— —	52	2	5	3
28 ¼,	— —	53	2	1	4
29 ¼,	— —	54	1	17	6
30 ¼,	— —	55	1	14	3
31 ¼,	or at Age	56	1	11	0
32 ¼,	— —	57	1	8	2
33 ¼,	— —	58	1	5	4
34 ¼,	— —	59	1	3	1
35 ¼,	— —	60	1	0	11
36 ¼,	— —	61	0	18	10
37 ¼,	— —	62	0	16	10
38 ¼,	— —	63	0	15	2
39 ¼,	— —	64	0	13	6
40 ¼,	— —	65	0	12	0
41 ¼,	— —	66	0	10	6
42 ¼,	— —	67	0	9	4
43 ¼,	— —	68	0	8	2
44 ¼,	— —	69	0	7	2
45 ¼,	— —	70	0	6	3
46 ¼,	— —	71	0	5	6
47 ¼,	— —	72	0	4	9
48 ¼,	— —	73	0	4	1
49 ¼,	— —	74	0	3	6
50 ¼,	— —	75	0	3	0

TABLE XII.

For the Use of LONDON.

Shewing the Payment due, (reckoning Interest at 3 per Cent.) for a Life-Annuity of One Pound, payable Quarterly. To commence at any Age from 35 to 75.

Age of the Purchaser from $25\frac{3}{4}$ to $26\frac{1}{2}$.

To commence at the end of, Years after purchasing.			Value of an annuity of £1. in one present payment. £.	s.	d.	To commence at the end of Years after purchasing.			Value of an annuity of £1. in one present payment. £.	s.	d.
$9\frac{1}{4}$,	or at Age	35	9	0	2	$30\frac{1}{4}$,	or at Age	56	1	12	7
$10\frac{1}{4}$,	— —	36	8	8	7	$31\frac{1}{4}$,	— —	57	1	9	5
$11\frac{1}{4}$,	— —	37	7	17	0	$32\frac{1}{4}$,	— —	58	1	6	9
$12\frac{1}{4}$,	— —	38	7	6	4	$33\frac{1}{4}$,	— —	59	1	4	2
$13\frac{1}{4}$,	— —	39	6	15	8	$34\frac{1}{4}$,	— —	60	1	1	11
$14\frac{1}{4}$,	— —	40	6	6	1	$35\frac{1}{4}$,	— —	61	0	19	8
$15\frac{1}{4}$,	— —	41	5	16	6	$36\frac{1}{4}$,	— —	62	0	17	9
$16\frac{1}{4}$,	— —	42	5	8	1	$37\frac{1}{4}$,	— —	63	0	15	10
$17\frac{1}{4}$,	— —	43	4	19	8	$38\frac{1}{4}$,	— —	64	0	14	2
$18\frac{1}{4}$,	— —	44	4	12	4	$39\frac{1}{4}$,	— —	65	0	12	6
$19\frac{1}{4}$,	— —	45	4	5	0	$40\frac{1}{4}$,	— —	66	0	11	1
$20\frac{1}{4}$,	— —	46	3	18	7	$41\frac{1}{4}$,	— —	67	0	9	9
$21\frac{1}{4}$,	— —	47	3	12	3	$42\frac{1}{4}$,	— —	68	0	8	7
$22\frac{1}{4}$,	— —	48	3	6	9	$43\frac{1}{4}$,	— —	69	0	7	6
$23\frac{1}{4}$,	— —	49	3	1	4	$44\frac{1}{4}$,	— —	70	0	6	7
$24\frac{1}{4}$,	— —	50	2	16	7	$45\frac{1}{4}$,	— —	71	0	5	8
$25\frac{1}{4}$,	— —	51	2	11	10	$46\frac{1}{4}$,	— —	72	0	5	0
$26\frac{1}{4}$,	— —	52	2	7	6	$47\frac{1}{4}$,	— —	73	0	4	3
$27\frac{1}{4}$,	— —	53	2	3	3	$48\frac{1}{4}$,	— —	74	0	3	8
$28\frac{1}{4}$,	— —	54	1	19	6	$49\frac{1}{4}$,	— —	75	0	3	1
$29\frac{1}{4}$,	— —	55	1	15	10						

TABLE

TABLE XIII.

For the Use of LONDON.

Shewing the Payment due (reckoning Interest at 3 per Cent.) for a Life-Annuity of One Pound, payable Quarterly. To commence at any Age from 35 to 75.

Age of the Purchaser from $26\frac{3}{4}$ to $27\frac{1}{2}$.

To commence at the end of Years after purchasing.			Value of an annuity of £1. in one present payment. £.	s.	d.	To commence at the end of Years after purchasing.			Value of an annuity of £1. in one present payment. £.	s.	d.
$8\frac{1}{4}$,	or at Age	35	9	9	4	$29\frac{1}{4}$,	or at Age	56	1	14	2
$9\frac{1}{4}$,	— —	36	8	16	10	$30\frac{1}{4}$,	— —	57	1	11	0
$10\frac{1}{4}$,	— —	37	8	5	1	$31\frac{1}{4}$,	— —	58	1	7	11
$11\frac{1}{4}$,	— —	38	7	13	3	$32\frac{1}{4}$,	— —	59	1	5	5
$12\frac{1}{4}$,	— —	39	7	2	8	$33\frac{1}{4}$,	— —	60	1	3	0
$13\frac{1}{4}$,	— —	40	6	12	1	$34\frac{1}{4}$,	— —	61	1	0	9
$14\frac{1}{4}$,	— —	41	6	2	7	$35\frac{1}{4}$,	— —	62	0	18	6
$15\frac{1}{4}$,	— —	42	5	13	0	$36\frac{1}{4}$,	— —	63	0	16	8
$16\frac{1}{4}$,	— —	43	5	4	11	$37\frac{1}{4}$,	— —	64	0	14	11
$17\frac{1}{4}$,	— —	44	4	16	9	$38\frac{1}{4}$,	— —	65	0	13	3
$18\frac{1}{4}$,	— —	45	4	9	6	$39\frac{1}{4}$,	— —	66	0	11	7
$19\frac{1}{4}$,	— —	46	4	2	2	$40\frac{1}{4}$,	— —	67	0	10	3
$20\frac{1}{4}$,	— —	47	3	16	0	$41\frac{1}{4}$,	— —	68	0	9	0
$21\frac{1}{4}$,	— —	48	3	9	11	$42\frac{1}{4}$,	— —	69	0	7	11
$22\frac{1}{4}$,	— —	49	3	4	6	$43\frac{1}{4}$,	— —	70	0	6	11
$23\frac{1}{4}$,	— —	50	2	19	2	$44\frac{1}{4}$,	— —	71	0	6	0
$24\frac{1}{4}$,	— —	51	2	14	6	$45\frac{1}{4}$,	— —	72	0	5	2
$25\frac{1}{4}$,	— —	52	2	9	11	$46\frac{1}{4}$,	— —	73	0	4	6
$26\frac{1}{4}$,	— —	53	2	5	7	$47\frac{1}{4}$,	— —	74	0	3	10
$27\frac{1}{4}$,	— —	54	2	1	3	$48\frac{1}{4}$,	— —	75	0	3	3
$28\frac{1}{4}$,	— —	55	1	17	8						

TABLE

TABLE XIV.

For the Uſe of LONDON.

Shewing the Payment due (reckoning Intereſt at 3 per Cent.) for a Life-Annuity of One Pound, payable Quarterly. To commence at any Age from 35 to 75.

Age of the Purchaſer from 27 ¾ to 28 ½.

To commence at the end of Years after purchaſing.			Value of an annuity of £1. in one preſent payment. £.	s.	d.	To commence at the end of Years after purchaſing.			Value of an annuity of £1. in one preſent payment. £.	s.	d.
7 ¼,	or at Age	35	9	18	9	28 ¼,	or at Age	56	1	16	0
8 ¼,	— —	36	9	5	11	29 ¼,	— —	57	1	12	6
9 ¼,	— —	37	8	13	2	30 ¼,	— —	58	1	9	7
10 ¼,	— —	38	8	1	5	31 ¼,	— —	59	1	6	8
11 ¼,	— —	39	7	9	8	32 ¼,	— —	60	1	4	2
12 ¼,	— —	40	6	19	1	33 ¼,	— —	61	1	1	9
13 ¼,	— —	41	6	8	6	34 ¼,	— —	62	0	19	7
14 ¼,	— —	42	5	19	3	35 ¼,	— —	63	0	17	6
15 ¼,	— —	43	5	10	0	36 ¼,	— —	64	0	15	8
16 ¼,	— —	44	5	1	11	37 ¼,	— —	65	0	13	10
17 ¼,	— —	45	4	13	9	38 ¼,	— —	66	0	12	3
18 ¼,	— —	46	4	6	9	39 ¼,	— —	67	0	10	9
19 ¼,	— —	47	3	19	8	40 ¼,	— —	68	0	9	6
20 ¼,	— —	48	3	13	8	41 ¼,	— —	69	0	8	3
21 ¼,	— —	49	3	7	8	42 ¼,	— —	70	0	7	3
22 ¼,	— —	50	3	2	5	43 ¼,	— —	71	0	6	4
23 ¼,	— —	51	2	17	2	44 ¼,	— —	72	0	5	6
24 ¼,	— —	52	2	12	5	45 ¼,	— —	73	0	4	8
25 ¼,	— —	53	2	7	9	46 ¼,	— —	74	0	4	0
26 ¼,	— —	54	2	3	7	47 ¼,	— —	75	0	3	5
27 ¼,	— —	55	1	19	6						

TABLE

TABLE XV.

For the Uſe of LONDON.

Shewing the Payment due (reckoning Intereſt at 3 per Cent.) for a Life-Annuity of One Pound, payable Quarterly. To commence at any Age from 35 to 75.

Age of the Purchaſer from 28 ¾ to 29 ½.

To commence at the end of Years after purchaſing.			Value of an annuity of £1. in one preſent payment. £.	s.	d.	To commence at the end of Years after purchaſing.			Value of an annuity of £1. in one preſent payment. £.	s.	d.
6 ¼,	or at Age	35	10	9	5	27 ¼,	or at Age	56	1	17	9
7 ¼,	— —	36	9	15	7	28 ¼,	— —	57	1	14	3
8 ¼,	— —	37	9	2	6	29 ¼,	— —	58	1	10	11
9 ¼,	— —	38	8	9	6	30 ¼,	— —	59	1	8	2
10 ¼,	— —	39	7	17	9	31 ¼,	— —	60	1	5	5
11 ¼,	— —	40	7	6	1	32 ¼,	— —	61	1	2	11
12 ¼,	— —	41	6	15	6	33 ¼,	— —	62	1	0	6
13 ¼,	— —	42	6	4	11	34 ¼,	— —	63	0	18	6
14 ¼,	— —	43	5	15	11	35 ¼,	— —	64	0	16	6
15 ¼,	— —	44	5	7	0	36 ¼,	— —	65	0	14	8
16 ¼,	— —	45	4	18	11	37 ¼,	— —	66	0	12	10
17 ¼,	— —	46	4	10	10	38 ¼,	— —	67	0	11	4
18 ¼,	— —	47	4	4	0	39 ¼,	— —	68	0	9	11
19 ¼,	— —	48	3	17	3	40 ¼,	— —	69	0	8	9
20 ¼,	— —	49	3	11	4	41 ¼,	— —	70	0	7	7
21 ¼,	— —	50	3	5	6	42 ¼,	— —	71	0	6	8
22 ¼,	— —	51	3	0	4	43 ¼,	— —	72	0	5	10
23 ¼,	— —	52	2	15	2	44 ¼,	— —	73	0	5	0
24 ¼,	— —	53	2	10	4	45 ¼,	— —	74	0	4	2
25 ¼,	— —	54	2	5	7	46 ¼,	— —	75	0	3	7
26 ¼,	— —	55	2	1	8						

TABLE

TABLE XVI.

For the Uſe of LONDON.

Shewing the Payment due (reckoning Intereſt at 3 per Cent.) for a Life-Annuity of One Pound, payable Quarterly. To commence at any Age from 35 to 75.

Age of the Purchaſer from 29 ¾ to 30 ½.

To commence at the end of Years after purchaſing.			Value of an annuity of £1. in one preſent payment. £.	s.	d.
5 ¼,	or at Age	35	11	0	3
6 ¼,	— —	36	10	6	1
7 ¼,	— —	37	9	11	11
8 ¼,	— —	38	8	18	11
9 ¼,	— —	39	8	5	11
10 ¼,	— —	40	7	14	2
11 ¼,	— —	41	7	2	5
12 ¼,	— —	42	6	12	2
13 ¼,	— —	43	6	1	11
14 ¼,	— —	44	5	12	11
15 ¼,	— —	45	5	4	0
16 ¼,	— —	46	4	16	2
17 ¼,	— —	47	4	8	4
18 ¼,	— —	48	4	1	8
19 ¼,	— —	49	3	15	0
20 ¼,	— —	50	3	9	2
21 ¼,	— —	51	3	3	4
22 ¼,	— —	52	2	18	2
23 ¼,	— —	53	2	12	11
24 ¼,	— —	54	2	8	4
25 ¼,	— —	55	2	3	10
26 ¼,	or at Age	56	1	19	11
27 ¼,	— —	57	1	16	0
28 ¼,	— —	58	1	12	9
29 ¼,	— —	59	1	9	7
30 ¼,	— —	60	1	6	10
31 ¼,	— —	61	1	4	1
32 ¼,	— —	62	1	1	9
33 ¼,	— —	63	0	19	4
34 ¼,	— —	64	0	17	4
35 ¼,	— —	65	0	15	4
36 ¼,	— —	66	0	13	8
37 ¼,	— —	67	0	11	11
38 ¼,	— —	68	0	10	7
39 ¼,	— —	69	0	9	2
40 ¼,	— —	70	0	8	1
41 ¼,	— —	71	0	7	0
42 ¼,	— —	72	0	6	1
43 ¼,	— —	73	0	5	3
44 ¼,	— —	74	0	4	6
45 ¼,	— —	75	0	3	9

TABLE XVII.

For the Uſe of LONDON.

Shewing the Payment due (reckoning Intereſt at 3 per Cent.) for a Life-Annuity of One Pound, payable Quarterly. To commence at any Age from 35 to 75.

Age of the Purchaſer from 30 ¾ to 31 ½.

To commence at the end of Years after purchaſing.			Value of an annuity of £1. in one preſent payment. £.	s.	d.
4 ¼,	or at Age	35	11	12	9
5 ¼,	— —	36	10	17	4
6 ¼,	— —	37	10	2	10
7 ¼,	— —	38	9	8	4
8 ¼,	— —	39	8	15	4
9 ¼,	— —	40	8	2	4
10 ¼,	— —	41	7	10	7
11 ¼,	— —	42	6	18	10
12 ¼,	— —	43	6	8	10
13 ¼,	— —	44	5	18	11
14 ¼,	— —	45	5	9	11
15 ¼,	— —	46	5	1	0
16 ¼,	— —	47	4	13	5
17 ¼,	— —	48	4	5	11
18 ¼,	— —	49	3	19	4
19 ¼,	— —	50	3	12	10
20 ¼,	— —	51	3	7	0
21 ¼,	— —	52	3	1	3
22 ¼,	— —	53	2	16	0
23 ¼,	— —	54	2	10	8
24 ¼,	— —	55	2	6	4
25 ¼,	or at Age	56	2	2	0
26 ¼,	— —	57	1	18	1
27 ¼,	— —	58	1	14	3
28 ¼,	— —	59	1	11	3
29 ¼,	— —	60	1	8	3
30 ¼,	— —	61	1	5	6
31 ¼,	— —	62	1	2	10
32 ¼,	— —	63	1	0	7
33 ¼,	— —	64	0	18	3
34 ¼,	— —	65	0	16	3
35 ¼,	— —	66	0	14	3
36 ¼,	— —	67	0	12	8
37 ¼,	— —	68	0	11	0
38 ¼,	— —	69	0	9	9
39 ¼,	— —	70	0	8	6
40 ¼,	— —	71	0	7	5
41 ¼,	— —	72	0	6	5
42 ¼,	— —	73	0	5	7
43 ¼,	— —	74	0	4	8
44 ¼,	— —	75	0	4	0

TABLE XVIII.

For the Uſe of LONDON.

Shewing the Payment due (reckoning Intereſt at 3 per Cent.) for a Life-Annuity of One Pound, payable Quarterly. To commence at any Age from 35 to 75.

Age of the Purchaſer from 31 ¾ to 32 ½.

To commence at the end of Years after purchaſing.			Value of an annuity of £1. in one preſent payment. £.	s.	d.	To commence at the end of Years after purchaſing.			Value of an annuity of £1. in one preſent payment. £.	s.	d.
3 ¼,	or at Age	35	12	5	1	24 ¼,	or at Age	56	2	4	5
4 ¼,	— —	36	11	9	4	25 ¼,	— —	57	2	0	1
5 ¼,	— —	37	10	13	7	26 ¼,	— —	58	1	16	6
6 ¼,	— —	38	9	19	1	27 ¼,	— —	59	1	12	11
7 ¼,	— —	39	9	4	7	28 ¼,	— —	60	1	9	10
8 ¼,	— —	40	8	11	7	29 ¼,	— —	61	1	6	10
9 ¼,	— —	41	7	18	6	30 ¼,	— —	62	1	4	2
10 ¼,	— —	42	7	7	1	31 ¼,	— —	63	1	1	7
11 ¼,	— —	43	6	15	8	32 ¼,	— —	64	0	19	4
12 ¼,	— —	44	6	5	8	33 ¼,	— —	65	0	17	1
13 ¼,	— —	45	5	15	8	34 ¼,	— —	66	0	15	2
14 ¼,	— —	46	5	7	0	35 ¼,	— —	67	0	13	3
15 ¼,	— —	47	4	18	4	36 ¼,	— —	68	0	11	9
16 ¼,	— —	48	4	10	11	37 ¼,	— —	69	0	10	2
17 ¼,	— —	49	4	3	6	38 ¼,	— —	70	0	9	0
18 ¼,	— —	50	3	17	0	39 ¼,	— —	71	0	7	10
19 ¼,	— —	51	3	10	6	40 ¼,	— —	72	0	6	10
20 ¼,	— —	52	3	4	8	41 ¼,	— —	73	0	5	10
21 ¼,	— —	53	2	18	10	42 ¼,	— —	74	0	5	0
22 ¼,	— —	54	2	13	9	43 ¼,	— —	75	0	4	3
23 ¼,	— —	55	2	8	8						

TABLE XIX.

For the Uſe of LONDON.

Shewing the Payment due (reckoning Intereſt at 3 per Cent.) for a Life-Annuity of One Pound, payable Quarterly. To commence at any Age from 35 to 75.

Age of the Purchaſer from 32 ¾ to 33 ½.

To commence at the end of Years after purchaſing.			Value of an annuity of £1. in one preſent payment. £.	s.	d.	To commence at the end of Years after purchaſing.			Value of an annuity of £1. in one preſent payment. £.	s.	d.
2 ¼,	or at Age	35	12	19	3	23 ¼,	or at Age	56	2	6	9
3 ¼,	— —	36	12	2	1	24 ¼,	— —	57	2	2	6
4 ¼,	— —	37	11	5	11	25 ¼,	— —	58	1	18	2
5 ¼,	— —	38	10	9	10	26 ¼,	— —	59	1	14	10
6 ¼,	— —	39	9	15	4	27 ¼,	— —	60	1	11	6
7 ¼,	— —	40	9	0	11	28 ¼,	— —	61	1	8	5
8 ¼,	— —	41	8	7	9	29 ¼,	— —	62	1	5	4
9 ¼,	— —	42	7	14	8	30 ¼,	— —	63	1	2	10
10 ¼,	— —	43	7	3	7	31 ¼,	— —	64	1	0	4
11 ¼,	— —	44	6	12	6	32 ¼,	— —	65	0	18	2
12 ¼,	— —	45	6	2	6	33 ¼,	— —	66	0	15	11
13 ¼,	— —	46	5	12	6	34 ¼,	— —	67	0	14	1
14 ¼,	— —	47	5	4	1	35 ¼,	— —	68	0	12	3
15 ¼,	— —	48	4	15	8	36 ¼,	— —	69	0	10	10
16 ¼,	— —	49	4	8	4	37 ¼,	— —	70	0	9	5
17 ¼,	— —	50	4	1	1	38 ¼,	— —	71	0	8	3
18 ¼,	— —	51	3	14	8	39 ¼,	— —	72	0	7	2
19 ¼,	— —	52	3	8	3	40 ¼,	— —	73	0	6	2
20 ¼,	— —	53	3	2	4	41 ¼,	— —	74	0	5	2
21 ¼,	— —	54	2	16	6	42 ¼,	— —	75	0	4	6
22 ¼,	— —	55	2	11	7						

TABLE XX.

For the Use of LONDON.

Shewing the Payment due, (reckoning Interest at 3 per Cent.) for a Life-Annuity of One Pound, payable Quarterly. To commence at any Age from 35 to 75.

Age of the Purchaser from 33 3/4 to 34 1/2.

To commence at the end of Years after purchasing.	Value of an annuity of £1. in one present payment. £.	s.	d.	To commence at the end of Years after purchasing.	Value of an annuity of £1. in one present payment. £.	s.	d.
1 1/4, or at Age 35	13	13	4	22 1/4, or at Age 56	2	9	6
2 1/4, — — 36	12	15	10	23 1/4, — — 57	2	4	8
3 1/4, — — 37	11	18	2	24 1/4, — — 58	2	0	8
4 1/4, — — 38	11	2	0	25 1/4, — — 59	1	16	8
5 1/4, — — 39	10	5	11	26 1/4, — — 60	1	13	3
6 1/4, — — 40	9	11	4	27 1/4, — — 61	1	9	11
7 1/4, — — 41	8	16	9	28 1/4, — — 62	1	7	0
8 1/4, — — 42	8	4	0	29 1/4, — — 63	1	4	0
9 1/4, — — 43	7	11	3	30 1/4, — — 64	1	1	6
10 1/4, — — 44	7	0	2	31 1/4, — — 65	0	19	0
11 1/4, — — 45	6	9	0	32 1/4, — — 66	0	17	0
12 1/4, — — 46	5	19	4	33 1/4, — — 67	0	14	10
13 1/4, — — 47	5	9	8	34 1/4, — — 68	0	13	1
14 1/4, — — 48	5	1	4	35 1/4, — — 69	0	11	4
15 1/4, — — 49	4	13	1	36 1/4, — — 70	0	10	0
16 1/4, — — 50	4	5	10	37 1/4, — — 71	0	8	8
17 1/4, — — 51	3	18	7	38 1/4, — — 72	0	7	7
18 1/4, — — 52	3	12	2	39 1/4, — — 73	0	6	6
19 1/4, — — 53	3	5	8	40 1/4, — — 74	0	5	7
20 1/4, — — 54	3	0	0	41 1/4, — — 75	0	4	9
21 1/4, — — 55	2	14	4				

TABLE

TABLE XXI.

