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Chas. Shaffner jun.

Paradise

year

of Adam

Chr. H. Hasbrouck

Poet of New York

1793

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The American INSTRUCTOR: OR, Young Man's Best Companion.

CONTAINING,

Spelling, Reading, Writing, and Arithmetick, in an eaſier Way than any yet publiſhed; and how to qualify any Perſon for Buſineſs, without the Help of a Maſter.

Inſtructions to write Variety of Hands, with Copies both in Proſe and Verſe. How to write Letters on Buſineſs or Friendſhip. Forms of Indentures, Bonds, Bills of Sale, Receipts, Wills, Leaſes, Releaſes, &c.

Alſo Merchants Accompts, and a ſhort and eaſy Method of Shop and Book keeping; with a Deſcription of the ſeveral *American* Colonies.

Together with the *Carpenter's* Plain and exact Rule: Shewing how to meaſure *Carpenters, Joyners, Sawyers, Bricklayers, Plaiſterers, Plumbers, Maſons Glaſiers,* and *Painters* Work. How to undertake each Work, and at what Price; the Rates of each Commodity, and the common Wages of Journeymen; with *Gunter's* Line, and *Coggeſhal's* Deſcription of the *Sliding Rule.*

Likewiſe the PRACTICAL GAUGER made Eaſy; the Art of *Dialling*, and how to erect and fix any *Dial*; with Inſtructions for *Dying, Colouring*, and making *Colours.*

To which is added,

The POOR PLANTER'S PHYSICIAN:

With Inſtructions for *Marking* on *Linnen*; how to *Pickle* and *Preſerve*; to make divers Sorts of Wine; and many *excellent Plaiſters*, and *Medicines*, neceſſary in all *Families.*

And alſo,

Prudent Advice to young *Tradeſmen* and *Dealers.*

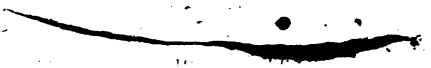
The whole better adapted to theſe American *Colonies, than any other Book of the like Kind.*

By *GEORGE FISHER*, Accomptant.

The Tenth Edition, Reviſed and Corrected.

PHILADELPHIA: Printed by B. FRANKLIN and D. HALL, at the New-Printing-Office, in *Market-Street*, 1758.

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THE PREFACE.

I Need say but little by way of Preface, in relation to the Usefulness of this Book, the Title Page so fully declaring its Contents: But as a Preface is usually expected, I must and cannot well avoid saying something with respect to its Utility.

As to the first Step of forming the young Man's Mind for Business, viz. The being instructed in, and acquainted with our Mother Tongue, viz. English, it must and is acknowledged by all, to be a due and principal Qualification in writing Business, and therefore it is necessary to be therewith well acquainted.

Then in the next Place, to write a good, fair, free, and commendable Hand, is as necessary in most, if not in all the Affairs of Life, and Occurrences of Business.

The next Thing touched on, is in relation to the inditing of some few Epistles or Letters in a familiar Stile, and on sundry Subjects and Occasions: With Directions how to subscribe or conclude a Letter, and also to superscribe or direct Letters, according to the different Ranks and Qualities of the Persons to whom directed: And this cannot be deny'd but to be a

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Qualification fit for a young Man, and alſo to others of more adult Years.

The next Accompliſhment for a young Man, and largely treated on in this Book, is that excellent Science of Arithmetick, *both Vulgar and Decimal: Leading him by the Hand, and by eaſy Steps, through its whole Courſe.*

Again the young Man is next ſhewn the ingenious Art of Book-keeping after the Italian *Manner, by way of Double Entry; and that is an Accompliſhment that capacitates him for Buſineſs in the higheſt Degree: Under which Head, he is alſo informed how to draw out or make various Sorts of Accompts or Writings, relating to Mercantile Affairs; as Bills of Lading, Invoices, Accompts of Sales, together with authentick Examples of Bills of Exchange, with Notes concerning them; likewiſe Bills of Parcels of divers Kinds; alſo various Sorts of Receipts,* &c. *All which is expedient for a young Man to know and underſtand, if he would be dextrous in Buſineſs.*

Next he hath a conciſe Account of the ſeveral American *Colonies; with a ſhort but comprehenſive Account of all the Arts and Sciences. An hiſtorical Table of the moſt remarkable Events that have happened in the World; and An Abſtract of the Hiſtory of* England.

Here are alſo, eaſy, plain, and likewiſe curious Directions for meaſuring all Sorts of Planes and Solids (Arithmetically and Inſtrumentally) as the Works of Carpenters, Joiners, Sawyers, Bricklayers, Maſons, Plaiſterers: Painters, Glaſiers, &c. *with the Prices of their Works.*

Here is likewiſe ſhewn the Methods, of extracting the Square and Cube Roots, with ſome of their Uſes, in relation to Meaſuring, &c.

Alſo Practical Gauging of divers Kinds of Veſſels, Tuns, &c. *Likewiſe Dialling in various Kinds, with the Repreſentation of the ſeveral Sorts of Dials, and how to beautify and adorn them.*

Next are Precedents of Law Writings, as Bonds, Bills, Indentures, Wills, Letters of Attorney, &c. *in great Variety, and adapted to theſe* American *Colonies.*

Laſtly,

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Lastly, some Directions relating to the pleasant and delightful Art of Grafting and Inoculating. To which is subjoined, some Instructions to young Women how to Pickle and Preserve all Kinds of Fruits and Flowers, &c. *with Instructions for making divers Sorts of Wines of* English *Growth; and also for preparing many excellent Medicines, Plaisters,* &c. *with several good Prescriptions of proper Use against most Distempers: Fit for, and necessary in, all Families. Including the whole of that useful little Tract, intituled,* The Poor Planter's Physician.

To the whole is added, some prudential Advice to a young Tradesman or Dealer; which, if observ'd, may, with God's Blessing, make his Fortune.

In the British *Edition of this Book, there were many Things of little or no Use in these Parts of the World: In this Edition those Things are omitted, and in their Room many other Matters inserted, more immediately useful to us* Americans. *And many Errors in the Arithmetical Part are here carefully corrected.*

VALE & FRUERE.

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INSTRUCTIONS FOR YOUTH,

To Spell, Read, and Write

TRUE ENGLISH.

The Uſe of Great and Small Letters; *how to divide them into Vowels and Conſonants; what Diphthongs are, their Numbers, and how pronounced and written.*

THE Subject Part of this Book being to inſtruct Young (as well as Old) People, in the general Rules of Buſineſs and Converſation thereunto belonging, the firſt Step I ſhall take for forming the Mind for Buſineſs, is that moſt neceſſary Accompliſhment, the Spelling and Writing good and proper *Engliſh*; for let a Perſon write never ſo good a Hand, yet if he be defective in Spelling, he will be ridiculed and contemptibly ſmiled at, notwithſtanding his fair Writing; and which will, indeed, make his Orthographical Faults be more conſpicuous. But to the Matter.

Firſt, We are to take Notice, that of Letters are made Syllables, of Syllables Words, and of Words, Sentences, *&c.*

The Letters are in Number 24; to which if you add *j* and *v* Conſonants, being of a different Shape and Sound from the reſt, they make 26. As to the Letters, we are to obſerve their Names, their Form, and their Force: Their Names, whereby to know them; their Form, whether great or ſmall; and their Force in Pronounciation or Utterance.

Letters

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Letters are distinguished, according to their Sound, into Vowels and Consonants: A *Vowel* is a Letter that soundeth by itself, and they be five in Number, *viz. a, e, i, o, u,* and *y,* the *Greek* Vowel; which also is a Vowel in *English,* when it cometh after a Consonant, and hath the Sound of *i*; as in *by, sly, reply,* &c. A *Consonant* is a Letter that soundeth not, except it be joined with a *Vowel,* for without one of the Vowels no Syllable can be made; as, *b, c, d,* &c. without the Aid of a *Vowel,* make nothing: So that *Vowels* and *Consonants* may be compared to *Nouns Substantive* and *Nouns Adjective,* each requiring the other's Assistance. Though we have but 24 Letters, and 6 of them *Vowels,* yet we have 21 *Consonants*; for *j, v,* and *y,* when they are set before any *Vowel,* in the same Syllable, become *Consonants*; as was said before concerning *y*; as in *Jupiter, Juno, Jilt, vulgar, violent, vigour,* &c. *Note,* That *j* Consonant hath the Sound of *g,* as in *join, jangle, jingle,* &c.

When two *Vowels* come or meet together in a Word, and are not parted in the Pronounciation, but united in one Sound, such are called *Diphthongs*; being 13, *viz. ai, ei, oi,* and *ui, au, eu, ou, ee, oo, ea, eo, oa,* and *ei*; as in *maid, faith, either, join, aul, eunuch, stout, feed, seed, food, brood, stealth, wealth, people, steeple, boat, goat, heat, beat, feat, friend, field,* &c. *Note,* That in the first 7 Words, both *Vowels* are sounded; but in the other 15, one of them is scarcely heard.

There are also those that are called *Tripthongs,* where three *Vowels* meet in one Sound, as in *Beauty, Beau, Lieu,* and *View*: Likewise *ay, ey, oy, uy, aw, ew,* and *ow* become *Diphthongs,* at the End of Words, but are called *improper Diphthongs*; as in *say, key, joy, saw, bow,* &c.

Of Letters Great and Small, and when to be used.

FIRST Negatively, *Great Letters* are not to be used in the Middle or latter End of a Word, except the whole Word be so written, as JEHOVAH, LORD, or Titles of Books, &c. For it would be very absurd to write thus: To Mr. geoRgE RoGeRs In thaMes StReEt.

1st, Great Letters, or *Capitals,* are written at the Beginning of Sentences; as, Fear God. Honour the King. Know when to speak, and when to hold your Tongue.

2dly. After every Period, or Full Stop, when new Matter begins. As, Some time after that Accident, another followed,

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lowed, which was this, *&c.* London, May 16. Turin, June 12, *&c.*

3*dly*, All Proper Names of Persons, Places, Ships, Rivers, *&c.* are to begin with a Capital; as, *George*, *London*, the *Dreadnought*, *Thames*, *Severn*: All Christian Names and Surnames, both of Men and Women, must begin with a Great Letter; as, *Samuel Sharp*, *Mary Sweeting*, &c.

4*thly*, The more eminent Words in a Sentence; as Faith is the Foundation of the Christian Religion; or, any Word that we have a particular Regard or Deference for; as, *God*, *Christ*, *King*, *Queen*, &c.

5*thly*, At the Beginning of every Line in Poetry; as,

Improve your Time: Time passeth quickly on;
Nor doth so good succeed, as that that's gone.

6*thly*, All Names of Arts, and Sciences, and Trades; as, *Writing*, *Arithmetick*, *Geometry*, *Musick*, *Carpenter*, *Smith*, &c. And evermore the Personal Pronoun *I*, and the Interjection *O*, must be Capitals.

For it is ridiculous to write thus; *On Monday last i came to your House, but you was not at Home; then i went*, &c.

Lastly, I think I may venture to give a general Rule when Capitals are to begin Words, which is this; All Nouns Substantive may begin with a great Letter; and a Substantive may be known by the Signs either of *A*, *An*, or *The*, before them; as, *a House*, *a Mill*, *an Ox*, *an Ass*, *the City*, *the River*, &c. And I think the Adjective (which declares what Sort of a Thing the Substantive is) may be with a Small, and the Substantive with a Great Letter; as, *the white Horse*, *the long Rope*, *brown Bread*, *fat Beef*, &c.

Small Letters are commonly written in all other Places, as Verbs of the Active and Passive Voice, &c.

Observations concerning the Sound of Letters, and which are omitted in Pronounciation.

A Is not sounded in *Pharaoh*, nor in *Sabbaoth*, but as if written *Pharo*, and *Sabboth*; neither in *Marriage*, but as *Marrige*; also *Parliament* as *Parliment*, and *Chaplain* as *Chaplin*, &c. In some proper Names it is not sounded, but drop'd in the Pronounciation; as in *Aaron*, *Isaac*, *Canaan*, *Balaam*, which are pronounced as if written *Aron*, *Isac*, *Canan*, *Balam*; but we must except *Ba al*, and *Ga-al*. *A* is sounded broad like *aw*, in Words before *ld* and *ll*; as in *bald*, *scald*, *ball*, *wall*, *fall*, &c.

B is

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B is not ſounded in *thumb*, *dumb*, *plumb*, *lamb*, *doubt*, *debt*, *ſubtle*, &c. but ſounded as if written *thum*, *dum*, *plum lam*, *dout*, *det*, *ſuttle*.

C is ſounded hard like *K*, before *a*, *o*, and *u*, and before *l* and *r*; as in theſe Words, *cane*, *came*, *comb*, *cub*, *clay*, *crane*, *crab*; and ſoft in *cement*, *city*, and *tendency*; *C* loſeth its Sound in *ſcene*, *ſcience*, and *victuals*, and in *verdict*, likewiſe in *indict*, *indictment*; alſo before *k*, as in *ſtack*, *rack*, *ſtick*, *thick*, *brick*.

Ch is ſounded like *K*, in Words of Foreign Extraction, and in many proper Names of the holy Scripture; as in *Chorus*, *Chymiſt*, *Chryſoſtom*, *Chriſt*, *Chederlaomer*, *Baruch*, *Archippus*, &c. *Ch* in *French* Words ſound like *ſh*, as in *Chevalier*, pronounced as *Shevalier*: *Machine* as *Maſheen*, *Mareſchal* as *Marſhal*, *Capuchin* as *Capuſheen*, *Chaiſe* as *Shaze*, &c.

D is not ſounded in *Ribband*, nor in *Wedneſday*, but pronounced as *Ribbin*, and *Wenſday*; the Termination *ed* is ſhortened into *t*; as *burned*, *burnt*; *choaked*, *choakt*; *ripped*, *ript*; *paſſed*, *paſt*; *choped*, *chopt*; &c.

E is not ſounded in *heart*, neither in *hearth*, or *dearth*, &c. and ſeldom heard but in Monoſyllables; as in *me*, *he*, *ſhe*, *ye*, *the*, &c. where it hath the Sound of *ee*; but in Words, derived from the *Hebrew* and *Greek*, *e* hath its perfect Sound, as, *Jeſſe*, *Jubile*, *Mamre*, *Nineve*, *Candace*, *Cloe*, *Eunice*; *Penelope*, *Salmone*, *Phebe*, *Epitome*, *Cataſtrophe*, *Gethſemane*, and from the *Latin ſimile*, and *premunire*, &c. *E final*, or *e* at the End of a Word, ſerves to lengthen the Sound, and to diſtinguiſh it from other Words without *e*, which are ſounded ſhort; as in theſe Examples following, *viz. cane*, *can*; *hate*, *hat*; *bite*, *bit*; *fare*, *far*; *hope hop*; *made*, *mad*; *mane*, *man*; *ſcrape*, *ſcrap*; *flare*, *flar*; *tune*, *tun*; *write*, *writ*; &c. And in Words of more than one Syllable, lengthens the Sound of the laſt Syllable, but doth not increaſe the Number of Syllables; as, *admire*, *deniſe*, *blaſpheme*, &c. *E* lengthens the Syllable in *Tyre*, *Kenite*, and *Shu-la-mite*. *E* muſt not be made to lengthen a Syllable, when it is made ſhort by two Conſonants; as in *paſs*, *turn*, *black*; not *paſſe*, *turne*, *blacke*. Words ending in *cre*, *gre*, and *tre*, Sound the *e* before the *r*, as in theſe Words; *acre*, *lucre*, *centre*, *ſepulchre*, *tygre*, *maugre*, *mitre*, *luſtre*; which are ſounded as if writen *aker*, *luker*, *senter*, *ſcpulker*, *tyger mauger*, *miter*, and *luſter*. *E final*, when not ſounded, ſerves to ſoften *c* and

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g, as in *ace*, *place*, *lace*, *ſpice*, *truce*, *oblige*, *huge*, *age*, &c. If Nouns in *e final* take *s* after them with an Apoſtrophe before it, it ſtands for *his*, as the *Pope's Eye*, or the *Eye of the Pope*. If without an Apoſtrophe, it makes the Plural Number, as *Tables*. *E* muſt be joined to long *ſ* in theſe Words; *Horſe*, *Nurſe*, *Purſe*; not *Hors*, *Nurs*, or *Purs*. If to *e* at the End of a Word, a long Vowel be added, the *e* is to be omitted, as in *writing*, *loving*, *doing*, &c. not *writeing*, *loveing*, or *doeing*; except the Terminations *ge* and *ce* before *able*, as in *charge-able*, *peace-able*, &c. *E* muſt not be written after a Diphthong, in theſe Words; *vain*, *maid*, *gain*, *fear*, *gnaw*, &c. *not vaine*, *maide*, *gaine*, &c.

F in Plurals is changed into *v*, as, *ſtrife*, *ſtrives*, *ſtaff*, *ſtaves*.

G is not ſounded in *ſign*, *reign*, neither in *gnaw*, *gnat*, *aſſign*, *deſign*, *ſeignior*, *ſeraglio*, *phlegm*, &c. but ſounded as if *ſenior*, *ſeralio*, *ſteme*. *G* is ſounded ſoft in *gender*, *ginger*, and *gipſy*; but hard in *Gibeon*, *Giberah*, *Gilboa*, *Geth-ſemane*, and hard alſo in theſe Proper Names, *Gibſon*, *Gilman*, and *Gilbert*; and likewiſe in theſe common Words, *gelt*, *geld*, *gird*, *gimp*, *geeſe*, *gander*, *gabble*, *gather*, *gild*, &c. Obſerve, That if *G* be *hard* with a long Vowel, *ue* is joined and pronounced in the ſame Syllable; as in *Plague*, *Prague*, *Hague*, *rogue*, *league*, *dialogue*, *catalogue*, &c.

Gh in the End of ſome Words, where *au* or *ou* goes before, hath the Sound of *ff*, as in *tough*, *rough*, *cough*, *laugh*, ſounded as if *tuff*, *ruff*, *coff*, *laff*; but *huff*, *cuff*, *ſnuff*, and *buff*, muſt be ſo written.——*Gh* is not ſounded in *mighty*, *though*, *through*, neither in *daughter*, or *Vaughan*.

H hath Place, but no Sound, in *Chryſtal*, *Chroniele*, *Chriſt*, *Ghoſt*, *John*, *Rhine*, *Schedule*, and *Schiſm*. *H* is not ſounded at the End of Words, if it be alone, without *t* or *c* before it, as, *ſnatch*, *watch*, &c.

I is not ſounded in *adieu*, *juice*, *veniſon*, *fruit*, *bruiſe*, *Saliſbury*; but ſounded like *ee* in *oblige*, *Magazine*, and *Machine*, &c. *I* is ſounded long in proper Names ending in *iah*, *Jeremiah*, *Hezekiah*; but ſhort in *A-ri-el* and *Me-ri-am*.—The tail'd *j*, or Conſonant, hath been ſpoke of before.

K is nearly allied in Sound with *C*; but to know when to uſe one, and when the other, *Note*, that *C* hath the Force of *K* only before *a*, *o*, *oo*, and *u*, and theſe two Conſonants *l* and *r*; and therefore we muſt not write, *kare* for *care*, *kow*

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kow for *cow*, *krown* for *crown*; and the use of *K* is only before *e*, *i*, and *n*; wherefore we must write *keep*, *key*, *knight*, *kill*, &c. not *ceep*, *cey*, *cnight*, nor *cil*: We must write *Calendar*, *Catherine*, rather than *Kalendar*, or *Katherine*.

L is not sounded in *calf*, *half*, *chalk*, *stalk*, *walk*; but pronounced as if *cafe*, *hafe*, *chauk*, *flauk*, *wauk*. Neither is *l* pronounced in *Briſtol*, *Holborn*, *Lincoln*, *Salmon*, or *Chaldron*; but sounded as if writ *Briſtow*, *Hoburn*, *Lincon*, *Sammon*, and *Chaudron*; nor in *Colonel*, where the firſt *l* hath the Sound of *rr*, as *Curronel*.

M hath the Sound of *n*, in the Word *accompt*.

N is not heard in *autumn*, *lime-kiln*, *ſolemn*, *limn*, *hymn*, *column*, nor in *condemn*.

O is not ſounded in *people*, *feoffe*, *baſon*, *mutton*, and loſt alſo in *yeoman*, *maſon*, *righteous*, *bacon*, *jeopardy*, and *crimſon*. *O* ſometimes ſounds like *oo*, as in *doing*, *moving*, *proving*, &c. *O* is not heard in *coroner*, *damoſel*, *Nicholas*, *carrion*, nor in *chariot*; but pronounced as if writ *crowner*, *damſel*, *Nicklas*, *carrin*, and *charrit*.——*O* is ſometimes ſounded like *i*; as in *women* and *flagon*, pronounced as if *wimmen* and *flaggin*. And ſometimes *O* is ſounded as *u*, as in *corduit*, *conjure*, *attorney*, and *Monmouth*, being heard as if writ *cundit*, *cunjur*, *atturney*, and *Munmouth*.

P is written, but not ſounded, in *empty*, *preſumptuous*, *pſalm*, *ſumpter*, *accompt*, *attempt*, *pſalter*, and *ſymptom*; alſo in *ſumptuous*, *contemptuous*, *receipt*, and *conſumptive*, &c.

Ph have the ſound of *f*, when together in one Syllable; as in *philoſophy*, *phyſician*, *Aſaph*, and *elephant*, but we muſt not write *filoſophy*, *fiſitian*, nor *Aſaf*, or *elefant*. *Ph* are parted in *ſhep-herd*, *up-hold*, and in *Clap ham*, and other ſuch compounded Words.

Q. After *Q* always follows *u* in all Words; and in *French* Words it hath the Sound of *k*; as in *riſque*, *liquor*, *catholique*, *banquet*, *conquer*, *maſquerade*, *chequer*; pronounced as *riſk*, *likker*, *catholic*, *banket*, &c.

S is not ſounded in *iſland*, *viſcount*, or *iſle*, nor in *Liſle*, but pronounced as *land*, *vicount*, *ile*, and *Lile*.

There be two Sorts of *S*'s, the long *ſ*, thus *ſ*; and the little *s*, thus *s*; the long *ſ* in the Beginning and Middle of Words, (but never at the latter End) and the ſhort or ſmall *s* at the latter End of Words, and ſounds *hard* like *z*, in all the Words of the plural Number, and in Words of the third Perſon; as *names*, *worms*, *he reads*, *ſhe hears*, *S* ſounds *hard*

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hard, in Words that terminate in *sion*, as in *circumcision*, *evasion*, *delusion*; but after a Consonant *soft*, as in *conversion*, *commission*, *dimension*. S is likewise sounded hard in these Words, *raise*, *praise*, *chaise*, *cheese*, *these*, *compose*, *expose*, *bruise*, *refuse*, *applause*, *pause*, *clause*, *wisdom*, *casement*, and *d'msel*.——I do not think it any very great Abuse, to have the small *s* sometimes in the Beginning or Middle of a Word, as well as at the latter End; especially if a *t* follow it, thus *st*.

Th sounds *fine* in *thin*, *think*, and *wrath*; and is sounded *hard* in *thee*, *then*, *they*, *that*, *blythe*, *tythe*, and *sithe*; also in *mother*, *brother*, *hither*, *thither*; and in *loath*, *cloath*, and *cloather*, &c.

Ti before a Vowel or Diphthong, hath the Sound of *si*; as in *patience*, *dictionary*, *gratian*, *oblation*, *nation*, *translation*; except when *s* goes just before it, as in these Words, *question*, *fustian*, *bastion*, *combustion*, and *celestial*, and also *bestial*, &c. In some Words of *Hebrew* and *Greek*, *ti* retains its natural Sound; as in *Shealatiel*, *Phaltiel*, *Shephatiah*, *Cotittia*, *Adramyttium*, and the like; and in *mightier* and *mightiest*, *emptiest*, *emptied*; and from *pity*, we say *piti-able*.

U is sounded like *i* in *bury*, *birry*, *busy*, *bizze*; *business*, as *bizness*.

W is not sounded, though written, in *answer*, *sword*, *whore*, nor in *swooning away*, neither is it heard in *wrap*, *wrath*, *wrong*, *wretch*, *wreath*, *wrangle*, *wriggle*; but pronounced as if *sord*, *hore*, *souning*, and hath the Sound of *R* in the last seven Words, *viz. rap*, *rath*, *rong*, &c.

Wh belongs to Words purely *English*; as *what*, *when*, *where* and *wheel*.

X is sounded as *z*, in *Xenophon*, *Xerxes*, *Xenocrates*, and *Xantippe*.

Y is either a Vowel or Consonant, as hinted before. A *Vowel*, in *my*, *by*, *fly*, *thy*; and sometimes, when a *Vowel*, it hath the Sound of *ee*, as in *worthily*, *christianity*, *liberty*, *formerly*, *formally*, *Normondy*, and *Dorothy*. *Y* is a *Consonant* when it begins a Word, as in *yet*, *you*, *yonder*, *younger*, and *yesterday*.

Z hath its proper Sound, in *Zeno*, *zeal*, *zealous*, and in *Zenobia*. It hath the Sound of *s* in *Elizabeth*, *size*, *prize*, and *Melchizedeck*; the first of which Words hath been formerly, and sometimes now is writ with an *s*, thus, *Elisabeth*.

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Thus far for the Sound of Letters single; and now I shall give a few Notes concerning two Letters, when they are united in one Sound, called *Diphthongs*; and first of

Ai and *Ay*. These have the Sound of *a*, in *air*, *fair*, *pair*, *may*, *stay*, *play*; but *a* is lost in *Calais*, (a Town of *France*) and pronounced separately in *Sinai*, (a Mountain of *Arabia*).

Ei, and *Ey*, are sounded in *eight*, *streight*, *sleight*, and *heyday!* and are pronounced as *e*, in *key*, *veil*, and *convey*; but *eye* must be excepted: And *ei* is sounded as *a*, in *neighbour*, and *heir*, being pronounced as *nabor* and *are*.

Oi and *Oy* have a Sound peculiar to themselves; as in *oil* and *oyster*; but make no Diphthong in *going* or *doing*.

Au and *Aw* commonly keep a proper Sound; as in *augur*, *austere*, *daw*, *maw*, *saw*, &c. but *au* is lost in *aunt*, and *gauger*, being sounded as *ant* and *gager*; likewise is not heard in *Em-ma-us*, and *Ca-per-na-um*.

Eu and *Ew* have an united Sound in all Words, as in *feud*, *brew*, *new*, and *grew*; but *eu*, is no Diphthong in *Zac cheus*, or in *Bar-ti-me-us*.

Ou and *Ow*. *Ou* is expressed in *foul*, *soul*, *proud*, *loud*; and *ow* in *bow*, *cow*, and *now*; but *ou* sounds like *oo*, in *soup*, (a *French* Dish) *Stroud*, (a Town in *Kent*) and *Cowper*, (a Man's Name) sounded as if *soop*, *Strood*, an i *Cooper*.

Ee is no Diphthong in *Be-e-rites*, *Be-er-sheba*, and in *Be-el-ze-bub*, one of the *e*'s is dropt in Pronounciation; neither in Words beginning with *re*, or *pre*, as *re-enter*, *pre-e-minence*.

Oo is properly sounded in *cool*, *fool*, *pool*, and *tool*; but hath the Sound of *u* in *root*, *foot*, and *soot*; and makes no Diphthong in *Co-os*, *co-o-pe-rate*.

Ea sounds like *a*, in *sea*, *pea*, *seam*, and *ream*; and hath the sound of *e* in *bread*, *head*, *lead*, *dead*, *search*, *leather*, *feather*, *heaven*, and *leaven*; but is no Diphthong in *ven-geance*, *mis-cre-ant*, or any *Hebrew*, *Greek*, or *Latin* Words; as in *Ka-desh*, *Bar-ne-a*, *Kir-jath-je-a-rim*, nor in *Ce sa-re-a*, *i-de-a*, or *o-ce-an*; neither in *re al*, *be-a-ti-tude*, *cre-a-tor*; but except *creature*; nor in Words beginning with *pre*, as *pre-amble*, &c.

Oa is sounded as *o* in *goat*, *boat*, and *coat*; and sounded broad, as *au*, in *broad* and *groat*; but is no Diphthong in *Go-a*, (a City in *India*) or in the *Hebrew* Words *Zo-an*, *Zo-ar*, and *Gil-bo-a*.

Le

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Ie before a ſingle Conſonant, ſounds like *ee*, as in *brief*, *chief*, and *thief*; but if before two Conſonants, it ſounds like *e*; as in *friend*, *field*; but at the End of *Engliſh* Words, *e* final is not heard, as in *die*, *ſignifie*; and is no Diphthong in *A-bi-e-zer*, *Eli-e-zer*, nor in the *Engliſh* Words *di-er*, *car-ri-er*, or *clo-thi er*; and in Words derived from the *Latin*, *ie* is parted, as in *cli-ent*, *o-ri-ent*, *qui-et*, and *ſci-ence*.

Ui is ſounded as *u* in *juice*, *fruit*, and *ſuit*; but *u* is loſt in *conduit*, *build*, and *guiſe*, and is no Diphthong in *je ſu-it*, *ge-nu-in*, or *fru-i-ti-on*.

Æ and *Œ* be no *Engliſh* Diphthongs, but are uſed in *Æſop*, *Æneas*, *Ætna*, *Cæſar*, *Oedipus*, and *Oeconomy*; but in common Words they are neglected; as in *equity*, *female*, and *tragedy*, tho' derived of *æquitas*, *fœmina*, and *tragœdia*.

Of Syllables, *and their Diviſion, being the Art of Spelling.*

A *Syllable* is a taking Letters together, and uttering them in one Breath, as *vir-tue*; ſo that *virtue* being thus divided, or taken aſunder, makes two *Syllables*, viz. *vir* and *tue*, which put together, forms the word *virtue*. And many times a Vowel, or a Diphthong, of themſelves, make a *Syllable*; as in *a-bate*, *e-ve-ry*, *i-dle*, *o-ver*, *u-ſu-rie*; ſo of *Diphthongs*, as *au-ge*, *Eu-ſtace*, *ow-ner*, *ai-der*, *oy-ſter*, *Ea-ton*, *oa-ten*: By which we may particularly note, That no *Syllable* can be made, be there never ſo many *Conſonants*, or ſo few, without the Aid of a *Vowel* or *Diphthong*.

The longeſt *Monoſyllables* we have in *Engliſh*, are *length*, *ſtrength*, and *ſtreights*; which ſtill would be nothing, without the Vowel *e* and *i*.

All Spelling may be taken in, under theſe four following general Rules, or Heads.

1*ſt*, When a *Conſonant* comes between two *Vowels* in dividing the Word into *Syllables*, the *Conſonant* is joined to the latter Vowel; as in *ſta-ture*, *na-ture*, *de-li-ver*, *u-ni-ty*, &c. except compound Words, which terminate in *ed*, *en*, *eſt*, *eth*, *er*, *ing*, *iſh*, and *ous*; as *coaſted*, *gold-en*, *know-eſt*, *know-eth*, *bear-er*, *fool-ing*, *bar-ba-rous*, *ra-ven-ous*, and *ſub-urbs*.

2*dly*, When two *Conſonants* come together in the Middle of a Word, they are to be parted if not proper to begin a Word; as *num-ber*, *ſtran-ger*, *for-tune*, &c. not *numb-er*, *ſtrang-er*, *fort-une*: To this Rule is excepted, Words with *x*, as *ox-en*, *ex-er-ciſe*, &c. When the ſame Conſonant is doubled

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in a Word, the firſt belongs to the foregoing, and the latter to the following Syllable, as in the Rule above, and in theſe words, *Ab-ba, ac-cord, an-no, ad-der, &c.*

3*dly*, *Conſonants* that can begin Words, muſt not be parted in the Middle; as *a-gree, be-ſtow, re frain, &c.* not *ag-ree, beſ-tow, ref-rain.*——Theſe *Conſonants* may begin Words, *viz. bl, br, ch, cr, dr, dw, ſt, fr, gh, gl, gr, kn,* &c. as *blunt, break, chaw, cry, draw, dwell, fleſh, ghoſt,* &c. On the Contrary, *Conſonants* that cannot begin Words, muſt be parted in the Middle, as in *Sul-tan*, and as ſaid above.

4*thly*, When two *Vowels* come together, not making a Diphthong, they muſt be divided; as in *vi-al, va-li-ant, Li-o-nel, du-el, cry-el, me-te-or*, and *La-o-di-ce-a.*

Some particular Notes.

L is doubled in Words of one Syllable; as *well, tell, ſwell, hall, wall, fall, will, hill, mill,* &c. But in Words of more than one Syllable, the Word always terminates with ſingle *l*, as, *angel, Babel, hurtful, dutiful*, and *beautiful.* Neither muſt *l* be doubled in *alway, alſo, although*; not *all-way, all-ſo, all-though*, &c. But Words accented on the laſt Syllable, muſt be excepted from the Rule above, *viz. inſtall, recall, inroll, rebell*, and *repell.*

Y muſt be uſed before the Termination *ing*, as *buying, lying, carrying, marrying, paying, ſtaying, burying*, &c.

The long *ſ* muſt never be uſed at the End of a Word, or immediately after the ſhort or ſmall *s.*

X ſhould be uſed inſtead of *ct*, where it appears to have been in the Original; as *reflexion connexion*, rather than *reflection*, or *connection*, &c.

Remember, that if you cannot write out the whole Word at the End of the Line, break it off at the End of a Syllable, thus ——————————————————con-demn; not thus——————————————————cond-emn: Again——————————————————dif-charge; not——————————————————diſc-harge.

C muſt not be put between two *Conſonants*; as *think*, not *thinck*; *thank*, not *thanck*; *brink*, not *brinck*; but if a Vowel goes before *c*, you muſt write *c* before *k*, as *brick, ſtick, thick*, &c.

E final muſt not be placed after a Syllable made long by a Diphthong, as *rain*, not *raine*; *brain*, not *braine*; *re-ſtrain*,

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ſtrain, not *reſtraine*, &c. Neither is it neceſſary after *n* double Conſonant, as *inn* and *add*; not *inne* or *adde*: But we muſt except *Anne*, a Chriſtian Name, and *Donne*, a Surname; and alſo *Deale*, the Name of a Town in *Kent*.

Ph muſt be retained in Words of a Foreign Original; as *phancy*, *prophet*; not *fancy*, *profet*.

U follows *Q* in all Words, as was ſaid before.

Q is better than *C*, in ſome Words from the *Latin*, as *oblique*, *antique*, *relique*, rather than *oblike*, *antike*, or *relike*. Alſo *paquet*, *riſque*, *traffique*, and *Fabrique*, from the *French*.

K is by ſome thought unneceſſary in Words of Foreign Extraction, *viz. arithmetic*, *muſic*, *logic*, *public*, *catholic*, and *phyſic*; rather than *arithmetick*, &c.

Of *S* and *C*. Some People may eaſily drop into Error by miſtaking *S* for *C*, as in the Beginning of the following Words, where *C* hath the perfect Sound of *S*, though *C* muſt undoubtedly be written, *viz.* in

Ceiling	Cinnamon	Cell	Ceruſs
Celeſtial	Ceremony	Cenſer	Centre
Civet	Cellar	Celerity	Cinque
Certain	Cenſure	Cypreſs	Cypher
Cymbal	Cenſor	Circle	City
Ciſtern	Ceaſe	Circuit	Citron
Centurion	Celebrate	Cement	

But theſe Words muſt be written with *S*, *viz.*

Science	Sceptre	Scarcity	Sciatica
Schedule	Scheme	Schiſm	Scythian

When to write *ti*, and when *ſi*——*viz.*

with ti.	*with* ſi.
Contention	Confuſion
Action	Occaſion
Contradiction	Contuſion
Attention	Oppreſſion
Benediction	Alluſion
Apparition	Aſcenſion
Concoction	Averſion
Declaration	Aſperſion
Ambition	Commiſſion
Contrition	Comprehenſion
Oration	Circumciſion
Oblation	Concluſion

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These Words spell thus,

Passion, *not* Pashon	Salisbury, *not* Salsbury
Fashion, *not* Fation	Leicester, *not* Lester.
Cushion, *not* Cution	Shrewsbury, *not* Shrosbury
Glouceſter, *not* Gloſter	Carliſle, *not* Carlile
Worceſter, *not* Worſter	Weſtminſter, *not* Weſtmiſter.

