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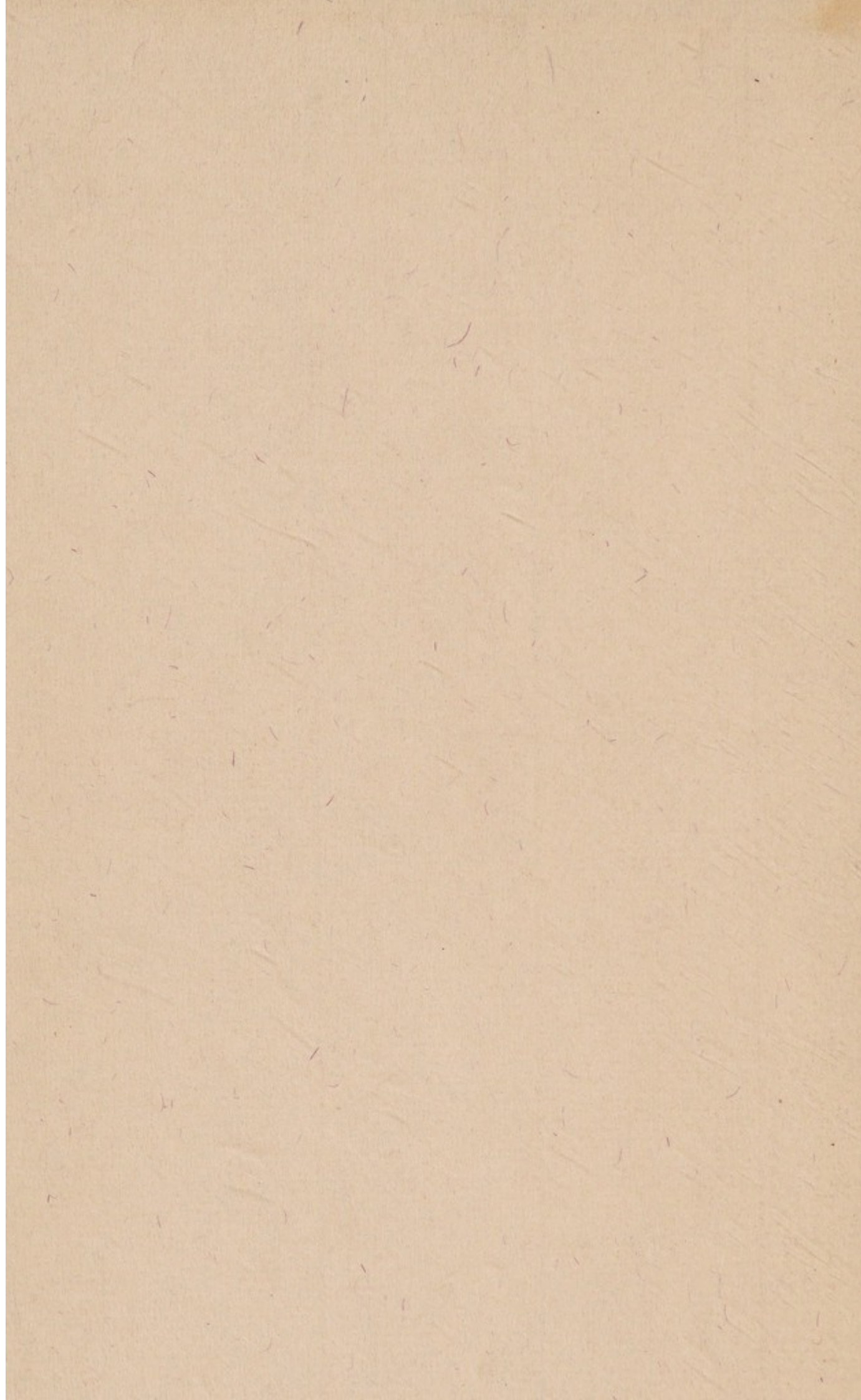
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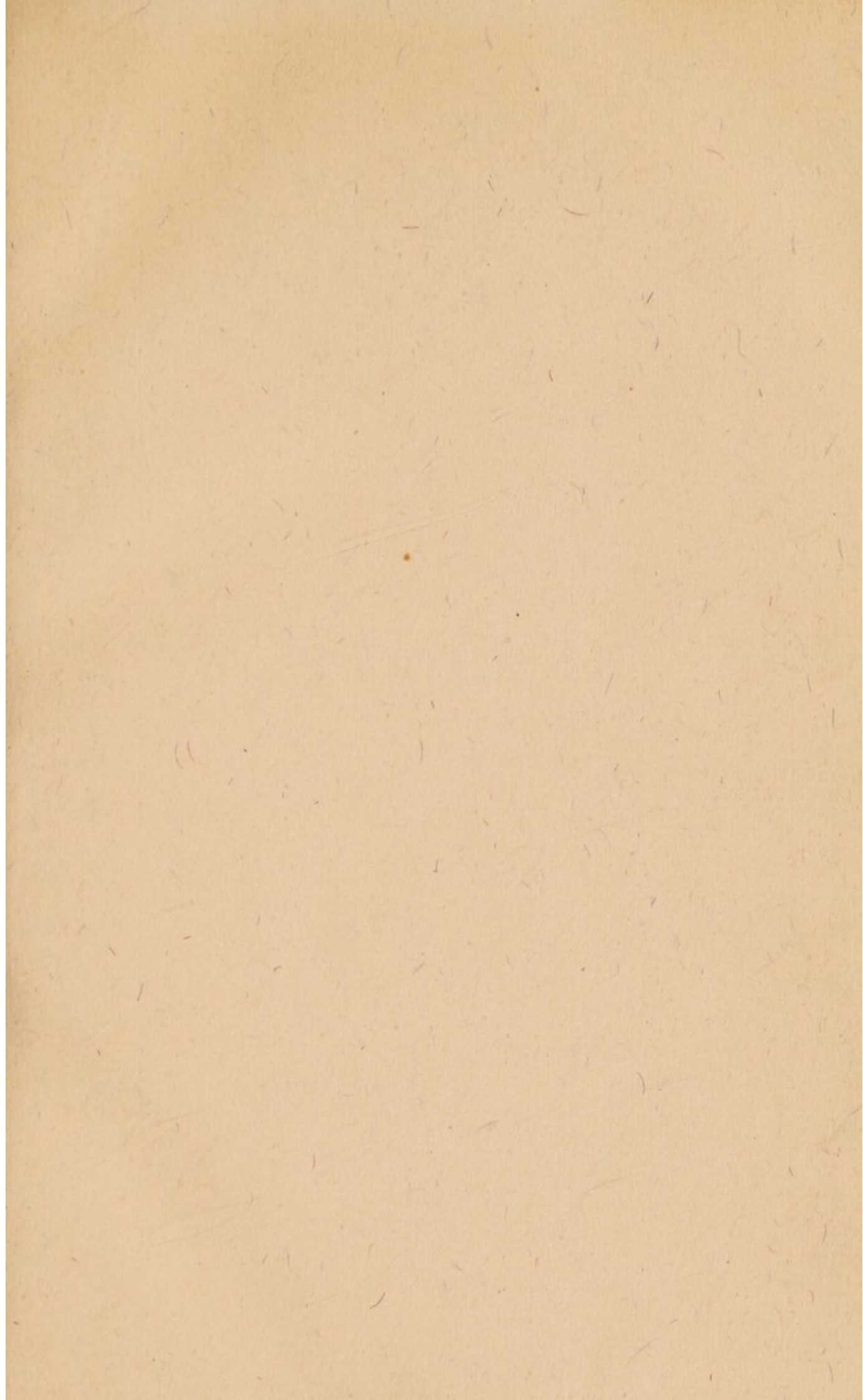
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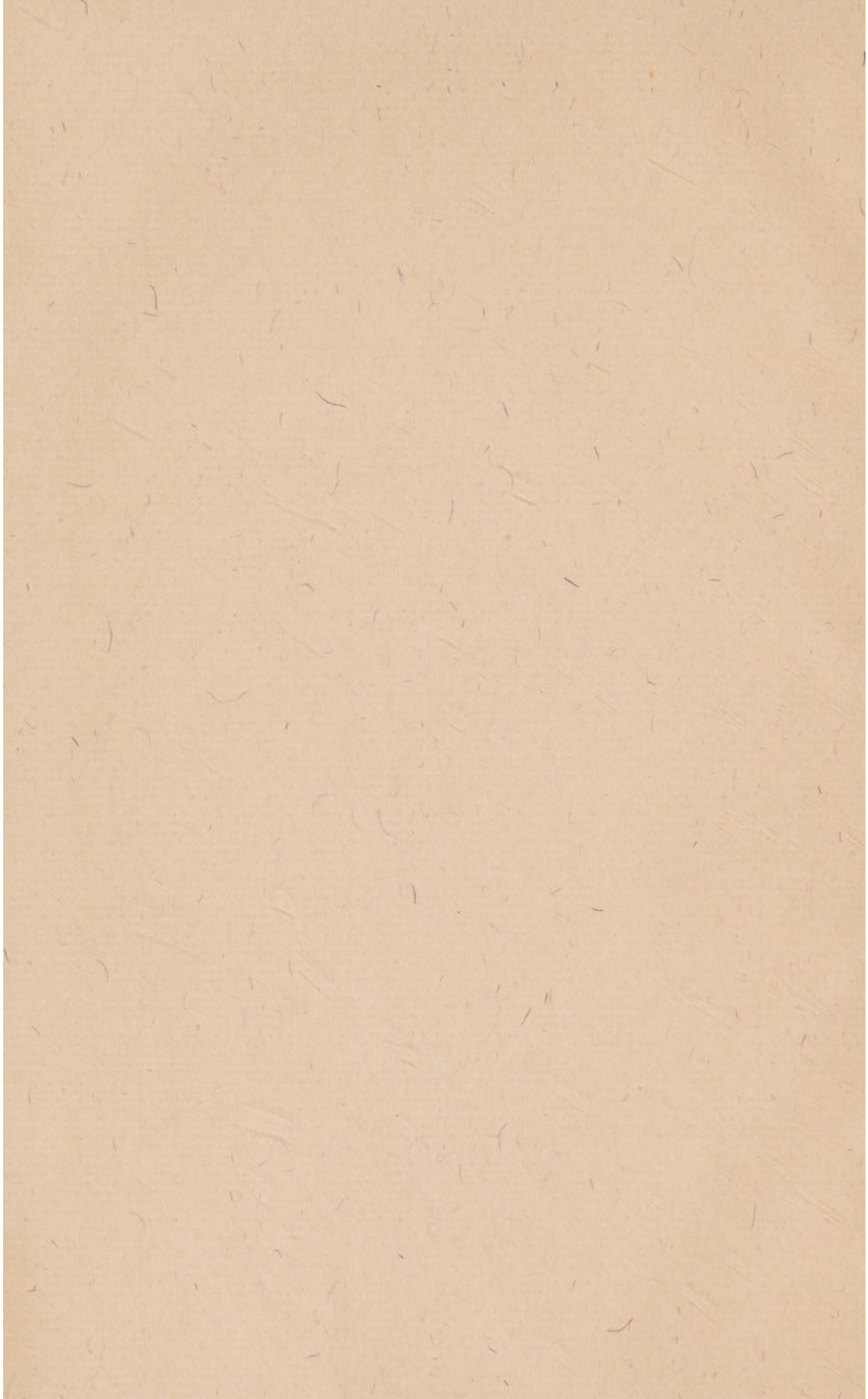



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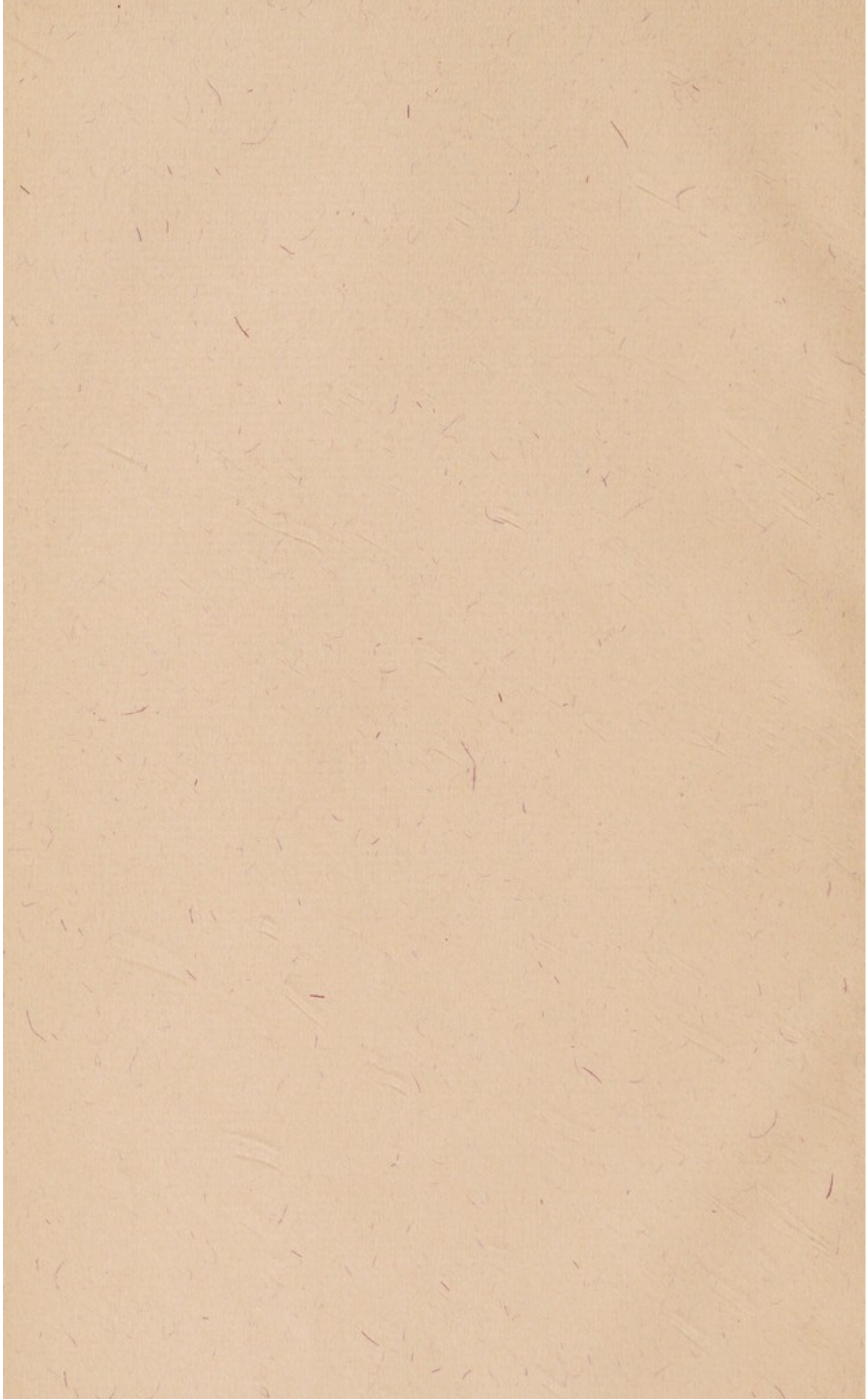






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SEVERAL
ESSAYS

IN

Political Arithmetick.

BY

Sir WILLIAM PETTY, Knt.

AND

FELLOW of the ROYAL SOCIETY.

The FOURTH EDITION, Corrected.

To which are prefix'd,

MEMOIRS

OF THE

AUTHOR'S LIFE.

LONDON:

Printed for D. BROWNE, without *Temple-Bar*; J. SHUCK-
BURGH, at the *Sun*, and J. WHISTON and B. WHITE,
at *Boyle's Head* in *Fleet-Street*.

M.DCC.LV.



Political Arithmetic

By WILLIAM PERRY, M.D.

AND

FELLOW OF THE ROYAL SOCIETY

THE FOURTH EDITION CORRECTED

In which are prefixed

MEMOIRS

OF THE

AUTHOR'S LIFE

LONDON

Printed by D. Browne, Stationer, in Strand, near St. Dunstons Church

at the Sign of the Sun

MDCCLXXII

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Five Essays in Political Arithmetick — Page 71

Political Arithmetick, concerning the Value of Lands, People, Buildings, Manufactures, Commerce, Fishery, Revenues, Taxes, Interest, Registries, Banks, Militias, Shipping, &c. particularly as the same relates to Great Britain and its Territories, to Holland and France — 95



THE
L I F E
OF THE
A U T H O R.



MR *William Petty*, the ingenious Author of the following judicious Tracts, was Son of *Anthony Petty*, a Clothier at *Rumsey* in *Hampshire*, and born *May 26, 1623*. He took great Delight, whilst a Boy, in spending his Time among Carpenters, Smiths, and other Artificers, whose Trades he so well understood, that at 12 Years of Age he could work at them. His Education was only at the Grammar School there, but he made so great a Progress
A in

in his Learning, that when he was 15, he had made himself Master of *Latin, Greek, and French*, understood *Dialling*, and so much of *Geometry* and *Astronomy*, as was useful to Navigation.

Soon after he went to *Caen* in *Normandy*, with a little Stock of Merchandize, which he there improved : From thence to *Paris*, where he studied *Anatomy*, and came there acquainted with Mr. *Hobbes*, who had a great Affection for him, and assisted him in his Studies. Upon his Return to *England* he had a Place given him in the Royal Navy.

In 1643, when the War grew hot between the King and Parliament, he went into the *Netherlands* and *France*, prosecuting his Studies for 3 Years, and then returned to *Rumsey*, with so small a Stock as only about 70 *l.* in Cash, but with an inexhaustible Treasure of useful Learning.

In 1647, he obtained a Patent from the Parliament for 17 Years to teach the *Art of double Writing*. He sided with the Parliament in Opinion, and in 1648 went to *Oxford*, where he became Deputy to Dr. *Tho. Clayton*, Professor of Anatomy, and under him instructed young Students in that Science, and in Chemistry.

In *March* 1649, he was created Doctor of Physick, and soon after made Fellow of *Brazen Nose* College. In *December* 1650, he was one of the Persons concerned in recovering *Anne Green* to Life, who was hanged at *Oxford* on the 14th for the supposed Murther of her Bastard Child. *January* following he was elected Professor of Anatomy in the Room of *Dr. Clayton* who resigned, and soon after was made a Member of the College of Physicians, and Music-Professor at *Gresham* College.

Being now Master of 500*l.* he went to *Ireland*, where he was made Physician to the Army by the Parliament, with an Allowance of 20 *s. per Diem*, in which Post he continued till *June* 1659, gaining by his Practice 4000*l. per Annum*, beside his Salary.

In 1654, perceiving that the Lands which were forfeited in 1641, and given to the Soldiers for suppressing the Rebellion, then in *Ireland* were very falsly measured, and therefore unequally divided by the Unskillfulness of the Surveyors, he entered into a Contract in *December* 1654 to regulate the Admeasurements, by which he gained 9000*l.* He was then made Clerk of the Council for two Years, with a Salary of 400 *l. per Annum*. By these Advantages, and his considerable Practice in Physick, he had now increased his Fortune so much as to be worth full 13 Thousand Pounds; Part of

this Money he improved by purchasing Soldiers Debentures, and with Part he bought the Earl of *Arundel's* House in *Lothbury*, *London*. The rest he kept in Cash for any improveable Emergency.

January 1658, he was elected a Burgefs for *Westlow* in *Cornwall*, in the Parliament called by *Richard Cromwell*; but that being soon dissolved, he returned to *Ireland*, where he had a great Contest with *Sir Jerom Sankey*, who charged him with amassing a great Fortune by taking great Bribes, buying Debentures against the Statute, by fraudulently procuring several Lands, having used foul Practices in setting out the Lands, and other Misdemeanors; against which Charges *Mr. Petty* vindicated himself in a small Tract, but it doth not appear that he received any publick Censure.

After the Restoration he returned to *England*, and was introduced to *King Charles II.* who was so highly pleased with his Ingenuity, that *April* 11, 1661, he knighted him, and, as it was reported, designed to create him Earl of *Kilmore* in *Ireland*. Upon the Establishment of the Royal Society, he was one of the first Members, and afterwards one of its Council.

In 1663, *Sir William Petty* was greatly applauded in *Ireland* for the Success of his new Invention of a double-bottomed Ship; she failed

failed from *Dublin* in *July* 1663, and turned into the narrow Harbour of *Holyhead*, amongst the Rocks and Ships, with such Dexterity, that many experienced Seamen did confess they had never seen the like. It appeared very much to excell all other Forms of Ships in Sailing, in Carriage, in Security, and many other Benefits. Sir *William* gave a Model of this Ship, made with his own Hand, to the Royal Society, and it is now in their Musæum; and, as Bishop *Sprat* observes, this Invention will undoubtedly produce great Effects, if ever it shall be brought to Perfection, upon the publick Stock of the Nation.

He died at his House in *Picadilly* the 16th of *December* 1687, of a Gangrene in the Foot, occasioned by the Gout, in his 63d Year, and was buried at his native Town *Rumsey*. By his Wife *Elizabeth*, Daughter of Sir *Hardres Waller*, Knight, and Relict of Sir *Maurice Fenton*, he had Issue *Charles*, *Henry*, and one Daughter *Anne*. *Charles* the eldest Son was soon after his Father's Death created Baron of *Shelburn* in *Ireland*.

By his last Will it appears that he estimated his real Estate at 6500 *l. per Annum*, his personal Estate about 45000 *l.* and the demonstrable Improvements of his *Irish* Estates at 4000 *l. per Annum*; In all he may be reckoned to have left behind him to the Amount of 15000 *l. per Annum*.

Annum. A prodigious Fortune to raise from so small a Beginning.

He wrote several small Treatises, chiefly mathematical, some of which are inserted in the *Philosophical Transactions*. A Catalogue of them is annexed to his Life in the *General Dictionary*, Vol. 8. Article PETTY. But the most esteemed, and indeed most useful, are those which are here collected, and have already gone through three Editions ; but being become very scarce, and much sought after, it was thought that a new Edition would be acceptable to the Publick, which is printed from the most correct and compleat Editions of his several Tracts.



A N
E S S A Y

Concerning

The M U L T I P L I C A T I O N of Mankind:

Together with another

E S S A Y

I N

P O L I T I C A L A R I T H M E T I C K,

Concerning the Growth of the

C I T Y O F L O N D O N:

W I T H T H E

M e a s u r e s, P e r i o d s, C a u s e s, a n d C o n s e -
q u e n c e s t h e r e o f, 1682.

The Second Edition, revised and enlarged.

By Sir W I L L I A M P E T T Y, Fellow of the
Royal Society.

AN
ESSAYS
Concerning
The Multiplication of Mankind:
Together with another
ESSAYS
IN
POLITICAL ARITHMETICK,
Concerning the Growth of the
CITY OF LONDON:
WITH THE
Measures, Periods, Causes, and Consequences thereof, 1682.
The Second Edition, revised and enlarged.
By Sir WILLIAM PLETY, Fellow of the
Royal Society.

T H E
S T A T I O N E R
T O T H E
R E A D E R.

TH E ensuing Essay concerning the Growth of the City of *London*, was intituled [*Another Essay*] intimating that some other Essay had preceded it, which was not to be found. I having been much importuned for that precedent Essay, have found that the same was about the Growth, Encrease, and Multiplication of Mankind, which Subject should in Order of Nature precede that of the Growth of the City of *London*, but am not able to procure the Essay itself, only I have obtained from a Gentleman, who sometimes corresponded with Sir *William Petty*, an Extract of a Letter from Sir *William* to him, which I verily believe containeth the Scope thereof; wherefore, I must desire the Reader to be content therewith, till more can be had.

The Extract of a Letter concerning the Scope of an Essay intended to precede another Essay concerning the Growth of the City of London, &c. An Essay in Political Arithmetick, concerning the Value and Encrease of People and Colonies.

THE Scope of this Essay, is concerning People and Colonies, and to make way for another Essay concerning the Growth of the City of *London*. I desire in this first Essay to give the World some Light, concerning the Numbers of People in *England*, with *Wales*, and in *Ireland*; as also, of the Number of Houses, and Families, wherein they live, and of Acres they occupy.

2. How many live upon their Lands, how many upon their Personal Estates, and Commerce, and how many upon Art and Labour; how many upon Alms, how many upon Offices and Publick Employments, and how many as Cheats and Thieves; how many are Impotents, Children, and decrepit old Men.

3. How many upon the Poll-Taxes in *England*, do pay extraordinary Rates, and how many at the Level.

4. How many Men and Women are prolifick, and how many of each are married or unmarried.

5. What the Value of People are in *England*, and what in *Ireland*, at a Medium, both as
Members

Members of the Church or Commonwealth, or as Slaves and Servants to one another; with a Method how to estimate the same, in any other Country or Colony.

6. How to compute the Value of Land in Colonies, in Comparison to *England* and *Ireland*.

7. How 10000 People in a Colony may be, and planted to the best Advantage.

8. A Conjecture in what Number of Years *England* and *Ireland* may be fully peopled, as also all *America*, and lastly the whole habitable Earth.

9. What Spot of the Earth's Globe were fittest for a general and universal Emporium, whereby all the People thereof may best enjoy one anothers Labours and Commodities.

10. Whether the speedy Peopling of the Earth would make

First, For the Good of Mankind.

Secondly, To fulfil the revealed Will of God.

Thirdly, To what Prince or State the same would be most advantageous.

11. An Exhortation to all thinking Men to save the Scriptures, and other good Histories, concerning the Number of People in all Ages of the World, in the great Cities thereof, and elsewhere.

12. An Appendix concerning the different Number of Sea-fish and Wild-fowl, at the End of every thousand Years, since *Noah's* Flood.

13. An Hypothesis of the Use of those Spaces (of about 8000 Miles through) within the
Globe

Globe of our Earth, supposing a Shell of 150 Miles thick.

14. What may be the Meaning of glorified Bodies, in case the Place of the Blessed shall be without the Convex of the Orb of the fixed Stars, if that the whole System of the World was made for the Use of our Earth's-men.



The principal Points of this Discourse.

1. **T**HAT *London* doubles in Forty Years, and all *England* in Three Hundred and sixty Years.

2. That there be, *Anno* 1682. about six Hundred and seventy Thousand Souls in *London*, and about seven Millions four hundred Thousand in all *England* and *Wales*, and about twenty-eight Millions of Acres of profitable Land.

3. That the Periods of doubling the People, are found to be in all Degrees, from between Ten, to Twelve hundred Years.

4. That the Growth of *London* must stop of itself, before the Year 1800.

5. A Table helping to understand the Scriptures, concerning the Number of People mentioned in them.

6. That the World will be fully peopled within the next two Thousand Years.

7. Twelve Ways whereby to try any Proposal, pretended for the Publick Good.

8. How

8. How the City of *London* may be made (morally speaking) invincible.

9. An Help to Uniformity in Religion.

10. That it is possible to encrease Mankind by Generation four Times more than at present.

11. The Plagues of *London* are the chief Impediment and Objection, against the Growth of the City.

12. That an exact Account of the People is necessary in this Matter.

Of the Growth of the City of London: And of the Measures, Periods, Causes, and Consequences thereof.

BY the City of *London*, we mean the Houses within the Walls of the old City, with the Liberties thereof, *Westminster*, the Borough of *Southwark*, and so much of the built Ground in *Middlesex* and *Surrey*, whose Houses are contiguous unto, or within Call of those afore-mentioned. Or else we mean the Houses which stand upon the Ninety seven Parishes within the Walls of *London*; upon the Sixteen Parishes next, without them; the Six Parishes of *Westminster*, and the Fourteen out-Parishes in *Middlesex* and *Surrey*, contiguous to the former; all which One hundred and thirty three Parishes are comprehended within the Weekly Bills of Mortality.

The Growth of this City is measured; 1. By the Quantity of Ground, or Number of Acres upon which it stands. 2. By the Number of Houses, as the same appears by the Hearth-books and late Maps. 3. By the Cubical Content of the said Houses. 4. By the Flooring of the same. 5. By the Number of Days-work, or Charge of building the said Houses. 6. By the Value of the said Houses, according to their yearly Rent, and Number of Years Purchase. 7. By the Number of Inhabitants; according to which latter

latter Sense only, we make our Computations in this Essay.