For the Use of LONDON.

Shewing the Payment due (reckoning Interest at 3 per Cent.) for a Life-Annuity of One Pound, payable Quarterly. To commence at any Age from 35 to 75.

Age of the Purchaser from 34 3/4 to 35 1/2.

To commence at the end of Years after purchasing.	Value of an annuity of £1. in one present payment. £.	s.	d.	To commence at the end of Years after purchasing.	Value of an annuity of £1. in one present payment. £.	s.	d.
1/4, or at Age 35	14	9	6	21 1/4, or at Age 56	2	12	2
1 1/4, — — 36	13	10	4	22 1/4, — — 57	2	7	5
2 1/4, — — 37	12	12	4	23 1/4, — — 58	2	2	8
3 1/4, — — 38	11	14	3	24 1/4, — — 59	1	18	11
4 1/4, — — 39	10	18	2	25 1/4, — — 60	1	15	2
5 1/4, — — 40	10	2	0	26 1/4, — — 61	1	11	9
6 1/4, — — 41	9	7	4	27 1/4, — — 62	1	8	4
7 1/4, — — 42	8	12	8	28 1/4, — — 63	1	5	7
8 1/4, — — 43	8	0	3	29 1/4, — — 64	1	2	9
9 1/4, — — 44	7	7	11	30 1/4, — — 65	1	0	3
10 1/4, — — 45	6	16	9	31 1/4, — — 66	0	17	9
11 1/4, — — 46	6	5	7	32 1/4, — — 67	0	15	9
12 1/4, — — 47	5	16	2	33 1/4, — — 68	0	13	8
13 1/4, — — 48	5	6	10	34 1/4, — — 69	0	12	1
14 1/4, — — 49	4	18	8	35 1/4, — — 70	0	10	6
15 1/4, — — 50	4	10	7	36 1/4, — — 71	0	9	3
16 1/4, — — 51	4	3	4	37 1/4, — — 72	0	8	0
17 1/4, — — 52	3	16	2	38 1/4, — — 73	0	6	11
18 1/4, — — 53	3	9	8	39 1/4, — — 74	0	5	10
19 1/4, — — 54	3	3	1	40 1/4, — — 75	0	5	0
20 1/4, — — 55	2	17	8				

TABLE

TABLE XXII.

For the Uſe of LONDON.

Shewing the Payment due (reckoning Intereſt at 3 per Cent.) for a Life-Annuity of One Pound, payable Quarterly. To commence at any Age from 35 to 75.

Age of the Purchaſer from 35 ¾ to 36 ½.

To commence at the end of Years after purchaſing.	Value of an annuity of £1. in one preſent payment. £.	s.	d.	To commence at the end of Years after purchaſing.	Value of an annuity of £1. in one preſent payment. £.	s.	d.
¼, or at Age	36	14	5	6	20 ¼, or at Age	56	2	15	4
1 ¼, — —	37	13	6	4	21 ¼, — —	57	2	10	0
2 ¼, — —	38	12	8	3	22 ¼, — —	58	2	5	6
3 ¼, — —	39	11	10	2	23 ¼, — —	59	2	1	0
4 ¼, — —	40	10	14	0	24 ¼, — —	60	1	17	2
5 ¼, — —	41	9	17	8	25 ¼, — —	61	1	13	5
6 ¼, — —	42	9	3	5	26 ¼, — —	62	1	10	2
7 ¼, — —	43	8	9	2	27 ¼, — —	63	1	6	11
8 ¼, — —	44	7	16	8	28 ¼, — —	64	1	4	1
9 ¼, — —	45	7	4	3	29 ¼, — —	65	1	1	4
10 ¼, — —	46	6	13	5	30 ¼, — —	66	0	18	11
11 ¼, — —	47	6	2	7	31 ¼, — —	67	0	16	6
12 ¼, — —	48	5	13	4	32 ¼, — —	68	0	14	8
13 ¼, — —	49	5	4	1	33 ¼, — —	69	0	12	9
14 ¼, — —	50	4	16	0	34 ¼, — —	70	0	11	2
15 ¼, — —	51	4	8	0	35 ¼, — —	71	0	9	8
16 ¼, — —	52	4	0	8	36 ¼, — —	72	0	8	6
17 ¼, — —	53	3	13	5	37 ¼, — —	73	0	7	3
18 ¼, — —	54	3	7	1	38 ¼, — —	74	0	6	3
19 ¼, — —	55	3	0	9	39 ¼, — —	75	0	5	3

TABLE

TABLE XXIII.

For the Uſe of LONDON.

Shewing the Payment due (reckoning Intereſt at 3 per Cent.) for a Life-Annuity of One Pound, payable Quarterly. To commence at any Age from 35 to 75.

Age of the Purchaſer from 36 ¾ to 37 ½.

To commence at the end of Years after purchaſing.	Value of an annuity of £1. in one preſent payment. £.	s.	d.	To commence at the end of Years after purchaſing.	Value of an annuity of £1. in one preſent payment. £.	s.	d.
¼, or at Age	37	14	1	6	20 ¼, or at Age	57	2	13	1
1 ¼, — —	38	13	2	5	21 ¼, — —	58	2	7	9
2 ¼, — —	39	12	4	3	22 ¼, — —	59	2	3	7
3 ¼, — —	40	11	6	2	23 ¼, — —	60	1	19	4
4 ¼, — —	41	10	9	9	24 ¼, — —	61	1	15	6
5 ¼, — —	42	9	13	4	25 ¼, — —	62	1	11	8
6 ¼, — —	43	8	19	6	26 ¼, — —	63	1	8	7
7 ¼, — —	44	8	5	8	27 ¼, — —	64	1	5	6
8 ¼, — —	45	7	13	2	28 ¼, — —	65	1	2	8
9 ¼, — —	46	7	0	8	29 ¼, — —	66	0	19	11
10 ¼, — —	47	6	10	1	30 ¼, — —	67	0	17	7
11 ¼, — —	48	5	19	7	31 ¼, — —	68	0	15	4
12 ¼, — —	49	5	10	6	32 ¼, — —	69	0	13	7
13 ¼, — —	50	5	1	4	33 ¼, — —	70	0	11	10
14 ¼, — —	51	4	13	4	34 ¼, — —	71	0	10	4
15 ¼, — —	52	4	5	4	35 ¼, — —	72	0	8	11
16 ¼, — —	53	3	18	0	36 ¼, — —	73	0	7	9
17 ¼, — —	54	3	10	8	37 ¼, — —	74	0	6	6
18 ¼, — —	55	3	4	6	38 ¼, — —	75	0	5	7
19 ¼, — —	56	2	18	5					

TABLE

TABLE XXIV.

For the Use of LONDON.

Shewing the Payment due (reckoning Interest at 3 per Cent.) for a Life-Annuity of One Pound, payable Quarterly. To commence at any Age from 35 to 75.

Age of the Purchaser from $37\frac{3}{4}$ to $38\frac{3}{4}$.

To commence at the end of Years after purchasing.			Value of an annuity of £1. in one present payment. £.	s.	d.	To commence at the end of Years after purchasing.			Value of an annuity of £1. in one present payment. £.	s.	d.
$\frac{1}{4}$,	or at Age	38	13	17	6	$19\frac{1}{4}$,	or at Age	57	2	16	2
$1\frac{1}{4}$,	— —	39	12	18	9	$20\frac{1}{4}$,	— —	58	2	11	1
$2\frac{1}{4}$,	— —	40	12	0	6	$21\frac{1}{4}$,	— —	59	2	6	1
$3\frac{1}{4}$,	— —	41	11	2	2	$22\frac{1}{4}$,	— —	60	2	1	10
$4\frac{1}{4}$,	— —	42	10	6	1	$23\frac{1}{4}$,	— —	61	1	17	7
$5\frac{1}{4}$,	— —	43	9	10	1	$24\frac{1}{4}$,	— —	62	1	13	10
$6\frac{1}{4}$,	— —	44	8	16	1	$25\frac{1}{4}$,	— —	63	1	10	2
$7\frac{1}{4}$,	— —	45	8	2	2	$26\frac{1}{4}$,	— —	64	1	7	1
$8\frac{1}{4}$,	— —	46	7	10	0	$27\frac{1}{4}$,	— —	65	1	4	0
$9\frac{1}{4}$,	— —	47	6	17	9	$28\frac{1}{4}$,	— —	66	1	1	3
$10\frac{1}{4}$,	— —	48	6	7	4	$29\frac{1}{4}$,	— —	67	0	18	7
$11\frac{1}{4}$,	— —	49	5	17	0	$30\frac{1}{4}$,	— —	68	0	16	5
$12\frac{1}{4}$,	— —	50	5	7	11	$31\frac{1}{4}$,	— —	69	0	14	3
$13\frac{1}{4}$,	— —	51	4	18	9	$32\frac{1}{4}$,	— —	70	0	12	7
$14\frac{1}{4}$,	— —	52	4	10	8	$33\frac{1}{4}$,	— —	71	0	11	0
$15\frac{1}{4}$,	— —	53	4	2	6	$34\frac{1}{4}$,	— —	72	0	9	6
$16\frac{1}{4}$,	— —	54	3	15	5	$35\frac{1}{4}$,	— —	73	0	8	1
$17\frac{1}{4}$,	— —	55	3	8	3	$36\frac{1}{4}$,	— —	74	0	7	0
$18\frac{1}{4}$,	— —	56	3	2	2	$37\frac{1}{4}$,	— —	75	0	5	11

TABLE XXV.

For the Use of LONDON.

Shewing the Payment due (reckoning Interest at 3 per Cent.) for a Life-Annuity of One Pound, payable Quarterly. To commence at any Age from 35 to 75.

Age of the Purchaser from $38\frac{1}{4}$ to $39\frac{1}{4}$.

To commence at the end of Years after purchasing.			Value of an annuity of £1. in one present payment. £.	s.	d.	To commence at the end of Years after purchasing.			Value of an annuity of £1. in one present payment. £.	s.	d.
$\frac{1}{4}$,	or at Age	39	13	13	6	$19\frac{1}{4}$,	or at Age	58	2	13	11
$1\frac{1}{4}$,	— —	40	12	15	2	$20\frac{1}{4}$,	— —	59	2	9	2
$2\frac{1}{4}$,	— —	41	11	16	8	$21\frac{1}{4}$,	— —	60	2	4	5
$3\frac{1}{4}$,	— —	42	10	18	2	$22\frac{1}{4}$,	— —	61	2	0	1
$4\frac{1}{4}$,	— —	43	10	2	6	$23\frac{1}{4}$,	— —	62	1	15	10
$5\frac{1}{4}$,	— —	44	9	6	11	$24\frac{1}{4}$,	— —	63	1	12	3
$6\frac{1}{4}$,	— —	45	8	12	9	$25\frac{1}{4}$,	— —	64	1	8	9
$7\frac{1}{4}$,	— —	46	7	18	8	$26\frac{1}{4}$,	— —	65	1	5	7
$8\frac{1}{4}$,	— —	47	7	6	10	$27\frac{1}{4}$,	— —	66	1	2	5
$9\frac{1}{4}$,	— —	48	6	14	11	$28\frac{1}{4}$,	— —	67	0	19	10
$10\frac{1}{4}$,	— —	49	6	4	8	$29\frac{1}{4}$,	— —	68	0	17	3
$11\frac{1}{4}$,	— —	50	5	14	4	$30\frac{1}{4}$,	— —	69	0	15	3
$12\frac{1}{4}$,	— —	51	5	5	4	$31\frac{1}{4}$,	— —	70	0	13	3
$13\frac{1}{4}$,	— —	52	4	16	3	$32\frac{1}{4}$,	— —	71	0	11	8
$14\frac{1}{4}$,	— —	53	4	8	0	$33\frac{1}{4}$,	— —	72	0	10	1
$15\frac{1}{4}$,	— —	54	3	19	8	$34\frac{1}{4}$,	— —	73	0	8	8
$16\frac{1}{4}$,	— —	55	3	12	10	$35\frac{1}{4}$,	— —	74	0	7	4
$17\frac{1}{4}$,	— —	56	3	5	11	$36\frac{1}{4}$,	— —	75	0	6	3
$18\frac{1}{4}$,	— —	57	2	19	11						

TABLE XXVI.

For the Use of LONDON.

Shewing the Payment due (reckoning Interest at 3 per Cent.) for a Life-Annuity of One Pound, payable Quarterly. To commence at any Age from 35 to 75.

Age of the Purchaser from 39 ¾ to 40 ½.

To commence at the end of Years after purchasing.			Value of an annuity of £1. in one present payment. £.	s.	d.
¼,	or at Age	40	13	11	6
1 ¼,	— —	41	12	11	1
2 ¼,	— —	42	11	13	0
3 ¼,	— —	43	10	14	10
4 ¼,	— —	44	9	19	1
5 ¼,	— —	45	9	3	3
6 ¼,	— —	46	8	9	6
7 ¼,	— —	47	7	15	9
8 ¼,	— —	48	7	4	0
9 ¼,	— —	49	6	12	3
10 ¼,	— —	50	6	2	0
11 ¼,	— —	51	5	11	8
12 ¼,	— —	52	5	2	6
13 ¼,	— —	53	4	13	3
14 ¼,	— —	54	4	5	3
15 ¼,	— —	55	3	17	2
16 ¼,	— —	56	3	10	4
17 ¼,	— —	57	3	3	5
18 ¼,	or at Age	58	2	17	9
19 ¼,	— —	59	2	12	1
20 ¼,	— —	60	2	7	3
21 ¼,	— —	61	2	2	6
22 ¼,	— —	62	1	18	4
23 ¼,	— —	63	1	14	2
24 ¼,	— —	64	1	10	7
25 ¼,	— —	65	1	7	1
26 ¼,	— —	66	1	4	0
27 ¼,	— —	67	1	1	0
28 ¼,	— —	68	0	18	7
29 ¼,	— —	69	0	16	2
30 ¼,	— —	70	0	14	3
31 ¼,	— —	71	0	12	4
32 ¼,	— —	72	0	10	9
33 ¼,	— —	73	0	9	2
34 ¼,	— —	74	0	7	10
35 ¼,	— —	75	0	6	8

TABLE

TABLE XXVII.

For the Use of LONDON.

Shewing the Payment due (reckoning Interest at 3 per Cent.) for a Life-Annuity of One Pound, payable Quarterly. To commence at any Age from 35 to 75.

Age of the Purchaser from 40 ¾ to 41 ½.

To commence at the end of Years after purchasing.			Value of an annuity of £1. in one present payment. £.	s.	d.
¼,	or at Age	41	13	7	6
1 ¼,	— —	42	12	7	1
2 ¼,	— —	43	11	9	4
3 ¼,	— —	44	10	11	7
4 ¼,	— —	45	9	15	8
5 ¼,	— —	46	8	19	8
6 ¼,	— —	47	8	6	3
7 ¼,	— —	48	7	12	10
8 ¼,	— —	49	7	1	2
9 ¼,	— —	50	6	9	7
10 ¼,	— —	51	5	19	4
11 ¼,	— —	52	5	9	1
12 ¼,	— —	53	4	19	8
13 ¼,	— —	54	4	10	3
14 ¼,	— —	55	4	2	6
15 ¼,	— —	56	3	14	8
16 ¼,	— —	57	3	7	10
17 ¼,	— —	58	3	1	0
18 ¼,	or at Age	59	2	15	8
19 ¼,	— —	60	2	10	3
20 ¼,	— —	61	2	5	5
21 ¼,	— —	62	2	0	7
22 ¼,	— —	63	1	16	7
23 ¼,	— —	64	1	12	7
24 ¼,	— —	65	1	9	0
25 ¼,	— —	66	1	5	5
26 ¼,	— —	67	1	2	6
27 ¼,	— —	68	0	19	7
28 ¼,	— —	69	0	17	4
29 ¼,	— —	70	0	15	1
30 ¼,	— —	71	0	13	3
31 ¼,	— —	72	0	11	5
32 ¼,	— —	73	0	9	11
33 ¼,	— —	74	0	8	4
34 ¼,	— —	75	0	7	1

TABLE XXVIII.

For the Use of LONDON.

Shewing the Payment due, (reckoning Interest at 3 per Cent.) for a Life-Annuity of One Pound, payable Quarterly. To commence at any Age from 35 to 75.

Age of the Purchaser from 41 ¾ to 42 ½.

To commence at the end of Years after purchasing.	Value of an annuity of £1. in one present payment. £.	s.	d.	To commence at the end of Years after purchasing.	Value of an annuity of £1. in one present payment. £.	s.	d.
¼, or at Age 42	13	3	6	17¼, or at Age 59	2	19	3
1¼, — — 43	12	4	6	18¼, — — 60	2	13	9
2¼, — — 44	11	6	6	19¼, — — 61	2	8	3
3¼, — — 45	10	8	6	20¼, — — 62	2	3	7
4¼, — — 46	9	12	10	21¼, — — 63	1	18	10
5¼, — — 47	8	17	2	22¼, — — 64	1	14	10
6¼, — — 48	8	3	10	23¼, — — 65	1	10	9
7¼, — — 49	7	10	5	24¼, — — 66	1	7	4
8¼, — — 50	6	18	9	25¼, — — 67	1	3	11
9¼, — — 51	6	7	1	26¼, — — 68	1	1	2
10¼, — — 52	5	16	7	27¼, — — 69	0	18	4
11¼, — — 53	5	6	1	28¼, — — 70	0	16	3
12¼, — — 54	4	17	0	29¼, — — 71	0	14	1
13¼, — — 55	4	7	9	30¼, — — 72	0	12	3
14¼, — — 56	4	0	0	31¼, — — 73	0	10	5
15¼, — — 57	3	12	3	32¼, — — 74	0	9	0
16¼, — — 58	3	5	9	33¼, — — 75	0	7	7

TABLE

TABLE XXIX.

For the Use of LONDON.

Shewing the Payment due (reckoning Interest at 3 per Cent.) for a Life-Annuity of One Pound, payable Quarterly. To commence at any Age from 35 to 75.

Age of the Purchaser from 42 ¾ to 43 ½.

To commence at the end of Years after purchasing.	Value of an annuity of £1. in one present payment. £.	s.	d.	To commence at the end of Years after purchasing.	Value of an annuity of £1. in one present payment. £.	s.	d.
¼, or at Age 43	12	19	6	17¼, or at Age 60	2	17	6
1¼, — — 44	12	2	0	18¼, — — 61	2	11	11
2¼, — — 45	11	3	8	19¼, — — 62	2	6	4
3¼, — — 46	10	5	5	20¼, — — 63	2	1	9
4¼, — — 47	9	10	1	21¼, — — 64	1	17	2
5¼, — — 48	8	14	8	22¼, — — 65	1	13	1
6¼, — — 49	8	1	5	23¼, — — 66	1	9	0
7¼, — — 50	7	8	1	24¼, — — 67	1	5	9
8¼, — — 51	6	16	4	25¼, — — 68	1	2	5
9¼, — — 52	6	4	8	26¼, — — 69	0	19	10
10¼, — — 53	5	13	11	27¼, — — 70	0	17	2
11¼, — — 54	5	3	2	28¼, — — 71	0	15	2
12¼, — — 55	4	14	3	29¼, — — 72	0	13	1
13¼, — — 56	4	5	4	30¼, — — 73	0	11	3
14¼, — — 57	3	17	7	31¼, — — 74	0	9	6
15¼, — — 58	3	9	10	32¼, — — 75	0	8	2
16¼, — — 59	3	3	8				

TABLE

TABLE XXX.

For the Use of LONDON.

Shewing the Payment due (reckoning Interest at 3 per Cent.) for a Life-Annuity of One Pound, payable Quarterly. To commence at any Age from 35 to 75.

Age of the Purchaser from 43 ¾ to 44 ½.

To commence at the end of Years after purchasing.	Value of an annuity of £1. in one present payment. £. s. d.	To commence at the end of Years after purchasing.	Value of an annuity of £1. in one present payment. £. s. d.
¼, or at Age 44	12 17 0	16¼, or at Age 60	3 1 4
1¼, — — 45	11 18 0	17¼, — — 61	2 15 1
2¼, — — 46	11 0 0	18¼, — — 62	2 9 9
3¼, — — 47	10 2 2	19¼, — — 63	2 4 4
4¼, — — 48	9 6 11	20¼, — — 64	1 19 8
5¼, — — 49	8 11 7	21¼, — — 65	1 15 1
6¼, — — 50	7 18 4	22¼, — — 66	1 11 2
7¼, — — 51	7 5 0	23¼, — — 67	1 7 3
8¼, — — 52	6 13 0	24¼, — — 68	1 4 2
9¼, — — 53	6 1 1	25¼, — — 69	1 1 0
10¼, — — 54	5 10 7	26¼, — — 70	0 18 6
11¼, — — 55	5 0 2	27¼, — — 71	0 16 0
12¼, — — 56	4 11 3	28¼, — — 72	0 14 0
13¼, — — 57	4 2 4	29¼, — — 73	0 12 0
14¼, — — 58	3 15 0	30¼, — — 74	0 10 3
15¼, — — 59	3 7 8	31¼, — — 75	0 8 8

TABLE

TABLE XXXI.

For the Use of LONDON.

Shewing the Payment due (reckoning Interest at 3 per Cent.) for a Life-Annuity of One Pound, payable Quarterly. To commence at any Age from 35 to 75.

Age of the Purchaser from 44 ¾ to 45 ½.

To commence at the end of Years after purchasing.	Value of an annuity of £1. in one present payment. £. s. d.	To commence at the end of Years after purchasing.	Value of an annuity of £1. in one present payment. £. s. d.
¼, or at Age 45	12 13 6	16¼, or at Age 61	2 19 1
1¼, — — 46	11 13 11	17¼, — — 62	2 12 9
2¼, — — 47	10 16 5	18¼, — — 63	2 7 7
3¼, — — 48	9 18 11	19¼, — — 64	2 2 4
4¼, — — 49	9 3 9	20¼, — — 65	1 17 8
5¼, — — 50	8 8 7	21¼, — — 66	1 13 6
6¼, — — 51	7 15 3	22¼, — — 67	1 9 3
7¼, — — 52	7 1 11	23¼, — — 68	1 5 6
8¼, — — 53	6 9 8	24¼, — — 69	1 2 7
9¼, — — 54	5 17 6	25¼, — — 70	0 19 7
10¼, — — 55	5 7 4	26¼, — — 71	0 17 3
11¼, — — 56	4 17 2	27¼, — — 72	0 14 11
12¼, — — 57	4 8 3	28¼, — — 73	0 12 11
13¼, — — 58	3 19 5	29¼, — — 74	0 10 11
14¼, — — 59	3 12 5	30¼, — — 75	0 9 3
15¼, — — 60	3 5 6		

TABLE

TABLE XXXII.

For the Uſe of LONDON.

Shewing the Payment due (reckoning Intereſt at 3 per Cent.) for a Life-Annuity of One Pound, payable Quarterly. To commence at any Age from 35 to 75.