Another Qualification in Spelling, is rightly to diſtinguiſh Words of the *ſame Sound*, though widely different in their Senſe and Signification: Such as theſe that follow, *viz.*

A

A Bel, *Cain*'s Brother
Able, to do a Thing
A Bell, to ring
Accidents, Chances
Accidence, a Book
Acre, of Land
Acorn, of an Oak
Acher, a Valley of that Name
Advice, Counſel
Adviſe, to counſel
Account, Eſteem
Accompt, of Reckoning
Ale, a Drink
Ail, Trouble
All, every one
Awl, for Shoemakers
Alley, a narrow Place
Ally, a Friend or Confederate
Allay, to give Eaſe
Alloy, baſer Metal
Altar, for Sacrifice
Alter, to change
Ale-hoof, an Herb
Aloof, at a Diſtance
Allow'd, approv'd
Aloud, to ſpeak ſo
Amiſs, wrong
A Miſs, or Miſtreſs
Ant, a Piſmire
Aunt, a Father's Siſter
Anchor, of a Ship
Anker, a Rundlet
A Peal, of Bells
Appeal, to higher Powers
Appear, to be ſeen
A Peer, a Lord
Aray, good Order
Array, to cloth
A Roſe, to ſmell to
Aroſe, did riſe
Are, they be
Heir, to an Eſtate
Arrant, notorious
Errand, a Meſſage
Arrows, to ſhoot
Arras, Hangings
A Scent, or Smell
Aſcent, a going up
Aſſent, Agreement
Aſſiſtance, Help
Aſſiſtants, Helpers
Augur, a Soothſayer
Augre, to bore with
Ax, to cut with
Acts, of Parliament
Auſtere, ſevere
Oyſter, a Shell Fiſh

B

Babel, the Tower
Babble, to prate
Bacon, Hog's Fleſh
Baken, in the Oven
Beckon, to make a Sign
Bail, a Surety
Bale, of Goods

Bald,

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Bald, without Hair
Bawl'd, cry'd out
Ball, to play with
Bawl, to cry aloud
Barbara, a Woman's Name
Barbary, in Africa
Barberry, a Fruit
Bare, naked
Bear, a Beaſt, or to bear
Bays, of Bay Trees
Baize, Cloth of Colcheſter
Baſe, Vile
Baſs, in Muſic
Belly, Part of the Body
Belie, to ſpeak falſly
Be, they are
Bee, that makes Honey
Beer, to drink
Bier, to carry the Dead on
Bell, to ring.
Bel, an Idol
Berry, a ſmall Fruit
Bury, the Dead
Blue, a Colour
Blew, as the Wind
Board, a Plank,
Bor'd, a Hole
Boar, a Beaſt
Bore, to bore
Boor, a Country Fellow
Bold, Confident
Bowl'd, at the Jack
Bolt, the Door
Boult, the Meal
Bow, to bend, or the Bow
Bough, of a Tree
Boy, a Lad
Buoy, of an Anchor
Bread, to eat
Bred, brought up
Breeches, to wear
Breaches, broken Places
Bruit, a Report
Brute, Beaſt
Burrow, for Coneys
Burrough, a Corporation
By, near
Buy, with Money
Brews, he breweth
Bruiſe, a Hurt
Brewis, of Fat and Bread

C

Cain, that kill'd his Brother
Cane, to walk with
Caen, in Normandy
Calais, in France
Chalice, a Cup
Call, by Name
Cawl, or Suet
Cannon, a great Gun
Canon, a Church Rule
Capital, great or chief
Capitol, a Tower in *Rome*
Carier, full Speed
Carrier, of Goods
Cellar, for Liquors
Seller, that ſelleth
Cenſer, for Incenſe
Cenſor, a Reformer
Cenſure, to judge
Centaury, an Herb
Century, an hundred Years
Centry or Sentinel, a Soldier on Guard
Chair, to ſit in
Chare, a Job of Work
Champaine, Wine of *France*
Campaign, a wide Field, or Summer's Expedition
Choler, Rage or Anger
Collar, of the Neck
Coller, of Beef or Brawn
Cieling, of a Room
Sealing, with a Seal
Cittern, for Muſic
Citron, a Fruit

Clerk

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Clerk, a Clergyman
Clerk, of a Pariſh
Clauſe, Part of a Sentence
Claws, of a Beaſt or Bird
Coat, a Garment
Cote, for Sheep
Comb, for the Hair
Come, hither
Commit, to do
Comet, a blazing Star
Common, uſual
Commune, or converſe
Condemn, to Death
Contemn, to deſpiſe
Council, of the King
Counſel, Advice
Cou'd, or could
Cud, to chew as Beaſts
Current, a paſſing or running Stream
Courant, a Meſſenger or News-paper
Currants, Fruit
Crick, in the Neck
Creek, of the Sea or River
Couſin, a Relation
Cozen, to cheat
Cymbal, a muſical Inſtrument
Symbol, a Mark or Sign
Cypreſs, a Tree
Cyprus, an Iſland
Cruſe, for Oil
Cruize, by the Sea Coaſt
Cygnet, a young Swan
Signet, a Seal

D

Dane, of Denmark
Deign, to vouchſafe
Dam, ſtopping Water
Damn, to condemn
Dame, a Miſtreſs
Dear, of Price
Deer, in a Park
Deceaſed, dead
Diſeaſed, ſick
Decent, becoming
Deſcent, going down
Diſſent, to diſagree
Deep, low in the Earth
Diep, a Town in *France*
Defer, to put off
Differ, to diſagree
Derbe, a City of *Aſia*
Derby, a Town of *England*
Deſert, Merit
Deſart, a Wilderneſs
Dew, a falling Miſt
Due, owing
Do, to make
Doe, a female Deer
Dough, Paſte
Don, a *Spaniſh* Lord
Done, acted
Dun, of Colour
Dolphin, a Fiſh
Dauphine, the *French* King's eldeſt Son
Devices, Inventions
Devizes, in *Wiltſhire*
Doer, that doeth
Door, of a Houſe
Dragon, a Beaſt
Dragoon, a Soldier
Draught, of Drink
Drought, Dryneſs
Dolour, Grief or Pain
Dollar, a Piece of Money
Demure, Sober
Demur, a Stop or Doubt

E

Ear, of the Head
E'er, ever
Early, betimes,
Yearly, every Year
Earth, the Ground
Hearth, of the Chimney

Eaſter

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Easter, the Festival
Esther, a Woman's Name
Enter, to go in
Inter, to bury
Elder, not the Younger
Eldern, a Tree
Eaten, or swallowed
Eton, a Town's Name
Eminent, famous
Imminent, over Head
Enow, in Number
Enough, in Quantity
Earn, to deserve
Yarn, Woollen Thread
Yearn, to pity
Envy, or Hatred
Envoy, a Messenger
Exercise, Labour or Practice
Exorcise, to conjure
Err, to mistake
Er, Brother to *Onan*, Sons of *Judah*
Extant, in being
Extent, Distance

F

Fain, desirous
Feign, to dissemble
Fair, beautiful, or a Market
Fare, Victuals
Faint, weary
Feint, a false March
Fourth, in Number
Forth, to go out
Feed, to eat
Fee'd, rewarded
Fir, Wood
Fur, or Hair
Felon, a Criminal
Fellon, a Whitlow
File, of Steel
Foil, put to the worst
Fly, as a Bird
Fly, or Insect
Fillip, with the Fingers
Philip, a Man's Name
Flower, of the Field
Flour, Meal
Floor, of the Room
Follow, to come after
Fallow, Ground not plow'd
Find, to find any thing
Fin'd, amerced
Fiend, a Devil
Flea off the Skin, and also Vermin
Flee, to escape
Fowl, a Bird
Foul, dirty
Francis, a Man's Name
Frances, a Woman's Name
Frays, Quarrels
Froise, Pancake with Bacon

G

Gall, of a Beast
Gaul, *France*
Garden, of Herbs
Guardian, an Overseer
Genteel, graceful
Gentile, a Heathen
Gentle, mild
Gesture, Carriage
Jester, a merry Fellow
Groan, with Grief
Grown, greater
Guilt, of Sin
Gilt, with Gold
Greater, bigger
Grater, for Nutmegs
Grave, for the Dead
Greave, Armour for the Leg
Guess, to imagin
Guest, one entertain'd
Gluttonous, greedy
Glutinous, sticking as Pitch
Great, large
Grate, for Coals, &c.

Graze,

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Graze, to eat
Grays, a Town
Groat; Four pence
Grot, a Cave
Gallies, Ships with Oars
Gallows, for Criminals

H

Hare, of the Fields
Hair, of the Head
Harſh, ſevere
Haſh, minced Meat
Haven, a Harbour
Heaven, a large Place of Happineſs
Heart, of the Body
Hart, of the Woods, or an over-grown Buck
Herd, of Cattle
Heard, did hear
Hard, not ſoft, or difficult
Here, in this Place
Hear, with the Ears
High, lofty
Hie, away, make haſte
Him, that Man
Hymn, to ſing
Hail, congeal'd Rain
Hale, the Ship
Hall, in a Houſe
Haul, pull
Higher, taller
Hire, Wages
His, of him
Hiſs, as a Snake, or to deride
Hoar, Froſt
Whore, a lewd Woman
Hole, or Hollowneſs
Whole, intire
Ho! lo! to call
Hallow, to make holy
Holy, pious
Wholly, intirely
Home, one's Houſe
Holm, Holly
Hoop, for a Tub
Whoop, or ho! lo!
Hugh, a Man's Name
Hue, of Colour
Hew, with an Ax

I.

I, I myſelf
Eye, to ſee with
Idle, lazy
Idol, an Image
I'll, I will
Ile, of a Church
Iſle, an Iſland
Oil, of Olives
Imploy, in Work
Imply, to ſignify
In, within
Inn, for Travellers
Incite, to ſtir up
Inſight, Knowledge
Ingenious, of quick Parts
Ingenuous, candid
Iron, Metal
Ironie, ſpeaking by Contraries

K

Ketch, a Ship
Catch, to take
Kill, to ſlay
Kiln, for Lime
Kind, good natur'd
Coin'd, Money
Knave, diſhoneſt
Nave, of a Wheel
Knight, by Honour
Night, Darkneſs

L.

Laid, placed
Lade, the Water
Lane, not a Street
Lain, did lie
Latin, a Tongue
Latten, Tin

Lattice

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Lattice, of a Window
Lettice, a Woman's Name
Lettuce, Sallad
Leaſe, of a Houſe
Leaſh, three
Lees, of Wine
Leeſe, old Word for loſe
Leaper, that jumpeth
Lepar, one leprous
Leſſen, to make leſs
Leſſon, to read
Leaſt, ſmalleſt
Leſt, for fear
Lethargy, Sleepineſs
Liturgy, Church-ſervice
Lier, in wait
Lyar, that tells Lies
Limb, a Member
Limn, to paint
Line, Length
Loin, of Veal
Low, humble
Lo, behold
Loſe, to ſuffer Loſs
Looſe, to let go
Lower, to let down
Lour, to frown

M.

Made, finiſhed
Maid, a young Woman
Main, Chief
Mane, of a Horſe
Male, the He
Mail, Armour
Manner, Cuſtom
Manor, a Lordſhip
Market, to buy or ſell in
Mark it, note it
Marſh, low Ground
Maſh, for a Horſe, or of a Net
Martin, a Man's Name
Marten, a Bird
Mead, a Meadow
Mede, one of *Media*
Mean, of low Value
Mien, Carriage or Aſpect
Meat, to eat
Mete, to meaſure
Meſſage, Buſineſs
Meſſuage, a Houſe
Mews, for Hawks
Muſe, to meditate
Mighty, powerful
Moiety, half
Mile, Meaſure
Moil, Labour
Might, Strength
Mite, in Cheeſe
Moat, a Ditch
Mote, in the Sun
More, in Quantity
Moor, a black
Mower, that moweth
Moore, barren Ground
Mortar, made of Lime
Mortar, to pound in
Mole, Vermin
Mould, to caſt in

N.

Nay, denial
Neigh, as a Horſe
Neither, none of the two
Nether, lower
Naught, bad
Nought, nothing
Nigh, near
Nye, a Man's Name
Nice, curious
Niece, a Brother's Daughter
Not, denying
Knot, to tye
Note, mark
Note, of one's Hand
Noſe, of the Face
Noah's Ark

O.

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O.

Oar, of a Boat
Ore, crude Metal
O'er, over
Off, caſt off
Of, belonging to
Our, belonging to us
Hour, of the Day
Oh! alas!
Owe, in Debt
One, in Number
Own, to acknowledge
Order, Rule
Ordure, Dung

P.

Pair, a Couple
Pare, cut off
Pear, a Fruit
Patin, for a Woman
Patent, a Grant
Peer, a Lord
Pier, of Dover
Peter, a Man's Name
Petre, Salt
Pail, for Water
Pale, of Countenance
Pale, a Fence
Place, Room
Plaiſe, a Fiſh
Parſon, of the Pariſh
Perſon, any Man
Pole, for Hops
Poll, of the Head
Pool, of Water
Pore, with the Eyes, or of the Skin
Poor, neceſſitous
Palate, of the Mouth
Pallet, Bed
Poſy, a Noſegay
Poeſy, Poetry
Power, mighty
Pour, as Water
Prey, a Booty
Pray, beſeech
Profit, Gain
Prophet, a Foreteller
Practice, Exerciſe
Practiſe, to exerciſe
Preſence, being here
Preſents, Gifts
Princes, the King's Sons
Princeſſes, the King's Daughters
Pleaſe, to content
Pleas, Defences
Precedent, an Example
Preſident, Chief
Principal, Chief
Principle, the firſt Rule

Q.

Quire, of Paper
Choir, of Singers
Queen, the King's Wife
Queen, an Harlot Whore

R

Rack, to torment
Wreck, of a Ship
Rain, Water
Reign, of the King
Rein, of a Bridle
Rays, of the Sun
Raiſe, lift up
Race, to run
Raſe, to demoliſh
Rice, Grain
Riſe, to get up
Red, in Colour
Read, the Book
Reed, of the Water
Relick, a Remainder
Relict, a Widow
Roe, of a Fiſh, or a Female Deer
Row, the Boat
Right, not wrong

Rite,

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Rite, a Ceremony
Write, with a Pen
Wright, a Wheelwright
Reddiſh, of Colour
Radiſh, a Root
Rear, ſet up
Rere, behind
Ruff, for the Neck
Rough, not ſmooth
Rie, Corn
Rye, in *Suſſex*
Wry, crooked
Ring, the Bells
Wring, the Hands
Rime, a Fog or Miſt
Rhyme, Verſe
Rind, of Cheeſe
Rode, did ride
Road, the Highway
Rote, got by Heart
Wrote, did write
Wrought, did work

S.

Savour, Taſte or Smell
Saviour, that ſaves
Sheep, a Beaſt
Ship, for the Sea
Sight, View
Cite, to ſummons
Sail, of a Ship
Sale, of Goods
Sink, ſink down
Cinque, Five
Slow, not quick
Sloe, Fruit
Sow, Seed
Sew, with a Needle
So, thus
Slight, neglected
Sleight, of Hand
Some, a Part
Sum, of Money
Soul, or Spirit
Sole, a Fiſh
Sole, of a Shoe
Son, of a Father
Sun, in the Firmament
Sore, painful
Soar, aloft
Swore, did ſwear
Stare, to look on earneſtly
Stair, a Step
Stile, to get over
Style, of Writing
Sound, whole, firm; alſo Noiſe
Swoon, to faint away
Straight, not crooked
Strait, narrow
Succour, Help
Sucker, a young Sprig
Spear, a Weapon
Sphere, a Globe

T

Then, at that Time
Than, in Compariſon
Tame, gentle, not wild
Thame, in *Oxfordſhire*
Tear, to rent
Tear, of the Eye
Tare, an Allowance in Weight
Tare, a Vetch
Tail of a Beaſt
Tale, a Story
Tiles, for the Houſe
Toyls, Nets
Toil, to Labour
There, in that Place
Their, of them
Throne, of the King
Thrown, as a Stone
Tide, a flowing Water
Ty'd, made faſt
Time of the Day
Thyme, an Herb
Team of Horſes

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Teem, with Child
Twice, twice one
To, the Prepoſition
Too, likewiſe
Toe of the Foot
Tow, to draw
Tow, to ſpin
Told, as a Story
Toll'd, as a Bell
Tour, a Journey
Tower, of a Church

V.

Vacation, Leiſure
Vocation, a Calling
Veil, a Covering
Vale, between two Hills
Vain, fooliſh
Vein, of the Body
Vane, or Weathercock
Value, Worth
Valley, a Vale
Vial, a Glaſs
Viol, a Fiddle

U.

Your, of you
Ewer, a Baſon
Uſe, Practice
Uſe, to be wont
Ewes, Sheep

W.

Wade, in the Water
Weigh'd, in the Scales
Whale, of the Sea
Wail, lament
Ware, Merchandize
Were, was
Where, what Place
Weigh to weigh
Wey, five Quarters
Weal, good
Wheal, from Scourging
Wield, a Sword
Weald, of *Suſſex* in *Kent*
Wen, in the Neck
When, at what Time
White, of Colour
Wight, an Iſland
Whiſt, Silence
Wiſt, knew
Wood, of Trees
Wou'd, for Would

Y.

Yea, Yes
Ye, you
Ewe, a Sheep
Yew, a Tree
Yarn, made of Wool
Yearn, to weep

Of Stops, Marks, and Points, uſed in Reading and Writing, with their Places and Significations.

THESE are of abſolute Neceſſity; and great Regard ought to be had to them, to avoid Confuſion and Miſconſtruction, and for the better Underſtanding of what we read and write ourſelves; and are likewiſe of Uſe to others that ſhall hear us read, or ſee our Writing: They teach us to obſerve proper Diſtances of Time, with the neceſſary Raiſing and Falling of the Tone or Voice in Reading, and the needful Stops or Marks to be uſed in Writing, that we may underſtand it ourſelves, and that our Meaning may not be miſunderſtood or miſapplied by others.

Stops,

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Stops, or Pauſes, conſidered as Intervals in Reading, are indeed no more than four; though there are other Marks to be taken notice of, but to other Purpoſes: The Names of theſe four principal Stops are, *viz.* a *Comma*, *Semicolon*, *Colon*, and *Period* or *Full Stop*; and theſe do bear to one another a kind of progreſſional Proportion of Time; for the *Comma* ſignifies a Stop of leiſurely telling One, the *Semicolon* Two, the *Colon* Three, and the *Period* Four.——

And are made or mark'd thus:

Comma, (,) at the Foot of a Word.

Semicolon (;) a Point over the Comma.

Colon (:) two Points

Period (.) a ſingle Point at the Foot of a Word.

, *Example of the* Comma.] There is not any thing in the World, perhaps, that is more talk'd of, and leſs underſtood, than the Buſineſs of a happy Life.

; *Example of the* Semicolon.] It is not a Curſe that makes way for a Bleſſing; the bare Wiſh is an Injury; the Moderation of *Antigonus* was remarkable.

: *Example of the* Colon.] A ſound Mind is not to be ſhaken with popular Applauſe: But, Anger is ſtartled at every Accident.

. *Example of the Period.*] It is a Shame ſays *Fabius*, for a Commander to excuſe himſelf, by ſaying, I was not aware of it. A Cruelty that was only fit for *Marius* to ſuffer, *Sylla* to command, and *Cataline* to act.

By the Examples foregoing, we may eaſily note, that a *Comma* is a Note of a ſhort Stay, between Words in the Sentence; and therefore the Tenor of the Voice muſt ſtill be kept up.——The *Semicolon* is a little longer, and the Tone of the Voice very little abated.——The *Colon* ſignifies perfect Senſe, though not an End of the Sentence; and the Voice a little abated, or let fall.——The *Period* denotes perfect Senſe, and the End of the Sentence.

? When the Queſtion is aſked, there is a crooked Mark made over the Period thus ? and is called a Note of Interrogation: *Example*, What could be happier than the State of Mankind, when People lived without either Avarice or Envy? The Time of Pauſe for this Stop, is the ſame with the *Semicolon*.

! If a ſudden Crying out, or Wondering, be expreſſed, then this Mark is made over the Full Stop, thus ! and called

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a Note of Admiration, or Exclamation. *Example*, Oh the aſtoniſhing Wonders that are in the elementary World!

( ) If one Sentence be within another, of which it is no Part, then 'tis placed between two Semicircles or Parentheſis, made thus ( ) *Example*, *Pompey*, on the other Side (that hardly ever ſpake in Publick without a Bluſh) had a wonderful Sweetneſs of Nature. Again, if Authors be ſure to make Choice of the beſt; and (as I ſaid before) to ſtick cloſe to them. Once more; Honour thy Father and Mother (which is the firſt Commandment with Promiſe) that it may be well with thee.——In reading a Parentheſis, the Tone muſt be ſomewhat lower, as a Thing or Matter that comes in by the bye, breaking in as it were on the main Coherence of the Period. The Time is equal to a Comma, and ought to be read pretty quick, leſt it detain the Ear too long from the Senſe of the more important Matter.

' *Apoſtrophe* is a Comma at the Head of Letters, ſignifying ſome Letter or Letters left out for quicker Pronounciation; as *I'll* for *I will*, *would'ſt* for *wouldeſt*, *ſha'n't* for *ſhall not*, *ne'er* for *never*, *is't* for *is it*, *'tis* for *it is*, *i'th'* for *in the*, *o'er* for *over*: Or to denote a Genitive Caſe; as, my Father's Houſe, my Uncle's Wife, &c.

/ *Accent* is placed over a Vowel, to denote that the Streſs or Sound in Pronounciation is on that Syllable.

˘ *Breve* or crooked Mark over a Vowel, ſignifies it muſt be ſounded ſhort or quick.

, *Caret* ſignifies ſomething is wanting, and is placed underneath the Line, juſt where any thing omitted, by Miſtake, or Forgetfulneſs, &c. ſhould be brought in.

^ *Circumflex* is of the ſame Shape with the Caret, but is placed over ſome Vowel, to ſhew the Syllable to be long, as *Eu-phrâ-tes*.

¨ *Dialyſis*, or two Points placed over two Vowels in a Word, ſignifies they are to be parted, being no Diphthong.

- *Hyphen*, or *Note of Connection*, is a ſtraight Line; which being ſet at the End of a Line, ſhews that the Syllables of that Word are parted, and the Remainder of it is at the Beginning of the next Line; and ſometimes is uſed in compound Words; as Burnt-ſacrifices, Heart-breaking, Soul-healing, Book-keeper, &c. *N. B.* That when you have not Room to write the whole Word at the End of a Line, but are obliged to finiſh it at the Beginning of the next, ſuch Words muſt be truly divided, according to the Rules of Spelling;

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Spelling; as re ſtrain, not——————————refſtrain. When the Hyphen is placed over a Vowel, it is properly a Daſh, and ſignifies the Omiſſion of *m* or *n*; it is much uſed in old *Latin* Authors, and ſometimes in *Engliſh*, eſpecially in Law Buſineſs. *Example*; It is very comedable to write a good Hand.

☞ *Index*, is a Note like a Hand, pointing to ſomething very remarkable.

* *Aſteriſm*, or *Star*, directs to ſome Remark in the Margin, or at the Foot of the Page. Several of them together, denote ſomething defective, or immodeſt, in that Paſſage of the Author.

† *Obeliſk*, is a Mark like a Dagger, and refers to the Margin, as the *Aſteriſm* *; And in Dictionaries, it ſignifies the Word to be obſolete, or old, and out of uſe.

¶ *Paragraph*, denotes a Diviſion, comprehending ſeveral Sentences under one Head.

§ *Section*, ſignifies the Beginning of a new Head of Diſcourſe, and is uſed in ſub dividing a Chapter, or Book, into leſſer Parts or Portions.

[ ] *Brackets* or *Crotchets*, generally include a Word or Sentence, explanatory of what went before; or Words of the ſame Senſe, which may be uſed in their Stead.

" *Quotation*, or double Comma reverſe, is uſed at the Beginning of the Line, and ſhews what is quoted from an Author to be in his own Words.

Thus much for Pointing, Stops, and Marks; which, if carefully heeded and obſerved, will add Grace and Credit to your Writing.

Of Abreviations.

TO be ready in theſe, ſhews a Dexterity in Writing; and is very neceſſary for Diſpatch: For by theſe, we expeditiouſly expreſs, or ſet down a Word, ſhortening it, by making ſome initial Letter or Letters, belonging to the Word, to expreſs it; as in the Table following.

A, For Anſwer or Afternoon
A. B. Arts Batchelor
A. Bp. Archbiſhop
*Acc*t. Account
A. D. Anno Domini, Year of our Lord
A. M. Anno Mundi, Year of the World
*Adm*rs. Adminiſtrators
A. M. Artium Magiſter, Maſter of Arts
Ana. of each a like Quantity
Ap. April, or Apoſtle

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Admˡ. Admiral
Agᵗ. Againſt
Amᵗ. Amount
Anab. Anabaptiſt
Aug. Auguſt
A. R. Anno Regni, in the Year of the Reign
Aſt. P G. Aſtronomy Profeſſor of Greſham College
Auſt. Auſtin, or Auſtria
B. A. Batchelor of Arts
B. D. Batchelor of Divinity
B. V. Bleſſed Virgin
Bart. Baronet
Bp. Biſhop
Cha. Charles, or Chapter
Cant. Canticles, or Canterbury
Cat. Catechiſm
Cha. Charles, or Charity
Chap. Chapter
Cent. Centum
Ch. Church
Chanc. Chancellor
Chron. Chronicles
Capt. Captain
Clem. Clement
Col. Coloſſians
Cl. Clericus
Co. Country
Coll. Colonel
Comʳˢ. Commiſſioners
Con. Conſtance or Conſtantine
Conf. Confeſſor
Cou'd for could
Cor. Corinthians or Corollary
Cr. Creditor
C. R. Carolus Rex, or Charles the King
C. C. C. Corpus Chriſti College
C. S. Cuſtos, Sigilli, Keeper of the Seal
C. P. S. Cuſtos Privati Sigilli, Keeper of the Privy Seal
D. Dean or Duke
Dan. Daniel
Dr. Doctor or Debtor
Dea. Deacon
Dº. Ditto
D. Denarii, Pence
Dec. Or *xber*, or *10ber*, December
Devon. Devonſhire
Deut. Deuteronomy
Dec. Deceaſed
D. C. Dean of Chriſt Church
Doct. Doctrine
D. D. Doctor of Divinity
E. for Earl
Earld. Earldom
Edm. Edmund
Edw. Edward
E. gr. Exempli gratia, for Example
Engl. England
Eliz. Elizabeth
Eſa. Eſaiah
Eph. Epheſians
Eccl. Eccleſiaſtes
Ex. Exodus, or Example
Ev. Evangeliſt
Exp. Explanation
Expo. Expoſition
Eſq; Eſquire
Exon. Exeter
Fr. French, or France
Feb. February
Fra. Francis
F. R. S. Fellow of the Royal Society
G. God, Great, or Goſpel
Gal. Galatians
Gen. Geneſis
Genᵐᵒ. Generaliſſimo
Geo. George

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G. R. Georgius Rex, George the King
Gar. Garriſon
Gen. General
Gent. Gentleman
Goſp. Goſpel
Greg. Gregory
Hen. Henry
Hamp. Hamper
Hund. Hundred
Hum. Humphry
Heb. Hebrews
i. e. id eſt, that is
I. H. S. Jeſus Hominum Salvator, Jeſus Saviour of Men
Id. Idem, the ſame
Inſt. Inſtance or Inſtant
Ja. James, or Jacob
Jan. January
Jer. Jeremiah
Jeſ. Jeſus
Jn°. John
Jud. Judges
Iſ. Iſaac
I'll, I will
Is't, is it
I'd, I had
I'm I am
J. D. Jurium Doctor, Doctor of Laws
Joſ. Joſhua
K. King
K^m. Kingdom
Kn^t. Knight
L. Lord
L. Liber, a Book
L. Libræ, Pounds
Lieu. Lieutenant
Lp. Lordſhip
Ladiſh^p. Ladyſhip
L. L. D. Legum Doctor, Doctor of Laws
Learn^g. Learning
Lon. London
L^r. Letter
Lam. Lamentations
Lev. Leviticus
Let's Let us
M. Marquis, or Monday, or Morning
Mar. March
Matt. Matthew
M. Manipulus, a Handful
M. A. Maſter of Arts
Ma^ty Majeſty
M^d. Madam
Monſ. Monſieur
Math. Mathematician
Mr. Maſter
Mrs. Miſtreſs
M. D. Medicinæ Doctor, Doctor of Phyſick
M. S. Memoriæ Sacrum, Sacred to the Memory; alſo Manuſcript
Mich. Michael, or Michaelmas
Min. Miniſter
N. Note, or Nativity
Nat. Nathaniel, or Nativity
N. B. Nota bene, Note, or mark well
Nic. Nicolas, or Nicodemus
N. S. New Stile
N°. Number
n.l. Non liquet, it appears not
Nov. or *9ber,* November
O. Oliver
Obj. Objection
Ob^t. Obedient
O. W. Old Word
O. S. Old Stile
Oct. or *8ber,* October
Oxon. Oxford
P Paul, Paulus, Publius, or Preſident
Pugil, a Handful
Pen. Penelope

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Pd. paid
Par. Pariſh
p. per, or by
Pat. Patience or Patrick
Per Ct. Per Centum, by the Hundred
Parl. Parliament
Pet. Peter
Phil. Philippians, or Philip
Philom. Philomethes, a Lover of Learning.
Philo-Math. Philo Mathematicus, a Lover of the Mathematicks.
P. M. G. Profeſſor of Muſic at Greſham College
Prof. Th. G. Profeſſor of Divinity at Greſham College
Priſ. Priſcilla
Pr. Prieſt
Pſ. Pſalm
Q Queen or Queſtion
q. quaſi, as it were
q. d. quaſi dicat, as if he ſhould ſay
q. l. quantum libet, as much as you pleaſe
q. ſ. quantum ſufficet, a ſufficient Quantity
qr. Quarter, or a Farthing
R. Reaſon
R. Rex, King; or Regina, Queen
Revd. Reverend
Rev. Revelations
Rich. Richard
Robt. Robert
Rog. Roger
Ret. Return
Reg. Prof. Regius Profeſſor, founded by K. Henry VIII.
Rom. Romans
Rt Honble. Right Honourable
Rt Wpl. Right Worſhipful
Saint
Sam. Samuel
Sect. Section
Sept. or *7ber*, September
Serj. Serjeant
Serv. Servant
Shr. Shire
Shan't, for ſhall not
Salop, Shropſhire
Sol. Solution
Staff. Stafford
Sp. Spain, or Spaniſh
Sr. Sir
ſs. Semiſſis, half a Pound
S. S. T. P. A Profeſſor, or a Doctor of Philoſophy
Stew. Steward
Tho. Thomas
Theſ. Theſſalonians
The. Theophilus
To. Tobias
V. Virgin or Verſe
U. Uſe
Vid. ſee
Ven. Venerable
Viz. Videlicet, to wit, or that is to ſay
Wm. William
Wp. Worſhip
Wpl. Worſhipful
W. R. William Rex
wn. when
Xn. Chriſtian
Xt. Chriſt
Xtopher Chriſtopher
ye. the
yn. then
yo. you
ym. them
yt, that
yr. your
Z. Zeal
&. et, and
&c. & cætera, and the reſt, or, and ſo forth.

And

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And now having finiſhed my Directions concerning Spelling, Pointing, *&c.* I ſhall proceed to give ſome Inſtructions in relation to the moſt uſeful Art of Writing.

When any Perſon has throughly acquainted himſelf with Spelling, and underſtands good *Engliſh*, *&c.* the next Step neceſſary, is the Acquiring of the accompliſhing Art of fair Writing, to put this Spelling in Practice: In order thereto, I ſhall endeavour to give ſuch Directions, and proper Inſtructions, as may duly qualify any Perſon therein.

Firſt, and principally, there muſt be a fixed Deſire and Inclination imprinted in the Mind, for its Attainment: For I myſelf had never acquired, or arrived to any Proficiency in it, if I had not had a ſtrong Deſire and Inclination to it, riſing from being convinced of its excellent Uſe in Trade, and all Manner of Buſineſs, according to the Verſe,

Great was his Genius, moſt ſublime his Thought,
That firſt fair Writing to Perfection brought, &c.

Next to the Deſire, there muſt be added a ſteady Reſolution to go through with it, 'till it is gained; and by a diligent and indefatigable Application, overcome all ſeeming Difficulties, that may ariſe in the Progreſs of its Attainment, agreeable to this Diſtich;

By frequent Uſe, Experience gains its Growth;
But Knowledge flies from Laxineſs and Sloth.

DIRECTIONS *to* BEGINNERS.

FIRST, 'tis neceſſary to be provided with the following Implements, *viz.* good Pens, good and free Ink, and alſo good Paper, when arrived to commendable Performances; likewiſe a flat Ruler for Sureneſs, and a round one for Diſpatch, with a Leaden Plummet or Pencil to rule Lines: Alſo Gum Sandrick Powder, (or Pounce as they call it) with a little Cotton dipp'd therein, which rub gently over the Paper, to make it bear Ink the better; particularly when full Hands are to be written, ſuch as Text, *&c.* and eſpecially when you are obliged to ſcratch out a Word or Letter; for then there will be a Neceſſity for its Uſe; And rubbing the Place with the Pounce, ſmooth it with the Haft of the Penknife, or clean Paper, and then you may write what is proper in the ſame Place. Theſe Implements are ſummed up in theſe Lines.

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A Pen-knife Razor Metal, Quills good Store;
Gum Sandrick Powder, to pounce Paper o'er;
Ink, shining black; Paper more white than Snow,
Round and flat Rulers, on yourself bestow,
With willing Mind, these, and industrious Hand,
Will make this Art your Servant at Command.

To hold the Pen.

THE Pen must be held somewhat sloping, with the Thumb and the two Fingers next to it; the Ball of the Middle Finger must be placed strait, just against the upper Part of the Cut or Cradle, to keep the Pen steady. The Fore Finger lying strait on the Middle Finger; and the Thumb must be fixed a little higher than the End of the Fore Finger, bending in the Joint; and the Pen be so placed, to be held easily without griping. The Elbow must be drawn pretty close to the Body, almost to touch it. You must support your Hand, by leaning on the Table Edge, resting on it, half way between your Wrist and Elbow, not suffering the Ball, or fleshy Part of your Hand to touch the Paper; but resting your Hand on the End of your Little Finger, that and your fourth Finger bending inwards, and supported on the Table as aforesaid. So fixed, and sitting pretty upright, not leaning your Breast against the Table, proceed to the making the small *o*, the *a*, *e*, *c*, *i*, *m*, *r*, *s*, *w*, and *x*; which must be all made of equal Bigness and Height, the Distance or Width between the two Strokes of the *n*, must be the same with the Distance or Width of the three Strokes of the *m*; the same Proportion of Width must be observed in the *u*, *w*, and *v*. The Letters with Stems or Heads, must be of equal Height; as the *b*, *d*, *f*, *h*, *k*, *l*, and *s*. And those with Tails, must be of equal Depth, as the *f*, *g*, *p*, *q*, and *s*. The Capitals must bear the same Proportion one to another, with respect to Bigness and Height, as *A*, *B*, *C*, *D*, *E*, *F*, *G*, *H*, and *I*, *&c.*—This Proportion of Letters, both of Small and Great, must be observed in, and will serve for, all Hands whatsoever. *N. B.* That all upright Strokes, and those leaning to the left Hand, must be fine or hair Strokes; and all downright Strokes must be fuller or blacker. And when you are in Joyning, where Letters will naturally join, without any straining, take not off the Pen in Writing, especially in Running or Mix'd Hands. Care likewise must be duly taken, that there be an equal

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equal Distance between Letter and Letter, and also between Word and Word. The Distance between Word and Word, may be the Space that the small *m* takes up; but between Letter and Letter, not quite so much. Sit not long at writing (that is, no longer than you improve) especially at the first, lest it weary you, and you grow weary of Learning. Imitate the best Examples, and have a constant Eye at your Copy; and be not ambitious of writing fast, before you can write well: Expedition will naturally follow, after you have gained a Habit of writing fair and free; and 'tis much more commendable to be an Hour in writing six Lines well, than to be able to write sixty Lines in the same Time, which perhaps is perfect Scribble, and altogether unintelligible. And besides, by a slow and fair Procedure, you will learn in half the Time; and therefore 'tis a vain Thought in a Learner, to desire to be quick before he hath acquired Experience, and a Freedom of Writing by frequent Practice. If you have Cotton in your Ink, look well that there be no Hairs at the Nib of your Pen. Never overcharge your Pen with Ink; but shake what is too much into the Ink again. When you leave off, keep your Pen or Pens in Water, till you come to your Writing again.

How to make a Pen.

THIS is gained sooner by Experience and Observation from others that can make a Pen well, than by verbal Directions. But *Note*, That those Quills call'd *Seconds* are the best, as being hard, long and round in the Barrel; and before you begin to cut the Quill, scrape off the superfluous Scurff with the Back of your Pen-knife, and most on the Back of the Quill, that the Slit may be the finer, and without Gander's Teeth (as the Roughness of the Slit is by some called.) After you have scraped the Quill as above-said, cut the Quill at the End, half through, on the back Part; and then turning up the Belly, cut the other half or Part quite through, *viz.* about a quarter or almost half an Inch, at the End of the Quill, which will then appear forked: Then enter the Pen-knife a little in the back Notch; and then putting the Peg of the Pen-knife, Haft (or the End of another Quill) into the back Notch, holding your Thumb pretty hard on the Back of the Quill, (as high as you intend the Slit to be) then with a sudden or quick Twitch, force up the Slit; it must be sudden and smart, that the

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the Slit may be the Clearer: Then by ſeveral Cuts of each Side, bring the Quill into equal Shape, or Form, on both Sides, and having brought it to a fine Point, place the Inſide of the Nib on the Nail of your Thumb, and enter the Knife, at the Extremity of the Nib, and cut it through, a little ſloping: Then with an almoſt downright Cut of the Knife, cut off the Nib; and then by other proper Cuts, finiſh the Pen, bringing it into handſome Shape, and proper Form: But meddle not with the Nib again, by giving it any Trimming or fine Cuts; for that cauſes a Roughneſs, and ſpoils it: But if you do, to bring the Nib the evener, you muſt nib it again, as above directed. ☞ *Note*, That the Breadth of the Nib muſt be proportioned to the Breadth of the Body, or down-right black Strokes of the Letters, in whatſoever Hand you write, whether Small or Text. *Note alſo*, That in your ſitting to write, you place yourſelf directly againſt a fore-right Light, or elſe to have it on your left Hand, (which I eſteem beſt) but by no Means to have the Light on your right Hand, becauſe the Shadow of your Writing-Hand will obſtruct your Sight, and therefore is very improper. And therefore, me thinks, all Perſons in fixing up their Accompting Houſes, ſhould have a particular Regard to their Situation, in reſpect to what was before mentioned.

Thus far for Direction. Now for Application. I have here ſet Copies of the moſt uſual, faſhionable, and commendable Hands for Buſineſs; with Alphabets of Great and Small Letters proper to each. Be ſure you make your Letters well, (both Small and Great) before you proceed to joining. Be careful in Imitation, and obſerve the foregoing Directions, and without doubt you will gain your End. Command of Hand, or the Art of ſtriking Letters, *&c.* is gained by frequent practiſing after good Examples.