Till a better Rule can be obtained, we conceive that the Proportion of the People may be sufficiently measured by the Proportion of the Burials in such Years as were neither remarkable for extraordinary Healthfulness or Sickliness.

That the City hath increased in this latter Sense, appears from the Bills of Mortality, represented in the two following Tables, *viz.* One whereof is a Continuation for Eighteen Years, ending in 1682. of that Table which was published in the 117th Page of the Book of the *Observations upon the London Bills of Mortality*, printed in the Year 1676. The other sheweth what Number of People dyed at a Medium of two Years, indifferently taken, at about Twenty Years Distance from each other.

The

The first of the said two Tables.

An.Dom.	⁹⁷ Parishes.	¹⁶ Parishes.	Out- Parishes.	Buried in all.	Besides of the Plague.	Christen'd.
1665	5320	12463	10925	28708	68596	9967
1666	1689	3969	5082	10740	1998	8997
1667	761	6405	8641	15807	35	10938
1668	796	6865	9603	17267	14	11633
1669	1323	7500	10440	19263	3	12335
1670	1890	7808	10500	20198		11997
1671	1723	5938	8063	15724	5	12510
1672	2237	6788	9200	18225	5	12593
1673	2307	6302	8890	17499	5	11895
1674	2801	7522	10875	21198	3	11851
1675	2555	5986	8702	17243	1	11775
1676	2756	6508	9466	18730	2	12399
1677	2817	6632	9616	19065	2	12626
1678	3060	6705	10908	20673	5	12601
1679	3074	7481	11173	21728	2	12288
1680	3076	7066	10911	21053		12747
1681	3669	8136	12166	23971		13355
1682	2975	7009	10707	20691		12653

According to which latter Table, there died as followeth.

The latter of the said two Tables.

There died in *London*, at a Medium between the Years.

1604 and 1605 ——— 5135. A.

1621 and 1622 ——— 8527. B.

1641 and 1642 ——— 11883. C.

1661 and 1662 ——— 15148. D.

1681 and 1682 ——— 22331. E.

B

Wherein

Wherein observe, That the Number C. is double to A. and 806 over. That D. is double to B. within 1906. That C. and D. is double to A. B. within 293. That E. is double to C. within 1435. That D. and E. is double to B. and C. within 3341. And that C. and D. and E. are double to A. and B. and C. within 1736. And that E. is above Quadruple to A. All which Differences (every way considered) do allow the doubling of the People of *London* in forty Years, to be a sufficient Estimate thereof in round Numbers, and without the Trouble of Fractions. We also say, That 669930 is near the Number of People now in *London*, because the Burials are 22331. which multiplied by 30, (one dying yearly out of 30, as appears in the 94th Page of the aforementioned Observations) maketh the said Number; and because there are 84 Thousand tenanted Houses (as we are credibly informed) which at 8 in each, makes 672 Thousand Souls; the said two Accounts differing inconsiderably from each other.

We have thus pretty well found out in what Number of Years (*viz.* in about 40.) that the City of *London* hath doubled, and the present Number of Inhabitants to be about 670 Thousand. We must now also endeavour the same for the whole Territory of *England* and *Wales*. In Order whereunto, we

First say, That the Assessment of *London* is about an eleventh Part of the whole Territory, and therefore that the People of the whole
may

may well be eleven Times that of *London*, viz. about 7 Millions, 369 Thousand Souls; with which Account that of the Poll-Money, Hearth-Money, and the Bishops late Numbering of the Communicants, do pretty well agree; wherefore although the said Number of 7 Millions, 369 Thousand, be not (as it cannot be) a demonstrated Truth, yet it will serve for a good Supposition, which is as much as we want at present.

As for the Time in which the People double, it is yet more hard to be found: For we have good Experience (in the said 94th Page of the afore-mentioned Observations) That in the Country, but one of Fifty die *per Annum*; and by other late Accounts, that there have been sometimes but 24 Births for 23 Burials: The which two Points, if they were universally, and constantly true, there would be Colour enough to say, that the People doubled but in about 1200 Years. As for Example: Suppose there be 600 People, of which let a fiftieth Part die *per Annum*, then there shall die 12 *per Annum*; and if the Births be as 24 to 23, then the Increase of the People shall be somewhat above half a Man *per Annum*, and consequently the supposed Number of 600, cannot be doubled but in 1126 Years, which to reckon in round Numbers, and for that the afore-mentioned Fractions were not exact, we had rather call 1200.

There are also other good Observations, That even in the Country, one in about 30, or 32 *per Annum*, hath died, and that there have been five Births for four Burials. Now, according to this Doctrine, 20 will die *per Annum* out of the above 600, and 25 will be born, so as the Increase will be 5, which is a hundred and twentieth Part of the said 600. So as we have two fair Computations, differing from each other as one to ten; and there are also several other good Observations for other Measures.

I might here insert, That although the Births in this last Computation be 25 of 600, or a Twenty-fourth Part of the People; yet that in natural Possibility, they may be near thrice as many, and near 75. For that by some late Observations, the teeming Females between 15 and 44, are about 180 of the said 600, and the Males of between 18 and 59, are about 180 also, and that every teeming Woman can bear a Child once in two Years; from all which it is plain, that the Births may be 90, (and abating 15 for Sickness, young Abortions, and natural Barrenness) there may remain 75 Births, which is an Eighth of the People; which by some Observations we have found to be but a Two and thirtieth Part, or but a Quarter of what is thus shewn to be naturally possible. Now, according to this Reckoning, if the Births may be 75 of 600, and the Burials but 15, then the annual Increase of the People will be 60; and so the said 600 People may double in 10
Years,

Years, which differs yet more from 1200 above-mentioned. Now to get out of this Difficulty, and to temper those vast Disagreements, I took the Medium of 50 and 30 dying *per Annum*, and pitch'd upon 40; and I also took the Medium between 24 Births and 23 Burials, and 5 Births for 4 Burials, *viz*, allowing about 10 Births for 9 Burials; upon which Supposition there must die 15 *per Annum*, out of the above-mentioned 600, and the Births must be 16 and two Thirds, and the Increase 1, and two Thirds, or five Thirds of a Man; which Number compared with 1800 Thirds, or 600 Men, gives 360 Years for the Time of doubling (including some Allowance for Wars, Plagues, and Famine, the Effects whereof, though they be terrible at the Times and Places where they happen, yet in a Period of 360 Years, is no great Matter in the whole Nation.) For the Plagues of *England* in 20 Years hath carried away scarce an Eightieth Part of the whole Nation; and the late 10 Years Civil Wars, (the like whereof hath not been in several Ages before) did not take away above a fortieth Part of the whole People.

According to which Account or Measure of doubling, if there be now in *England* and *Wales*, 7 Millions 400 Thousand People, there were about 5 Millions 526 Thousand in the Beginning of Queen *Elizabeth's* Reign, *Anno* 1560, and about two Millions at the *Norman* Conquest, of which consult the *Doomsday-Book*,

and my Lord *Hale's Origination of Man-kind.*

Memorandum, That if the People double in 360 Years, that the present 320 Millions computed by some learned Men, (from the Measures of all the Nations of the World, their Degrees of being peopled, and good Accounts of the People in several of them) to be now upon the Face of the Earth, will within the next 2000 Years, so increase, as to give one Head for every two Acres of Land in the habitable Part of the Earth. And then, according to the Prediction of the Scriptures, there must be Wars and great Slaughter, &c.

Wherefore, as an Expedient against the above-mentioned Difference between 10 and 12 hundred years, we do for the present, and in this Country admit of 360 years to be the Time wherein the People of *England* do double, according to the present Laws and Practice of Marriages.

Now, if the City double its People in 40 years, and the present Number be 670 Thousand, and if the whole Territory be 7 Millions 400 Thousand, and double in 360 years, as aforesaid; then by the underwritten Table it appears, that *Anno* 1840, the People of the City will be 10718880, and those of the whole Country but 10917389, which is but inconsiderably more. Wherefore it is certain and necessary that the Growth of the City must stop before the said Year 1840; and will be at its
utmost

utmost Height in the next preceeding Period, *Anno* 1800, when the Number of the City will be Eight times its present Number, *viz.* 5 Millions 359 Thousand. And when (besides the said Number) there will be 4 Millions 466 Thousand to perform the Tillage, Pasturage, and other rural Works necessary to be done without the said City, as by the following Table, *viz.*

	{ <i>Annis.</i> }	{ Burials. }	{ People in } <i>London.</i> }	{ People in } <i>England.</i> }
	1565 —	2568	77040	5526929.
As in the former Table. }	1605 —	5135		
	1642 —	11883		
	1682 —	22331	669930	7369230.
	1722 —	44662		
	1762 —	89324		
	1802 —	178648	5359440	9825650.
	1842 —	357296	10718889	10917389.

Now when the People of *London* shall come to be so near the People of all *England*, then it follows, that the Growth of *London* must stop before the said Year 1842, as aforesaid, and must be at its greatest Height *Anno* 1800, when it will be eight Times more than now, with above 4 Millions for the Service of the Country and Ports, as aforesaid.

Of the afore-mentioned vast Difference between 10 Years and 1200 Years for doubling the People, we make this Use, *viz.* To justify the Scriptures and all other good Histories concerning the Number of the People in ancient Time. For supposing the eight Persons who

came out of the Ark, increased by a progressive doubling in every 10 Years, might grow in the first 100 Years after the Flood from 8 to 8000, and that in 350 Years after the Flood (when abouts *Noah* died) to one Million, and by this Time 1682, to 320 Millions (which by rational Conjecture, are thought to be now in the World) it will not be hard to compute, how in the intermediate years, the Growths may be made, according to what is set down in the following Table, wherein making the doubling to be 10 Years at first, and within 1200 Years at last, we take a discretionary Liberty, but justifiable by Observations and the Scriptures for the rest; which Table we leave to be corrected by Historians, who know the Bigness of ancient Cities, Armies, and Colonies in the respective Ages of the World, in the mean Time affirming that without such Difference in the Measures and Periods for doubling (the Extreams whereof we have demonstrated to be real and true) it is impossible to solve what is written in the Holy Scriptures and other authentick Books. For if we pitch upon any one Number throughout for this Purpose, 150 Years is the fittest of all round Numbers; according to which, there would have been but 512 Souls in the whole World in *Moses's* Time (being 800 Years after the Flood) when 603 Thousand *Israelites* of above 20 Years Old (besides those of other Ages, Tribes, and Nations) were found upon an exact Survey appointed by
 God,

God, whereas our Table makes 12 Millions. And there would have been but 8000 in *David's* Time, when were found 1100 Thousand of above 20 Years old (besides others, as aforesaid) in *Israel*, upon the Survey instigated by Satan, whereas our Table makes 32 Millions. And there would have been but a Quarter of a Million about the Birth of Christ, or *Augustus* his Time, when *Rome* and the *Roman* Empire were so great, whereas our Table makes 100 Millions. Where note, that the *Israelites* in about 500 Years between their coming out of *Egypt* to *David's* Reign, increased from 603 Thousand to 1100 Thousand.

On the other Hand, if we pitch upon a less Number, as 100 Years, the World would have been over-peopled 700 Years since. Wherefore no one Number will solve the Phænomena, and therefore we have supposed several in Order to make the following Table, which we again desire Historians to correct, according to what they find in Antiquity concerning the Number of the People in each Age and Country of the World.

We did (not long since) assist a worthy Divine, writing against some Scepticks, who would have baffled our Belief of the Resurrection, by saying, that the whole Globe of the Earth could not furnish Matter enough for all the Bodies that must rise at the last Day, much less would the Surface of the Earth furnish Footing for so vast a Number; whereas we did
(by

(by the Method aforementioned) assert the Number of Men now living, and also of those that had died since the Beginning of the World, and did withal shew, that half the Island of *Ireland* would afford them all, not only Footing to stand upon, but Graves to lie down in, for that whole Number; and that two Mountains in that Country were as weighty as all the Bodies that had ever been from the Beginning of the World to the Year 1680, when this Dispute happened. For which Purpose, I have digressed from my intended Purpose, to insert this Matter, intending to prosecute this Hint further, upon some more proper Occasion.

A Table shewing how the People might have doubled in the several Ages of the World.

Anno after the Flood.

Periods of doubling,	{	1	————	8 Persons,
		10	————	16
		20	————	32
		30	————	64
		40	————	128
In 10 Years.	{	50	————	256
		60	————	512
		70	————	1024
		80	————	2048
		90	————	4096
		100	————	8000 and more.
In 20 Years.	{	120	Years after the Flood.	16 Thousand,
		140	————	32
		170	————	64
30	————	200	————	128
40	————	240	————	256
50	————	290	————	512
60	————	350	————	1 Million and more.
70	————	420	————	2 Millions.
100	————	520	————	4 Millions.
190	————	710	————	8 Millions.
290	————	1000	————	16 In Moses Time.
400	————	1400	————	32 About David's Time.
550	————	1950	————	64
750	————	2700	————	128 About the Birth of Christ,
1000	————	3700	————	256
In	{	300	————	4000
		1000	————	
				320

It is here to be noted, that in this Table we have assigned a different Number of Years for the Time of doubling the People in the several Ages of the World, and might have done the same

same

same for the several Countries of the World, and therefore the said several Periods assigned to the whole World in the Lump, may well enough consist with the 360 Years especially assigned to *England*, between this Day, and the *Norman* Conquest; and the said 360 Years may well enough serve for a Supposition between this Time, and that of the Worlds being fully peopled; nor do we lay any Stress upon one or the other in this Disquisition concerning the Growth of the City of *London*.

We have spoken of the Growth of *London*, with the Measures and Periods thereof, we come next to the Causes and Consequences of the same.

The Causes of its Growth from 1642 to 1682, may be said to have been as followeth, *viz.* From 1642 to 1650, that Men came out of the Country to *London*, to shelter themselves from the Outrages of the Civil Wars, during that Time; from 1650 to 1660, the Royal Party came to *London*, for their more private and inexpensive Living; from 1660 to 1670, the King's Friends and Party came to receive his Favours after his happy Restauration; from 1670 to 1680, the Frequency of Plots and Parliaments, might bring extraordinary Numbers to the City; but what Reasons to assign for the like Increase from 1604 to 1642, I know not, unless I should pick out some remarkable Accident happening in each Part of the said Period, and make that to be the Cause of this Increase

(as

(as vulgar People make the Cause of every Man's Sickness, to be what he did last eat) wherefore, rather than so to say *quidlibet de quolibet*; I had rather quit even what I have above-said to be the Cause of *London's* Increase from 1642 to 1682, and put the whole upon some natural and spontaneous Benefits and Advantages that Men find by living in great more than in small Societies; and shall therefore seek for the antecedent Causes of this Growth, in the Consequences of the like, considered in greater Characters and Proportions.

Now, whereas in Arithmetick, out of two false Positions the Truth is extracted, so I hope out of two extravagant contrary Suppositions, to draw forth some solid and consistent Conclusion, *viz.*

The first of the said two Suppositions is, that the City of *London* is seven Times bigger than now, and that the Inhabitants of it are four Millions 690 Thousand People, and that in all the other Cities, Ports, Towns, and Villages, there are but 2 Millions 710 Thousand Men.

The other Supposition is, that the City of *London* is but a seventh Part of its present Bigness, and that the Inhabitants of it are but 96 Thousand, and that the rest of the Inhabitants (being 7 Millions 304 Thousand) do co-habit thus, 104 Thousand of them in small Cities and Towns, and that the rest, being 7 Millions 200 Thousand, do inhabit in Houses not contiguous to one another, *viz.* In 1200 Thousand Houses,

Houses, having about 24 Acres of Ground belonging to each of them, accounting about 28 Millions of Acres to be in the whole Territory of *England, Wales,* and the adjacent Islands; which any Man that pleases may examine upon a good Map.

Now, the Question is, in which of these two imaginary States, would be the most convenient, commodious, and comfortable Livings?

But this general Question divides itself into the several Questions, relating to the following Particulars, *viz.*

1. For the Defence of the Kingdom against foreign Powers.

2. For preventing the intestine Commotions of Parties and Factions.

3. For Peace and Uniformity in Religion.

4. For the Administration of Justice.

5. For the proportionably taxing of the People, and easy levying the same.

6. For Gain by foreign Commerce.

7. For Husbandry, Manufacture, and for Arts of Delight and Ornament.

8. For lessening the Fatigue of Carriages and Travelling.

9. For preventing Beggars and Thieves.

10. For the Advancement and Propagation of useful Learning.

11. For increasing the People by Generation.

12. For preventing the Mischiefs of Plagues and Contagions. And withal, which of the
said

ſaid two States is moſt practicable and natural; for in theſe and the like Particulars, do lie the Tests and Touch-ſtones of all Propoſals, that can be made for the publick Good.

First, as to practicable, we ſay, that although our ſaid extravagant Propoſals are both in Nature poſſible, yet it is not obvious to every Man to conceive, how *London*, now ſeven Times bigger than in the Beginning of *Queen Elizabeth's* Reign, ſhould be ſeven Times bigger than now it is, and 49 Times bigger than *Anno 1560*. To which I ſay, 1. That the preſent City of *London* ſtands upon leſs than 2500 Acres of Ground, wherefore a City ſeven Times as large may ſtand upon 10500 Acres, which is about equivalent to a Circle of four Miles and a half in Diameter, and leſs than 15 Miles in Circumference. 2. That a Circle of Ground of 35 Miles Semidiameter will bear Corn, Garden-ſtuff, Fruits, Hay, and Timber for the four Millions 690 Thouſand Inhabitants of the ſaid City and Circle, ſo as nothing of that Kind need be brought from above 35 Miles Diſtance from the ſaid City; for the Number of Acres within the ſaid Circle, reckoning two Acres ſufficient to furniſh Bread and Drink-Corn for every Head, and two Acres will furniſh Hay for every neceſſary Horſe; and that the Trees which may grow in the Hedge-rows of the Fields within the ſaid Circle, may furniſh Timber for 600 Thouſand Houſes. 3. That all live Cattle and great Animals can bring them-

themselves to the said City; and that Fish can be brought from the Land's End, and *Berwick*, as easily as now. 4. Of Coals there is no Doubt: And for Water, 20 *s. per* Family (or 600 Thousand Pounds *per Annum* in the whole) will serve this City, especially with the Help of the *New-River*. But if by practicable be understood, that the present State may be suddenly changed into either of the two above-mentioned Proposals, I think it is not practicable. Wherefore the true Question is, unto or towards which of the said two extravagant States it is best to bend the present State by Degrees, *viz.* Whether it be best to lessen or enlarge the present City? In Order whereunto, we enquire (as to the first Question) which State is most defensible against foreign Powers, saying, that if the above-mentioned Housing, and a Border of Ground, of 3 Quarters of a Mile broad, were encompassed with a Wall and Ditch of 20 Miles about (as strong as any in *Europe*, which would cost but a Million, or about a Penny in the Shilling of the House-Rent for one Year) what foreign Prince could bring an Army from beyond Seas, able to beat, 1. Our Sea-Forces, and next with Horse harrassed at Sea, to resist all the fresh Horse that *England* could make, and then conquer above a Million of Men, well united, disciplin'd, and guarded within such a Wall, distant every-where 3 Quarters of a Mile from the Housing, to elude the Grana- does and great Shot of the Enemy? 2. As to

in-

intestine Parties and Factions, I suppose that 4 Millions 690 Thousand People united within this great City, could easily govern half the said Number scattered without it, and that a few Men in Arms within the said City and Wall, could also easily govern the rest unarmed, or armed in such a Manner as the Sovereign shall think fit. 3. As to Uniformity in Religion, I conceive, that if *St. Martins* Parish may (as it doth) consist of about 40 Thousand Souls, that this great City also may as well be made but as one Parish, with 7 Times 130 Chapels, in which might not only be an Uniformity of Common Prayer, but in Preaching also; for that a thousand Copies of one judiciously and authentically composed Sermon, might be every Week read in each of the said Chapels without any subsequent Repetition of the same, as in the Case of Homilies. Whereas in *England* (wherein are near 10 Thousand Parishes, in each of which upon Sundays, Holy-days, and other extraordinary Occasions, there should be about 100 Sermons *per Annum*, making about a Million of Sermons *per Annum* in the whole :) It were a Miracle, if a Million of Sermons composed by so many Men, and of so many Minds and Methods, should produce Uniformity upon the discomposed Understandings of about 8 Millions of Hearers.

4. As to the Administration of Justice. If in this great City shall dwell the Owners of all the Lands, and other valuable Things in *England*;

land; if within it shall be all the Traders, and all the Courts, Offices, Records, Juries, and Witnesses; then it follows, that Justice may be done with Speed and Ease.

5. As to the Equality and easy levying of Taxes. It is too certain, that *London* hath at some Times paid near half the Excise of *England*; and that the People pay thrice as much for the Hearths in *London* as those in the Country, in Proportion to the People of each, and that the Charges of collecting these Duties have been about a sixth Part of the Duty itself. Now, in this great City, the Excise alone, according to the present Laws, would not only be double to the whole Kingdom, but also more equal. And the Duty of Hearths of the said City, would exceed the present Proceed of the whole Kingdom. And as for the Customs, we mention them not at present.

6. Whether more would be gain'd by foreign Commerce ?

The Gain which *England* makes by Lead, Coals, the Freight of Shipping, &c. may be the same, for aught I see, in both Cases. But the Gain which is made by Manufactures, will be greater, as the Manufacture itself is greater and better. For in so vast a City Manufactures will beget one another, and each Manufacture will be divided into as many Parts as possible, whereby the Work of each Artisan will be simple and easy: As for Example; in the making of a Watch, if one Man shall make the
Wheels,

Wheels, another the Spring, another shall engrave the Dial-plate, and another shall make the Cases, then the Watch will be better and cheaper, than if the whole Work be put upon any one Man. And we also see that in Towns, and in the Streets of a great Town, where all the Inhabitants are almost of one Trade, the Commodity peculiar to those Places is made better and cheaper than elsewhere. Moreover, when all Sorts of Manufactures are made in one Place, there every Ship that goeth forth, can suddenly have its Loading of so many several Particulars and Species, as the Port whereunto she is bound can take off. Again, when the several Manufactures are made in one Place, and shipped off in another, the Carriage, Postage, and Travelling-charges, will inhanche the Price of such Manufacture, and lessen the Gain upon foreign Commerce. And lastly, when the imported Goods are spent in the Port itself where they are landed, the Carriage of the same into other Places, will create no Surcharge upon such Commodity; all which Particulars tend to the greater Gain by foreign Commerce.

7. As for Arts of Delight and Ornament.

They are best promoted by the greatest Number of Emulators. And it is more likely that one ingenious curious Man may rather be found out amongst 4 Millions than 400 Persons. But as for Husbandry, *viz.* Tillage and Pasturage, I see no Reason, but the second State (when each Family is charged with the Culture of about 24 Acres) will best promote the same.

8. As for lessening the Fatigue of Carriage and Travelling.

The Thing speaks itself; for if all the Men of Business, and all Artisans do live within five Miles of each other; and if those who live without the great City, do spend only such Commodities as grow where they live, then the Charge of Carriage and Travelling could be little.

9. As to the preventing of Beggars and Thieves.

I do not find how the Differences of the said two States should make much Difference in this Particular; for Impotents (which are but one in about 600) ought to be maintained by the rest. 2. Those who are unable to work, through the evil Education of their Parents, ought (for aught I know) to be maintained by their nearest Kindred, as a just Punishment upon them. 3. And those who cannot find Work (though able and willing to perform it) by Reason of the unequal Application of Hands to Lands, ought to be provided for by the Magistrate and Landlord till that can be done; for there need be no Beggars in Countries, where there are many Acres of unimproved improvable Land to every Head, as there are in *England*. As for Thieves, they are for the most Part begotten from the same Cause; for it is against Nature, that any Man should venture his Life, Limb, or Liberty, for a wretched Livelihood, whereas moderate Labour will produce a better.

But

But of this see Sir *Thomas Moore*, in the first Part of his *Utopia*.

10. As to the Propagation and Improvement of useful Learning.

The same may be said concerning it, as was above-said concerning Manufactures, and the Arts of Delight and Ornaments; for in the great vast City, there can be no so odd a Conceit or Design, whereunto some Assistance may not be found, which in the thin scattered Way of Habitation may not be.

11. As for the Increase of People by Generation.

I see no great Difference from either of the two States, for the same may be hindred or promoted in either, from the same Causes.

12. As to the Plague.

It is to be remembered, that one Time with another, a Plague happeneth in *London* once in 20 Years, or thereabouts; for in the last hundred Years, between the Years 1582 and 1682, there have been five great Plagues, viz. Anno 1592, 1603, 1625, 1636, and 1665. And it is also to be remembered, that the Plagues of *London* do commonly kill one fifth Part of the Inhabitants. Now, if the whole People of *England* do double but in 360 Years, then the annual Increase of the same is but 20000, and in 20 Years 400000. But if in the City of *London* there should be two Millions of People (as there will be about 60 Years hence) then the Plague (killing one Fifth of them, namely,

4000000, once in 20 Years) will destroy as many in one Year, as the whole Nation can re-furnish in 20 : And consequently the People of the Nation shall never increase. But if the People of *London* shall be above 4 Millions (as in the first of our two Extravagant Suppositions is premised) then the People of the whole Nation shall lessen above 20000 *per Annum*. So as if People be worth 70 *l. per Head* (as hath elsewhere been shewn) then the said Greatness of the City will be a Damage to itself and the whole Nation of 14 hundred Thousand Pounds *per Annum*, and so *pro rata*, for a greater or lesser Number ; wherefore to determine, which of the two States is best, (that is to say, towards which of the said two States Authority should bend the present State) a just Balance ought to be made between the Disadvantages from the Plague, with the Advantages accruing from the other Particulars above-mentioned ; unto which Balance a more exact Account of the People, and a better Rule for the Measure of its Growth is necessary, than what we have here given, or are yet able to lay down.

POST-

P O S T S C R I P T.

IT was not very pertinent to a Discourse concerning the City of *London*, to thrust in Considerations of the Time when the whole World will be fully peopled ; and how to justify the Scriptures concerning the Number of People mentioned in them ; and concerning the Number of the *Quick* and the *Dead*, that may rise at the last Day, &c. Nevertheless, since some Friends liking the said Digressions and Imperinencies (perhaps as Sauce to a dry Discourse) have desired that the same might be explained and made out : I therefore say as followeth.

1, If the Number of Acres in the habitable Part of the Earth, be under 50 Thousand Millions ; if twenty Thousand Millions of People, are more than the said Number of Acres will feed ; (few or no Countries being so fully peopled) and for that in six Doublings (which will be in 2000 Years) the present 320 Millions will exceed the said 20 Thousand Millions.

2. That the Number of all those who have died since the Flood, is the Sum of all the Products made by multiplying the Number of the doubling Periods mentioned in the first Column of the last Table, by the Number of People respectively affixed to them, in the third Column of the same Table ; the said Sum being divided by 40 (one dying out of 40 *per Annum*, out of the whole Mass of Mankind) which Quotient

is 12570 Millions; whereunto may be added for those that died before the Flood, enough to make the last-mentioned Number 20 Thousand Millions, as the full Number of all that died, from the Beginning of the World, to the Year 1682; unto which, if 320 Millions, the Number of those who are now alive, be added, the Total of the Quick and the Dead, will amount but unto one fifth Part of the Graves, which the Surface of *Ireland* will afford, without ever putting two Bodies into any one Grave; for there be in *Ireland* 28 Thousand square *English* Miles, each whereof will afford about 4 Millions of Graves, and consequently above 114 Thousand Millions of Graves, *viz.* about five Times the Number of the Quick and the Dead, which should arise at the last Day, in case the same had been in the Year 1682.

3. Now, if there may be Place for five Times as many Graves in *Ireland*, as are sufficient for all that ever died; and if the Earth of one Grave weigh five Times as much as the Body interr'd therein, then a Turf, less than a Foot thick, pared off from a fifth Part of the Surface of *Ireland*, will be equivalent in Bulk and Weight to all the Bodies that ever were buried; and may serve as well for that Purpose, as the two Mountains afore-mentioned in the Body of this Discourse. From all which it is plain, how madly they were mistaken, who did so petulantly vilify what the Holy Scriptures have delivered.