Age of the Purchaſer from 45 ¼ to 46 ½.

To commence at the end of Years after purchaſing.	Value of an annuity of £1. in one preſent payment. £. s. d.	To commence at the end of Years after purchaſing.	Value of an annuity of £1. in one preſent payment. £. s. d.
¼, or at Age 46	12 9 6	15 ¼, or at Age 61	3 2 11
1 ¼, — — 47	11 10 9	16 ¼, — — 62	2 16 9
2 ¼, — — 48	10 13 4	17 ¼, — — 63	2 10 7
3 ¼, — — 49	9 15 11	18 ¼, — — 64	2 5 4
4 ¼, — — 50	9 0 8	19 ¼, — — 65	2 0 1
5 ¼, — — 51	8 5 6	20 ¼, — — 66	1 15 7
6 ¼, — — 52	7 11 10	21 ¼, — — 67	1 11 1
7 ¼, — — 53	6 18 2	22 ¼, — — 68	1 7 6
8 ¼, — — 54	6 6 3	23 ¼, — — 69	1 4 0
9 ¼, — — 55	5 14 4	24 ¼, — — 70	1 1 2
10 ¼, — — 56	5 4 2	25 ¼, — — 71	0 18 3
11 ¼, — — 57	4 14 0	26 ¼, — — 72	0 16 0
12 ¼, — — 58	4 5 7	27 ¼, — — 73	0 13 8
13 ¼, — — 59	3 17 2	28 ¼, — — 74	0 11 9
14 ¼, — — 60	3 10 0	29 ¼, — — 75	0 9 11

TABLE XXXIII.

For the Uſe of LONDON.

Shewing the Payment due (reckoning Intereſt at 3 per Cent.) for a Life-Annuity of One Pound, payable Quarterly. To commence at any Age from 35 to 75.

Age of the Purchaſer from 46 ¼ to 47 ½.

To commence at the end of Years after purchaſing.	Value of an annuity of £1. in one preſent payment. £. s. d.	To commence at the end of Years after purchaſing.	Value of an annuity of £1. in one preſent payment. £. s. d.
¼, or at Age 47	12 5 6	15 ¼, or at Age 62	3 0 4
1 ¼, — — 48	11 7 7	16 ¼, — — 63	2 14 5
2 ¼, — — 49	10 10 3	17 ¼, — — 64	2 8 6
3 ¼, — — 50	9 12 11	18 ¼, — — 65	2 3 2
4 ¼, — — 51	8 17 8	19 ¼, — — 66	1 17 10
5 ¼, — — 52	8 2 5	20 ¼, — — 67	1 13 6
6 ¼, — — 53	7 8 5	21 ¼, — — 68	1 9 2
7 ¼, — — 54	6 14 5	22 ¼, — — 69	1 5 10
8 ¼, — — 55	6 2 10	23 ¼, — — 70	1 2 5
9 ¼, — — 56	5 11 2	24 ¼, — — 71	0 19 9
10 ¼, — — 57	5 1 0	25 ¼, — — 72	0 17 0
11 ¼, — — 58	4 10 11	26 ¼, — — 73	0 14 8
12 ¼, — — 59	4 2 11	27 ¼, — — 74	0 12 5
13 ¼, — — 60	3 14 11	28 ¼, — — 75	0 10 7
14 ¼, — — 61	3 7 8		

TABLE XXXIV.

For the Use of LONDON.

Shewing the Payment due (reckoning Interest at 3 per Cent.) for a Life-Annuity of One Pound, payable Quarterly. To commence at any Age from 35 to 75.

Age of the Purchaser from 47¾ to 48¾.

To commence at the end of Years after purchasing.			Value of an annuity of £1. in one present payment. £.	s.	d.
¼,	or at Age	48	12	3	6
1 ¼,	——	49	11	4	2
2 ¼,	——	50	10	6	9
3 ¼,	——	51	9	9	5
4 ¼,	——	52	8	13	9
5 ¼,	——	53	7	18	1
6 ¼,	——	54	7	4	6
7 ¼,	——	55	6	10	10
8 ¼,	——	56	5	19	3
9 ¼,	——	57	5	7	7
10 ¼,	——	58	4	18	0
11 ¼,	——	59	4	8	4
12 ¼,	——	60	4	0	2
13 ¼,	——	61	3	12	0
14 ¼,	——	62	3	5	0
15 ¼,	——	63	2	17	11
16 ¼,	——	64	2	11	10
17 ¼,	——	65	2	5	10
18 ¼,	——	66	2	0	9
19 ¼,	——	67	1	15	7
20 ¼,	——	68	1	11	6
21 ¼,	——	69	1	7	5
22 ¼,	——	70	1	4	2
23 ¼,	——	71	1	1	0
24 ¼,	——	72	0	18	3
25 ¼,	——	73	0	15	7
26 ¼,	——	74	0	13	5
27 ¼,	——	75	0	11	4

TABLE XXXV.

For the Use of LONDON.

Shewing the Payment due (reckoning Interest at 3 per Cent.) for a Life-Annuity of One Pound, payable Quarterly. To commence at any age from 35 to 75.

Age of the Purchaser from 48¾ to 49¾.

To commence at the end of Years after purchasing.			Value of an annuity of £1. in one present payment. £.	s.	d.
¼,	or at Age	49	11	19	6
1 ¼,	——	50	11	0	10
2 ¼,	——	51	10	3	4
3 ¼,	——	52	9	5	11
4 ¼,	——	53	8	9	10
5 ¼,	——	54	7	13	10
6 ¼,	——	55	7	0	7
7 ¼,	——	56	6	7	3
8 ¼,	——	57	5	15	8
9 ¼,	——	58	5	4	0
10 ¼,	——	59	4	14	11
11 ¼,	——	60	4	5	9
12 ¼,	——	61	3	17	5
13 ¼,	——	62	3	9	1
14 ¼,	——	63	3	2	3
15 ¼,	——	64	2	15	6
16 ¼,	——	65	2	9	4
17 ¼,	——	66	2	3	3
18 ¼,	——	67	1	18	4
19 ¼,	——	68	1	13	5
20 ¼,	——	69	1	9	6
21 ¼,	——	70	1	5	8
22 ¼,	——	71	1	2	7
23 ¼,	——	72	0	19	6
24 ¼,	——	73	0	16	10
25 ¼,	——	74	0	14	2
26 ¼,	——	75	0	12	2

TABLE

TABLE XXXVI.

For the Use of LONDON.

Shewing the Payment due (reckoning Interest at 3 per Cent.) for a Life-Annuity of One Pound, payable Quarterly. To commence at any Age from 35 to 75.

Age of the Purchaser from 49¾ to 50¾.

To commence at the end of Years after purchasing.			Value of an annuity of £1. in one present payment. £.	s.	d.
¼,	or at Age	50	11	15	6
1 ¼,	——	51	10	16	9
2 ¼,	——	52	9	18	10
3 ¼,	——	53	9	1	0
4 ¼,	——	54	8	5	4
5 ¼,	——	55	7	9	8
6 ¼,	——	56	6	16	5
7 ¼,	——	57	6	3	1
8 ¼,	——	58	5	12	1
9 ¼,	——	59	5	1	0
10 ¼,	——	60	4	11	9
11 ¼,	——	61	4	2	4
12 ¼,	——	62	3	14	4
13 ¼,	——	63	3	6	3
14 ¼,	——	64	2	19	4
15 ¼,	——	65	2	12	6
16 ¼,	——	66	2	6	7
17 ¼,	——	67	2	0	9
18 ¼,	——	68	1	16	1
19 ¼,	——	69	1	11	4
20 ¼,	——	70	1	7	8
21 ¼,	——	71	1	4	0
22 ¼,	——	72	1	0	11
23 ¼,	——	73	0	17	10
24 ¼,	——	74	0	15	4
25 ¼,	——	75	0	13	0

TABLE XXXVII.

For the Use of LONDON.

Shewing the Payment due (reckoning Interest at 3 per Cent.) for a Life-Annuity of One Pound, payable Quarterly. To commence at any Age from 35 to 75.

Age of the Purchaser from 50¾ to 51¾.

To commence at the end of Years after purchasing.			Value of an annuity of £1. in one present payment. £.	s.	d.
¼,	or at Age	51	11	11	6
1 ¼,	——	52	10	12	8
2 ¼,	——	53	9	14	4
3 ¼,	——	54	8	16	0
4 ¼,	——	55	8	0	10
5 ¼,	——	56	7	5	7
6 ¼,	——	57	6	12	4
7 ¼,	——	58	5	19	0
8 ¼,	——	59	5	8	7
9 ¼,	——	60	4	18	1
10 ¼,	——	61	4	8	7
11 ¼,	——	62	3	19	0
12 ¼,	——	63	3	11	3
13 ¼,	——	64	3	3	6
14 ¼,	——	65	2	16	6
15 ¼,	——	66	2	9	6
16 ¼,	——	67	2	3	11
17 ¼,	——	68	1	18	3
18 ¼,	——	69	1	13	10
19 ¼,	——	70	1	9	4
20 ¼,	——	71	1	5	10
21 ¼,	——	72	1	2	3
20 ¼,	——	73	0	19	3
23 ¼,	——	74	0	16	3
24 ¼,	——	75	0	13	11

TABLE

TABLE XXXVIII.

For the Use of LONDON.

Shewing the Payment due (reckoning Interest at 3 per Cent.) for a Life-Annuity of One Pound, payable Quarterly. To commence at any Age from 35 to 75.

Age of the Purchaser from $51\frac{3}{4}$ to $52\frac{3}{4}$.

To commence at the end of Years after purchasing.			Value of an annuity of £1. in one present payment. £.	s.	d.
$\frac{1}{4}$,	or at Age	52	11	7	6
$1\frac{1}{4}$,	——	53	10	7	8
$2\frac{1}{4}$,	——	54	9	9	9
$3\frac{1}{4}$,	——	55	8	11	9
$4\frac{1}{4}$,	——	56	7	16	7
$5\frac{1}{4}$,	——	57	7	1	3
$6\frac{1}{4}$,	——	58	6	8	8
$7\frac{1}{4}$,	——	59	5	16	0
$8\frac{1}{4}$,	——	60	5	5	3
$9\frac{1}{4}$,	——	61	4	14	6
$10\frac{1}{4}$,	——	62	4	5	3
$11\frac{1}{4}$,	——	63	3	16	0
$12\frac{1}{4}$,	——	64	3	8	1
$13\frac{1}{4}$,	——	65	3	0	3
$14\frac{1}{4}$,	——	66	2	13	6
$15\frac{1}{4}$,	——	67	2	6	9
$16\frac{1}{4}$,	——	68	2	1	5
$17\frac{1}{4}$,	——	69	1	16	0
$18\frac{1}{4}$,	——	70	1	11	9
$19\frac{1}{4}$,	——	71	1	7	6
$20\frac{1}{4}$,	——	72	1	4	0
$21\frac{1}{4}$,	——	73	1	0	6
$22\frac{1}{4}$,	——	74	0	17	7
$23\frac{1}{4}$,	——	75	0	14	5

TABLE XXXIX.

For the Use of LONDON.

Shewing the Payment due (reckoning Interest at 3 per Cent.) for a Life-Annuity of One Pound, payable Quarterly. To commence at any Age from 35 to 75.

Age of the Purchaser from $52\frac{3}{4}$ to $53\frac{3}{4}$.

To commence at the end of Years after purchasing.			Value of an annuity of £1. in one present payment. £.	s.	d.
$\frac{1}{4}$,	or at Age	53	11	1	6
$1\frac{1}{4}$,	——	54	10	2	8
$2\frac{1}{4}$,	——	55	9	5	2
$3\frac{1}{4}$,	——	56	8	7	7
$4\frac{1}{4}$,	——	57	7	12	4
$5\frac{1}{4}$,	——	58	6	17	0
$6\frac{1}{4}$,	——	59	6	5	0
$7\frac{1}{4}$,	——	60	5	12	11
$8\frac{1}{4}$,	——	61	5	2	0
$9\frac{1}{4}$,	——	62	4	11	0
$10\frac{1}{4}$,	——	63	4	2	0
$11\frac{1}{4}$,	——	64	3	13	1
$12\frac{1}{4}$,	——	65	3	5	0
$13\frac{1}{4}$,	——	66	2	17	0
$14\frac{1}{4}$,	——	67	2	10	6
$15\frac{1}{4}$,	——	68	2	4	0
$16\frac{1}{4}$,	——	69	1	18	11
$17\frac{1}{4}$,	——	70	1	13	10
$18\frac{1}{4}$,	——	71	1	9	9
$19\frac{1}{4}$,	——	72	1	5	8
$20\frac{1}{4}$,	——	73	1	2	2
$21\frac{1}{4}$,	——	74	0	18	9
$22\frac{1}{4}$,	——	75	0	16	0

TABLE

TABLE XL.

For the Use of LONDON.

Shewing the Payment due (reckoning Interest at 3 per Cent.) for a Life-Annuity of One Pound, payable Quarterly. To commence at any Age from 35 to 75.

Age of the Purchaser from $53\frac{3}{4}$ to $54\frac{3}{4}$.

To commence at the end of Years after purchasing.			Value of an annuity of £1. in one present payment. £.	s.	d.
$\frac{1}{4}$,	or at Age	54	10	17	6
$1\frac{1}{4}$,	——	55	9	18	6
$2\frac{1}{4}$,	——	56	9	0	11
$3\frac{1}{4}$,	——	57	8	3	3
$4\frac{1}{4}$,	——	58	7	8	7
$5\frac{1}{4}$,	——	59	6	14	0
$6\frac{1}{4}$,	——	60	6	1	7
$7\frac{1}{4}$,	——	61	5	9	2
$8\frac{1}{4}$,	——	62	4	18	7
$9\frac{1}{4}$,	——	63	4	7	10
$10\frac{1}{4}$,	——	64	3	18	8
$11\frac{1}{4}$,	——	65	3	9	7
$12\frac{1}{4}$,	——	66	3	1	9
$13\frac{1}{4}$,	——	67	2	14	0
$14\frac{1}{4}$,	——	68	2	7	9
$15\frac{1}{4}$,	——	69	2	1	7
$16\frac{1}{4}$,	——	70	1	16	8
$17\frac{1}{4}$,	——	71	1	11	9
$18\frac{1}{4}$,	——	72	1	7	9
$19\frac{1}{4}$,	——	73	1	3	8
$20\frac{1}{4}$,	——	74	1	0	4
$21\frac{1}{4}$,	——	75	0	17	3

TABLE XLI.

For the Use of LONDON.

Shewing the Payment due (reckoning Interest at 3 per Cent.) for a Life-Annuity of One Pound, payable Quarterly. To commence at any Age from 35 to 75.

Age of the Purchaser from $54\frac{3}{4}$ to $55\frac{3}{4}$.

To commence at the end of Years after purchasing.			Value of an annuity of £1. in one present payment. £.	s.	d.
$\frac{1}{4}$,	or at Age	55	10	13	6
$1\frac{1}{4}$,	——	56	9	14	5
$2\frac{1}{4}$,	——	57	8	16	8
$3\frac{1}{4}$,	——	58	7	18	11
$4\frac{1}{4}$,	——	59	7	4	11
$5\frac{1}{4}$,	——	60	6	10	11
$6\frac{1}{4}$,	——	61	5	18	2
$7\frac{1}{4}$,	——	62	5	5	6
$8\frac{1}{4}$,	——	63	4	15	2
$9\frac{1}{4}$,	——	64	4	4	9
$10\frac{1}{4}$,	——	65	3	15	5
$11\frac{1}{4}$,	——	66	3	6	1
$12\frac{1}{4}$,	——	67	2	18	7
$13\frac{1}{4}$,	——	68	2	11	0
$14\frac{1}{4}$,	——	69	2	5	1
$15\frac{1}{4}$,	——	70	1	19	2
$16\frac{1}{4}$,	——	71	1	14	6
$17\frac{1}{4}$,	——	72	1	9	9
$18\frac{1}{4}$,	——	73	1	5	9
$19\frac{1}{4}$,	——	74	1	1	8
$20\frac{1}{4}$,	——	75	0	18	7

TABLE

TABLE XLII.

For the Use of LONDON.

Shewing the Payment due (reckoning Interest at 3 per Cent.) for a Life-Annuity of One Pound, payable Quarterly. To commence at any Age from 35 to 75.

Age of the Purchaser from 55¾ to 56½.

To commence at the end of Years after purchasing.			Value of an annuity of £1. in one present payment. £.	s.	d.
¼,	or at Age	56	10	9	6
1 ¼,	——	57	9	10	2
2 ¼,	——	58	8	13	1
3 ¼,	——	59	7	16	0
4 ¼,	——	60	7	1	7
5 ¼,	——	61	6	7	2
6 ¼,	——	62	5	14	8
7 ¼,	——	63	5	2	4
8 ¼,	——	64	4	11	8
9 ¼,	——	65	4	1	0
10 ¼,	——	66	3	12	0
11 ¼,	——	67	3	2	10
12 ¼,	——	68	2	15	8
13 ¼,	——	69	2	8	5
14 ¼,	——	70	2	2	8
15 ¼,	——	71	1	17	0
16 ¼,	——	72	1	12	3
17 ¼,	——	73	1	7	7
18 ¼,	——	74	1	3	8
19 ¼,	——	75	1	0	1

TABLE XLIII.

For the Use of LONDON.

Shewing the Payment due (reckoning Interest at 3 per Cent.) for a Life-Annuity of One Pound, payable Quarterly. To commence at any Age from 35 to 75.

Age of the Purchaser from 56¾ to 57½.

To commence at the end of Years after purchasing.			Value of an annuity of £1. in one present payment. £.	s.	d.
¼,	or at Age	57	10	5	6
1 ¼,	——	58	9	5	11
2 ¼,	——	59	8	9	6
3 ¼,	——	60	7	13	2
4 ¼,	——	61	6	18	3
5 ¼,	——	62	6	3	5
6 ¼,	——	63	5	11	3
7 ¼,	——	64	4	19	2
8 ¼,	——	65	4	8	3
9 ¼,	——	66	3	17	4
10 ¼,	——	67	3	8	6
11 ¼,	——	68	2	19	8
12 ¼,	——	69	2	12	10
13 ¼,	——	70	2	5	11
14 ¼,	——	71	2	0	4
15 ¼,	——	72	1	14	10
16 ¼,	——	73	1	10	1
17 ¼,	——	74	1	5	5
18 ¼,	——	75	1	1	8

TABLE

TABLE XLIV.

For the Use of LONDON.

Shewing the Payment due (reckoning Interest at 3 per Cent.) for a Life-Annuity of One Pound, payable Quarterly. To commence at any Age from 35 to 75.

Age of the Purchaser from 57¾ to 58½.

To commence at the end of Years after purchasing.			Value of an annuity of £1. in one present payment. £.	s.	d.
¼,	or at Age	58	9	19	6
1 ¼,	——	59	9	1	9
2 ¼,	——	60	8	5	0
3 ¼,	——	61	7	8	2
4 ¼,	——	62	6	13	8
5 ¼,	——	63	5	19	2
6 ¼,	——	64	5	6	9
7 ¼,	——	65	4	14	5
8 ¼,	——	66	4	3	10
9 ¼,	——	67	3	13	3
10 ¼,	——	68	3	4	10
11 ¼,	——	69	2	16	5
12 ¼,	——	70	2	9	9
13 ¼,	——	71	2	3	1
14 ¼,	——	72	1	17	7
15 ¼,	——	73	1	12	2
16 ¼,	——	74	1	7	7
17 ¼,	——	75	1	3	5

TABLE XLV.

For the Use of LONDON.

Shewing the Payment due (reckoning Interest at 3 per Cent.) for a Life-Annuity of One Pound, payable Quarterly. To commence at any Age from 35 to 75.

Age of the Purchaser from 58¾ to 59½.

To commence at the end of Years after purchasing.			Value of an annuity of £1. in one present payment. £.	s.	d.
¼,	or at Age	59	9	15	6
1 ¼,	——	60	8	17	8
2 ¼,	——	61	8	0	5
3 ¼,	——	62	7	3	2
4 ¼,	——	63	6	9	1
5 ¼,	——	64	5	15	0
6 ¼,	——	65	5	2	4
7 ¼,	——	66	4	9	8
8 ¼,	——	67	3	19	6
9 ¼,	——	68	3	9	3
10 ¼,	——	69	3	1	2
11 ¼,	——	70	2	13	2
12 ¼,	——	71	2	6	9
13 ¼,	——	72	2	0	4
14 ¼,	——	73	1	14	11
15 ¼,	——	74	1	9	6
16 ¼,	——	75	1	5	2

TABLE

TABLE XLVI.

For the Use of LONDON.

Shewing the Payment due (reckoning Interest at 3 per Cent.) for a Life-Annuity of One Pound, payable Quarterly. To commence at any Age from 35 to 75.

Age of the Purchaser from $59\frac{3}{4}$ to $60\frac{3}{4}$.

To commence at the end of Years after purchasing.			Value of an annuity of £1. in one present payment. £.	s.	d.
$\frac{1}{4}$,	or at Age	60	9	11	6
$1\frac{1}{4}$,	——	61	8	12	7
$2\frac{1}{4}$,	——	62	7	15	9
$3\frac{1}{4}$,	——	63	6	18	10
$4\frac{1}{4}$,	——	64	6	4	5
$5\frac{1}{4}$,	——	65	5	10	0
$6\frac{1}{4}$,	——	66	4	17	8
$7\frac{1}{4}$,	——	67	4	5	4
$8\frac{1}{4}$,	——	68	3	15	7
$9\frac{1}{4}$,	——	69	3	5	9
$10\frac{1}{4}$,	——	70	2	18	0
$11\frac{1}{4}$,	——	71	2	10	2
$12\frac{1}{4}$,	——	72	2	3	10
$13\frac{1}{4}$,	——	73	1	17	5
$14\frac{1}{4}$,	——	74	1	12	1
$15\frac{1}{4}$,	——	75	1	7	0

TABLE XLVII.

For the Use of LONDON.

Shewing the Payment due (reckoning Interest at 3 per Cent.) for a Life-Annuity of One Pound, payable Quarterly. To commence at any Age from 35 to 75.

Age of the Purchaser from $60\frac{3}{4}$ to $61\frac{3}{4}$.

To commence at the end of Years after purchasing.			Value of an annuity of £1. in one present payment. £.	s.	d.
$\frac{1}{4}$,	or at Age	61	9	5	6
$1\frac{1}{4}$,	——	62	8	7	7
$2\frac{1}{4}$,	——	63	7	11	1
$3\frac{1}{4}$,	——	64	6	14	7
$4\frac{1}{4}$,	——	65	5	19	10
$5\frac{1}{4}$,	——	66	5	5	0
$6\frac{1}{4}$,	——	67	4	13	0
$7\frac{1}{4}$,	——	68	4	1	1
$8\frac{1}{4}$,	——	69	3	11	8
$9\frac{1}{4}$,	——	70	3	2	3
$10\frac{1}{4}$,	——	71	2	14	9
$11\frac{1}{4}$,	——	72	2	7	3
$12\frac{1}{4}$,	——	73	2	0	11
$13\frac{1}{4}$,	——	74	1	14	6
$14\frac{1}{4}$,	——	75	1	9	3

TABLE

TABLE XLVIII.