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The Italian Hand

A B C D E F G H I K L M

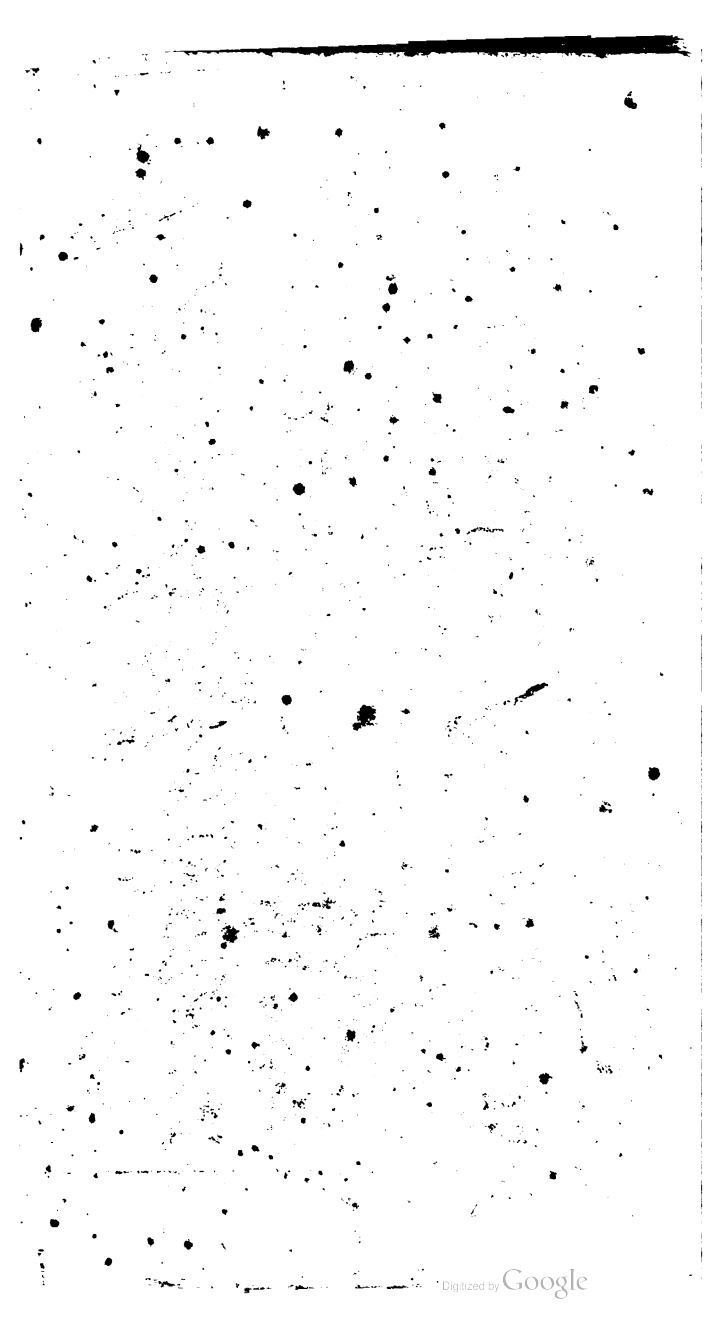
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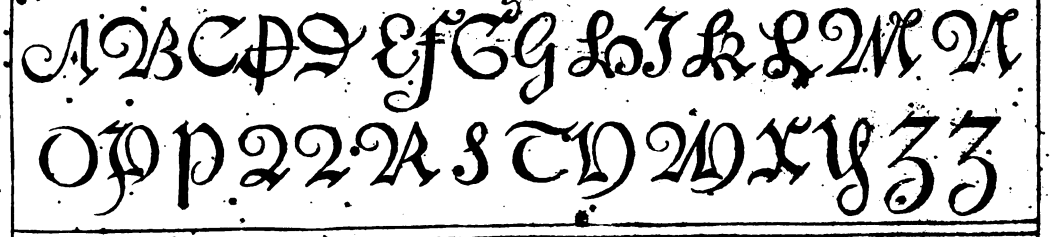
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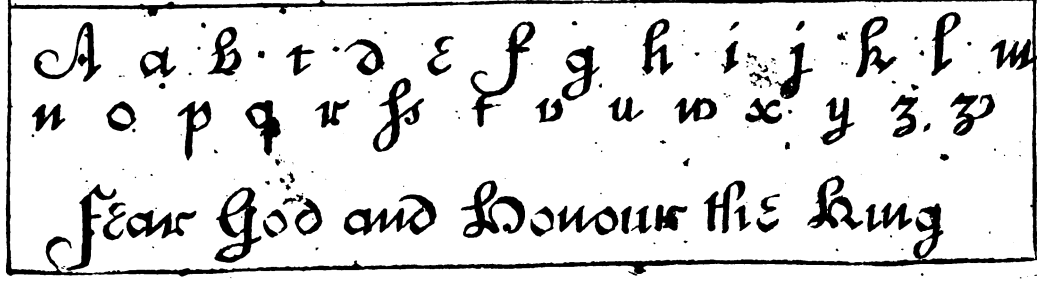
Art is gain'd by great Labour & Industry


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Secretary Hand





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An easy Copy for Round Hand

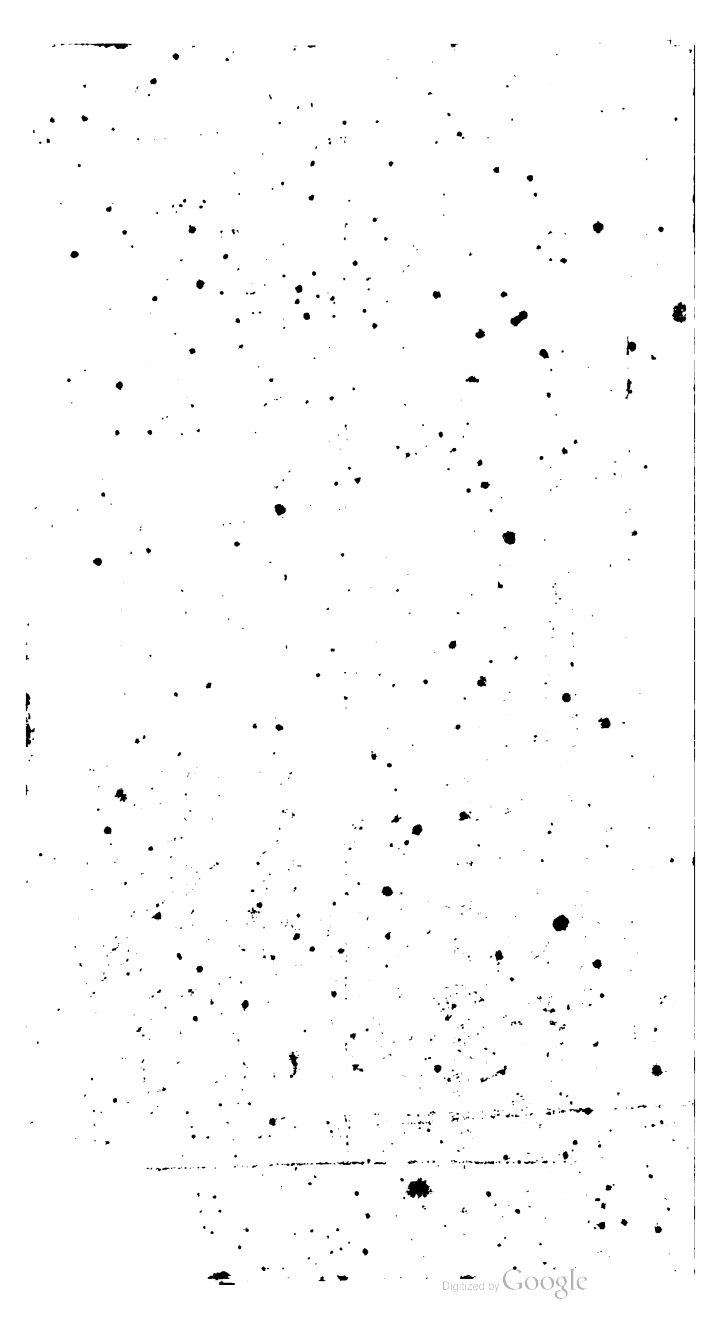
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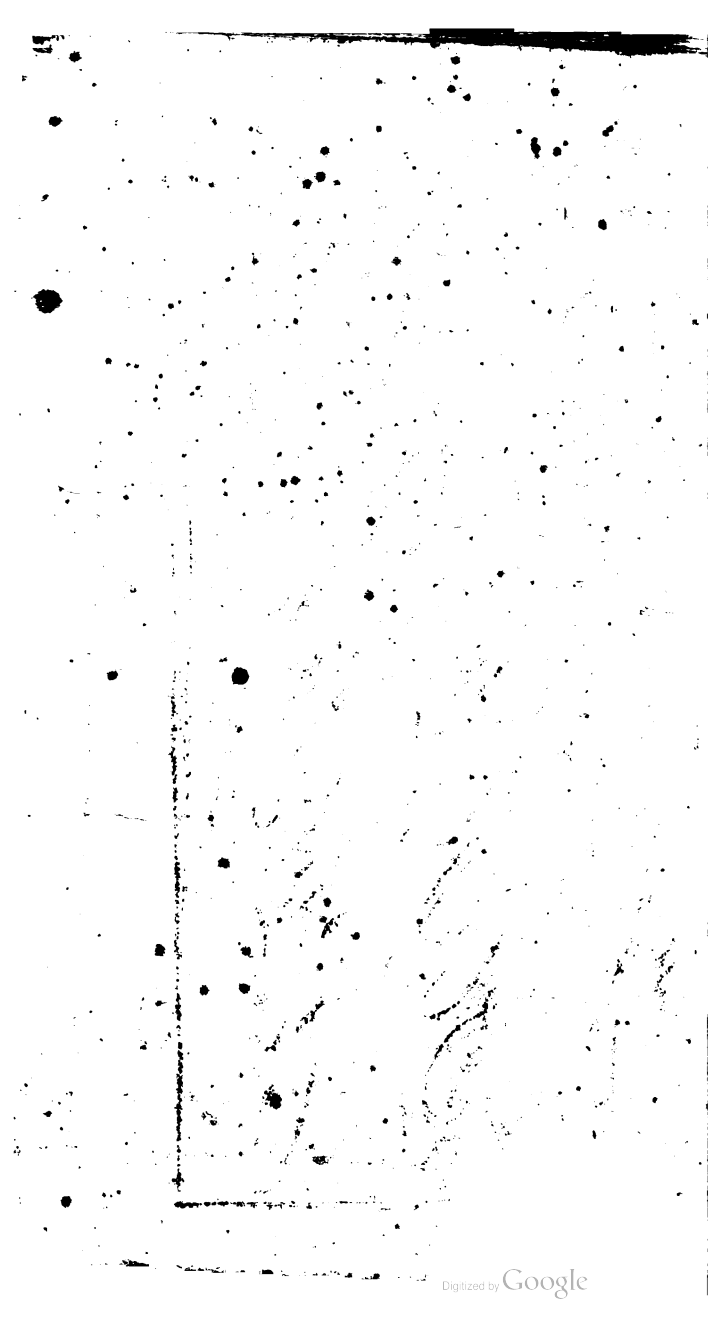
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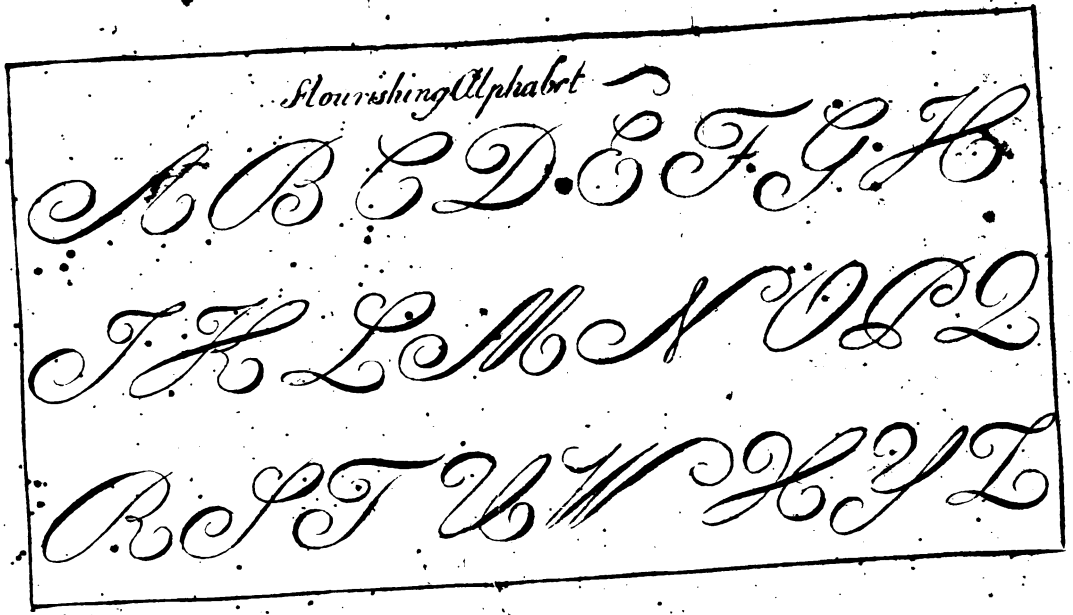
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Take great Care and you'll Write faur


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A B C D E F G H I J K L M N
O P Q R S T U V W X Y Z Æ

a b c d e f g h i j k l m n o p q r
f s t u v w x y z &

D

N. B. 'Tis neceſſary for all thoſe who would qualify themſelves for Buſineſs, often to imitate this Print-Hand; to make clean Marks on Bales, or plain Directions on Parcels.

Copies

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Copies in Proſe, and Clinking, in Alphabetical Order.

A.

ART is gained by great Labour and Induſtry.
A covetous Man is always, as he fancies, in Want.
Add to your Faith Virtue, and to Virtue Knowledge.
A blind Man's Wife, they ſay, needs no Painting.
A comely Countenance is a ſilent Commendation.
A Place of ill Example may endanger a good Man.
A prudent Man values Content more than Riches.
A virtuous Mind is rather to be choſen than Promotion.
A fair Piece of Writing is a Sort of ſpeaking Picture.
All mundane Things run a continual Round.
Authority is the main Point in Government.
All God's Commandments keep moſt divinely pure.
A Man's Manners oft-times forms his Fortune.
A great Lyar is ſeldom believ'd, tho' he ſpeaks Truth.
All evil Things and vain, ſtrive never to maintain.
A virtuous minded Youth, will ever love the Truth.
A prudent Youth and wiſe, will not Advice deſpiſe.
All you that write well, ſtrive others to excel:
Abundance ruins ſome, but Want makes all to moan.
Amendment ſtill ſhould ſhine, in all and every Line.
A greater Loſs can't be, than that of Liberty.
A good and virtuous Lad, will ſhun whate'er is bad.
Abundance proves a Snare, but moſt of Want are aware.
All Idleneſs avoid, by it moſt are deſtroy'd.
All idle lazy Boys, obſtruct their Parents Joys.
A Man by Conduct may keep Miſery away.
All Miſhap hath been occaſion'd by our Sin.
Avoid th' Occaſion ſtill, of running into Ill.
A Youth that would tranſcend, muſt ever mind to mend.
A Lad that would excel, muſt mind his Copy well.

B.

Bounty is commendable in ſome, but it ruins others.
By a commendable Deportment we gain Reputation.
By Delight, and ſome Care, we come to write fair.
By Diligence and Induſtry, we come to Preferment.
Beauty without Virtue, is but a painted Sepulchre.
Beauty commands ſome, but Money all Men.
By conſtant Amendment, we riſe to Preferment.
Brave Men will do nothing unbecoming themſelves.
Be ware and beware; of blotting take care,

Bounty

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Bounty is more commended than imitated.
By Iniquity and Sin, Misfortunes enter in.
By Idleneſs and Play, Youth ſquander Time away.
Barren are thoſe Joys, we waſte away in Toys.
Bleſs'd are their Joys above, who do their Time improve.
Badneſs brings all Sadneſs, therefore follow Goodneſs.
By truſting to To-morrow, Men plunge themſelves in Sorrow.
Be wiſe betimes, ſhun darling Crimes.

C.

Contentment is preferable to Riches and Honour.
Can they be counted wiſe, who Counſel do deſpiſe?
Care mixed with Delight, will bring us ſoon to write.
Conſider the Shortneſs of Life, and Certainty of Death.
Contentment is a Gem, beyond a Diadem.
Competency with Content, is a great Happineſs.
Contention and Strife, make uneaſy our Life.
Courtiers receive Preſents in a Morning, and forget 'em by (Night.
Caution and Care, oft baffle a Snare.
Contentment makes a Man happy without a Fortune.
Cenſure no Man, nor detract from any Man.

D.

Deride not Infirmities, nor triumph over Injuries.
Delight and ſome Care, will make you write fair.
Delight in Virtue's Ways, and then you'll merit Praiſe.
Death conquers potent Princes, and their Powers.
Delight in what you undertake to learn.
Duty, Fear, and Love, we owe to God above.
Death is before the old Man's Face, and may be at the (young One's Back.
Death only can declare, what Duſt the Bodies of all Mortals (are.
Drinking is the Drowning of Cares, not the Cure of them.
Death deſtroys not the Soul, but an ill Life does.
Do to others as you would, that they unto you ſhould.
Delay is the Remora to all good Succeſs.
Deprive no Perſon of his lawful Due, leſt they ſhould do the (ſame by you,
Delight and Pleaſure's but a golden Dream.
Death is leſs feard' by a Fool than a Philoſopher.

E.

Endleſs Joys have thoſe, whoſe Sins are vanquiſh'd Foes.
Every Plant and Flower, ſhews to us God's Power.

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Example oft doth rule, the wiſe Man and the Fool.
Examples oft prevail, when Arguments do fail.
Every idle Thought, to Judgment muſt be brought.
Every Sluggard is the Cauſe of his own Misfortune.
Envious Men do fret, when they ſee others get.
Evil Company makes the Good bad, and the Bad worſe.
Experience is the beſt Looking glaſs of Wiſdom.
Even at Head and Feet, be ſure your Letters keep.
Endeavour to do well, and then you may excel.
Every Man is right, that mixes Profit with Delight.
Evil Men and ſly, take care how you come nigh.
Envy and Care, make the Body grow ſpare.
Every money'd Man, hath others at Command.

F.

Fair Words commonly dreſs foul Deeds.
Fair Faces have ſometimes foul Conditions.
Few do Good with what they have gotten ill.
Future Events muſt be left to Providence.
Fools are ruled by their Humour, but wiſe Men by Intereſt.
Firm keep your Mind on Things that are ſublime.
Fear is a good Watchman, but a bad Defender.
Fate will ſtill have, a kind Chance for the Brave.
Fraud in Childhood, will become Knavery in Manhood.
Fear without Hope turns to Deſpair.
Faith and Hope are both dead when divided.
Fortune at ſome Hours to all is kind.
Feign'd Looks oft hide what the falſe Heart doth know
Fortune and Fame create a great Name.
Friends in Adverſity are not often found.
Fools and knaves are not Companions for honeſt Men.
Frugality and Induſtry are the Hands of Fortune.

G.

Godlineſs with Contentment is great Gain.
Good Manners in a Lad, will make his Parents glad.
Great Minds and ſmall Means ruin many Men.
Good Manners, Grace and Truth, are Ornaments in Youth.
Good Men, as well as bad, have ſometimes Fortunes ſad.
Great Good you ſure will find, if you are well inclin'd.
Godlineſs hath the Promiſe of the Life that now is, *&c.*
God's Works only are perfect in their Kind.
Gluttony ranſacks *Noah*'s Ark for the Riot of a Meal.
Grief nouriſh'd in your Breaſt, will never let you reſt.
Greater Profit doth always come of Learning than of Play.

Great

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Great Men, tho' they ſhou'd, are not always good.
Good Men are ſafe when wicked Ones are at odds.
Get what you get honeſtly, and uſe it frugally.
God is Omnipreſent, True, and Almighty.

H.

Haſty Reſolutions are ſeldom fortunate.
Haſte makes Waſte of Paper, Ink and Time.
He that ſtumbles, and falls not, mends his Pace.
Honour and Renown will the Ingenious crown.
Hypocrites firſt cheat the World, and at laſt themſelves.
Human Life will human Frailties have.
Honour that is true, 'tis lawful to purſue.
He that ſends a Fool of an Errand, ought to follow him.
Honours are Burthens, and Riches have Wings.
He is a wiſe Security, that ſecures himſelf.
He that ſins againſt Conſcience, ſins with a Witneſs.
Honour the hoary Head, that Virtue's Paths do tread.
Happy are their Joys, who turn away from Toys.
Hours fly ſwift away; improve each Moment in the Day.
He that ſwims in Sin, muſt ſink in Sorrow.
He that fears not an Oath, will not tremble at a Lye.
He hath his Work half done, that hath it well begun.

I.

Inſtruction, and a good Education, is a durable Portion.
Ignorance is the greateſt Enemy to Learning.
In praiſing ſparing be, and blame moſt ſparingly.
Imaginary Toys, do pleaſe ſome idle Boys.
Intemperance is attended by Diſeaſes, and Idleneſs with Want.
It is good to have a Friend, but bad to need him.
Idleneſs and Sloth, decreaſeth Learning's Growth.
Innocency need not fear the Lion, or the rugged Bear.
It is better to be unborn than untaught.
It is too late to ſpare, when the Bottom is bare.
Idleneſs hath no Advocate, but many Friends.
Improvement of Parts, is by Improvement of Time.
If you'd win a Pen of Gold, firſt learn well the Pen to hold.
It is the Work of an Age, to repair the Miſcarriage of an Hour.

K.

Keep a cloſe Mouth, if you'd have a wiſe Head.
Kings, as well as mean Men, muſt die.
Kings may command, and Subjects muſt obey.
Kingdoms and Crowns, muſt in the Duſt be laid.
Knowledge ſublime, is gained by much Time.

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Keep at a Distance from Company that's ill.
Keep good Decorum in your Words and Deeds.
Keep close your Intention, for Fear of Prevention.
Kings may win Crowns, but cannot conquer Death.
Keep Faith with all Men, and have a Care of a Lie.
Keep good Company, if you'd keep a good Name.
Knowledge, if abus'd, is like a Gem ill us'd.
Kingdoms bring Care, and Crowns are heavy Things to wear.
Keep out evil Thoughts by entertaining good Ones.
Kind Actions neglected, make Friendship suspected.
Keep safe good Counsel, and entertain not ill Advice.
Kindle not Passion's Fire, it burns with dreadful Ire.

L.

Learn to live, as you would wish to die.
Love and Honour will bear no Rivals.
Learn to unlearn what you have learnt amiss.
Learn now, in Time of Youth, to follow Grace and Truth.
Liberty is grateful to all, but destructive to many.
Lying is the Duty of none, but the Custom of many.
Learning do but love, and then you will improve.
Liberality, without Discretion, becomes Profuseness.
Let no Jest intrude upon good Manners.
Learn now, in youthful Prime, to husband well your Time.
Learn how to make as well as use a Pen.
Liberality should have no Object but the Poor.
Lost Opportunities are very rarely, if ever, recovered.
Let not the Work of To-day be put off 'till To morrow.
Laugh not out of Measure, nor out of Season.

M.

Money makes honest Men and Knaves, Fools and Philoso-
(phers.
Monuments of Learning are the most durable.
Many know Good, but do not the Good they know.
Make use of Time now whilst you'r in your Prime.
Money commonly corrupts both Church and State.
Many think not of living, 'till they can live no longer.
Money pleads all Causes, and defends all Titles.
Many, when they have fill'd their Bellies, complain of weak
(Stomachs.
Measure not Goodness by good Words only.
Marriage is out of Season, if we are either too Young or
(too Old.
Lost precious Time esteem, which no One can redeem.

Many

Many live Beggars all their Lives, that they may not die
Money makes some Men mad, many merry, but few sad.
Many are led by the Ears more than by the Understanding.
Most precious Things are still possess'd with Fear.
Many are made Saints on Earth, that never reach Heaven.
Men of Intrigue commonly sail with all Winds.
Money answers all Objections, and removes all Scruples.
Money and Poverty make great Knaves and little Ones.
Misfortune is the Touchstone of Friendship.
Marriage, say some, breeds Cares and Cuckolds.
Mend your Manners, and that will mend your Fortune.
Many want Help that have not the Face to ask it.
Momentary and vain, is all earthly Gain.

N.

Nothing is constant in this uncertain World.
Necessity is commonly the Mother of Invention.
Next to a good Conscience, prefer a good Name.
None so high can be, as no Mis-hap to see.
Nothing is so hard but Diligence may overcome.
No Task's too hard, when Heaven's the Reward.
None can lay himself under an Obligation to do Ill.
Never lament or weep, for Loss of what you cannot keep.
Noise and talk, without some Rule, doth indicate that Man (a Fool.
Nature seldom changes with the Climate.
Never study to please others, and thereby ruin yourself.
Nature's oldest Law we find, is that we to ourselves be kind.

O.

Opportunity neglected brings severe Repentance.
On present Time depends our future State.
Opus and *Usus*, as we read, are sometimes Latin for our Need.
Of what gives most Delight, we soonest lose the Sight.
Omitting doing Good, is a committing Evil.
Orators are more solicitous to speak well than to do so.
Our Sand doth run apace, and soon we end our Race.
Our Inclinations get the Rein, to gain a Point we should (restrain.
Our Minds must be cultivated, as well as our Plants.
Other People's Death should be Memento's to our own.
Our early care should be, to live most piously.
Our Time of Life is call'd a Span, by which observe how (frail is Man.
One false Step sometimes prevents another.

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P.

ovide againſt the worſt, and hope for the beſt.
or Men want many Things, but covetous Men all.
tience and Time run thro' the rougheſt Day.
t to your Tongue a Bridle, that it talk not idle.
in, Diſgrace, and Poverty, have frightful Looks.
tayers and Provender hinder no Man's Journey.
t not off the main Buſineſs of Life, to the very Article of (Death.
ain we can count, but Pleaſure ſteals away.
oor Freedom is better than rich Slavery.
atience is the Lord of the lean Meat of Adverſity.
aſſion and Partiality govern in too many Caſes.
erfection in this World, is Virtue; and in the next, Know- (ledge.

Q.

Quick Promiſers are commonly ſlow Performers.
Quietneſs and Content are Mates moſt excellent.
Qualify exorbitant Paſſions with Quietneſs and Patience.
Quiet Men have quiet Minds, and enjoy Content.
Quicken Learning with Alacrity and Delight.
Quarrelſome Perſons ſometimes meet with their Match.
Quot Homines tot Sententiæ, ſo many Men, *&c.*
Quills are made for Pens, and Pens for Letters.
Quietly learn to bear a Croſs, if we repine, 'tis to our Loſs.
Queſtions in Jeſt, no ſerious Anſwers need.
Quench Paſſion's Heat; don't ſuffer it to reign.
Quantity with ſome is what they'd hit; but Quality prevails (with Men of Wit.

R.

Remember your Duty to God, your Neighbour and yourſelf.
Repentance comes too late, when all is conſumed.
Reaſon ſhould always guide, and o'er our Acts preſide.
Reputation is the Darling of human Affection.
Reſt continu'd long, makes Idleneſs grow ſtrong.
Rely on Virtue more than Blood, for that is what you ſhou'd.
Repent To-day, To-morrow may be too late.
Reputation is like a Glaſs, when crack'd, it will be crazy.
Reputation is gain'd by many Actions, and loſt by one.
Remember Death, and do not forget Judgment.
Religion in Hypocrites, is as it were but ſkin deep.
Relations and Friends, purſue their own Ends.

Religion

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Religion hath and doth give Countenance to much Wickedneſs.
Riches ſerve a wiſe Man, and rule a Fool.
Run no great Riſque for 'vantage ſmall, tho' ſome for (Money hazard all.
Reaſon's Dictates follow ſtill; which if you do, you'll ne'er (do Ill.
Righteous Mens Prayers ſhall be regarded.
Repentance is a quite forſaking Sin; but he repents not that (remains therein.
Reſolve to amend, and purſue it to your End.
Review the Time that you have miſpent; think upon it, (and lament.
Recreation ſhould fit us for Buſineſs, not rob us of Time.

S.

Sin and Sorrow are inſeparable Companions.
Some are too ſtiff to bend, and too old to mend,
Some *willinglier* diſcharge a Reckoning, than pay a Debt.
Sin is moſt certain, firſt Cauſe of Misfortune.
Study to live quiet, and to do your own Buſineſs.
Some in their Zeal are hot, but Knowledge they've not.
Set Bounds to Zeal by Diſcretion.
Silence is the Sanctuary of Prudence and Diſcretion.
Sloth is an Argument of a mean and degenerate Mind.
Short and therefore vain, is all earthly Gain.
Soft Words, ſometimes, work upon the proudeſt Heart.
Sleep and Idleneſs are Enemies to Learning.
Sin is the Cauſe of Shame; who love it are to blame.
Small Means, and large Minds, ruin many Men.
Short, are *all* Extreams, whether of Good or *Ill*.
Spend Time in good Duties, and Treaſure in good Works.
Some go fine and brave, finely to play the Knave.
Six Foot of Earth, ends *all* Diſtinctions of our Birth.
Some muſt die, that others may live, ſaid the Grave-digger.
Silly People are commonly *pleas'd* with *filly* Things.
Some are *full* of *oral* Sanctity, and *mental* Impiety.
Small Profit comes from *all ungodly* Gain.

T.

Train up a Child in the Love and Practice of good Manners.
The End of Mirth is many times the Beginning of Sorrow.
Time is ſo ſwift of Foot, that none can overtake it.
Time paſſeth ſwift away, no Mortal can it ſtay.
Time paſſeth ſwift away, improve therefore each Day.
The doing nothing, is very near doing Evil.

The

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Thoſe who won't mend To-day, *ſhall* have more Work To morrow.
The Borrower is a Slave to the Lender; and the Security a (Slave to both.
Truth is the ſtrongeſt Bands of human Society.
The Endowments of the Mind, ought not to be confin'd.
There's no diſcerning Fate, that can contend with Fate.
The Deſtruction of the Poor is their Poverty.
The Country cares not what the City thinks.
To do Good is the Way to find it. 1753.
'Tis juſt ſo much loſt as is idly ſpent.
There is no ſuch Thing in Nature as Perfection.
Time, Tide, and Carriers, *will* for no Man ſtay.
The Unfortunate are inſulted by every Raſcal.
'Tis inhuman to ſport with another's Infirmities.

V.

Virtue is firſt to be ſought for, and Money the next.
Vain and tranſitory, is all mundane Glory.
Virtue and Fortune work Wonders in the World.
Value more good Conſcience than a great Fame.
Unwillingly go to *Law*, and *willingly* make an End.
Underſtanding a Thing is half doing it. 1746.
Variety is the Happineſs of Life. 1 2 3 4 5 6 7.
Virtuous and brave Actions gain Reputation.
Uſe ſoft Words and hard Arguments. 1 2 3 4 5
Virtue is commended of *all*, but *follow'd* by few.
Unthankfulneſs is the Cauſe of the Earth's Unfruitfulneſs.
Vain Conceitedneſs is ridiculed by *all*. 1749.
Virtue is ſeldom found a Match for Power.
Underſtand Things not by their Form, but Quality.
Virtue *all* commend, but few do it attend.
Union and Peace, make Diſcord to ceaſe. 1760.
Valour and Greatneſs, are preferr'd before Neatneſs.
Vain and fooliſh Things, Diſreputation bring.
Virtuous Actions *will* bring Reputation *ſtill*.

W.

What is more vain than publick Light to ſhun.
Who fears no Bad, ſtands moſt unarm'd to *Ill*.
What pleaſes God muſt be, none alters his Decree.
We are many Times deceiv'd with the bare Shew of Good.
Women and Wine, tho' they ſmile, they make Men pine.
When Fortune knocks, be ſure to ope the Door.
Wine is a Turn-coat; firſt a Friend, then an Enemy.

Wha

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What is violent is seldom permanent. l. 4. 10. 9.
When good Cheer is lacking, our Friends will be packing.
We dance *well*, while Fortune plays on the Musick.
We keep a better Account of our Money than our Time.
Wickedness in Jest leads us to Wickedness in Earnest.
We must not blame Fortune for our own Faults.
Where Knavery is in Credit, Honesty is put out of Countenance.
We must *look* to Time past, to improve what's to come.
What is fixed in our Hearts, is seldom out of our Heads.
Wickedness comes on by Degrees, as *well* as Virtue.
Would you be rich, be industrious; if wise, be studious.

X.

Xenophon was a great Captain, as *well* as a Philosopher.
Xerxes wept at the Thoughts that his vast Army would be dead in 100 Years.
Xerxes whipt the Sea because it would not obey his Command.
Xenocrates, tho' a Philosopher, was very *dull* and *heavy*.
Xenophilus liv'd without Sickness one hundred and seven Years.
'Xamples of the best for ever mind, and imitate in kind.
'Xpel bad Thoughts, and what is Sin, forth of your Mind, and let what's good come in.
'Xamine *well* how you improve, for that *will* be as you your Learning love.
'Xercise will much Improvement gain. 1 2 3 4 5 6.
Xperience is the Mistress of all Arts and Sciences.
Xcel in what you can, and strive to lead the Van.
Xpress your Desire to learn by your Diligence.

Y.

Youth is full of Disorder, and Age of Infirmity.
Young Men lament your Minutes mispent.
Your Time improve, and squander't not away.
Your Spelling mind, and Sense of what you write.
Yield quietly to what must come unavoidably.
Young Men in Strength should provide against Age and Weakness.
Youth in their Prime, should manage *well* their Time.
Youth to the Grave do go, as *well* as the Aged do.
Yield yourself Servant to Righteousness and to Holiness.
Your Copy mind, write fair, and of blotting beware.
Your Care should appear by writing most fair.
Your Delight and your Care will make you write fair.

Z.

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Z.

Zeal, in a good Cauſe, commands Applauſe.
Zeal, mixt with Love, is harmleſs as the Dove.
Zealouſly ſtrive, with Emulation write. 1753.
Zealouſly ſtrive for an eternal Crown. 1 2 3 4 5.
Zeno was the firſt of the Stoic Philoſophers.
Zeal without Knowledge, is but Religious Wild-fire.
Zaccheus he was low but yet his Faith wa'n't ſo.
Zeal, if not rightly directed, is very pernicious.
Zealouſly bend amain fair writing to attain.

Short Lines for Text Hand.

Abandon whatſoever's Ill——Be Wiſe betimes.
Care deſtroys the Body——Do the Things that are Juſt.
Expect to receive as you give—Frequent good Company.
Give what you give chearfully—Have good Men in Eſteem.
Imitate that which is good—Keep God's Commandments.
Learn to be wiſe——Money anſwers all Things.
Nothing get, nothing have——Obſerve Modeſty.
Pleaſures are very ſhort——Pains are very long.
Quit all Revenge——Quiet your Paſſions.
Recompence a good Turn——Repent of your Sins.
Spare for to live——Sin very little.
Time will improve——Turn from your Sins.
Uſe moderate Pleaſure——Uſe not bad Company.
Vain are ſome Pleaſures——Vile are ſome Vulgar.
Wiſdom is the principal Thing——Wiſe Men are ſcarce.
Xenophon and *Xenocrates*——*Zeno* and *Zenobia*.

Double Lines in Verſe.

All you that in fair Writing would excel,
How much you write regard not, but how well.
Bear your Pen lightly, keep a ſteady Hand,
And that's the Way, fair Writing to command.
Carefully mend in each ſucceeding Line,
For that's the Way to reach to what is fine.
Deſcending Strokes are dark, but upwards ſmall;
Even at Head and Feet keep Letters all.
From Blots keep clean your Book; and always mind
To have your Letters all one Way inclin'd.
Grace every Letter with perfect, full and ſmall,
And keep a due Proportion in them all.

Hold

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Hold your Pen lightly, gripe it not too hard,
And with due Care your Copy well regard.
Join every Letter to its next, with Care,
And let the Stroke be admirably fair.
Keep a light Hand, and smoothly glide along,
Ascending fine, and downward Strokes are strong.
Let graceful Beauty in each Line appear,
And see the Front do not excel the Rear;
Majestic Grace, beautiful and strong,
Doth, or else ought, to every Line belong.
No rough Edges ever should be seen;
But all the Letters should be smooth and clean.
Of Care depends the Beauty of each Line,
For that alone will make your Art to shine.
Praise is deserving to the careful Hand,
But to the Unthinking, doth Correction stand.
Quit yourself nobly, with a prudent Care,
Of clumsey Writing, and of Blots beware.
Remember strictly what the Art enjoins,
Equal siz'd Letters, and as equal Lines.
Small Letters must of equal Height be seen;
The same of Great; both beautifully clean.
Time and Delight will easy make the Task:
Delight, Delight's the only Thing I ask!
Vain are the Hopes of those that think to gain
This noble Treasure, without taking Pain.
Whilst idle Drones supinely dream of Fame,
The Industrious actually do get the same.
'Xamples of the best, with Emulation strive,
To imitate, and then your Name'll survive.
Youth is the Time for Progress in all Arts;
Then use your Youth to gain most noble Parts.
Zeal for Attainment of each Art should burn
With fervent Warmth, then to Account 'twill turn.

Since good Ink is necessary to good Writing, I shall give a Receipt or two for making some of the best Black Ink in the World, which is as follows, *viz.*

A Receipt for Black Ink.

TO six Quarts of Rain or River Water, (but Rain Water is the best) put one Pound and a Half of fresh blue Galls of *Aleppo* (for those of *Smyrna* are not strong enough)

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bruiſed pretty ſmall; 8 Ounces of Copperas, clean, rocky, and green; alſo 8 Ounces of clean, bright, and clear Gum Arabick; and 2 Ounces of Roche Allom: Let theſe ſtand together in a large Stone Bottle, or clean Stone Pot, or earthen Pot, with a narrow Mouth to keep it free from Duſt; ſhake, roll, or ſtir it well, once every Day, and you will have excellent Ink in about a Month's Time: And the Older it grows, the better 'twill be for Uſe.

Ingredients for a Quart.

1 Quart of Water, 4 Ounces of Galls, 2 Ounces of Copperas, and 2 Ounces of Gum, mix'd and ſtirred as above.

☞ If you ſoak the green Peeling of *Walnuts* (at the Time of the Year when pretty ripe) and Oak Saw-duſt, or *ſmall* Chips of it, in Rain Water, and ſtir'd pretty often for a Fortnight, and then ſtrain'd, and the Water uſed with the ſame Ingredients as above, the Ink *will ſtill* be ſtronger and better.

How to make Red Ink.

TAKE 3 Pints of ſtale Beer, (rather than Vinegar) and 4 Ounces of Ground *Brazil* Wood; ſimmer them together for an Hour; and then ſtrain it thro' a Flannel, or, *&c.* then bottle it up (well ſtopped) for Uſe.

Or you may diſſolve half an Ounce of *Gum Stennegæ*, or *Arabick*, in half a Pint of Water; then put a Penny worth of *Vermillion* into a ſmall Gallipot, and pour ſome of the Gum Water to it, and ſtir it well, and mix it together with a Hair-pencil, to a proper Conſiſtency; but it will not incorporate preſently, but by the next Day it will; then having a clean Pen, dip it into the Ink, having firſt well ſtirred it with the Pencil, and then you may uſe it: It is a fine and curious Red, tho' not ſo free as the other. And after the ſame manner, you may make any other colour'd Ink, as Blue, Green, Yellow, Purple, *&c.* having divers Gallipots for that Uſe. In like manner you may mix the *Shell Gold*, for curious Occaſions, pouring two or three Drops, according to Direction, into the *Shell*, and mix it *well* with a clean Hair Pencil, and with it put a little into a clean Pen, *&c.* The *ſmall Shells* may be bought a ſome *Fan-ſellers*, or *Fan-painters*, at two or three for Two-pence; or the large ones (which are the beſt) at the *Colour-ſhops*, at Six-pence a Piece.