O B S E R V A T I O N S
 U P O N T H E
D U B L I N-Bills of Mortality, 1681.
 A N D T H E
 State of that CITY.

THE Observations upon the *London* Bills of Mortality have been a new Light to the World; and the like Observation upon those of *Dublin*, may serve as Snuffers to make the same Candle burn clearer.

The *London* Observations flowed from Bills regularly kept for near One hundred Years; but these are squeezed out of six stragling *London* Bills, out of Fifteen *Dublin* Bills, and from a Note of the Families and Hearths in each Parish of *Dublin*; which are all digested into the one Table or Sheet annexed, consisting of Three Parts, marked A, B, C; being indeed the A, B, C, of publick Oeconomy, and even of that Policy which tends to Peace and Plenty.

Observations upon the Table A.

1. **T**HE total of the Burials in *London*, (for the said six stragling Years mentioned in the Table A) is 120170; whereof the Medium or sixth Part is 20028; and exceeds the Burials of *Paris*, as may appear by the late Bills of that City.

2. The

2. The Births, for the same Time, are 73683, the Medium or sixth Part whereof is 12280, which is about five eighth Parts of the Burials; and shews, that *London* would in Time decrease quite away, were it not supplied out of the Country, where are about five Births for four Burials, the Proportion of Breeders in the Country being greater than in the City.

3. The Burials in *Dublin* for the said six Years, were 9865, the sixth Part or Medium whereof is, 1644, which is about the twelfth Part of the *London* Burials; and about a fifth Part over. So as the People of *London* do hereby seem to be above twelve Times as many as those of *Dublin*.

4. The Births in the same Time at *Dublin*, are 6157, the sixth Part or Medium whereof is 1026, which is also about five eighth Parts of the 1644 Burials; which shews, that the Proportion between Burials and Births are alike at *London* and *Dublin*, and that the Accompts are kept alike; and consequently are likely to be true, there being no Confederacy for that Purpose: Which if they be true, we then say,

5. That the Births are the best Way (till the Accompts of the People shall be purposely taken) whereby to judge of the Increase and Decrease of People, that of Burials being subject to more Contingencies and Variety of Causes.

6. If Births be as yet the Measure of the People, and that the Births (as has been shewn) are as five to eight, then eight fifths of the Births is the Number of the Burials, where the Year was

not considerable for extraordinary Sicknefs or Salubrity; and is the Rule whereby to measure the fame. As for Example: The Medium of Births in *Dublin* was 1026, the eight fifths whereof is 1641, but the real Burials were 1644; fo as in the faid Years they differed little from the 1641, which was the Standard of Health: and confequently, the Years 1680, 1674, and 1668, were fickly Years, more or lefs, as they exceeded the faid Number 1641; and the reft were healthful Years, more or lefs, as they fell fhort of the fame Number. But the City was more or lefs populous, as the Births differed from the Number 1026; *viz.* populous in the Years 1680, 1679, 1678, and 1668: For other Causes of this Difference in Births are very occult and uncertain.

7. What hath been faid of *Dublin*, ferves alfo for *London*.

8. It hath already been obferv'd by the *London* Bills, that there are more Males than Females. It is to be further noted, that in thefe fix *London* Bills alfo, there is not one Instance either in the Births or Burials to the contrary.

9. It hath been formerly obferv'd, that in the Years wherein moft dye, feweft are born, and *vice verfa*. The fame may be further obferved in Males and Females, *viz.* When feweft Males are born, then moft dye: for here the Males dyed as Twelve to Eleven, which is above the mean Proportion of Fourteen to Thirteen; but were born but as Nineteen to Eighteen, which is below the fame.

Observations upon the Table B.

1. **F**ROM the Table B, it appears, that the Medium of the fifteen Years Burials, (being 24199) is 1613, whereas the Medium of the other six Years in the Table A, was 1644, and that the Medium of the fifteen Years Births (being in all 14795) is 984, whereas the Medium of the said other six Years, was 1026. That is to say, there were both fewer Births and Burials in these fifteen Years, than in the other six Years; which is a probable Sign that at a Medium there were fewer People also.

2. The Medium of Births for the fifteen Years being 984, whereof eight Fifths (being 1576) is the Standard of Health for the said fifteen Years; and the Triple of the said 1576, being 4728, is the Standard for each of the Ternaries of the fifteen Years within the said Table.

3. That 2952, the Triple of 984 Births, is for each Ternary the Standard of Peoples Increase and Decrease from the Year 1666 to 1680 inclusive, *viz.* The People increased in the second Ternary, and decreased from the same in the third and fourth Ternaries, but re-increased in the fifth Ternary beyond any other.

4. That the last Ternary was withal very healthful, the Burials being but 4624, *viz.* below 4728, the Standard.

5. That according to this Proportion of Increase, the Houses of *Dublin* have probably increased also.

Observations upon the Table C.

1. **F**IRST, from the Table C, it appears, 1. That the Houſing of *Dublin* is ſuch, as that there are not five Hearths in each Houſe one with another, but nearer five than four.

2. That in *St. Warburgh's* Pariſh are near ſix Hearths to an Houſe. In *St. John's* five. In *St. Michael's* above five. In *St. Nicholas within* above ſix. In *Chriſt-Church* above ſeven. In *St. James's*, and *St. Catherine's*, and in *St. Michan's*, not four. In *St. Kevan's* about four.

3. That in *St. James's*, *St. Michan's*, *St. Bride's*, *St. Warburgh*, *St. Andrew's*, *St. Michael's*, and *St. Patrick's*, all the Chriſtenings were but 550, and the Burials 1055, *viz.* near double; and that in the reſt of the Pariſhes the Chriſtenings were five, and the Burials ſeven, *viz.* as 457 to 634. Now whether the Cauſe of this Difference were Negligence in Accompts, or the Greaterneſs of the Families, &c. is worth inquiring.

4. It is hard to ſay in what Order (as to Greatneſs) theſe Pariſhes ought to ſtand, ſome having moſt Families; ſome moſt Hearths, ſome moſt Births, and others moſt Burials. Some Pariſhes exceeding the reſt in two, others in three of the ſaid four Particulars, but none in all four. Wherefore this Table ranketh them according to the Plurality of the ſaid four Particulars wherein each excelleth the other.

5. The *London* Obſervations reckon eight Heads to be in each Family; according to which Eſtimation, there are 32000 Souls in the 4000 Fami-

Families of *Dublin*; which is but half of what most Men imagine; of which but about one sixth Part are able to bear Arms, besides the Royal Regiment.

6. Without the Knowledge of the true Number of People, as a Principle, the whole Scope and Use of the keeping Bills of Births and Burials is impaired; wherefore by laborious Conjectures and Calculations to deduce the Number of People from the Births and Burials, may be ingenious, but very preposterous.

7. If the Number of Families in *Dublin* be about 4000, then ten Men, in one Week (at the Charge of about five Pound, surveying eight Families in an Hour) may directly, and without Algebra, make an Accompt of the whole People, expressing their several Ages, Sex, Marriages, Title, Trade, Religion, &c. and those who survey the Hearths, or the Constables or Parish-Clerks, (may, if required) do the same *ex Officio*, and without other Charge, by the Command of the chief Governor, the Diocesan, or the Mayor.

8. The Bills of *London* have since their Beginning, admitted several Alterations and Improvements; and eight or ten Pound *per Annum* Surcharge, would make the Bills of *Dublin* to exceed all others, and become an excellent Instrument of Government. To which Purpose the Forms for Weekly, Quarterly, and Yearly Bills are humbly recommended, *viz.*

Yearly Bills of Mortality for

LONDON and DUBLIN.

Anno.	LONDON		DUBLIN.		LONDON.		LONDON.	
	Burials.	Births.	Burials.	Births.	Males Burials.	Females Burials.	Males Births.	Females Births.
1680	21053	12747	1826	1096	11039	10044	6543	6199
1679	21730	12288	1397	1061	11154	10576	6247	6041
1678	20678	12601	1401	1045	10681	9977	6568	6033
1674	21201	11851	2106	942	11000	10196	6113	5738
1672	18230	12563	1436	987	9560	8060	6443	6120
1668	17278	11633	1699	1026	9111	8167	6073	5566
	120170	73683	9865	6157	62545	57030	37992	35697
	20028	12280	1644	1026	10424	9505	6332	5940

The medium or 6th part where-
of is

D U B L I N .

<i>Anno.</i>	Burials.	Births.	In Ternaries of Years.	
1666	1480	952	4821	2979
1667	1642	1001		
1668	1699	1026		
1669	1666	1000	5353	3070
1670	1713	1067		
1671	1974	1003		
1672	1436	967	5073	2842
1673	1531	933		
1674	2106	942		
1675	1578	823	4328	2672
1676	1391	952		
1677	1359	897		
1678	1401	1045	4624	3202
1679	1397	1061		
1680	1826	1096		
	24199	14765	24199	14765
The medium or 15th part whereof is	1613	984	1613	984

B

The

The Parishes of DUBLIN.

	Anno 1671.		An. 1670, 71, & 72. at a Medium.	
	Families.	Hearths.	Burials.	Births.
1 St. Katherine's and St. James,	661	2399	161	290
2 St. Nicholas without,	490	2348	207	262
3 St. Michan's,	656	2301	127	221
4 St. Andrew's with Donabrook,	483	2123	108	178
5 St. Bridget's,	416	1989	70	100
6 St. John's,	244	1337	70	138
7 St. Warbrough,	267	1650	54	108
8 St. Audaens,	216	1081	53	121
9 St. Michael,	140	793	44	59
10 St. Keavens,	106	433	64	133
11 St. Nicholas within,	93	614	28	34
12 St. Patrick's Liberties,	52	255	21	44
13 Christ-Church and Trinity-College per Estimate,	26	197		1
Houfes built between 1671, and 1681, per Estimate,	3850 150	17520 550	1007	1689
	4000	18070		

A Weekly Bill of Mortality for the City of Dublin,
Ending the Day of 1681.

PARISHES Names.	Births.	Males.	Females.	Burials.	Under 16 years old.	Above 16 years old.	Plague.	Small Pox	Measles.	Spotted Fever.
1 St. Katherine and St. James,										
2 St. Nicholas without,										
3 St. Michans,										
4 St. Andrews with Donabrook,										
5 St. Bridgets,										
6 St. Johns,										
7 St. Warbrough,										
8 St. Audacens,										
9 St. Michael,										
10 St. Keavens,										
11 St. Nicholas within,										
12 St. Patrick's Liberties,										
13 Chriff-Church and Trinity-College,										
Totals,										

A Quarterly Bill of Mortality,

Beginning and ending for the City of Dublin

PARISHES Names.	1. Births.	2. Marriages.	Buried of		Plague, Small Pox, Spotted Fever, Meales.	Stone, Gout, Drople, Consumption.	Sudden Death, Quinley, Plurisie, Fever.	Aged above 70 years old	Infants under 2 years old.	All other Ca- sualties.
			Above 60 years old.	Under 16 years old.						
1 St. Katherines and St. James,										
2 St. Nicholas without,										
3 St. Michans,										
4 St. Andrews with Donabrook,										
5 St. Bridgets,										
6 St. Johns,										
7 St. Warbrough,										
8 St. Auddens,										
9 St. Michael,										
10 St. Keacens,										
11 St Nicholas within,										
12 St. Patrick's Liberties,										
13 Christ-Church and Trinity-College.										
Totals,										

Casualties and Diseases.

<p>Aged above 70 Years. Abortive and Still-born, Childbed-women. Convulsion. Teeth. Worms. Gout, and Sciatica. Stone. Palsy. Consumption and French Pox. Dropsie, and Tympany. Rickets, and Livergrown.</p>	<p>Head-ach, and Megrim. Epilepsie, and Planet. Fever, and Ague. Pleurisie. Quinsy. Executed. Murder'd, Drown'd. Plague, and Spotted-Fever. Gripping of the Guts. Scouring, Vomiting, Bleeding. Small-Pox. Measles. Neither of all the other Sorts.</p>	
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A
P O S T S C R I P T
T O T H E
S T A T I O N E R.

WHEREAS you complain, that these Observations make no sufficient Bulk, I could answer you, that I wish the Bulk of all Books were less; but do nevertheless comply with you in adding what follows, *viz.*

1. That the Parishes of *Dublin* are very unequal; some having in them above six Hundred Families, and others under Thirty.

2. That thirteen Parishes are too few for four Thousand Families; the middling Parishes of *London* containing One hundred and twenty Families; according to which Rate, there should be about Thirty three Parishes in *Dublin*.

3. It is said, that there are eighty four Thousand Houses or Families in *London*, which is twenty-one Times more than are in *Dublin*; and yet the Births and Burials of *London* are but twelve Times those of *Dublin*: which shews, that the Inhabitants of *Dublin* are more crowded and streightned in their Housing, than those

those of *London*; and consequently, that to increase the Buildings of *Dublin*, will make that City more conformable to *London*.

4. I shall also add some Reasons for altering the present Forms of the *Dublin* Bills of Mortality, according to what hath been here recommended, *viz.*

1. We give the Distinctions of Males and Females in the Births only; for that the Burials must, at one Time or another, be in the same Proportion with the Births.

2. We do in the Weekly and Quarterly Bills propose, that Notice be taken in the Burials of what Numbers dye above Sixty and Seventy, and what under Sixteen, Six, and two Years old; foreseeing good Uses to be made of that Distinction.

3. We do in the yearly Bill, reduce the Casualties to about Twenty-four, being such as may be discerned by common Sense and without Art; conceiving that more will but perplex and imbroid the Account. And in the Quarterly Bills, we reduce the Diseases to three Heads, *viz.* contagious, acute, and chronical; applying this Distinction to Parishes, in Order to know how the different Situation, Soil, and Way of living in each Parish, doth dispose Men to each of the said three Species: and in the Weekly Bills we take Notice not only of the Plague, but of the other contagious Diseases in each Parish; that Strangers and fearful Persons may thereby know how to dispose of themselves.

4. We

4. We mention the Number of the People, as the fundamental Term in all our Proportions; and without which, all the rest will be almost fruitless.

5. We mention the Number of Marriages made in every Quarter, and in every Year; as also the Proportion which married Persons bear to the whole; expecting in such Observations to read the Improvement of the Nation.

6. As for Religions, we reduce them to three, *viz.* 1. Those who have the Pope of *Rome* for their Head. 2. Who are governed by the Laws of their Country. 3. Those who rely respectively upon their own private Judgments. Now whether these Distinctions should be taken Notice of or not, we do but faintly recommend, seeing many Reasons *pro* and *con* for the same: and therefore although we have mentioned it as a Matter fit to be considered, yet we humbly leave it to Authority.

Further

D U B L I N, 1682.

Parishes.	Houfes.	Fire-places.	Baptiz'd.	Buried.
St. James	272	836	122	306
St. Katherines	540	2198		
St. Nicholas with- out, and	1064	4082	145	414
St. Patricks				
St. Bridgets	395	1903	68	149
St. Audaen	276	1510	56	164
St. Michael	174	884	34	50
St. Johns	302	1636	74	101
St. Nicholas within, and	153	902	26	52
Christ-Church Lib.				
St. Warbrough	240	1638	45	105
St. Michans	938	3516	124	389
St. Andrews	864	3638	131	300
St. Kevans	554	2120	87	233
Donobrook	253	506		
	6025	25369	912	2263

Further Observations upon the Dublin Accompts of Baptisms and Burials, Houfes and Hearths.

THE Table hath been made for the Year 1682, wherein is to be noted,

1. That the Houfes which *Anno* 1671, were but 3850 are *Anno* 1682, 6025; but whether this Difference is caused by the real Encrease of Houfing, or by Fraud and Defect in the former Accompts, is left to Consideration. For the Burials or People have increased but from 1696, to 2263, according to which Proportion, the 3850 Houfes *Anno* 1671, should *Anno* 1682 have been but 5143, wherefore some Fault may
be

be suspected as aforesaid, when farming the Hearth-money was in Agitation.

2. The Hearths have encreased according to the Burials, and $\frac{1}{3}$ of the said Increase more, *viz.* The Burials *Anno* 1671 were 1696, the $\frac{1}{3}$ whereof is 563, which put together makes 2259, which is near the Number of Burials *Anno* 1682. But the Hearths *Anno* 1671, were 17500, whereof the $\frac{1}{3}$ is 5833, making in all but 23333; whereas the whole Hearths *Anno* 1682 were 25369, *viz.* $\frac{1}{3}$ and better of the said 5833 more.

3. The Houses were *Anno* 1671, but 3850, which if they had increased *Anno* 1682 but according to the Burials, they had been but 5143, or according to the Hearths, had been but 5488, whereas they appear 6025, increasing double to the Hearths. So as 'tis likely there hath been some Error in the said Account of the Houses, unless the new Houses be very small, and have but one Chimney a piece, and that $\frac{1}{4}$ Part of them are untenanted. On the other Hand, 'tis more likely that when 1696 died *per An.* there were near 6000; for 6000 Houses at 8 Inhabitants *per House*, would make the Number of the People to be 48 Thousand, and the Number of 1696 that died according to the Rule of 1 out of 30, would have made the Number of Inhabitants about 50 Thousand: For which Reason I continue to believe there was some Error in the Accompt of 3850 Houses as aforesaid, and the rather because there is no Ground from
Expe-

Experience to think that in 11 Years, the Houses in *Dublin* have increased from 3850 to 6025.

Moreover, I rather think that the Number of 6025 is yet short, because that Number at 8 Heads *per* House makes the Inhabitants to be but 48200; whereas the 2263 who died in the Year 1682, according to the aforementioned Rule of one dying out of 30 makes the Number of People to be 67890; the Medium betwixt which Number and 48200 is 58045, which is the best Estimate I can make of that Matter, which I hope Authority will ere long rectify, by direct and exact Enquiries.

4. As to the Births, we say that *Anno* 1640, 1641, and 1642, at *London*, just before the Troubles in Religion began, the Births were $\frac{5}{6}$ of the Burials, by Reason I suppose of the Greatness of Families in *London* above the Country, and the fewer Breeders, and not for Want of registering. Wherefore deducting $\frac{1}{6}$ of 2263, which is 377, there remains 1886 for the probable Number of the Births in *Dublin* for the Year 1682; whereas but 912 are represented to have been christen'd in that Year, though 1023 were christen'd *Anno* 1671, when there died but 1696; which Decreasing of the Christenings, and Increasing of the Burials, shews the Increase of Non-registering in the legal Books, which must be the Increase of *Roman Catholics* at *Dublin*.

The Scope of this whole Paper therefore is, That the People of *Dublin* are rather 58000, than 32000; and that the Dissenters, who do not register their Baptisms, have increased from 391 to 974: but of Dissenters, none have increased but the *Roman Catholicks*, whose Numbers have increased from about 2 to 5 in the said Years. The exacter Knowledge whereof, may also be better had from direct Enquiries.



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T W O

E S S A Y S

I N

POLITICAL ARITHMETICK,

Concerning

The People, Housing, Hospitals, &c.

O F

LONDON and PARIS.

By Sir WILLIAM PETTY, *Fellow of the*
Royal Society.

——— *Qui sciret Regibus uti*
Fastidiret olus ———

T O T H E

K I N G ' S

Most Excellent MAJESTY.

I Do presume, in a very small Paper; to shew your Majesty, that your City of *London* seems more considerable than the two best Cities of the *French* Monarchy, and for ought I can find, greater than any other of the Universe; which because I can say without Flattery, and by such Demonstration as your Majesty can examine, I humbly pray your Majesty to accept from

Your MAJESTY'S

*Most Humble, Loyal,**and Obedient Subject,*

WILLIAM PETTY.

A N
E S S A Y
I N
POLITICAL ARITHMETICK,

By Sir *WILLIAM PETTY*,

Tending to prove that London hath more People and Houses than the Cities of Paris and Rouen put together, and is also more considerable in several other Respects.

1. **T**HE Medium of the Burials at *London* in the three last Years, *viz.* 1683, 1684 and 1685, (wherein there was no extraordinary Sickness, and wherein the Christenings do correspond in their ordinary Proportions with the Burials and Christenings of each Year one with another) was 22337, and the like Medium of Burials for the three last *Paris* Bills we could procure, *viz.* for the Years 1682, 1683, and 1684 (whereof the last as appears by the Christenings to have been very sickly) is 19887.

2. The City of *Bristol* in *England* appears to be by good Estimate of its Trade and Customs,
as

as great as *Rouen* in *France*, and the City of *Dublin* in *Ireland* appears to have more Chimnies than *Bristol*, and consequently more People, and the Burials in *Dublin* were *Anno* 1682 (being a sickly Year) but 2263.

3. Now the Burials of *Paris* (being 19887) being added to the Burials of *Dublin* (supposed more than at *Rouen*) being 2263, makes but 22150, whereas the Burials of *London* were 187 more, or 22337, or as about 6 to 7.

4. If those who die unnecessarily, and by Miscarriage in *L' Hostel Dieu* in *Paris* (being above 3000) as hath been elsewhere shewn, or any Part thereof, should be subtracted out of the *Paris* Burials afore-mentioned, then our Assertion will be stronger, and more proportionable to what follows concerning the Houses of those Cities, *viz.*

5. There were burnt at *London*, *Anno* 1666, above 13000 Houses, which being but a fifth Part of the whole, the whole Number of Houses in the said Year, were above 65000; and whereas the ordinary Burials of *London* have increased between the Years 1666 and 1686, above one third, the Total of the Houses at *London* *Anno* 1686, must be about 87000, which *Anno* 1682, appeared by Accompt to have been 84000.

6. *Monsieur Morery*, the great *French* Author of the late *Geographical Dictionaries*, who makes *Paris* the greatest City in the World, doth reckon but 50000 Houses in the same, and other Authors and knowing Men much less; nor are there

there full 7000 Houses in the City of *Dublin*; so as if the 50000 Houses of *Paris* and the 7000 Houses in the City of *Dublin* were added together, the Total is but 57000 Houses; whereas those of *London* are 87000 as aforesaid, or as 6 to 9.

7. As for the Shipping and foreign Commerce of *London*, the common Sense of all Men doth judge it to be far greater than that of *Paris* and *Rouen* put together.

8. As to the Wealth and Gain accruing to the Inhabitants of *London* and *Paris* by Law-suits (or *La Chicane*) I only say that the Courts of *London* extend to all *England* and *Wales*, and affect seven Millions of People, whereas those of *Paris* do not extend near so far: Moreover there is no palpable conspicuous Argument at *Paris* for the Number and Wealth of Lawyers like the Buildings and Chambers in the two *Temples*, *Lincoln's Inn*, *Gray's Inn*, *Doctors Commons*, and the seven other Inns, in which are Chimnies, which are to be seen at *London*, besides many Lodgings, Halls, and Offices relating to the same.

9. As to the plentiful and easy living of the People we say,

1. That the People of *Paris* to those of *London*, being as about 6 to 7, and the Houses of the same as about 6 to 9, we infer that the People do not live at *London* so close and crouded as at *Paris*, but can afford themselves more Room and Liberty.

2. That at *London* the Hospitals are better and more desirable than those of *Paris*, for that in the best at *Paris* there die 2 out of 15, whereas at *London* there die out of the worst scarce 2 of 16, and yet but a fiftieth Part of the whole die out of the Hospitals at *London*, and $\frac{2}{5}$ or 20 Times that Proportion die out of the *Paris* Hospitals which are of the same Kind; that is to say, the Number of those at *London* who chuse to lie sick in Hospitals rather than in their own Houses, are to the like People of *Paris* as one to twenty; which shews the greater Poverty or Want of Means in the People of *Paris* than those of *London*.

3. We infer from the Premises, *viz.* the dying scarce 2 of 16 out of the *London* Hospitals, and about 2 of 15 in the best of *Paris*, (to say nothing of *L' Hostel Dieu*) that either the Physicians and Chirurgeons of *London* are better than those of *Paris*, or that the Air of *London* is more wholesome.

10. As for the other great Cities of the World, if *Paris* were the greatest, we need say no more in Behalf of *London*. As for *Pequin* in *China*, we have no Account fit to reason upon; nor is there any thing in the Description of the two late Voyages of the *Chinese* Emperor from that City into East and West *Tartary*, in the Years 1682 and 1683, which can make us recant what we have said concerning *London*. As for *Dely* and *Agra* belonging to the Mogul, we find nothing against our Position, but much to shew

shew the vast Numbers which attend that Emperor in his Business and Pleasures.

11. We shall conclude with *Constantinople* and *Gran Cairo*; as for *Constantinople* it hath been said by one who endeavour'd to shew the Greatness of that City, and the Greatness of the Plague which reigned in it, that there died 1500 *per Diem*, without other Circumstances: To which we answer, that in the Year 1665 there died in *London* 1200 *per Diem*, and it hath been well proved that the Plague of *London* never carried away above $\frac{1}{5}$ of the People, whereas it is commonly believed that in *Constantinople*, and other Eastern Cities, and even in *Italy* and *Spain*, that the Plague takes away $\frac{2}{5}$ one half or more; wherefore where 1200 is but $\frac{1}{5}$ of the People, it is probable that the Number was greater, than where 1500 was $\frac{2}{5}$ or one half, &c.

12. As for *Gran Cairo* it is reported, that 73000 died in 10 Weeks or 1000 *per Diem*, where note, that at *Gran Cairo* the Plague comes and goes away suddenly, and that the Plague takes away 2 or $\frac{3}{5}$ Parts of the People as aforesaid; so as 73000 was probably the Number of those that died of the Plague in one whole Year at *Gran Cairo*, whereas at *London Anno 1665*, 97000 were brought to Account to have died in that Year. Wherefore it is certain that that City wherein 97000 was but $\frac{1}{5}$ of the People, the Number was greater than where 73000 was $\frac{2}{5}$ or the half.

We therefore conclude, that *London* hath more People, Houfes, Shipping, and Wealth, than *Paris* and *Rouen* put together ; and for ought yet appears, is more confiderable than any other City in the Univerfe, which was propounded to be proved.

... of that City, and the ...
... which reigned in it that there died 1700 ...
... Dies, without other Circumstances, to which
... we know that in the Year 1665, that died in
... 1700 for Dies, and it hath been well
... proved that the Plague of London is not carried
... away above 1/2 of the People, whereas it is com-
... monly believed that in Constantinople and other
... Eastern Cities, and even in Italy and Spain, that
... the Plague takes away one half or more, whic-
... fore where 1700 is but 1/2 of the People, it is pro-
... bable that the Number was greater, than where
... 1700 was, or one half, &c.
... 12. As for Great Cases it is reported, that
... 7000 died in 10 Weeks or 1000 for Dies,
... where not, that at Great Cases the Plague comes
... and goes away suddenly, and that the Plague
... takes away a 1/2 Part of the People at a time;
... so as 7000 was probably the Number of those
... that died of the Plague in one whole Year at
... Great Cases, whereas at London, where 1665
... 7000 were brought to Account to have died in
... that Year, Wherefore it is certain that the City
... N A in 7000 was but 1/2 of the People, the
... Number was greater than where 7000 was,
... or the half, &c.

A N
E S S A Y
I N
POLITICAL ARITHMETICK,

By Sir *WILLIAM PETTY*,

Tending to prove that in the Hospital called L'Hostel Dieu at Paris, there die above 3000 per Annum, by Reason of ill Accommodation.

1. **I**T appears that *Anno* 1678 there entered into the Hospital of *La Charité* 2647 Souls, of which there died there within the said Year 338, which is above an eighth Part of the said 2647, and that in the same Year there entered into *L'Hostel Dieu* 21491, and that there died out of that Number 5630, which is above one Quarter, so as about half the said 5630, being 2815, seem to have died for Want of as good Usage and Accommodation as might have been had at *La Charité*.

2. Moreover in the Year 1679 there entered into *La Charité* 3118, of which there died 452, which is above a seventh Part, and in the same year there entered into *L'Hostel Dieu* 28635, of which there died 8397, and in both the said

Years 1678 and 1679 (being very different in their Degrees of Mortality) there entered into *L' Hostel Dieu* 28635 and 21491, in all 50126, the Medium whereof is 25063, and there died out of the same in the said two Years 5630 and 8397, in all 14027, the Medium whereof is 7013.