For the Use of LONDON.

Shewing the Payment due (reckoning Interest at 3 per Cent.) for a Life-Annuity of One Pound, payable Quarterly. To commence at any Age from 35 to 75.

Age of the Purchaser from $61\frac{3}{4}$ to $62\frac{3}{4}$.

To commence at the end of Years after purchasing.			Value of an annuity of £1. in one present payment. £.	s.	d.
$\frac{1}{4}$,	or at Age	62	9	1	6
$1\frac{1}{4}$,	——	63	8	3	4
$2\frac{1}{4}$,	——	64	7	6	4
$3\frac{1}{4}$,	——	65	6	9	4
$4\frac{1}{4}$,	——	66	5	14	11
$5\frac{1}{4}$,	——	67	5	0	5
$6\frac{1}{4}$,	——	68	4	8	11
$7\frac{1}{4}$,	——	69	3	17	4
$8\frac{1}{4}$,	——	70	3	8	3
$9\frac{1}{4}$,	——	71	2	19	1
$10\frac{1}{4}$,	——	72	2	11	6
$11\frac{1}{4}$,	——	73	2	4	0
$12\frac{1}{4}$,	——	74	1	17	10
$13\frac{1}{4}$,	——	75	1	12	0

TABLE XLIX.

For the Use of LONDON.

Shewing the Payment due (reckoning Interest at 3 per Cent.) for a Life-Annuity of One Pound, payable Quarterly. To commence at any Age from 35 to 75.

Age of the Purchaser from $62\frac{3}{4}$ to $63\frac{3}{4}$.

To commence at the end of Years after purchasing.			Value of an annuity of £1. in one present payment. £.	s.	d.
$\frac{1}{4}$,	or at Age	63	8	17	6
$1\frac{1}{4}$,	——	64	7	19	2
$2\frac{1}{4}$,	——	65	7	1	8
$3\frac{1}{4}$,	——	66	6	4	2
$4\frac{1}{4}$,	——	67	5	10	0
$5\frac{1}{4}$,	——	68	4	15	11
$6\frac{1}{4}$,	——	69	4	4	10
$7\frac{1}{4}$,	——	70	3	13	8
$8\frac{1}{4}$,	——	71	3	4	10
$9\frac{1}{4}$,	——	72	2	15	11
$10\frac{1}{4}$,	——	73	2	8	4
$11\frac{1}{4}$,	——	74	2	0	10
$12\frac{1}{4}$,	——	75	1	14	10

TABLE L.

For the Use of LONDON.

Shewing the Payment due (reckoning Interest at 3 per Cent.) for a Life-Annuity of One Pound, payable Quarterly. To commence at any Age from 35 to 75.

Age of the Purchaser from $63\frac{3}{4}$ to $64\frac{1}{2}$.

To commence at the end of Years after purchasing.			Value of an annuity of £1. in one present payment. £.	s.	d.
$\frac{1}{4}$,	or at Age	64	8	13	6
$1\frac{1}{4}$,	——	65	7	14	0
$2\frac{1}{4}$,	——	66	6	16	9
$3\frac{1}{4}$,	——	67	5	19	6
$4\frac{1}{4}$,	——	68	5	5	9
$5\frac{1}{4}$,	——	69	4	12	1
$6\frac{1}{4}$,	——	70	4	1	3
$7\frac{1}{4}$,	——	71	3	10	4
$8\frac{1}{4}$,	——	72	3	1	4
$9\frac{1}{4}$,	——	73	2	12	5
$10\frac{1}{4}$,	——	74	2	5	0
$11\frac{1}{4}$,	——	75	1	18	0

TABLE LI.

For the Use of LONDON.

Shewing the Payment due (reckoning Interest at 3 per Cent.) for a Life-Annuity of One Pound, payable Quarterly. To commence at any Age from 35 to 75.

Age of the Purchaser from $64\frac{3}{4}$ to $65\frac{1}{2}$.

To commence at the end of Years after purchasing.			Value of an annuity of £1. in one present payment. £.	s.	d.
$\frac{1}{4}$,	or at Age	65	8	7	6
$1\frac{1}{4}$,	——	66	7	8	11
$2\frac{1}{4}$,	——	67	6	11	11
$3\frac{1}{4}$,	——	68	5	14	11
$4\frac{1}{4}$,	——	69	5	1	7
$5\frac{1}{4}$,	——	70	4	8	4
$6\frac{1}{4}$,	——	71	3	17	8
$7\frac{1}{4}$,	——	72	3	7	0
$8\frac{1}{4}$,	——	73	2	17	11
$9\frac{1}{4}$,	——	74	2	8	11
$10\frac{1}{4}$,	——	75	2	1	9

TABLE

TABLE LII.

For the Use of LONDON.

Shewing the Payment due (reckoning Interest at 3 per Cent.) for a Life-Annuity of One Pound, payable Quarterly. To commence at any Age from 35 to 75.

Age of the Purchaser from $65\frac{1}{4}$ to $66\frac{1}{2}$.

To commence at the end of Years after purchasing.			Value of an annuity of £1. in one present payment. £.	s.	d.
$\frac{1}{4}$,	or at Age	66	8	3	6
$1\frac{1}{4}$,	——	67	7	4	6
$2\frac{1}{4}$,	——	68	6	7	11
$3\frac{1}{4}$,	——	69	5	11	3
$4\frac{1}{4}$,	——	70	4	18	1
$5\frac{1}{4}$,	——	71	4	5	0
$6\frac{1}{4}$,	——	72	3	14	2
$7\frac{1}{4}$,	——	73	3	3	3
$8\frac{1}{4}$,	——	74	2	14	5
$9\frac{1}{4}$,	——	75	2	6	0

TABLE LIII.

For the Use of LONDON.

Shewing the Payment due (reckoning Interest at 3 per Cent.) for a Life-Annuity of One Pound, payable Quarterly. To commence at any Age from 35 to 75.

Age of the Purchaser from $66\frac{1}{4}$ to $67\frac{1}{2}$.

To commence at the end of Years after purchasing.			Value of an annuity of £1. in one present payment. £.	s.	d.
$\frac{1}{4}$,	or at Age	67	7	19	6
$1\frac{1}{4}$,	——	68	7	0	2
$2\frac{1}{4}$,	——	69	6	3	11
$3\frac{1}{4}$,	——	70	5	7	8
$4\frac{1}{4}$,	——	71	4	14	8
$5\frac{1}{4}$,	——	72	4	1	8
$6\frac{1}{4}$,	——	73	3	10	8
$7\frac{1}{4}$,	——	74	2	19	7
$8\frac{1}{4}$,	——	75	2	10	11

TABLE LIV.

For the Use of LONDON.

Shewing the Payment due (reckoning Interest at 3 per Cent.) for a Life-Annuity of One Pound, payable Quarterly. To commence at any Age from 35 to 75.

Age of the Purchaser from 67¾ to 68½.

To commence at the end of Years after purchasing.			Value of an annuity of £1. in one present payment. £.	s.	d.
¼,	or at Age	68	7	15	6
1 ¼,	——	69	6	16	1
2 ¼,	——	70	6	0	0
3 ¼,	——	71	5	3	11
4 ¼,	——	72	4	10	7
5 ¼,	——	73	3	17	4
6 ¼,	——	74	3	6	6
7 ¼,	——	75	2	16	0

TABLE LV.

For the Use of LONDON.

Shewing the Payment due (reckoning Interest at 3 per Cent.) for a Life-Annuity of One Pound, payable Quarterly. To commence at any Age from 35 to 75.

Age of the Purchaser from 68¾ to 69½.

To commence at the end of Years after purchasing.			Value of an annuity of £1. in one present payment. £.	s.	d.
¼,	or at Age	69	7	9	6
1 ¼,	——	70	6	12	0
2 ¼,	——	71	5	16	0
3 ¼,	——	72	5	0	2
4 ¼,	——	73	4	6	7
5 ¼,	——	74	3	13	1
6 ¼,	——	75	3	2	4

TABLE

TABLE LVI.

For the Use of LONDON.

Shewing the Payment due (reckoning Interest at 3 per Cent.) for a Life-Annuity of One Pound, payable Quarterly. To commence at any Age from 35 to 75.

Age of the Purchaser from 69¾ to 70½.

To commence at the end of Years after purchasing.			Value of an annuity of £1. in one present payment. £.	s.	d.
¼,	or at Age	70	7	5	6
1 ¼,	——	71	6	7	7
2 ¼,	——	72	5	11	3
3 ¼,	——	73	4	15	0
4 ¼,	——	74	4	1	8
5 ¼,	——	75	3	9	0

TABLE LVII.

For the Use of LONDON.

Shewing the Payment due (reckoning Interest at 3 per Cent.) for a Life-Annuity of One Pound, payable Quarterly. To commence at any Age from 35 to 75.

Age of the Purchaser from 70¾ to 71½.

To commence at the end of Years after purchasing.			Value of an annuity of £1. in one present payment. £.	s.	d.
¼,	or at Age	71	7	1	6
1 ¼,	——	72	6	3	3
2 ¼,	——	73	5	6	7
3 ¼,	——	74	4	9	11
4 ¼,	——	75	3	16	9

TABLE

TABLE LVIII.

For the Uſe of LONDON.

Shewing the Payment due (reckoning Intereſt at 3 per Cent.) for a Life-Annuity of One Pound, payable Quarterly. To commence at any Age from 35 to 75.

Age of the Purchaſer from $71\frac{3}{4}$ to $72\frac{1}{2}$.

To commence at the end of Years after purchaſing.			Value of an annuity of £1. in one preſent payment. £.	s.	d.
$\frac{1}{4}$,	or at Age	72	6	17	3
$1\frac{1}{4}$,	——	73	5	18	1
$2\frac{1}{4}$,	——	74	5	1	9
$3\frac{1}{4}$,	——	75	4	6	6

TABLE LIX.

For the Uſe of LONDON.

Shewing the Payment due (reckoning Intereſt at 3 per Cent.) for a Life-Annuity of One Pound, payable Quarterly. To commence at any Age from 35 to 75.

Age of the Purchaſer from $72\frac{3}{4}$ to $73\frac{1}{2}$.

To commence at the end of Years after purchaſing.			Value of an annuity of £1. in one preſent payment. £.	s.	d.
$\frac{1}{4}$,	or at Age	73	6	11	6
$1\frac{1}{4}$,	——	74	5	13	7
$2\frac{1}{4}$,	——	75	4	16	11

SECOND

SECOND SET OF TABLES.

Intended for the Uſe of COUNTRY PARISHES.

TABLE I.

Shewing the Payment due (reckoning Intereſt at 3 per Cent.) for a Life-Annuity of One Pound, payable Quarterly. To commence at any Age from 35 to 75.

Age of the Purchaſer from $14\frac{3}{4}$ to $15\frac{1}{2}$.

To commence at the end of Years after purchaſing.			Value of an annuity of £1. in one preſent payment. £.	s.	d.
$20\frac{1}{4}$,	or at Age	35	6	12	8
$21\frac{1}{4}$,	— —	36	6	4	10
$22\frac{1}{4}$,	— —	37	5	17	8
$23\frac{1}{4}$,	— —	38	5	10	7
$24\frac{1}{4}$,	— —	39	5	4	1
$25\frac{1}{4}$,	— —	40	4	17	7
$26\frac{1}{4}$,	— —	41	4	11	7
$27\frac{1}{4}$,	— —	42	4	5	7
$28\frac{1}{4}$,	— —	43	4	0	1
$29\frac{1}{4}$,	— —	44	3	14	7
$30\frac{1}{4}$,	— —	45	3	9	8
$31\frac{1}{4}$,	— —	46	3	4	9
$32\frac{1}{4}$,	— —	47	3	0	4
$33\frac{1}{4}$,	— —	48	2	15	11
$34\frac{1}{4}$,	— —	49	2	11	11
$35\frac{1}{4}$,	— —	50	2	7	11
$36\frac{1}{4}$,	— —	51	2	4	4
$37\frac{1}{4}$,	— —	52	2	0	8
$38\frac{1}{4}$,	— —	53	1	17	7
$39\frac{1}{4}$,	— —	54	1	14	6
$40\frac{1}{4}$,	— —	55	1	11	9

To commence at the end of Years after purchaſing.			Value of an annuity of £1. in one preſent payment. £.	s.	d.
$41\frac{1}{4}$,	or at Age	56	1	9	0
$42\frac{1}{4}$,	— —	57	1	6	7
$43\frac{1}{4}$,	— —	58	1	4	2
$44\frac{1}{4}$,	— —	59	1	2	1
$45\frac{1}{4}$,	— —	60	1	0	0
$46\frac{1}{4}$,	— —	61	0	18	1
$47\frac{1}{4}$,	— —	62	0	16	2
$48\frac{1}{4}$,	— —	63	0	14	7
$49\frac{1}{4}$,	— —	64	0	13	0
$50\frac{1}{4}$,	— —	65	0	11	8
$51\frac{1}{4}$,	— —	66	0	10	3
$52\frac{1}{4}$,	— —	67	0	9	2
$53\frac{1}{4}$,	— —	68	0	8	0
$54\frac{1}{4}$,	— —	69	0	7	0
$55\frac{1}{4}$,	— —	70	0	6	0
$56\frac{1}{4}$,	— —	71	0	5	2
$57\frac{1}{4}$,	— —	72	0	4	5
$58\frac{1}{4}$,	— —	73	0	3	9
$59\frac{1}{4}$,	— —	74	0	3	1
$60\frac{1}{4}$,	— —	75	0	2	6

TABLE

TABLE II.

For the Uſe of Country Pariſhes.

Shewing the Payment due (reckoning Intereſt at 3 per Cent.) for a Life-Annuity of One Pound, payable Quarterly. To commence at any Age from 35 to 75.

Age of the Purchaſer from 15 ¾ to 16 ½.

To commence at the end of Years after purchaſing.	Value of an annuity of £1. in one preſent payment. £.	s.	d.	To commence at the end of Years after purchaſing.	Value of an annuity of £1. in one preſent payment. £.	s.	d.
19 ¼, or at Age 35	6	17	5	40 ¼, or at Age 56	1	10	3
20 ¼, — — 36	6	9	10	41 ¼, — — 57	1	7	7
21 ¼, — — 37	6	2	2	42 ¼, — — 58	1	5	3
22 ¼, — — 38	5	15	1	43 ¼, — — 59	1	2	11
23 ¼, — — 39	5	8	1	44 ¼, — — 60	1	0	9
24 ¼, — — 40	5	1	6	45 ¼, — — 61	0	18	9
25 ¼, — — 41	4	15	0	46 ¼, — — 62	0	16	11
26 ¼, — — 42	4	9	0	47 ¼, — — 63	0	15	2
27 ¼, — — 43	4	3	1	48 ¼, — — 64	0	13	8
28 ¼, — — 44	3	17	8	49 ¼, — — 65	0	12	1
29 ¼, — — 45	3	12	3	50 ¼, — — 66	0	10	10
30 ¼, — — 46	3	7	6	51 ¼, — — 67	0	9	4
31 ¼, — — 47	3	2	8	52 ¼, — — 68	0	8	4
32 ¼, — — 48	2	18	3	53 ¼, — — 69	0	7	3
33 ¼, — — 49	2	13	10	54 ¼, — — 70	0	6	3
34 ¼, — — 50	2	9	11	55 ¼, — — 71	0	5	5
35 ¼, — — 51	2	6	0	56 ¼, — — 72	0	4	7
36 ¼, — — 52	2	2	5	57 ¼, — — 73	0	3	10
37 ¼, — — 53	1	19	0	58 ¼, — — 74	0	3	3
38 ¼, — — 54	1	16	0	59 ¼, — — 75	0	2	8
39 ¼, — — 55	1	12	11				

TABLE III.

For the Uſe of Country Pariſhes.

Shewing the Payment due, (reckoning Intereſt at 3 per Cent.) for a Life-Annuity of One Pound, payable Quarterly. To commence at any Age from 35 to 75.

Age of the Purchaſer from 16 ¾ to 17 ½.

To commence at the end of Years after purchaſing.	Value of an annuity of £1. in one preſent payment. £.	s.	d.	To commence at the end of Years after purchaſing.	Value of an annuity of £1. in one preſent payment. £.	s.	d.
18 ¼, or at Age 35	7	3	4	39 ¼, or at Age 56	1	11	4
19 ¼, — — 36	6	14	10	40 ¼, — — 57	1	8	9
20 ¼, — — 37	6	7	1	41 ¼, — — 58	1	6	2
21 ¼, — — 38	5	19	5	42 ¼, — — 59	1	3	11
22 ¼, — — 39	5	12	6	43 ¼, — — 60	1	1	7
23 ¼, — — 40	5	5	7	44 ¼, — — 61	0	19	7
24 ¼, — — 41	4	19	0	45 ¼, — — 62	0	17	7
25 ¼, — — 42	4	12	5	46 ¼, — — 63	0	15	10
26 ¼, — — 43	4	6	6	47 ¼, — — 64	0	14	1
27 ¼, — — 44	4	0	7	48 ¼, — — 65	0	12	8
28 ¼, — — 45	3	15	4	49 ¼, — — 66	0	11	2
29 ¼, — — 46	3	10	0	50 ¼, — — 67	0	9	11
30 ¼, — — 47	3	5	3	51 ¼, — — 68	0	8	7
31 ¼, — — 48	3	0	6	52 ¼, — — 69	0	7	7
32 ¼, — — 49	2	16	1	53 ¼, — — 70	0	6	6
33 ¼, — — 50	2	11	9	54 ¼, — — 71	0	5	7
34 ¼, — — 51	2	7	11	55 ¼, — — 72	0	4	9
35 ¼, — — 52	2	4	0	56 ¼, — — 73	0	4	0
36 ¼, — — 53	2	0	8	57 ¼, — — 74	0	3	3
37 ¼, — — 54	1	17	4	58 ¼, — — 75	0	2	8
38 ¼, — — 55	1	14	4				

TABLE IV.

For the Uſe of Country Pariſhes.

Shewing the Payment due (reckoning Intereſt at 3 per Cent.) for a Life-Annuity of One Pound, payable Quarterly. To commence at any Age from 35 to 75.

Age of the Purchaſer from 17 ¾ to 18 ½.

To commence at the end of Years after purchaſing.				Value of an annuity of £1. in one preſent payment. £.	s.	d.
17 ¼,	or at Age		35	7	8	11
18 ¼,	—	—	36	7	0	6
19 ¼,	—	—	37	6	12	1
20 ¼,	—	—	38	6	4	6
21 ¼,	—	—	39	5	16	10
22 ¼,	—	—	40	5	9	10
23 ¼,	—	—	41	5	2	9
24 ¼,	—	—	42	4	16	4
25 ¼,	—	—	43	4	9	10
26 ¼,	—	—	44	4	4	1
27 ¼,	—	—	45	3	18	2
28 ¼,	—	—	46	3	12	11
29 ¼,	—	—	47	3	7	8
30 ¼,	—	—	48	3	3	0
31 ¼,	—	—	49	2	18	3
32 ¼,	—	—	50	2	13	11
33 ¼,	—	—	51	2	9	8
34 ¼,	—	—	52	2	6	0
35 ¼,	—	—	53	2	2	2
36 ¼,	—	—	54	1	18	11
37 ¼,	—	—	55	1	15	8
38 ¼,	or at Age		56	1	12	9
39 ¼,	—	—	57	1	9	10
40 ¼,	—	—	58	1	7	4
41 ¼,	—	—	59	1	4	9
42 ¼,	—	—	60	1	2	7
43 ¼,	—	—	61	1	0	3
44 ¼,	—	—	62	0	18	4
45 ¼,	—	—	63	0	16	4
46 ¼,	—	—	64	0	14	8
47 ¼,	—	—	65	0	13	0
48 ¼,	—	—	66	0	11	8
49 ¼,	—	—	67	0	10	3
50 ¼,	—	—	68	0	9	0
51 ¼,	—	—	69	0	7	9
52 ¼,	—	—	70	0	6	10
53 ¼,	—	—	71	0	5	9
54 ¼,	—	—	72	0	4	11
55 ¼,	—	—	73	0	4	2
56 ¼,	—	—	74	0	3	5
57 ¼,	—	—	75	0	2	9

TABLE

TABLE V.

For the Uſe of Country Pariſhes.

Shewing the Payment due (reckoning Intereſt at 3 per Cent.) for a Life-Annuity of One Pound, payable Quarterly. To commence at any Age from 35 to 75.

Age of the Purchaſer from 18 ¾ to 19 ½.

To commence at the end of Years after purchaſing.				Value of an annuity of £1. in one preſent payment. £.	s.	d.
16 ¼,	or at Age		35	7	15	3
17 ¼,	—	—	36	7	6	1
18 ¼,	—	—	37	6	17	9
19 ¼,	—	—	38	6	9	5
20 ¼,	—	—	39	6	1	11
21 ¼,	—	—	40	5	14	4
22 ¼,	—	—	41	5	7	2
23 ¼,	—	—	42	5	0	0
24 ¼,	—	—	43	4	13	8
25 ¼,	—	—	44	4	7	4
26 ¼,	—	—	45	4	1	7
27 ¼,	—	—	46	3	15	10
28 ¼,	—	—	47	3	10	7
29 ¼,	—	—	48	3	5	5
30 ¼,	—	—	49	3	0	9
31 ¼,	—	—	50	2	16	1
32 ¼,	—	—	51	2	11	10
33 ¼,	—	—	52	2	7	7
34 ¼,	—	—	53	2	4	0
35 ¼,	—	—	54	2	0	5
36 ¼,	—	—	55	1	17	2
37 ¼,	or at Age		56	1	14	0
38 ¼,	—	—	57	1	11	2
39 ¼,	—	—	58	1	8	4
40 ¼,	—	—	59	1	5	10
41 ¼,	—	—	60	1	3	4
42 ¼,	—	—	61	1	1	2
43 ¼,	—	—	62	0	19	0
44 ¼,	—	—	63	0	17	1
45 ¼,	—	—	64	0	15	2
46 ¼,	—	—	65	0	13	7
47 ¼,	—	—	66	0	12	0
48 ¼,	—	—	67	0	10	8
49 ¼,	—	—	68	0	9	4
50 ¼,	—	—	69	0	8	2
51 ¼,	—	—	70	0	7	0
52 ¼,	—	—	71	0	6	1
53 ¼,	—	—	72	0	5	1
54 ¼,	—	—	73	0	4	4
55 ¼,	—	—	74	0	3	7
56 ¼,	—	—	75	0	2	11

TABLE VI.

For the Uſe of Country Pariſhes.

Shewing the Payment due (reckoning Intereſt at 3 per Cent.) for a Life Annuity of One Pound, payable Quarterly. To commence at any Age from 35 to 75.