To

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To keep Ink from Freezing or Moulding.

IN hard frosty Weather, Ink *will* be apt to freeze; which if once it doth, it *will* be good for nothing; for it takes away all its Blackness and Beauty. To prevent which (if you have not the Conveniency of keeping it warm, or from the Cold) put a few Drops of Brandy, or other Spirits, into it, and it will not freeze. And to hinder its Moulding, put a little Salt therein.

Familiar Letters on several Occasions, and on divers Subjects.

BEFORE we enter upon *Arithmetick*, it may be proper to give some Examples of Letters on various Subjects, and upon divers Occasions; which Letters frequently read over, and sometimes copied, it may be a good Introduction, to a handsome Style of Sense, and to a commendable Manner of Writing; besides the Help and Use they may be of in noting and observing the Method of Spelling good *English*, and orthographically placing *Great Letters*, or *Capitals*, where they ought to be; and also an imprinting in the Mind the due Notion of Points, Stops, *&c.* and when and where to be made.

Letters are variously worded, and ought properly to express the Desires, Thoughts, *&c.* of the Writer to the Reader, that thereby the Receiver of the Letter may *fully* understand, and be justly inform'd of the Occasions, Wants, or Intentions of the Sender.

Letters being writ on divers Subjects, and on sundry Occasions, they may be ranked under these Denominations, or several Heads following, *viz. Letters of proffered Assistance, Letters Consolatory, Letters of Thanks, Letters Congratulatory, Ditto of Reproof, Ditto of Excuse, Ditto Accusatory, Ditto of Advice or Counsel, Ditto of Recommendation, Ditto Exhortatory, Ditto of Remonstrance, and Letters of Visit, properly called Familiar Letters, Letters of Business*; and lastly, *Mixed Letters, that is, on various Subjects, and different Affairs.*

I shall not have Room to touch upon every one of those particularly; but I shall give sundry Examples promiscuously exhibited, and are such as these that follow, *viz.*

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A Letter from a Son to his Father.

London, 6th Dec. 1746.

Honoured Father,

WITH all dutiful Respect, I trouble you with these Lines, to enquire of the good State of your Health, (of which I shall be extremely glad to hear) and to present you my most humble Duty, and Tenders of filial, and most affectionate Service. I have not had the Favour of any Letter from you, since that from you dated the 8th of *Oct.* last, which I reply'd to the very next Post, and in such Particulars as you enjoin'd me. I have sent you, Sir, by *Samuel Simple*, the *Pemsey* Carrier, a Spaniel Dog, which is an excellent good one of his Kind, and fit for the Sport of your Place; his Name is *Tray*, and is very free for the Water; and if he hath any Fault, it is being a little too eager, but he is young, and may be brought to what you please to have him. I hope my Sister *Mary* is well, to whom pray give my kind Love, and also be pleased to accept of my Duty to yourself, which is the Present needful from,

Sir, your most Dutiful Son,
and humble Servant,
Anthony Addlehill.

The Answer.

Pemsey, 28 Xber, 1746.

Dear Tony,

I Received your Letter of the 6th Instant, and I take notice of your dutiful Respect and kind Wishes for my Health, which, I thank God, I perfectly enjoy at present, as I wish and hope you do yours.——I received your Present of the Dog; but the poor Cur was almost starv'd, having (as I suppose) had nothing on the Road; but he is now in good Condition, and hath been try'd as to his Mettle, and find he is a good one. I have sent you by the Carrier half a Dozen wild Ducks, which *Tray* fetch'd when I had shot them. Your Sister *Molly* remembers her kind Love to you, and hath sent you a Turkey, and a Chine of Bacon, to which I wish you (and your Friends, if you invite any) a good

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good Stomach. With my Bleſſing and Prayers to God for you, conclude your tender and very

Loving Father,

Andrew Addlehill.

P. S. We have a great many Wild Fowl in our *Level*, ſo that you may expect another Preſent of that Kind in a little Time.

Note, *That theſe four ſhort Lines are called the Poſtſcript, becauſe they are writ after, when the Body of the Letter is done.*

A Letter from a Young Man to his Uncle.

Honoured Uncle, *Norwich, Dec. 7. 1746.*

S I R,

THE many kind and courteous Things that you have done for me, oblig'd me, in Point of Gratitude, as *well* as Duty, to return you my moſt humble Thanks, and to offer you my poor, but real and hearty Service, in the Affair between you and Mr. *A. B.* of this P[illegible]. And if *you'll* pleaſe but to communicate to me your Intentions, and give me your Directions therein, I ſhall obſerve and follow them with all Punctuality; and will from time to time give an exact Account of my Negociations in that Affair.

So expecting to receive your Commands by the firſt convenient Opportunity, I reſt and remain,

Sir, your moſt obliged Nephew, and very humble Servant,

Brian Bing.

The Uncle's Anſwer.

London, 13th Dec. 1749.

Nephew,

I Take your Offer of Service to me in the Buſineſs between me and Mr. *A. B.* of your City, very kindly, and think none fitter to adjuſt that Affair than yourſelf; but I am *unwilling* to go to Law, and had rather, much rather, that you would endeavour to bring him to ſome reaſonable Accommodation; for in ſuch Conteſts the Winner is a Loſer at the Upſhot. So if I can bring him to any reaſonable Terms, I *ſhall* be very glad: You underſtand the Affair, and I

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and so I *shall* commit it *wholly* to your discreet and good Management, being perswaded that you'll do for me as for yourself: So I remain your Loving,

And Affectionate Uncle,

Bazil Bing.

A Letter from a Niece to her Aunt.

London, 7th Dec. 1750.

Madam,

THE Trouble I have already given you, puts me to the Blush, when I think of intruding again on your Goodness; but Necessity, that frequently puts us upon what we have not always a Mind to, and forces us against our Inclinations, is now the Motive that induces me to be thus troublesome. Pray dear Madam, excuse me, if I once more beg your Assistance in this Time of my unlucky Misfortune, and I shall ever have a grateful Remembrance of your Goodness to me; and hope I *shall* be one Time or other in a Capacity of making some Returns of the many Obligations your Goodness hath conferred upon me, your most respectful Niece,

And humble Servant,

Penelope Pinch.

A Letter of proffer'd Assistance to a Friend.

Dear Friend.

I Should be false to true Friendship, if I should neglect or cast off my Friend in Adversity; I hearing that you are under some Misfortune, and, at present somewhat pinch'd with Want, I send you these Lines for your Consolation, desiring you to bear up against your ill Luck with as much Presence of Mind as you can; for assure yourself, I shall suddenly follow this Epistle in Person, and come, I hope, opportunely enough to your Assistance; 'till which Time, take Courage, and be assured that you shall not be disappointed of timely Help, from, dear Friend,

Yours, in Reality,

Timothy Timely.

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A Brother to a Sister.

Dear Sister,

THE great Distance and long Absence of me from you (tho' I have not wanted good Company) makes me very solicitous concerning your Welfare. Natural Affection inclines me strongly to have you in Remembrance, tendering your Health and Welfare in every Respect as dear as my own; and there is nothing at my Command, but, if you request, it shall be freely yours. Notwithstanding the Distance, I purpose (God willing) to make you a Visit very shortly; and had done it before now, but an urgent Occasion interpos'd, the Particulars of which being too long for a Letter, I shall acquaint you of when I see you. Pray give my due Respects to all Friends, particularly to honest Mr. *S. T.* and so in a hopeful Expectation of finding you all well at my Arrival, I conclude, and remain,

Dear Sister,
Your affectionate Brother,
and humble Servant,

James Canter.

A Letter from a Youth at School to his Parents.

London, 6th Dec. 1751.

Honoured Father and Mother,

I Received your kind Letter of the 4th of *November* past, and also the several Things therein mentioned, by the *Chichester* Carrier, for which I return you my most humble and hearty Thanks, they coming very seasonably to the Relief of my Occasions.——I begin to make pretty good Improvement in my Learning now (tho' at the first it seem'd a-like irksome, and hard) and I hope to gain the Point at last, for which you sent me hither. Pray, dear Parents, accept of my most humble Duty to yourselves, and kind Love pray remember to my Brothers, and Sisters, and to my quondam Play fellows, particularly to *Jacky Rattlebrains*, and tell him I hope by this Time he begins to be a little serious.—This being all at present from,

Honoured Parents,
Your dutiful Son, and humble Servant,

Nathaniel Serious.

From

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From an Apprentice to his Friends.

Honoured Father and Mother,

BY these I let you know, that by your good Care and Conduct I am well settled, and am very well pleased with my Station, and could not but in Duty return you my hearty Thanks in a grateful Acknowledgment of your Love and tender Care of me; I will endeavour to go thro' my Business chearfully; and having begun well, I hope I shall persevere so to do to the End, and that I may be a Comfort to you hereafter, and in some Measure make a Return of your Love and Kindness to me, who am,

Your most dutiful and obedient Son, and Servant,

Daniel Diligent.

A Letter of Recommendation.

SIR,

THE Bearer hereof *Francis Faithful*, I send to you as one whose Honesty you may rely on, and my Experience of his Conduct and Fidelity gives me a certain kind of Confidence, in recommending him to you; but you know me, Sir, and I believe you cannot in the least think that I would recommend any one to you, that I had the least Umbrage of Suspicion or Doubt concerning their Probity. I am with due Respect,

Sir, your real Friend, and humble Servant,

George Generous.

A Daughter to a Mother, in relation to Marriage.

Honoured Mother,

WITH all Duty, Humility and Respect, I address myself to you in these Lines, hoping they will find you in perfect Health both of Body and Mind, for which I am never wanting in my Prayer to implore. As I would act nothing that is very material, without your Knowledge, Consent, and Approbation, I thought it my Duty to acquaint you of a Matter of the greatest Weight and Importance, pardon me, if I blush to name it, *viz.* that of my Marriage; the Person (as I think) is well deserving of me,

or

or one much better; it is Mr. *A. B.* of *C.* You know both him and his Character, *viz.* one sober, diligent, and good humour'd; but however I shall submit to your good Pleasure and Guidance in an Affair of such momentous Concern, and remain,

Honoured Mother,
Your dutiful Daughter,
and very humble Servant,

Mary Modesty.

To a Country Chapman.

Mr. Francis Fairdealer, *London, 9th May,* 1753.

YOU and I have formerly had Trading together, and it is not my Fault that we do not continue so to do; for assure yourself, I have a great Value and Respect for you, and on that Account none shall be more ready to oblige you in what I may; and pray let us once more re-assume our Dealings together; and you shall find, that for any Goods you have Occasion for in my Way, none shall use you more kindly than,

Sir,
Your real Friend, and humble Servant,

Titus Trad[illegible].

A Letter of Congratulation.

SIR,

IF you were but sensible how much I am affected with the good and most acceptable News that I hear of your good Fortune, you would conclude that the Joy that surprizes me for the same, is equal to yours that enjoy so happy a Turn of Providence: I could express myself further on this Theme, and enlarge exceedingly on so pleasing a Subject; but let this at present suffice, till I have a more favourable Opportunity of expressing my Joy to you personally: In the Interim, I am truly,

Sir,
Your sincere Friend,
and very humble Servant,

Ralph Real.

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A Letter of Enquiry of Health.

Hammersmith, 9th Octob. 1752.

SIR,

I Not hearing from you in such a Length of Time as from the 11*th* of *June* last to this Time, I am therefore under a great Concern for you, lest some Misfortune of Sickness, or some other Accident hath happened to you, or to some one of your Family; my Uneasiness thereon, occasions my giving you the Trouble of these Lines, which I wish may find Things with you better than my Fears suggest; however to put me out of Pain, be pleas'd to let me know the Certainty with what convenient Speed you can; and thereby you'll very much oblige,

Sir,

Your cordial and real Friend,
and very humble Servant,

Peter Pitiful.

A Letter by Way of Petition to a Friend.

Honoured Sir,

I Am uncertain whether my late Misfortunes have come to your Knowledge; however, I most humbly presume on your good Nature, being assured by sundry Examples of your Compassion, that you will think of, and take Pity on the Distressed; therefore, as an Object truly deserving Compassion, I most humbly implore, and petition you to consider the many Losses and Disappointments that I have met with in my unlucky and wayward Fortune, which have reduced me to such necessitous Circumstances, that I cannot possibly proceed in my Affairs: You was pleased once to style me your Friend, and so I was indeed; and so I would most certainly be now, and shew it by a signal Proof of Kindness, if our Circumstances were changed, by standing between you and Misfortune, and screening you from the malevolent and inauspicious Influences of cross grain'd Stars. I doubt not, Sir, but your Generosity and Goodness is as great; and I hope, with all Humility, you will be pleased to interpose your good Offices, *&c.* between unlucky Fortune, and,

Sir, *Your very humble Servant,*

Lawrence Luckless.

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A Letter of Friendship.

Dear Friend,

IT is now a long Time (as I account it) since you and I have had any mutual Converse by Letter, which to me is a great Unhappiness; and really, if Distance did not somewhat excuse, I should be apt to tax you with Unkindness; but however, perhaps you may not have the same Conveniency of Writing at your Place (for want of Postage) as we have at ours, and on that Account, I shall not insist on your Infringement of Friendship; but the chief Purport of these is to enquire of your Welfare, and to have an Answer given to,

Sir,

Your real Friend,
and very humble Servant,
Kendrick Kindly.

A Letter of Correspondence.

SIR,

YOURS of the 5th *ult.* is now before me; in answer to which, I positively declare, That Mr. *A. B.* hath not been with me to present the Bill of Exchange that you mention in your Letter of Advice to me, and therefore there can be no just Cause of Protest, or any other Charge, put on,

Sir,

Your humble Servant,
John Innocent.

It is as proper to know how to Subscribe, and how to Direct, as it is how to write a Letter.

SUBSCRIPTIONS.

To his most Excellent Majesty, or, *to his most Sacred Majesty*, &c. *To the Queen's most Excellent Majesty*, &c.
To the Prince, *To his Royal Highness*, &c.
To the Princess, *To her Royal Highness*, &c.

To Spiritual Lords,

To his Grace the Lord Archbishop of Canterbury; or,
To the most Reverend Father in God, &c.

To other Bishops,

To the Right Reverend Father in God, &c.

To the Inferior Clergy,

To the Reverend Mr. A &c. or *To the Reverend Doctor*, &c.

To Temporal Lords,

To his Grace the Duke of, &c. *To the Right Honourable the Marquis of Hallifax. To the Right Honourable the Earl of*

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of Suſſex. To the Right Honourable the Lord Viſcount Aſhburnham.

The Sons of Nobility,

Muſt be dignified (tho' not immediate Heirs) with the Title of *Honourable*, as being their Due by Birth.

To a Baronet, *Honourable*, by virtue of his Patent, or *Right Worſhipful*; and alſo to a Knight, *Right Worſhipful*. To an Eſquire, *Worſhipful*.—Every Privy Counſellor, tho' not a Nobleman, hath the Title of *Right Honourable*. All Embaſſadors have the Stile of *Excellency*; as hath alſo the Lord Lieutenant of *Ireland*, and the Captain General of his Majeſty's Forces. The Lord Mayor of *London*, during his Mayoralty, hath the Title of *Right Honourable*. And the Sheriffs, during that Office, have the Title of *Right Worſhipful*. All Mayors of Corporations have the Title of *Eſquires*, during their Office.

For the Beginning of Letters.

To the King; *Sir*, or *may it pleaſe your Majeſty.*
To the Queen; *Madam*, or *May it pleaſe your Majeſty.*
To the Prince; *Sir*, or *May it pleaſe your Royal Highneſs.*
To the Princeſs; *Madam*, or *May it pleaſe your Royal Highneſs.*
To a Duke; *My Lord*, or *May it pleaſe your Grace.*
To a Dutcheſs; *Madam*, or *May it pleaſe your Grace.*
To a Marquiſs; *My Lord*, or *May it pleaſe your Lordſhip.*
To a Marchioneſs; *Madam*, or *may it pleaſe your Ladyſhip.*
To an Earl, Viſcount, or Baron; *Right Honourable*, or *May it pleaſe your Lordſhip.*
To their Conſorts; *Madam*, or *May it pleaſe your Ladyſhip.*
To a Knight; *Sir*, or *Right Worſhipful*,
To his Lady; *Madam*, or *May it pleaſe your Ladyſhip.*
To a Mayor, Juſtice of the Peace, Eſquires, &c. *Sir*, or *May it pleaſe your Worſhip.*

At Subſcribing your Name, conclude with the ſame Title you began with; as *My Lord, your Lordſhip*, &c.

Of Secret Writing.

HERE it may not be improper to ſay ſomething of Secret Writing; to which Biſhop *Wilkins*, in his Book of *Mathematical Magick*, ſpeaks largely; but it is principally concerning Writing in Cypher, which requires great Pains, and an uncommon Share of Ingenuity, both in Writers, and

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and Readers. But however I shall shew two or three particular Ways, that are very pretty and amusing, and also very easy, both as to Cost and Pains. And

First, If you dip your Pen in the Juice of a Lemon, or of an Onion, or in your own Urine, or in Spirits of Vitriol, and write on clean Paper whatever you intend, it *shall* not be discerned till you hold it to the Fire, and then it will appear legible. And if with any of the aforementioned, you write on your Skin, as on your Arm, the Back of your Hand, &c. it shall not be seen *till* you burn a Piece of Paper, and with the Ashes rub on the Place, and then it *will* appear very plain. And this I have experienced and try'd, and therefore can say, *Probatum est*.

Another Way is, When you write a Letter that you intend shall not be discovered, but to those you think fit; is first to write your Thoughts on one Side of your Letter with black Ink, as usual (but it ought to be on thin Paper) and then on the contrary Side, go over the said Matter that you would have secret, with a clean Pen dipp'd in Milk; and that Writing shall not be read without holding it to the Fire, as mentioned above, and then it *will* appear *legible*, in a bluish Colour.

A third Method, is to have two Pieces of Paper of equal Size, and the uppermost cut in chequered Holes or Squares, big enough to contain any Word of six or seven Syllables, and in these Squares write your Mind in regular Sense; and then take off the said chequered Paper, and fill up the Vacancies with Words of any Kind, which will render it perfect Nonsense, and not capable of being read, to any Purpose of Intelligence. And transmit and send the said uppermost, or chequered Paper, or another exactly of the same Form, to your Correspondent; whereby he shall, by laying it nicely on your said Letter, read your intended Sense, without being perplexed with the Words of Amusement intermixed, which makes it altogether unintelligible.

Or again, you may write to your Friend in proper Sense, with common Ink, and let the Lines be at so commodious a Distance, that what you intend to be secret, may be written between them with Water, wherein Galls have been steeped a little Time (but not long enough to tincture the Water) and when dry, nothing of the Writing between the said Lines can be seen; but when it is to be read, you must, with a fine Hair Pencil, dipp'd in Copperas Water, go between the

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ſaid Lines, and ſo you make it legible. *Note*, This Way will give no Ground for Suſpicion, becauſe the Letter ſeemeth to carry a neceſſary Senſe in thoſe Lines that are ſet at ſuch a proper Diſtance, &c.

Of ARITHMETICK.

AFTER Writing, the next neceſſary Step towards qualifying a Perſon for Buſineſs, is the Underſtanding that truly laudable and moſt excellent Accompliſhment, the noble Science of *Arithmetick*; a Knowledge ſo neceſſary in all the Parts of Life and Buſineſs, that ſcarce any Thing is done without it.

In my Directions for its Attainment, I ſhall proceed with ſuch Plainneſs of Method, and Familarity of Stile, as ſhall render it eaſy to be underſtood, and conſpicuous to the meaneſt Capacity.

And firſt of *Notation* and *Numeration*.

In *Notation*, we muſt note or obſerve that all Numbers are expreſſed by, or compoſed of, theſe ten Figures or Characters following, *viz.*

One, Two, Three, Four, Five, Six, Seven, Eight, Nine, Cypher.

1 2 3 4 5 6 7 8 9 0

Nine of theſe are called ſignificant Figures, to diſtinguiſh them from the *Cypher*, which of itſelf ſignifies nothing; but as it is placed (in whole Numbers) ſerves to encreaſe the Value of the next Figure or Figures that ſtand before it; as 3 is but Three; but before the *Cypher* thus 30, the 3 becomes Thirty, *&c.* But in Decimal Fractions, the (0) decreaſes the Value of the Figure behind it; for therein, 3 is three Tenths of any Thing; but by placing 0 before it, thus, 03, it is decreaſed from 3 tenth Parts, to three hundredth Parts of any Thing, *&c.*—We are to note, That every one, or any, of the abovementioned nine Figures, or Digits, have two Values; one certain, and another uncertain; the certain Value is, when it ſtands alone by itſelf; the uncertain is, when joined or placed with other Figures or Cyphers; for when any one of theſe Figures ſtands alone, they ſignify no more than their own ſimple Value; as 5 is but Five, 4 but Four, 6 but Six, and 3 no more than Three, *&c.* And this is the certain Value of a Figure: But when another Figure or Cypher is annexed, they then are encreaſed in their Value

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Value ten Times; as 5, or 5 Units, or Ones, to 5 Tens or Fifty, 4 to 4 Tens or Forty, 6 to 6 Tens or Sixty, and 3 to 3 Tens or Thirty; as thus, 51, Fifty-one; 42, Forty-two; 63, Sixty-three; 34, Thirty-four, *&c.* Again, if any of the said Figures ſtand in the third Place towards the Left-hand, they ſignify ſo many Hundreds as they expreſſed Units or Ones; as 500 is Five Hundreds, 400 Four Hundreds, 600 Six Hundreds, and 300 Three Hundreds, *&c.* If any of them poſſeſs the 4th Place towards the Left-hand, they are ſo many Thouſands as they contain Units. And ſo, any, or every Figure, encreaſes by a Ten-fold Proportion, from the Right-hand to the Left, according to the Place it is found or ſtands in; ſo that 5 may be but Five, or Fifty; Five Hundred, or Five Thouſand. In the firſt Place, 5; in the ſecond 50; in the third 500; in the fourth Place 5000, *&c.* And therefore, this is the uncertain Value of a Figure. But the true Value of Figures in Conjunction, may be fully learnt and underſtood by the following Table.

The Numeration Table.

12 C Thouſ. of Mil.	11 X Thouſ. of Mil.	10 Thouſ. of Mil.	9 C. of Millions.	8 Ten of Millions.	7 Millions.	6 C of Thouſ.	5 Tens of Thouſ.	4 Thouſands.	3 Hundreds.	2 Tens.	1 Units	Hund. Thouſ. of Mil.	Hundreds of Mil.	Hundreds of Thouſ.	Units or Ones
1	2	3	4	5	6	7	8	9	0	1	2	123	456	789	012
	1	2	3	4	5	6	7	8	9	0	1	12	345	678	901
		1	2	3	4	5	6	7	8	9	0	1	234	567	890
			1	2	3	4	5	6	7	8	9		123	456	789
				1	2	3	4	5	6	7	8		12	345	678
					1	2	3	4	5	6	7		1	234	567
						1	2	3	4	5	6			123	456
							1	2	3	4	5			12	345
								1	2	3	4			1	234
									1	2	3				123
										1	2				12
											1				1

For the eaſier Reading of any Number, firſt get the Words at the Head of the Table by Heart; as Units Tens, Hundreds,

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dreds, Thousands, *&c.* and apply'd thus, 75, five Units, five, and 7 Tens, Seventy, that is, Seventy-five. Again, 678; 8 Units, Eight; 7 Tens, Seventy; and 6 Hundreds, six hundred; that is, Six hundred seventy eight. Once more, 3456; 6 Units, six; five Tens, fifty; 4 Hundreds, four Hundred; 3 Thousands, three Thousand; together, Three thousand four hundred fifty-six. Read the 4th Line of the Table downwards, *viz.* 123456789; here the Valuation of the Figures is from the Right-hand to the Left, as 1 in the ninth Place is Hundreds of Millions; but to be read from the Left-hand to the Right; thus, One hundred twenty three Millions, four hundred and fifty-six thousand, seven hundred eighty-nine. But any Number may yet be read more intelligibly, *viz.* by Stops, thus: Make a Comma after every third Figure or Cypher, beginning at the Right-hand, and so on towards the Left, making a Stop after every third Figure or Cypher, as abovesaid; thereby distinguishing every third Place into Hundreds, as Hundreds of Units, Hundreds of Thousands, Hundreds of Millions, and hundred Thousands of Millions, *&c.* And for Trial, let's read the first Line of the Table; the last Place in Valuation is Hundred Thousands of Millions, and to be pointed into Periods thus, 123,456,789,012; and read thus, One hundred twenty three thousand, four hundred fifty-six Millions, seven hundred eighty nine thousand, and twelve; that is, no hundreds but twelve. Again, read the following Number, *viz.* 276,245,678,921,460; here the first Point or Period is between 4 and 1, and the last between 2 and 6, and to be read thus; 276 Millions of Millions, 245 Thousands of Millions, 678 Millions, 921 Thousands, 460 Units, or Ones. And thus may any Number be read with ease, though a large one: And thus are large Numbers or Sums expressed, or set out in the Exchequer, Bank, Lottery Tickets, *&c.* as thus, N°. 224, 156——19, 478,——and 420,000, *&c.* The foregoing *Table of Numeration* is on the Right-hand distanced out into Periods, for the easier Reading thereof,

Num-

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Numbers to be read or written, *viz.*

96, *Ninety-six.*
242, *Two hundred forty-two.*
7924, *Seven thousand 9 hundred 24.*
54006, *Fifty-four thousand and six.*
524707, *Five hundred 24 thousand 707.*
4706240, *Four millions 706 thousand 240.*
62700472, *Sixty-two millions 700 thousand 472.*
474960204, *Four hundred 74 millions 960 thousand 204.*
4214007042, *Four thousand 214 millions 7 thousand 42.*
44214800240, *Forty-four thousand 214 millions 8 hundred thousand 240.*

Of Numerical Letters.

Sometimes Numbers are expreſſed by Letters; and it is neceſſary to underſtand them, for the readier Reading the Dates of Years, frequently uſed at the Foot of Title Pages of Books, and on Funeral Monuments, and in Roman Hiſtory, *&c.*

I *ſignifies One.*
V *Five.*
X *Ten.*
L *Fifty.*
C *An hundred.*
CC *Two hundred.*
D *or* IↃ *Five hundred.*
M *or* CIↃ *A Thouſand.*
IↃↃ *Five Thouſand.*
CCIↃↃ *Ten Thouſand.*
IↃↃↃ *Fifty Thouſand.*
CCCCIↃↃↃ *A Hundred Thouſand.*
IↃↃↃↃ *Five hundred Thouſand*
CCCCCIↃↃↃↃ *Ten Hundred Thouſand, or a Million.*
M.DCCLIII. *expreſſes this preſent Date of* 1753, M. *being One Thouſand,* D *Five Hundred,* CC *Two Hundred, and* LIII *Fifty-three; together One Thouſand Seven Hundred and Fifty-three.*

ADDITION.

IS the putting together two or more Numbers or Sums, ſo as their total Value may be diſcovered or known.

Herein we muſt always obſerve to ſet the Numbers to be added, orderly one under the other; that is, Units under Units, Tens under Tens, Hundreds under Hundreds, *&c.* as in the ſubſequent Examples.

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Addition of Numbers of one Denomination.

Yards.	*Gallons.*	*Pounds.*
		x *of*
T. U.	H. T. U.	Th. Th. H. T. U.
2 4	7 5 6	5 7 9 6 2
4 2	4 3 2	3 9 7 4 4
6 8	5 7 8	6 7 2 2 2
8 6	6 9 6	7 9 6 7 4
2 4	4 2 2	2 4 9 2
4 2	6 7 8	3 9 0
2 8 6	3 5 6 2	2 4 7 4 8 4

In Addition of ſimple Numbers, whether it be *Yards*, *Gallons*, *Pounds*, or any Thing elſe, remember to carry 1 for every 10 that you find in the firſt Row or Rank of Figures, being Units, to the next Row of Tens; and the like from the Rank of Tens to the Row of Hundreds, *&c.* and what ever it makes in the laſt, you muſt ſet it down, amount to what it will.

The Numbers above are ſet down in order, as before directed; that is, Units under Units, Tens under Tens, *&c.* as may be plainly underſtood, by being indicated at the Head of each Row, or Rank with Units, Tens, Hundreds, *&c.* Then in caſting up each Example, to know its Total, I begin at the Right-hand, or Unit's Rank, of the firſt Example, and ſay, 2 and 4 is 6, and 6 is 12, and 8 is 20, and 2 is 22, and 4 is 26; in which Row there are two Tens and 6 over; wherefore I ſet down 6 juſt under its own Rank, and carry 2 to the next or laſt Row, and ſay, 2 that I carry and 4 makes 6, and 2 is 8, and 8 is 16, and 6 is 22, and 4 is 26, and 2 is 28; and it being the laſt Row I ſet down the Amount, *viz.* 28; ſo that the Total Number of Yards is found to be (by this Method) at the Bottom 286 And the next or ſecond Example, is found by the ſame Method to be 3562 Gallons. And in the third and laſt Example, the Total Number of Pounds is found by the ſame Way to be 247484. And ſo the Total of any other Example of the ſame kind, *viz.* ſimple Numbers of one Denomination, may be found. *Note*, That when any of the Ranks amount to juſt 10, 20, 30, 40, 50, *&c.* then muſt ſet down the 0, under its proper Rank, and carry either

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either 1, 2, 3, 4, or 5, according to the Number of Tens that you find, to the next Row; and so you will always do, when it so happens, whether in the first, second, or third Row; or in any other, except the last, where what it amounts to must be set down, without any Reserve or Carriage in the Mind, because there is no other Row or Rank to carry to, as was hinted before.

And so much for *Addition of Numbers of one Denomination*, which never varies from what has been said above; serving strictly to keep to the critical, and nicely setting down in perpendicular Order your several Numbers, that Units may precisely and directly stand under Units, Tens under Tens, *&c.* as hath fully been declared before. The next in Order of Course, is *Addition of Numbers of several Denominations*, or *Addition of Money*.

As we in *England*, or *Great-Britain*, keep our Accounts in Pounds, Shillings, and Pence, and Parts of a Penny; so you are to note, that

4 *Farthings make* 1 *Penny*,
12 *Pence* 1 *Shilling*, and
20 *Shillings* 1 *Pound*.

And here also you are strictly to observe, and with the same Punctuality to mind, that Pounds be set directly under Pounds, Shillings under Shillings, Pence under Pence, and Farthings under Farthings; as in the Examples hereafter following.

But before you proceed, it will be necessary to have the following Tables by Heart, for the readier Knowledge how many Shillings there are in so many Pence, and apprehending how many Pounds are contained in so many Shillings, *&c.*

Pence.	*s.*	*d.*
20 is	1	8.
30 —	2	6
40 —	3	4
50 —	4	2
60 —	5	0
70 —	5	10
80 —	6	8
90 —	7	6
100 —	8	4
110 —	9	2
120 —	10	0

s.	*l.*	*s.*
30 is	1	10.
40 —	2	0
50 —	2	10
60 —	3	0
70 —	3	10
80 —	4	0
90 —	4	10
100 —	5	0
110 —	5	10
120 —	6	0

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The Use of these Tables is this; when ever you are casting up any Example, or Sum of Money, you begin at the Right-hand (as before in Sums of one Denomination) the Place of Pence, and suppose the Rank, Row, or Denomination of Pence amounts, from the Bottom to the Top, to 56; then your Table of Pence tells you that 50*d.* is 4*s.* and 2*d.* 6 over is 4*s.* 8*d.* If to 92*d.* the Table tells you that 90*d.* is 7*s.* 6. and 2*d.* over is 7*s.* 8*d.* And if to 81*d.* the Table shews that 80*d.* is 6*s.* 8*d.* and 1*d.* more makes 6*s.* 9*d.* &c.

The *Shillings Table* serves to lead you to a quick Recollection how many Pounds there are in so many Shillings; as admit the Rank of Shillings arises to 57*s.* the Table says that 50*s.* is 2*l.* 10*s.* and 7*s.* over makes 2*l.* 17*s.* If to 84*s.* the Table declares that 80*s.* is just 4*l.* and 4*s.* over makes 4*l.* 4*s.* If to 112*s.* the Table tells you that 100*s.* is 5*l.* and 12*s.* more makes 5*l.* 12*s.* &c.

Addition of Money.

Money Owing, and Money Received, as follows.

(1)

		l.	*s.*	*d.*
Ow. to	Mr. *Andrews*	4	12	6
	M. *Bent*	7	06	9
	Mr. *Crawley*	4	12	0
	Mr. *Dupper*	6	17	7
	Mr. *Edlin*	5	06	6
	Mr. *Franklin*	4	12	3
	Mr. *Gregory*	6	00	0
	Mr. *Fisher*	5	15	4
		45	02	11

(2)

		l.	*s.*	*d.*
Rec. for	*Tobacco*	46	10	9
	Sugar	79	16	0
	Indigo	42	18	3
	Broad Cloth	66	12	4
	Canary	90	16	0
	Port-Wine	84	07	6
	Rice	24	12	0
	Logwood	60	10	0
		496	02	10

Note, That *l.* stands for Pounds, *s.* for Shillings, *d.* for Pence, and *qr.* for Farthings; in regard that *Libra* signifies a Pound, *Solidus* a Shilling, *Denarius* a Penny, and *Quadrans* a Farthing.

I begin with the first Example of Money Owing, and say 4 and 3 is 7, and 6 is 13, and 7 is 20, and 9 is 29, and 6 makes 35 Pence; now 30 Pence, according to the Table, is 2*s.* and 6*d.* and 5*d.* makes 2*s.* and 11*d.* I set down 11 exactly under the Rank of Pence, and say 2 Shillings that I carry (which I do to the Rank of Shillings) and 5 is 7, and

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and 2 is 9, (for I only take the Units Rank of Shillings) and 6 is 15, and 7 makes 22, and 2 is 24, and 6 is 30, and 2 makes 32; and now being come to the Top of the Sum, and it making 32, I come down with the Tens of Shillings, saying 32 and 10 is 42, and 10 is 52, and 10 is 62, and 10 is 72, and 10 makes 82 Shillings; and the Table telling me that 80 Shillings is 4 Pounds, I know therefore 82*s.* is 4*l.* 2*s.* wherefore I set down the odd 2*s.* just under the Row of Shillings, and carry 4 Pounds to the Pounds; saying, 4 that I carry and 5 is 9, and 6 is 15, and 4 is 19, and 5 is 24, and 6 is 30, and 4 is 34, and 7 is 41, and 4 makes 45 Pounds; so that the Total of those several Sums of Money, due to those several Persons, amounts to 45*l.* 2*s.* 11*d.* as in the Example.

In the second Example of Money received, I begin at the Right-hand (as in all *Additions*, *Subtractions*, and *Multiplications*, we do, and ought so to do, working from the Right-hand to the Left; but in *Division* you begin the Operation at the Left, and work towards the Right) and say, 6 and 4 is 10, and 3 is 13, and 9 makes 22; and 22 Pence being 1*s* and 10*d.* I set down 10*d.* and carry 1*s.* to the Shillings; saying 1 that I carry, and 2 is 3, and 7 is 10, and 6 is 16, and 2 is 18, and 8 is 26, and 6 makes 32; then I come down with the Tens, saying, 32 and 10 makes 42, *&c* and find at the Bottom it comes to 102 Shillings; which making 5*l.* 2*s.* I set down 2*s.* and carry 5*l.* to the Pounds; saying, 5 that I carry, and 4 is 9, *&c.* I find that at the Top it amounts to 36, wherefore I set down 6 exactly under its own Rank, *viz.* the Rank of Units of Pounds, and carry 3 for the 3 Tens that are in 30; for at all Times in the first Denomination of Addition, whether of Money, Weight, or Measure, that is in the Denomination of Pounds, Tuns, or Yards, you must cast them up as Sums of one Denomination; that is, for every Ten carry One to the next, *&c.* saying, 3 that I carry and 6 is 9, and 8 is 11, and 8 is 19, *&c.* and find that at the Top it comes to 49; wherefore I set down 49 before the 6, and the total Amount of the Money received for those particular Goods or Wares sold, is 496*l.* 2*s.* 10*d.*

More

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More Examples for Practice.

		l.	*s.*	*d.*	10 20 12 4	*l.*	*s.*	*d.*
Money due from	Mr. *Money*	17	12	6¼	*l.* 146 12 3½	4	10	6
	Mr. *Gaunt*	26	10	2	278 10 9	0	07	9
	Mr. *Hern*	50	00	0	46 16 6	1	00	0
	Mr. *James*	44	12	8½	100 00 0	1	01	0
	Mr. *King*	60	14	0	72 12 4	0	04	6
	Mr. *Smith*	29	16	6¾	69 16 6¼	0	10	0
	Mr. *Monk*	16	10	0	460 12 6	4	14	4
	Mr. *Napper*	20	00	0	49 10 0	0	07	6
	Mr. *Oliver*	27	11	4½	7 12 4½	0	01	6
	Mr. *Perkins*	17	04	0	22 10 0	0	02	6
	Mr. *Quinton*	20	16	3	164 12 9	3	10	9
	Mr. *Roper*	46	16	8	75 10 6	1	10	0
	Total	377	18	3	1494 16 6¾	18	00	4

Over the middle Example there are Numbers set, to denote what you must stop at, if you cannot cast it up without.

Addition of Avoirdupois Weight.

By this Weight are weighed all Kinds of Grocery Goods or Wares, or Goods subject to waste; as *Tobacco*, *Sugars*, *Fruit* and *Drugs*, as also *Butter*, *Cheese*, *Allom*, *Tallow*, *Flesh*, *Iron*, *Brass*, *Copper*, *Lead*, *Tin*, or *Pewter*, *Pitch*, *Tar*, *Rosin*, *Hemp*, *Flax*, *Soap*, *Salt*, and all Kind of *Garbled Goods*; that is, those Goods that have Dust, Dross, or Waste.

A Table of this Weight is as follows, *viz.*

	Marked,
4 Quarters make 1 Dram	*dr.* Drams
16 Drams 1 Ounce	*oz.* Ounces
16 Ounces 1 Pound	*lb.* Pounds
28 Pound 1 qr. of a hundred Weight, or 112 *lb.*	*qrs.* Quarters
4 Quarters 1 Hundred Wt.	C. Hundreds.
20 Hundred Wt. 1 Tun.	T. Tuns.