3. There entered in the said Years into *La Charité* 2647 and 3118, in all 5765, the Medium whereof is 2882, whereof there died 338 and 452, in all 790, the Medium whereof is 395.

4. Now if there died out of *L' Hostel Dieu* 7013 *per Annum*, and that the Proportion of those that died out of *L' Hostel Dieu* is double to those that died out of *La Charité* (as by the above Numbers it appears to be near thereabouts) then it follows that half the said Numbers of 7013 being 3506, did not die by natural Necessity, but by the evil Administration of that Hospital.

5. This Conclusion seem'd at the first Sight very strange, and rather to be some Mistake or Chance than a solid and real Truth; but considering the same Matter as it appeared at *London*, we were more reconciled to the Belief of it, *viz.*

1. In the Hospital of *St. Bartholomew* in *London* there was sent out and cured in the Year 1685, 1764 Persons, and there died out of the said Hospital 252. Moreover there were sent out and cured out of *St. Thomas's* Hospital 1523, and buried 209, that is to say, there were cured
in

in both Hospitals 3287, and buried out of both Hospitals 461, and consequently cured and buried 3748, of which Number the 461 buried is less than an eighth Part ; whereas at *La Charité* the Part that died was more than an eighth Part ; which shews that out of the most poor and wretched Hospitals of *London* there died fewer in Proportion than out of the best in *Paris*.

2. Farthermore, it hath been above shewn that there died out of *La Charité* at a Medium 395 *per Annum*, and 141 out of *Les Incurables*, making in all 536 ; and that out of *St. Bartholomew's* and *St. Thomas's* Hospital, *London*, there died at a Medium but 461, of which *Les Incurables* are Part ; which shews that altho' there be more People in *London* than in *Paris*, yet there went at *London* not so many People to Hospitals as there did at *Paris*, although the poorest Hospitals at *London*, were better than the best at *Paris* ; which shews that the poorest People at *London* have better Accommodation in their own Houses, than the best Hospital of *Paris* affordeth.

6. Having proved that there die about 3506 Persons at *Paris* unnecessarily to the Damage of *France*, we come next to compute the Value of the said Damage and of the Remedy thereof, as follows, *viz.* the Value of the said 3506 at 60 *Livres Sterl. per Head*, being about the Value of *Algier* Slaves, (which is less than the intrinsic Value of People at *Paris*) the whole

Loss of the Subjects of *France* in that Hospital seems to be 60 Times 3506 Livres *Sterl. per Annum, viz.* 210 Thousand 360 Livres *Sterl.* equivalent to about two Millions 524 Thousand 320 *French* Livres.

7. It hath appeared that there came into *L' Hostel Dieu* at a Medium 25063 *per Annum*, or 2089 *per Mensem*, and that the whole Stock of what remained in the precedent Months is at a Medium about 2108 (as may appear by the third Line of the Table N^o 5, which shall be shortly published) *viz.* the Medium of Months is 2410 for the sickly Year 1679, whereunto 1806 being added, as the Medium of Months for the Year 1678, makes 4216, the Medium whereof is the 2108 above-mentioned; which Number being added to the 2089 which entered each Month, makes 4197 for the Number of Sick which are supposed to be always in *L' Hostel Dieu* one Time with another.

8. Now if 60 *French* Livres *per Annum* for each of the said 4197 sick Persons were added to the present ordinary Expence of that Hospital (amounting to an Addition of 251 Thousand 820 Livres) it seems that so many Lives might be saved as are worth above ten Times that Sum, and this by doing a manifest Deed of Charity to Mankind.

Memorandum, *That Anno 1685, the Burials of London were 23222, and those of Amsterdam 6245; from whence, and the Difference of Air, 'tis probable that the People of London are quadruple to those of Amsterdam.*

OBSERVATIONS
UPON THE
CITIES
OF
LONDON and ROME.

1. **T**HAT before the Year 1630, the Christenings at *London* exceeded the Burials of the same, but about the Year 1655 they were scarce half; and now about two Thirds.

2. Before the Restauration of Monarchy in *England*, Anno 1660, the People of *Paris* were more than those of *London* and *Dublin* put together, whereas now, the People of *London* are more than those of *Paris* and *Rome*, or of *Paris* and *Rouen*.

3. Anno 1665 one fifth Part of the then People of *London* or 97 Thousand died of the Plague, and in the next Year 1666, 13 Thousand Houses, or one fifth Part of all the Housing of *London* were burnt also.

4. At the Birth of *Christ*, old *Rome* was the greatest City of the World, and *London* the
greatest

greatest at the Coronation of King *James* the Second, and near 6 Times as great as the present *Rome*, wherein are 119 Thousand Souls besides *Jews*.

5. In the Years of King *Charles* the Second his Death and King *James* the Second his Coronation (which were neither of them remarkable for extraordinary Sickliness or Healthfulness) the Burials did wonderfully agree, *viz.* *Anno* 1684, they were 23202, and *Anno* 1685 they were 23222, the Medium whereof is 23212. And the Christenings did very wonderfully agree also, having been *Anno* 1684, 14702, and *Anno* 1685, 14732, the Medium whereof is 14717, which Consistence was never seen before, the said Number of 23212 Burials making the People of *London* to be 696360, at the Rate of one dying *per Annum* out of 30.

6. Since the great Fire of *London*, *An.* 1666 about 7 Parts of 15 of the present vast City hath been new built, and is with its People increased near one half, and become equal to *Paris* and *Rome* put together, the one being the Seat of the great *French* Monarchy, and the other of the Papacy.

FIVE ESSAYS

IN

POLITICAL ARITHMETICK,

VIZ.

- I. Objections from the City of *Rey* in *Persia*, and from Monsieur *Auzout*, against two former Essays, answered, and that *London* hath as many People as *Paris*, *Rome*, and *Rouen* put together.
- II. A Comparison between *London* and *Paris* in 14 Particulars.
- III. Proofs that at *London*, within its 134 Parishes named in the Bills of Mortality, there live about 696 Thousand People.
- IV. An Estimate of the People in *London*, *Paris*, *Amsterdam*, *Venice*, *Rome*, *Dublin*, *Bristol*, and *Rouen*, with several Observations upon the same.
- V. Concerning *Holland*, and the rest of the Seven *United Provinces*.

By Sir WILLIAM PETTY, Fellow of the
Royal Society.

Invidiam augendo ulciscar.

London 1687.

T O T H E

K I N G ' S

Most Excellent MAJESTY.

S I R,

YOUR Majesty having graciously accepted my two late Essays about the Cities and Hospitals of *London* and *Paris*, as also my Observations on *Rome* and *Rouen*; I do (after six Months waiting for what may be said against my several Doctrines, by the able Men of *Europe*) humbly present your Majesty with a few other Papers upon the same Subject, to strengthen, explain and enlarge the former; hoping by such real Arguments, better to praise and magnify your Majesty, than by any other the most specious Words and Elogies that can be imagined by

Your MAJESTY'S

*Most Humble, Loyal,
and Obedient Subject,*

1687,

WILLIAM PETTY.

 The FIRST ESSAY.

IT could not be expected that an Assertion of *London's* being bigger than *Paris* and *Rouen*, or than *Paris* and *Rome* put together, and bigger than any City of the World, should escape uncontradicted ; and 'tis also expected, that I (if continuing in the same Persuasion) should make some Reply to those Contradictions. In order whereunto,

I begin with the ingenious Author of the *Republique des Lettres*, who saith that *Rey* in *Persia* is far bigger than *London*, for that in the 6th Century of Christianity (I suppose *An. 550*, the Middle of that Century) it had 15000, or rather 44000 Moschees, or *Mahometan* Temples; to which I reply, that I hope this Objector is but in Jest, for that *Mahomet* was not born till about the Year 570, and had no Moschees till about 50 Years after.

In the next Place I reply to the excellent Monsieur *Auzout's* Letters from *Rome*, who is content that *London, Westminster* and *Southwark*, may have as many People as *Paris* and its Suburbs ; and but faintly denieth, that all the Housing within the Bills, may have almost as many People as *Paris* and *Rouen*, but saith that several Parishes inserted into these Bills, are distant from, and not contiguous with *London*, and that *Grant* so understood it.

To which (as his main if not his only Objection) we answer : 1. That the *London Bills* appear in *Grant's Book*, to have been always since the Year 1636, as they now are. 2. That about 50 Years since, three or 4 Parishes, formerly somewhat distant, were joined by interposed Buildings, to the Bulk of the City, and therefore then inserted into the Bills. 3. That since 50 Years, the whole Buildings being more than double, have perfected that Union, so as there is no House within the said Bills, from which one may not call to some other House. 4. All this is confirmed by Authority of the King and City, and the Custom of 50 Years. 5. That there are but 3 Parishes under any Colour of this Exception, which are scarce $\frac{1}{52}$ Part of the Whole.

Upon the whole Matter, upon the Sight of Monsieur *Auzout's* large Letter, dated the 19th of *November*, from *Rome*, I made Remarks upon every Paragraph thereof; but suppressing it (because it look'd like a War against a worthy Person, with whom I intended none, whereas in Truth it was but a reconciling Explication of some Doubts) I have chosen the shorter and softer Way of answering Monsieur *Auzout* as followeth, *viz.*

Concerning the Number of People in London, as
also in Paris, Rouen, and Rome, viz.

Monfieur *Auzout* alledgeth an authentic Account, that there are 23223 Houses in *Paris*, wherein do live about 80 Thousand Families, and therefore fupposing $3\frac{1}{2}$ Families, to live in every of the faid Houses, one with another, the Number of Families will be 81280; and Monfieur *Auzout* alfo allowing 6 Heads to each Family, the utmoft Number of People in *Paris* according to that Opinion will be } 487, 680

The Medium of the *Paris* Burials was not denied by Monfieur *Auzout* to be 19887, nor that there died 3506 unneceffarily out of *L'Hotel Dieu*; wherefore deducting the faid laft Number out of the former, the neat Standard for Burials at *Paris*, will be 16381, fo as the Number of People there, allowing but one to die out of 30 (which is more advantageous to *Paris* than Monfieur *Auzout's* Opinion of one to die out of 25) the Number of People at *Paris* will be 491,430, more than by Monfieur *Auzout's* own laft mentioned Account. } 491, 430

And the Medium of the said two }
Paris Accompts is } 488, 055

The Medium of the *London* Bu- }
rials is really 23212, which multi- }
plied by 30 (as hath been done for } 696, 360
Paris) the Number of the People }
there will be }

The Number of Houses at *London* }
appears by the Register to be 105,315, }
whereunto adding ¹⁰ Part of the same, }
or 10331, as the least Number of }
double Families that can be supposed } 695, 076
in *London*, the Total of Families will }
be 115,840 ; and allowing 6 Heads }
for each Family as was done for *Pa-* }
ris, the Total of the People at *Lon-* }
don will be }

The Medium of the two last *Lon-* }
don Accounts is } 695, 718

So as the People of *Pa-* }
ris according to the above } 488, 055
Account is }

Of *Rouen* according to }
Monfieur *Auzout's* ut- } 80, 000 } 693, 055
most Demands }

Of *Rome* according to }
his own Report thereof in } 125, 000
a former Letter }

So as there are more People at }
London than at *Paris*, *Rouen*, and } 2, 663
Rome }

Memorandum, That the Parishes of *Islington*, *Newington*, and *Hackney*, for which only there is any Colour of Non-contiguity, is not ⁵/₅ Part of what is contained in the Bills of Mortality, and consequently *London*, without the said 3 Parishes, hath more People than *Paris* and *Rouen* put together by

114, 284

Which Number of 114,284 is probably more People than any other City of *France* contains.

The S E C O N D E S S A Y.

AS for other Comparisons of *London* with *Paris*, we farther repeat and enlarge what hath been formerly said upon those Matters, as followeth, *viz.*

1. That 40 *per Cent.* die out of the Hospitals at *Paris* where so many die unnecessarily, and scarce $\frac{1}{20}$ of that Proportion out of the Hospitals of *London*, which have been shewn to be better than the best of *Paris*.

2. That at *Paris* 81280 Kitchens, are within less than 24000 Street-doors, which makes a less cleanly and convenient Way of living than at *London*.

3. Where the Number of Christenings are near unto, or exceed the Burials, the People are poorer, having few Servants and little Equipage.

4. The River of *Thames* is more pleasant and navigable than the *Seyne*, and its Waters better and more wholesome; and the Bridge of *London* is the most considerable of all *Europe*.

5. The Shipping and foreign Trade of *London* is incomparably greater than that at *Paris* and *Rouen*.

6. The Lawyers Chambers at *London* have 2772 Chimnies in them, and are worth 140 Thousand Pounds sterling, or 3 Millions of *French Livres*, besides the Dwellings of their Families elsewhere.

7. The Air is more wholesome, for that at *London* scarce 2 of 16 die out of the worst Hospitals, but at *Paris* above 2 of 15 out of the best. Moreover the Burials of *Paris* are $\frac{1}{5}$ Part above and below the Medium, but at *London* not above $\frac{1}{12}$, so as the Intemperies of the Air at *Paris* is far greater than at *London*.

8. The Fuel cheaper, and lies in less Room, the Coals being an wholesome sulphurous Bitumen.

9. All the most necessary Sorts of Victuals, and of Fish, are cheaper, and Drinks of all Sorts in greater Variety and Plenty.

10. The Churches of *London* we leave to be judg'd by thinking that nothing at *Paris* is so great as *St. Paul's* was, and is like to be, nor so beautiful as *Henry the Seventh's Chapel*.

11. On the other Hand, 'tis probable, that there is more Money in *Paris* than *London*, if the publick Revenue (grossly speaking, quadruple to that of *England*) be lodged there.

12. *Paris* hath not been for these last 50 Years so much infested with the Plague as *London*; now that at *London* the Plague (which between the Year 1591 and 1666, made 5 Returns, *viz.* every 15 Years at a Medium, and at each Time carried away $\frac{1}{5}$ of the People) hath not been known for the 21 Years last past, and there is a visible Way by God's ordinary Blessing to lessen the same by $\frac{2}{3}$ when it next appeareth.

13. As to the Ground upon which *Paris* stands in respect of *London*, we say, that if there be 5 Stories or Floors of Housing at *Paris*, for 4 at *London*, or in that Proportion, then the 82 Thousand Families at *Paris* stand upon the Equivalent of 65000 *London* Housteds, and if there be 115000 Families at *London*, and but 82000 at *Paris*, then the Proportion of the *London* Ground to that of *Paris* is as 115 to 65, or as 23 to 13.

14. Moreover *Paris* is said to be an Oval of 3 *English* Miles long and $2\frac{1}{2}$ broad, the Area whereof contains but $5\frac{1}{2}$ square Miles; but *London* is 7 Miles long, and $\frac{1}{4}$ broad at a Medium, which makes an Area of near 9 square Miles, which Proportion of $5\frac{1}{2}$ to 9 differs little from that of 13 to 23.

15. *Memorandum*, That in *Nero's* Time, as *Monfieur Chevreau* reporteth, there died 300 Thousand People of the Plague in Old *Rome*; now if there died 3 of 10 then, and there, being a hotter Country, as there dies 2 of 10 at *London*, the Number of People at that Time, was but a Million, whereas at *London* they are now about

700 Thousand. Moreover the Ground within the Walls of Old *Rome* was a Circle but of 3 Miles diameter, whose Area is about 7 square Miles, and the Suburbs scarce as much more, in all about 13 square Miles; whereas the built Ground at *London* is about 9 square Miles as aforesaid; which two Sorts of Proportions agree with each other, and consequently Old *Rome* seems but to have been half as big again as the present *London*, which we offer to Antiquaries.

The THIRD ESSAY.

PROOFS that the Number of People in the 134 Parishes of the *London* Bills of Mortality, without Reference to other Cities, is about 696 Thousand, *viz.*

I know but three Ways of finding the same.

1. By the Houses and Families, and Heads living in each.

2. By the Number of Burials in healthful Times, and by the Proportion of those that live, to those that die.

3. By the Number of those who die of the Plague in pestilential Years, in Proportion to those that escape.

The First Way.

To know the Number of Houses I used three Methods, *viz.*

1. The Number of Houses which were burnt *Anno* 1666, which by authentick Report was 13200; next what Proportion the People who died out of those Houses, bore to the Whole;

Whole ; which I find *Anno* 1686, to be but $\frac{1}{7}$ Part, but *Anno* 1666 to be almost $\frac{1}{5}$, from whence I infer the whole Housing of *London Anno* 1666 to have been 66 Thousand ; then finding the Burials *Anno* 1666 to be to those of 1686 as 3 to 4, I pitch upon 88 Thousand to be the Number of Houses *Anno* 1686.

2. Those who have been employed in making the general Map of *London*, set forth in the Year 1682, told me that in that Year they had found above 84 Thousand Houses to be in *London* ; wherefore *Anno* 1686, or in 4 Years more, there might be $\frac{1}{10}$ or 8400 Houses more (*London* doubling in 40 Years) so as the Whole, *Anno* 1686 might be 92400.

3. I found that *Anno* 1685, there were 29325 Hearths in *Dublin*, and 6400 Houses, and in *London* 388 Thousand Hearths, whereby there must have been at that Rate 87000 Houses in *London*. Moreover I found that in *Bristol* there were in the same Year 16752 Hearths, and 5307 Houses, and in *London* 388 Thousand Hearths as aforesaid ; at which Rate there must have been 123 Thousand Houses in *London*, and at a Medium between *Dublin* and *Bristol* Proportions, 105 Thousand Houses.

Lastly, by Certificate from the Hearth-Office, I find the Houses within the Bills of Mortality to be 105,315.

Having thus found the Houses, I proceed next to the Number of Families in them ; and first I thought that if there were 3 or 4 Families or

Kitchens in every House of *Paris*, there might be 2 Families in $\frac{1}{10}$ of the Housing of *London*; unto which Supposition, the common Opinion of several Friends, doth concur with my own Conjectures.

As to the Number of Heads in each Family, I stick to *Grant's* Observation in his fifth Edition, that in Tradesmen of *London's* Families, there be 8 Heads one with another, in Families of higher Ranks, above 10, and in poorest near 5, according to which Proportions, I had upon another Occasion pitch'd the Medium of Heads in all the Families of *England* to be $6\frac{1}{3}$, but quitting the Fraction in this Case, I agree with Monsieur *Auzout* for 6.

To conclude, the Houses of *London* being 105315, and the Addition of double Families 10531 more, in all 115846; I multiplied the same by 6, which produced 695076 for the Number of the People.

The Second Way.

I found that the Years 1684 and 1685, being next each other, and both healthful, did wonderfully agree in their Burials, *viz.* 1684 they were 23202, and *Anno* 1685 23222, the Medium whereof is 23212; moreover that the Christenings 1684 were 14,702, and those *Anno* 1685 were 14730; wherefore I multiplied the Medium of Burials 23212 by 30, supposing that one dies out of 30 at *London*, which made the Number of People 696360 Souls.

Now to prove that one dies out of 30 at *London*, or thereabouts, I say,

1. That *Grant* in his fifth Edition, affirmeth from Observation, that 3 died of 88 *per Annum*, which is near the same Proportion.

2. I found that out of healthful Places, and out of adult Persons, there dies much fewer, as but 1 out of 50 among our Parliament Men, and that the Kings of *England* having reigned 24 Years one with another, probably lived above 30 Years each.

3. *Grant* hath shewn that but about 1 of 20 die *per An.* out of young Children under 10 Years old, and Monsieur *Auzout* thinks that but 1 of 40 die at *Rome*, out of the greater Proportion of adult Persons there; wherefore we still stick at a Medium to the Number 30.

4. In 9 Country Parishes lying in several Parts of *England*, I find that but 1 of 37 hath died *per An.* or 311 out of 11507, wherefore till I see another round Number, grounded upon many Observations, nearer than 30, I hope to have done pretty well in multiplying our Burials by 30, to find the Number of the People, the Product being 696360, and what we find by the Families they are 695,076, as aforesaid.

The Third Way,

It was proved by *Grant*, that $\frac{1}{5}$ of the People died of the Plague, but *Anno* 1665 there died of the Plague near 98 Thousand Persons, the

Quin-

Quintuple whereof is 490 Thousand, as the Number of People in the Year 1665, whereunto adding above $\frac{1}{3}$, as the Increase between 1665 and 1686, the Total is 653 Thousand, agreeing well enough with the other two Computations above-mentioned.

Wherefore let the Proportion of 1 to 30 continue till a better be put in its Place.

Memorandum, That 2 or 3 Hundred new Houses would make a Contiguity of 2 or 3 other great Parishes, with the 134 already mentioned in the Bills of Mortality; and that an oval Wall of about 20 Miles in Compass would enclose the same, and all the Shipping at *Deptford* and *Black-wall*, and would also fence in 20 Thousand Acres of Land, and lay the Foundation or Designation of several vast Advantages to the Owners, and Inhabitants of that Ground, as also to the whole Nation and Government.

The FOURTH ESSAY.

Concerning the Proportions of People in the 8 eminent Cities of Christendom undernamed, viz.

1. **W**E have by the Number of Burials in healthful Years, and by the Proportion of the living to those who die yearly, as also by the Number of Houses and Families within the 134 Parishes, called *London*, and the Estimate

Estimate of the Heads in each, pitch'd upon the Number of People in that City to be at a Medium 695718.

2. We have, by allowing that at *Paris* above 80 Thousand Families (*viz.* 81280) do live in 23223 Houses, 32 Palaces, and 38 Colleges, or that there are 81280 Kitchens within less than 24 Thousand Street-doors; as also by allowing 30 Heads for every one that died necessarily there; we have pitch'd upon the Number of People there at a Medium to be 488055, nor have we restrained them to 300 Thousand, by allowing with Monsieur *Auzout* 6 Heads for each of *Morery's* 50000 Houses or Families.

3. To *Amsterdam* we allow 187350 Souls, *viz.* 30 Times the Number of their Burials, which were 6245 in the Year 1685.

4. To *Venice* we allow 134 Thousand Souls, as found there in a special Account taken by Authority, about 10 Years since, when the City abounded with such as returned from *Candia*, then surrendered to the *Turks*.

5. To *Rome* we allow 119 Thousand Christians and 6000 Jews, in all 125 Thousand Souls, according to an Account sent hither of the same by Monsieur *Auzout*.

6. To *Dublin* we allow (as to *Amsterdam*) 30 Times its Burials, the Medium whereof for the last 2 Years is 2303, *viz.* 69090 Souls.

7. As to *Bristol*, we say that if the 6400 Houses of *Dublin* give 69,090 People, that the 5307 Houses of *Bristol*, must give above 56
Thousand

Thousand People ; moreover, if the 29,325 Hearths of *Dublin*, give 69,090 People, the 16,752 Hearths of *Bristol*, must give about 40 Thousand ; but the Medium of 56 Thousand and 40 Thousand is 48 Thousand.

8. As for *Rouen*, we have no Help, but Monsieur *Auzout's* Fancy of 80 Thousand Souls to be in that City, and the Conjecture of knowing Men, that *Rouen* is between the $\frac{1}{7}$ and $\frac{1}{8}$ Part of *Paris*, and also that it is by a Third bigger than *Bristol*: By all which, we estimate (till farther Light) that *Rouen* hath at most but 66 Thousand People in it.

Now it may be wondered why we mentioned *Rouen* at all, having had so little Knowledge of it ; whereunto we answer, that we did not think it just to compare *London* with *Paris*, as to Shipping and foreign Trade, without adding *Rouen* thereunto, *Rouen* being to *Paris* as that Part of *London* which is below the Bridge, is to what is above it.

All which we heartily submit to the Correction of the Curious and Candid, in the mean Time observing according to the gross Numbers under-mentioned.

	<i>m.</i>
<i>London</i>	696
<i>Paris</i>	488
<i>Amsterdam</i>	187
<i>Venice</i>	134
<i>Rome</i>	125
<i>Dublin</i>	69
<i>Bristol</i>	48
<i>Rouen</i>	66

<i>Observations on the said 8 Cities.</i>		<i>m.</i>
1. That the People of <i>Paris</i> being		488
	of <i>Rome</i>	125
	of <i>Rouen</i>	66

do make in all but 679
Thousand, or 17 Thousand less than the 696
Thousand of *London* alone.

2. That the People of the 2 *English* Cities
and Emporiums, *viz.* of *London* 696 Thousand,
and *Bristol* 48 Thousand, do make 744 Thou-
sand, or more than *m.*

In <i>Paris</i>	488
<i>Amsterdam</i>	187
<i>Rouen</i>	66

being in all 741 Thousand

3. That the same 2 *English* Cities seem equi-
valent

To <i>Paris</i> which hath	488 Thousand Souls.
To <i>Rouen</i>	66
To <i>Lyons</i>	100
To <i>Thoulouse</i>	90

In all 744 Thousand

If there be any Error in these Conjectures
concerning these Cities of *France*, we hope
they will be mended by those whom we hear
to be now at work upon that Matter.

4. That the King of *England's* 3 Cities, *viz.*

Lon-

	<i>m.</i>			<i>m.</i>	
<i>London</i>	696	} exceed	} {	<i>Paris</i>	488
<i>Dublin</i>	69			<i>Amsterdam</i>	187
<i>Bristol</i>	48			<i>Venice</i>	134

In all 813 being but 809

5. That of the 4 great Emporiums, *London*, *Amsterdam*, *Venice* and *Rouen*, *London* alone is near double to the other 3, viz. above 7 to 4.

	<i>m.</i>		
<i>Amsterdam</i>	187	} <i>m.</i>	
<i>Venice</i>	134		387
<i>Rouen</i>	66		2

774 *London* *m.* 696

6. That *London* (for aught appears) is the greatest and most considerable City of the World, but manifestly the greatest Emporium.

When these Assertions have past the *Examen* of the Critics, we shall make another Essay, shewing how to apply those Truths to the Honour and Profit of the King and Kingdom of *England*.

The FIFTH ESSAY.

Concerning *Holland*, and the rest of the United Provinces.

SINCE the Close of this Paper, it hath been objected from *Holland*, that what hath been said of the Number of Houses and People in *London*

London is not like to be true; for that if it were, then *London* would be $\frac{2}{3}$ of the whole Province of *Holland*. To which is answered, that *London* is the $\frac{2}{3}$ of all *Holland* and more, that Province having not a Million and 44000 Inhabitants (whereof 696 m. is the $\frac{2}{3}$) nor above 800 Thousand, as we have credibly and often heard; for suppose *Amsterdam* hath, as we have elsewhere noted, 187000, the seven next great Cities at 30000 each one with another 210000, the 10 next at 15000 each 150000, the 10 smallest at 6000 each 60000, in all the 28 walled Cities and Towns of *Holland* 607000, in the Dorps and Villages 193000, which is about one Head for every 4 Acres of Land; whereas in *England* there is 8 Acres for every Head, without the Cities and Market Towns.

Now suppose *London* having 116000 Families, should have 7 Heads in each, the Medium between Monsieur *Auzout* and *Grant's* Reckonings, the Total of the People would be 812000, or if we reckon that there dies 1 out of 34 (the Medium between 30 and 37 above-mentioned) the Total of the People would be 34 Times 23212, viz. 789208, the Medium between which Number, and the above 812 Thousand, is 800604, somewhat exceeding 800 Thousand, the supposed Number of *Holland*.

Farthermore, I say that upon former Searches into the Peopling of the World, I never found that in any Country (not in *China* itself) there was more than one Man to every *English* Acre
of

of Land (many Territories passing for well peopled, where there is but one Man for ten such Acres) I found by measuring *Holland* and *West-Frizia*, alias *North-Holland*, upon the best Maps, that it contained but as many such Acres as *London* doth of People, viz. about 696000 Acres; I therefore venture to pronounce (till better informed) that the People of *London* are as many as those of *Holland*, or at least above $\frac{2}{3}$ of the same; which is enough to disable the Objection above-mentioned; nor is there any Need to strain up *London* from 696000 to 800000, tho' competent Reasons have been given to that Purpose, and though the Author of the excellent Map of *London*, set forth *Anno* 1682, reckoned the People thereof (as by the said Map appears) to be 1200,000, even when he thought the Houses of the same to be but 85000.