Age of the Purchaſer from 19 ¾ to 20 ½.

To commence at the end of Years after purchaſing.			Value of an annuity of £1. in one preſent payment. £.	s.	d.
15 ¼,	or at Age	35	8	2	0
16 ¼,	— —	36	7	12	10
17 ¼,	— —	37	7	3	9
18 ¼,	— —	38	6	15	5
19 ¼,	— —	39	6	7	2
20 ¼,	— —	40	5	19	6
21 ¼,	— —	41	5	11	10
22 ¼,	— —	42	5	4	9
23 ¼,	— —	43	4	17	8
24 ¼,	— —	44	4	11	4
25 ¼,	— —	45	4	5	1
26 ¼,	— —	46	3	19	4
27 ¼,	— —	47	3	13	8
28 ¼,	— —	48	3	8	5
29 ¼,	— —	49	3	3	3
30 ¼,	— —	50	2	18	8
31 ¼,	— —	51	2	14	0
32 ¼,	— —	52	2	9	11
33 ¼,	— —	53	2	5	10
34 ¼,	— —	54	2	2	4
35 ¼,	— —	55	1	18	9
36 ¼,	— —	56	1	15	7
37 ¼,	— —	57	1	12	6
38 ¼,	— —	58	1	9	9
39 ¼,	— —	59	1	6	11
40 ¼,	— —	60	1	4	6
41 ¼,	— —	61	1	2	1
42 ¼,	— —	62	0	19	11
43 ¼,	— —	63	0	17	10
44 ¼,	— —	64	0	16	0
45 ¼,	— —	65	0	14	2
46 ¼,	— —	66	0	12	7
47 ¼,	— —	67	0	11	1
48 ¼,	— —	68	0	9	9
49 ¼,	— —	69	0	8	5
50 ¼,	— —	70	0	7	4
51 ¼,	— —	71	0	6	3
52 ¼,	— —	72	0	5	4
53 ¼,	— —	73	0	4	6
54 ¼,	— —	74	0	3	9
55 ¼,	— —	75	0	3	0

TABLE

TABLE VII.

For the Uſe of Country Pariſhes.

Shewing the Payment due (reckoning Intereſt at 3 per Cent.) for a Life-Annuity of One Pound, payable Quarterly. To commence at any Age from 35 to 75.

Age of the Purchaſer from 20 ¾ to 21 ½.

To commence at the end of Years after purchaſing.			Value of an annuity of £1. in one preſent payment. £.	s.	d.
14 ¼,	or at Age	35	8	9	7
15 ¼,	— —	36	7	19	7
16 ¼,	— —	37	7	10	6
17 ¼,	— —	38	7	1	5
18 ¼,	— —	39	6	13	2
19 ¼,	— —	40	6	4	11
20 ¼,	— —	41	5	17	2
21 ¼,	— —	42	5	9	4
22 ¼,	— —	43	5	2	4
23 ¼,	— —	44	4	15	5
24 ¼,	— —	45	4	9	1
25 ¼,	— —	46	4	2	10
26 ¼,	— —	47	3	17	2
27 ¼,	— —	48	3	11	7
28 ¼,	— —	49	3	6	4
29 ¼,	— —	50	3	1	2
30 ¼,	— —	51	2	16	7
31 ¼,	— —	52	2	12	0
32 ¼,	— —	53	2	8	1
33 ¼,	— —	54	2	4	2
34 ¼,	— —	55	2	0	8
35 ¼,	— —	56	1	17	2
36 ¼,	— —	57	1	14	0
37 ¼,	— —	58	1	11	0
38 ¼,	— —	59	1	8	3
39 ¼,	— —	60	1	5	7
40 ¼,	— —	61	1	3	2
41 ¼,	— —	62	1	0	10
42 ¼,	— —	63	0	18	9
43 ¼,	— —	64	0	16	9
44 ¼,	— —	65	0	15	0
45 ¼,	— —	66	0	13	2
46 ¼,	— —	67	0	11	8
47 ¼,	— —	68	0	10	2
48 ¼,	— —	69	0	8	11
49 ¼,	— —	70	0	7	7
50 ¼,	— —	71	0	6	7
51 ¼,	— —	72	0	5	7
52 ¼,	— —	73	0	4	9
53 ¼,	— —	74	0	3	11
54 ¼,	— —	75	0	3	2

TABLE

TABLE VIII.

For the Uſe of Country Pariſhes.

Shewing the Payment due (reckoning Intereſt at 3 per Cent.) for a Life-Annuity of One Pound, payable Quarterly. To commence at any Age from 35 to 75.

Age of the Purchaſer from 21 ¾ to 22 ½.

To commence at the end of Years after purchaſing.				Value of an annuity of £1. in one preſent payment. £.	s.	d.
13 ¼,	or at Age		35	8	17	2
14 ¼,	—	—	36	8	7	2
15 ¼,	—	—	37	7	17	2
16 ¼,	—	—	38	7	8	2
17 ¼,	—	—	39	6	19	1
18 ¼,	—	—	40	6	10	9
19 ¼,	—	—	41	6	2	4
20 ¼,	—	—	42	5	14	7
21 ¼,	—	—	43	5	6	10
22 ¼,	—	—	44	4	19	11
23 ¼,	—	—	45	4	13	0
24 ¼,	—	—	46	4	6	10
25 ¼,	—	—	47	4	0	7
26 ¼,	—	—	48	3	14	11
27 ¼,	—	—	49	3	9	4
28 ¼,	—	—	50	3	4	2
29 ¼,	—	—	51	2	19	1
30 ¼,	—	—	52	2	14	8
31 ¼,	—	—	53	2	10	3
32 ¼,	—	—	54	2	6	3
33 ¼,	—	—	55	2	2	5
34 ¼,	or at Age		56	1	18	11
35 ¼,	—	—	57	1	15	6
36 ¼,	—	—	58	1	12	6
37 ¼,	—	—	59	1	9	6
38 ¼,	—	—	60	1	6	9
39 ¼,	—	—	61	1	4	2
40 ¼,	—	—	62	1	1	10
41 ¼,	—	—	63	0	19	7
42 ¼,	—	—	64	0	17	7
43 ¼,	—	—	65	0	15	7
44 ¼,	—	—	66	0	13	11
45 ¼,	—	—	67	0	12	2
46 ¼,	—	—	68	0	10	9
47 ¼,	—	—	69	0	9	3
48 ¼,	—	—	70	0	8	1
49 ¼,	—	—	71	0	6	11
50 ¼,	—	—	72	0	5	10
51 ¼,	—	—	73	0	4	11
52 ¼,	—	—	74	0	4	1
53 ¼,	—	—	75	0	3	4

TABLE

TABLE IX.

For the Uſe of Country Pariſhes

Shewing the Payment due (reckoning Intereſt at 3 per Cent.) for a Life-Annuity of One Pound, payable Quarterly. To commence at any Age from 35 to 75.

Age of the Purchaſer from 22 ¾ to 23 ½.

To commence at the end of Years after purchaſing.				Value of an annuity of £1. in one preſent payment. £.	s.	d.
12 ¼,	or at Age		35	9	5	10
13 ¼,	—	—	36	8	14	10
14 ¼,	—	—	37	8	4	10
15 ¼,	—	—	38	7	14	10
16 ¼,	—	—	39	7	5	10
17 ¼,	—	—	40	6	16	10
18 ¼,	—	—	41	6	8	4
19 ¼,	—	—	42	5	19	10
20 ¼,	—	—	43	5	12	1
21 ¼,	—	—	44	5	4	5
22 ¼,	—	—	45	4	17	7
23 ¼,	—	—	46	4	10	8
24 ¼,	—	—	47	4	4	7
25 ¼,	—	—	48	3	18	5
26 ¼,	—	—	49	3	12	9
27 ¼,	—	—	50	3	7	1
28 ¼,	—	—	51	3	2	0
29 ¼,	—	—	52	2	17	0
30 ¼,	—	—	53	2	12	8
31 ¼,	—	—	54	2	8	5
32 ¼,	—	—	55	2	4	6
33 ¼,	or at Age		56	2	0	8
34 ¼,	—	—	57	1	17	3
35 ¼,	—	—	58	1	13	11
36 ¼,	—	—	59	1	11	0
37 ¼,	—	—	60	1	8	0
38 ¼,	—	—	61	1	5	5
39 ¼,	—	—	62	1	2	10
40 ¼,	—	—	63	1	0	7
41 ¼,	—	—	64	0	18	4
42 ¼,	—	—	65	0	16	5
43 ¼,	—	—	66	0	14	5
44 ¼,	—	—	67	0	12	10
45 ¼,	—	—	68	0	11	2
46 ¼,	—	—	69	0	9	10
47 ¼,	—	—	70	0	8	5
48 ¼,	—	—	71	0	7	3
49 ¼,	—	—	72	0	6	2
50 ¼,	—	—	73	0	5	2
51 ¼,	—	—	74	0	4	3
52 ¼,	—	—	75	0	3	6

TABLE

TABLE X.

For the Uſe of Country Pariſhes.

Shewing the Payment due (reckoning Intereſt at 3 per Cent.) for a Life-Annuity of One Pound, payable Quarterly. To commence at any Age from 35 to 75.

Age of the Purchaſer from 23 ¾ to 24 ½.

To commence at the end of Years after purchaſing.			Value of an annuity of £1. in one preſent payment.		
			£.	s.	d.
11 ¼,	or at Age	35	9	14	3
12 ¼,	— —	36	9	3	3
13 ¼,	— —	37	8	12	4
14 ¼,	— —	38	8	2	4
15 ¼,	— —	39	7	12	5
16 ¼,	— —	40	7	3	3
17 ¼,	— —	41	6	14	1
18 ¼,	— —	42	6	5	8
19 ¼,	— —	43	5	17	2
20 ¼,	— —	44	5	9	6
21 ¼,	— —	45	5	1	11
22 ¼,	— —	46	4	15	3
23 ¼,	— —	47	4	8	7
24 ¼,	— —	48	4	2	3
25 ¼,	— —	49	3	16	0
26 ¼,	— —	50	3	10	7
27 ¼,	— —	51	3	5	2
28 ¼,	— —	52	3	0	1
29 ¼,	— —	53	2	15	0
30 ¼,	— —	54	2	10	10
31 ¼,	— —	55	2	6	9
32 ¼,	or at Age	56	2	2	10
33 ¼,	— —	57	1	18	11
34 ¼,	— —	58	1	15	8
35 ¼,	— —	59	1	12	6
36 ¼,	— —	60	1	9	6
37 ¼,	— —	61	1	6	6
38 ¼,	— —	62	1	4	0
39 ¼,	— —	63	1	1	7
40 ¼,	— —	64	0	19	4
41 ¼,	— —	65	0	17	1
42 ¼,	— —	66	0	15	3
43 ¼,	— —	67	0	13	6
44 ¼,	— —	68	0	11	10
45 ¼,	— —	69	0	10	2
46 ¼,	— —	70	0	8	11
47 ¼,	— —	71	0	7	8
48 ¼,	— —	72	0	6	8
49 ¼,	— —	73	0	5	7
50 ¼,	— —	74	0	4	6
51 ¼,	— —	75	0	3	8

TABLE XI.

For the Uſe of Country Pariſhes.

Shewing the Payment due, (reckoning Intereſt at 3 per Cent.) for a Life-Annuity of One Pound, payable Quarterly. To commence at any Age from 35 to 75.

Age of the Purchaſer from 24 ¾ to 25 ½.

To commence at the end of Years after purchaſing.			Value of an annuity of £1. in one preſent payment.		
			£.	s.	d.
10 ¼,	or at Age	35	10	3	9
11 ¼,	— —	36	9	11	9
12 ¼,	— —	37	9	0	9
13 ¼,	— —	38	8	9	10
14 ¼,	— —	39	7	19	11
15 ¼,	— —	40	7	10	0
16 ¼,	— —	41	7	0	8
17 ¼,	— —	42	6	11	5
18 ¼,	— —	43	6	3	0
19 ¼,	— —	44	5	14	7
20 ¼,	— —	45	5	7	0
21 ¼,	— —	46	4	19	5
22 ¼,	— —	47	4	12	11
23 ¼,	— —	48	4	6	6
24 ¼,	— —	49	4	0	0
25 ¼,	— —	50	3	13	7
26 ¼,	— —	51	3	8	5
27 ¼,	— —	52	3	3	3
28 ¼,	— —	53	2	18	2
29 ¼,	— —	54	2	13	0
30 ¼,	— —	55	2	9	0
31 ¼,	or at Age	56	2	5	1
32 ¼,	— —	57	2	1	2
33 ¼,	— —	58	1	17	2
34 ¼,	— —	59	1	14	1
35 ¼,	— —	60	1	11	1
36 ¼,	— —	61	1	8	0
37 ¼,	— —	62	1	5	0
38 ¼,	— —	63	1	2	8
39 ¼,	— —	64	1	0	5
40 ¼,	— —	65	0	18	2
41 ¼,	— —	66	0	15	11
42 ¼,	— —	67	0	14	2
43 ¼,	— —	68	0	12	6
44 ¼,	— —	69	0	10	10
45 ¼,	— —	70	0	9	2
46 ¼,	— —	71	0	8	1
47 ¼,	— —	72	0	7	0
48 ¼,	— —	73	0	6	0
49 ¼,	— —	74	0	4	11
50 ¼,	— —	75	0	3	10

TABLE XII.

For the Uſe of Country Pariſhes.

Shewing the Payment due (reckoning Intereſt at 3 per Cent.) for a Life-Annuity of One Pound, payable Quarterly. To commence at any Age from 35 to 75.

Age of the Purchaſer from 25 ¾ to 26 ½.

To commence at the end of Years after purchaſing.			Value of an annuity of £1. in one preſent payment. £.	s.	d.
9 ¼,	or at Age	35	10	13	1
10 ¼,	— —	36	10	1	1
11 ¼,	— —	37	9	9	1
12 ¼,	— —	38	8	18	2
13 ¼,	— —	39	8	7	3
14 ¼,	— —	40	7	17	2
15 ¼,	— —	41	7	7	1
16 ¼,	— —	42	6	17	10
17 ¼,	— —	43	6	8	7
18 ¼,	— —	44	6	0	3
19 ¼,	— —	45	5	11	10
20 ¼,	— —	46	5	4	4
21 ¼,	— —	47	4	16	10
22 ¼,	— —	48	4	10	5
23 ¼,	— —	49	4	4	0
24 ¼,	— —	50	3	17	7
25 ¼,	— —	51	3	11	2
26 ¼,	— —	52	3	6	1
27 ¼,	— —	53	3	1	0
28 ¼,	— —	54	2	16	0
29 ¼,	— —	55	2	11	0

To commence at the end of Years after purchaſing.			Value of an annuity of £1. in one preſent payment. £.	s.	d.
30 ¼,	or at Age	56	2	7	1
31 ¼,	— —	57	2	3	2
32 ¼,	— —	58	1	19	3
33 ¼,	— —	59	1	15	4
34 ¼,	— —	60	1	12	4
35 ¼,	— —	61	1	9	5
36 ¼,	— —	62	1	6	5
37 ¼,	— —	63	1	3	6
38 ¼,	— —	64	1	1	3
39 ¼,	— —	65	0	19	0
40 ¼,	— —	66	0	16	10
41 ¼,	— —	67	0	14	8
42 ¼,	— —	68	0	13	0
43 ¼,	— —	69	0	11	5
44 ¼,	— —	70	0	9	10
45 ¼,	— —	71	0	8	3
46 ¼,	— —	72	0	7	2
47 ¼,	— —	73	0	6	1
48 ¼,	— —	74	0	5	0
49 ¼,	— —	75	0	4	0

TABLE

TABLE XIII.

For the Uſe of Country Pariſhes.

Shewing the Payment due (reckoning Intereſt at 3 per Cent.) for a Life-Annuity of One Pound, payable Quarterly. To commence at any Age from 35 to 75.

Age of the Purchaſer from 26 ¼ to 27 ½.

To commence at the end of Years after purchaſing.			Value of an annuity of £1. in one preſent payment. £.	s.	d.
8 ¼,	or at Age	35	11	3	7
9 ¼,	— —	36	10	10	5
10 ¼,	— —	37	9	18	6
11 ¼,	— —	38	9	6	6
12 ¼,	— —	39	8	15	8
13 ¼,	— —	40	8	4	9
14 ¼,	— —	41	7	14	6
15 ¼,	— —	42	7	4	3
16 ¼,	— —	43	6	15	0
17 ¼,	— —	44	6	5	10
18 ¼,	— —	45	5	17	6
19 ¼,	— —	46	5	9	2
20 ¼,	— —	47	5	1	9
21 ¼,	— —	48	4	14	4
22 ¼,	— —	49	4	7	11
23 ¼,	— —	50	4	1	6
24 ¼,	— —	51	3	15	1
25 ¼,	— —	52	3	8	8
26 ¼,	— —	53	3	3	9
27 ¼,	— —	54	2	18	10
28 ¼,	— —	55	2	13	11

To commence at the end of Years after purchaſing.			Value of an annuity of £1. in one preſent payment. £.	s.	d.
29 ¼,	or at Age	56	2	9	0
30 ¼,	— —	57	2	5	2
31 ¼,	— —	58	2	1	4
32 ¼,	— —	59	1	17	5
33 ¼,	— —	60	1	13	7
34 ¼,	— —	61	1	10	8
35 ¼,	— —	62	1	7	10
36 ¼,	— —	63	1	4	11
37 ¼,	— —	64	1	2	0
38 ¼,	— —	65	0	19	10
39 ¼,	— —	66	0	17	8
40 ¼,	— —	67	0	15	7
41 ¼,	— —	68	0	13	5
42 ¼,	— —	69	0	11	11
43 ¼,	— —	70	0	10	5
44 ¼,	— —	71	0	8	11
45 ¼,	— —	72	0	7	5
46 ¼,	— —	73	0	6	4
47 ¼,	— —	74	0	5	3
48 ¼,	— —	75	0	4	2

TABLE XIV.

For the Uſe of Country Pariſhes.

Shewing the Payment due (reckoning Intereſt at 3 per Cent.) for a Life-Annuity of One Pound, payable Quarterly. To commence at any Age from 35 to 75.

Age of the Purchaſer from 27 ¾ to 28 ½.

To commence at the end of Years after purchaſing.		Value of an annuity of £1. in one preſent payment. £.	s.	d.	To commence at the end of Years after purchaſing.		Value of an annuity of £1. in one preſent payment. £.	s.	d.
7 ¼,	or at Age 35	11	14	1	28 ¼,	or at Age 56	2	11	9
8 ¼,	— — 36	11	0	10	29 ¼,	— — 57	2	7	2
9 ¼,	— — 37	10	7	8	30 ¼,	— — 58	2	3	2
10 ¼,	— — 38	9	15	9	31 ¼,	— — 59	1	19	2
11 ¼,	— — 39	9	3	10	32 ¼,	— — 60	1	15	7
12 ¼,	— — 40	8	12	9	33 ¼,	— — 61	1	12	1
13 ¼,	— — 41	8	1	8	34 ¼,	— — 62	1	9	0
14 ¼,	— — 42	7	11	5	35 ¼,	— — 63	1	6	0
15 ¼,	— — 43	7	1	2	36 ¼,	— — 64	1	3	4
16 ¼,	— — 44	6	12	0	37 ¼,	— — 65	1	0	9
17 ¼,	— — 45	6	2	11	38 ¼,	— — 66	0	18	6
18 ¼,	— — 46	5	14	8	39 ¼,	— — 67	0	16	3
19 ¼,	— — 47	5	6	5	40 ¼,	— — 68	0	14	4
20 ¼,	— — 48	4	19	0	41 ¼,	— — 69	0	12	7
21 ¼,	— — 49	4	11	7	42 ¼,	— — 70	0	10	10
22 ¼,	— — 50	4	5	0	43 ¼,	— — 71	0	9	3
23 ¼,	— — 51	3	18	6	44 ¼,	— — 72	0	7	11
24 ¼,	— — 52	3	12	5	45 ¼,	— — 73	0	6	8
25 ¼,	— — 53	3	6	4	46 ¼,	— — 74	0	5	6
26 ¼,	— — 54	3	1	4	47 ¼,	— — 75	0	4	5
27 ¼,	— — 55	2	16	4					

TABLE

TABLE XV.

For the Uſe of Country Pariſhes.

Shewing the Payment due (reckoning Intereſt at 3 per Cent.) for a Life-Annuity of One Pound, payable Quarterly. To commence at any Age from 35 to 75.

Age of the Purchaſer from 28 ¾ to 29 ½.

To commence at the end of Years after purchaſing.		Value of an annuity of £1. in one preſent payment. £.	s.	d.	To commence at the end of Years after purchaſing.		Value of an annuity of £1. in one preſent payment. £.	s.	d.
6 ¼,	or at Age 35	12	5	11	27 ¼,	or at Age 56	2	13	10
7 ¼,	— — 36	11	11	5	28 ¼,	— — 57	2	9	7
8 ¼,	— — 37	10	18	2	29 ¼,	— — 58	2	5	5
9 ¼,	— — 38	10	5	0	30 ¼,	— — 59	2	1	2
10 ¼,	— — 39	9	13	1	31 ¼,	— — 60	1	17	0
11 ¼,	— — 40	9	1	2	32 ¼,	— — 61	1	13	10
12 ¼,	— — 41	8	9	10	33 ¼,	— — 62	1	10	7
13 ¼,	— — 42	7	18	7	34 ¼,	— — 63	1	7	5
14 ¼,	— — 43	7	8	4	35 ¼,	— — 64	1	4	2
15 ¼,	— — 44	6	18	2	36 ¼,	— — 65	1	1	10
16 ¼,	— — 45	6	9	1	37 ¼,	— — 66	0	19	6
17 ¼,	— — 46	6	0	0	38 ¼,	— — 67	0	17	2
18 ¼,	— — 47	5	11	11	39 ¼,	— — 68	0	14	10
19 ¼,	— — 48	5	3	9	40 ¼,	— — 69	0	13	1
20 ¼,	— — 49	4	16	3	41 ¼,	— — 70	0	11	6
21 ¼,	— — 50	4	8	10	42 ¼,	— — 71	0	9	9
22 ¼,	— — 51	4	2	2	43 ¼,	— — 72	0	8	1
23 ¼,	— — 52	3	15	6	44 ¼,	— — 73	0	6	11
24 ¼,	— — 53	3	9	9	45 ¼,	— — 74	0	5	10
26 ¼,	— — 54	3	4	0	46 ¼,	— — 75	0	4	8
26 ½,	— — 55	2	18	11					

TABLE

TABLE XVI.

For the Uſe of Country Pariſhes.

Shewing the Payment due (reckoning Intereſt at 3 per Cent.) for a Life-Annuity of One Pound, payable Quarterly. To commence at any Age from 35 to 75.

Age of the Purchaſer from 29 ¾ to 30 ½.