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			Small Weight
20 4 28	28	28	16 16 16
C. *qrs.* *lb.*	C. *qrs.* *lb.*	C. *qrs.* *lb.*	*lb.* *oz.* *dr.*
5—1—16	24—1—12	9—1—16	24—11—12
4—2—24	42—2—00	4—3—26	42—14—15
6—3—06	16—1—12	7—1—00	64—10—11
7—0—12	25—3—24	5—3—27	29—09—10
9—1—20	19—0—20	4—3—09	16—13—13
6—2—00	26—1—22	2—2—02	27—13—14
39—3—22	154—3—06	34—3—15	206—09—11

In the first of these Examples I begin at the Right-hand, to wit, at the Denomination of Pounds, and stop at every 28, so many Pounds making a Quarter; that is, at every 28 I make a Speck on my Nail (not in the Sum, for that Way is not proper or handsome) and I find two 28's, and 22*lb.* over; wherefore I set down 22, and carry 2 *qrs.* to the Quarters, and adding them up find them 11, which is 2 Hundred and 3 *qrs.* over; wherefore I set down 3, and carry 2 to the Hundreds; which also added up, make 39; so that the Total Weight is 39 C. 3 *qrs.* and 22*lb.* &c.

And for the Example of *Small Weight*, there I stop at 16 and 16, and at 10 in the Pounds, and find the Total 206*lb.* 9 *oz.* and 11 *Drams*. There's no Occasion for stopping, but only at 28 in the Great Weight, and at 16 and 16 in the Small.

☞ *Note*, That in weighing at the Water-side, or elsewhere, they do not weigh by the Ton in *Great Weight*, though some Goods are sold by it, as *Iron*, *Logwood*, *Cheese*, &c. but by Hundreds, Quarters, and Pounds, and afterwards computed by Tuns, &c.

Addition of Troy Weight.

By this Weight are weighed *Jewels*, *Gold*, *Silver*, *Pearl*, *Electuaries*, and *Liquors*; a Pint of Water, Wine, &c. being a Pound, and the usual Denominations are *Pounds*, *Ounces*, *Penny-weights*, and *Grains*, as in the following Table, *viz.*

Note, That { 24 *Grains* make 1 *Penny-weight*, 20 *Penny-weights* 1 *Ounce*, and 12 *Ounces* 1 *Pound T*

Note,

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Note also, That 25 *lb.* is a Quarter of a Hundred by this Weight, 100 *lb.* is one hundred Weight, and 20 hundred one Tun of Gold or Silver.

Examples of Troy Weight.

6 Ingots of Silv. wt. *vix.*					10 12 20 24				10 20 24		
N°.	*l.*	*oz.*	*pw.*	*gr.*	*lb.*	*oz.*	*pw.*	*gr.*	*oz.*	*pw.*	*gr.*
1 Wt.	4	05	12	10	14	06	10	11	204	10	14
2	5	04	16	17	24	10	11	12	96	07	17
3	3	11	19	20	21	06	07	17	100	11	12
4	4	06	07	12	21	10	12	14	56	16	20
5	5	01	11	12	16	11	12	13	212	10	23
6	4	11	12	13	21	07	06	17	96	19	12
	28	06	00	12	121	05	01	12	767	17	02

In the Denomination of *Grains* I ſtop at 24, and find it to amount to 3 *Penny-weights* and 12 *Grains* over; wherefore I ſet down 12 *Grains* and carry three *Penny-weights* to the *Penny-weights*; then I ſay, 3 that I carried and 2 is 5, and 1 is 6, and 7 is 13, and 9 is 22, and 6 is 28, and 2 is 30; and then coming down with the Tens, I ſay, 30 and 10 is 40, and 10 is 50; *&c.* juſt as I do in *Addition of Money*; (for as there 20*s.* make a Pound, ſo here 20 *Penny-weights* make an Ounce) and find it to come juſt to 80; now in 80 there are juſt 4 Twenties, or 4 Ounces; wherefore I ſet down 00, and carry 4 to the *Ounces*, and find them to amount to 42; which makes 3 *Pounds* and 6 *Ounces* over; wherefore I ſet down 6, and carry 3 to the *Pounds*; ſaying, 3 I carry and 4 is 7, and 5 is 12, *&c.* and find they come to 28; ſo the Total is 28*l.* 06 *oz.* 00 *pw.* 12 *gr.* and ſo of the reſt.

How to prove Addition.

IN all *Additions*, whether of ſimple Numbers, that is, Numbers of one Denomination; or in Examples compound, that is, of diverſe Denominations, as *Pounds*, *Shillings*, *Pence* and *Farthings*; or *Tuns*, *Hundreds*, *Quarters*, and *Pounds*, Great Weight; or *Pounds*, *Ounces*, and *Drams*, Small Weight; *Pounds*, *Ounces*, *Penny-weights* and *Grains*, Troy-Weight; I ſay, in any of the Examples above-mentioned, the trueſt and beſt Method of Proof is to caſt the ſame downwards (beginning at the Top) as you did the ſame upwards, beginning at the Bottom) and if it proves the

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the same Total, the Work is infallibly right, and beyond any Contradiction; and is much better and more sensible than the common Method used in Schools, of making two Totals, by omitting the upper Line in the Second, which is altogether impracticable in real Business. I might here also give the several Examples of other *Additions*, such as *Apothecaries Weight, Cloth, Liquid, Dry*, and *Long Measures, Time*, &c. but the Method serves for any of them, having respect to the several Tables of Quantity belonging to those several Denominations of Addition above mentioned, which are as follows, *viz.*

A Table of the Parts of Apothecaries Weight.

	Marks.
20 *Grains* 1 *Scruple*	℈ a Scruple
3 *Scruples* 1 *Dram.*	ʒ a Dram.
8 *Drams* 1 *Ounce.*	℥ an Ounce.
12 *Ounces* 1 *Pound.*	℔ a Pound.

By these Weights they compound their Medicines; but they buy and sell their Drugs by *Avoirdupois Weight*.

Cloth Measure.

4 *Nails*, or 9 *Inches*, 1 *qr. of a Yard.*
4 *qrs.* or 36 *Inches*, 1 *Yard.*
5 *qrs.* or 45 *Inches*, 1 *Ell English.*
3 *qrs.* or 27 *Inches*, 1 *Ell Flemish.*
6 *qrs.* or 54 *Inches*, 1 *French Ell.*

A Table of Wool Weight.

Note, That 7*lb.* makes 1 *Clove*; 2 *Cloves*, or 14*lb.* 1 *Stone*; 2 *Stones* or 28*lb.* 1 *Tod*; 6 *Tod* and a Half 1 *Wey*, or 182*lb.* 2 *Weys*, or 364*lb.* 1 *Sack*; and 12 *Sacks* 1 *Last*, or 4368*lb.* 240*lb.* 1 *Pack of Wool.*

Note, That 1*lb.* 2*oz.* 12 *pw. Troy*, is equal to a Pound *Avoirdupois*. And a Pound *Troy* is about 13 *oz.* 2 *Drams* and a Half *Avoirdupois*.

			l.	*s.*	*d.*
A Pound of Weight *Troy*	} of Silver is worth	}	3	02	2
A Pound Wt. *Avoirdupois*			3	15	$3\frac{1}{2}$

£100 { in Gold / in Silver } weighs { 1 11 3 / 26 04 } *Avoirdup. Wt.*

A Pound *Avoirdupois* is heavier than a Pound *Troy*: But an Ounce *Troy* is heavier than an Ounce *Avoirdupois*.

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A Table of Liquid Measure.

Liquid Measure is of two Sorts, *viz.* one for *Wine, Brandy*, &c. and the other for *Beer* and *Ale*.

Wine, &c.

8 Pints 1 Gallon,
42 Gallons 1 Tierce,
63 Gallons 1 Hogshead,
84 Gallons 1 Puncheon,
2 Hogsheads 1 Pipe or Butt,
2 Pipes or Butts 1 Tun, or 252 Gallons.

Note, That *sweet Oyl* hath 236 Gallons to the Tun: But Oyl from *Greenland* hath 252 Gallons to the Tun.

Note, The Wine Gallon contains 231 Cubic or solid Inches, by which all Liquids are measured, except Beer and Ale.

Beer Measure.

8 Pints 1 Gallon,
9 Gallons 1 Firkin,
2 Firkins 1 Kilderkin.
2 Kilderkins 1 Barrel, or 36 Gallons,
1 Barrel and Half, or 54 Gallons, 1 Hogshead.

Ale Measure.

8 Pints 1 Gallon,
8 Gallons 1 Firkin of Ale, Soap, or Herrings,
2 Firkins 1 Kilderkin,
2 Kilderkins 1 Barrel, or 32 Gallons,
1 Barrel and Half, or 48 Gallons, 1 Hogshead.

Note, The *Beer* and *Ale* Gallon are the same, *viz.* 282 solid Inches; but with this Difference, *i. e.* the Barrel of Beer contains 1228 Cubic Inches, or 4 Gallons more than the Barrel of Ale.

In a Tun of Wine are
2 Pipes or Butts,
6 Tierces,
252 Gallons,
504 Pottles,
1008 Quarts,
2016 Pints.

In a Pipe or Butt are
2 Hogsheads,
3 Tierces,
126 Gallons,
252 Pottles,
504 Quarts,
1008 Pints.

In a Puncheon are
84 Gallons,
168 Pottles,
336 Quarts,
672 Pints.

In a Hogshead are
63 Gallons,
126 Pottles,
252 Quarts,
504 Pints.

In a Barrel of Beer are
2 Kilderkins,
4 Firkins,
36 Gallons.

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72 Pottles,
144 Quarts,
288 Pints.

In a Barrel of Ale are

2 Kilderkins,
4 Firkins,
32 Gallons,
64 Pottles,
128 Quarts,
256 Pints,

Dry Measure.

2 Pints 1 Quart,
2 Quarts 1 Pottle,
2 Pottles 1 Gallon,
2 Gallons 1 Peck,
4 Pecks 1 Bushel Land Measure,
5 Pecks 1 Bushel Water Measure,
4 Bushels 1 Comb, or half Quarter,
2 Combs 1 Quarter,
4 Quarters 1 Chaldron,
5 Quarters 1 Wey,
2 Weys 1 Last, or 10 Quarters,
4 Fatts or Vatts, or 56 Bushels, of Sea Coal, 1 Chaldron; and 21 Chaldron is accounted a Score in the River of *Thames*; Salt and Sea Coal are heaped, or else there are 5 Pecks to the Bushel.

In the Last are

2 Weys
10 Quarters,
80 Bushels,
320 Pecks,
1280 Pottles,
2560 Quarts,
5120 Pints.

In a Wey are

5 Quarters,
40 Bushels,
160 Pecks,
320 Gallons,
640 Pottles,
1280 Quarts,
2560 Pints.

Note, By an Act *Anno* 1712, the Bushel is 2178 Cubic Inches; and a Gallon of this Measure is 272 Cubic Inches.

Long Measure.

3 Barley Corns 1 Inch,
12 Inches 1 Foot,
3 Feet 1 Yard,
3 Feet 9 Inches 1 Ell Engl.
5 Feet a Geometrical Pace,
5 Yards and Half, 1 Pole, Perch, or Rod,
6 Feet 1 Fathom, or 2 Yards,
40 Poles, or 220 Yards, 1 Furlong,
8 Furlongs 1 Mile, or 1760 Yards,
3 Miles 1 League,
20 Leagues, or 60 Miles, 1 Degree; and 360 Degrees the supposed Circumference of the Earth and Sea.

In a Mile are

8 Furlongs,
320 Poles,
1760 Yards,
5280 Feet,
63360 Inches,
190080 Barley Corns.

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Land Measure.

5 Yards and Half, 1 Pole, Perch or Rod.
40 Poles make 1 Rod, or quarter of an Acre.
160 Poles in Length, and 1 in Breadth, is 1 Acre.
80 Poles in Length, and 2 in Breadth, 1 Acre; and
40 Poles in Length, and 4 in Breadth, 1 Acre.
4 Poles in Length make 1 Chain.
10 Chains in Length, and 1 in Breadth, make 1 Acre.

Time.

	In a Year are
60 Seconds 1 Minute,	
60 Minutes 1 Hour,	
24 Hours 1 Day natural,	31557600 Seconds,
7 Days 1 Week,	525960 Minutes,
4 Weeks 1 Month,	8766 Hours,
13 Months, 1 Day, and 6 Hours, 1 Solar Year.	365 Days 6 Hours.

Note, The Year is alſo divided into 12 Calendar Months, which contain 365 Days, according to this good old Verſe, *viz. Thirty Days hath* September, April, June, *and* November, February *hath* 28 *alone, and all the reſt Thirty and one.*

SUBTRACTION.

THE next Rule in *Arithmetick* is *Subtraction* (or commonly called *Subſtraction*), and this Rule teaches to take a leſſer Number, or Sum, out of a greater, and ſheweth the Remainder, Reſt, Exceſs, or Difference.

Note always to place the leſſer Number under the greater (with the ſame Care and Order as in *Addition*) ſo the Units may ſtand under Units, Tens under Tens, *&c.* and the Remainder under the Line is the Difference ſought: And ſuch Difference being added again to the leſſer Number, ſhall make the greater Number, and is a certain Proof of the ſaid Rule.

A general Rule.

Whatever you uſed to ſtop at in *Addition* (whether of one Denomination or of ſeveral) the ſame you muſt borrow in *Subtraction*, when need requires: Remembering to pay, or carry 1 to the next Place towards the Left-hand. *Example*; Suppoſe Mr. *Andrews* owes to Mr. *Baker* 323*l.* whereof Mr. *A.* hath paid to Mr. *B.* the Sum of 146*l.* in part; what remains due to Mr. *Baker*?

Anſwer 177*l.*

Here

Here the leſſer Number 146, ſtands under the greater 323; and to find the Remainder or Sum reſting due, I ſay, 6 from 3 I cannot; but 6 from 13 (for you muſt always borrow 10 of the next Figure in the ſame under Line, and put it to the Figure or Cypher that ſtands directly over the Figure you ſubſtract) and there remains 7; then 1 that I borrow and 4 is 5, for as I borrowed 10 (or 1) out of 4, ſo I muſt pay the ſaid 1 or 10 (for ſo it really is, becauſe of the Decuple Proportion of Increaſe from the Right-hand to the Left) to the ſaid Figure 4 again, as above hinted: I ſay, 5 from 2 I cannot; but 5 from 12 (borrowing 10, and putting it to the over Figure 2, as above directed) and there remains 7; then 1 that I borrowed and 1 is 2, from 3 the over Figure, and there reſts 1, and ſo the Example is done; and by it is ſhewn that *A.* ſtill owes *B.* 177 Pounds as appears in the Work; and for Proof of its Verity, add 177 the Remainder, to 146 the leſſer of the two given Numbers, and it will make 323, being the ſame with the greater Number, or Sum of Money firſt due; and therefore, a ſure Proof of the Truth and Certainty of the Rule. And as *Subtraction* is proved by *Addition*, ſo may *Addition* be proved by *Subtraction*; for if the two aforeſaid Numbers, *viz.* 323 and 146, are added, their Total is 469, from which if you deduct 146, the Remainder will be the greater Number; or if you ſubſtract 323 from the ſaid 469, the Remainder will be 146, the leſſer Number.

All Examples or Sums in *Subſtraction* of one Denomination, are performed as above, they varying not at all: But however, once more for the better Explanation. Admit, a great Sheep-Maſter hath in all 6904 Sheep, and takes out of them 2490 to diſpoſe of at Market; how many doth he leave behind? To know this, ſet them down thus:

From—6904 the Greater Number.
Take—2490 the Leſſer Number.

Anſwer 4414 the Remainder.

Here I ſay, 0 from 4, and there remains 4; then 9 from nothing (or 0) I cannot; but 9 from 10 (putting or making the 0 10) and there remains 1; then 1 that I borrow and 4 make 5; and 5 from 9, and there reſt 4; and laſtly, 2 from 6, and there remains alſo 4, (for I borrowed none, and therefore there's no Occaſion of paying) ſo that he leaves behind him juſt 4414; which put to the Number he takes

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to Market, makes the Number he first had, *viz.* 6904, and shews the Deduction to be true, and the Answer right.

More Examples for Practice.

	l.	*Yards.*	*Gallons.*	*Pounds.*
From	4796	3700	47200	479672
Take	2929	1976	31976	97694
Rem.	1867	1724	15224	381978
Proof.	4796	3700	47200	479672

Any Distance of Time that is from any particular Date of a Year, may be known by subtracting that Date from the present Date of the Year.

Example.

I.—1753 1666 the Fire of *London*. Since 87

II.—1753 1588 the *Spanish* Invasion. Since 165

III.—1753 1605 Gun-powder Treason. Since 148

Subtraction of divers Denominations.

Of Money.

	l.	*s.*	*d.*
Due	9	02	6
Paid	6	16	4
Rests due	2	06	2

Suppose Mr. *Campion* owes Mr. *Darnell* 9*l.* 2*s.* 6*d.* and Mr. *C.* hath paid Mr. *D.* in part 6 *l.* 16*s.* 4*d.* what remains due to Mr. *Darnell*? Answer, Due to Mr. *Darnell* 2 *l.* 6*s.* 2*d.* as by this Example.

Again,

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	10	20	12	4
	l.	*s.*	*d.*	*q.*
Sold for	242	16	$3\frac{3}{4}$	
Paid in part	174	12	$6\frac{1}{2}$	
Answer	68	03	$9\frac{1}{4}$	

Again, Mr. *Edwards* sells to Mr. *Franci.* Sto[illegible] Wool to the Value 3*d.* $\frac{3}{4}$, and pa[illegible] ney, and by [illegible] *Goodwin*, the Sum of 174 *l.* 12*s.* 6*d.* $\frac{1}{2}$; what Money remains unpaid from Mr. *Francis?* Answer 68 *l.* 3*s.* 9*d.* $\frac{1}{4}$.

In the first of these Examples I say, 4*d.* from 6*d.* and there remains 2*d.* then 16*s.* from 2*s.* I cannot, but borrowing one Integer of the next Denomination, or 1 Pound, which is 20*s.* I say 16 from 20, and there rests 4, and taking the over Number 2, and putting it to the Remainder 4, makes 6; wherefore I put down 6 in the Place of Shillings, and say, 1 that I borrow and 6 is 7; now 7 *l.* from 9 *l.* there remains 2 *l.* so the Money resting due to Mr. *Darnell*, is 2*l.* 6*s.* 2*d.* as in the Example.

In the second Example I say, 2 Farthings (or a Half-penny) from 3 Farthings, and there remains 1 or $\frac{1}{4}$, which I set down in its proper Place, *viz.* under the Denomination of Farthings; then 6 from 3 I cannot, but 6 from 12, (as marked over the Denomination) and there remains 6, and 3*d.* over it makes 9*d.* which I place under the Line in its right Place, *viz.* of Pence; then 1 that I borrowed (that is 1 Shilling) and 12 is 13; 13*s.* from 16*s.* and there rests 3, which I likewise set down under its own Rank; then 4 from 2 I cannot but 4 from 12 (borrowing 10, as in *Addition* I carry 1 for every 10) and there rests 8; then 1 that I borrow and 7 makes 8; 8 from 4 I cannot, but 8 from 14, and there remains 6; so that the Sum remaining due is 68 *l.* 3*s.* 9$\frac{1}{4}$*d.* as in the Work. And for its Proof you must add the Remainder, 68 *l.* 3*s.* 9*d.* $\frac{1}{4}$. to the lesser, or under Sum, 174 *l.* 12*s.* 6*d.* $\frac{1}{2}$, and it makes 242 *l.* 16*s.* 3*d.* $\frac{3}{4}$, the Sum first due, and is a Proof of the Work's being right. See the Example above.

More

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More Examples for Practice.

20	20	12	4	19	20	12		10	20	12	4
l.	*s.*	*d.*		*l.*	*s.*	*d.*		*l.*	*s.*	*d.*	
174	16	6	¼	74	10	4		2471	07	0	
Paid 97	12	4	¼	29	12	9		1976	16	6	½
Remain 77	04	1	½	44	17	7		494	10	5	½
Proof 174	16	6	¼	74	10	4		2471	07	0	

	10	20	12		10	20	12		10	20	12
1st Due	74	00	00		274	16	6		796	00	0
Paid	46	12	10		197	19	4		279	11	7
Balance	27	07	02		76	17	2		516	08	5
Proof	74	00	00		274	16	6		796	00	0

Sometimes a Sum owing may be paid at several Times; then the several Payments must be added together, and their Total deducted from the Sum first due, as in this and the Examples following.

Owing 266 *l.*

Paid at Times
- 20
- 15
- 30
- 90
- 17
- 24
- 60

Paid in all 256 *deduct.*

Rests due 10

Proof 266

Mone.

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	l.	*s.*	*d.*		*l.*	*s.*	*d.*
More due	249	12	0	*Received*	100	10	0
Received at several Times.	24	12	6	*Paid to several Persons.*	6	16	0
	9	14	9		10	00	0
	20	00	0		5	12	6
	16	16	6		20	10	0
	22	10	2		7	09	6
	13	12	6		9	08	6
	7	16	4		7	12	6
Received in all	115	02	9	*Paid in all*	67	09	0
Rest due	134	09	3	*Remains in the Bag.*	33	01	0
Proof	249	12	0				

Avoirdupois Weight.

	20 *Tuns.*	20 *C.*	4 *qrs.*	28 *lb.*	10 *C.*	4 *qrs.*	28 *lb.*	10 *lb.*	16 *oz.*	16 *dr.*
From	44	12	1	10	246	2	12	146	02	10
Take	39	14	2	06	164	3	22	97	10	12
	4	17	3	04	81	2	18	48	07	14
Proof	44	12	1	10	246	2	12	146	02	10

Troy Weight.

	10 *lb.*	12 *oz.*	20 *pwt.*	24 *gr.*	10 *oz.*	20 *pwt.*	24 *gr.*
From	462	04	10	11	1247	10	12
Take	196	09	06	16	976	16	17
Remain	265	07	03	19	270	13	19
Proof	462	04	10	11	1247	10	12

And so much for *Subtraction*; which Method will serve for any Denomination whatever, having respect to the several Tables of Quantity, as before hinted in *Addition*.

MUL-

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MULTIPLICATION.

THE next Rule in order is *Multiplication*, and perhaps the moſt ſerviceable Rule in Buſineſs, for its quick Diſpatch, of all others in *Arithmetick*, and I ſhall endeavour to ſhew, by its Nature, Quality and Uſe, that it is ſo. And,

1. *Multiplication* is a Rule that by two Numbers given teacheth to find out a third which ſhall contain either of the two as many Times as the other containeth Units.

2. In ſome Caſes *Multiplication* is alſo a compendious Working of *Addition*.

3. It ſerves likewiſe to bring great Denominations into ſmall, as Pounds into Shillings, Pence, or Farthings.

4. Having the Length and Breadth of a plain Superficies, we find its Contents in Square Meaſure.

5. By *Multiplication* we find by having the Value of one Thing, or the Wages of one Perſon, how to know the Value of many Things, or the Wages of many Perſons.

In *Multiplication* we are particularly to take Notice of theſe three Terms, *viz.*

The { *Multiplicand*, *Multiplier*, and *Product*.

1. The *Multiplicand* (generally the greater of the two Numbers) is the Number to be multiplied.

2. The *Multiplier*, (generally the leſſer of the two Numbers) is the Number to multiply with.

3. The *Product*, or Reſult of the Work, being the Anſwer.

But before any Procedure can be made in this Rule, it is neceſſary to have the following Table by Heart, and that very perfectly.

The

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The Multiplication Table.

1	2	3	4	5	6	7	8	9	10	11	12
2	4	6	8	10	12	14	16	18	20	22	24
3		9	12	15	18	21	24	27	30	33	36
4			16	20	24	28	32	36	40	44	48
5				25	30	35	40	45	50	55	60
6					36	42	48	54	60	66	72
7						49	56	63	70	77	84
8							64	72	80	88	96
9								81	90	99	108
10									100	110	120
11										121	132
12											144

This Table is so plain and easy, that there is no need of Direction; for 'tis but guiding the Eye from the Side Column to the Head, and in its opposite Angel or Square you have the Answer; and contrariwise, by directing the Eye from the Head to the Side, you have the same; as 6 times 9 is 54, and 9 times 6 is 54; so 7 times 8 is 56, and 8 times 7 is 56, &c. And so it ought to be got by heart for the more dexterous Handling in multiplying.

Now for Application.

Example 1. How many is 3 times 472? Which must be set down as in the Margin; and then say, 3 times 2 is 6; which place under 3 the Multiplier; then 3 times 7 is 21; set down 1 under 7, and carry 2 for the two Tens; as in *Addition of one Denomination*; then 3 times 4 is 12, and 2 is 14; which set down

472
3
1416

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down, and the Product is 1416; that is, 3 times 472 make so much; and may be proved by *Addition*, by setting down 472 three times, in additional Order, and casting it up, which makes the Assertion good in the second Definition, that this Rule compendiously performs the Office of Addition. Likewise the foregoing Example agrees with the first Definition; for as 3 times 472 makes 1416, so doth 472 times 3 make the same, *viz.* 1416.

Example 2. Again, how many makes 742 multiplied by 4?

742 *Multiplicand.*
4 *Multiplier.*
2968 *Product.*

Here I say, 4 times 2 is 8, and 4 times 4 is 16; 6, and carry 1; and 4 times 7 is 28, and 1 is 29, which set down; so the whole Product is 2968, as *per* Example.

More Examples of one Figure in the *Multiplier*, are these, *viz.*

Multiplic.	7420	4444	7460	90704	56789
Multiplier	5	6	7	8	9
Product	37100	26664	52220	725632	511101

Compound Multiplication.

Is when the *Multiplier* consists of two, three, four, or more Figures, or Figures and Cyphers.

And here you must begin with that Figure which is in the Place of Units of the *Multiplier*, and go through the whole *Multiplicand*, by multiplying each Figure of it first by that said Unit Figure, then by the next, to wit, by the Figure in the Place of Tens of the *Multiplier*, then with the third, *&c.* to the last; always remembering to place the first Figure of every Product or Line, (for you will ever have as many as you have significant Figures in the *Multiplier*) I say remember to place the first Figure of each Line exactly and perpendicularly under the Figure you multiply by; and then add the several Lines or Products together, which so collected gives the total Product required, as in the Examples following, *viz.*

Example

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Example 1.

How many is, or are, 23 times 7426? first I begin with the Unit Figure 3 in the *Multiplier*, saying 3 times 6 is 18; 8 (which I set directly under 3 by which I multiply) and carry 1; then 3 times 2 is 6, and 1 is 7; then 3 times 4 is 12; 2 and carry 1; then 3 times 7 is 21, and 1 is 22: And so I have done with the first Figure of the *Multiplier*, *viz.* 3, Then I go to the next, that is 2, and twice 6 is 12; 2 and carry 1, (which 2 is placed in a direct Line under 2, the Multiplying Figure) then twice 2 is 4, and 1 is 5, then twice 4 is 8; and lastly, twice 7 is 14, which I set down: Then I add the two Products together, saying 8 is 8, *&c.* and the Total is the right and proper Product, or Result of the Multiplication, *viz.* 170798. Again,

7426	
23	
22278	
14852	
170798	

Example 2.

What is the Result or total Product of 527527
Multiplied by 285

It will appear too prolix, and altogether unnecessary, to give more verbal Directions; nay, indeed nauseous Tautology, since those given above are sufficient; and therefore the Learner is referred to the Observation of the Example, as also to those two that follow, *viz.*

2637635	
4220216	
1055054	
150345195	

527535	275827
15728	19725
4220280	1379135
1055070	551654
3692745	1930789
2637675	2482443
527535	275827
8297070480	5440687575

When Cyphers are intermixed with Figures in the *Multiplier*, then multiply by the Figures as above; and when you come to a Cypher in the *Multiplier*, then set down another Cypher exactly and perpendicularly under it, then begin the *Multiplicand* again with the next Figure to the Cypher in the

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Multiplier, and go through it in the same Line, placing the first Figure of that Product next to the Cypher towards the Left-hand, but then heed must be taken that the next Figure or Cypher of the next Line must be set down one Degree farther towards the Left-hand, and not immediately under the last Figure set down next to the Cypher: As in the following Examples may be fully understood.

24393	7864371	327586
402	23604	6030
48786	31457484	9827580
975720	471862260	19655160
	23593113	
9805986	15728742	1975343580
	185630613084	

When you have a Cypher or Cyphers in the *Mutliplier*, at the Beginning towards the Right-hand, then set it, or them, backwards from the Place of Units towards the Right-hand; and when you have multiplied by the Figure or Figures, annex the Cypher or Cyphers: *As in these Examples.*

4762	47962	4632
70	400	2600
333340	19184800	27792
		9264
		12043200

If you have Cyphers both in the *Multiplicand* and *Multiplier*, then neglect the Cyphers in both, and multiply by the Figures, and annex the Cyphers at last: *As in these Examples.*

42600	42300	376400
220	12000	2400
852	846	15056
852	423	7528
9372000	507600000	903360000

When

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When you are to multiply by 10, 100, 1000, or 10000, it is only adding or annexing so many Cyphers to the *Multiplicand*, that is, either 1, 2, 3, or 4 Cyphers, and the Work is done. *Example*, Suppose I am to multiply 375 by the Numbers above; if I multiply it by 10, then I join 0 to 375, and then it makes, or the Product is 3750: If by 100, then I annex 00, and then it makes 37500: If by 1000, I put to it 000, and then it produces 375000: And lastly, if by 10000, I then add 0000, and then it makes 3750000 *&c.* And thus may any Number be multiplied, when the *Multiplier* consists of a Unit with any Number of Cyphers, and done by Inspection only, without any formal setting down the *Multiplicand*, with a Line drawn under it, *&c.*

Thus far for Direction in the Manner how to multiply; the next will be to shew the Uses of *Multiplication* in real Business, and how to apply it on proper Occasions, *viz.*

1. Suppose you want to know how many Half Crowns there are in 246 *l.* you know that 8 Half Crowns make 1 *l.* wherefore set them down thus.

	246 *l.*
Multiply by	8
Answer	1968

Again, in 1968 Half Crowns how many Pence?
30 Pence in Half a Crown.

59040 Pence the Answer.

And this serves to make out, that great Denominations are brought into smaller by this Rule, according to the third Definition.

2. Admit you wanted to know the Contents of a large Shuffle-board Table, 34 Feet long, and 4 Feet wide; multiply 34 the Length, by 4 the Breadth, and the Answer will be 136 Square Feet for the true Contents of such a Table. And this agrees with the 4th Definition of this Rule.

3. If I know the Value of a Yard of Broadcloth to be 12 Shillings, what is the Value of 220 Yards of the said Cloth in Shillings?

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220
Multiply by 12

440
220

2640 Shillings, or 132 Pounds.

If the Wages of 1 Seaman be 23 Shillings a Month, what is the Wages of 250 Seamen for the same Time?
Multiply by 23

750
500

Answer 5750 Shillings, or 287 *l.* 10 *s.*

And these two Examples accord with the fifth Definition, or Use of this Rule.

And thus much for plain *Multiplication.*

I shall, in the next Place, say some small Matter concerning *Multiplication of Money*, and a little of its Use, and so conclude this Rule.

Multiplication of Money.

Multiplication of Money (what most would learn above any thing) hath great Affinity with *Addition of Money*; the same Method being taken in carrying from one Denomination to the next, *viz.* from Farthings to Pence, from Pence to Shillings, and from Shillings to Pounds. And as in *Addition* (and other *Multiplications*) you begin at the Right-hand, and proceed towards the Left; so here you begin at the least Denomination, which is also at the Right-hand.

This Method of accompting is the most apt and expeditious of all others, for small Quantities; and therefore extremely necessary in making Bills of Parcels, *&c.* and is, beyond all Contradiction, as sure and certain as any way whatsoever.

The general Rule,

Is always to multiply the Price by the Quantity.

The first Step is, for Quantities from 2 to 12; and this is done by one Multiplier; as in the Examples following.

Example

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Example 1.

	l.	*s.*	*d.*
Multiply	7	12	6
(or 6 Pieces of Cloth at *l.* 7—12—6 *per* Piece) by			6
	45	15	0

Here I say 6 times 6 is 36 Pence, which is just 3*s.* I set down 0 in the Place of Pence, and carry 3*s.* to the Place of Shillings, (exactly the same as in *Addition of Money*) then 6 times 12 is 72, and 3 is 75*s.* or 3*l.* 15*s.* wherefore I set down 15 in the Place of Shillings, and carry 3 to the Pounds; then 6 times 7 is 42 and 3 is 45*l.* So the whole Amount of the 6 Cloths, at 7—12—6 *per* Cloth, is 45*l.* 15*s.* as in the Work, and very concise.

Example 2.

Again, how much is 9 times 13*s.* 4*d.* or what is the Amount of 9 Marks?

	9		
	6	00	0 *Answer.*

In this Example I say, 9 times 4 is 36 *d.* or 3*s.* I set down 0, and carry 3; then 9 times 3 is 27, and 3 makes 30; I set down 00 and carry 3 (as in Multiplication of simple Numbers;) then 9 times 1 is 9, and 3 is 12, which being the Tens of Shillings, consequently they are Angels; which being halved, make just 6*l.* and so much is the Value of 9 Marks, or any thing else at that Price, *viz.* 13*s.* 4*d.*

Example 3.

Once more, What comes 12 Gallons of Wine at 5*s.* 4*d.* *per* Gallon?

	s.	*d.*
	5	4
	12	
l.	3	4—0

Here I say, 12 times 4 is 48; 0 and carry 4; then 12 times 5 is 60, and 4 is 64*s.* or 3*l.* 4*s.*

The next Degree or Step of Advance in this Way of Reckoning, is of Quantities exceeding 12, even to 12 times 12, or 144; all which as far as 144, are found in that excellent Table, the *Table of Multiplication*; which is a ready Help to all Purposes of Reckoning, and particularly in this Way; and that you may proceed with Dexterity, you must be very ready in the said Table, that you may be immediately apprehensive what component Parts hit your Quantity proposed, or pretty near it, (for any Quantity below 12

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needs no Recollection at all, as in two of the Examples foregoing) and then work accordingly; as 15 Yards at, &c. I readily know that 3 and 5, or 5 and 3, are to be my Multipliers. If to 21, then three and 7, or 7 and 3, as above. If to 30, then 5 and 6, or 6 and 5, also 3 and 10, or 10 and 3. If to 45, 48, 56, 66, 72, 96, &c. then 5 and 9, 6 and 8, 7 and 8, 6 and 11, 6 and 12, and 8 and 12, &c. are to be Multipliers, and exactly hit their several Quantities of which they are component Parts; and Examples of this Kind have two Multiplications for their Solution.

When the Quantity proposed is a Number irregular, or such a Number that no two Numbers in the Table can be found to answer it, then we must multiply by two such Numbers as come pretty near it, as is said above; and for the Number wanting, to make up the Number or Quantity proposed, multiply the given Price of one by the Number that is wanting; which will make three Products by three Multiplications; which last Product must be added to the foregoing Products resulting from two Multiplications, and the Total will be the Answer.

And first, I shall shew Examples of the second Step, *viz.* of Regular Quantities that exceed 12, and are precisely answered at two Multiplications, such as mentioned above, *viz.*

What comes 15 Yards of Muslin to, at	*s.*	*d.*
per Yard?	3 and 5	
Here 3 times 5 is 15*d.* or 1*s.* and 3*d.*		
3 and carry 1*s.* then 3 times 3 is 9, and	10	3
1 is 10*s.* so the first Product is 10*s.* 3*d.*	5	
which I multiply by 5, saying, 5 times		
3 is 15*d.* or 1*s.* 3*d.* 3 and carry 1; then	2	11 3
5 times 10 is 50, and 1 is 51*s.* or 2*l.*		

11*s.* So the whole Amount of 15 Yards, at 3*s.* 5*d.* *per* Yard, is 2*l.* 11*s.* 3*d.* And demonstrable thus, *viz.* If 10*s.* 3*d.* be the Value of three times 3*s.* 5*d.* then 5 times the Value of 10*s.* 3*d.* must of Necessity be 15 times the Value of 3*s.* 3*d.* because 5 times 3 is 15: And its Truth may be proved by *Additions* and *Multiplication*, thus; set down 3*s.* 5*d.* three times in additional Order, and put the three Lines together, and the Total of them multiply by 5, as before, and the Answer will be the same. Or set down 17*s.* 1*d.* (the Product of 3*s.* 5*d.* multiplied by 5) three times also, and

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and add them together, and the total will be exactly the same with the Result by Multiplication; as in the following Specimen of Work.

(1)		(2)		(3)	
s.	*d.*	*s.*	*d.*	*s.*	*d.*
3	5	3	5	17	1
3	5	5		17	1
3	5			17	1
10	3	17	1	2	11 3
5					
2	11 3				

Here the first of these two Proofs is worked by *Addition* and *Multiplication*, and the second by *Multiplication* (as *per* Margin) and *Addition*. Also,

By this we see, that in all Examples under this Head, we are to pitch on two Numbers (for *Multipliers*) in the Table; which multiplied together, make the Quantity proposed; and then we are to multiply the Price by one of the Numbers, (it matters not by which first) and then that Product is to be multiplied by the other Number, and the second or last Product will be the Answer.

Example 2.

Again, What is the Value of 21 Gallons of Brandy?

	s.	*d.*	
at	7	9	*per Gallon.*
		7 and 3	
	2	14 3	
		3	
	8	02 9	

In this Example I say, times 9 is 63*d.* or 5*s.* 3*d.* I set down 3 and carry 5; then 7 times 7 is 49, and 5 is 54*s.* or 2*l.* 14*s.* So the first Product is 2*l.* 14*s.* 3*d.* which I multiply by 3, and that produces the last Product or Answer, *viz.* 8*l.* 2*s.* 9*d.*

Now follow a few more Examples of this Sort, without any verbal Directions, because I think those already given to be sufficient.

Example

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Example 3.

What comes 30 Ells of Holland to, at

	s.	d.	
	3	7	*per Ell*
		10 and	3
	1	15	10
			3
Answer	5	07	6

Example 4.

45 Pound of Raw Silk at

	s.	d.	
	15	6	*per lb.*
		5 and	9
	3	17	6
			9
Answer	34	17	6

In the first Product of this Example I say, the half of 7 is 3 and half, or 3 *l.* 10 *s.* And in the last, the half of 15 is 7 and half, or 7 *l.* 10 *s.* &c.

Example 5.

56 Bushels of Wheat, at

	s.	d.	
	4	9	
		7 and	8
	1	13	3
			8
Answer	13	06	0

Example 6.

	s.	d.	
72 Broad Pcs. at	23	6	*each.*
		12 and	6
	14	02	0
			6
	84	12	0

In the first Product the half of 28 Angels is 14 *l.* &c.