The worthy Person who makes this Objection in the same Letter also saith,

1. That the Province of *Holland*, hath as many People as the other 6 United Provinces together, and as the whole Kingdom of *England*, and double to the City of *Paris* and its Suburbs; that is to say, 2 Millions of Souls. 2. He says that in *London* and *Amsterdam*, and other trading Cities there are 10 Heads to every Family, and that in *Amsterdam* there are not 22000 Families. 3. He excepteth against the Register alledged by Monsieur *Auzout*, which makes 23223 Houses, and above 80,000 Families to be in *Paris*, as also against the Register alledged by *Petty*; making 105315 Houses to be in *London*,

don, with a tenth Part of the same to be of Families more than Houses, and probably will except against the Register of 1163000 Houses to be in all *England*, that Number giving at $6\frac{1}{3}$ Heads to each Family, about 7 Millions of People, upon all which we remark as followeth, *viz.*

1. That if *Paris* doth contain but 488 thousand Souls, that then all *Holland* containeth but the Double of that Number, or 976 Thousand, wherefore *London* containing 696 Thousand Souls, hath above $\frac{2}{3}$ of all *Holland* by 46000.

2. If *Paris* containeth half as many People as there are in all *England*, it must contain 3 Millions and a half of Souls, or above 7 Times 488 Thousand, and because there do not die 20 Thousand *per An.* out of *Paris*, there must die but one out of 175, whereas Monsieur *Auzout* thinks that there dies 1 out of 25, and there must live 149 Heads in every House of *Paris* mentioned in the Register, but there must be scarce 2 Heads in every House of *England*; all which we think fit to be reconsidered.

I must as an *Englishman* take Notice of one Point more, which is, that these Assertions do reflect upon the Empire of *England*, for that it is said, that *England* hath but two Millions of Inhabitants, and it might as well have been added, that *Scotland* and *Ireland*, with the Islands of *Man*, *Fersey* and *Guernsey* have but $\frac{2}{5}$ of the same Number, or 800 Thousand more, or that all the King of *England's* Subjects in *Europe* are but two Millions and 800 Thousand Souls; whereas he saith, that the Subjects of the 7 United

nited Provinces are four Millions. To which we answer, that the Subjects of the said 7 Provinces, are by this Objector's own shewing, but the Quadruple of *Paris*, or 1932 Thousand Souls, *Paris* containing but 488000 as afore hath been prov'd, and we do here affirm that *England* hath 7 Millions of People, and that *Scotland*, *Ireland*, with the Islands of *Man*, *Fer-sey* and *Guernsey*, hath $\frac{2}{3}$ of the said Number, or two Millions 800 Thousand more, in all 9 Millions 800 Thousand; whereas by the Objector's Doctrine, if the 7 Provinces have 1932 Thousand People, the King of *England's* Territories should have but $\frac{7}{10}$ of the same Number, viz. 1351 Thousand; whereas we say 9800 Thousand, as aforesaid, which Difference is so gross as that it deserves to be thus reflected upon.

To conclude, we expect from the concerned Critics of the World, that they would prove,

1. That *Holland* and *West-Frizia*, and the 28 Towns and Cities thereof, hath more People than *London* alone.

2. That any 3 the best Cities of *France*, any 2 of all Christendom, or any 1 of the World, hath the same, or better Housing, and more foreign Trade than *London*, even in the Year that King *James II.* came to the Empire thereof.

POLITICAL ARITHMETICK,

O R A

DISCOURSE

Concerning

The Extent and Value of Lands, People, Buildings ; Husbandry, Manufactures, Commerce, Fishery, Artizans, Seamen, Soldiers ; Publick Revenues, Interest, Taxes, Superlucration, Registries, Banks ; Valuation of Men, Increasing of Seamen, of Militia's, Harbours, Situation, Shipping, Power at Sea, &c. As the same relates to every Country in general, but more particularly to the Territories of his Majesty of *Great Britain*, and his Neighbours of *Holland*, *Zealand*, and *France*.

By Sir WILLIAM PETTY, late Fellow of
the Royal Society.

1691.

G

LET this Book called *Political Arith-*
metick, which was long since wrote
by Sir *William Petty* deceased, be Printed.

Given at the Court at Whitehall the 7th Day of
November, 1690.

Nottingham.

T O T H E
K I N G ' S

Most Excellent MAJESTY.

S I R,

WHILST every one meditates some fit Offering for your Majesty, such as may best agree with your happy Exaltation to this Throne ; I presume to offer, what my Father long since wrote, to shew the Weight and Importance of the *English* Crown.

It was by him stiled *Political Arithmetick*, inasmuch as Things of Government, and of no less Concern and Extent, than the Glory of the Prince, and the Happiness and Greatness of the People, are, by the ordinary Rules of *Arithmetick*, brought into a Sort of Demonstration. He was allowed by all, to be the Inventor of this Method of Instruction ; where the perplexed and intricate Ways of the World, are explained by a very mean Piece of Science ; and had not the Doctrines of this Essay

offended *France*, they had long since seen the Light, and had found Followers, as well as Improvements before this Time, to the Advantage perhaps of Mankind.

But this has been reserved to the Felicity of your Majesty's Reign, and to the Expectation which the Learned have therein; and if while in this, I do some Honour to the Memory of a good Father, I can also pay Service, and some Testimony of my Zeal and Reverence to so great a King, it will be the utmost Ambition of

S I R,

Your Majesty's most dutiful

and most obedient Subject,

SHELBORNE.

P R E F A C E.

FORASMUCH as Men, who are in a decaying Condition, or who have but an ill Opinion of their own Concernments, instead of being (as some think) the more industrious to resist the Evils they apprehend, do contrariwise become the more languid and ineffectual in all their Endeavours, neither caring to attempt or prosecute even the probable Means of their Relief. Upon this Consideration, as a Member of the Commonwealth, next to knowing the precise Truth in what Condition the common Interest stands, I would in all doubtful Cases think the best, and consequently not despair, without strong and manifest Reasons, carefully examining whatever tends to lessen my Hopes of the publick Welfare.

I have therefore thought fit to examine the following Persuasions, which I find too current in the World, and too much to have affected the Minds of some, to the Prejudice of all, *viz.*

That the Rents of Lands are generally fallen; that therefore, and for many other Reasons, the

whole Kingdom grows every Day poorer and poorer; that formerly it abounded with Gold, but now there is a great Scarcity both of Gold and Silver; that there is no Trade nor Employment for the People, and yet that the Land is under-peopled; that Taxes have been many and great; that *Ireland* and the Plantations in *America*, and other Additions to the Crown, are a Burthen to *England*; that *Scotland* is of no Advantage; that Trade in general doth lamentably decay; that the *Hollanders* are at our Heels, in the Race of Naval Power; the *French* grow too fast upon both, and appear so rich and potent, that it is but their Clemency that they do not devour their Neighbours; and finally, that the Church and State of *England*, are in the same Danger with the Trade of *England*; with many other dismal Suggestions, which I had rather stifle than repeat.

'Tis true, the Expence of foreign Commodities hath of late been too great; much of our Plate, had it remain'd Money, would have better served Trade; too many Matters have been regulated by Laws, which Nature, long Custom, and general Consent, ought only to have governed; the Slaughter and Destruction of Men by the late Civil Wars and Plague have been great; the Fire at *London*, and Disaster at *Chatbam*, have begotten Opinions in the *Vulgus* of the World to our Prejudice; the Nonconformists increase; the People of *Ireland* think
long

long of their Settlement ; the *English* there apprehend themselves to be Aliens, and are forced to seek a Trade with Foreigners, which they might as well maintain with their own Relations in *England*. But notwithstanding all this, (the like whereof was always in all Places), the Buildings of *London* grow great and glorious ; the *American* Plantations employ four Hundred Sail of Ships ; Actions in the *East-India* Company are near double the principal Money ; those who can give good Security, may have Money under the Statute-Interest ; Materials for building, (even Oaken-Timber) are little the dearer, some cheaper for the rebuilding of *London* ; the Exchange seems as full of Merchants as formerly ; no more Beggars in the Streets, nor executed for Thieves, than heretofore ; the Number of Coaches, and Splendor of Equipage exceeding former Times ; the publick Theatres very magnificent : the King has a greater Navy, and stronger Guards than before our Calamities ; the Clergy rich, and the Cathedrals in Repair ; much Land has been improved, and the Price of Food so reasonable, as that Men refuse to have it cheaper, by admitting of *Irish* Cattle ; and in brief, no Man needs to want that will take moderate Pains. That some are poorer than others, ever was and ever will be : And that many are naturally querulous and envious, is an Evil as old as the World.

These general Observations, and that Men eat, and drink, and laugh as they use to do,

have encouraged me to try if I could also comfort others, being satisfied myself, that the Interest and Affairs of *England* are in no deplorable Condition.

The Method I take to do this, is not yet very usual; for instead of using only comparative and superlative Words, and intellectual Arguments, I have taken the Course (as a Specimen of the Political Arithmetick I have long aimed at) to express myself in Terms of *Number*, *Weight*, or *Measure*; to use only Arguments of Sense, and to consider only such Causes, as have visible Foundations in Nature; leaving those that depend upon the mutable Minds, Opinions, Appetites, and Passions of particular Men, to the Consideration of others: Really professing myself as unable to speak satisfactorily upon those Grounds (if they may be called Grounds,) as to foretell the Cast of a Dye; to play well at Tennis, Billiards, or Bowls, (without long Practice,) by Virtue of the most elaborate Conceptions that ever have been written *De Projectilibus & Missilibus*, or of the Angles of Incidence and Reflection.

Now the Observations or Positions expressed by *Number*, *Weight*, and *Measure*, upon which I bottom the ensuing Discourses, are either true, or not apparently false, and which if they are not already true, certain, and evident, yet may be made so by the Sovereign Power, *Nam id certum est quod certum reddi potest*, and if they are false, not so false as to destroy the Argument

ment they are brought for ; but at worst are sufficient as Suppositions to shew the Way to that Knowledge I aim at. And I have withal for the present confined myself to the ten principal Conclusions hereafter particularly handled, which if they shall be judged material, and worthy of a better Discussion, I hope all ingenious and candid Persons will rectify the Errors, Defects, and Imperfections, which probably may be found in any of the Positions, upon which these Ratiocinations were grounded. Nor would it misbecome Authority itself, to clear the Truth of those Matters which private Endeavours cannot reach to,

C H A P.

C H A P. I.

That a small Country and few People, by its Situation, Trade, and Policy, may be equivalent in Wealth and Strength, to a far greater People and Territory: And particularly that Conveniences for Shipping and Water-Carriage, do most eminently and fundamentally conduce thereunto.

THE first principal Conclusion by Reason of its Length, I consider in three Parts; whereof the first is, That a small Country and few People, may be equivalent in Wealth and Strength to a far greater People and Territory.

This Part of the first principal Conclusion needs little Proof; forasmuch as one Acre of Land, may bear as much Corn and feed as many Cattle as Twenty, by the Difference of the Soil; some Parcel of Ground is naturally so defensible, as that an hundred Men being possessed thereof, can resist the Invasion of five Hundred; and bad Land may be improved and made good; Bog may by draining be made Meadow; Heath-land may (as in *Flanders*) be made to bear Flax and Clover-grass, so as to advance in Value from One to an Hundred; the same Land being built upon, may centuple the Rent which it yielded as Pasture; one Man is more nimble or strong, and more patient of Labour than another; one Man by Art may do

as much Work, as many without it; *viz.* one Man with a Mill can grind as much Corn, as Twenty can pound in a Mortar; one Printer can make as many Copies, as an hundred Men can write by Hand; one Horfe can carry upon Wheels, as much as Five upon their Backs; and in a Boat, or upon Ice, as Twenty: So that I say again, this first Point of this general Position, needs little or no Proof. But the second and more material Part of this Conclusion is, that this Difference in Land and People, arises principally from their Situation, Trade, and Policy.

To clear this, I shall compare *Holland* and *Zealand*, with the Kingdom of *France*, *viz.* *Holland* and *Zealand* do not contain above one Million of *English* Acres, whereas the Kingdom of *France* contains above 80.

Now the original and primitive Difference holds Proportion as Land to Land, for it is hard to say, that when these Places were first planted, whether an Acre in *France* was better than the like Quantity in *Holland* and *Zealand*; nor is there any Reason to suppose, but that therefore upon the first Plantation, the Number of Planters was in Proportion to the Quantity of Land; wherefore, if the People are not in the same Proportion as the Land, the same must be attributed to the Situation of the Land, and to the Trade and Policy of the People superstructed thereupon.

The next Thing to be shewn is, that *Holland* and *Zealand* at this Day, is not only an eightieth
Part

Part as rich and strong as *France*, but that it hath advanced to one Third or thereabouts, which I think will appear upon the Balance of the following Particulars, *viz.*

As to the Wealth of *France*, a certain Map of that Kingdom, set forth *Anno* 1647, represents it to be fifteen Millions, whereof six did belong to the Church, the Author thereof (as I suppose) meaning the Rents of the Lands only: And the Author of a most judicious Discourse of Husbandry (supposed to be Sir *Richard Weston*,) doth from Reason and Experience shew, that Lands in the Netherlands, by bearing Flax, Turneps, Clover-grass, Madder, &c. will easily yield 10 *l.* per Acre; so as the Territories of *Holland* and *Zealand*, should by his Account yield at least Ten Millions *per Annum*, yet I do not believe the same to be so much, nor *France* so little as abovesaid, but rather, that one bears to the other as about 7, or 8 to 1.

The People of *Amsterdam*, are one Third of those in *Paris* or *London*, which two Cities differ not in People a twentieth Part from each other, as hath appeared by the Bills of Burials and Christenings for each. But the Value of the Buildings in *Amsterdam*, may well be half that of *Paris*, by Reason of the Foundations, Grafts, and Bridges, which in *Amsterdam* are more numerous and chargeable than at *Paris*. Moreover the Habitations of the poorest People in *Holland* and *Zealand*, are twice or thrice as good as those of *France*; but the People of the one

one to the People of the other, being but as 13 to 1, the Value of the Housing must be as about 5 to 1.

The Value of the Shipping of *Europe*, being about two Millions of Tons, I suppose the *English* have Five Hundred Thousand, the *Dutch* Nine Hundred Thousand, the *French* an Hundred Thousand, the *Hamburgers*, and the Subjects of *Denmark*, *Sweden*, and the Town of *Dantzick* Two Hundred and Fifty Thousand, and *Spain*, *Portugal*, *Italy*, &c. Two Hundred and Fifty Thousand ; so as the Shipping in our Case of *France* to that of *Holland*, is about 1 to 9, which reckoned as great and small, new and old, one with another at 8 *l. per* Ton, makes the Worth to be as Eight Hundred Thousand Pounds, to Seven Millions and two Hundred Thousand Pounds. The *Hollanders* Capital in the *East-India* Company, is worth above Three Millions, where the *French* as yet have little or nothing.

The Value of the Goods exported out of *France* into all Parts, are supposed Quadruple to what is sent to *England* alone, and consequently in all about Five Millions, but what is exported out of *Holland* into *England* is worth 2 Millions ; and what is exported thence into all the World besides, is Sextuple to the same.

The Monies yearly raised by the King of *France*, as the same appears by the Book intituled *The State of France*, dedicated to the King, printed *Anno* 1669, and set forth several Times by Authority, is 82000000 of *French* Livres, which

which is about 6 $\frac{1}{2}$ Millions of Pounds Sterling, of which Sum the Author says, that one fifth Part was abated for Non-valeurs or Insolvencies, so (as I suppose) not above Five Millions were effectually raised: But whereas some say, that the King of *France* raised Eleven Millions as the $\frac{1}{3}$ of the Effects of *France*; I humbly affirm, that all the Land and Sea Forces, all the Buildings and Entertainments, which we have heard by common Fame, to have been set forth and made in any of these seven last Years, need not to have cost six Millions Sterling; wherefore, I suppose he hath not raised more, especially since there were one fifth Insolvencies, when the Tax was at that Pitch. But *Holland* and *Zealand*, paying 67 of the 100, paid by all the United Provinces, and the City of *Amsterdam* paying 27 of the said 67; it follows that if *Amsterdam* hath paid 4000 *l.* Flemish *per Diem*, or about 1400000 *l.* *per Annum*, or 800000 *l.* Sterling; that all *Holland* and *Zealand* have paid 2100000 *l.* *per Annum*: Now the Reasons why I think they pay so much, are these, *viz.*

1. The Author of the State of the *Netherlands* saith so.

2. Excise of Victual at *Amsterdam*, seems above half the original Value of the same, *viz.*

Ground Corn pays 20 Stivers the Bushel, or 63 Guilders the Last; Beer 113 Stivers the Barrel, Housing $\frac{1}{6}$ of the Rent, Fruit $\frac{1}{8}$ of what it cost; other Commodities $\frac{1}{7}$, $\frac{1}{8}$, $\frac{1}{9}$, $\frac{1}{12}$; Salt *ad libitum*, all weighed Goods pay besides the Premises

misses a vast Sum ; now if the Expence of the People of *Amsterdam* at a Medium, and without Excise were 8 *l. per Annum*, whereas in *England* 'tis 7 *l.*, then if all the several Imposts above named, raise it Five Pound more, there being 160000 Souls in *Amsterdam*, the Sum of 800000 Pound Sterling *per Annum* will thereby be raised.

3. Though the Expence of each Head should be 13 *l. per Annum* ; 'tis well known that there be few in *Amsterdam*, who do not earn much more than the said Expence.

4. If *Holland* and *Zealand* pay *per Annum* 2100000 *l.* then all the Provinces together, must pay about 3000000 *l.* less than which Sum *per An.* perhaps is not sufficient to have maintained the Naval War with *England*, 72000 Land Forces, besides all other the ordinary Charges of their Government, whereof the Church is there a Part: To conclude, it seems from the Premisses, that all *France* doth not raise above thrice as much from the publick Charge, as *Holland* and *Zealand* alone do.

5. Interest of Money in *France*, is 7 *l. per Cent.* but in *Holland* scarce half so much.

6. The Countries of *Holland* and *Zealand* consisting as it were of Islands guarded with the Sea, Shipping, and Marshes, is defensible at one Fourth of the Charge, that a plain open Country is, and where the Seat of War may be both Winter and Summer ; whereas in the others, little can be done but in the Summer only.

7. But

7. But above all the Particulars hitherto considered, that of Superlucration ought chiefly to be taken in ; for if a Prince have never so many Subjects, and his Country be never so good, yet if either through Sloth, or extravagant Expences, or Oppression and Injustice, whatever is gained shall be spent as fast as gotten, that State must be accounted poor ; wherefore let it be considered, how much, or how many Times rather, *Holland* and *Zealand* are now above what they were 100 Years ago, which we must also do of *France* : Now if *France* hath scarce doubled its Wealth and Power, and that the other have decupled theirs, I shall give the Preference to the latter, even although the $\frac{2}{10}$ increased by the one, should not exceed the one half gained by the other, because one has a Store for nine Years, the other but for one.

To conclude, upon the Whole it seems, that though *France* be in People to *Holland* and *Zealand* as 13 to 1, and in Quantity of good Land, as 80 to 1, yet is not 13 Times richer and stronger, much less 80 Times, nor much above thrice, which was to be proved.

Having thus dispatched the two first Branches of the first principal Conclusion, it follows, to shew that this Difference of Improvement in Wealth and Strength, arises from the Situation, Trade, and Policy of the Places respectively, and in particular from Conveniencies for Shipping and Water-Carriage.

Many writing on this Subject do so magnify the *Hollanders* as if they were more, and all other Nations less than Men (as to the Matters of Trade and Policy) making them Angels, and others Fools, Brutes, and Sots, as to those Particulars; whereas I take the Foundation of their Atchievements to lie originally in the Situation of the Country, whereby they do Things inimitable by others, and have Advantages whereof others are incapable.

First, The Soil of *Holland* and *Zealand* is low Land, rich and fertile; whereby it is able to feed many Men, and so as that Men may live near each other, for their mutual Assistance in Trade. I say that a Thousand Acres, that can feed 1000 Souls, is better than 10000 Acres of no more Effect, for the following Reasons, *viz.*

1. Suppose some great Fabrick were in building by a Thousand Men, shall not much more Time be spared if they lived all upon a Thousand Acres, than if they were forced to live upon ten Times as large a Scope of Land.

2. The Charge of the Cure of their Souls, and the Ministry would be far greater in one Case than in the other; as also of mutual Defence in Case of Invasion, and even of Thieves and Robbers: Moreover the Charge of the Administration of Justice would be much easier, where Witnesses and Parties may be easily summoned, Attendance less expensive, when Mens Actions would be better known, when Wrongs and Injuries could not be covered, as in thin peopled Places they are.

Lastly, those who live in solitary Places, must be their own Soldiers, Divines, Physicians, and Lawyers, and must have their Houses stored with necessary Provisions, (like a Ship going upon a long Voyage,) to the great Waste, and needless Expence of such Provisions; the Value of this first Convenience to the *Dutch*, I reckon or estimate to be about 100000*l.* per An.

2dly, *Holland* is a level Country, so as in any Part thereof a Windmill may be set up, and by its being moist and vaporous, there is always Wind stirring over it, by which Advantage the Labour of many Thousand Hands is saved, forasmuch as a Mill made by one Man in half a Year, will do as much Labour, as four Men for five Years together. This Advantage is greater or less, where Employment or Ease of Labour is so; but in *Holland* 'tis eminently great, and the Worth of this Conveniency is near 150000*l.*

3dly, There is much more to be gained by Manufacture than Husbandry, and by Merchandize than Manufacture; but *Holland* and *Zealand*, being seated at the Mouths of three long great Rivers, and passing through rich Countries, do keep all the Inhabitants upon the Sides of those Rivers but as Husbandmen, whilst themselves are the Manufacturers of their Commodities, and do dispense them into all Parts of the World, making Returns for the same, at what Prices almost they please themselves; and in short, they keep the Keys of Trade of those Countries, through which the said Rivers pass; the

the Value of this third Conveniency, I suppose to be 200000 *l.*

4thly, In *Holland* and *Zealand*, there is scarce any Place of Work, or Business, one Mile distant from a navigable Water, and the Charge of Water-Carriage is generally but $\frac{1}{15}$, or $\frac{1}{20}$ Part of Land-Carriage; wherefore if there be as much Trade there as in *France*, then the *Hollanders* can out-sell the *French* $\frac{14}{15}$ of all the Expence, of all Travelling, Postage, and Carriage, whatsoever, which even in *England* I take to be 300000 Pounds *per Annum*, where the very Postage of Letters costs the People perhaps 50000 *l. per Annum*, though farmed at much less, and all other Labour of Horses, and Porters, at least six Times as much: The Value of this Conveniency I estimate to be above 300000 *l. per An.*

5. The Defensibleness of the Country, by Reason of its Situation in the Sea upon Islands, and in the Marshes, impassible Ground dyked and trenched, especially considering how that Place is aimed at for its Wealth; I say the Charge of defending that Country is easier than if it were a plain Champian, at least 200000 *l. per Annum.*

6. *Holland* is so considerable for keeping Ships in Harbour with small Expence of Men, and Ground Tackle, that it saves *per An.* 200000 *l.* of what must be spent in *France*. Now if all these natural Advantages do amount to above 1 Million *per Annum* Profits, and that the Trade of all *Europe*, nay of the whole World, with

which our *Europeans* do trade, is not above 45 Millions *per Annum*, and if $\frac{1}{50}$ of the Value be $\frac{1}{7}$ of the Profit, it is plain that the *Hollander* may command and govern the whole Trade.

7. Those who have their Situation thus towards the Sea, and abound with Fish at home, and having also the Command of Shipping, have by Consequence the Fishing Trade, whereof that of Herrings alone brings more yearly Profit to the *Hollanders* than the Trade of the *West-Indies* to *Spain*, or of the *East* to themselves, as many have affirmed, being as the same say, *viis & modis*, of above 3 Millions *per An.* Profit.

8. It is not to be doubted, but those who have the Trade of Shipping and Fishing, will secure themselves of the Trade of Timber for Ships, Boats, Masts, and Casks; of Hemp for Cordage, Sails, and Nets; of Salt; of Iron; as also of Pitch, Tar, Rosin, Brimstone, Oil, and Tallow, as necessary Appurtenances to Shipping and Fishing.

9. Those who predominate in Shipping and Fishing, have more Occasions than others to frequent all Parts of the World, and to observe what is wanting or redundant every where, and what each People can do, and what they desire, and consequently to be the Factors and Carriers for the whole World of Trade. Upon which Ground they bring all native Commodities to be manufactured at home, and carry the same back, even to that Country in which they grew; all which we see.

For,

For, do they not work the Sugars of the *West-Indies*? The Timber and Iron of the *Baltick*? The Hemp of *Russia*? The Lead, Tin, and Wool of *England*? The Quicksilver and Silk of *Italy*? The Yarns, and Dying Stuffs of *Turkey*, &c. To be short, in all the ancient States, and Empires, those who had the Shipping, had the Wealth, and if 2 *per Cent.* in the Price of Commodities, be perhaps 20 *per Cent.* in the Gain; it is manifest that they who can in 45 Millions, under-sell others by one Million, (upon Account of natural and intrinick Advantages only) may easily have the Trade of the World without such angelical Wits and Judgments, as some attribute to the *Hollanders*.

Having thus done with their Situation, I come now to their Trade.

It is commonly seen, that each Country flourisheth in the Manufacture of its own native Commodities, *viz.* *England* for woollen Manufacture, *France* for Paper, *Luic-land* for Iron-Ware, *Portugal* for Confectures, *Italy* for Silks; upon which Principle it follows, that *Holland* and *Zealand* must flourish most in the Trade of Shipping, and so become Carriers and Factors of the whole World of Trade. Now the Advantages of the Shipping Trade are as followeth, *viz.*

Husbandmen, Seamen, Soldiers, Artizans, and Merchants, are the very Pillars of any Commonwealth; all the other great Professions do rise out of the Infirmities and Miscarriages of these;

these ; now the Seaman is three of these four. For every Seaman of Industry and Ingenuity, is not only a Navigator, but a Merchant, and also a Soldier ; not because he hath often Occasion to fight, and handle Arms ; but because he is familiarized with Hardship and Hazards, extending to Life and Limbs ; for Training and Drilling is a small Part of Soldiery, in respect of this last-mentioned Qualification ; the one being quickly and presently learned, the other not without many Years most painful Experience : Wherefore to have the Occasion of abounding in Seamen, is a vast Conveniency.

2. The Husbandman of *England* earns but about 4*s.* *per* Week, but the Seamen have as good as 12 *s.* in Wages, Victuals (and as it were Housing) with other Accommodations, so as a Seaman is in Effect three Husbandmen ; wherefore there is little Ploughing, and Sowing of Corn in *Holland* and *Zealand*, or breeding of young Cattle : But their Land is improved by building Houses, Ships, Engines, Dykes, Wharfs, Gardens of Pleasure, extraordinary Flowers and Fruits ; for Dairy and feeding of Cattle, for Rape, Flax, Madder, &c. The Foundations of several advantageous Manufactures.

3. Whereas the Employment of other Men is confined to their own Country, that of Seamen is free to the whole World ; so as where Trade may (as they call it) be dead here or there, now and then, it is certain that some where or other in the World, Trade is always quick enough,

nough, and Provisions are always plentiful, the Benefit whereof those who command the Shipping enjoy, and they only.

4. The great and ultimate Effect of Trade is not Wealth at large, but particularly Abundance of Silver, Gold, and Jewels, which are not perishable, nor so mutable as other Commodities, but are Wealth at all Times, and all Places : Whereas Abundance of Wine, Corn, Fowls, Flesh, &c. are Riches but *hic & nunc*, so as the raising of such Commodities, and the following of such Trade, which does store the Country with Gold, Silver, Jewels, &c. is profitable before others. But the Labour of Seamen, and Freight of Ships, is always of the Nature of an exported Commodity, the Overplus whereof, above what is imported, brings home Money, &c.