To commence at the end of Years after purchaſing.			Value of an annuity of £1. in one preſent payment. £.	s.	d.
5 ¼,	or at Age	35	12	17	2
6 ¼,	— —	36	12	2	9
7 ¼,	— —	37	11	8	3
8 ¼,	— —	38	10	15	1
9 ¼,	— —	39	10	1	11
10 ¼,	— —	40	9	9	9
11 ¼,	— —	41	8	17	7
12 ¼,	— —	42	8	6	4
13 ¼,	— —	43	7	15	2
14 ¼,	— —	44	7	5	1
15 ¼,	— —	45	6	15	0
16 ¼,	— —	46	6	5	11
17 ¼,	— —	47	5	16	11
18 ¼,	— —	48	5	8	9
19 ¼,	— —	49	5	0	7
20 ¼,	— —	50	4	13	3
21 ¼,	— —	51	4	5	10
22 ¼,	— —	52	3	19	4
23 ¼,	— —	53	3	12	9
24 ¼,	— —	54	3	7	2
25 ¼,	— —	55	3	1	7
26 ¼,	— —	56	2	16	6
27 ¼,	— —	57	2	11	6
28 ¼,	— —	58	2	7	3
29 ¼,	— —	59	2	3	0
30 ¼,	— —	60	1	19	1
31 ¼,	— —	61	1	15	3
32 ¼,	— —	62	1	11	11
33 ¼,	— —	63	1	8	7
34 ¼,	— —	64	1	5	8
35 ¼,	— —	65	1	2	9
36 ¼,	— —	66	1	0	4
37 ¼,	— —	67	0	17	10
38 ¼,	— —	68	0	15	9
39 ¼,	— —	69	0	13	8
40 ¼,	— —	70	0	11	10
41 ¼,	— —	71	0	10	2
42 ¼,	— —	72	0	8	8
43 ¼,	— —	73	0	7	2
44 ¼,	— —	74	0	5	11
45 ¼,	— —	75	0	4	10

TABLE

TABLE XVII.

For the Uſe of Country Pariſhes.

Shewing the Payment due (reckoning Intereſt at 3 per Cent.) for a Life-Annuity of One Pound, payable Quarterly. To commence at any Age from 35 to 75.

Age of the Purchaſer from 30 ¾ to 31 ½.

To commence at the end of Years after purchaſing.			Value of an annuity of £1. in one preſent payment. £.	s.	d.
4 ¼,	or at Age	35	13	10	0
5 ¼,	— —	36	12	14	0
6 ¼,	— —	37	11	19	7
7 ¼,	— —	38	11	5	2
8 ¼,	— —	39	10	12	0
9 ¼,	— —	40	9	18	10
10 ¼,	— —	41	9	6	5
11 ¼,	— —	42	8	14	0
12 ¼,	— —	43	8	2	11
13 ¼,	— —	44	7	11	10
14 ¼,	— —	45	7	1	10
15 ¼,	— —	46	6	11	10
16 ¼,	— —	47	6	2	10
17 ¼,	— —	48	5	13	10
18 ¼,	— —	49	5	5	8
19 ¼,	— —	50	4	17	6
20 ¼,	— —	51	4	10	3
21 ¼,	— —	52	4	2	11
22 ¼,	— —	53	3	16	7
23 ¼,	— —	54	3	10	2
24 ¼,	— —	55	3	4	8
25 ¼,	or at Age	56	2	19	2
26 ¼,	— —	57	2	14	2
27 ¼,	— —	58	2	9	2
28 ¼,	— —	59	2	4	11
29 ¼,	— —	60	2	0	7
30 ¼,	— —	61	1	17	1
31 ¼,	— —	62	1	13	7
32 ¼,	— —	63	1	10	1
33 ¼,	— —	64	1	6	7
34 ¼,	— —	65	1	4	0
35 ¼,	— —	66	1	1	5
36 ¼,	— —	67	0	18	10
37 ¼,	— —	68	0	16	2
38 ¼,	— —	69	0	14	4
39 ¼,	— —	70	0	12	6
40 ¼,	— —	71	0	10	8
41 ¼,	— —	72	0	8	10
42 ¼,	— —	73	0	7	7
43 ¼,	— —	74	0	6	3
44 ¼,	— —	75	0	5	0

TABLE

TABLE XVIII.

For the Uſe of Country Pariſhes.

Shewing the Payment due (reckoning Intereſt at 3 per Cent.) for a Life-Annuity of One Pound, payable Quarterly. To commence at any Age from 35 to 75.

Age of the Purchaſer from 31 ¾ to 32 ½.

To commence at the end of Years after purchaſing.	Value of an annuity of £1. in one preſent payment. £.	s.	d.
3 ¼, or at Age 35	14	2	3
4 ¼, — — 36	13	6	4
5 ¼, — — 37	12	10	5
6 ¼, — — 38	11	16	0
7 ¼, — — 39	11	1	7
8 ¼, — — 40	10	8	3
9 ¼, — — 41	9	14	11
10 ¼, — — 42	9	2	7
11 ¼, — — 43	8	10	3
12 ¼, — — 44	7	19	3
13 ¼, — — 45	7	8	2
14 ¼, — — 46	6	18	3
15 ¼, — — 47	6	8	4
16 ¼, — — 48	5	19	4
17 ¼, — — 49	5	10	5
18 ¼, — — 50	5	2	3
19 ¼, — — 51	4	14	2
20 ¼, — — 52	4	7	1
21 ¼, — — 53	3	19	11
22 ¼, — — 54	3	13	9
23 ¼, — — 55	3	7	6
24 ¼, or at Age 56	3	2	0
25 ¼, — — 57	2	16	7
26 ¼, — — 58	2	11	8
27 ¼, — — 59	2	6	10
28 ¼, — — 60	2	2	8
29 ¼, — — 61	1	18	5
30 ¼, — — 62	1	14	11
31 ¼, — — 63	1	11	4
32 ¼, — — 64	1	8	2
33 ¼, — — 65	1	5	0
34 ¼, — — 66	1	2	4
35 ¼, — — 67	0	19	7
36 ¼, — — 68	0	17	4
37 ¼, — — 69	0	15	0
38 ¼, — — 70	0	13	1
39 ¼, — — 71	0	11	2
40 ¼, — — 72	0	9	6
41 ¼, — — 73	0	7	11
42 ¼, — — 74	0	6	7
43 ¼, — — 75	0	5	3

TABLE

TABLE XIX.

For the Uſe of Country Pariſhes.

Shewing the Payment due, (reckoning Intereſt at 3 per Cent.) for a Life-Annuity of One Pound, payable Quarterly. To commence at any Age from 35 to 75.

Age of the Purchaſer from 32 ¾ to 33 ½.

To commence at the end of Years after purchaſing.	Value of an annuity of £1. in one preſent payment. £.	s.	d.
2 ¼, or at Age 35	14	16	1
3 ¼, — — 36	13	18	7
4 ¼, — — 37	13	2	8
5 ¼, — — 38	12	6	10
6 ¼, — — 39	11	12	5
7 ¼, — — 40	10	18	0
8 ¼, — — 41	10	4	6
9 ¼, — — 42	9	11	0
10 ¼, — — 43	8	18	10
11 ¼, — — 44	8	6	7
12 ¼, — — 45	7	15	7
13 ¼, — — 46	7	4	7
14 ¼, — — 47	6	14	9
15 ¼, — — 48	6	4	10
16 ¼, — — 49	5	15	11
17 ¼, — — 50	5	7	0
18 ¼, — — 51	4	18	11
19 ¼, — — 52	4	10	10
20 ¼, — — 53	4	3	11
21 ¼, — — 54	3	17	0
22 ¼, — — 55	3	10	11
23 ¼, or at Age 56	3	4	10
24 ¼, — — 57	2	19	5
25 ¼, — — 58	2	14	0
26 ¼, — — 59	2	9	3
27 ¼, — — 60	2	4	7
28 ¼, — — 61	2	0	6
29 ¼, — — 62	1	16	4
30 ¼, — — 63	1	12	9
31 ¼, — — 64	1	9	2
32 ¼, — — 65	1	6	4
33 ¼, — — 66	1	3	6
34 ¼, — — 67	1	0	8
35 ¼, — — 68	0	17	10
36 ¼, — — 69	0	15	10
37 ¼, — — 70	0	13	10
38 ¼, — — 71	0	11	10
39 ¼, — — 72	0	9	10
40 ¼, — — 73	0	8	5
41 ¼, — — 74	0	7	0
42 ¼, — — 75	0	5	7

TABLE XX.

For the Use of Country Parishes.

Shewing the Payment due (reckoning Interest at 3 per Cent.) for a Life-Annuity of One Pound, payable Quarterly. To commence at any Age from 35 to 75.

Age of the Purchaser from 33 3/4 to 34 1/2.

To commence at the end of Years after purchasing.	Value of an annuity of £1. in one present payment. £.	s.	d.	To commence at the end of Years after purchasing.	Value of an annuity of £1. in one present payment. £.	s.	d.
1 1/4, or at Age 35	15	9	9	22 1/4, or at Age 56	3	8	1
2 1/4, — — 36	14	12	3	23 1/4, — — 57	3	2	1
3 1/4, — — 37	13	14	9	24 1/4, — — 58	2	16	9
4 1/4, — — 38	12	18	11	25 1/4, — — 59	2	11	6
5 1/4, — — 39	12	3	1	26 1/4, — — 60	2	6	10
6 1/4, — — 40	11	8	5	27 1/4, — — 61	2	2	2
7 1/4, — — 41	10	13	9	28 1/4, — — 62	1	18	2
8 1/4, — — 42	10	0	4	29 1/4, — — 63	1	14	2
9 1/4, — — 43	9	6	11	30 1/4, — — 64	1	10	8
10 1/4, — — 44	8	14	10	31 1/4, — — 65	1	7	3
11 1/4, — — 45	8	2	8	32 1/4, — — 66	1	4	4
12 1/4, — — 46	7	11	9	33 1/4, — — 67	1	1	6
13 1/4, — — 47	7	0	10	34 1/4, — — 68	0	19	0
14 1/4, — — 48	6	11	0	35 1/4, — — 69	0	16	6
15 1/4, — — 49	6	1	1	36 1/4, — — 70	0	14	5
16 1/4, — — 50	5	12	3	37 1/4, — — 71	0	12	3
17 1/4, — — 51	5	3	5	38 1/4, — — 72	0	10	6
18 1/4, — — 52	4	15	7	39 1/4, — — 73	0	8	9
19 1/4, — — 53	4	7	9	40 1/4, — — 74	0	7	3
20 1/4, — — 54	4	0	11	41 1/4, — — 75	0	5	10
21 1/4, — — 55	3	14	2				

TABLE XXI.

For the Use of Country Parishes.

Shewing the Payment due (reckoning Interest at 3 per Cent.) for a Life-Annuity of One Pound, payable Quarterly. To commence at any Age from 35 to 75.

Age of the Purchaser from 34 3/4 to 35 1/2.

To commence at the end of Years after purchasing.	Value of an annuity of £1. in one present payment. £.	s.	d.	To commence at the end of Years after purchasing.	Value of an annuity of £1. in one present payment. £.	s.	d.
1/4, or at Age 35	16	5	0	21 1/4, or at Age 56	3	11	4
1 1/4, — — 36	15	6	0	22 1/4, — — 57	3	5	4
2 1/4, — — 37	14	8	6	23 1/4, — — 58	2	19	4
3 1/4, — — 38	13	11	0	24 1/4, — — 59	2	14	2
4 1/4, — — 39	12	15	2	25 1/4, — — 60	2	9	0
5 1/4, — — 40	11	19	5	26 1/4, — — 61	2	4	5
6 1/4, — — 41	11	4	6	27 1/4, — — 62	1	19	10
7 1/4, — — 42	10	9	7	28 1/4, — — 63	1	15	11
8 1/4, — — 43	9	16	2	29 1/4, — — 64	1	12	0
9 1/4, — — 44	9	2	10	30 1/4, — — 65	1	8	8
10 1/4, — — 45	8	10	10	31 1/4, — — 66	1	5	4
11 1/4, — — 46	7	18	9	32 1/4, — — 67	1	2	5
12 1/4, — — 47	7	8	0	33 1/4, — — 68	0	19	7
13 1/4, — — 48	6	17	2	34 1/4, — — 69	0	17	5
14 1/4, — — 49	6	7	4	35 1/4, — — 70	0	15	2
15 1/4, — — 50	5	17	5	36 1/4, — — 71	0	13	0
16 1/4, — — 51	5	8	7	37 1/4, — — 72	0	10	9
17 1/4, — — 52	4	19	10	38 1/4, — — 73	0	9	2
18 1/4, — — 53	4	12	3	39 1/4, — — 74	0	7	8
19 1/4, — — 54	4	4	8	40 1/4, — — 75	0	6	2
20 1/4, — — 55	3	18	0				

TABLE XXII.

For the Uſe of Country Pariſhes.

Shewing the Payment due (reckoning Intereſt at 3 per Cent.) for a Life-Annuity of One Pound, payable Quarterly. To commence at any Age from 35 to 75.

Age of the Purchaſer from 35 ¾ to 36 ½.

To commence at the end of Years after purchaſing.		Value of an annuity of £1. in one preſent payment. £.	s.	d.
¼,	or at Age 36	16	0	10
1 ¼,	— — 37	15	2	0
2 ¼,	— — 38	14	4	6
3 ¼,	— — 39	13	7	2
4 ¼,	— — 40	12	11	0
5 ¼,	— — 41	11	15	0
6 ¼,	— — 42	11	0	2
7 ¼,	— — 43	10	5	3
8 ¼,	— — 44	9	12	0
9 ¼,	— — 45	8	18	8
10 ¼,	— — 46	8	6	9
11 ¼,	— — 47	7	14	9
12 ¼,	— — 48	7	3	11
13 ¼,	— — 49	6	13	1
14 ¼,	— — 50	6	3	4
15 ¼,	— — 51	5	13	7
16 ¼,	— — 52	5	5	0
17 ¼,	— — 53	4	16	5
18 ¼,	— — 54	4	8	11
19 ¼,	— — 55	4	1	5

To commence at the end of Years after purchaſing.		Value of an annuity of £1. in one preſent payment. £.	s.	d.
20 ¼,	or at Age 56	3	14	10
21 ¼,	— — 57	3	8	3
22 ¼,	— — 58	3	2	5
23 ¼,	— — 59	2	16	7
24 ¼,	— — 60	2	11	6
25 ¼,	— — 61	2	6	5
26 ¼,	— — 62	2	1	11
27 ¼,	— — 63	1	17	6
28 ¼,	— — 64	1	13	8
29 ¼,	— — 65	1	9	11
30 ¼,	— — 66	1	6	7
31 ¼,	— — 67	1	3	4
32 ¼,	— — 68	1	0	7
33 ¼,	— — 69	0	17	10
34 ¼,	— — 70	0	15	8
35 ¼,	— — 71	0	13	5
36 ¼,	— — 72	0	11	6
37 ¼,	— — 73	0	9	7
38 ¼,	— — 74	0	7	11
39 ¼,	— — 75	0	6	6

TABLE

TABLE XXIII.

For the Uſe of Country Pariſhes.

Shewing the Payment due (reckoning Intereſt at 3 per Cent.) for a Life-Annuity of One Pound, payable Quarterly. To commence at any Age from 35 to 75.

Age of the Purchaſer from 36 ¾ to 37 ½.

To commence at the end of Years after purchaſing.		Value of an annuity of £1. in one preſent payment. £.	s.	d.
¼,	or at Age 37	15	16	9
1 ¼,	— — 38	14	18	0
2 ¼,	— — 39	14	0	6
3 ¼,	— — 40	13	3	4
4 ¼,	— — 41	12	6	11
5 ¼,	— — 42	11	10	7
6 ¼,	— — 43	10	15	10
7 ¼,	— — 44	10	1	0
8 ¼,	— — 45	9	7	10
9 ¼,	— — 46	8	14	7
10 ¼,	— — 47	8	2	8
11 ¼,	— — 48	7	10	10
12 ¼,	— — 49	6	19	11
13 ¼,	— — 50	6	9	0
14 ¼,	— — 51	5	19	5
15 ¼,	— — 52	5	9	10
16 ¼,	— — 53	5	1	5
17 ¼,	— — 54	4	13	0
18 ¼,	— — 55	4	5	7
19 ¼,	— — 56	3	18	2

To commence at the end of Years after purchaſing.		Value of an annuity of £1. in one preſent payment. £.	s.	d.
20 ¼,	or at Age 57	3	11	8
21 ¼,	— — 58	3	5	2
22 ¼,	— — 59	2	19	6
23 ¼,	— — 60	2	13	10
24 ¼,	— — 61	2	8	10
25 ¼,	— — 62	2	3	10
26 ¼,	— — 63	1	19	6
27 ¼,	— — 64	1	15	2
28 ¼,	— — 65	1	11	6
29 ¼,	— — 66	1	7	10
30 ¼,	— — 67	1	4	7
31 ¼,	— — 68	1	1	5
32 ¼,	— — 69	0	18	10
33 ¼,	— — 70	0	16	2
34 ¼,	— — 71	0	14	0
35 ¼,	— — 72	0	11	10
36 ¼,	— — 73	0	10	1
37 ¼,	— — 74	0	8	5
38 ¼,	— — 75	0	6	9

TABLE

TABLE XXIV.

For the Uſe of Country Pariſhes.

Shewing the Payment due (reckoning Intereſt at 3 per Cent.) for a Life-Annuity of One Pound, payable Quarterly. To commence at any Age from 35 to 75.

Age of the Purchaſer from 37 ¼ to 38 ½.

To commence at the end of Years after purchaſing.	Value of an annuity of £1. in one preſent payment. £.	s.	d.
¼, or at Age 38	15	12	6
1 ¼, — — 39	14	13	11
2 ¼, — — 40	13	16	0
3 ¼, — — 41	12	18	7
4 ¼, — — 42	12	2	3
5 ¼, — — 43	11	5	11
6 ¼, — — 44	10	11	3
7 ¼, — — 45	9	16	6
8 ¼, — — 46	9	3	5
9 ¼, — — 47	8	10	3
10 ¼, — — 48	7	18	4
11 ¼, — — 49	7	6	5
12 ¼, — — 50	6	15	8
13 ¼, — — 51	6	4	11
14 ¼, — — 52	5	15	6
15 ¼, — — 53	5	6	1
16 ¼, — — 54	4	17	10
17 ¼, — — 55	4	9	7
18 ¼, — — 56	4	2	3
19 ¼, or at Age 57	3	15	0
20 ¼, — — 58	3	8	7
21 ¼, — — 59	3	2	0
22 ¼, — — 60	2	16	7
23 ¼, — — 61	2	11	0
24 ¼, — — 62	2	6	2
25 ¼, — — 63	2	1	4
26 ¼, — — 64	1	17	1
27 ¼, — — 65	1	12	10
28 ¼, — — 66	1	9	3
29 ¼, — — 67	1	5	8
30 ¼, — — 68	1	2	7
31 ¼, — — 69	0	19	7
32 ¼, — — 70	0	17	1
33 ¼, — — 71	0	14	7
34 ¼, — — 72	0	12	6
35 ¼, — — 73	0	10	5
36 ¼, — — 74	0	8	9
37 ¼, — — 75	0	7	1

TABLE

TABLE XXV.

For the Uſe of Country Pariſhes.

Shewing the Payment due (reckoning Intereſt at 3 per Cent.) for a Life-Annuity of One Pound, payable Quarterly. To commence at any Age from 35 to 75.

Age of the Purchaſer from 38 ¾ to 39 ½.

To commence at the end of Years after purchaſing.	Value of an annuity of £1. in one preſent payment. £.	s.	d.
¼, or at Age 39	15	8	6
1 ¼, — — 40	14	9	10
2 ¼, — — 41	13	11	10
3 ¼, — — 42	12	13	10
4 ¼, — — 43	11	17	7
5 ¼, — — 44	11	1	4
6 ¼, — — 45	10	6	8
7 ¼, — — 46	9	12	0
8 ¼, — — 47	8	19	0
9 ¼, — — 48	8	6	0
10 ¼, — — 49	7	14	0
11 ¼, — — 50	7	2	1
12 ¼, — — 51	6	11	6
13 ¼, — — 52	6	0	10
14 ¼, — — 53	5	11	7
15 ¼, — — 54	5	2	5
16 ¼, — — 55	4	14	3
17 ¼, — — 56	4	6	2
18 ¼, — — 57	3	19	0
19 ¼, or at Age 58	3	11	10
20 ¼, — — 59	3	5	6
21 ¼, — — 60	2	19	2
22 ¼, — — 61	2	13	8
23 ¼, — — 62	2	8	2
24 ¼, — — 63	2	3	6
25 ¼, — — 64	1	18	10
26 ¼, — — 65	1	14	8
27 ¼, — — 66	1	10	7
28 ¼, — — 67	1	7	1
29 ¼, — — 68	1	3	7
30 ¼, — — 69	1	0	8
31 ¼, — — 70	0	17	10
32 ¼, — — 71	0	15	5
33 ¼, — — 72	0	13	0
34 ¼, — — 73	0	11	0
35 ¼, — — 74	0	9	0
36 ¼, — — 75	0	7	5

TABLE

TABLE XXVI.

For the Use of Country Parishes.

Shewing the Payment due (reckoning Interest at 3 per Cent.) for a Life-Annuity of One Pound, payable Quarterly. To commence at any Age from 35 to 75.

Age of the Purchaser from 39 ¾ to 40 ½.

To commence at the end of Years after purchasing.		Value of an annuity of £1. in one present payment. £.	s.	d.
¼,	or at Age 40	15	4	4
1 ¼,	— — 41	14	5	2
2 ¼,	— — 42	13	7	2
3 ¼,	— — 43	12	9	2
4 ¼,	— — 44	11	13	0
5 ¼,	— — 45	10	16	10
6 ¼,	— — 46	10	2	4
7 ¼,	— — 47	9	7	9
8 ¼,	— — 48	8	14	8
9 ¼,	— — 49	8	1	6
10 ¼,	— — 50	7	9	8
11 ¼,	— — 51	6	17	10
12 ¼,	— — 52	6	7	5
13 ¼,	— — 53	5	17	0
14 ¼,	— — 54	5	7	10
15 ¼,	— — 55	4	18	9
16 ¼,	— — 56	4	10	9
17 ¼,	— — 57	4	2	9
18 ¼,	or at Age 58	3	15	8
19 ¼,	— — 59	3	8	7
20 ¼,	— — 60	3	2	5
21 ¼,	— — 61	2	16	3
22 ¼,	— — 62	2	10	10
23 ¼,	— — 63	2	5	6
24 ¼,	— — 64	2	0	11
25 ¼,	— — 65	1	16	4
26 ¼,	— — 66	1	12	4
27 ¼,	— — 67	1	8	4
28 ¼,	— — 68	1	5	0
29 ¼,	— — 69	1	1	8
30 ¼,	— — 70	0	18	10
31 ¼,	— — 71	0	16	1
32 ¼,	— — 72	0	13	9
33 ¼,	— — 73	0	11	6
34 ¼,	— — 74	0	9	7
35 ¼,	— — 75	0	7	9

TABLE XXVII.