Example 7.

108 *lb.* of Indigo Lahore, at

	s.	d.	
	7	8	*d.*
		9 and	12
	3	9	0
			12
Answer	41	8	0

Example 8.

	l.	s.	d.	
96 C. of Currants, at	2	13	6	*per C.*
		8 and	12	
	21	08	0	
			12	
Answer	256	16	0	

The

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The next Gradation of Advanceis of Quantities irregular, or of Numbers that are not to be anſwered preciſely at two *Multiplications*: In this Caſe, there ariſeth no Increaſe of Difficulty, but it is as eaſy as the Examples foregoing; only here you will have an Addition of one Line more, occaſioned by bringing down the Price of one to be added to the laſt Product, or elſe a Line more made by multiplying the Price by what is defective or wanting in the Number by two Multiplications to make up the propoſed Quantity compleat; as it may be of 2, 3, 4, 5, *&c.* as by the ſubſequent Examples may be ſeen and underſtood.

Example 1. What is the Product of 2*l.* 13*s.* 6*d.* multiplied by 39?

l. 2—13—6	Here I find that 6 multiplied by 6, makes 36; which is within 3 of the Quantity propoſed; wherefore I multiply by 6, and that Product again by the other 6; the laſt Product is 96*l.* 6*s.* which is the Value of 36, but we want to know the Value of 39; wherefore I multiply the Price of one, *viz.* 2*l.* 13*s.* 6*d.* by 3 that is defective or wanting to make up 36 to 39, ſaying 3 times 6 is 18*d.* *&c.* And find that 3 times 2*l.* 13*s.* 6*d.* is 8*l.* 00*s.* 6*d.* which added to 96*l.* 6*s.* 0*d.* the Total gives the compleat Value of 39; for 36 and 3 makes 39. See the Work.
6 and 6	
16—01—0	
6	
96—06—0	
8—00—6	
104—06—0	

Example 2. What comes 79 C. wt. of Cheeſe to, at 28*s.* *per* C. weight?

l. *s.* *d.*	
28 0	In this Example I ſay, 7 times 0 is 0; then 7 times 8 is 56; 6 and carry 5; and 7 times 2 is 14, and 5 is 19; the half of which is 9 and half, or 9*l.* 10*s.* 0*d.* So the firſt Product is 9*l.* 16*s.* 0*d.* which multiplied by 11 produces 107*l.* 16*s.* 0*d.* or the Value of 77; then for 2 wanting I multiply the
7 and 11	
9—16—0	
11	
107—16—0	
2—16—0	
110—12—0 *Anſwer*	

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the Price by it, and that gives 2*l.* 16*s.* 0*d.* which added to 107*l.* 16*s.* 0*d.* which makes the whole Value of 79, *viz.* 110*l* 12*s.* 0*d.* as in the Work. Or, as there are no Pence in the Price, you may multiply 28*s.* by 79 without bringing it into Pounds as you work it, but omit it till the laſt, and then cut off or ſeparate the laſt Figure or Cypher of the Product towards the Right-hand, and halve thoſe towards the Left, which Half will be Pounds, and the Figure cut off Shillings, as in this Example.

s.
28
79
252
196
221,2
l. 110,12

The Half of 2, is 1, and the Half of 1 is 0, which 1 joined to the 2 ſevered from 221, makes 12; ſo the Anſwer is 110*l.* 12*s.* as before.

Example 3. 112 Pound of Sugar at $5\frac{1}{2}$ *per lb.* ſet down thus:

s.	*d.*	
	$5\frac{1}{2}$	*per* Pound
	10 and 10	
4	07	
	10	
2	05	10
	05	06 the Product of 5*d.* $\frac{1}{2}$ by 12 defective.
2	11	04 the Anſwer.

Here after I have multiplied by 10 and 10, the Parts of 100, there wants 12; wherefore I multiplied 5*d.* $\frac{1}{2}$ by 12, and it gives 5*s.* 6*d.* for 12 *lb.* at 5*d.* $\frac{1}{2}$, which added to 2*l.* 5*s.* 10*d.* the Value of 100, makes 2*l.* 11*s.* 4*d.* the true Value of 112 *lb.* at 5*d.* $\frac{1}{2}$ *per* Pound.

Example

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Example 4. 94 Stone of Beef, at 22*d.* or 1*s.* 10*d.* *per* Stone.

1*s.*	10*d.*	
	10 and 9	Here what is wanting after the two Multiplications, is 4; wherefore I multiply 1*s.* 10*d.* (the Price) by 4, which produces 7*s.* 4*d.* to be added, &c.
18—	04	
	9	
8—	05—00	
	7—04	
8—	12—04 Answer.	

Example 5. 97 C. ½ of Raisins,

l.	*s.* *d.*	
	25—06 *per* C.	After I have multiplied
	9 and 10	by 9 and 10, I multiply
11—	09—06	the Price 25*s.* 6*d.* by the
	10	Quantity wanting, and it
114—	15—00	produces 8*l.* 18*s.* 6*d.* then
8—	18—06	for the Half C. I take
	12—09 for the ½ C.	Half of the Price, which
124—	06—03	is 12*s.* 9*d.* and then collect the three Lines, the Total of which is 124*l.* 6*s.* 3*d.* for the Answer.

Note, From the last Example may be observed, that there is no need of too much Solicitude concerning coming so very near by two Multiplications, for there 7 is wanting to make up the true Quantity; nay, if the two Multiplications be short by 20 or 12, it is near enough; for 'tis as easy to multiply the Price by 10 or 12, as by 2 or 3, and the Addition is the same.

Example

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Example 6. Once more; What comes 110 C. $\frac{3}{4}$ of Hops to, at 4*l.* 10*s.* 6*d.* *per* C.

l.	*s.*	*d.*	
4	10	06	
		10 and 10	
45	05	00	
		10	
452	10	00	
45	05	00	
2	05	03	
1	02	07$\frac{1}{2}$	
501	02	10$\frac{1}{2}$	Answer.

After I have multiplied by 10 and 10, which makes 100, I multiply the Price, 4*l.* 10*s.* 6*d.* by 10 that is wanting, which gives the same with the first Product, *viz.* 45*l.* 5*s.* 0*d.* which stands under the Product by 100; and for the $\frac{3}{4}$ of a C. I take $\frac{3}{4}$ of the Price, *viz.* first the Half, and then the Half of that Half, that is 2*l.* 5*s.* 3*d.* and and 1*l.* 2*s.* 7*d.* $\frac{1}{2}$; which four Lines added together, make 501*l.* 2*s.* 10*d.* $\frac{1}{2}$ for the Answer.

To prove Multiplication.

Whether of Simple Numbers, or of Money; it is most surely done by *Division*; but before that is known, take this Method, *viz.* As you multiplied the *Multiplicand* by the *Multiplier*, so contrariwise multiply the *Multiplier* by the *Multiplicand*; and if the Products are alike, the Work is right; or otherwise one of them is wrong, and must be gone over again till they do agree.

Example 1.

365 Days in a Year.
24 Hours in a Day.

1460
730

8760

Here (reversly) I say, 5 times 4 is 20; 0 and carry 2; 6 times 4 is 24, and 2 is 26; 6 and carry 2, and 3 times 4 is 12, and 2 is 14. Then 5 Times 2 is 10; 0 and carry 1; 6 times 2 is 12, and 1 is 13; 3 and carry 1; and 3 times 2 is 6, and 1 is 7. Which Products added together make 8760, the Hours in a Year, without taking in the odd 6 Hours, which the Year doth consist of more than 365 Days.

Example

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Example.

56 Gallons of Spirits at 3*l.* 2*s.* 2*d.* *per* Gallon.

3—2*d.* *per* Gallon.
7 and 8
1—02—2
8
8—17—4 Answer.

Say here, twice 7 is 14 and carry 1; and 3 times 7 is 21, and 1 is 22. Again, twice 8 is 16, and 4 and carry 1, and 8 and 1 is 9, and 1 is 10, and carry 1, and 8 and 1 is 9. Thus both these Examples are the same in Consequence as if you proceeded in the common and regular Method of *Multiplication*, and shews the Truth of the Operation.

The next Rule in Order, of Course, is

DIVISION.

THIS Rule, though accounted the hardest Lesson in *Arithmetick*, yet I shall make it easy and intelligible to the meanest Capacity.

The Use of this Rule is to know how many times one Number or Sum is contained in another; as if it were ask'd, how often is 9 contained in 54? the Answer is 6 times; or, how many times 12 is there in 144? Answer 12 times.

As by *Multiplication* great Names or Denominations are brought into small; so contrarily, by *Division*, small Names are brought into greater, as Farthings (from one Gradation to another) into Pounds, Pounds Weight into Tuns Weight, and Gallons Liquid into Tuns Liquid, *&c.*

In this Rule we are to take particular Notice of these three certain Terms following, *viz.*

1. } The { *Dividend*, or Number to be divided.
2. } The { *Divisor*, or Number by which we divide.
3. } The { *Quotient*, or Answer to the Work; which shews how often the Divisor is contained in the Dividend.

4. The *Remainder*; which is an uncertain Branch of this Rule, because there is sometimes a Remainder, and sometimes not. ☞ And you must particularly note, That the *Remainder* is ever of the same Name with the *Dividend*, and is always less than the *Divisor*; for if it be more, or equal to the *Divisor*, the Work is wrong.

Division is either Single or Compound; *Single*, when the *Divisor* consisteth of a single Figure, and the *Dividend* of

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two at most. Any of this sort is answered by the *Multiplication Table*; as if 63 were to be divided by 7, the Answer will be 9 times. Here 63 is the *Dividend*, 7 the *Divisor*, and 9 the *Quotient* or *Answer*.

Compound Division is when the *Dividend* hath many, or more Figures or Cyphers than the *Divisor*, and the *Divisor* one or more Figures or Cyphers, &c.

Example.

How many times 7 is there contained in 365? Or, how many Weeks in a Year?

7) 365 (52
35
15
14
1

A General Rule for Working.

Note { 1. Seek, 2. Multiply, 3. Subtract.

Having set down the Example with two crooked Lines, or half Parenthesis, one for the Divisor, and the other for the Quotient, I begin according to the afore-mentioned general Rule for Working, by seeking or asking how often I can take 7, the *Divisor*, out of 36 the two first Figures of the *Dividend* (for I cannot take 7 out of 3, the *Quotient*, being never to begin with 0) and the *Answer* is 5 times; wherefore I place 5 in the *Quotient*, and multiply the *Divisor* 7, by it (as directed in the *General Rule*) saying 5 times 7 is 35, which I place under 36, and then thirdly, according to the said Rule, I subtract 35 from 36, and there remains 1; to which I bring down the next, or last Figure of the *Dividend*, viz. 5, and then there is 15 for a new *Dividend*, or *Dividual*, to work upon; then I ask or seek again, how oft 7 may be taken in 15? and the Answer is 2 times; wherefore I put 2 in the *Quotient* next to the 5, by which 2 I also multiply the *Divisor* 7, saying, twice 7 is 14; which I set down under 15, and subtract, and there remains 1, which I place between two Semicircles thus, (1) as it stands in the Work; where observe, That 365 is the *Dividend*, 7 the *Divisor*, 52 the *Quotient*, or *Answer*, and 1 the *Remainder*. The *Quotient* declares that 7 is contained in 365, 52 times, and 1 over, or remaining; which I set over the *Divisor*, thus, $\frac{1}{7}$, and signifies that there is one Seventh of a Week, or 1 Day, more than just 52 Weeks a Year, or 365 Days; which is easily to be found by collecting

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collecting the Days of each Calendar Month as they stand in the Almanack.

You may Note, That the said $\frac{1}{7}$ one Seventh is properly what is called a *Fraction*, or a Piece or Segment of the *Dividend*; but of this hereafter.

Note also, That if there had been more Figures or Cyphers in the *Dividend*, they must have all been brought down, one by one at a time (and never but one at a time) and (after *Substraction*) set to the *Remainder*; and if there remains 0, you must still bring down but one Figure or Cypher at a time; and for every Figure or 0 so brought down, there must be a Figure or 0 placed in the *Quotient*, according to the times you can take the *Divisor* out of the several *Dividuals* you make, by drawing down a Figure or Cypher at a Time out of the *Dividend*, till all be brought down, and the Work ended.

For a Specimen, let us divide 8060 Pounds of Tobacco equally among 8 Men.

8) 8060 (1007 *Quotient*.
8 ···
60,
56
(4)

Here I say the Eights in 8 once; which I put in the Quotient, then the Eights in 0, 0 times, which I likewise put in the Quotient; then the Eights in 6, 0 times again; which is also placed in the Quotient, and there remains 6; to which I bring down 0, the last of the Dividend, and it makes 60; lastly, the Eights in 60 7 times, and 7 times 8 is 56, from 60, and there remains 4; so the Quotient shews that each Person must have 1007 Pounds of Tobacco for his Share in the Dividend 8060, and there remains 4 Pounds over and above, which makes Half a Pound more due to each Man, because 4 the Remainder is Half of 8 the Divisor; and so the Work is Done, the Quotient giving to each Man 1007 Pounds and a Half for his equal Share.

Note, That in the Operation, every time that you bring down a Figure or Cypher, you are to make a Point under it in the Dividend, to signify that such a Figure or Cypher hath been brought down and done with, as may be observed in the foregoing Example.

Though this Way of Working is plain, and easy to be understood, yet it is somewhat tedious; and therefore I shew a quicker Way for Dispatch, when the Divisor is a single

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Figures as shall be made conspicuous in these Examples following, *viz.*

I.	II.	III.
4) 78906	5) 34567	6) 29702
Quotient 19726 (2)	6913 (2)	4950 (2)
4	5	6
Proof 78906	34567	29702

In the first of these Examples I say, the 4's in 7, once, and there remains 3, which makes 8, the next Figure in the Dividend 38; then the 4's in 38, 9 times; 9 times 4 is 36, from 38, and there remains 2; which makes 9 the next Figure in the Dividend, 29; then the 4's in 29, 7 times; 7 times 4 is 28, from 29, and there rests 1; which makes 0, the next of the Dividend, 10, and the 4's in 10 twice; twice 4 is 8; from 10, and there remains 2; which makes 6, the last of the Dividend, 26; lastly, the 4's in 26, 6 times; and 6 times 4 is 24; from 26, and there rests 2 the Remainder; and so for the other two Examples. And for Proof of the Work, (or of any other Example) multiply the Quotient by the Divisor, and take in the Remainder in the first Place, or Place of Units; and if the Product be the same with the Dividend, the Division is right; for I say, 4 times 6 is 24, and 2 the Remainder makes 26; 6 and go 2, &c.

More Examples by a single Figure.

3) 54321	7) 279060	9) 234567
Quotient 18107 (0)	39865 (5)	26063 (0)
Proof 54321	279060	234567

This is the shortest Way of Division that can be by a single Figure.

As it is necessary for Expedition to multiply by 11 and 12, as by a single Figure, to have the Product in one Line; so, divide as in these Examples, *viz.*

11)

	11) 72646206	12) 76677240
Quotient	6604200 (6)	6389770
	11	12
Proof	72646206	76677240
	11) 47627000	12) 42007400
Quotient	4329727 (3)	3500616 (8)
	11	12
Proof	47627000	42007400

In the first of these Examples, I say, the 11's in 72, answer 6 times, *&c.* In the second, I say, the 12's in 76, answer 6 times, *&c.* In the third, the 11's in 47, 4 times; 4 times 11 is 44, from 47, and there rests 3, *&c.* In the fourth, I say, the 12's in 42, 3 times; 3 times 12 is 36, from 42, and there remains 6, *&c.*

By being ready and dextrous in the Examples above, you may expeditiously divide by these Numbers, *viz.* 110, 120, 1100, or 1200; *&c.* for it is but cutting off, or separating the Cyphers from 11 and 12, (when these Numbers happen to be Divisors); and cutting off and separating the like Numbers of Figures or Cyphers from the Right-hand of the Dividend, and then divide the other Figures or Cyphers towards the Left-hand, by 11 or 12, as it shall happen; as in the Examples following, *viz.*

Divide 34567 by 110, and 899123 by 120, and 98765 by 1100, and 678901 by 1200.

	11,0) 3456,7	12,0) 89012,3
Quotient	$314\frac{2}{11}$ or $\frac{27}{110}$.	$7417\frac{3}{12}$ or $\frac{33}{120}$
	11,00) 987,65	12,00) 6789,01
Quotient	$89\frac{8}{11}$ or $\frac{865}{1100}$	$565\frac{9}{12}$ or $\frac{901}{1200}$

When you divide by 10, 100, 1000 or 10000, *&c.* you having nothing more to do than to cut off, or to separate so many Figures or Cyphers of the Dividend towards the Right-hand, as you have Cyphers in the Divisor, and those Figures

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towards the Left make your Quotient; and thoſe cut off towards the Right, is the Remainder.

Examples.

Divide 123456789 by 10, 100, 1000, or 10000.

By 10 the Quotient is 12345678, and the Remainder 9

By 100 the Quotient is 1234567, and Remainder 89.

By 1000 the Quotient is 123456, and Remainder 789.

By 10000 the Quotient is 12345, and Remainder 6789.

When the Diviſor conſiſteth of ſeveral Figures, then there ariſeth a little more Difficulty in the Work, but if the following Directions are heedfully attended to, the ſeeming Difficulty is eaſily overcome; as in the ſucceeding Examples, *viz.*

Suppoſe I am to divide 78901 Pounds among 32 Pariſhes, or ſuppoſe an Aſſeſſment of ſo much Money was laid on ſo many Pariſhes; what muſt each Pariſh pay by an equal Proportion towards the raiſing ſuch a Supply?

Diviſor 32) 78901 (. . . . Quotient.

The Example thus ſet out, I begin at the Left-hand, ſeeking how often I can take 32 out of 78; or more eaſy, how many times 3 there is in 7, and the Anſwer is two times; which I place in the Quotient thus 32) 78901 (2, and then according to the *General Rule of Working*, I multiply the Diviſor 32, by the two placed in the Quotient, ſaying, twice 2 is 4, and twice 3 is 6; ſo there is 64 to be taken out of 78, and ſtands thus:

32) 78901 (2.
64.

14

Then I make a Point under 9, the third Figure of the Dividend, and bring it down to the Remainder 14, and then the Work appears thus:

32) 78901 (24.
64.

149

Then ſeek again, aſking how many times 32 is 149? which is not readily to be anſwered; but how many times 3, the firſt Figure of the Diviſor, is there in 14, the two firſt Figures of the Dividual 149, and the Anſwer is 4 times; wherefore, after placing 4 in the Quotient, I multiply, (as directed in the *General Rule*) the Diviſor 32 by the ſaid 4, ſaying,

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saying, 4 times 2 is 8, placing it under 9 in the Dividual; then 4 times 3 is 12, and set down under 14; so there is 128 to be taken out of 149, and then the Work appears thus:

```
32) 78901(24
    64..
    ----
     149
     128
     ---
      210
```

And after Substraction there remains 21; then I make a Point under 0 in the Dividend, and bring it down to the Right of the Remainder 21; and then there is 210 for a new Dividual; then as the general Rule directs, I seek again, saying, how many times 32, the Divisor, is there in 210, the Dividual? or easier, how many times 3 in 21? ☞ For observe well, That when ever you have a Place more in the Dividual than in the Divisor, then always seek how oft you can take the first Figure of the Divisor out of the two first of the Dividual) and the Answer is 7 times; but it will not bear 7 times, for 7 times 32 is 224, and you cannot take 224 out of 210; or rather, you cannot take 22 out of 21; wherefore try in your Mind before you set down the Answer, or Figure in the Quotient, whether it will go to the Number of Times as is most easily suggested; as here the Question or Demand is readily answered 7 times; and so many times 3 may be taken in 21; but when you come to multiply the whole Divisor by the times you place in the Quotient, you begin at the Right-hand, and go towards the Left, carrying the Tens that arise to the next Place, which increases the Product so, that sometimes Substraction cannot be made, because the under Line is greater than the upper, or that which you should substract from; wherefore first try in your Mind as aboveſaid; and since it will not bear 7 times, try if it will go 6 times; saying, 6 times 2 is 12, 2 and carry 1, and 6 times 3 is 18, and 1 is 19; and 19 may be taken out of 21, therefore set down 6 in the Quotient next to the 4, and multiply the Divisor 32 by it, and the Work will stand thus:

```
32) 78901 (246
    64...
    -----
     149
     128
     ---
      210
      192
      ---
       181
```

Here the Divisor 32 multiplied by 6, gives 192 to be taken out of 210, and the Remainder is 18; to which, after a Point made under it, I bring down the 1, the last Figure of the Dividend, and then there is 181 for a new Dividual; then according to the Rule, I seek again (for you are to note, That the aforesaid *General Rule for working* must be as often repeated as you bring down a Figure

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Figure or Cypher from the Dividend, to make a new Dividual; and alſo, that for every Figure or Cypher brought down, there muſt likewiſe be a Figure or Cypher placed in the Quotient, how many times 32 the Diviſor may be taken out of 181 the Dividual; or how many times 3 in 18, and the ready Anſwer is 6 times, but on the Trial I find it will not go 6 times, wherefore I try a time leſs by 1, *viz.* 5 times, and find it will bear it; and ſetting 5 in the Quotient next to the 6, I multiply the Diviſor 32 by it; and it produces 160; which ſubſtracted from 181, the laſt Remainder is 21, and the Quotient or Anſwer is 2465; and ſhews that 32 is contained in 78901, 2465 times, and 21 over, as *per* Work.

```
32) 78901 (2465
    64...
    ----
     149
     128
    ----
      210
      102
     ----
      181
      160
     ----
      (21)
```

Again, admit a Nobleman hath 30,000 *l. per Annum*, what is his daily Income?

If you divide 30000 by 365 (the Days in a Year) the Quotient will be the Anſwer. Set it down for working thus:

```
365) 30000 (
```

Firſt, ſeek how many times 365 can be taken in 300, (an equal Number of Places with the Diviſor) anſwer 0 times; wherefore I go a Place farther to the Right-hand, in the Dividend (for 0 muſt never begin the Quotient, as was ſaid before) and make a Point under it, *viz.* under the laſt 0 but one, as may be ſeen in the Example; and there being a Place more in this pointed out Dividual than in the Diviſor, I ſeek how oft the firſt Figure of the Diviſor, *viz.* 3, is contained in the two firſt Figures or Places of the Dividend, *viz.* 30, and the Anſwer is 10 times; but you are never to take above 9 times at once, in any of theſe Examples of Diviſion, wherefore try in your Mind whether it will bear 9 times, before you ſet it down in the Quotient (as was ſaid before) ſaying to yourſelf, or in your Mind, 9 times 5 is 45; 5 and go 4; 9 times 6 is 54, and 4 is 58; 8 and go 5; and 9 times 3 is 27, and 5 is 32; now 32 cannot be taken out of 30, wherefore take a time leſs by a Unit or One, *viz.* 8 times

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8 times; and finding it will go 8 times, set down 8 in the Quotient; and then say, 8 times 5 is 40; 0 and carry 4; and 8 times 6 is 48, and 4 is 52; 2 and carry 5; and 8 times 3 is 24, and 5 is 29; and then there is 2920 to be taken from 3000; and after Subtraction, the Work appears thus.

365) 3000 (8
2920

80

Then to the Remainder 80, I bring down 0, the last of the Dividend, and then there is 800 for a new Dividual; then you must try how oft you can take 365 out of the said Dividual 800, and the Number of Places being equal to both in Divisor and Dividual, to wit; 3, ask how oft three in 8; answer twice; so put 2 in the Quotient, and say, twice 5 is 10; 0 and carry 1; and twice 6 is 12, and 1 is 13; 3 and carry 1; and twice 3 is 6, and 1 is 7; so there is 730 to be deducted from 800, and the Remainder is 70, as in the whole Work may be seen, *viz.*

365) 30000 (82
2920

800
730
---
(70)

Thus by the Work the Nobleman hath Eighty-two Pounds *per Diem*, and 70 Pounds over; which if multiplied by 20, the Shillings in a Pound, would produce 1400 Shillings; which if divided *per* said Divisor 365, there would come out 3*s.* a Day more, and there will be a Remainder of 305, which multiplied by 12, the Pence in a Shilling, produces 3660; which divided still *per* 365, gives 10 Pence a Day more: So that 30000*l.* a Year is *l.* 82—3—10 a Day.

Once more; Divide 46242 Gallons of Canary by 252, the Gallons in a Tun, thus set down:

252) 46242 (183
252

2102
2016

882
756
---
(126)

In this Example, after Enquiry I find that it will not go twice; therefore I set down 1 in the Quotient, and place 352 under 462 of the Dividend, and after Subtraction the Remainder is 210; to which I bring down 4 from the Dividend, and the Dividual is 2104; and then seeking again, find it will bear 8 times; which placed in the Quotient, and the Divisor 252 multiplied by it,

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it, the Product is 2016 to be subtracted from 2204, which being done, the Remainder is 88; to which 2, the last Figure of the Dividend being brought down, there is 882 for the last Dividual; and then seeking again, I find it will go 3 times; and the Product of the Divisor multiplied by 3, is 756; which subtracted from 882, there remains 126 for the last, or true Remainder: So that by this Division, I find there are 183 Tuns in 46242 Gallons, and 126 Gallons remaining, or over and above; which being Half of 252 the Divisor, the Remainder is therefore Half a Tun more.

When you have a Cypher or Cyphers in the Divisor, in the First, Second, or Third Place, &c. separate such Cypher or Cyphers with a Dash of the Pen, from the rest of the Divisor; and also cut off as many Figures or Cyphers from the Right of the Dividend, as you cut off Cyphers from the Divisor, and divide the remaining Figures towards the Left-hand by the remaining significant Figures of the Divisor.

Example.

Divide 42952 Square Poles of Land by 160, the Square Poles in an Acre of Land.

```
160) 4295|2 (268
     32
     ----
     109
      96
     ----
     135
     128
     ----
       72
```

Here the Cypher is cut off from the Divisor, and 2 from the Dividend; then I ask how oft 16 in 42; answer twice; then the 16's in 109, answer 9 times; then 16's in 135, answer 8 times. So there are 268 Acres, and 72 remains that is in 268 Acres, $\frac{72}{160}$ or almost Half an Acre.

(7)

Divide 27|00|6|2746|20(2333$\frac{25}{27}$ or $\frac{2500}{2700}$

```
     54
     ----
     87
     81
     ----
     64
     54
     ----
     106
      81
     ----
       25
```

In this Example, two Cyphers are separated from the Divisor, and also two Places from the Dividend, and then 62746 is divided only by 27. See the Work.

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When the Divisor is 3, 4, 5, 6, or more Figures, there is a sure and easy Way of performing the Work truly, by making a Table of the Divisor, which may be done by *Addition*, or by multiplying the Divisor by 2, 3, 4, *&c.* Admit you are to divide 98765432 by 123456.

123456)98765432(8000	Times	
98765432	1	123456
(6321)	2	246912
Here having noted the Number of Figures in the Divisor, which here is 6, I make a Point under the Sixth Figure, or Place of the Dividend, *&c.*	3	370368
	4	493824
	5	617280
	6	740736
	7	864192
	8	987648
	9	1111104

The foregoing Table is made by doubling the first Line, which makes 246912; which added to the first or uppermost Line gives the 3d Line 370368, which also added to the said first Line, makes 493824 for the 4th Line or Product; and so of the rest; still remembring to add the subsequent Line or Product to the first or uppermost Line, till you come to the last Line of 9 times, which is 1111104; the Truth of which may be proved by multiplying the first or uppermost Line by 2, 3, 4, 5, *&c.* and if you commit an Error by *Addition*, it may be found or corrected by *Multiplication*.

The Use of the said Table.

When you have pointed out your Number of Places in the Dividend, cast your Eye on the Table, and at the first View you may know how many times you can take, as in this Example, 7 times is too little, and 9 times too much; wherefore I set down 8 in the Quotient, and then multiply and subtract, and the Remainder is 6; to which I bring down 3, and put 0 in the Quotient, then to the 63, I bring down

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down 2, and place 0 in the Quotient; then to 634 I bring down 1, the last Figure of the Dividend: But still it will not bear any Times or Time, wherefore I put another 0 in the Quotient; and so the Work is done, and the Quotient is 8000, and the Remainder 6321 as in the Work.

Thus having plainly, fully, and pertinently shewn, by verbal Directions, the Method of Working Division; I think it unnecessary to give any more Examples in that Manner, but shall leave some few Examples for Practice sake, whose Quotients and Remainders are expressed, but the Operation omitted, to save Room, and for Trial of the Ingenuity of Practitioners.

7400690042 divided by 987, the Quotient is 7498166, and Remainder 200.

479679002742 divided by 4689, the Quotient is 102298704 and the Remainder 4566.

7969767002 divided by 976294, the Quotient is 8163, and the Remainder 279080.

456789012345, divided by 9876543, the Quotient is 46249, and the Remainder 8775138.

764697 by 4500 Quotes 16993, and Remainder 1249. And 8092320000 by 345000, quotes 23456, and remains (0)

The Proof of Multiplication and Division.

THese two Rules reciprocally prove each other; for in proving *Multiplication*, if you divide the Product by the Multiplier, the Quotient will be like the Multiplicand; or if the Multiplicand, the Quotient will be the same with the Multiplier.

Exa. 1.

345
24

1380
690
---
24) 8280 (345
72

108
96

120
120
---
(0)

Exa. 2.

Or thus,

345) 8280 (24
690

1380
1380
---
(0)

To

To prove Division.

Division may be proved by Division thus:

If you divide the Dividend by the Quotient, the Quotient will be your former Divisor.

Example.

Divide 8280 by 345.

345) 8280 (24

Here the Working again is needless, it being in the Page foregoing; and shews the Truth of the Assertion, that *Division* may be proved by *Division*, as aforesaid.

But the most usual Way of proving *Division* is by *Multiplication* in this Manner, *viz.* multiply the Quotient by the Divisor, and the Product will be equal to the Dividend, Example of 1, in the foregoing Page.

345 *Quotient.*
24 *Divisor.*

1380
690

8280 *Proof.*

Note, That when there is any Remainder, such Remainder must be taken in or added to the Product.

As in *Multiplication*, I gave some Examples of its Utility in Money, so likewise I shall give a few Examples of *Division of Money*; whereby may be seen how expeditiously some Things may be done, without having Recourse to Reduction, the Rule of Three, *&c. viz.*

Example 1.

Divide 26*l.* 12*s.* 6*d.* equally among Five Men. For Disposition of working, set it down as follows.

	l.	*s.*	*d.*
5)	26	12	6
	5	06	6
		5	
Proof	26	12	6

In the Working of this, I say, the 5's in 26, 5 times; 5 times 5 is 25, from 26, and there remains 1, or 1 Pound, or 20 Shillings; which with the 12*s.* in the Place of Shillings, makes 32*s.* then the 5's in 32, 6 times; 6 times 5 is 30, from 32, and there remains 2*s.* or 24*d.* which with the 6*d.* in the Place of Pence, makes 30; then the 5's in 30, 6 times; and so the Work is done, and the Answer is that each Man must have

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have *l.* 5—06—6 for his equal Share in the said Division of *l.* 26—12—6 amongst 5 Persons; and the Truth of it is proved by Multiplication of Money, sufficiently shewn in the Rule of Multiplication; as here, 5 times 6 is 30; 6 and carry 2; and 5 times 6 is 30, and 2 is 32; 12 and carry 1; and 5 times 5 is 25, and 1 is 26, *&c.*

Example 2.

Divide the Charges of a Country Feast, amounting to *l.* 246—13—4 equally among 12 Stewards, to know what each Steward must pay.

	l.	*s.*	*d.*
12)	246—	13—	4
Answer	20—	11—	$1\frac{1}{3}$

Here I say the 12's in 24 twice, and the 12's in 6, 0 times, and there remains 6*l.* or 120*s.* and 13*s.* make 133; and then 12's in 13 once, and there remains 1*s.* or 12*d.* then 12 and 4 is 16; and the 12's in 16 once, and 4 remains; so that each Steward must pay *l.* 20—11—$1\frac{4}{12}$ or four Twelfths of a Penny, something more than a Farthing; and this may be proved as that above.

When any Quantity is such a Number that any two Digits of the *Multiplication-Table*, multiplied together, make the said Quantity or Number, then the Quotient may be very expeditiously found at two Divisions, and sooner than at one. *Example*: Divide 7872 by [illegible]. In this Example the Digits, component Parts, or Ratio's, which multiply'd together, make the Divisor 32, and 4 and 8, or 8 and 4; for it matters not which of the Ratio's you divide by first; for either of which Divisions give a true, and the same Quotient; as may be seen by the different Methods of the following Work.

4)	7872	Or thus, 8)	7872
8)	1968	4)	984
	246 *Quotient.*		246 *Quotient.*

Here though the Operations are divers, yet the *Quotients* are one and the same. Again, divide 44184 by 56.

Example

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Example 2.

7) 44184

8) 6312

789 *Quotient.*

Here the *Diviſors* are 7 and 8, or 8 and 7; for either, or both, will give the ſame *Quotient*.

And thus may above Forty Examples be wrought by Numbers out of the *Multiplication-Table*, with great Diſpatch and Expedition, as by 15, 18, 25, 35, 64, 72, 96, *&c.*

When it happens there is any Remainder in the firſt Diviſion, or the laſt, or in both; to know the true Remainder as if you divided by the common Way, take this Method, *viz.* multiply the firſt Diviſor by the laſt Remainder, and to take it in or add the firſt Remainder, if there be any, and the Product will be the true or ſame Remainder as if you divided by the long Way. *Example*: Divide 4567, by 15.

3) 4567

5) 1522—1

304—2

(7)

Here I multiply 3, the firſt Diviſor, by 2, the laſt Remainder, and take in 1, the firſt Remainder, and it makes 7 for the true Remainder, as may be proved at Leiſure, by the other Way.

The ſame Obſervation and Method muſt be taken with reſpect to component Parts mentioned before, in Diviſion of Money, as in Diviſion of ſimple Numbers.

Example.

3) *l.* *s.* *d.*

Divide 463—18—06 into 18 equal Parts.

(6) 154—12—10

Anſwer 25—15—5$\frac{4}{6}$

By this Method of *Diviſion of Money* (if the Quantity be as aforeſaid made by even component Parts) you may, by having the Price of ſeveral Things, know the Price or Va-

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lue of one Thing, at the said Rate, as well as by the *Rule of Three*: So doth *Multiplication of Money* answer Questions in the *Rule of Three*, when the first Number is a Unit or One.

Example by Division.

7). *l.* *s.* *d.*

If 84*lb.* of Coffee cost 31—10—0 what is that a *lb?*

12) 4—10—0

Answer 0—07—6 *a Pound.*

As in the Multiplication of Money, to have an Answer, you multiply the Price by the Quantity, so in Division of Money, you divide the Price by the Quantity, to have your Answer.

I could speak more largely, if I had Room, of the excellent Uses that may be made of *Multiplication* and *Division* only; but their various Uses will be better understood by their Application in the following Rules of *Arithmetick*, particularly in the next Rule, call'd,

REDUCTION.

WHICH is an Application of *Multiplication* and *Division*, shewing how to reduce Numbers of one Denomination to another, thereby discovering the same Value, tho' in different Terms.

1. As first, All Great Names are brought into Smaller by Multiplication, as Pounds into Shillings, Pence, or Farthings, by multiplying 20, 12, and 4. Or Hundreds Weight into Pounds Weight, by multiplying by 4 and by 28, or by 112; or lower, into Ounces or Drams, by multiplying by 16 and 16.

2. And on the contrary, All Small Names are brought into greater by Division; as Farthings into Pounds, by dividing by 4, 12, and 20; and Pounds Weight into Hundreds Weight, by dividing by 28 and 4; and Drams into Pounds, by dividing by 16 and 16.

But you may Note, That Pounds only are brought into Pence, by multiplying by 240; or into Farthings, by multiplying by 960; and just the contrary by Division.

And for Weight, as expressed above.

The

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The Senſe, Meaning and Uſe of *Reduction*, is expreſſed in the following Verſes.

Reduction ſhews how we of Names in Uſe,
May Great to Small, and Small to Great, reduce;
So that the Anſwer which ſhall thence ariſe,
The given Sum in Value equalize;
Multiply, or divide it, back you muſt;
Which makes again your given Number juſt.

Example 1.

In 240 *l.* Sterling how many Pence?
20 Shillings 1 Pound.

	Or thus.
4800 Shillings in 240 *l.*	240 *l.*
12 Pence 1 Shilling	240 *d.* in a *l.*
Anſwer 57600 Pence in 240 *l.*	9600
	480
Anſwer	57600

Example 2.

In 226 Tuns of Copper how many Pounds Wt?
20 C. 1 Tun.

	Or thus,
4520 Hund. Wt. in 226 Tuns	226 Tuns
4 qr. 1 C.	20
18080 qrs. of a C. Wt. in 226 Tuns	4520
28lb. 1 qr. of a C.	112
144640	54240
36160	4520
506240 Pounds Wt. in 226 Tuns	506240 Pounds

Theſe foregoing Examples are Great Names to be brought into Small (as may eaſily be obſerved and underſtood;) therefore, as the firſt Rule directeth, it is done by Multiplication, by multiplying the greater Name by the Number of the next leſſer Name that makes one of the ſaid greater; as in the laſt Examples the leſſer Name to Pounds is Shillings; where-

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wherefore I multiply by 20, because 20 of that leſſer Name makes one of the ſaid greater Name, *i. e.* 20 Shillings make a Pound. And the ſame Regard is had, and Method obſerved in the Example of Weight; as is very plain to be ſeen in the Work, and is called *Reduction Deſcending*, becauſe it brings Higher or Greater Denominations into Lower or Leſſer.

4) *Example* 3.

Bring 494400 Farthings into Pounds

12) 123600 Pence.

20) 10300 Shillings.