5. Those who have the Command of the Sea Trade, may work at easier Freight with more Profit, than others at greater, for as Cloth must be cheaper made, when one cards, another spins, another weaves, another draws, another dresses, another presses and packs ; than when all the Operations abovementioned, were clumsily performed by the same Hand ; so those who command the Trade of Shipping, can build long slight Ships for carrying Masts, Fir-Timber, Boards, Balks, &c. and short ones for Lead, Iron, Stones, &c. One Sort of Vessels to trade at Ports where they need never lie a-ground, others where they must jump upon the

Sand twice every 12 Hours ; one Sort of Vessels, and Way of manning in Time of Peace, and for cheap gross Goods, another for War and precious Commodities ; one Sort of Vessels for the turbulent Sea, another for Inland Waters and Rivers ; one Sort of Vessels and Rigging, where Haste is requisite for the Maidenhead of a Market, another where $\frac{1}{5}$ or $\frac{1}{4}$ Part of the Time makes no Matter. One Sort of Masting and Rigging for long Voyages, another for Coasting. One Sort of Vessels for Fishing, another for Trade. One Sort for War for this or that Country, another for Burthen only. Some for Oars, some for Poles, some for Sails, and some for Draught by Men or Horses, some for the Northern Navigations amongst Ice, and some for the South against Worms, &c. And this I take to be the chief of several Reasons, why the *Hollanders* can go at less Freight than their Neighbours, *viz.* because they can afford a particular Sort of Vessels for each particular Trade.

I have shewn how Situation hath given them Shipping, and how Shipping hath given them in Effect all other Trade, and how foreign Traffick must give them as much Manufacture as they can manage themselves, and as for the Overplus make the rest of the World but as Workmen to their Shops. It now remains to shew the Effects of their Policy, superstructed upon these natural Advantages, and not as some think upon the Excess of their Understandings.

I have

I have omitted to mention that the *Hollanders* were one hundred Years since, a poor and oppressed People, living in a Country naturally cold, moist, and unpleasant; and were withal persecuted for their Heterodoxy in Religion.

From hence it necessarily follows, that this People must labour hard, and set all Hands to work: Rich and Poor, Young and Old, must study the Art of Number, Weight, and Measure; must fare hard, provide for Impotents, and for Orphans, out of Hope to make Profit by their Labours; must punish the Lazy by Labour, and not by crippling them: I say, all these Particulars, said to be the subtile Excogitations of the *Hollanders*, seem to me but what could not almost have been otherwise.

Liberty of Conscience, Registry of Conveyances, small Customs, Banks, Lumbards, and Law Merchant, rise all from the same Spring, and tend to the same Sea; as for Lowness of Interest, it is also a necessary Effect of all the Premises, and not the Fruit of their Contrivance.

Wherefore we shall only shew in particular the Efficacy of each, and first of Liberty of Conscience; but before I enter upon these, I shall mention a Practice almost forgotten (whether it referreth to Trade or Policy is not material,) which is, the *Hollanders* under-masting and sailing such of their Shipping, as carry cheap and gross Goods, and whose Sale doth not depend much upon Season.

It

It is to be noted, that of two equal and like Vessels, if one spreads 1600 Yards of like Canvase, and the other 2500, their Speed is but as four to five, so as one brings home the same Timber in four Days, as the other will in five. Now if we consider that although those Ships be but four or five Days under Sail, that they are perhaps thirty upon the Voyage; so as the one is but $\frac{1}{30}$ Part longer upon the whole Voyage than the other, though $\frac{1}{5}$ longer under Sail. Now if Masts, Yards, Rigging, Cables, and Anchors, do all depend upon the Quantity and Extent of the Sails, and consequently Hands also; it follows that the one Vessel goes at one third less Charge, losing but one thirtieth of the Time, and of what depends thereupon.

I now come to the first Policy of the *Dutch*, viz. Liberty of Conscience; which I conceive they grant upon these Grounds, (But keeping up always a Force to maintain the Common Peace,) 1. They themselves broke with *Spain*, to avoid the Imposition of the Clergy. 2. Dissenters of this Kind, are for the most Part, thinking, sober, and patient Men. and such as believe that Labour and Industry is their Duty towards God. (How erroneous soever their Opinions be.) 3. These People believing the Justice of God, and seeing the most licentious Persons to enjoy most of the World, and its best Things, will never venture to be of the same Religion and Profession with Voluptuaries, and Men of extreme Wealth and Power, who they think have their Portion in this World.

4. They

4. They cannot but know, that no Man can believe what himself pleases, and to force Men to say they believe what they do not, is vain, absurd, and without Honour to God.

5. The *Hollanders* knowing themselves not to be an infallible Church, and that others had the same Scripture for Guides as themselves, and withal the same Interest to save their Souls, did not think fit to make this Matter their Business; not more than to take Bonds of the Seamen they employ, not to cast away their own Ships and Lives.

6. The *Hollanders* observe that in *France* and *Spain*, (especially the latter) the Churchmen are about one hundred to one, to what they use or need; the principal Care of whom is to preserve Uniformity, and this they take to be a superfluous Charge.

7. They observe where most Endeavours have been used to keep Uniformity, there Heterodoxy hath most abounded.

8. They believe that if $\frac{1}{4}$ of the People were heterodox, and that if that whole Quarter should by Miracle be removed, that within a small Time one Quarter of the Remainder would again become heterodox some Way or other, it being natural for Men to differ in Opinion in Matters above Sense and Reason; and for those who have less Wealth, to think they have the more Wit and Understanding, especially of the Things of God, which they think chiefly belong to the Poor.

9. They

9. They think the Case of the primitive Christians, as it is represented in the *Acts of the Apostles*, looks like that of the present Dissenters, (I mean externally.) Moreover it is to be observed that Trade doth not (as some think) best flourish under popular Governments, but rather that Trade is most vigorously carried on, in every State and Government, by the heterodox Part of the same, and such as profess Opinions different from what are publickly established: (that is to say) in *India* where the *Mahometan* Religion is authorized, there the *Banians* are the most considerable Merchants. In the *Turkish* Empire the *Jews* and Christians. At *Venice*, *Naples*, *Leghorn*, *Genoa*, and *Lisbon*, *Jews*, and Non-Papist Merchant-Strangers: But to be short, in that Part of *Europe*, where the Roman Catholick Religion now hath, or lately hath had Establishment, there three Quarters of the whole Trade is in the Hands of such as have separated from that Church (that is to say) the Inhabitants of *England*, *Scotland*, and *Ireland*, as also those of the *United Provinces*, with *Denmark*, *Sweden*, and *Norway*, together with the Subjects of the *German* Protestant Princes, and the *Hans* Towns, do at this Day possess three Quarters of the Trade of the World; and even in *France* itself, the *Hugonots* are proportionably far the greatest Traders; nor is it to be denied but that in *Ireland*, where the said *Roman* Religion is not authorized, there the Professors thereof have a great Part of the Trade.

From

From whence it follows that Trade is not fixt to any Species of Religion as such; but rather as before hath been said to the heterodox Part of the whole, the Truth whereof appears also in all the particular Towns of greatest Trade in *England*; nor do I find Reason to believe, that the *Roman* Catholick Seamen in the whole World, are sufficient to man effectually a Fleet equal to what the King of *England* now hath; but the Non-papist Seamen can do above thrice as much. Wherefore he whom this latter Party doth affectionately own to be their Head, cannot probably be wronged in his Sea-concernments by the other; from whence it follows, that for the Advancement of Trade, (if that be a sufficient Reason) Indulgence must be granted in Matters of Opinion; though licentious Actings as even in *Holland*, be restrained by Force.

The second Policy or Help to Trade used by the *Hollanders*, is securing the Titles to Lands and Houses; for although Lands and Houses may be called *Terra firma* & *res immobilis*, yet the Title unto them is no more certain than it pleases the Lawyers and Authority to make them; wherefore the *Hollanders* do by Registries, and other Ways of Assurance, make the Title as immoveable as the Lands, for there can be no Encouragement to Industry, where there is no Assurance of what shall be gotten by it; and where by Fraud and Corruption, one Man may take away with Ease and by a Trick,
and

and in a Moment what another has gotten by many Years extreme Labour and Pains.

There hath been much Discourse about introducing of Registries into *England*; the Lawyers for the most Part object against it, alledging that Titles of Land in *England* are sufficiently secure already; wherefore omitting the Considerations of small and oblique Reasons *pro & contra*, it were good that Enquiry were made from the Officers of several Courts, to what Sum or Value Purchasers have been damnified for this last ten Years, by such fraudulent Conveyances as Registries would have prevented; the tenth Part whereof at a Medium, is the annual Loss which the People sustain for Want of them, and then Computation is to be made of the annual Charge of registering such extraordinary Conveyances, as would secure the Title of Lands; now by comparing these two Sums, the Question so much agitated may be determined; though some think that though few are actually damnified, yet that all are hindered by Fear and deterred from dealing.

Their third Policy is their Bank, the Use whereof is to encrease Money, or rather to make a small Sum equivalent in Trade to a greater, for the effecting whereof these Things are to be considered, 1. How much Money will drive the Trade of the Nation. 2. How much current Money there is actually in the Nation. 3. How much Money will serve to make all Payments of under 50*l.* or any other more convenient Sum through-

throughout the Year. 4. For what Sum the Keepers of the Bank are unquestionable Security : If all these four Particulars be well known, then it may also be known, how much of the ready Money above-mentioned may safely and profitably be lodged in the Bank, and to how much ready current Money the said deposited Money is equivalent. As for Example, suppose a Hundred Thousand Pounds will drive the Trade of the Nation, and suppose there be but sixty Thousand Pounds of ready Money in the same ; suppose also that Twenty Thous. Pounds will drive on and answer all Payments made of under 50 *l.* In this Case Forty of the Sixty being put into the Bank, will be equivalent to Eighty, which Eighty and Twenty kept out of the Bank do make up an Hundred, (that is to say) enough to drive the Trade as was proposed: Where note that the Bank-keepers must be responsible for double the Sum intrusted with them, and must have Power to levy upon the general, what they happen to lose unto particular Men.

Upon which Grounds the Bank may freely make use of the received Forty Thousand Pounds, whereby the said Sum, with the like Sum in Credit, makes Eighty Thousand Pounds, and with the Twenty reserved an Hundred.

I might here add many more Particulars, but being the same as have already been noted by others, I shall conclude only with adding one Observation which I take to be of Consequence,
viz.

viz. That the *Hollanders* do rid their Hands of two Trades, which are of greatest Turmoil and Danger, and yet of least Profit ; the first whereof is that of a common and private Soldier, for such they can hire from *England, Scotland,* and *Germany,* to venture their Lives for Sixpence a Day, whilst themselves safely and quietly follow such Trades, whereby the meanest of them gain six Times as much, and withal by this Entertaining of Strangers for Soldiers, their Country becomes more and more peopled, forasmuch as the Children of such Strangers are *Hollanders,* and take to Trades, whilst new Strangers are admitted *ad infinitum* ; besides these Soldiers at convenient Intervals, do at least as much Work as is equivalent to what they spend, and consequently by this Way of employing of Strangers for Soldiers, they people the Country, and save their own Persons from Danger and Misery, without any real Expence, effecting by this Method, what others have in vain attempted by Laws for naturalizing of Strangers, as if Men could be charmed to transplant themselves from their own native into a foreign Country, merely by Words, and for the bare Leave of being called by a new Name. In *Ireland* Laws of Naturalization have had little Effect, to bring in Aliens, and 'tis no Wonder, since *Englishmen* will not go thither, without they may have the Pay of Soldiers, or some other Advantage amounting to Maintenance.

Having

Having intimated the Way by which the *Hollanders* do increase their People, I shall here digress to set down the Way of computing the Value of every Head one with another, and that by the Instance of People in *England*, viz. Suppose the People of *England* be Six Millions in Number, that their Expence at 7 *l.* per Head be Forty-two Millions: Suppose also that the Rent of the Lands be Eight Millions, and the yearly Profit of all the Personal Estate be Eight Millions more; it must needs follow, that the Labour of the People must have supplied the remaining Twenty-six Millions, the which multiplied by Twenty (the Mass of Mankind being worth twenty Years Purchase as well as Land) makes Five hundred and twenty Millions, as the Value of the whole People; which Number divided by six Millions, makes above 80 *l.* Sterling to be the Value of each Head of Man, Woman, and Child, and of adult Persons twice as much; from whence we may learn to compute the Loss we have sustained by the Plague, by the Slaughter of Men in War, and by the sending them abroad into the Service of foreign Princes. The other Trade of which the *Hollanders* have rid their Hands, is the old patriarchal Trade of being Cow-keepers, and in a great Measure of that which concerns Ploughing and Sowing of Corn, having put that Employment upon the *Danes* and *Polanders*, from whom they have their young Cattle and Corn. Now here we may take Notice, that as Trades

and curious Arts increase, so the Trade of Husbandry will decrease, or else the Wages of Husbandmen must rise, and consequently the Rents of Lands must fall.

For Proof whereof I dare affirm, that if all the Husbandmen of *England*, who now earn but 8 *d.* a Day, or thereabouts, could become Tradesmen and earn 16 *d.* a Day (which is no great Wages, 2 *s.* and 2 *s.* 6 *d.* being usually given) that then it would be the Advantage of *England* to throw up their Husbandry, and to make no Use of their Lands, but for Grass Horses, Milch Cows, Gardens, and Orchards, &c. which if it be so, and if Trade and Manufacture have increased in *England* (that is to say) if a greater Part of the People apply themselves to those Faculties than there did heretofore, and if the Price of Corn be no greater now, than when Husbandmen were more numerous, and Tradesmen fewer; it follows from that single Reason (though others may be added) that the Rents of Land must fall: As for Example, suppose the Price of Wheat be 5 *s.* or 60 *d.* the Bushel; now if the Rent of the Land whereon it grows be the third Sheaf, then of the 60 *d.* 20 *d.* is for the Land, and 40 *d.* for the Husbandman; but if the Husbandman's Wages should rise one eighth Part, or from 8 *d.* to 9 *d.* *per Diem*, then the Husbandman's Share in the Bushel of Wheat rises from 40 *d.* to 45 *d.* And consequently the Rent of the Land must fall from 20 *d.* to 15 *d.* for we suppose the Price of
the

the Wheat still remains the same: Especially since we cannot raise it, for if we did attempt it, Corn would be brought in to us, (as into *Holland*) from foreign Parts, where the State of Husbandry was not changed.

And thus I have done with the first principal Conclusion, that *A small Territory, and even a few People, may by Situation, Trade, and Policy, be made equivalent to a greater; and that Convenience for Shipping, and Water-carriage, do most eminently and fundamentally conduce thereunto.*

C H A P. II.

That some Kind of Taxes and Publick Levies, may rather increase than diminish the Wealth of the Kingdom.

IF the Money or other Effects, levied from the People by Way of *Tax*, were destroyed and annihilated; then 'tis clear, that such Levies would diminish the Commonwealth: Or if the same were exported out of the Kingdom without any Return at all, then the Case would be also the same or worse: But if what is levied as aforesaid, be only transferred from one Hand to another, then we are only to consider whether the said Money or Commodities, are taken from an improving Hand, and given to an ill Husband, or *vice versa*: As for Example, suppose that Money by Way of *Tax*, be taken from one who spendeth the same in superfluous eating and drinking; and delivered to another

who employeth the same in improving of Land, in Fishing, in working of Mines, in Manufacture, &c. It is manifest, that such Tax is an Advantage to the State whereof the said different Persons are Members: Nay, if Money be taken from him, who spendeth the same as aforesaid upon eating and drinking, or any other perishing Commodity; and the same transferr'd to one that bestoweth it on Cloaths; I say, that even in this Case, the Commonwealth hath some little Advantage; because Cloaths do not altogether perish so soon as Meats and Drinks: But if the same be spent in Furniture of Houses, the Advantage is yet a little more; if in building of Houses, yet more; if in improving of Lands, working of Mines, Fishing, &c. yet more; but most of all, in bringing Gold and Silver into the Country; because those Things are not only not perishable, but are esteemed for Wealth at all Times, and every where: Whereas other Commodities which are perishable, or whose Value depends upon the Fashion, or which are contingently scarce and plentiful, are Wealth but *pro hic & nunc*, as shall be elsewhere said.

In the next Place if the People of any Country, who have not already a full Employment, should be enjoined or taxed to work upon such Commodities as are imported from abroad; I say that such a Tax also doth improve the Commonwealth.

Moreover,

Moreover, if Persons who live by begging, cheating, stealing, gaming, borrowing without Intention of restoring; who by those Ways do get from the credulous and careles, more than is sufficient for the Subsistence of such Persons; I say, that although the State should have no present Employment for such Persons, and consequently should be forced to bear the whole Charge of their Livelihood; yet it were more for the publick Profit to give all such Persons a regular and competent Allowance by publick Tax, than to suffer them to spend extravagantly, at the only Charge of credulous, careles, and good-natured People; and to expose the Commonwealth to the Loss of so many able Men, whose Lives are taken away for the Crimes which ill Discipline doth occasion.

On the contrary, if the Stocks of laborious and ingenious Men, who are not only beautifying the Country where they live, by elegant Dyet, Apparel, Furniture, Housing, pleasant Gardens, Orchards, and publick Edifices, &c. but are also increasing the Gold, Silver, and Jewels of the Country by Trade and Arms; I say, if the Stock of these Men should be diminished by a Tax, and transferred to such as do nothing at all but eat and drink, sing, play, and dance; nay to such as study the Metaphysics, or other needless Speculation; or else employ themselves in any other Way, which produces no material Thing, or Things of real Use and Value in the Commonwealth: In this Case,

the Wealth of the Publick will be diminished, otherwise than as such Exercises are Recreations and Refreshments of the Mind ; and which being moderately used, do qualify and dispose Men to what in itself is more considerable.

Wherefore upon the whole Matter, to know whether a Tax will do Good or Harm, the State of the People, and their Employments, must be well known ; (that is to say) what Part of the People are unfit for Labour by their Infancy or Impotency ; and also what Part are exempt from the same, by Reason of their Wealth, Function, or Dignities ; or by Reason of their Charge and Employments ; otherwise than in governing, directing, and preserving those who are appointed to Labour and Arts.

2. In the next Place Computation must be made, what Part of those who are fit for Labour and Arts as aforesaid, are able to perform the Work of the Nation in its present State and Measure,

3. It is to be considered, whether the Remainder can make all or any Part of those Commodities which are imported from abroad ; which of them, and how much in particular : The Remainder of which Sort of People (if any be) may safely and without possible Prejudice to the Commonwealth, be employed in Arts and Exercises of Pleasure and Ornament ; the greatest whereof is the Improvement of natural Knowledge.

Having

Having thus in general illustrated this Point, which I think needs no other Proof but Illustration, I come next to intimate that no Part of *Europe* hath paid so much by Way of Tax, and publick Contribution, as *Holland* and *Zealand* for this last 100 Years; and yet no Country hath in the same Time increased their Wealth comparably to them: And it is manifest they have followed the general Considerations above-mentioned; for they tax Meats and Drinks most heavily of all, to restrain the excessive Expence of those Things, which 24 Hours doth (as to the Use of Man,) wholly annihilate, and they are more favourable to Commodities of greater Duration.

Nor do they tax according to what Men gain, but in extraordinary Cases, but always according to what Men spend: And most of all, according to what they spend needlessly, and without Prospect of Return. Upon which Grounds, their Customs upon Goods imported and exported are generally low; as if they intended by them, only to keep an Account of their foreign Trade, and to retaliate upon their Neighbour States the Prejudices done them by their Prohibitions and Impositions.

It is further to be observed, that since the Year 1636, the Taxes and publick Levies made in *England*, *Scotland*, and *Ireland*, have been prodigiously greater than at any Time heretofore; and yet the said Kingdoms have increased in their Wealth and Strength, for these last Forty Years, as shall hereafter be shewn.

It is said that the King of *France*, at present, doth levy the fifth Part of his People's Wealth; and yet great Ostentation is made of the present Riches and Strength of that Kingdom. Now great Care must had in distinguishing between the Wealth of the People, and that of an absolute Monarch, who taketh from the People, where, when, and in what Proportion he pleaseth. Moreover, the Subjects of two Monarchs may be equally rich, and yet one Monarch may be double as rich as the other; *viz.* If one take the tenth Part of the People's Substance to his own Dispose, and the other but the twentieth; nay the Monarch of a poorer People may appear more splendid and glorious than that of a richer, which perhaps may be somewhat the Case of *France*, as hereafter shall be examined. As an Instance and Application of what hath been said, I conceive that in *Ireland* wherein are about 1200 Thousand People, and near 300 Thousand Smokes or Hearths, it were more tolerable for the People, and more profitable for the King, that each Head paid 2 s. worth of Flax, than that each Smoke should pay 2 s. in Silver; and that for the following Reasons.

1. *Ireland* being under-peopled, and Land and Cattle being very cheap, there being every where Store of Fish and Fowl; the Ground yielding excellent Roots (and particularly that bread-like Root Potatoes) and withal they being able to perform their Husbandry, with such Harness and

and Tackling as each Man can make with his own Hands, and living in such Houses as almost every Man can build; and every House-wife being a Spinner and Dyer of Wool and Yarn, they can live and subsist after their present Fashion, without the Use of Gold or Silver Money; and can supply themselves with the Necessaries above-named, without labouring 2 Hours *per Diem*: Now it hath been found, that by Reason of Insolvencies arising rather from the Usefulness than Want of Money among these poor People, that from 300 Thousand Hearths, which should have yielded 30 Thousand Pound *per Annum*, not 15 Thousand Pound of Money could be levied: Whereas it is easily imagined, that four or five People dwelling in that Cottage which hath but one Smoke, could easily have planted a Ground-plot of about 40 Foot square with Flax, or the 50 Part of an Acre, for so much Ground will bear eight or ten Shillings worth of that Commodity; and the Rent of so much Ground in few Places amounts to a Penny *per Annum*. Nor is there any Skill requisite to this Practice, wherewith the Country is not already familiar. Now as for a Market for the Flax, there is imported into *Holland* itself, over and above what that Country produces, as much Flax as is there sold for between Eightscore and Two Hundred Thousand Pound; and into *England* and *Ireland* is imported as much Linnen Cloth made of Flax, and there spent, as is worth above; a
 Million

Million of Money. As shall hereafter be shewn.

Wherefore having shewn, that Silver Money is useles to the poor People of *Ireland*; that half the Hearth Money could not be raised by Reason thereof; that the People are not a fifth Part employed; that the People and Land of *Ireland* are competently qualified for Flax; that one Penny-worth of Land will produce ten Shillings worth of the same; and that there is Market enough and enough for above 100000 Pounds worth; I conceive my Proposition sufficiently proved; at least to set forwards and promote a Practice which both the present Law and Interest of the Country doth require: Especially, since if all the Flax so produced should yield nothing, yet there is nothing lost; the same Time having been worse spent before. Upon the same Grounds, the like Tax of 2 s. per Head, may be raised with the like Advantage upon the People of *England*, which will amount to Six Hundred Thousand Pound *per Annum*; to be paid in Flax, manufactured into all the Sorts of Linnens, Threads, Tapes, and Laces; which we now receive from *France, Flanders, Holland, and Germany*; the Value whereof doth far exceed the Sum last-mentioned, as hath appeared by the Examination of Particulars.

It is observed by Clothiers, and others, who employ great Numbers of poor People, that when Corn is extremely plentiful, that the Labour of the Poor is proportionably dear, and scarce

scarce to be had at all (so licentious are they who labour only to eat, or rather to drink.) Wherefore when so many Acres sown with Corn, as do usually produce a sufficient Store for the Nation, shall produce perhaps double to what is expected or necessary; it seems not unreasonable that this common Blessing of God should be applied to the common Good of all People, represented by their Sovereign; much rather than the same should be abused by the vile and brutish Part of Mankind, to the Prejudice of the Commonwealth: And consequently, that such Surplusage of Corn should be sent to publick Store-houses; from thence to be disposed of, to the best Advantage of the Publick.

Now if the Corn spent in *England*, at five Shillings *per* Bushel Wheat, and two Shillings Sixpence Barley, be worth ten Millions *communibus annis*; it follows that in Years of great Plenty, when the said Grains are one third Part cheaper, that a vast Advantage might accrue to the Commonwealth, which now is spent in over-feeding of the People, in Quantity or Quality; and so indisposing them to their usual Labour.

The like may be said of Sugar, Tobacco, and Pepper, which Custom hath now made necessary to all Sorts of People; and which the over-planting of them hath made unreasonably cheap: I say it is not absurd that the Publick should be advantaged by this extraordinary Plenty.

That

That an Excise should be laid on Currants also, is not unreasonable; not only for this but for other Reasons also.

The Way of the present Militia or Trained Bands is a gentle Tax upon the Country; because it is only a few Days Labour in the Year, of a few Men in respect of the Whole; using their own Goods, that is their own Arms. Now if there be three Millions of Males in *England*, there must be above 200 Thousand of them who are between the Age of 16 and 30, unmarried Persons, and who live by their Labour and Service; for of so many, or thereabouts, the present Militia consists.

Now if an hundred and fifty Thousand of these were armed and trained as Foot, and fifty Thousand as Horse, (Horse being of special Advantage in Islands) the said Forces at Land, with thirty Thousand Men at Sea, would, by God's ordinary Blessing, defend this Nation, being an Island, against any Force in View: But the Charge of arming, disciplining, and rendezvousing all these Men twice or thrice a Year, would be a very gentle Tax, levied by the People themselves, and paid to themselves. Moreover if out of the said Number; Part were selected of such as are more than ordinarily fit and disposed for War, and to be exercised and rendezvoused fourteen or fifteen Times *per Annum*; the Charge thereof being but a Fortnight's Pay in the Year, would be also a very gentle Tax.

Lastly,

Lastly, if out of this last-mentioned Number, ¹/₃ again should be selected, making about sixteen thousand Foot, and near six thousand Horse to be exercised and rendezvoused forty Days in the Year; I say that the Charge of all these three Militias, allowing the latter six Weeks Pay *per Annum* would not cost above one hundred and twenty thousand Pound *per Annum*; which I take to be an easy Burthen for so great a Benefit.

Forasmuch as the present Navy of *England* requires thirty-six thousand Men to man it; and for that the *English* Trade of Shipping requires about forty-eight thousand Men to manage it also; it follows, that to perform both well, there ought to be about seventy-two thousand Men, (and not eighty-four thousand) competently qualified for these Services: For Want whereof we see, that it is a long while before a Royal Navy can be manned; which till it be, is of no effectual Use, but lies at Charge. And we see likewise upon these Occasions, that Merchants are put to great Straights and Inconveniencies; and do pay excessive Rates for the carrying on their Trade. Now if twenty-four thousand able-bodied Tradesmen, were by six thousand of them *per Annum*, brought up and fitted for Sea-Service; and for their Encouragement allowed 20 s. *per Annum* for every Year they had been at Sea, even when they stay at home, not exceeding 6 l. for those who have served six Years or upward; it follows, that a-
bout

bout 72000*l.* at the Medium of 3 *l.* per Man, would pay the whole Number of twenty-four Thousand; and so, forasmuch as half the Seamen which manage the Merchants Trade, are supposed to be always in Harbour, and are about twenty-four thousand Men, with the said half together of the Auxiliaries last-mentioned, would upon all Emergencies man out the whole Royal Navy with thirty-six Thousand, and leaving to the Merchants twelve Thousand of the abler Auxiliaries, to perform their Business in Harbour, till others come home from Sea; and thus thirty-six Thousand, twenty-four Thousand, and twelve Thousand, make the seventy-two Thousand abovementioned: I say that more than this Sum of 72000*l.* is fruitlessly spent, and over-paid by the Merchants, whensoever a great Fleet is to be fitted out. Now these whom I call Auxiliary Seamen, are such as have another Trade besides, wherewith to maintain themselves, when they are not employed at Sea; and the Charge of maintaining them, though 72000*l.* per Annum, I take to be little or nothing, for the Reasons above-mentioned, and consequently an easy Tax to the People, because levied by, and paid to themselves.

As we propounded that *Ireland* should be taxed with Flax, and *England* by Linnen, and other Manufacture of the same, I conceive that *Scotland* also might be taxed as much, to be paid in Herrings, as *Ireland* in Flax: Now the
three

three Taxes (*viz.*) of Flax, Linnen, and Herrings, and the Maintenance of the triple Militia, and of the auxiliary Seamen above-mentioned, do all five of them together, amount to one Million of Money, the raising whereof is not a Million spent, but Gain unto the Commonwealth, unless it can be made appear, that by Reason of all, or any of them, the Exportation of Woollen Manufactures, Lead, and Tin, are lessened; or of such Commodities as our own *East* and *West India* Trade do produce, forasmuch as I conceive, that the Exportation of these last-mentioned Commodities is the Touch-stone whereby the Wealth of *England* is tried, and the Pulse whereby the Health of the Kingdom may be discerned.