For the Use of Country Parishes.

Shewing the Payment due, (reckoning Interest at 3 per Cent.) for a Life-Annuity of One Pound, payable Quarterly. To commence at any Age from 35 to 75.

Age of the Purchaser from 40 ¾ to 41 ½.

To commence at the end of Years after purchasing.		Value of an annuity of £1. in one present payment. £.	s.	d.
¼,	or at Age 41	15	0	0
1 ¼,	— — 42	14	0	7
2 ¼,	— — 43	13	2	7
3 ¼,	— — 44	12	4	7
4 ¼,	— — 45	11	8	6
5 ¼,	— — 46	10	12	5
6 ¼,	— — 47	9	18	0
7 ¼,	— — 48	9	3	7
8 ¼,	— — 49	8	10	4
9 ¼,	— — 50	7	17	1
10 ¼,	— — 51	7	5	4
11 ¼,	— — 52	6	13	7
12 ¼,	— — 53	6	3	5
13 ¼,	— — 54	5	13	2
14 ¼,	— — 55	5	4	2
15 ¼,	— — 56	4	15	2
16 ¼,	— — 57	4	7	3
17 ¼,	— — 58	3	19	5
18 ¼,	or at Age 59	3	12	5
19 ¼,	— — 60	3	5	5
20 ¼,	— — 61	2	19	4
21 ¼,	— — 62	2	13	4
22 ¼,	— — 63	2	8	1
23 ¼,	— — 64	2	2	10
24 ¼,	— — 65	1	18	4
25 ¼,	— — 66	1	13	10
26 ¼,	— — 67	1	10	0
27 ¼,	— — 68	1	6	2
28 ¼,	— — 69	1	2	11
29 ¼,	— — 70	0	19	9
30 ¼,	— — 71	0	17	1
31 ¼,	— — 72	0	14	5
32 ¼,	— — 73	0	12	2
33 ¼,	— — 74	0	10	0
34 ¼,	— — 75	0	8	2

TABLE XXVIII.

For the Uſe of Country Pariſhes.

Shewing the Payment due (reckoning Intereſt at 3 per Cent.) for a Life-Annuity of One Pound, payable Quarterly. To commence at any Age from 35 to 75.

Age of the Purchaſer from 41 ¾ to 42 ½.

To commence at the end of Years after purchaſing.			Value of an annuity of £1. in one preſent payment. £.	s.	d.	To commence at the end of Years after purchaſing.			Value of an annuity of £1. in one preſent payment. £.	s.	d.
¼,	or at Age	42	14	15	6	17 ¼,	or at Age	59	3	16	1
1 ¼,	— —	43	13	16	2	18 ¼,	— —	60	3	9	2
2 ¼,	— —	44	12	18	2	19 ¼,	— —	61	3	2	4
3 ¼,	— —	45	12	0	3	20 ¼,	— —	62	2	16	4
4 ¼,	— —	46	11	4	2	21 ¼,	— —	63	2	10	5
5 ¼,	— —	47	10	8	1	22 ¼,	— —	64	2	5	4
6 ¼,	— —	48	9	13	7	23 ¼,	— —	65	2	0	2
7 ¼,	— —	49	8	19	0	24 ¼,	— —	66	1	15	10
8 ¼,	— —	50	8	5	11	25 ¼,	— —	67	1	11	5
9 ¼,	— —	51	7	12	9	26 ¼,	— —	68	1	7	9
10 ¼,	— —	52	7	1	2	27 ¼,	— —	69	1	4	0
11 ¼,	— —	53	6	9	8	28 ¼,	— —	70	1	0	11
12 ¼,	— —	54	5	19	7	29 ¼,	— —	71	0	17	10
13 ¼,	— —	55	5	9	6	30 ¼,	— —	72	0	15	4
14 ¼,	— —	56	5	0	7	31 ¼,	— —	73	0	12	9
15 ¼,	— —	57	4	11	8	32 ¼,	— —	74	0	10	7
16 ¼,	— —	58	4	3	10	33 ¼,	— —	75	0	8	7

TABLE XXIX.

For the Uſe of Country Pariſhes.

Shewing the Payment due (reckoning Intereſt at 3 per Cent.) for a Life-Annuity of One Pound, payable Quarterly. To commence at any Age from 35 to 75.

Age of the Purchaſer from 42 ¾ to 43 ½.

To commence at the end of Years after purchaſing.			Value of an annuity of £1. in one preſent payment. £.	s.	d.	To commence at the end of Years after purchaſing.			Value of an annuity of £1. in one preſent payment. £.	s.	d.
¼,	or at Age	43	14	11	0	17 ¼,	or at Age	60	3	12	9
1 ¼,	— —	44	13	11	9	18 ¼,	— —	61	3	6	0
2 ¼,	— —	45	12	13	10	19 ¼,	— —	62	2	19	3
3 ¼,	— —	46	11	15	11	20 ¼,	— —	63	2	13	5
4 ¼,	— —	47	10	19	10	21 ¼,	— —	64	2	7	7
5 ¼,	— —	48	10	3	10	22 ¼,	— —	65	2	2	7
6 ¼,	— —	49	9	9	2	23 ¼,	— —	66	1	17	7
7 ¼,	— —	50	8	14	6	24 ¼,	— —	67	1	13	4
8 ¼,	— —	51	8	1	6	25 ¼,	— —	68	1	9	1
9 ¼,	— —	52	7	8	5	26 ¼,	— —	69	1	5	6
10 ¼,	— —	53	6	17	1	27 ¼,	— —	70	1	1	11
11 ¼,	— —	54	6	5	10	28 ¾,	— —	71	0	18	11
12 ¼,	— —	55	5	15	10	29 ¼,	— —	72	0	16	0
13 ¼,	— —	56	5	5	10	30 ¼,	— —	73	0	13	7
14 ¼,	— —	57	4	17	0	31 ¼,	— —	74	0	11	2
15 ¼,	— —	58	4	8	2	32 ¼,	— —	75	0	9	1
16 ¼,	— —	59	4	0	6						

TABLE XXX.

For the Uſe of Country Pariſhes.

Shewing the Payment due (reckoning Intereſt at 3 per Cent.) for a Life-Annuity of One Pound, payable Quarterly. To commence at any Age from 35 to 75.

Age of the Purchaſer from 43 ¾ to 44 ½.

To commence at the end of Years after purchaſing.			Value of an annuity of £1. in one preſent payment.		
			£.	s.	d.
¼,	or at Age	44	14	6	9
1 ¼,	— —	45	13	7	2
2 ¼,	— —	46	12	9	3
3 ¼,	— —	47	11	11	4
4 ¼,	— —	48	10	15	2
5 ¼,	— —	49	9	19	0
6 ¼,	— —	50	9	4	5
7 ¼,	— —	51	8	9	10
8 ¼,	— —	52	7	17	0
9 ¼,	— —	53	7	4	2
10 ¼,	— —	54	6	13	0
11 ¼,	— —	55	6	1	10
12 ¼,	— —	56	5	11	11
13 ¼,	— —	57	5	2	0
14 ¼,	— —	58	4	13	3
15 ¼,	— —	59	4	4	7
16 ¼,	or at Age	60	3	17	0
17 ¼,	— —	61	3	9	4
18 ¼,	— —	62	3	2	9
19 ¼,	— —	63	2	16	1
20 ¼,	— —	64	2	10	5
21 ¼,	— —	65	2	4	9
22 ¼,	— —	66	1	19	10
23 ¼,	— —	67	1	14	11
24 ¼,	— —	68	1	10	10
25 ¼,	— —	69	1	6	9
26 ¼,	— —	70	1	3	3
27 ¼,	— —	71	0	19	10
28 ¼,	— —	72	0	17	0
29 ¼,	— —	73	0	14	2
30 ¼,	— —	74	0	11	10
31 ¼,	— —	75	0	9	7

TABLE

TABLE XXXI.

For the Uſe of Country Pariſhes.

Shewing the Payment due (reckoning Intereſt at 3 per Cent.) for a Life-Annuity of One Pound, payable Quarterly. To commence at any Age from 35 to 75.

Age of the Purchaſer from 44 ¾ to 45 ½.

To commence at the end of Years after purchaſing.			Value of an annuity of £1. in one preſent payment.		
			£.	s.	d.
¼,	or at Age	45	14	2	0
1 ¼,	— —	46	13	2	7
2 ¼,	— —	47	12	4	8
3 ¼,	— —	48	11	6	10
4 ¼,	— —	49	10	10	6
5 ¼,	— —	50	9	14	2
6 ¼,	— —	51	8	19	8
7 ¼,	— —	52	8	5	2
8 ¼,	— —	53	7	12	7
9 ¼,	— —	54	7	0	0
10 ¼,	— —	55	6	8	11
11 ¼,	— —	56	5	17	10
12 ¼,	— —	57	5	8	0
13 ¼,	— —	58	4	18	2
14 ¼,	— —	59	4	9	7
15 ¼,	— —	60	4	1	0
16 ¼,	or at Age	61	3	13	6
17 ¼,	— —	62	3	6	0
18 ¼,	— —	63	2	19	6
19 ¼,	— —	64	2	13	0
20 ¼,	— —	65	2	7	5
21 ¼,	— —	66	2	1	11
22 ¼,	— —	67	1	17	1
23 ¼,	— —	68	1	12	4
24 ¼,	— —	69	1	8	5
25 ¼,	— —	70	1	4	5
26 ¼,	— —	71	1	1	1
27 ¼,	— —	72	0	17	10
28 ¼,	— —	73	0	15	1
29 ¼,	— —	74	0	12	5
30 ¼,	— —	75	0	10	2

TABLE

TABLE XXXII.

For the Uſe of Country Pariſhes.

Shewing the Payment due (reckoning Intereſt at 3 per Cent.) for a Life-Annuity of One Pound, payable Quarterly. To commence at any Age from 35 to 75.

Age of the Purchaſer from $45\frac{3}{4}$ to $46\frac{1}{2}$.

To commence at the end of Years after purchaſing.				Value of an annuity of £1. in one preſent payment. £.	s.	d.
$\frac{1}{4}$,	or at Age		46	13	17	6
$1\frac{1}{4}$,	—	—	47	12	17	10
$2\frac{1}{4}$,	—	—	48	11	19	9
$3\frac{1}{4}$,	—	—	49	11	1	8
$4\frac{1}{4}$,	—	—	50	10	5	6
$5\frac{1}{4}$,	—	—	51	9	9	3
$6\frac{1}{4}$,	—	—	52	8	15	0
$7\frac{1}{4}$,	—	—	53	8	0	8
$8\frac{1}{4}$,	—	—	54	7	8	2
$9\frac{1}{4}$,	—	—	55	6	15	8
$10\frac{1}{4}$,	—	—	56	6	4	8
$11\frac{1}{4}$,	—	—	57	5	13	8
$12\frac{1}{4}$,	—	—	58	5	4	0
$13\frac{1}{4}$,	—	—	59	4	14	3
$14\frac{1}{4}$,	—	—	60	4	5	9
$15\frac{1}{4}$,	or at Age		61	3	17	3
$16\frac{1}{4}$,	—	—	62	3	9	11
$17\frac{1}{4}$,	—	—	63	3	2	7
$18\frac{1}{4}$,	—	—	64	2	16	2
$19\frac{1}{4}$,	—	—	65	2	9	10
$20\frac{1}{4}$,	—	—	66	2	4	5
$21\frac{1}{4}$,	—	—	67	1	19	0
$22\frac{1}{4}$,	—	—	68	1	14	4
$23\frac{1}{4}$,	—	—	69	1	9	9
$24\frac{1}{4}$,	—	—	70	1	5	11
$25\frac{1}{4}$,	—	—	71	1	2	2
$26\frac{1}{4}$,	—	—	72	0	18	11
$27\frac{1}{4}$,	—	—	73	0	15	10
$28\frac{1}{4}$,	—	—	74	0	13	2
$29\frac{1}{4}$,	—	—	75	0	10	9

TABLE

TABLE XXXIII.

For the Uſe of Country Pariſhes.

Shewing the Payment due (reckoning Intereſt at 3 per Cent.) for a Life-Annuity of One Pound, payable Quarterly. To commence at any Age from 35 to 75.

Age of the Purchaſer from $46\frac{3}{4}$ to $47\frac{1}{2}$.

To commence at the end of Years after purchaſing.				Value of an annuity of £1. in one preſent payment. £.	s.	d.
$\frac{1}{4}$,	or at Age		47	13	12	6
$1\frac{1}{4}$,	—	—	48	12	13	2
$2\frac{1}{4}$,	—	—	49	11	14	11
$3\frac{1}{4}$,	—	—	50	10	16	7
$4\frac{1}{4}$,	—	—	51	10	0	6
$5\frac{1}{4}$,	—	—	52	9	4	4
$6\frac{1}{4}$,	—	—	53	8	10	4
$7\frac{1}{4}$,	—	—	54	7	16	3
$8\frac{1}{4}$,	—	—	55	7	3	10
$9\frac{1}{4}$,	—	—	56	6	11	5
$10\frac{1}{4}$,	—	—	57	6	0	6
$11\frac{1}{4}$,	—	—	58	5	9	7
$12\frac{1}{4}$,	—	—	59	5	0	0
$13\frac{1}{4}$,	—	—	60	4	10	4
$14\frac{1}{4}$,	—	—	61	4	2	0
$15\frac{1}{4}$,	or at Age		62	3	13	7
$16\frac{1}{4}$,	—	—	63	3	6	5
$17\frac{1}{4}$,	—	—	64	2	19	2
$18\frac{1}{4}$,	—	—	65	2	12	11
$19\frac{1}{4}$,	—	—	66	2	6	9
$20\frac{1}{4}$,	—	—	67	2	1	5
$21\frac{1}{4}$,	—	—	68	1	16	2
$22\frac{1}{4}$,	—	—	69	1	11	8
$23\frac{1}{4}$,	—	—	70	1	7	2
$24\frac{1}{4}$,	—	—	71	1	3	6
$25\frac{1}{4}$,	—	—	72	0	19	10
$26\frac{1}{4}$,	—	—	73	0	16	10
$27\frac{1}{4}$,	—	—	74	0	13	10
$28\frac{1}{4}$,	—	—	75	0	11	4

TABLE

TABLE XXXIV.

For the Uſe of Country Pariſhes.

Shewing the Payment due (reckoning Intereſt at 3 per Cent.) for a Life-Annuity of One Pound, payable Quarterly. To commence at any Age from 35 to 75.

Age of the Purchaſer from 47 ¾ to 48 ½.

To commence at the end of Years after purchaſing.				Value of an annuity of £1. in one preſent payment. £.	s.	d.
¼,	or at Age		48	13	7	9
1 ¼,	—	—	49	12	7	10
2 ¼,	—	—	50	11	9	7
3 ¼,	—	—	51	10	11	5
4 ¼,	—	—	52	9	15	6
5 ¼,	—	—	53	8	19	7
6 ¼,	—	—	54	8	5	7
7 ¼,	—	—	55	7	11	8
8 ¼,	—	—	56	6	19	4
9 ¼,	—	—	57	6	7	0
10 ¼,	—	—	58	5	16	2
11 ¼,	—	—	59	5	5	4
12 ¼,	—	—	60	4	15	10
13 ¼,	—	—	61	4	6	4
14 ¼,	or at Age		62	3	18	1
15 ¼,	—	—	63	3	9	10
16 ¼,	—	—	64	3	2	10
17 ¼,	—	—	65	2	15	8
18 ¼,	—	—	66	2	9	7
19 ¼,	—	—	67	2	3	7
20 ¼,	—	—	68	1	18	5
21 ¼,	—	—	69	1	13	3
22 ¼,	—	—	70	1	8	11
23 ¼,	—	—	71	1	4	8
24 ¼,	—	—	72	1	1	2
25 ¼,	—	—	73	0	17	8
26 ¼,	—	—	74	0	14	9
27 ¼,	—	—	75	0	12	0

TABLE XXXV.

For the Uſe of Country Pariſhes.

Shewing the Payment due, (reckoning Intereſt at 3 per Cent.) for a Life-Annuity of One Pound, payable Quarterly. To commence at any Age from 35 to 75.

Age of the Purchaſer from 48 ¾ to 49 ½.

To commence at the end of Years after purchaſing.				Value of an annuity of £1. in one preſent payment. £.	s.	d.
¼,	or at Age		49	13	2	6
1 ¼,	—	—	50	12	2	6
2 ¼,	—	—	51	11	4	5
3 ¼,	—	—	52	10	6	3
4 ¼,	—	—	53	9	10	6
5 ¼,	—	—	54	8	14	10
6 ¼,	—	—	55	8	0	11
7 ¼,	—	—	56	7	7	1
8 ¼,	—	—	57	6	14	10
9 ¼,	—	—	58	6	2	7
10 ¼,	—	—	59	5	11	10
11 ¼,	—	—	60	5	1	1
12 ¼,	—	—	61	4	11	9
13 ¼,	—	—	62	4	2	5
14 ¼,	or at Age		63	3	14	3
15 ¼,	—	—	64	3	6	2
16 ¼,	—	—	65	2	19	3
17 ¼,	—	—	66	2	12	3
18 ¼,	—	—	67	2	6	4
19 ¼,	—	—	68	2	0	5
20 ¼,	—	—	69	1	15	5
21 ¼,	—	—	70	1	10	5
22 ¼,	—	—	71	1	6	3
23 ¼,	—	—	72	1	2	2
24 ¼,	—	—	73	0	18	10
25 ¼,	—	—	74	0	15	6
26 ¼,	—	—	75	0	12	8

TABLE XXXVI.

For the Use of Country Parishes.

Shewing the Payment due (reckoning Interest at 3 per Cent.) for a Life-Annuity of One Pound, payable Quarterly. To commence at any Age from 35 to 75.

Age of the Purchaser from 49 ¾ to 50 ½.

To commence at the end of Years after purchasing.	Value of an annuity of £1. in one present payment. £.	s.	d.	To commence at the end of Years after purchasing.	Value of an annuity of £1. in one present payment. £.	s.	d.
¼, or at Age	50 12	17	8	13 ¼, or at Age	63 3	18	7
1 ¼, — —	51 11	17	10	14 ¼, — —	64 3	10	7
2 ¼, — —	52 10	19	10	15 ¼, — —	65 3	2	7
3 ¼, — —	53 10	1	11	16 ¼, — —	66 2	15	10
4 ¼, — —	54 9	6	2	17 ¼, — —	67 2	8	11
5 ¼, — —	55 8	10	6	18 ¼, — —	68 2	3	2
6 ¼, — —	56 7	16	7	19 ¼, — —	69 1	17	5
7 ¼, — —	57 7	2	10	20 ¼, — —	70 1	12	7
8 ¼, — —	58 6	10	7	21 ¼, — —	71 1	7	9
9 ¼, — —	59 5	18	5	22 ¼, — —	72 1	3	9
10 ¼, — —	60 5	7	9	23 ¼, — —	73 0	19	10
11 ¼, — —	61 4	17	1	24 ¼, — —	74 0	16	7
12 ¼, — —	62 4	7	10	25 ¼, — —	75 0	13	6

TABLE XXXVII.

For the Use of Country Parishes.

Shewing the Payment due (reckoning Interest at 3 per Cent.) for a Life-Annuity of One Pound, payable Quarterly. To commence at any Age from 35 to 75.

Age of the Purchaser from 50 ¾ to 51 ½.

To commence at the end of Years after purchasing.	Value of an annuity of £1. in one present payment. £.	s.	d.	To commence at the end of Years after purchasing.	Value of an annuity of £1. in one present payment. £.	s.	d.
¼, or at Age	51 12	12	6	13 ¼, or at Age	64 3	14	10
1 ¼, — —	52 11	13	2	14 ¼, — —	65 3	6	11
2 ¼, — —	53 10	15	4	15 ¼, — —	66 2	19	1
3 ¼, — —	54 9	17	7	16 ¼, — —	67 2	12	5
4 ¼, — —	55 9	1	11	17 ¼, — —	68 2	5	8
5 ¼, — —	56 8	6	2	18 ¼, — —	69 2	0	0
6 ¼, — —	57 7	12	4	19 ¼, — —	70 1	14	5
7 ¼, — —	58 6	18	7	20 ¼, — —	71 1	9	9
8 ¼, — —	59 6	6	5	21 ¼, — —	72 1	5	1
9 ¼, — —	60 5	14	3	22 ¼, — —	73 1	1	4
10 ¼, — —	61 5	3	9	23 ¼, — —	74 0	17	6
11 ¼, — —	62 4	13	2	24 ¼, — —	75 0	14	4
12 ¼, — —	63 4	4	0				

TABLE XXXVIII.

For the Use of Country Parishes

Shewing the Payment due (reckoning Interest at 3 per Cent.) for a Life-Annuity of One Pound, payable Quarterly. To commence at any Age from 35 to 75.

Age of the Purchaser from $51\frac{1}{4}$ to $52\frac{1}{4}$.

To commence at the end of Years after purchasing.		Value of an annuity of £1. in one present payment. £.	s.	d.
$\frac{1}{4}$,	or at Age 52	12	7	6
$1\frac{1}{4}$,	—— 53	11	7	10
$2\frac{1}{4}$,	—— 54	10	10	1
$3\frac{1}{4}$,	—— 55	9	12	4
$4\frac{1}{4}$,	—— 56	8	16	9
$5\frac{1}{4}$,	—— 57	8	1	1
$6\frac{1}{4}$,	—— 58	7	7	4
$7\frac{1}{4}$,	—— 59	6	13	8
$8\frac{1}{4}$,	—— 60	6	1	7
$9\frac{1}{4}$,	—— 61	5	9	7
$10\frac{1}{4}$,	—— 62	4	19	2
$11\frac{1}{4}$,	—— 63	4	8	8
$12\frac{1}{4}$,	—— 64	3	19	8
$13\frac{1}{4}$,	—— 65	3	10	8
$14\frac{1}{4}$,	—— 66	3	2	11
$15\frac{1}{4}$,	—— 67	2	15	3
$16\frac{1}{4}$,	—— 68	2	8	9
$17\frac{1}{4}$,	—— 69	2	2	3
$18\frac{1}{4}$,	—— 70	1	16	9
$19\frac{1}{4}$,	—— 71	1	11	4
$20\frac{1}{4}$,	—— 72	1	6	10
$21\frac{1}{4}$,	—— 73	1	2	5
$22\frac{1}{4}$,	—— 74	0	18	9
$23\frac{1}{4}$,	—— 75	0	15	3

TABLE XXXIX.

For the Use of Country Parishes.

Shewing the Payment due (reckoning Interest at 3 per Cent.) for a Life-Annuity of One Pound, payable Quarterly. To commence at any age from 35 to 75.

Age of the Purchaser from $52\frac{3}{4}$ to $53\frac{3}{4}$.