515 Pounds.

Or thus,

96) 494400 (515 *l.*
480
144
96
480
480
(0)

In this Way I divide by 960 the Farthings in a Pound, *&c.*

In the firſt Way, I divide the Farthings by 4, becauſe 4 of them make a Penny, and the Quotient is Pence; then theſe Pence I divide by 12, becauſe 12 of them make a Shilling, and that Quotient is Shillings; which Shillings I divide by 20, to bring it into Pounds, thus; I cut off the Cypher in the Dividend towards the Right, for the Cypher that is in the Diviſor 20, which is alſo ſeparated from it with a Daſh of the Pen, (as may be ſeen in the Work) then I halve the Figures one by one, as they are united with the Remainder in the Dividend; which Half is Pounds, and is a ſhort Way of dividing by 20; in the Example I ſay, the Half of 10 (becauſe I muſt not ſet down 0 at the Beginning) is 5, and the Half of 3 is 1, and there remains 1; which makes the next, which is 0, 10; and the half of 10 is 5. So that 10300 Shillings makes 515 Pounds, or there are ſo many Pounds in 494400 Farthings

Note, In dividing by 20, as above, if any Thing remains it muſt be joined or annexed to the Figure or Cypher cut off; as ſuppoſe there had in halving the laſt Figure excepting that you cut off, remained 1, which there doth never more, and then neither, but when the Figure halveth odd;

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odd; I say, if there had remained 1, then it muſt have been joined to the Cypher ſeparated or cut off, and then there would have been 10 Shillings.

Example 4.

Reduce 27552 Pounds Weight into Hundreds Wt.

4)
28) 27552 (984
252
246 C. wt. *Anſwer.*
235
224
112
112
(0)

Or thus,

lb.
112) 27552 (246 *Anſ.*
224
515
448
672
672

In the firſt of the two foregoing Examples I divide the Pounds by 28 to bring them into Quarters; then I divide thoſe Quarters by 4, to bring them into Hundreds Weight, as in the Work.

In the ſecond Way, I divide the Pounds Weight by 112, the Pounds in a C. Weight, and it brings the Pounds Weight into Hundreds Weight at once.

The ſaid Examples are of ſmall Denominations to be brought into greater; and therefore according to the ſecond Rule of Direction, it is done by Diviſion, by dividing the leſſer Name by as many of them as make the next greater Name; that is, by 28, becauſe 28 of them make one of the next greater Name, *viz.* a Quarter of a Hundred; and this Reduction is called *Reduction Aſcending*, becauſe it brings low or ſmall Names to higher or greater Denominations.——By which may be obſerved, that all Queſtions in Reduction, whether Aſcending or Deſcending, are anſwered either by Multiplication or Diviſion, or by both; as will plainly appear in the ſundry Examples of Reducing of divers Denominations to others.

When it is required to reduce Numbers of ſeveral Denominations by *Reduction Deſcending*, or by *Multiplication*, you are to work as before; but you muſt always remember to take in ſuch Numbers as ſtand in the Place of the next inferior

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ferior Denomination; as when you multiply the Pounds by 20, if there be any Shillings in the Denomination or Place of Shillings, you must take them in. So likewise when you multiply the Shillings by 12, if there be any Pence in the Place of Pence, you must also take them in. And so when you multiply the Pence by 4, to bring them into Farthings, you must take in the Farthings, if there be any, in the Place of Farthings, as in the following Work.

Example 5.

l. s. d.

In 346—16—9½ how many Farthings?

20 Shillings 1 Pound.

6936 Shillings in 346 *l.* 16 *s.*

12 Pence 1 Shilling.

83241 Pence in 346 *l.* 16 *s.* 9 *d.*

4 Farthings 1 Penny.

332966 Farthings in 346 *l.* 16 *s.* 9½.

The Example is so plain in the Work that it hardly needs any Explanation; but I begin to say, 0 is 0, but 6 in the Units of Shillings is 6; then twice 6 is 12; and 1 in the Tens of Shillings is 13; 3 and carry 1; and twice 4 is 8, and 1 is 9; twice 3 is 6; then by 12, saying 12 times 6 is 72, and 9 *d.* (in the Place of Pence) is 81 *s.* 1 and carry 8? and 12 times 3 is 36, and 8 is 44; 4 and carry 4; and 12 times 9 is 108, and 4 is 112; 2 and carry 11; and 12 times 6 is 72, and 11 is 83, *&c.*

Example 6.

C. qrs. lb.

In 56—2—18 of Tobacco, how many Pound Weight?

4—qrs. 1. C.

226 qrs in 56 C. 2 qrs.

28 lb. 1 qr. of a C.

1814

453

Anſ. 6344 Pounds Weight in 56 *C.* 2. *qrs.* 19 *lb.*

In

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In the foregoing Work, I first multiply the 56 C. by 4, and take in the two Quarters; and then I multiply the 226 *qrs.* by 28, saying, 8 times 6 is 48, and 6 (the Unit Figure in the odd Pounds) is 54; 4 and carry 5, *&c.* Then I multiply by 2, saying, twice 6 is 12, and 1 (that ſtands in the Place of Tens in the odd Pounds) is 13; 3 and carry 1, *&c.* Then adding the two Products together, they make 6344 Pounds contained in 56 *C.* 2 *qrs.* 16*lb.* as in the Work is conſpicuous. Or the Example may be ſooner done by multiplying the 56 *C.* by 112, the Pounds in a C. Wt. and taking in the odd Weight, *viz.* 2 *qrs.* 16*lb.* or 72 Pounds at once, thus:

C.	
56	I ſay here, 12 times 6 is 72; 2
112	and carry 7; and 12 times 5 is
672	60, and 7 is 67; then once 6 is
56,72 *odd Weight.*	6, ſetting it down in the third
6344	Place, becauſe by multiplying by 12 at once, two Places are taken up; See the Work.

Or, ſtill briefer thus, by ſetting down the 56 C. four ſeveral times, in the following Manner; taking in the odd Weight, as before.

56 C.
56
56
56,72

The ſame as above, *viz.* 6344 Pounds.

Reduction Aſcending.

Is the bringing Numbers from a leſſer Denomination to a greater, and is the Reverſe of *Reduction Deſcending*; and each may ſerve as a Proof to the other, one being performed by *Multiplication*, and the other by *Diviſion*.

And Note, That when at any Time in *Reduction Deſcending* you take in, or add to, the odd Money, Weight, or Meaſure, as you multiply the ſeveral Denominations, ſuch Quantities will be Remainders in *Reduction Aſcending*.

Example

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Example by the two foregoing Sums.

4)
In 332966 Farthings, how many Pounds?
12) 83241—$\frac{1}{4}$*d.* remains what taken in.
2,0) 693,6—9*d.* remains what taken in.
346——16*s.* remains what taken in.

So that in 332966 Farthings, there are 346*l.* 16*s.* 9*d.* and is a sure Proof of the foregoing Work descending.

Again, in 6344 Pounds Weight, how many Hundred Weight?

4)
28) 6344 (226 *qrs.*
56··
——
756 C. 2 *qrs.* taken in.
74
56
——
184
168
——
(16) remain Pounds taken in.

So that in 6344 Pounds Weight, there is 56 *C.* 2 *qrs.* 16*l.* and proves the foregoing Example descending to be right.

Now follow promiscuous Examples of both Kinds of Reduction, one proving the other.

In 276*l.* 12*s.* how many Pence?

20
——
5532
12
——
Anſ. 66384*d.*

12
In 66384*d.* how many Pounds?
——
2'0) 553'2
——
Anſ. l. 276|12 and *Proof.*

In 47964 Grains how many Pounds *Troy*?

20)
24) 47964 (1998
24···12) 99—18 Pwts.
239
216
——
236
216
——
204
192
——
Gr. (12)

In 8*lb.* 3*oz.* 18 *pwt.* 12 *gr.* *Anſwer*, how many Grains

12
——
99
20
——
1998
24
——
7994
3997
——
Anſwer 47964 and *Proof.*

In

In 34 C. ¾ of Cotton Wool, how many Pounds?

34
34
34184

3892 Pounds.

112) 3892 (34 C. ¾ *Proof.*
336
532
448
(84) *lb.* or ¾ of a C.

In 456 C. 3 *qrs.* 27 *lb.* of Copper, how many Pounds? nd what comes it to, at 21 *d. per lb.*

456 C.
456
456
456
,111

51183 Pounds.
21

51183
102366

Or thus,
C.
456
112.

5472
456
,111

51183 Pounds.

1074843 Pence; which bring into Pounds by *Division*, or *Reduction Ascending*, as before shewn, and it will amount to *l.* 4478 : 10 : 3.

Bring 4796 Ells *Flemiſh* into Ells *Engliſh*; multiply by 3. 3 and divide by 5, becauſe 3 Quarters make an Ell *Flemiſh*, and 5 an Ell *Engliſh*.

5) 14388

2877 ¾

Reduce 456 Ells *Engliſh* into Yards; multiply by 5, and ivide by 4, thus:

456 *Engliſh* Ells.
5 qrs. 1 *Eng.* Ell.

4) 2280 qrs.

Yds. 570 *Anſwer*

In 570 Yds. how many *Eng.* Ells?
4 qrs. 1 Yd.

5) 2280

Engliſh Ells 456 *Anſwer* and *Proof.*

Bring

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Bring 130 Tuns of Wine into Gallons.

4 Hogsheads 1 Tun.

63 Gallons 1 Hoghead.

520	
1560	
3120	
Anſ. 32760 Gallons.	

Or thus.

252 Gallons 1 Tun.
130 Tuns.

7560	
252	
32760	

And ſo the contrary by *Diviſion:*

Laſts. Quarters. Buſhels. Pecks.

Reduce 42 — 3 — 5 — 2 into Pecks.

10 qrs. 1 Laſt.

423 qrs.

8 Buſhels 1 qr.

3389

4 Pecks 1 Buſhel.

13558 Pecks in 42 Laſts 3 Quarters, 5 Buſhels, and 2 Pecks.

Here I multiply by 10, and take in 3 *qrs.* and then by 8, and take in 5 *Buſhels*; and laſtly by 4, and take in 2 *Pecks.*

4) In 13558 Pecks, how many Laſts, *&c.*

8) 3389 2 Pecks taken in.

10) 42|3 5 Buſhels taken in.

Laſts 42 3 Quarters taken in.

Anſwer, 42 Laſts, 3 Quarters, 5 Buſhels, and 2 Pecks.

Thus by the two foregoing Examples it is ſeen, that *Reduction Aſcending* and *Deſcending* mutually prove each other, as was ſaid before; and is no more, than that *Multiplication* and *Diviſion* prove one another.

By *Reduction* alſo,

Foreign Coins or Exchanges may be reduced to Sterling Money; and on the contrary, Sterling Money to Foreign.

Example

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Example.

Reduce 246 *Venetian Ducats de Banco* into Sterling Money, the Exchange at 52 *d.* Sterling *per* Ducat, thus:

246
52
492
1230
12) 12792
2|0 106|6

l. 53,6 To be paid in *London*, for the 246 Ducats drawn in *Venice*.

Reduce 53 *l.* 6 *s.* Sterl. into Ducats at 52 *d.* Sterl. *per* Duc.

20
1066
12
52)12792(246 Ducats to be paid in *Venice* for the 53 *l.* 6 *s.*
104 drawn in *London*,
23, *&c.*

To reduce *Flemish* Money into *Sterling* Money, divide the Pence *Flemish* by the Par of Exchange, *viz.* 33 *s.* 4 *d.* and the Quotient will be the *Sterling* Money; and what remains, multiply by 20, *&c.* *Example.*

In 242 *l.* 13 *s.* 4 *d.* *Flemish* how many Pounds *Sterling*, &c?

20
33 *s.* 4 *d.* *Flemish.* 4855
12 12
400 4 00) 58240
l. 145 *Sterling.*
Remains 240
20
41 c)4800
12 Shillings *Sterling.*

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By the Work it appears that 145 *l.* 12 *s.* *Sterling* anſwers or is equivalent to 242 *l.* 13 *s.* 4 *d.* *Flemiſh*, at 33 *s.* 4 *d.* *Flemiſh*, *per* Pound *Sterling*.

Thus *Flemiſh* Money may be reduced to *Sterling* Money, though the Par of Exchange be at any other Rate of Shillings and Pence *Flemiſh*; but when at the Rate, as above, *viz.* 33 *s.* 4 *d.* (the common Par) then the Anſwer is ſooner found by multiplying by 3, and dividing by 5; for 400 *d.* *Flemiſh* is the ſame to 240 *d.* *Sterling* (each being a Pound) as 3 is to 5; for if you divide 240 by 3, it quotes 80; ſo 400 divided by 5, quotes the ſame.

The foregoing *Example* done by the laſt propoſed Way.

l. 242—13—4 *Flemiſh.*

3

5)728—00—0

l. 144—12—0 *Sterling.*

Note, *French* Money is reduced to *Sterling*, *viz.* *Livres*, *Sols*, and *Deniers* (or *French* Pence) as *Sterling* and *Flemiſh* Money is by multiplying by 20 and by 12. Alſo *Proclamation Money* is reduced to *Sterling*, if you multiply by 3, and divide by 4.

In 436 *French* Crowns, each 54 *d.* $\frac{3}{4}$ *Sterling*, how many Pounds, &c. *Sterling*?

436	In this Example, the Number of Crowns is multiplied by 54 *d.* and for that I take the 4th Part of 246, which is 106$\frac{3}{4}$ of a Penny, or a Half penny; which added to the other Pence, gives for Total 23110 *d.* which divided by 12, quotes 1925, and 10 *d.* remains; ſo the Anſwer is 96 *l.* 5 *s.* 10 *d.* $\frac{1}{2}$ *Sterling*, as in the Work.
54	
1704	
2130	
106$\frac{3}{4}$ or $\frac{1}{2}$ *d.*	
12) 23110 : 10 *d.*	
20) 1925	

Anſwer *l.* 96 : 5 : 10 *Ster.*

Again, bring 1600 Pieces of Eight *Mexico*, at 54 *d.* $\frac{3}{4}$ *Sterling* into Pounds, &c. *Sterling*?

1600

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1600
54

6400
8000
200
200

12) 86800 Pence.

2|0) 723|3—4

l. 361 : 13 : 4

Here the 1600 Pieces of Eight are multiplied by 54, to bring them into Pence; and for the $\frac{2}{8}$ I take the $\frac{1}{8}$ of 1600 twice, *&c.* as in the Work. And the Anſwer is *l.* 361 : 13 : 4.

This Method is of Uſe in reducing the Exchanges of *Cadiz*, *Leghorn*, and *Genoa*. Or when the Exchange is at ſo many Pence and Eighths of a Penny, (as often the Exchanges run) then multiply the given Number to reduce it into Pence, by the Pence contained in a Piece of Eight; and alſo multiply the ſaid given Number apart, by the Numerator or upper Figure of the Fraction, and divide by the Denominator, or under Figure of the Fraction, and the Quotient will be Pence; which add to the other Pence produced by multiplying the given Number by the Pence contained in one of the Pieces for Exchange; then divide the total Pence by 12, *&c.*

Example.

Bring 296 Dollars, at 52*d.* $\frac{5}{8}$ *Sterling*, into Pounds, *&c. Sterling?*

296
52

592
1480

15392
222

12) 15614

2|0 1301|—2

Anſwer *l.* 65 : 1 : 2 *Sterling* Money due for 296 Dollars, at 52*d.* $\frac{5}{8}$ *Sterling per* Dollar.

296 Dollars.
6

8) 1776

222 Pence.

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But *Ducats, Dollars, Crowns, Millreas,* &c. are more expeditiously cast up by the Rules of Practice hereafter to be shewn.

And so much for *Reduction.* The next Rule in *Arithmetick* is

The GOLDEN RULE: *Or* RULE *of* THREE.

IT is called the *Golden Rule* from its excellent Performances in *Arithmetick,* as in other Parts also of *Mathemical* Learning.

And the *Rule of Three,* because from three Numbers given, proposed, or known, we find out a fourth Number required, or unknown, which bears such Proportion to the third as the second doth to the first Number. From whence also it is called, *The Rule of Proportion.*

And of this *Proportion* there are two sorts; one called *Direct,* and the other *Indirect* or *Reverse.*

Direct Proportion is, when the second and third Numbers are multiplied together, and their Product is divided by the first.

Indirect or *Reverse Proportion* is, when the first and second Numbers are multiplied together, and their Product is divided by the first.

In *Direct Proportion,* the fourth Number, or Answer to the Question, contains the third Number as often (or as many times) as the second contains the first.

But in *Indirect Proportion,* the greater the third Number is, the less is the fourth; and the lesser the third Number is, the greater is the fourth.

The Stating the Question.

The chiefest Difficulty that occurs in the *Rule of Three,* is the right placing the Numbers, or stating the Question; for when that is done, you have nothing more to do, but to multiply and divide, and the Work is done.

And to this End, we are to remember, that of the three given Numbers, two of them are always of one Name or Denomination; and the other Number is ever of the same Name with the fourth Number or Answer required; and must always be the second or middle Number; and the Number that asketh the Question, must still possess the third or last Place; and the other Number of the same Name with the third, must be the first Number; for, the first and third Numbers must always be of one Name, *viz.* both Money, both

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both Weight, both Time, or both Measure. And though they be of one Kind, yet if one of them is altered, by *Reduction*, from a high to a lower Name, then the other must be reduced to the same Name. For you must particularly note, *That if either the first or third Numbers consist of several Denominations, that is of Pounds and Shillings; or Pounds, Shillings, and Pence; or of Pounds, Shillings, Pence, and Farthings; or of Tons, Hundreds, Quarters and Pounds, &c. then must they be reduced to the lowest Name mentioned. And if one happen to be of divers Denominations, and the other but of one Name; then the Number of one Name must be reduced as low, or into the same Name with the other; as suppose the first Number is brought into Farthings, then the third Number, though but Pounds, must be brought into Farthings also. Then you are to multiply the second and third Numbers together (when the Proportion is Direct) and divide the Product by the first Number, and the Quotient thence arising will be the Answer to the Question, and in the same Name with the Middle Number: And if in a small Denomination, it must be brought by Division to the highest Name, for the better understanding the Answer.* You must also Note, *That if the middle Number be of several Denominations, it must be brought into the lowest mentioned.*

Example 1.

If 12 Gallons of Brandy cost 4*l.* 10*s.* what will 134 Gallons cost at that Rate?

Stated for Working thus.

Gallons.	*l.*	*s.*	*Gallons.*
If 12	04	10	134
	20		90
	90		12) 12060
			2[6]) 100[5;
			l. 50 5 *Answer.*

Here the first and third Numbers are of like Names, *viz.* both Gallons; and 134 being the Number that asketh the Question, it hath the third Place, as it always must, as before asserted; and 4*l.* 10*s.* the second Number, being of two Denominations, *viz.* Pounds and Shillings, it is reduced into the lowest mentioned, *viz.* Shillings, as before directed,

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directed, and then the three Numbers are these, *viz.* 12—90—134; and 134 the third Number, being multiplied by 90, the second Number, produces 12060; which divided by 12, the first Number, quotes 1005 Shillings, the Name of the middle Number 90; and 1005 Shillings, divided by 20, gives 50 *l.* 5 *s.* for the Answer; And for the Proof of its truth, state it back again thus;

Example 2.

Gal. *l.* *s.* *Gal.*

If 134 cost 50 — 5 what 12?

20

1005

12

134) 12060 (90 *s.* *Answer*, or 4 *l.* 10 *s.* the Cost of 12 Gallons, and
1206 is a sure Proof of the first
Work; and the back stating and working the Proof is as much a Question in the Rule of Three as the first.

By the foregoing Rules and Directions, and these two Operations, you may understand the Nature of the Rule, and Method of working, and with Ease and Certainty answer any Example proposed in the Rule of Three direct: And therefore, I shall omit what I can of verbal Directions, and abate as much of Figure-Work as is consistent with Dispatch, and of not leaving the Work too obscure; to save Room, and not to be too prolix; and to this End I shall only give the Examples stated, and a little of the Work, and the Answers to the Questions, leaving most of the Operations to be performed by the ingenious Practitioners.

Example 3.

If 56 *lb.* of Indigo cost 11 *l.* 4 *s.* what will 1008 *lb.* cost at that Rate?

lb. *s.* *lb.*

If 56—224—1008? *Answer* 4032 *s.* or 201 *l.* 12 *s.*

Example 4.

If half a C. Wt. of Rose Copper cost 4 *l.* 18 *s.* what Quantity will 14 *s.* buy at that Rate?

s. *lb.* *s.*

If 98 buy 56 what 14? *Answer* 8 *lb.* of Copper.

Example 5.

If 4 C. 3 qrs. of Sugar cost 5 *l.* 15 *s.* 7 *d.* what will 4 Hogsheads come to, weighing 42 C. 1 qr. 14 *l.* If

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lb. *d.* *lb.*

If 532—1387—4746; *Answer*, 12373 Pence, or 51 *l.* 11 *s.* 1 *d.* And the Remainder 266; multiplied by 4, gives 1064; which also divided by the first Number 532, gives a Half-penny more; so the whole is 51 *l.* 11 *s.* 1 *d.* ½.

Any of these Examples, or any other, may be proved by a Back-stating, according as the first Example was proved? And each Proof becomes another Question in the Rule of Three, as was said before.

Example 6.

If I have 50 *l.* a Year Salary, how much is due to me for 144 Days Service at that Rate?

Days *l.* *Days.*

If 365—50—144; *Answer*, *l.* 19—14—6 $\frac{290}{365}$ Parts of a Penny.

In this Example, the Product of the third by the second Number is 7200; which divided by the first 365, (according to the Rule) quotes 19 Pounds, the Name of the middle Number, and there is a Remainder of 265; which multiplied by 20 according to *Reduction*, and the Product still divided by 365, there comes out 14 Shillings; and yet there is a Remainder of 190, which multiplied by 12, and the Product divided by 365, gives 6 *d.* and there's a Remainder of 90; which multiplied by 4 (the last inferior Name) and divided by 365, yet it would not come to a Farthing more; so that the Answer is as above, 19—14—6 $\frac{290}{365}$.

You are to note always, *That when any thing remains that is reducible to an inferior or lower Name; after multiplied as above, it must continually be divided by the first Number.*

Note also, *when the first of the three given Numbers is an Unit, or One, the Work is performed, or Answer found by Multiplication.*

Example 7.

If I am to give 17 *s.* for 1 *lb.* of *Balladine* Silk, what must I give for 264 *lb.* at that Rate?

lb. *s.* *lb.*

If 1——17——264

17

Answer 4488, or 224 *l.* 8 *s.*

Example 8.

If I buy 49 Bags of Hops, at 12 *l.* 12 *s.* 6 *d.* *per* Bag, what come they to at that Rate? *Bags*

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Bags. *l.* *s.* *d.*
1———12—12—6———49 Bags.
7 and by 7.

88—07—6
7

618—12—6 *Answer.*

The foregoing Work is performed by the component Parts of *Multiplication of Money*, as taught in that Rule.

When the Third or Laſt of the three given Numbers is an Unit or One, then the Work is performed by *Diviſion.*

Example 9.

If 12 Ells of Holland coſt 3 *l.* 6 *s.* what is the Price of 1 Ell at that Rate?

Ells 12) *s.* Ell.
If 12———66———1 *Anſwer* 5 *s.* 6 *d.*

5 $\frac{6}{12}$ of 1 *s.* or 6 *d.*

Example 10.

If 56 Yards of Broadcloth coſt 40 *l.* 12 *s.* what comes a Yard to at that Rate?

Yards 7) *l.* *s.* Yd.
If 56———40—12———1 *Anſwer* 14 *s.* 6 *d. per* Yd.

805—16

0—14—6 *d. Anſwer.*

This Example is wrought by *Diviſion of Money*, and by Component Parts; as before taught in the *Rule of Diviſion.*

Example 11.

If *A* owes *B* 296 *l.* 17 *s.* and compounds at 7 *s.* 6 *d.* in the Pound; what muſt *B* take for his Debt?

s. *d.* *s.*
If 20———90———5937 *Anſwer* *l.* 111—6—4 $\frac{1}{2}$

Example 12.

If a Gentleman hath an Eſtate of 500 *l.* a Year, what may he expend daily, and yet lay up 12 *l.* 15 *s. per* Month?

First

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Firſt multiply 12 *l.* 15 *s. per* 12, the Months in a Year, and it makes 153 *l.* which deducted from 500 *l.* the Remainder is 347 *l.* Then ſay,

Days. *l.*

If 365————347, what 1 Day? *Anſwer* 19 *s.*

After you have reduced the Pounds into Shillings, which make 6940; you divide them by 365, and the Quotient is 19 *s. per* Day.

The Rule of Three Reverſe, or of Indirect Proportion.

WHAT *Indirect Proportion* is, hath been hinted already.

In *Direct Proportion*, the Product of the Firſt and Fourth Numbers, is equal to the Product of the Second and Third.

But in this *Proportion*, the Product of the Third and Fourth Numbers, is equal to the Product of the Firſt and Second.

The Method of ſtating any Queſtion in this Rule, is the ſame with that of the *Direct Rule*.

For the Firſt and third Numbers muſt be of one Name, or ſo reduced, as in that Rule; and the Number that moves the Queſtion muſt poſſeſs the Third Place; and the Middle Number will be of the ſame Name with the Anſwer, as it is there.

To know when the Queſtion belongs to the Direct, *and when to the* Reverſe Rule.

When the Queſtion is ſtated as aboveſaid, conſider whether the Anſwer to the Queſtion ought to be more or leſs than the Second Number; if more, then the leſſer of the Firſt and Third Numbers muſt be your *Diviſor*.

But if Leſs, then the Bigger of the two extreme Numbers muſt be your *Diviſor*.

And if the Firſt Number of the Three is your *Diviſor*, then the *Proportion* is *Direct*; but if the laſt of the Three given Numbers is your *Diviſor*, the Proportion is *Indirect* or *Reverſe*.

Or without Regard, either to *Direct*, or *Reverſe*:
If more is required, the Leſſer
If leſs, the Greater } is *Diviſor*.

Examples

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Examples for Explanation.

Example 1.

If 4 Men plain 250 Deal-boards in 6 Days? how many Men will plain them in 2 Days?

If 6 Days require 4 Men, what 2 Days? *Answer* 12 Men.

6

2) 24

12 *Answer.*

Example 2.

If a Board be 9 Inches Broad, how much in Length will make a Square Foot?

In B. In L. In B.

If 12——12 what 9 Inches broad?

12

9) 144

Answer 16 Inches broad.

In this Example, the first and second Numbers are multiplied together, (as they always must be) and their Product is divided by the Third; as in the Example above it, and agreeable to the aforesaid Assertion; for in the first Example, it is most certain, that 2 Days will require more Hands to perform the Work than 6 Days; therefore the Lesser of the extreme Numbers is the *Divisor*; and declares the Quotient is in the *Indirect Proportion.*

Likewise in the Second Example, 9 Inches in Breadth must needs require more in Length to make a Foot, than 12 Inches in Breadth; wherefore it is in the same *Proportion* with the first Example, because the *Divisor* is the Third Number.

Example 3.

How many Pounds of Coffee, at 5 *s.* 9 *d.* *per lb.* is equivalent in Value with 246 Pounds of Tea, at 13 *s.* 4 *d.* *per lb.*

d. *lb.* *d.* *lb.*

If 160 give 426, what 69? *Answer* $987\frac{57}{80}$.

Here it is manifest that there must be more Pounds of the Coffee than the Tea; therefore 69 is the *Divisor*, which the Third Number, &c.

Example

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Example 4.

How many Yards of Sarcenet, of 3 *qrs.* wide, will line 9 Yards of Cloth, of 8 *qrs.* wide?

qrs wide. *yds long.* *qrs wide.*

If 8 ——— 9 what 3

8

Here the narrower the Silk the more in Length is requir'd.

3) 72

Yards 24 *Answer.*

Example 5.

If a Quartern Loaf weigh 4 *lb.* $\frac{1}{2}$ when Wheat is 5 *s.* 6 *d.* the Bushel; what must it weigh when Wheat is 4 *s.* the Bushel?

d. *lb.* *d.* *lb.*

If 66 ——— 9 ——— 48 *Answer* $6\frac{3}{8}$

Example 6.

If in 12 Months 100 *l.* Principal gain 5 *l.* Interest; what Principal will gain the same Interest in 5 Months?

M. *l.P.* *M.*

12 ——— 100 ——— 5

12

5) 1200

Answer, 240 *l.* Principal.

The Double Rule of Three Direct.

IN this Rule there are Five Numbers given to find out a Sixth, in Proportion to the Product of the Fourth and Fifth Numbers, as the Third Number bears to the Product of the First and Second Numbers.

Questions in this Kind of *Proportion*, are wrought either by two Operations in the *Single Rule of Three Direct*, or by the Rule composed of the Five given Numbers, and the one may be a Proof to the other; as may be seen in the Example following.

Example

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Example 1.

If 100 Pounds Principal, in 12 Months, gain 5 Pounds Intereſt; what will 246 Pounds Principal gain in 7 Months?

l. 100 gain 5 what 246

5

1|00) 12|30

20

1|00) 6|00 *Anſwer* 12 *l.* 6 *s.*

M. *l.* *s.* *M.*

Then ſay again, if 12 gain 12—6 what 7

20

246

7

12) 1722

d.

20) 143,6

l. 7,3,6 *Anſwer*

In the firſt Stating, the Anſwer is, that if 100 *l.* gain 5 Pounds, the 246 *l.* will gain 12 Pounds 6 Shillings.

Then I ſay in the next Stating, If 12 Months gain 12 *l.* 6 *s.* what will 7 Months gain? And the Anſwer of the Work is, *l.* 7—3—6. And ſo much will 246 Pounds gain in 7 Months, if 100 Pounds gain 5 Pounds in 12 Months.

You muſt particularly note, That in all Operations where the Anſwer to the Queſtion is found by two Rules of Three, the Anſwer of the firſt Stating is ever the middle Number of the ſecond Stating or Work; as in the preceding Examples is plainly ſeen.

The

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The foregoing Queſtion anſwered by a Rule compoſed of the five given Numbers, thus:

(1)	(2)	(3)	(4)	(5)
l.	*M.*	*l.*	*l.*	*M.*
If 100	12	5	246	7
12			5	
1200			1230	
			7	
			1200) 8610 (7 *l.*	
			8400	
			210	
			20	
			1200) 4200 (3 *s.*	
			3600	
			600	
			12	
			1200) 7200 (6 *d.*	
			7200	
			(0)	

In this Work, in ſtating the Queſtion, the firſt and fourth Numbers are made of one Name, and the ſecond and fifth; then the two firſt Numbers are multiplied together for a Diviſor, and the laſt three Numbers are multiplied together for a Dividend, and the Quotient or Anſwer as in the ſame Name with the middle Number, *viz.* Pounds Intereſt; as in the Work I find the firſt Quotient 7 Pounds Intereſt; and ſo I proceed from one Denomination to another, till I find the ſame Anſwer as in the Work at two Statings, *viz. l.* 7—3—6.

This Method of Operation ſerves to anſwer all Queſtions in the *Double Rule of Three Direct.*

The Double Rule of Three Reverſe.

IN this Rule you muſt place your Numbers in ſuch Order, that your ſecond and fourth Numbers may be of one Name or Denomination, and your third and fifth.

Example.

If 100*l.* Principal, in 12 Months, gain 6*l.* Intereſt; what Principal will gain 20*l.* Intereſt in 8 Months?

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Stated thus:

l. P.	*Mo.*	*l. Int.*	*Mo.*	*l. Int.*
(1)	(2)	(3)	(4)	(5)
If 100	12	6	8	20
12			6	
1200				48 the Diviſor.
20				

48)24000 (500 *l. P. Anſwer.*
240

(0)

In this Work, the third and fourth Numbers are multiplied together for a Diviſor; and then the firſt is multiplied by the ſecond, and that Product by the fifth Number, and the Product 24000 is divided by 48, and the Quotient is 500*l.* Principal; which is what will gain 20*l.* Intereſt, in 8 Months, and the Anſwer to the Queſtion, as may be ſeen in the Work.

Rules of Practice.

THESE Rules are ſo called from their frequent Uſe and Brevity in caſting up moſt Sorts of Goods in Merchandize.

Note, *That any Queſtion in the Rule of Three, when the firſt Number in Stating is* 1, *it is moſt briefly done by theſe Rules called* Practice.

But previous to theſe Rules, it is neceſſary to have the following Tables by Heart.

Parts of a Shilling. Of a Pound.

d.		
6	is	½
4		⅓
3		¼
2		⅙
1		1/12
½		1/24
1		1/20

Parts of a Pound.

s.	d.	
10	0	is ½
6	8	⅓
5	0	¼
4	0	⅕
3	4	⅙
2	6	1/8
2	0	1/10
1	8	1/12
1	0	1/20

Parts

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Parts of a Shilling. *Example* 1.

6 *d.* is $\frac{1}{2}$ 1 *s.* | 426 Pounds of Sugar, at 6 *d. per lb.*

2|0) 21|3

l. 10|13 *Answer.*

Here 6 *d.* being the Price of each *lb.* and the Half of a Shilling; therefore the Half of 426 is taken, and gives 213 *s.* or 10 *l.* 13 *s.*

Example 2.

4 *d.* is $\frac{1}{3}$ of 1 *s.* | 512 *lb.* of Cheese, at 4 *d. per lb.*

2|0) 17|0—8 *d.*

l. 8,10,8 *Answer.*

Here 4 *d.* is $\frac{1}{3}$ of a Shilling; therefore the Third Part of 512 is 170 *s.* and $\frac{2}{3}$ of a Shilling, or 8 *d.* remains.

Note, *Always what remains is of the same Name with the Dividend, which here is Groats, for the Pounds of Cheese are at a Groat each.*

Example 3.

3 *d.* is $\frac{1}{4}$ of 1 *s.* | 246 Yds of Ribband, at 3 *d. per* Yard.

2|0) 6|1—$\frac{1}{2}$ of a Shilling, or 6 *d.*

l. 3—1—6 *Answer.*

Here the Yards are divided by 4, because 3 *d.* is the 4th of a Shilling; and it quotes 61 Shillings, and 2 remains, or two 3 Pences; so the Answer is *l.* 3—1—6.

And thus may any proposed Question be answered, belonging to the first Table, or Parts of a Shilling; that is, by dividing the given Number by the Denominator of the Fraction, and the Quotient will always be Shillings, which (the Remainders being known as above) bring into Pounds, by dividing by 20, *&c.*

When the Price of the Integer is at a Farthing, a Half-Penny, or three Farthings more than the Price of Pence mentioned, then for those Farthings take their even Part of the foregoing Quotient taken for the even Part of a Shilling, and add, *&c.*

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Examples.

249 Ells of Canvas, at $4\frac{1}{2}$ *per* Ell.

$4d.$ is $\frac{1}{3}$	83
$\frac{1}{2}d.$ is $\frac{1}{8}$	$10\frac{3}{8}$ or $4d.\ \frac{1}{2}$ *Answer.*
of $4d.$	

2|0) 9|3—4 $\frac{1}{2}$ *Answer.*

4-13-4 $\frac{1}{2}$

In this Example I divide by 3 for the Groats, as being the Third of one Shilling, and it quotes 83 *s.* then I consider that a Half-penny is the Eighth of 4 *d.* therefore I take the Eighth Part of the Groat Line, or 83 *s.* and that produces 10 *s.* and $\frac{3}{8}$ of a Shilling, or $4d.\ \frac{1}{2}$; then the two Lines being added together, make 93 *s.* $4d.\ \frac{1}{2}$, or 4 *l.* 13 *s.* $4d.\ \frac{1}{2}$. as in the Work.

Parts of a Pound.

10 *s.* is $\frac{1}{2}$	254 Yards of Cloth, at 10 *s.* *per* Yard.

l. 127 *Answer.*

Here the Half of 254 is taken, becauſe 10 *s.* is the Half of a Pound.

s.	*d.*	
6	$8\frac{1}{3}$	972 Gallons at 6 *s.* 8 *d.* *per* Gallon.

l. 324 *Answer.*

Here the third Part is taken, becauſe 6 *s.* 8 *d.* is the Third of a Pound; and the Anſwer is *l.* 324.

And thus may any Queſtion propoſed be anſwered belonging to the ſecond Table, or Parts of a Pound; that is, by dividing the given Number by the Denominator of the Fraction, and the Quotient will always be Pounds; and if any thing remains, it is always ſo many Halves, Thirds, Fourths, or Fifths, *&c.* of a Pound, according to the Denominator that you divide by.

If the Price be Shillings and Pence, or Shillings, Pence, and Farthings, and no even Part of a Pound; then multiply the given Number by the Shillings in the Price, and take even Parts for the Pence, or Pence and Farthings, and add the ſeveral Lines together, and they will be Shillings; which Shillings bring into Pounds, as before. *Ex.*

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Examples.

lb.	*s.*	*d.*
426	at 4—	9
4		
1704		
213		
106 ½ or 6*d.*		
2|0) 402|3		
l. 101-3-6 *Answer.*		

Ells	*s.*	*d.*
216	at 2—	3 ½
2 *per* Ell.		
432		
54		
9		
2|0) 49|5 *s.*		
24|15 *Answer.*		

396 Gallons of Brandy, at 7*s.* 9*d.* *per* Gallon.

7	
2772	
198	
99	
2|0) 306|9	
l. 153|9 *Answer.*	

When the Price is 10*d.* only annex 0 to the Right of the given Number (which is multiplying by 10) and they are Pence; which divide by 12, and by 20.

Example. 426 *lb.* of Hops at 10*d.* *per lb.*

12) 4260

2\|0) 355\|

l. 17—15 *Answer.*

When the Price is 11*d.* set down the Quantity twice in the Form of Multiplication, and add the two Lines together, then divide by 12, and by 20. *Example.*

426 *lb.* of Copper at 11*d.* *per lb.*

426

12) 4686 *Pence.*

2\|0 39\|0—6

l. 19,10,6 *Answer.*

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If the Price be 11 *d.* ½, take Half the uppermost Line, &c.

Example.

942 *lb.* of Tobacco, at 11 *d.* ½ *per lb.*

942
571

12) 10833 *Pence.*

2|0)90|2—9 *d.*

l. 45 2—9 *Answer.*

When the Price is 1 *s.* only divide by 20.

Example.

2|0) 96|4 *lb.* of Tobacco, at 12 *d. per lb.*

l. 48.4 *Answer.*

When the Price is 2 *s.* it is done at Sight, by doubling the last Figure toward the Right-hand, and setting it apart for Shillings; and the Figures toward the Left are Pounds.

Example.

596 Gallons of Spirits, at 2 *s. per* Gallon.

l. 59—12 *Answer.* Here the Double of 6 is 12 *s.* and the 59 are Pounds.

From this Method of working by 2 *s.* a Multitude of Examples may be most expeditiously wrought, *viz:*

Ells.

444 Cambrick.
——at 5 *s.* 9 *d.*
44—8 at 2 *s.*
44—8 at 2 *s.* 1 *s.* ½ 2 *s.*
22—4 at 1 *s.* 6 *d.* ½ 1 *s.*
11—2 at 6 *d.*
5—11 at 3 *d.* *Answer.*

1 *s.* ½ of 2 *s.*
6 *d.* ½ of 1 *s.*
3 *d.* ½ of 6 *d.*

Yards.