C H A P. III.

That France cannot, by Reason of natural and perpetual Impediments, be more powerful at Sea, than the English, or Hollanders, now are, or may be.

POWER at Sea consists chiefly of *Men able to fight at Sea*, and that in such Shipping as is most proper for the Seas wherein they serve; and those are, in these Northern Seas, Ships from between three Hundred to one Thousand three hundred Tons; and of those such as draw much Water, and have a deep Latch in the Sea, in order to keep a good Wind, and not to fall to Leeward, a matter of vast Advantage.

vantage in Sea Service: Wherefore it is to be examined, 1. Whether the King of *France* hath Ports in the Northern Seas (where he hath most Occasion for his Fleets of War, in any Contests with *England*) able to receive the Vessels above-mentioned, in all Weathers, both in Winter and Summer Season. For if the King of *France* should bring to Sea an equal Number of fighting Men with the *English* and *Hollanders*, in small floaty Leeward Vessels, he would certainly be of the weaker Side. For a Vessel of one thousand Tons manned with five hundred Men, fighting with five Vessels of two hundred Tons, each manned with one hundred Men a piece, shall in common Reason have the better offensively and defensively; forasmuch as the great Ship can carry such Ordnance, as can reach the small ones at a far greater Distance than those can reach, or at least hurt the other; and can batter, and sink at a Distance, when small ones can scarce pierce.

Moreover it is more difficult for Men out of a small Vessel to enter a tall Ship, than for Men from a higher Place to leap down into a lower; nor is small Shot so effectual upon a tall Ship, as *vice versa*.

And as for Vessels drawing much Water, and consequently keeping a good Wind, they can take or leave leeward Vessels at Pleasure, and secure themselves from being boarded by them: Moreover the windward Ship has a fairer Mark at a leeward Ship, than *vice versa*; and can
place

place her Shot upon such Parts of the leeward Vessel, as upon the next Tack will be under Water.

Now then the King of *France* having no Ports able to receive large windward Vessels, between *Dunkirk* and *Ussant*, what other Ships he can bring into those Seas, will not be considerable. As for the wide Ocean, which his Harbours of *Brest* and *Charente* do look into, it affordeth him no Advantage upon an Enemy; there being so great a Latitude of engaging or not, even when the Parties are in Sight of each other.

Wherefore, although the King of *France* were immensely rich, and could build what Ships he pleased, both for Number and Quality; yet if he have not Ports to receive and shelter that Sort and Size of Shipping, which is fit for his Purpose; the said Riches will in this Case be fruitless, and a mere Expence without any Return or Profit. Some will say that other Nations cannot build so good Ships as the *English*; I indeed hope they cannot; but because it seems too possible that they may sooner or later, by Practice and Experience, I shall not make use of that Argument, having bound myself to shew, that the Impediments of *France*, (as to this Purpose) are natural and perpetual. Ships and Guns do not fight of themselves, but Men who act and manage them; wherefore it is more material to shew, that the King of *France* neither hath, nor can have Men sufficient to

man a Fleet of equal Strength to that of the King of *England*, (*viz.*)

The King of *England's* Navy, consists of about 70 thousand Tons of Shipping, which requires 36 thousand Men to man it; these Men being supposed to be divided into eight Parts, I conceive that one eighth Part must be Persons of great Experience and Reputation in Sea-Service: another eighth Part must be such as have used the Sea seven Years and upwards; half of them, or $\frac{3}{8}$ Parts more must be such as have used the Sea above a Twelvemonth, *viz.* two, three, four, five, or six Years, allowing but one Quarter of the whole Complements to be such as never were at Sea at all, or at most but one Voyage, or upon one Expedition; so that at a Medium I reckon, that the whole Fleet must be Men of three or four Years Growth, one with another. *Fournier*, a late judicious Writer, making it his Business to persuade the World, how considerable the King of *France* was, or might be, at Sea, in the 92^d and 93^d. Pages of his *Hydrography*, saith, That there was one Place in *Britany*, which had furnished the King with 1400 Seamen, and that perhaps the whole Sea-Coast of *France* might have furnished him with 15 Times as many: Now supposing his whole Allegation were true, yet the said Number amounts but to 21000; all which, if the whole Trade of Shipping in *France* were quite and clean abandoned, would not, by above $\frac{1}{3}$, man out a Fleet equivalent to that of the King of
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England: And if the Trade were but barely kept alive, there would not be $\frac{1}{3}$ Part Men enough to man the said Fleet.

But if the Shipping Trade of *France* be not above $\frac{1}{4}$ as great as that of *England*, and that $\frac{1}{3}$ Part of the same, namely the Fishing Trade to the Banks of *Newfoundland*, is not peculiar, nor fixt to the *French*; then I say that if the King of *England* (having Power to press Men) cannot under two or three Months Time man his Fleet, then the King of *France*, with less than $\frac{1}{4}$ of the same Help, can never do it at all; for in *France* (as shall elsewhere be shewn) there are not above 150000 Ton of trading Vessels, and consequently not above 15000 Seamen, reckoning a Man to every ten Ton. As it has been shewn that the King of *France* cannot at present man such a Fleet as is above described, we come next to shew that he never can, being under natural and perpetual Impediments, *viz.*

1. If there be but 15000 Seamen in all *France*, to manage its Trade, it is not to be supposed, that the said Trade should be extinguished, nor that it should spare above 5 of the said 15000 towards manning the Fleet which requires 35 Thousand.

Now the deficient 30000 must be supplied one of these four Ways; either, first, by taking in Landmen, of which Sort there must not be above 10000, since the Seamen will never be contented without being the major Part, nor do they heartily wish well to Landmen at all, or

rejoice even at those Successes of which the Landmen can claim any Share; thinking it hard that themselves, who are bred to miserable, painful, and dangerous Employments, (and yet profitable to the Commonwealth) should, at a Time when Booty and Purchase is to be gotten, be clogged or hindered by any Conjunction with Landmen, or forced to admit those to an equal Share with themselves. 2. The Seamen, which we suppose 20000, must be had, that is hired, from other Nations, which cannot be without tempting them with so much Wages, as exceeds what is given by Merchants, and withal to counterpoise the Danger of being hanged by their own Prince, and allowed no Quarter if they are taken; the Trouble of conveying themselves away, when Restraints and Prohibitions are upon them; and also the Infamy of having been Apostates to their own Country and Cause: I say their Wages must be more than double to what their own Prince gives them, and their Assurance must be very great, that they shall not be at long Run abused or slighted by those who employed them; (as hating the Traitor although they love the Treason.) I say moreover, that those who will be thus tempted away, must be of the basest and lewdest Sort of Seamen, and such as have not enough of Honour and Conscience to qualify them for any Trust, or gallant Performance. 3. Another Way to increase Seamen, is to put great Numbers of Landmen upon Ships of War, in order to their
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being Seamen ; but this Course cannot be effectual, not only for the above-mentioned Antipathy between Landmen and Seamen, but also because it is seen that Men at Sea do not apply themselves to Labour and Practice, without more Necessity than happens in over-manned Shipping. For where there are 50 Men in a Vessel, that 10 can sufficiently navigate, the supernumerary 40 will improve little: But where there shall be of 10 but 1 or 2 Supernumeraries, there Necessity will often call upon every Man to set his Hand to the Work, which must be well done at the Peril of their own Lives. Moreover Seamen shifting Vessels almost every 6 or 12 Months, do sometimes sail in small Barks, sometimes in midling Ships, and sometimes in great Vessels of Defence ; sometimes in Lighters, sometimes in Hoighs, sometimes in Ketches, sometimes in three masted Ships, sometimes they go to the Southward, sometimes to the Northward, sometimes the Coast, sometimes they coast the Ocean ; by all which Variety of Service, they do in Time compleat themselves in every Part and Circumstance of their Faculty: Whereas those who go out for a Summer, in a Man of War, have not that Variety of Practice, nor a direct Necessity of doing any Thing at all.

Besides it is 3 or 4 Years at a Medium, wherein a Seaman can be made ; neither can there be less than three Seamen to make a fourth of a Landman : Consequently the 15000 Seamen of *France* can increase but 5000 Seamen

3 or 4 Years, and unless their Trade should increase with their Seamen in Proportion, the King must be forced to bear the Charge of this Improvement out of the publick Stock, which is intolerable. So as the Question which now remains is, whether the Shipping Trade of *France* is like to increase? Upon which Account it is to be considered, 1. That *France* is sufficiently stored with all Kind of Necessaries within itself; as with Corn, Cattle, Wine, Salt, Linnen Cloth, Paper, Silk, Fruits, &c. So as they need little Shipping to import more Commodities of Weight or Bulk; neither is there any Thing of Bulk exported out of *France*, but Wines and Salt; the Weight whereof is under 100,000 Tun *per Annum*, yielding not Employment to above 25000 Ton of Shipping, and these are for the most Part *Dutch* and *English*, who are not only already in Possession of the said Trade, but also are better fitted to maintain it than the *French* are, or perhaps ever can be: And that for the following Reasons. (*viz.*) 1. Because the *French* cannot victual so cheap as the *English* and *Dutch*, nor sail with so few Hands. 2. The *French* for Want of good Coasts and Harbours, cannot keep their Ships in Port, under double the Charge that the *English* and *Hollanders* can. 3. By Reason of Paucity, and Distance of their Ports, one from another, their Seamen and Tradesmen relating to Shipping, cannot correspond with, and assist, one another so easily, cheaply, and advantageously, as in o-
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ther Places. Wherefore if their Shipping Trade is not likely to increase within themselves, and much less to increase by their beating out the *English* and *Hollanders* from being the Carriers of the World; it follows that their Seamen will not be increased by the Increase of their said Trade: Wherefore, and for that they are not like to be increased by any of the several Ways above-specified, and for that their Ports are not fit to receive Ships of Burthen and Quality fit for their Purpose; and that by Reason of the less Fitness of their Ports than that of their Neighbours; I conceive that what was propounded hath been competently proved.

The afore-named *Fournier* in the 92^d and 93^d Pages of his *Hydrography* hath laboured to prove the contrary of all this, unto which I refer the Reader: Not thinking his Arguments of any Weight at all in the present Case. Nor indeed doth he make his Comparisons with the *English* or *Hollanders*, but with the *Spaniards*, who, nor the Grand Seignior, (the latter of whom hath greater Advantages to be powerful at Sea than the King of *France*) could ever attain to any illustrious Greatness in Naval Power: Having often attempted, but never succeeded in the same. Nor is it easy to believe, that the King of *England* should, for so many Years, have continued his Title to the Sovereignty of the *Narrow Seas* against his Neighbours (ambitious enough to have gotten it from him) had not their Impediments been natural and perpetual, and such, as we say, do obstruct the King of *France*.

CHAP. IV.

That the People and Territories of the King of England, are naturally near as considerable for Wealth and Strength, as those of France.

THE Author of the State of *England*, among the many useful Truths and Observations he hath set down, delivers the Proportion between the Territories of *England* and *France* to be as 30 to 82; the which if it be true, then *England*, *Scotland*, and *Ireland*, with the Islands unto them belonging, will, taken all together, be near as big as *France*. Though I ought to take all Advantages for proving the Paradox in Hand; yet I had rather grant that *England*, *Scotland*, and *Ireland*, with the Islands before-mentioned; together with the planted Parts of *Newfoundland*, *New-England*, *New-Netherland*, *Virginia*, *Mary-Land*, *Carolina*, *Jamaica*, *Bermudas*, *Barbadoes*, and all the rest of the *Carribbee* Islands, with what the King hath in *Asia* and *Africa*, do not contain so much Territory as *France*, and what planted Land the King of *France* hath also in *America*. And if any Man will be heterodox in Behalf of the *French* Interest, I would be contented against my Knowledge and Judgment to allow the King of *France's* Territories to be a seventh, sixth, or even a fifth greater than those of the King of *England*;

England; believing that both Princes have more Land, than they do employ to its utmost Use.

And here I beg Leave, (among the several Matters which I intend for serious,) to interpose a jocular, and perhaps whimsical, Digression, and which I indeed desire Men to look upon rather as a Dream, or Resvery, than a rational Proposition; the which is, that if all the Moveables and People of *Ireland*, and of the Highlands of *Scotland*, were transported into the rest of *Great Britain*; that then the King and his Subjects, would thereby become more rich and strong, both offensively and defensively, than now they are.

'Tis true, I have heard many wise Men say, when they were bewailing the vast Losses of the *English*, in preventing and suppressing Rebellions in *Ireland*, and considering how little Profit hath returned either to the King or Subjects of *England*, for their 500 Years doing and suffering in that Country; I say, I have heard wise Men (in such their Melancholies) wish, that (the People of *Ireland* being saved) that Island were sunk under Water: Now it troubles me, that the Distemper of my own Mind in this Point, carries me to dream that the Benefit of those Wishes may practically be obtained, without sinking that vast mountainous Island under Water, which I take to be somewhat difficult; for although *Dutch* Engineers may drain its Bogs, yet I know no Artists that could sink its Mountains. If ingenious and learned
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Men (among whom I reckon Sir *Tho. More*, and *Des Cartes*) have disputed, that we who think ourselves awake, are or may be really in a Dream; and since the greatest Absurdities of Dreams are but a preposterous and tumultuary Contexture of Realities; I will crave the Umbrage of these great Men last named, to say something for this wild Conception, with Submission to the better Judgment of all those that can prove themselves awake.

If there were but one Man living in *England*, then the Benefit of the whole Territory could be but the Livelihood of that one Man: But if another Man were added, the Rent or Benefit of the same would be double, if two, triple; and so forward, until so many Men were planted in it, as the whole Territory could afford Food unto: For if a Man would know what any Land is worth, the true and natural Question must be, How many Men will it feed? How many Men are there to be fed? But to speak more practically, Land of the same Quantity and Quality in *England*, is generally worth 4 or 5 Times as much as in *Ireland*, and but $\frac{1}{4}$ or $\frac{1}{3}$ of what it is worth in *Holland*; because *England* is 4 or 5 Times better peopled than *Ireland*, and but $\frac{1}{4}$ so well as *Holland*. And moreover, where the Rent of Land is advanced by Reason of Multitude of People, there the Number of Years Purchase, for which the Inheritance may be sold, is also advanced, though perhaps not in the very same Proportion; for 20 s. per Annum in
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Ireland, may be worth but 8 *l.* and in *England*, where Titles are very sure, above 20 *l.* in *Holland* above 30 *l.*

I suppose that in *Ireland*, and the Highlands in *Scotland*, there may be about 1800000 People, or about $\frac{1}{5}$ Part of what is in all the 3 Kingdoms: Wherefore the first Question will be, whether *England*, *Wales*, and the Lowlands of *Scotland*, cannot afford Food, (that is to say) Corn, Fish, Flesh, and Fowl, to $\frac{1}{5}$ Part more People than are at present planted upon it, with the same Labour that the said $\frac{1}{5}$ Part do now take where they are? For if so, then what is propounded is naturally possible. 2. It is to be enquired, what the Value of the Immoveables (which upon such Removal must be left behind) are worth? For if they be worth less than the Advancement of the Price of Land in *England* will amount unto; then the Proposal is to be considered. 3. If the deserted Lands, and the Immoveables left behind upon them, may be sold for Money, or if no other Nation shall dare meddle with them, without paying well for them, and if the Nation who shall be admitted, shall be less able to prejudice and annoy the Transplantees into *England* than before; then I conceive that the whole Proposal will be a pleasant and a profitable Dream indeed.

As to the first Point, whether *England* and the Lowlands of *Scotland* can maintain $\frac{1}{5}$ Part more People than they now do (that is to say) 9 Millions of Souls in all? For Answer thereunto,

unto; I first say, that the said Territories of *England*, and the Lowlands of *Scotland*, contain about 36 Millions of Acres, that is 4 Acres for every Head, Man, Woman, and Child; but the United Provinces do not allow above 1 Acre and $\frac{1}{2}$, and *England* itself, rescinding *Wales*, hath but 3 Acres to every Head, according to the present State of Tillage and Husbandry. Now if we consider that *England* having but 3 Acres to a Head as aforesaid, doth so abound in Victuals, as that it maketh Laws against the Importation of Cattle, Flesh, and Fish from abroad; and that the draining of Fens, improving of Forests, inclosing of Commons, Sowing of St. Foyne and Clover-grass, be grumbled against by Landlords, as the Way to depress the Price of Victuals; then it plainly follows, that less than 3 Acres improved as it may be, will serve the Turn, and consequently that 4 will suffice abundantly. I could here set down the very Number of Acres that would bear Bread and Drink, Corn, together with Flesh, Butter, and Cheese, sufficient to victual 9 Millions of Persons, as they are victualled in Ships and regular Families; but shall only say in general, that 12 Millions of Acres, *viz.* $\frac{1}{3}$ of 36 Millions, will do it, supposing that Roots, Fruits, Fowl, and Fish, and the ordinary Profit of Lead, Tin, Iron-Mines, and Woods, would piece up any Defect that may be feared.

As to the second, I say, that the Land and Housing in *Ireland*, and the Highlands of *Scotland*

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land, at the present Market Rates, are not worth 13 Millions of Money; nor would the actual Charge of making the Transplantation proposed amount to 4 Millions more: So then the Question will be, whether the Benefit expected from this Transplantation will exceed 17 Millions.

To which I say, that the Advantage will probably be near 4 Times the last-mentioned Sum, or about 69300000 *l.* For if the Rent of all *England* and *Wales*, and the Lowlands of *Scotland*, be about 9 Millions *per Annum*, and if the fifth Part of the People be superadded unto the present Inhabitants of those Countries; then the Rent will amount unto 10,008,000 *l.* and the Number of Years Purchase will rise from $17\frac{1}{2}$, to $\frac{1}{5}$ more, which is 21. So as the Land which is now worth but 9 Millions *per Annum*, at $17\frac{1}{2}$ Years Purchase, making 157 Millions and $\frac{1}{2}$, will then be worth 108000000 *l.* at 21 Years Purchase; *viz.* 226,800000 *l.* that is 69,300000 *l.* more than it was before.

And if any Prince, willing to enlarge his Territories, will give any Thing more than $6\frac{1}{2}$ Millions, or half the present Value for the said relinquished Lands, which are estimated to be worth 13 Millions; then the whole Profit will be above 75,800,600 *l.* or above 4 Times the Loss, as the same was above computed. But if any Man shall object, that it will be dangerous unto *England*, that *Ireland* should be in the Hands of any other Nation; I answer in short, that that Nation, whoever shall purchase it (be-
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ing divided by Means of the said Purchase) shall not be more able to annoy *England* than now in its united Condition. Nor is *Ireland* nearer *England*, than *France* and *Flanders*.

Now if any Man shall desire a more clear Explanation, how, and by what Means, the Rents of Lands shall rise by this closer Cohabitation of People above described? I answer, that the Advantage will arise in transplanting about 1800000 People from the poor and miserable Trade of Husbandry, to more beneficial Handicrafts: For when the Superaddition is made, a very little Addition of Husbandry to the same Lands will produce $\frac{1}{3}$ more of Food, and consequently the additional Hands, earning but 40*s.* *per Annum* (as they may very well do, nay to 8*l.* *per Annum*) at some other Trade; the Superlucration will be above 3,600000*l.* *per Annum*, which at 20 Years Purchase is 70 Millions. Moreover, as the Inhabitants of Cities and Towns spend more Commodities, and make greater Consumptions, than those who live in wild, thin-peopled Countries; so when *England* shall be thicker peopled, in the same Manner before described, the very same People shall then spend more, than when they lived more sordidly and inurbanely, and farther asunder, and more out of the Sight, Observation, and Emulation of each other; every Man desiring to put on better Apparel when he appears in Company, than when he has no Occasion to be seen.

I further add, that the Charge of the Government, civil, military, and ecclesiastical, would be more cheap, safe and effectual in this Condition of closer Cohabitation than otherwise; as not only Reason, but the Example of the United Provinces doth demonstrate.

But to let this whole Digression pass for a mere Dream, I suppose 'twill serve to prove, that in Case the King of *England's* Territories should be a little less than those of the King of *France*, that forasmuch as neither of them are over-peopled, that the Difference is not material to the Question in Hand; wherefore supposing the King of *France's* Advantages to be little or nothing in this Point of Territory, we come next to examine and compare the Number of Subjects which each of these Monarchs doth govern.

The Book called the State of *France*, maketh that Kingdom to consist of 27000 Parishes; and another Book written by a substantial Author, who professedly inquires into the State of the Church and Churchmen of *France*, sets it down as an extraordinary Case, that a Parish in *France* should have 600 Souls; wherefore I suppose that the said Author (who hath so well examined the Matter) is not of Opinion that every Parish, one with another, hath above 500; by which Reckoning the whole People of *France* are about 13 Millions and $\frac{1}{2}$; now the People of *England, Scotland, and Ireland*, with the Islands adjoining, by Computation from the Numbers
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of Parishes, which commonly have more People in Protestant Churches than in Popish Countries; as also from the Hearth-money, Poll-money, and Excise, do amount to about 9 Millions and $\frac{1}{2}$.

There are in *New-England* about 16000 Men mustered in Arms; about 24000 able to bear Arms, and consequently about 150000 in all: And I see no Reason why in all this and the other Plantations of *Asia*, *Africa*, and *America*, there should not be half a Million in all. But this last I leave to every Man's Conjecture, and consequently I suppose that the King of *England* hath about 10 Millions of Subjects, *ubivis Terrarum Orbis*, and the King of *France* about 13 $\frac{1}{2}$ as aforesaid.

Although it be very material to know the Number of Subjects belonging to each Prince, yet when the Question is concerning their Wealth and Strength, it is also material to examine, how many of them do get more than they spend, and how many less.

In Order whereunto it is be considered, that in the King of *England's* Dominions, there are not 20000 Churchmen; but in *France*, as the afore-mentioned Author of theirs doth aver, (who sets down the particular Number of each religious Order) there are about 270000; *viz.* 250000 more than we think are necessary, (that is to say) 250000 withdrawn out of the World. Now the said Number of adult and able-bodied Persons are equivalent to about double the same
Number

Number of the promiscuous Mafs of Mankind. And the fame Author fays, that the fame religious Perfons do fpend one with another about 18 *d. per Diem*, which is triple even to what a labouring Man requires.

Wherefore the faid 250000 Churchmen (living as they do) makes the King of *France's* 13 Millions and a half, to be lefs than 13 : Now if 10 Men can defend themfelves as well in Iflands, as 13 can upon the Continent, then the faid 10 being not concerned to increafe their Territory by the Invaſion of others, are as effectual as the 13 in Point of Strength alfo ; wherefore that there are more Superlucrators in the *Engliſh* than the *French* Dominions, we fay as followeth.

There be in *England, Scotland, Ireland*, and the King's other Territories, above 40000 Seamen ; in *France* not above $\frac{1}{4}$ fo many ; but one Seaman earneth as much as 3 common Husbandmen ; wherefore this Difference in Seamen, added to the Account of the King of *England's* Subjects, is an Advantage equivalent to 60000 Husbandmen.

There are in *England, Scotland, and Ireland*, and all other the King of *England's* Territories, 600000 Ton of Shipping, worth about $4\frac{1}{2}$ Millions of Money ; and the annual Charge of maintaining the Shipping of *England* by new Buildings and Reparations, is about $\frac{1}{4}$ Part of the fame Sum ; which is the Wages of 150000 Husbandmen, but is not the Wages of above $\frac{1}{3}$ Part of fo many Artifans as are employed up-

on Shipping of all Sorts; *viz.* Shipwrights, Calkers, Joyners, Carvers, Painters, Block-makers, Rope-makers, Mast-makers, Smiths of several Sorts, Flag-makers, Compass-makers, Brewers, Bakers, and all other Sort of Victual-lers; all Sorts of Tradesmen relating to Guns, and Gunners Stores. Wherefore there being 4 Times more of these Artisans in *England, &c.* than in *France*, they further add to the Account of the King of *England's* Subjects, the Equivalent of 80000 Husbandmen more.

The Sea-line of *England, Scotland, and Ireland*, and the adjacent Islands, is about 3800 Miles; according to which Length, and the whole Content of Acres, the said Land would be an oblong or parallelogram Figure of 3800 Miles long, and about 24 Miles broad; and consequently every Part of *England, Scotland, and Ireland*, is one with another, but 12 Miles from the Sea: Whereas *France* containing but about 1000 Miles of Sea-line, is by the like Method or Computation, about 65 Miles from the Sea-side; and considering the Paucity of Ports, in Comparison of what are in the King of *England's* Dominions, as good as 70 Miles distant from a Port: Upon which Grounds it is clear, that *England* can be supplied, with all gross and bulky Commodities of foreign Growth and Manufacture, at far cheaper Rates than *France* can be, *viz.* at about 4 s. *per Cent.* cheaper; the Land-Carriage for the Difference of the Distance between *England* and *France*
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from a Port, being so much or near thereabouts. Now to what Advantage this Conveniency amounteth, upon the Importation and Exportation of bulky Commodities, cannot be less than the Labour of one Million of People, &c. meaning by bulky Commodities all Sort of Timber, Plank, and Staves for Cask; all Iron, Lead, Stones, Bricks, and Tyles for building; all Corn, Salt, and Drinks; all Flesh and Fish, and indeed all other Commodities, wherein the Gain and Loss of 4 s. *per Cent.* is considerable; where note that the like Wines are sold in the inner Parts of *France* for 4 or 5 l. a Tun, which near the Ports yield 7 l. Moreover upon this Principle the Decay of Timber in *England* is no very formidable Thing, as the Rebuilding of *London*, and of the Ships wasted by the *Dutch* War do clearly manifest; nor can there be any Want of Corn, or other necessary Provisions in *England*, unless the Weather hath been universally unseasonable for the Growth of the same; which seldom or never happens; for the same Causes which make Dearth in one Place, do often cause Plenty in another; wet Weather being propitious to Highlands, which drowneth the Low.

It is observed that the Poor of *France* have generally less Wages than in *England*, and yet their Victuals are generally dearer there; which being so, there may be more Superlucration in *England* than in *France*.

Lastly, I offer it to the Consideration of all those, who have travelled through *England* and *France*; Whether the Plebeians of *England* (for they constitute the Bulk of any Nation) do not spend $\frac{1}{5}$ Part more than the Plebeians of *France*? And if so, it is necessary that they must first get it; and consequently that 10 Millions of the King of *England*'s Subjects are equivalent to 12 of the King of *France*; and upon the whole Matter, to the 13 Millions, at which the *French* Nation was estimated.

It will here be objected, that the Splendor and Magnificencies of the King of *France*, appearing greater than those of *England*, that the Wealth of *France* must be proportionably greater than that of *England*; but that doth not follow, forasmuch as the apparent Greatness of the King doth depend upon the *quota pars* of the People's Wealth which he levyeth from them; for supposing of the People to be equally rich, if one of the Sovereigns levy a fifth Part, and another a fifteenth, the one seems actually thrice as rich as the other, whereas potentially, they are but equal.

Having thus discoursed of the Territory, People, Superlucration, and Defencibleness of both Dominions, and in some Measure of their Trade, so far as we had Occasion to mention Ships, Shipping, and Nearness to Ports; we come next to enlarge a little further upon the Trade of each.

Some have estimated, that there are not above 300 Millions of People in the whole World. Whether that be so or no, is not very material to be known; but I have fair Grounds to conjecture, and would be glad to know it more certainly, that there are not above 80 Millions with whom the *English* and *Dutch* have Commerce; no *Europeans* that I know of, trading directly or indirectly, where they do not; so as the whole commercial World, or World of Trade, consisteth of about 80 Millions of Souls, as aforesaid.