To commence at the end of Years after purchasing.		Value of an annuity of £1. in one present payment. £.	s.	d.
$\frac{1}{4}$,	or at Age 53	12	2	0
$1\frac{1}{4}$,	—— 54	11	2	7
$2\frac{1}{4}$,	—— 55	10	4	11
$3\frac{1}{4}$,	—— 56	9	7	2
$4\frac{1}{4}$,	—— 57	8	11	8
$5\frac{1}{4}$,	—— 58	7	16	1
$6\frac{1}{4}$,	—— 59	7	2	5
$7\frac{1}{4}$,	—— 60	6	8	9
$8\frac{1}{4}$,	—— 61	5	16	10
$9\frac{1}{4}$,	—— 62	5	4	11
$10\frac{1}{4}$,	—— 63	4	14	7
$11\frac{1}{4}$,	—— 64	4	4	3
$12\frac{1}{4}$,	—— 65	3	15	5
$13\frac{1}{4}$,	—— 66	3	6	7
$14\frac{1}{4}$,	—— 67	2	19	0
$15\frac{1}{4}$,	—— 68	2	11	6
$16\frac{1}{4}$,	—— 69	2	5	2
$17\frac{1}{4}$,	—— 70	1	18	10
$18\frac{1}{4}$,	—— 71	1	13	7
$19\frac{1}{4}$,	—— 72	1	8	3
$20\frac{1}{4}$,	—— 73	1	4	0
$21\frac{1}{4}$,	—— 74	0	19	9
$22\frac{1}{4}$,	—— 75	0	16	2

TABLE

TABLE XL.

For the Use of Country Parishes.

Shewing the Payment due (reckoning Interest at 3 per Cent.) for a Life-Annuity of One Pound, payable Quarterly. To commence at any Age from 35 to 75.

Age of the Purchaser from $53\frac{3}{4}$ to $54\frac{3}{4}$.

To commence at the end of Years after purchasing.		Value of an annuity of £1. in one present payment. £.	s.	d.
$\frac{1}{4}$,	or at Age 54	11	16	8
$1\frac{1}{4}$,	—— 55	10	17	2
$2\frac{1}{4}$,	—— 56	9	19	6
$3\frac{1}{4}$,	—— 57	9	1	10
$4\frac{1}{4}$,	—— 58	8	6	4
$5\frac{1}{4}$,	—— 59	7	10	10
$6\frac{1}{4}$,	—— 60	6	17	3
$7\frac{1}{4}$,	—— 61	6	3	8
$8\frac{1}{4}$,	—— 62	5	11	11
$9\frac{1}{4}$,	—— 63	5	0	1
$10\frac{1}{4}$,	—— 64	4	9	11
$11\frac{1}{4}$,	—— 65	3	19	9
$12\frac{1}{4}$,	—— 66	3	11	1
$13\frac{1}{4}$,	—— 67	3	2	4
$14\frac{1}{4}$,	—— 68	2	15	0
$15\frac{1}{4}$,	—— 69	2	7	8
$16\frac{1}{4}$,	—— 70	2	1	6
$17\frac{1}{4}$,	—— 71	1	15	5
$18\frac{1}{4}$,	—— 72	1	10	4
$19\frac{1}{4}$,	—— 73	1	5	3
$20\frac{1}{4}$,	—— 74	1	1	1
$21\frac{1}{4}$,	—— 75	0	17	2

TABLE XLI.

For the Use of Country Parishes.

Shewing the Payment due (reckoning Interest at 3 per Cent.) for a Life-Annuity of One Pound, payable Quarterly. To commence at any Age from 35 to 75.

Age of the Purchaser from $54\frac{3}{4}$ to $55\frac{3}{4}$.

To commence at the end of Years after purchasing.		Value of an annuity of £1. in one present payment. £.	s.	d.
$\frac{1}{4}$,	or at Age 55	11	11	3
$1\frac{1}{4}$,	—— 56	10	11	9
$2\frac{1}{4}$,	—— 57	9	14	1
$3\frac{1}{4}$,	—— 58	8	16	6
$4\frac{1}{4}$,	—— 59	8	1	0
$5\frac{1}{4}$,	—— 60	7	5	7
$6\frac{1}{4}$,	—— 61	6	12	1
$7\frac{1}{4}$,	—— 62	5	18	7
$8\frac{1}{4}$,	—— 63	5	7	0
$9\frac{1}{4}$,	—— 64	4	15	4
$10\frac{1}{4}$,	—— 65	4	5	4
$11\frac{1}{4}$,	—— 66	3	15	3
$12\frac{1}{4}$,	—— 67	3	6	9
$13\frac{1}{4}$,	—— 68	2	18	2
$14\frac{1}{4}$,	—— 69	2	11	0
$15\frac{1}{4}$,	—— 70	2	3	11
$16\frac{1}{4}$,	—— 71	1	17	11
$17\frac{1}{4}$,	—— 72	1	12	0
$18\frac{1}{4}$,	—— 73	1	7	2
$19\frac{1}{4}$,	—— 74	1	2	4
$20\frac{1}{4}$,	—— 75	0	18	2

TABLE

TABLE XLII.

For the Use of Country Parishes.

Shewing the Payment due (reckoning Interest at 3 per Cent.) for a Life-Annuity of One Pound, payable Quarterly. To commence at any Age from 35 to 75.

Age of the Purchaser from $55\frac{3}{4}$ to $56\frac{1}{2}$.

To commence at the end of Years after purchasing.			Value of an annuity of £1. in one present payment. £.	s.	d.
$\frac{1}{4}$,	or at Age	56	11	5	6
$1\frac{1}{4}$,	——	57	10	5	10
$2\frac{1}{4}$,	——	58	9	8	6
$3\frac{1}{4}$,	——	59	8	10	11
$4\frac{1}{4}$,	——	60	7	15	6
$5\frac{1}{4}$,	——	61	7	0	2
$6\frac{1}{4}$,	——	62	6	6	9
$7\frac{1}{4}$,	——	63	5	13	4
$8\frac{1}{4}$,	——	64	5	1	11
$9\frac{1}{4}$,	——	65	4	10	5
$10\frac{1}{4}$,	——	66	4	0	7
$11\frac{1}{4}$,	——	67	3	10	8
$12\frac{1}{4}$,	——	68	3	2	4
$13\frac{1}{4}$,	——	69	2	14	0
$14\frac{1}{4}$,	——	70	2	7	0
$15\frac{1}{4}$,	——	71	2	0	1
$16\frac{1}{4}$,	——	72	1	14	4
$17\frac{1}{4}$,	——	73	1	8	8
$18\frac{1}{4}$,	——	74	1	3	11
$19\frac{1}{4}$,	——	75	0	19	6

TABLE XLIII.

For the Use of Country Parishes.

Shewing the Payment due (reckoning Interest at 3 per Cent.) for a Life-Annuity of One Pound, payable Quarterly. To commence at any Age from 35 to 75,

Age of the Purchaser from $56\frac{3}{4}$ to $57\frac{1}{2}$.

To commence at the end of Years after purchasing.			Value of an annuity of £1 in one present payment. £.	s.	d.
$\frac{1}{4}$,	or at Age	57	11	0	0
$1\frac{1}{4}$,	——	58	10	0	5
$2\frac{1}{4}$,	——	59	9	2	11
$3\frac{1}{4}$,	——	60	8	5	4
$4\frac{1}{4}$,	——	61	7	10	0
$5\frac{1}{4}$,	——	62	6	14	9
$6\frac{1}{4}$,	——	63	6	1	6
$7\frac{1}{4}$,	——	64	5	8	2
$8\frac{1}{4}$,	——	65	4	16	10
$9\frac{1}{4}$,	——	66	4	5	6
$10\frac{1}{4}$,	——	67	3	15	10
$11\frac{1}{4}$,	——	68	3	6	1
$12\frac{1}{4}$,	——	69	2	18	0
$13\frac{1}{4}$,	——	70	2	9	10
$14\frac{1}{4}$,	——	71	2	3	1
$15\frac{1}{4}$,	——	72	1	16	4
$16\frac{1}{4}$,	——	73	1	10	10
$17\frac{1}{4}$,	——	74	1	5	4
$18\frac{1}{4}$,	——	75	1	0	9

TABLE

TABLE XLIV.

For the Use of Country Parishes.

Shewing the Payment due (reckoning Interest at 3 per Cent.) for a Life-Annuity of One Pound, payable Quarterly. To commence at any Age from 35 to 75.

Age of the Purchaser from $57\frac{3}{4}$ to $58\frac{1}{2}$.

To commence at the end of Years after purchasing.			Value of an annuity of £1. in one present payment. £.	s.	d.
$\frac{1}{4}$,	or at Age	58	10	14	0
$1\frac{1}{4}$,	——	59	9	14	7
$2\frac{1}{4}$,	——	60	9	17	1
$3\frac{1}{4}$,	——	61	7	19	7
$4\frac{1}{4}$,	——	62	7	4	4
$5\frac{1}{4}$,	——	63	6	9	2
$6\frac{1}{4}$,	——	64	5	16	0
$7\frac{1}{4}$,	——	65	5	2	10
$8\frac{1}{4}$,	——	66	4	11	8
$9\frac{1}{4}$,	——	67	4	0	6
$10\frac{1}{4}$,	——	68	3	11	0
$11\frac{1}{4}$,	——	69	3	1	5
$12\frac{1}{4}$,	——	70	2	13	7
$13\frac{1}{4}$,	——	71	2	5	8
$14\frac{1}{4}$,	——	72	1	19	1
$15\frac{1}{4}$,	——	73	1	12	7
$16\frac{1}{4}$,	——	74	1	7	3
$17\frac{1}{4}$,	——	75	1	2	2

TABLE XLV.

For the Use of Country Parishes.

Shewing the Payment due (reckoning Interest at 3 per Cent.) for a Life-Annuity of One Pound, payable Quarterly. To commence at any Age from 35 to 75.

Age of the Purchaser from $58\frac{3}{4}$ to $59\frac{1}{2}$.

To commence at the end of Years after purchasing.			Value of an annuity of £1. in one present payment. £.	s.	d.
$\frac{1}{4}$,	or at Age	59	10	8	0
$1\frac{1}{4}$,	——	60	9	8	9
$2\frac{1}{4}$,	——	61	8	11	3
$3\frac{1}{4}$,	——	62	7	13	10
$4\frac{1}{4}$,	——	63	6	18	8
$5\frac{1}{4}$,	——	64	6	3	7
$6\frac{1}{4}$,	——	65	5	10	7
$7\frac{1}{4}$,	——	66	4	17	7
$8\frac{1}{4}$,	——	67	4	6	6
$9\frac{1}{4}$,	——	68	3	15	6
$10\frac{1}{4}$,	——	69	3	6	2
$11\frac{1}{4}$,	——	70	2	16	10
$12\frac{1}{4}$,	——	71	2	9	2
$13\frac{1}{4}$,	——	72	2	1	6
$14\frac{1}{4}$,	——	73	1	15	2
$15\frac{1}{4}$,	——	74	1	8	11
$16\frac{1}{4}$,	——	75	1	3	8

TABLE

TABLE XLVI.

For the Use of Country Parishes.

Shewing the Payment due (reckoning Interest at 3 per Cent.) for a Life-Annuity of One Pound, payable Quarterly. To commence at any Age from 35 to 75.

Age of the Purchaser from 59¾ to 60½.

To commence at the end of Years after purchasing.			Value of an annuity of £1. in one present payment. £.	s.	d.
¼,	or at Age	60	10	2	0
1 ¼,	——	61	9	2	8
2 ¼,	——	62	8	5	2
3 ¼,	——	63	7	7	10
4 ¼,	——	64	6	12	9
5 ¼,	——	65	5	17	9
6 ¼,	——	66	5	4	11
7 ¼,	——	67	4	12	1
8 ¼,	——	68	4	1	2
9 ¼,	——	69	3	10	4
10 ¼,	——	70	3	1	3
11 ¼,	——	71	2	12	2
12 ¼,	——	72	2	4	9
13 ¼,	——	73	1	17	5
14 ¼,	——	74	1	11	2
15 ¼,	——	75	1	5	5

TABLE XLVII.

For the Use of Country Parishes.

Shewing the Payment due (reckoning Interest at 3 per Cent.) for a Life-Annuity of One Pound, payable Quarterly. To commence at any Age from 35 to 75.

Age of the Purchaser from 60¾ to 61½.

To commence at the end of Years after purchasing.			Value of an annuity of £1. in one present payment. £.	s.	d.
¼,	or at Age	61	9	16	0
1 ¼,	——	62	8	16	7
2 ¼,	——	63	7	19	2
3 ¼,	——	64	7	1	10
4 ¼,	——	65	6	6	11
5 ¼,	——	66	5	12	0
6 ¼,	——	67	4	19	4
7 ¼,	——	68	4	6	7
8 ¼,	——	69	3	15	11
9 ¼,	——	70	3	5	3
10 ¼,	——	71	2	16	5
11 ¼,	——	72	2	7	7
12 ¼,	——	73	2	0	5
13 ¼,	——	74	1	13	4
14 ¼,	——	75	1	7	2

TABLE

TABLE XLVIII.

For the Use of Country Parishes.

Shewing the Payment due (reckoning Interest at 3 per Cent.) for a Life-Annuity of One Pound, payable Quarterly. To commence at any Age from 35 to 75.

Age of the Purchaser from 61¾ to 62½.

To commence at the end of Years after purchasing.			Value of an annuity of £1. in one present payment. £.	s.	d.
¼,	or at Age	62	9	9	8
1 ¼,	——	63	8	10	3
2 ¼,	——	64	7	12	11
3 ¼,	——	65	6	15	8
4 ¼,	——	66	6	0	9
5 ¼,	——	67	5	6	0
6 ¼,	——	68	4	13	6
7 ¼,	——	69	4	1	0
8 ¼,	——	70	3	10	7
9 ¼,	——	71	3	0	1
10 ¼,	——	72	2	11	6
11 ¼,	——	73	2	3	0
12 ¼,	——	74	1	15	8
13 ¼,	——	75	1	9	3

TABLE XLIX.

For the Use of Country Parishes.

Shewing the Payment due (reckoning Interest at 3 per Cent.) for a Life-Annuity of One Pound, payable Quarterly. To commence at any Age from 35 to 75.

Age of the Purchaser from 62¾ to 63½.

To commence at the end of Years after purchasing.			Value of an annuity of £1. in one present payment. £.	s.	d.
¼,	or at Age	63	9	3	3
1 ¼,	——	64	8	3	11
2 ¼,	——	65	7	6	8
3 ¼,	——	66	6	9	6
4 ¼,	——	67	5	14	9
5 ¼,	——	68	5	0	0
6 ¼,	——	69	4	7	9
7 ¼,	——	70	3	15	6
8 ¼,	——	71	3	5	3
9 ¼,	——	72	2	15	0
10 ¼,	——	73	2	6	8
11 ¼,	——	74	1	18	5
12 ¼,	——	75	1	11	5

TABLE L.

For the Use of Country Parishes.

Shewing the Payment due (reckoning Interest at 3 per Cent.) for a Life-Annuity of One Pound, payable Quarterly. To commence at any Age from 35 to 75.

Age of the Purchaser from $63\frac{3}{4}$ to $64\frac{1}{2}$.

To commence at the end of Years after purchasing.			Value of an annuity of £1. in one present payment. £.	s.	d.
$\frac{1}{4}$,	or at Age	64	8	16	8
$1\frac{1}{4}$,	——	65	7	17	4
$2\frac{1}{4}$,	——	66	7	0	2
$3\frac{1}{4}$,	——	67	6	3	0
$4\frac{1}{4}$,	——	68	5	8	6
$5\frac{1}{4}$,	——	69	4	13	11
$6\frac{1}{4}$,	——	70	4	1	10
$7\frac{1}{4}$,	——	71	3	9	9
$8\frac{1}{4}$,	——	72	2	19	10
$9\frac{1}{4}$,	——	73	2	9	10
$10\frac{1}{4}$,	——	74	2	1	7
$11\frac{1}{4}$,	——	75	1	14	0

TABLE LI.

For the Use of Country Parishes.

Shewing the Payment due (reckoning Interest at 3 per Cent.) for a Life-Annuity of One Pound, payable Quarterly. To commence at any Age from 35 to 75.

Age of the Purchaser from $64\frac{1}{4}$ to $65\frac{1}{2}$.

To commence at the end of Years after purchasing.			Value of an annuity of £1. in one present payment. £.	s.	d.
$\frac{1}{4}$,	or at Age	65	8	10	0
$1\frac{1}{4}$,	——	66	7	10	10
$2\frac{1}{4}$,	——	67	6	13	8
$3\frac{1}{4}$,	——	68	5	16	7
$4\frac{1}{4}$,	——	69	5	2	3
$5\frac{1}{4}$,	——	70	4	7	11
$6\frac{1}{4}$,	——	71	3	16	0
$7\frac{1}{4}$,	——	72	3	4	1
$8\frac{1}{4}$,	——	73	2	14	5
$9\frac{1}{4}$,	——	74	2	4	9
$10\frac{1}{4}$,	——	75	1	16	7

TABLE

TABLE LII.

For the Use of Country Parishes.

Shewing the Payment due (reckoning Interest at 3 per Cent.) for a Life-Annuity of One Pound, payable Quarterly. To commence at any Age from 35 to 75.

Age of the Purchaser from $65\frac{3}{4}$ to $66\frac{1}{2}$.

To commence at the end of Years after purchasing.			Value of an annuity of £1. in one present payment. £.	s.	d.
$\frac{1}{4}$,	or at Age	66	8	3	4
$1\frac{1}{4}$,	——	67	7	4	0
$2\frac{1}{4}$,	——	68	6	6	11
$3\frac{1}{4}$,	——	69	5	10	0
$4\frac{1}{4}$,	——	70	4	15	10
$5\frac{1}{4}$,	——	71	4	1	8
$6\frac{1}{4}$,	——	72	3	10	0
$7\frac{1}{4}$,	——	73	2	18	4
$8\frac{1}{4}$,	——	74	2	8	8
$9\frac{1}{4}$,	——	75	1	19	9

TABLE LIII.

For the Use of Country Parishes.

Shewing the Payment due (reckoning Interest at 3 per Cent.) for a Life-Annuity of One Pound, payable Quarterly. To commence at any Age from 35 to 75.

Age of the Purchaser from $66\frac{3}{4}$ to $67\frac{1}{2}$.

To commence at the end of Years after purchasing.			Value of an annuity of £1. in one present payment. £.	s.	d.
$\frac{1}{4}$,	or at Age	67	7	16	6
$1\frac{1}{4}$,	——	68	6	17	2
$2\frac{1}{4}$,	——	69	6	0	3
$3\frac{1}{4}$,	——	70	5	3	5
$4\frac{1}{4}$,	——	71	4	9	5
$5\frac{1}{4}$,	——	72	3	15	5
$6\frac{1}{4}$,	——	73	3	4	0
$7\frac{1}{4}$,	——	74	2	12	7
$8\frac{1}{4}$,	——	75	2	3	0

TABLE LIV.

For the Uſe of Country Pariſhes

Shewing the Payment due (reckoning Intereſt at 3 per Cent.) for a Life-Annuity of One Pound, payable Quarterly. To commence at any Age from 35 to 75.

Age of the Purchaſer from 67¼ to 68¼.

To commence at the end of Years after purchaſing.			Value of an annuity of £1. in one preſent payment. £.	s.	d.
¼,	or at Age	68	7	9	6
1 ¼,	——	69	6	10	1
2 ¼,	——	70	5	13	4
3 ¼,	——	71	4	16	7
4 ¼,	——	72	4	2	10
5 ¼,	——	73	3	9	0
6 ¼,	——	74	2	17	6
7 ¼,	——	75	2	7	1

TABLE LV.

For the Uſe of Country Pariſhes.

Shewing the Payment due (reckoning Intereſt at 3 per Cent.) for a Life-Annuity of One Pound, payable Quarterly. To commence at any age from 35 to 75.

Age of the Purchaſer from 68¼ to 69¼.

To commence at the end of Years after purchaſing.			Value of an annuity of £1. in one preſent payment. £.	s.	d.
¼,	or at Age	69	7	2	4
1 ¼,	——	70	6	3	1
2 ¼,	——	71	5	6	5
3 ¼,	——	72	4	9	9
4 ¼,	——	73	3	16	3
5 ¼,	——	74	3	2	8
6 ¼,	——	75	2	11	2

TABLE

TABLE LVI.

For the Uſe of Country Pariſhes.

Shewing the Payment due (reckoning Intereſt at 3 per Cent.) for a Life-Annuity of One Pound, payable Quarterly. To commence at any Age from 35 to 75.

Age of the Purchaſer from 69¾ to 70¾.

To commence at the end of Years after purchaſing.			Value of an annuity of £1. in one preſent payment. £.	s.	d.
¼,	or at Age	70	6	15	1
1 ¼,	——	71	5	15	9
2 ¼,	——	72	4	19	3
3 ¼,	——	73	4	2	9
4 ¼,	——	74	3	9	0
5 ¼,	——	75	2	16	0

TABLE LVII.

For the Uſe of Country Pariſhes.

Shewing the Payment due (reckoning Intereſt at 3 per Cent.) for a Life-Annuity of One Pound, payable Quarterly. To commence at any Age from 35 to 75.

Age of the Purchaſer from 70¾ to 71¾.

To commence at the end of Years after purchaſing.			Value of an annuity of £1. in one preſent payment. £.	s.	d.
¼,	or at Age	71	6	7	9
1 ¼,	——	72	5	8	6
2 ¼,	——	73	4	12	1
3 ¼,	——	74	3	15	9
4 ¼,	——	75	3	1	11

TABLE

TABLE LVIII.

For the Uſe of Country Pariſhes.

Shewing the Payment due (reckoning Intereſt at 3 per Cent.) for a Life-Annuity of One Pound, payable Quarterly. To commence at any Age from 35 to 75.

Age of the Purchaſer from $71\frac{1}{4}$ to $72\frac{1}{2}$.

To commence at the end of Years after purchaſing.			Value of an annuity of £1. in one preſent payment. £.	s.	d.
$\frac{1}{4}$,	or at Age	72	6	0	0
$1\frac{1}{4}$,	——	73	5	0	11
$2\frac{1}{4}$,	——	74	4	4	2
$3\frac{1}{4}$,	——	75	3	8	6

TABLE LIX.

For the Uſe of Country Pariſhes,

Shewing the Payment due (reckoning Intereſt at 3 per Cent.) for a Life-Annuity of One Pound, payable Quarterly. To commence at any Age from 35 to 75.

Age of the Purchaſer from $72\frac{3}{4}$ to $73\frac{1}{2}$.

To commence at the end of Years after purchaſing.			Value of an annuity of £1. in one preſent payment. £.	s.	d.
$\frac{1}{4}$,	or at Age	73	5	12	6
$1\frac{1}{4}$,	——	74	4	13	4
$2\frac{1}{4}$,	——	75	3	16	3

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