And I further estimate, that the Value of all Commodities yearly exchanged amongst them, doth not exceed the Value of 45 Millions: Now the Wealth of every Nation, consisting chiefly in the Share which they have in the Foreign Trade with the whole commercial World, rather than in the domestick Trade, of ordinary Meat, Drink, and Cloaths, &c. which bringing in little Gold, Silver, Jewels, and other universal Wealth; we are to consider, whether the Subjects of the King of *England*, Head for Head, have not a greater Share than those of *France*.

To which Purpose it hath been considered, that the Manufactures of Wool, yearly exported out of *England* into several Parts of the World, *viz.* All Sorts of Cloth, Serges, Stuffs, Cottons, Bayes, Sayes, Frize, Perpetuanas; as also Stockings, Caps, Rugs, &c. exported out of *England*, *Scotland*, and *Ireland*, do amount unto 5 Millions *per Annum*.

The Value of Lead, Tin, and Coals, to be 500,000 *l.*

The Value of all Cloaths, Household-stuff, &c. carried into *America*, 200,000 *l.*

The Value of Silver and Gold taken from the *Spaniards* 60,000 *l.*

The Value of Sugar, Indigo, Tobacco, Cotton, and Cocoa, brought from the Southward Parts of *America* 600,000 *l.*

The Value of the Fish, Pipe-staves, Masts, Bever, &c. brought from *New England*, and the Northern Parts of *America* 200,000 *l.*

The Value of the Wool, Butter, Hides, Tallow, Beef, Herring, Pilchers, and Salmon, exported out of *Ireland*, 800,000 *l.*

The Value of the Coals, Salt, Linnen, Yarn, Herrings, Pilchers, Salmon, Linnen-Cloth, and Yarn, brought out of *Scotland*, and *Ireland*, 500,000 *l.*

The Value of Salt-peter, Pepper, Callicoes, Diamonds, Drugs and Silks, brought out of the *East-Indies*, above what was spent in *England*, 800,000 *l.*

The Value of the Slaves, brought out of *Africa*, to serve in our *American* Plantations, 20000 *l.*; which with the Freight of *English* Shipping, trading into foreign Parts, being above 1 Million and $\frac{1}{2}$, makes in all 10180000 *l.*

Which Computation is sufficiently justified by the Customs of the 3 Kingdoms, whose intrinsic Value are thought to be near a Million *per Annum*, viz. 600,000 *l.* payable to the King;

King; 100,000 *l.* for the Charges of Collecting, &c. 200,000 *l.* smuggled by the Merchants, and 100,000 *l.* gained by the Farmers; according to common Opinion and Mens Sayings: And this agrees also with that Proportion or Part of the whole Trade of the World, which I have estimated the Subjects of the King of *England* to be possessed of, *viz.* of about 10 of 45 Millions.

But the Value of the *French* Commodities brought into *England*, (notwithstanding some current Estimates,) are not above 1200000 *l.* *per Annum*; and the Value of all they export into all the World besides, not above 3 or 4 Times as much; which Computation also agreeth well enough with the Account we have of the Customs of *France*; so as *France* not exporting above $\frac{1}{2}$ the Value of what *England* doth, and for that all the Commodities of *France* (except Wines, Brandy, Paper, and the first Patterns and Fashions for Cloaths and Furniture (of which *France* is the Mint) are imitable by the *English*, and having withal more People than *England*, it follows that the People of *England*, &c. have Head for Head, thrice as much Foreign Trade as the People of *France*; and about 2 Parts of 9 of the Trade of the whole commercial World; and about 2 Parts in 7 of all the Shipping: Notwithstanding all which it is not to be denied, that the King and some great Men of *France*, appear more rich and splendid, than those of the like Quality in *England*;

all which arises rather from the Nature of their Government, than from the intrinsic and natural Causes of Wealth and Power.

CH A P. V.

That the Impediments of England's Greatness are but contingent and removable.

THE first Impediment of *England's* Greatness is, that the Territories thereunto belonging are too far asunder, and divided by the Sea into many several Islands and Countries; and I may say, into so many Kingdoms, and several Governments, (*viz.*) there be three distinct Legislative Powers in *England, Scotland, and Ireland*; the which instead of uniting together, do often cross one another's Interest; putting Bars and Impediments upon one another's Trades, not only as if they were Foreigners to each other, but sometimes as Enemies.

2. The Islands of *Fersey* and *Guernsey*, and the *Isle of Man*, are under Jurisdictions different from those either of *England, Scotland, or Ireland*,

3. The Government of *New England* (both civil and ecclesiastical) doth so differ from that of his Majesty's other Dominions, that 'tis hard to say what may be the Consequence of it.

And the Government of the other Plantations doth also differ very much from any of the rest; although there be not naturally substantial Reasons from the Situation, Trade, and
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Condition of the People, why there should be such Differences.

From all which it comes to pass, that small divided remote Governments being seldom able to defend themselves, the Burthen of protecting of them all, must lye upon the chief Kingdom *England*; and so all the smaller Kingdoms and Dominions, instead of being Additions are really Diminutions; but the same is remedied by making two such grand Councils, as may equally represent the whole Empire, one to be chosen by the King, the other by the People. The Wealth of a King is threefold, one is the Wealth of his Subjects, the second is the *quota pars* of his Subjects Wealth, given him for the publick Defence, Honour, and Ornament of the People, and to manage such Undertakings for the common Good, as no one or a few private Men are sufficient for.

The third Sort are the *quota* of the last-mentioned *quota pars*, which the King may dispose of as his own personal Inclination and Discretion shall direct him, without Account. Now it is most manifest, that the afore-mentioned Distances and Differences, of Kingdoms and Jurisdictions, are great Impediments to all the said several Sorts of Wealth, as may be seen in the following Particulars. 1st, In Case of War with Foreign Nations, *England* commonly beareth the whole Burthen, and Charge, whereby many in *England* are utterly undone.

2dly, *England* sometimes prohibiting the Commodities of *Ireland* and *Scotland*, as of late it did the Cattle, Flesh, and Fish, of *Ireland*, did not only make Food, and consequently Labour dearer in *England*, but also hath forced the People of *Ireland* to fetch those Commodities from *France*, *Holland*, and other Places, which before was sold them from *England*, to the great Prejudice of both Nations.

3dly, It occasions an unnecessary Trouble and Charge, in collecting of Customs, upon Commodities passing between the several Nations.

4thly, It is a Damage to our *Barbadoes*, and other *American* Traders, that the Goods which might pass thence immediately, to several Parts of the World, and to be sold at moderate Rates, must first come into *England*, and there pay Duties, and afterwards (if at all) pass into those Countries, whither they might have gone immediately.

5thly, The Islands of *Fersey* and *Guernsey*, are protected at the Charge of *England*, nevertheless the Labour and Industry of that People (which is very great) redounds most to the Profit of the *French*.

6thly, In *New England* there are vast Numbers of able-bodied *Englishmen*, employed chiefly in Husbandry, and in the meanest Part of it, (which is breeding of Cattle) whereas *Ireland* would have contained all those Persons, and at worst would have afforded them Lands on better Terms than they have them in *America*, if
not

not some other better Trade withal, than now they can have.

7thly, The Inhabitants of the other Plantations, although they do indeed plant Commodities which will not grow so well in *England*; yet grasping at more Land, than will suffice to produce the said Exotics in a sufficient Quantity to serve the whole World, they do therein but distract and confound the Effect of their own Endeavours.

8thly, There is no Doubt that the same People, far and wide dispersed, must spend more upon their Government and Protection, than the same living compactly, and when they have no Occasion to depend upon the Wind, Weather, and all the Accidents of the Sea.

A second Impediment to the Greatness of *England*, is the different understanding of several material Points, *viz.* Of the King's Prerogative, Privileges of Parliament, the obscure Differences between Law and Equity; as also between civil and ecclesiastical Jurisdictions; Doubts whether the Kingdom of *England* hath Power over the Kingdom of *Ireland*, besides the wonderful Paradox that *Englishmen*, lawfully sent to suppress Rebellions in *Ireland*, should after having effected the same, be (as it were) disfranchised, and lose that Interest in the Legislative Power which they had in *England*, and pay Customs as Foreigners for all they spend in *Ireland*, whither they were sent for the Honour and Benefit of *England*.

The third Impediment is, That *Ireland* being a conquered Country, and containing not the Tenth Part as many *Irish* Natives as there are *English* in both Kingdoms, that natural and firm Union is not made, between the Two People, by Transplantations, and proportionable Mixture, so as there may be but a Tenth Part of the *Irish* in *Ireland*, and the same Proportion in *England*; whereby the Necessity of maintaining an Army in *Ireland*, at the Expence of a Quarter of the Rents of that Kingdom, may be taken away.

The fourth Impediment is, that Taxes in *England* are not levied upon the Expence, but upon the whole Estate; not upon Lands, Stock, and Labour, but chiefly upon Land alone; and that not by any equal and indifferent Standard, but the casual Predominancy of Parties and Factions: And moreover that these Taxes are not levied with the least Trouble and Charge, but let out to Farmers, who also let them from one to another without explicit Knowledge of what they do; but so as in Conclusion, the poor People pay twice as much as the King receives.

The fifth Impediment is the Inequality of Shires, Diocesses, Parishes, Church-Livings, and other Precincts, as also the Representation of the People in Parliament; all which do hinder the Operations of Authority in the same Manner as a Wheel irregularly made, and excentrically hung, neither moves so easily, nor performs its Work so truly, as if the same were duly framed and poised.

6thly, Whether it be an Impediment, that the Power of making War, and raising Money, be not in the same Hand, much may be said; but I leave it to those who may more properly meddle with fundamental Laws.

None of these Impediments are natural, but did arise as the Irregularity of Buildings do, by being built Part at one Time, and Part at another; and by the changing of the State of Things from what they were at the respective Times, when the Practices we complain of were first admitted, and perhaps, are but the Warpings of Time, from the Rectitude of the first Institution.

As these Impediments are contingent, so they are also removeable; for may not the Land of superfluous Territories be sold, and the People with their Moveables brought away? May not the *English* in the *American* Plantations (who plant Tobacco, Sugar, &c.) compute what Land will serve their Turn, and then contract their Habitations to that Proportion, both for Quantity and Quality? As for the People of *New England*, I can but wish they were transplanted into *Old England*, or *Ireland*, (according to Proposals of their own, made within this 20 Years) although they were allowed more Liberty of Conscience, than they allow one another.

May not the three Kingdoms be united into one, and equally represented in Parliament? Might not the several Species of the King's Subjects be equally mixed in their Habitations?

Might

Might not the Parishes and other Precincts, be better equalized? Might not Jurisdictions and Pretences of Power, be determined and ascertained? Might not the Taxes be equally allotted, and directly applied to their ultimate Use? Might not Dissenters in Religion be indulged, they paying for a competent Force to keep the publick Peace? I humbly venture to say all these Things may be done, if it be so thought fit by the Sovereign Power, because the like hath often been done already, at several Places and Times.

C H A P. VI.

That the Power and Wealth of England, hath increased this last forty Years.

IT is not much to be doubted, but that the Territories under the King's Dominions have increased; forasmuch as *New England, Virginia, Barbadoes, and Jamaica, Tangier, and Bombay,* have since that Time, been either added to his Majesty's Territories, or improved from a desert Condition, to abound with People, Buildings, Shipping, and the Production of many useful Commodities. And as for the Land of *England, Scotland, and Ireland,* as it is not less in Quantity than it was forty Years since, so it is manifest that by Reason of the draining of Fens, watering of dry Grounds, improving of Forrests and Commons, making of heathy and barren Grounds to bear Saintfoyne and Clover-grass; meliora-

meliorating and multiplying several Sorts of Fruits, and Garden-stuff, making some Rivers navigable, &c. I say it is manifest, that the Land in its present Condition, is able to bear more Provision and Commodities, than it was forty Years ago.

2dly, Altho' the People in *England*, *Scotland*, and *Ireland*, which have extraordinarily perished by the Plague and Sword, within this last forty Years, do amount to about 300000, above what have died in the ordinary Way; yet the ordinary Increase by Generation of 10 Millions, which doubles in two hundred Years, as hath been shewn by the Observators upon the Bills of Mortality, may in forty Years (which is a fifth Part of the same Time) have increased one fifth Part of the whole Number, or two Millions. Where note by the Way, that the Accession of Negroes to the *American* Plantations (being all Men of great Labour and little Expence) is not inconsiderable; besides it is hoped that *New England*, where few or no Women are barren, and most have many Children, and where People live long, and healthfully, hath produced an Increase of as many People as were destroyed in the late Tumults in *Ireland*.

As for Housing, the Streets of *London* itself speaks it, I conceive it is double in Value in that City, to what it was forty Years since; and for Housing in the Country, they have increased at *Newcastle*, *Yarmouth*, *Norwich*, *Exeter*, *Portsmouth*, *Cowes*, *Dublin*, *Kinsale*, *Londonderry*, and
Cole-

Coleraine in *Ireland*, far beyond the Proportion of what I can learn have been dilapidated in other Places. For in *Ireland* where the Ruin was greatest, the Houfing (taking all together) is now more valuable than forty Years ago, nor is this to be doubted, fince Houfing is now more fplendid than in thofe Days, and the Number of Dwellers is increafed by near one fifth Part; as in the laft Paragraph is fet forth.

As for Shipping, his Majesty's Navy is now triple, or quadruple, to what it was forty Years fince, and before the *Sovereign* was built; the Shipping trading to *Newcastle*, which are now about eighty thousand Tons, could not be then above a Quarter of that Quantity. Firft, becaufe the City of *London* is doubled. 2. Becaufe the Ufe of Coals is alfo at leaft doubled, becaufe they were heretofore feldom ufed in Chambers, as now they are, nor were there fo many Bricks burned with them as of late, nor did the Country on both Sides the *Thames* make ufe of them as now. Befides there are employed in the *Guiney* and *American* Trade above Forty thousand Ton of Shipping *per Annum*; which Trade in thofe Days was inconfiderable. The Quantity of Wines imported, was not near fo much as now; and to be fhort, the Customs upon imported and exported Commodities, did not then yield a third Part of the prefent Value; which fhews that not only Shipping, but Trade itfelf hath increafed fomewhat near that Proportion.

As to Money, the Interest thereof was within this fifty Years at 10 *l. per Cent.* forty Years ago at 8 *l.* and now at 6 *l.* no Thanks to any Laws which have been made to that Purpose, forasmuch as those who can give good Security, may now have it at less: But the natural Fall of Interest, is the Effect of the Increase of Money.

Moreover if rented Lands and Houses have increased; and if Trade hath increased also, it is certain that Money which payeth those Rents, and driveth on Trade, must have increased also.

Lastly, I leave it to the Consideration of all Observers, whether the Number and Splendor of Coaches, Equipage, and Household Furniture, hath not increased since that Time; to say nothing of the Postage of Letters, which have increased from one to twenty, which argues the Increase of Business and Negotiation. I might add that his Majesty's Revenue is near tripled, and therefore the Means to pay, and bear the same, have increased also.

C H A P. VII.

That one tenth Part of the whole Expence of the King of England's Subjects, is sufficient to maintain one hundred Thousand Foot, forty Thousand Horse, and forty Thousand Men at Sea; and defray all other Charges of the Government, both ordinary and extraordinary, if the same were regularly taxed and raised.

TO clear this Point, we are to find out what is the middle Expence of each Head in the King's Dominions, between the highest and the lowest; to which I say it is not probably less than the Expence of a Labourer, who earneth about 8 *d.* *per* Day; for the Wages of such a Man is 4 *s.* *per* Week without Victuals, or 2 *s.* with it; wherefore the Value of his Victuals is 2 *s.* *per* Week, or 5 *l.* 4 *s.* *per* *Annum*: Now the Value of Cloaths cannot be less than the Wages given to the poorest Maid-Servant in the Country, which is 30 *s.* *per* *Annum*, nor can the Charge of all other Necessaries be less than 6 *l.* *per* *Annum* more; wherefore the whole Charge is 7 *l.* 10 *s.*

It is not likely that this Discourse will fall into the Hands of any that live at 7 *l.* *per* *Annum*, and therefore such will wonder at this Supposition: But if they consider how much the Number of the Poor, and their Children, is greater than that of the Rich; although the personal Expence of some rich Men should be

twenty Times more than that of a Labourer ; yet the Expence of the Labourer above-mentioned may well enough stand for the Standard of the Expence of the whole Mass of Mankind.

Now if the Expence of each Man, one with another, be *7 l. per Annum*, and if the Number of the King's Subjects be ten Millions, then the tenth Part of the whole Expence will be seven Millions ; but about five Millions, or a very little more, will amount to one Year's Pay for one hundred thousand Foot, forty thousand Horse, and forty thousand Men at Sea, Winter and Summer ; which can rarely be necessary. And the ordinary Charge of the Government, in Times of deep and serene Peace, was not six hundred thousand Pound *per Annum*.

Where a People thrive, there the Income is greater than the Expence, and consequently the tenth Part of the Expence is not a tenth Part of the Income ; now for Men to pay a Tenth of their Expence, in a Time of the greatest Exigency, (for such it must be when so great Forces are requisite) can be no Hardship, much less a deplorable Condition ; for to bear the tenth Part, a Man needs spend but a twentieth Part less, and labour a twentieth Part more, or half an Hour *per Diem* extraordinary, both which, within common Experience, are very tolerable ; there being very few in *England* who do not eat by a twentieth Part more than does them good ; and what Misery were it, instead of

wearing Cloth of 20 s. per Yard, to be contented with that of 19 s. few Men having Skill enough to discern the Difference.

Memorandum, That all this while I suppose that all of these ten Millions of People are obedient to their Sovereign, and within the Reach of his Power; for as Things are otherwise, so the Calculation must be varied.

C H A P. VIII.

That there are spare Hands enough among the King of England's Subjects, to earn two Millions per Annum more than they now do; and that there are also Employments ready, proper, and sufficient, for that Purpose.

TO prove this Point we must enquire, how much all the People could earn, if they were disposed or necessitated to labour, and had Work whereupon to employ themselves; and compare that Sum with that of the total Expence above mentioned, deducting the Rents and Profits of their Land and Stock, which, properly speaking, saveth so much Labour. Now the Proceed of the said Lands and Stock in the Countries, is about three Parts of seven of the whole Expence; so as where the Expence is seventy Millions, the Rent of the Land, and the Profit of all the personal Estate, Interest of Money, &c. must be about thirty Millions; and consequently, the Value of the Labour forty Millions, that is 4 l. per Head.

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But it is to be noted, That about a Quarter of the Mass of Mankind are Children, Males and Females, under seven Years old, from whom little Labour is to be expected. It is also to be noted, that about another tenth Part of the whole People are such as, by Reason of their great Estates, Titles, Dignities, Offices, and Professions, are exempt from that Kind of Labour we now speak of; their Business being, or ought to be, to govern, regulate, and direct the Labours and Actions of others. So that of ten Millions, there may be about six Millions and an half, which (if Need require) might actually labour: And of these some might earn 3 s. *per Week*, some 5 s, and some 7 s. That is, all of them might earn 5 s. *per Week* at a Medium one with another; or at least 10 l. *per Annum*, (allowing for Sickness, and other Accidents;) whereby the whole might earn sixty five Millions *per Annum*, that is twenty five more than the Expence.

The Author of the State of *England* says that the Children of *Norwich*, between six and sixteen Years old, do earn 12000 l. *per Annum*, more than they spend. Now forasmuch as the People of *Norwich* are a three hundredth Part of all the People of *England*, as appears by the Accompts of the Hearth-money, and about a five hundredth Part of all the King's Subjects throughout the World; it follows that all his Majesty's Subjects between six and sixteen Years

old, may earn five Millions *per Annum* more, than they spend.

Again, forasmuch as the Number of People above sixteen Years old, are double the Number of those between six and sixteen, and that each of the Men can earn double to each of the Children; it is plain that if the Men and Children every where did work as they do in *Norwich*, they might earn twenty five Millions *per Annum* more than they spend; which Estimate, grounded upon Matter of Fact and Experience, agrees with the former.

Although as hath been proved, the People of *England* do thrive, and that it is possible they might superlucrate twenty five Millions *per Annum*; yet it is manifest that they do not, nor twenty three, which is less by the two Millions herein meant; for if they did superlucrate twenty three Millions, then in about five or six Years Time, the whole Stock and personal Estate of the Nation would be doubled, which I wish were true, but find no Manner of Reason to believe; wherefore if they can superlucrate twenty five, but do not actually superlucrate twenty three, nor twenty, nor ten, nor perhaps five, I have then proved what was propounded; *viz.* That there are spare Hands among the King's Subjects to earn, at least, two Millions more than they do.

But to speak a little more particularly concerning this Matter, It is to be noted, that
since

since the Fire of *London*. there was earned in four Years by Tradesmen (relating to Building only) the Sum of four Millions; *viz.* one Million *per Annum*, without lessening any other Sort of Work, Labour, or Manufacture, which was usually done in any other four Years before the said Occasion. But if the Tradesmen relating to Building only, and such of them only as wrought in and about *London*, could do one Million worth of Work extraordinary; I think that from thence, and from what hath been said before, all the rest of the spare Hands might very well double the same, which is as much as was propounded.

Now if there were spare Hands to superlucrate Millions upon Millions, they signify nothing unless there were Employment for them; and may as well follow their Pleasures and Speculations as labour to no Purpose; therefore the more material Point is, to prove that there is two Millions Worth of Work to be done, which at present the King's Subjects do neglect.

For the Proof of this there need little more to be done, than to compute 1. How much Money is paid by the King of *England's* Subjects to Foreigners for Freight of Shipping. 2. How much the *Hollanders* gain by their Fishing Trade practised upon our Seas. 3. What the Value is of all the Commodities imported into and spent in *England*, which might by Diligence be produced and manufactured here. To

make short of this Matter, upon Perusal of the most authentick Accompts relating to these several Particulars, I affirm that the same amounteth to above five Millions, whereas I propounded but two Millions.

For a further Proof whereof Mr. *Samuel Fortry* in his ingenious Discourse of Trade, exhibits the Particulars, wherein it appears, that the Goods imported out of *France* only, amount yearly to two Millions six hundred thousand Pounds. And I affirm, that the Wine, Paper, Cork, Rosin, Capers, and a few other Commodities which *England* cannot produce, do not amount to one fifth Part of the said Sum. From whence it follows, that (if Mr. *Fortry* hath not erred) the two Millions here mentioned may arise from *France* alone; and consequently five or six Millions from all the three Heads last above specified.

C H A P. IX.

That there is Money sufficient to drive the Trade of the Nation.

SINCE his Majesty's happy Restauration, it was thought fit to call in, and new coin, the Money which was made in the Times of Usurpation. Now it was observed by the general Consent of Cashiers, that the said Money (being by frequent Revolutions well mixed with old)

old) was about a seventh Part thereof; and that the said Money being called in, was about Eight hundred thousand Pounds, and consequently the Whole five Millions six hundred thousand Pound. Whereby it is probable that (some Allowance being given for hoarded Money) the whole Cash of *England* was then about six Millions, which I conceive is sufficient to drive the Trade of *England*, not doubting but the rest of his Majesty's Dominions have the like Means to do the same respectively.

If there be six Millions of Souls in *England*, and that each spendeth 7 *l. per Annum*, then the whole Expence is forty two Millions, or about Eight hundred thousand Pound *per Week*; and consequently, if every Man did pay his Expence weekly, and that the Money could circulate within the Compass of a Week, then less than one Million would answer the Ends proposed. But forasmuch as the Rents of the Lands in *England* (which are paid half-yearly) are eight Millions *per Annum*, there must be four Millions to pay them. And forasmuch as the Rent of the Housing of *England*, paid quarterly, are worth about four Millions *per Annum*, there needs but one Million to pay the said Rents; wherefore six Millions being enough to make good the three Sorts of Circulations above mentioned, I conceive what was proposed is competently proved, at least
 until

until something better be advanced to the contrary.

C H A P. X.

That the King of England's Subjects have Stock competent and convenient to drive the Trade of the whole commercial World.

NOW for the further Encouragement of Trade, as we have shewn that there is Money enough in *England* to manage the Affairs thereof; so we shall now offer to Consideration, whether there be not a competent and convenient Stock to drive the Trade of the whole commercial World. To which Purpose it is to be remember'd, that all the Commodities yearly exported out of every Part of the last mentioned World, may be bought for forty five Millions; and that the Shipping employed in the same World are not worth above fifteen Millions more, and consequently, that sixty Millions at most, would drive the whole Trade above mentioned, without any Trust at all. But forasmuch as the Growers of Commodities do commonly trust them to such Merchants or Factors as are worth but such a Part of the full Value of their Commodities as may possibly be lost upon the Sale of them, whereas Gain is rather to be expected; it follows that less than a Stock of Sixty Millions, nay less than Half of the same Sum, is sufficient to drive the Trade
above

above mentioned: It being well known that any Tradesman of good Reputation, worth Five hundred Pounds, will be trusted with above One thousand Pounds Worth of Commodities: Wherefore less than thirty Millions will suffice for the said Purpose; of which Sum the Coin, Shipping, and Stock, already in Trade, do at least make one Half.

And it hath been shewn how by the Policy of a Bank, any Sum of Money may be made equivalent in Trade, unto near double of the same; by all which it seems, that even at present much is not wanting to perform what is propounded. But suppose twenty Millions or more were wanting, it is not improbable, that since the Generality of Gentlemen, and some Noblemen, do put their younger Sons to Merchandize, they will see it reasonable, as they increase in the Number of Merchants, so to increase the Magnitude of Trade, and consequently to increase Stock; which may effectually be done by imbanking twenty Millions Worth of Land, not being above a Sixth or Seventh of the whole Territory of *England*; (that is to say) by making a Fund of such Value, to be Security for all Commodities bought and sold upon the Accompt of the universal Trade here mentioned.

And thus it having appeared, that *England* having in it as much Land, like *Holland* and *Zea-land*, as the said two Provinces do themselves

contain, with Abundance of other Land not inconvenient for Trade, and that there are spare Hands enough to earn many Millions of Money more than they now do, and that there is also Employment to earn several Millions (even from the Consumption of *England* itself) it follows from thence, and from what hath been said in the last Paragraph, about enlarging of Stock both of Money and Land, that it is not an impossible, nay a very feasible Matter, for the King of *England's* Subjects to gain the universal Trade of the whole commercial World.

Nor is it unseasonable to intimate this Matter, forasmuch as the younger Brothers of the good Families of *England* cannot otherwise be provided for, so as to live according to their Birth and Breeding: For if the Lands of *England* are worth eight Millions *per Annum*, then there be at a Medium about ten thousand Families of about 800 *l. per Annum*; in each of which, one with another, we may suppose there is a younger Brother, whom less than two or three hundred Pounds *per Annum* will not maintain suitable to his Relations: Now I say that neither the Offices at Court, nor Commands in our ordinary Army and Navy, nor Church Preferments, nor the usual Gains by the Profession of the Law and Physick, nor the Employments under Noblemen and Prelates, will, all of them put together, furnish

nish Livelyhoods of above 300 *l. per Annum*, to three Thousand of the said ten Thousand younger Brothers: Wherefore it remains that Trade alone must supply the rest. But if the said seven thousand Gentlemen be applied to Trade, without increasing of Trade, or if we hope to increase Trade without increasing of Stock, which for ought appears is only to be done by imbanking a due Proportion of Lands, and Money, we must necessarily be disappointed. Where note, that selling of Lands to Foreigners for Gold and Silver, would enlarge the Stock of the Kingdom. Whereas doing the same between one another, doth effect nothing: For he that turneth all his Land into Money, disposes himself for Trade; and he that parteth with his Money for Land, doth the contrary: But to sell Land to Foreigners, increaseth both Money and People, and consequently Trade. Wherefore it is to be thought, that when the Laws denying Strangers to purchase, and not permitting them to trade, without paying extraordinary Duties, were made; that then the publick State of Things, and Interest of the Nation were far different from what they now are.

Having handled these ten principal Conclusions, I might go on with others *ad infinitum*; but what hath been already said I look upon as sufficient to shew what I mean by *Political Arith-*

Arithmetick; and to shew the Uses of knowing the true State of the People, Land, Stock, Trade, &c. 2. That the King's Subjects are not in so bad a Condition as discontented Men would make them. 3. To shew the great Effect of Unity, Industry, and Obedience, in Order to the common Safety, and each Man's particular Happiness:

F I N I S.