426 at 3 *s.* 6 *d.*
——*per* Yard,
42—12 at 2 *s.*
21— 6 at 1 *s.*
10—13 at 6 *d.*

l. 74—11 at 3 *s.* 6 *d.*

Answer, 127—13— at 5—9 *d.*

The Operation of these two Examples is so intelligibly wrought, that there is no need of verbal Explanation.

Again,

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Again, 548 Yards of Broadcloth, at 12*s.* 6*d.* *per* Yard.

l. 54. 16 at 2*s.* 6 times 2*s.* is 12*s.*

1 *d.* is	328,16 at 12*s.*	Note, *That* 13*l.* 14*s.* is
of 2*s.*	13,14 at 6*d.*	*the fourth Part of* 54*l.* 16*s.*
		the two Shilling Line.

l. 342,10 *Answer.*

Or multiply by 12*s.* and take Half of the given Number for the 6*d.* thus:

548 Yards.
12

6576
$\frac{1}{2}$) 274

2|0)685|0

l. 342—10 *Answer.*

When the Price is an even Number of Shillings, multiply the Number of Integers by Half the Price, and double the first Figure of the Product for Shillings, and carry as is usual in Multiplication, and the other Figures towards the left will be Pounds.

Example.

296 Yards of Cloth, at 14*s.* *per* Yard.
7 the Half of 14 Shillings.

l. 207—4*s.* *Answer.*

Here 7 times 6 is 42; the Double of 4*s.* is 4*s.* &c.

When the Price is an odd Number of Shillings, work for the even Number as above; and for the odd Shillings, take the $\frac{1}{20}$ of the given Number, and add them together.

Example.

496 Gallons of Citron Water, at 17*s.* *per* Gal.
8 the Half of 16, or even Part,

396—16*s.*
24—16

421—12 *Answer.*

In

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In this Example I say, 8 times 6 is 48; the Double of 8 is 16*s.* and carry 4; then 8 times 9 is 72, and 4 is 76; 6 and carry 7; and 8 times 4 is 32, and 7 is 39; then the Half of 4 is 2, *&c.*

Even Parts of a Pound.

	Yards.	*Nobles s. d.*
10 *s.* is $\frac{1}{2}$	426 of Cloth, at 10*s.* ——*per* Yard.	429 at 6—8 each,
	213 *Answer.* 6—8 *d.* $\frac{1}{3}$	*l.* 143 *Answer*

	lb.	*lb.*
	598 of Cochineal, at ——5*s. per lb.* 4*s.*	154 of Indigo, at ——4*s. per lb.*
5*s.* is $\frac{1}{4}$	*l.* 149$\frac{2}{4}$ or 10*s. Answer.* is$\frac{1}{5}$	*l.* 30$\frac{4}{5}$ or 16*s. Anf.*
3*s.* 4*d.* is $\frac{1}{6}$	542 *Zealand* Dollars, at 3*s.* 4*d.*	
	90$\frac{2}{6}$ or 6*s.* 8*d. Answer l.* 90—6—8 *Sterling.*	

In all these Examples of Practice, I divide by the Denominator of the Fraction, and what remains is always of the same Name with the Denominator; as one Half, Thirds, Fourths, Sixths, or Eighths of a Shilling, or of a Pound, *&c.*

If the Price be Half a Crown, divide by 8; if at 20*d.* or 1*s.* 8. divide by 12, *&c.*

When the Price is Shillings and Pence, and no even Part of a Pound; multiply the given Number by the Shillings, and take Parts of it for the Pence, as directed before.

Example.

246 Marks, 13*s.* 4*d.*

13

4*d.* $\frac{1}{3}$ 1*s.*	738 246	For the Groat, I say the 3's in 24, 8 times; and the 3's in 6, twice, *&c.*
	82	

2)3)328)0*s.*

l. 164 *Answer.*

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But this Example may be sooner done by multiplying the given Number by 2, and dividing that Product by 3 (because a Mark is two Thirds of a Pound) thus;

246
2

3) 492

l. 164 *Answer and Proof.*

I have not here Room to speak of the various and almost infinite Methods and Rules of *Practice* (having several other Subjects and Things to treat on) but shall leave some general Rules, which if heedfully noted, will be of great Use to Learners; and are these, *viz.*

1. When the Price is Parts of a Farthing; or of a Penny, as $\frac{3}{4}$, $\frac{5}{6}$, $\frac{7}{8}$, *&c.* then multiply the Integers by the Numerator, and divide by the Denominator, and the Result will be either Farthings or Pence; which reduce to Pounds, *&c.*

2. When the Price is Pence, and no even Part of a Shilling; as suppose 5 *d.* 7 *d.* 8 *d.* or 9 *d.* then it may be done by taking their Parts, as 3 *d.* and 2 *d.* is 5 *d.* and 4 *d.* and 3 *d.* is 7 *d.* and 4 *d.* and 4 *d.* is 8 *d.* and 6 *d.* and 3 *d.* is 9 *d.* but it is an easy and sure Way to multiply the given Number by 5, 7, 8, or 9, and then the Product is Pence; which reduce to Pounds by *Reduction.*

3. When the Price is Pence, and Parts of a Penny; as 1 *d.* $\frac{1}{4}$, 2 *d.* $\frac{1}{2}$ or 6 $\frac{3}{4}$, then work for the Penny by taking the $\frac{1}{2}$; for 2 *d.* the $\frac{1}{6}$; and for 6 *d.* the $\frac{1}{2}$: Then for the Farthings, take the $\frac{1}{4}$ of the Penny Line, and for $\frac{1}{2}$, $\frac{1}{4}$, of the Two-penny Line; and for $\frac{3}{4}$, take $\frac{1}{2}$ of the 6 Penny Line; then add their Results together; and the total will be Shillings, which reduce to Pounds by dividing by 20. Or by the sure Way of bringing the mixt Number into the lowest Denomination; as 1 *d.* $\frac{1}{4}$, into 5 Farthings, 2 *d.* $\frac{1}{2}$, into 5 Halfpence, and 6 *d.* $\frac{3}{4}$, into 27 Farthings; then multiply the Integers by 5, and the Product is Farthings; or by 5 Halfpence, and the Product will be Halfpence; or by 27 Farthings, and the Product will be Farthings; which, whether Farthings or Pence, reduce to Pounds, *&c.*

4. When the Price is Shillings and Pence, or Shillings, Pence, and Farthings, multiply the Integers by the Shillings of the Price, and take Parts for the Pence, or Pence and Farthings, *&c.*

5. If

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5. If the Price be Pounds and Shillings, or Pounds, Shillings, Pence and Farthings; multiply by the Shillings in the Price, that is, in the Pounds and Shillings, and take Parts for the Pence and Farthings.

6. When the Number of Integers hath a Fraction annexed or belonging to them; as $\frac{1}{4}$, $\frac{1}{2}$, $\frac{3}{4}$, *&c.* then take $\frac{1}{4}$, $\frac{1}{2}$, or $\frac{3}{4}$ of the Price of one of the Integers, and add that to the other Reſults.

TARE and TRETT, &c.

Groſs Weight is the Weight of the Goods in Hundreds, Quarters and Pounds, with the Weight of the Hogſhead, Caſk, Cheſt, Bag, Bale, *&c.* that contains the Goods.

Tare is allowed to the Buyer for the Weight of the Hogſhead, Caſk, Cheſt, Bag, Bale, *&c.*

Trett is an Allowance made for Waſte, Duſt, *&c.* in ſundry Sorts of Goods, as Tobaccoes, Cottons, Peppers, Spices, *&c.* and is always 4 *lb. per* 104 *lb.* Suttle, and found by dividing the Suttle Pounds by 26, becauſe 4 times 26 make 104 *lb.* When the Groſs Weight is brought into Pounds, and before the Tare is deducted, they are called *Pounds Groſs*; and after the Tare is ſubſtracted, the remaining Pounds are called *Pounds Suttle*; which divided by 26 (as ſaid before) quotes Pounds Trett, *&c.*

Tare at ſo much per Caſk, Hogſhead, Bag, &c.

The Allowances for Tare are variouſly wrought; as by the following Examples

In 12 Caſks of Indigo, containing 45 *C.* 1 *qr.* 14 *lb.* Groſs, Tare 30 *lb per* Caſk, how many Pounds Nett?

	C.	*qr.*	*lb.*
12 Caſks	45	1	14
	45		
	45		
360 Pounds Tare.	4542		
	5082 Pounds Groſs.		
ſubſtract	360 Pounds Tare.		

Anſwer 4722 Pounds Nett.

In this Example, the *lbs.* Tare of one is multiplied by the Number of Caſks, and the Product is 360 Pounds Tare, and the Groſs Weight is reduced into Pounds by the Method ſhewn

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ſhewn in Reduction of Weight; and then the Pounds Tare are deducted from the Pounds Groſs, and the Remainder are Pounds Nett, *viz.* 4722, as in the Work.

When the Tare is at ſo much *per C. wt.* multiply the Number of Hundreds by the Tare, and take Parts for the odd Weight, and add it to the Tare found by Multiplication, and divide it by 112, to bring it into Groſs Weight, in order for Subſtraction. *Example.*

What is the Nett Wt. of 12 Caſks of Argol, Wt. Groſs.

84 *C.* 2 *qrs.* 14 *lb.*
14 Tare *per C.*

336
84
7 for Half *C.*
1 $\frac{3}{4}$ for 14 *lb.*

112) 11843/4 (10 C.
112

64 *lb.* or half a *C.* and 8 *lb.*

C. qrs. lb.
84—2—14 Groſs:
10—2—8 $\frac{3}{4}$ Tare.
74—0—5 $\frac{1}{4}$ Nett Wt.

The Tare in the laſt Example is to be found by the foregoing Directions, 10 *C.* 2 *qrs.* 8 *lb.* $\frac{3}{4}$, which ſubſtracted as in the Work, leaves 74 *C.* 0 *qrs.* 5 *lb.* $\frac{1}{4}$ for the Nett Wt.

But the foregoing Example may be ſooner done by *Practice* thus:

C. qrs. lb.
8) 84—2—14 Groſs
ſub. 10—2—8 $\frac{3}{4}$ Tare
74—0—5 $\frac{1}{4}$ Nett.

In this Method, the Groſs Weight is divided by 8, becauſe 14 *lb.* is one Eighth of 112 *lb.* and the Remainder is reduced into the next inferior Name, and ſtill divided by 8, to the End, and then deducted as above, and the Nett Weight is the ſame as by the other Way. And ſo may any Tare *per Ct.* be found, if the Tare be an even Part of 112 *lb.* as 14 is one Eighth, and 7 *lb.* is the Half of that, and 16 *lb.* is one Seventh, and 8 *lb.* is Half of that, *&c.* that is, if the Tare be at 7 *lb. per C.* find it for 14 *lb.* as before, and then take the Half of that for 7 *lb per C.* Tare, the like for 8 *lb.*

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8 *lb. per C.* Tare; take one Seventh for 16 *lb*, and then the Half of that for 8 *lb. per C.* Tare.

Of TRETT.

What *Trett* is, when allowed, and how found, hath been said already; now I shall give an Example for Explanation as follows.

Bought Six Hogsheads of Tobacco, containing Gross and Tare as follows; *viz.*

N.	*C. qrs. lb.*	*lb:*
1 qt.	4—1—20 Tare	80
2	5—2—19	100
3	6—3—18	102
4	7—3—12	104
5	8—2—13	106
6	9—1—14	110
	42—3—12	602

26) 4198(161 *lb.* Trett,
26..
159
156
38
26
12

42
42
42|96

4800 Pounds Gross.
subtract 602 Pounds Tare.

4198 Pounds Suttle.
deduct 161$\frac{6}{13}$ Pounds Trett.

4036,$\frac{7}{13}$ Pounds Nett.

There are some few other Rules, such as Barter, or exchanging Goods for Goods; also Exchange for Coin, Profit, Loss, *&c.* but all of them being done either by the Rule of Three, or by Rules of Practice, it is therefore here unnecessary to enlarge upon them.

Of FRACTIONS *Vulgar and Decimal.*

WHAT *Fractions* are, hath already been hinted in the Rule of *Division*, from whence they arise; for the Remainder is a supposed Part of the Divisor; as admit 54 *l.* is divided into twelve equal Parts, the Quotient is 4; and the Remainder 6: So that here 6 is six Parts of 12, or six Twelfths, equal to a Half; for 6 is the $\frac{1}{2}$ of 12; and set down in this Form $\frac{6}{12}$ and understood by these Names, *viz.*

6

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6 *Numerator.*

12 *Denominator.*

The *Numerator* is above the short Line, and sheweth the Number of Parts; and the *Denominator* stands under the Line, and declares the Number of equal Parts the Integer or whole Number is divided into; as above 54 *l.* is divided into 12 Parts, and the Quotient says there are 4 of those 12 Parts contained in 54, and 6 remains, or 6 Twelfths of a Pound, or 10 *s.* as above said.

Fractions are thus set down and read, *viz.* $\frac{1}{4}$, or one Fourth; $\frac{1}{2}$, one Half, $\frac{1}{3}$, one Third, $\frac{1}{5}$ one Fifth; $\frac{1}{6}$, one Sixth; $\frac{2}{3}$ two Thirds; $\frac{2}{4}$, two Fourths; $\frac{2}{6}$, two Sixths; $\frac{5}{7}$, five Sevenths, *&c.*

Fractions are either proper or improper. A proper Fraction hath its Numerator less than the Denominator; as $\frac{5}{8}$, five Eighths; $\frac{24}{56}$, twenty-four Fifty-Sixths, *&c.*

An improper Fraction hath its Numerator greater than the Denominator; as $\frac{7}{3}$, seven Thirds; $\frac{48}{15}$, forty-eight Fifteenths, *&c.*

Again, Fractions are either Simple or Compound; simple, when Part of an Integer or Thing hath but one Numerator, and one Denominator; as $\frac{3}{4}$ of a Pound Sterling $\frac{3}{4}$ of a *C.* Weight, $\frac{3}{4}$ of a Ton, $\frac{5}{8}$ of a Gallon, *&c.* Compound, is a Fraction of a Fraction, as the $\frac{1}{2}$ of a $\frac{1}{4}$ of a Pound Sterling is equal to a Half a Crown; or when one is divided into any Number of Parts, and those Parts again subdivided into Parts, *&c.*

Fractions are of two Kinds, *viz.* *Vulgar* and *Decimal*. *Vulgar* Fractions are as declared before. *Decimal* Fractions are artificially expressed by setting down the Numerators only, the Denominators being understood, and are always a Unit with as many Cyphers annexed as there are Places in the Numerator; and therefore must be either 10, or some Power of 10, as 100, 1000, 10,000, or 100,000, *&c.*

Decimal Fractions appear as whole Numbers, (and in the general so wrought) but are distinguished from them by a Point or a Comma prefixed thus, ,5, and is read five Tenths; ,32, thirty-two Hundredths; ,256, two Hundred 56 Thousandths: But of *Decimal* Fractions and their Use hereafter.

Reduction of Vulgar Fractions, is to fit or prepare them for *Addition*, *Substraction* &c.

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1. *To Reduce a mixt Number to an improper Fraction.*

Rule.

Multiply the Integer by the Denominator, and take in the Numerator.

Example.

Reduce 12 Gallons $\frac{3}{4}$ to an improper Fraction, thus,

4

—

51

—

4 *Answer* 51 Fourths, or 51 Quarts.

2. *To reduce an improper Fraction to a whole or mixt Number.*

Rule. Divide the Numerator by the Denominator.

Example.

Reduce the last Example to a whole or mixt Number, *viz.*

51 — 4

4) 51 (12

48

3 Remainder.

4 Divisor.

Here 12 Gallons is the whole Number, and $\frac{3}{4}$ the Fraction, the same with 3 Quarts.

3. *To reduce Fractions to a common Denominator.*

Rule.

Multiply the Numerator of each Fraction into all the Denominators, except its own, and the Product will be a Numerator to that Fraction; and then do so by the next, *&c.*

Example.

Reduce $\frac{2}{3}$, and $\frac{5}{6}$ of 20*s.* or any other Integer, or Thing, to a common Denominator; say twice 4 is 8, and 6 times 8 is 48, for a new Numerator to $\frac{2}{3}$; then say, 3 times 3 is 9, and 6 times 9 is 54, for a new Numerator to $\frac{3}{4}$; lastly, say, 5 times 4 is 20, and 3 times 20 is 60, the Numerator to $\frac{5}{6}$; Then, to find the common Denominator, say 3 times 4 is 12, and 6 times 12 is 72, the common Denominator: So that $\frac{48}{72}$ is equal to $\frac{2}{3}$, $\frac{54}{72}$ to $\frac{3}{4}$. and $\frac{60}{72}$ to $\frac{5}{6}$. And thus proved:

$\frac{2}{3}$ of

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$\frac{2}{3}$ of a Pound is	13	4	48	Added together make 162.
$\frac{3}{4}$ ditto	15	0	54	
$\frac{5}{6}$ ditto	16	8	60	
	45	0	162	Common Denominator.

Here the several Numerators are added together, and they make 162, which placed over the common Denominator 72, make the Improper Fraction $\frac{162}{72}$; and its Value is found as before directed. *To reduce an improper Fraction to a whole or mixt Number*; as may be seen in the foregoing Page.

4 *To reduce a Fraction into its lowest Terms.*

Rule.

If there are even Numbers, take Half of the Numerator and Denominator as long as you can; and then divide them by any Digit Number (*i. e.* 3, 4, 5, 6, *&c.*) that will leave no Remainder in either.

Example.

Reduce $\frac{56}{84}$ into its lowest Terms; say, the $\frac{1}{2}$ of 56 is 28, and the $\frac{1}{2}$ of 84 is 42; and then, the $\frac{1}{2}$ of 28 is 14, and the $\frac{1}{2}$ of 42 is 21. So the Fraction $\frac{56}{84}$ is reduced to $\frac{14}{21}$. And since they both are not to be halved any longer; for though you can halve 14, yet you cannot 21, without Remainder; try therefore to divide them by some other Digit Number, and you will find, that 7 will divide both Numerator and Denominator without any Remainder; then say, the 7's in 14, twice; and the 7's in 21, three times: So is the Fraction $\frac{56}{84}$ reduced into its lowest Terms, $\frac{2}{3}$ two Thirds; and is the same in Value with $\frac{56}{84}$, and done in this Form;

2	2	7	
56	28	14	2
84	42	21	3

And the Certainty that $\frac{2}{3}$ is the same in Value with $\frac{56}{84}$ is found by multiplying any Integer by the Numerator of each Fraction, and dividing by the Denominator of each Fraction.

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Example.

Let the Integer be 1 *l.* Sterling, or 20 *s.*

The best Way.

s.
20
2
3) 40
13·4 *d.*

The common Way.

s
20
56
84)1120(13 *s.*
84
280
252
28
12
336(4 *d.*
336
(0)

} 13 *s.* 4 *d.*

Here it is manifeſt, that by working by a Fraction in its loweſt Terms, much Time and Figures are ſaved. In one Operation, 20, the Integer, is multiplied by 2, and the Product 40 divided by 3, and there remains 1, or $\frac{1}{3}$ of a Shilling, or a Groat, as in the other Work.

There are other Methods of reducing a Fraction into its loweſt Terms; but in my Opinion, none ſo ready as the foregoing.

5. *To reduce a compound Fraction into a ſimple One of the ſame Value.*

Rule. Multiply the Numerators together for a Numerator, and the Denominators together for a Denominator.

Example.

Reduce $\frac{2}{3}$ of $\frac{3}{4}$ of $\frac{5}{6}$ of a Pound Sterling into a ſimple Fraction. Say twice 3 is 6, and 5 times 6 is 30, the Numerator: Then 3 times 4 is 12; and 6 times 12 is 72, the Denominator: So $\frac{30}{72}$ of a Pound is equivalent to $\frac{2}{3}$ of $\frac{3}{4}$ of $\frac{5}{6}$ of a *l.* Thus proved, $\frac{5}{6}$ of a *l.* is 16 *s.* 8 *d.* and $\frac{3}{4}$ of ditto, or 16 *s.* 8 *d.* is 12 *s.* 6 *d.* and $\frac{2}{3}$ of 12 *s.* and 6 *d.* is 8 *s.* 4 *d.* the Anſwer: And multiplying 20 by 30, and dividing by 72, gives the ſame Anſwer, as in the following Work is plain.

20

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20
30

72) 600 (8 *s.*
576

24 Remains } 8 *s.* 4 *d.*
12 Multiply

72) 288 (4 *d.*
288

(0)

6. *To find the Value of any Fraction, whether of Coin, Weight or Measure.*

Rule. Multiply the Integer by the Numerator, and divide by the Denominator; and if any Thing remains, multiply it by the Number of Units of the next inferior Denomination.

Example.

What is $\frac{30}{72}$ of a Pound, or 20 *s.*? the foregoing Example of Proof to the Compound Fraction $\frac{2}{3}$ of $\frac{3}{4}$ of $\frac{5}{6}$, and as it is worked there, it need not again be repeated.

Again, What is $\frac{5}{6}$ of a Ton Weight?

C.
20 the Integer.
5 the Numerator.

The Denominator 6) 100

16—4 remains.
4 *qrs.* 1 C.

6) 16

C. *qrs.* 2—4 remains.
28 *lb.* 1 *gr.*

6) 112

Answer,
16 C. 2 *qrs.* 18 *lb.* $\frac{4}{6}$ *lb.* 18—$\frac{4}{6}$

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Here the Integer 20 C. is multiplied by the Numerator 5, and the Product 100 divided by the Denominator 6, and the Remainder 4 is multiplied by the Parts of the next inferior Denomination, *&c.* and the Anſwer is 16 *C.* 2 *qrs.* 18 *lb.* $\frac{4}{6}$ or $\frac{2}{3}$ of a Pound Weight, as in the Work.

Addition of Vulgar Fractions.

IF the Fractions to be added have a common Denominator, add the Numerators together for a Numerator, and place it over the common Denominator.

Example.

Add $\frac{2}{5}$, $\frac{3}{4}$, and $\frac{4}{5}$ of a Pound Sterling together. Say, 2 and 3 is 5, and 4 is 9, the Numerator; which place over 5, the common Denominator, thus, $\frac{9}{5}$, and this improper Fraction $\frac{9}{5}$ is in Value 36*s.* for 9 times 4*s.* (the 5th of a Pound) is 36*s.* thus: Here $\frac{4}{5}$ is 16*s.* I ſay the 5's in 9, once, and 4 remains, which is $\frac{4}{5}$ of a Pound,

5) 9

l. 1 $\frac{4}{5}$

But if the Fractions to be added have unequal Denominators, then they muſt be reduced to a common Denominator, by a Rule before ſhewn, before Addition can be made; and then proceed as above.

2. When mixt Numbers are to be added, work with the fractional Parts as before, and carry the fractional Value to the whole Numbers.

Example.

Add 25 *l.* $\frac{3}{4}$ to 12$\frac{1}{4}$, thus: 25$\frac{3}{4}$
12$\frac{1}{4}$

l. 38 *Anſwer.*

Here 1 and 3, the Numerators, make 4; and $\frac{4}{4}$ is 1, and 2 is 3, and 5 makes 8; and 1 and 2 is 3, and the Anſwer is 38.

Or they may be reduced to improper Fractions thus:

25$\frac{3}{4}$	12$\frac{1}{4}$	103
4	4	49
103	49	4) 152
4	4	38 Pounds

Here the Numerators are added, and their Total is 152; which divided by 4, the common Denominator, quotes 38 Pounds, the ſame Anſwer as above. 3.

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3. When Compound Fractions are to be added to Simple Ones, reduce the Compound Fraction to a Simple One, as before directed; and then proceed as above.

Example.

Add $\frac{2}{6}$ and $\frac{3}{8}$ to $\frac{1}{2}$ of $\frac{2}{4}$ of a Pound; thus, once 2 is 2, and twice 4 is 8, the compound Fraction; then add, saying, 2 and 3 is 5, and 2 is $\frac{7}{8}$, equal in Value to 17*s.* 6*d.*

Substraction of Vulgar Fractions.

IN this Rule, the Fractions must have a common Denominator, or be reduced to one, before Deduction can be made.

Example.

What is the Difference between $\frac{1}{4}$ and $\frac{3}{4}$? Answer $\frac{2}{4}$; and proved by Addition; for $\frac{1}{4}$ and $\frac{2}{4}$ makes $\frac{3}{4}$ or 3 Quarters.

Note, The Difference between the Numerators is the Difference of the Fractions.

Again, from $\frac{3}{4}$ of a Pound, take $\frac{5}{12}$; Here the Fractions are to be reduced to a common Denominator; 36 the first Numerator, and 20 the second Numerator, and their Difference is 16; and 48 is the common Denominator; so that $\frac{16}{48}$, or $\frac{1}{3}$ in its lowest Terms, is the Difference between $\frac{3}{4}$ of a Pound, and $\frac{5}{12}$ of a Pound, that is, 6*s.* 8*d.*

To substract a Compound Fraction from a Simple one.

Rule. Reduce the Compound Fraction to a Simple One, and then work as before.

Example.

From $\frac{13}{14}$ take $\frac{2}{3}$ of $\frac{8}{9}$; say twice 8 is 16, and 3 times 9 is $\frac{16}{27}$, the Compound Fraction: Then $\frac{13}{14}$ and $\frac{16}{27}$ must be reduced to a common Denominator, thus; 13 times 27 is 351, the first Numerator; and 14 times 16 is 224, the second Numerator; and 14 times 27 is 378, the common Denominator. Then substract 224, the second Numerator, from 351, the first Numerator, and the Remainder is 127, which place over 378, the common Denominator, thus, $\frac{127}{378}$ *Answer.*

When a Simple Fraction is to be deducted from a whole Number.

Rule. Substract the Numerator of the Fraction from the Denominator, and place the Remainder over the Denominator, and carry 1 to substract from the whole Number, *&c.*

Example.

From 12 *l.* take $\frac{3}{8}$ thus; say 5 (the Numerator) from 8 the Denominator) and there remains 3, which place over the Denominator 8, thus, $\frac{3}{8}$; then 1 from 12, and there remains 11; so the Answer is, *l.* 11 $\frac{3}{8}$, or 11—7—6, as may be proved by whole Numbers.

Mul-

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Multiplication of Vulgar Fractions.

Rule. MUltiply the Numerators into one another for a Numerator of the Product; and then do the same by the Denominators, for a Denominator of the Product.

Example.

Multiply $\frac{3}{4}$ of a Pound, by $\frac{5}{6}$ of ditto; say 3 times 5 is 15, the Numerator; and 4 times 6 is 24, the Denominator; so the Answer is $\frac{15}{24}$, or in its lowest Terms $\frac{5}{8}$.

You are to Note, That Multiplication in Fractions lessens the Product, tho' in whole Numbers it augments it; as above, $\frac{5}{8}$ or 12*s.* 6*d.* is less than $\frac{5}{6}$ or 16*s.* 8*d.* and also less than the other Fraction $\frac{3}{4}$ or 15*s.* The Reason of which I have not here Room to insist on; but it is given in my *Arithmetick in Multiplication of Vulgar Fractions*; to which Book I refer the Reader for that, and sundry Enlargements in the several Rules in the Science of *Arithmetick.*

2. *To multiply a whole Number by a Fraction.*

Rule. Multiply the Integer by the Numerator of the Fraction, and place the Product over the Denominator.

Example.

Multiply 56*l.* by $\frac{3}{4}$

$$\begin{array}{r} 56 \\ 3 \\ \hline 168 \\ \hline 4 \end{array} \Big\} \textit{Facit.}$$

This improper Fraction $\frac{168}{4}$ reduced according to Rule, makes but 42*l.* which is less than 56; and confirms what was before asserted, *viz.* that Multiplication of Fractions lessens the Product, *&c.*

3. *To multiply a Simple by a Compound Fraction.*

Rule. Reduce the Compound Fraction to a Simple One, as before taught, and Work as above.

Example.

Multiply $\frac{6}{8}$ of a Pound; by $\frac{2}{3}$ of $\frac{3}{4}$ of a Pound: Say, 6 times 6 is 36, and 8 times 12 is 96. So that the Answer is $\frac{36}{96}$, or $\frac{3}{8}$ in its lowest Terms; equal to 7*s.* 6*d.*

Division of Vulgar Fractions.

Rule. MUltiply the Numerator of the Divisor into the Denominator of the Dividend, and the Product is the Denominator of the Quotient; and then multi-

ply

ply the Denominator of the Divisor into the Numerator of the Dividend, and the Product will be the Numerator of the Quotient.

Example.

Divide $\frac{15}{16}$ by $\frac{2}{3}$; $\frac{2}{3}$) $\frac{15}{16}$ ($\frac{45}{32}$ Quotient.

Here 16 multiplied by 2, gives 32; and 15 by 3, gives 45; so that the Quotient is $\frac{45}{32}$, equal to 1 $\frac{13}{45}$, as in the Work.

Again, Suppose $\frac{2}{3}\frac{4}{5}$ was divided by $\frac{2}{3}$ the Quotient will be $\frac{72}{70}$ equal to 1 Integer, or whole Thing. And so any other Example.

Reduction of Decimal Fractions.

WHAT a *Decimal Fraction* is, hath been already shewn. The next Step is, how to reduce a Vulgar Fraction into a Decimal; which is no more than to annex Cyphers at Discretion (that is, 2, 3, or 4, *&c.*) to the Numerator, and then divide it by the Denominator.

Example 1.

Reduce $\frac{3}{4}$ of a Pound Sterling to a Decimal.

4) 300

,75

that is, 75 Hundredths, equal to 3 qrs. of any Thing, whether Money, Weight, Measure, *&c.* as being $\frac{3}{4}$ of 100; and so, 25 Hundredths is, in Decimals, the Quarter of any Thing, as being $\frac{1}{4}$ of 100; and five Tenths expresses the Half of any Thing, as being the $\frac{1}{2}$ of 10.

In Reduction of Decimals, sometimes it happens that a Cypher or Cyphers must be placed to the Left-hand of the Decimal, to supply the Defect or Want of Places in the Quotient of Division, or in the Product of Multiplication of Decimals.——In this Case always remember, That so many Cyphers as you annex to the Denominator of the Vulgar Fraction, so many Places you must point off in the Quotient towards the Left-hand; but if there be not so many Places to point off, then you must supply the Defect by placing 0 to the Left of the Decimal.

Example 2.

Reduce 9*d.* or $\frac{9}{240}$ to the Decimal of a Pound Sterling, thus:

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24|0) 9000,0 (,0375
72 ..

180
168

120
120
---
(0)

Here is but three Places in the Quotient, *viz.* 375; and therefore I cannot point off 4 for the four Cyphers annexed to 9; wherefore I prefix 0 to the Left of the Quotient 375, thus ,0375, and then it is the Decimal of 375 ten thousandth Parts of an Integer in the Work.

The more Cyphers you annex, the nearer you bring your Decimal to the Truth: But in most Cases, four Cyphers annexed is sufficient. But when you are to reduce $\frac{1}{4}$, $\frac{1}{2}$, or $\frac{3}{4}$ (as above) of an Integer to a Decimal, or any Number of Shillings to the Decimal of a Pound, two Cyphers are sufficient. One Example more. *Example* 3.

Reduce 3 Farthings to the Decimal of a Pound, that is, $\frac{3}{960}$ vulgarly, 960 Farthings being a Pound, and therefore so expressed, and with the same Reason as 9 Pence before, 240 Pence being a Pound.

96|0) 300000 |0 (,003125. The Work being perform'd according to the Division, with two Cyphers prefixed, quotes, ,003125, or 3125 Millionth Parts of a Pound—by the same Method, the Vulgar Fraction of Weight, Measure, *&c.* are reduced to Decimals.

Example 4.

How is 12 Pounds Weight expressed in the Decimal of 1 C. Weight *Avoirdupois*, or 112 *lb.* the Vulgar Fraction is $\frac{12}{112}$, and the Decimal, 1071, found as before, thus,

112) 120000 (,1071
112

&c.

The Remainder 48 is not worth Notice, being less than the 1000oth Part of an Unit, or 1.

Example 5.

How is 73 Days brought to the Decimal of a Year vulgarly thus expressed $\frac{73}{365}$.

365) 730 (,2 *Anf.* 2 Tenths.
730

0

Thus proved,

36,5
36,5

73

Here 365, the Days in a Year, is divided by 10 twice, and the Quotients added together, and they make 73 Days.

Va-

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Valuation of Decimals.

TO find the Value of a Decimal Fraction, whether of Coin, Weight, Measure, *&c.*

Rule. Multiply the Decimal given by the Units contained in one of the next inferior Denomination, and point off as many Places from the Right-hand, as you have in your Decimal; so those Figures toward the Left of those pointed off, are Integers or whole Numbers; and those on the other Side toward the Right-hand are Parts of 1 or Unity; that is, so many Tenths, Hundredths, Thousandths, or Ten Thousandths of one of those Integers, whether a Pound, a Shilling, or a Penny, *&c.* or of a Ton, a Hundred, a Quarter, or a Pound Weight, *&c.* and so of any other Integer, of what Kind or Quality soever.

Examples.

,476 Parts of a Pound Sterling.
20 Shillings a Pound.

9,520
12 Pence 1 Shilling.

6,240
4 Farthings 1 Penny.

,960 Parts of 1 *l.* or almost $\frac{1}{4}$ of 1 *d.*

Answer. 9*s.* 6*d.* 960 Parts or $\frac{1}{4}$ of 1 *d.*

,476 Parts of a Ton wt.
20 *C.* 1 Ton.

9,520
4 *qrs.* 1 *C.*

2,080
28 *l.* 1 *qr.* of a *C.*

2,240

Answer. 9 *C.* 2 *qrs.* 2 *lb.* 240 *Parts.*

In the Example of Money, I multiply the Fraction by 20, and point off 520 for the three Places in the Decimal, *&c.* and the Answer is 9*s.* 6*d.* $\frac{1}{4}$.

In the Example of Weight, I proceed as in that of Money (the Fraction being the same) but with different Respect to

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to the inferior Denominations; and the Answer is 9 *C.* 2 *grs.* 2 *lb.* $\frac{240}{1000}$ of a Pound Weight.

To find the Value of a Decimal in Money in a briefer Method, *viz.*

Rule. Always account the Double of the first Figure (to the Left hand) for Shillings; and if the next to it is 5, reckon 1 *s.* and whatever is above 5, call every One Ten, and the next Figure so many Ones as it contains, which Tens and Ones call Farthings; and for every 25, abate one: As admit the last Example of Money, *viz.* 476; the Double of 4 is 8; and there being one five in 7, (the next Figure) I reckon 1 *s.* more, which makes 9 *s.* and there being 2 in 7 above 5, they are to be accounted two Tens or 20; which with the next Figure 6 being so many Ones, make 26 Farthings; and abating 1 for 24, give 6 *d.* and almost a Farthing more, for the Fraction 960 Thousandths of a Pound wants but 40 of a Farthing.

Addition of Decimals.

IS the same in Practice as in whole Numbers; only in setting down, Care must be taken that the Decimal Parts stand respectively under their Parts; that is, Primes under Primes, Seconds under Seconds, Thirds under Thirds, *&c.* and the Integers stand as in whole Numbers.

Example.

Integers	Primes	Seconds	Thirds	Parts	Primes	Seconds	Times	Fourths	Fifths
2 4 6	,4	2	6	,4 7 9 6	,4	7	9	6	2
7 4	,4	2		,4 2	,0	6	4	2	
9	,0	6		,0 7 6	,0	0	6		
6 5	,7	9	4	,0 0 0 4	,7				
4 2	,0	0	5	,5	,9				
4 3 7	,7	0	5	1 ,4 7 6 0	2 ,1	4	9	8	2

Note, *There must be as many Places pointed off, as there are in the biggest Number.*

The casting up of the foregoing Examples is the same with Addition of one Denomination in whole Numbers: The Total of the first (supposing them Pounds Sterling) is 437 *l.* and ,705 Parts. The second is 1 *l.* and ,4760 Parts. And the third is 2 *l.* and ,14982 Parts.

Sub-

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Subtraction of Decimals.

THE Numbers must be placed as before in *Addition*, and then proceed as in *Subtraction of and Denomination of Numbers.*

Examples.

l. pts.	l. pts.	l. pts.
46,51	140,42	4762,0
9,24	91,7462	0,472
37,27	48,6738	4761,528

Multiplication of Decimals.

HERE the placing the Numbers and Operation is the very same as in Whole Numbers; and only remember to point off towards the Right-hand so many Places for Decimals as you have Decimal Places in both *Multiplicand* and *Multiplier*.

Examples.

(1)	(2)	(3)
24,6	,4602	,2796
2,5	,075	26
1230	23010	16776
492	32214	5592
61,50	345,150	7,2696

(4)	(5)	(6)
,07214	,1083	4,25
,006	,16	1,09
,00043284	498	3825
	083	425
	,01328	4,6325

Note, That where there are not a competent Number of Figures, or Places to point off, such Defect is supplied with Cyphers to the Left-Hand; as in the 4th and 5th Examples, according to what was before hinted in reducing a Vulgar Fraction to a Decimal.

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Division of Decimals.

IS the same in Operation as in whole Numbers. The only Difficulty is to know how many Decimal Places to point off towards the Left-hand of the Quotient; to which End, remember this Rule; Observe how many Decimal Places there are both in the Divisor and Dividend, and note the Difference; and whatsoever it is, so many Places must be pointed off to the Right-hand of the Quotient.

Examples.

Divide 12,345670 by 6,789

12,345670 (1,818
6789...
55566
54312
12547
6789
57580
54312
(3268)

In this Example, the Dividend hath three Decimal Places more than the Divisor, wherefore I point off three Places to the Right-hand of the Quotient, *viz.* 818; so the Quotient is 1 Integer, and ,818 Parts.

Divide 3, 46000 by 1,23)

3,46000 (2,813
246...
1000
984
160
123
370
369
(1)

Here the Difference between the Divisor and Dividend is three Places; as in the foregoing Example; therefore ,813 is pointed off for the Decimal Fraction; and the Quotient is 2 Integers, and ,813 Thousandths of an Integer, or ⅞.

Thus much for Fractions Vulgar and Decimal; wherein I have been as concise as possible, and worked with as much Plainness as I could invent.

BOOK

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BOOK-KEEPING.

THE next Qualification to fit a Man for Buſineſs, after *Arithmetick*, is the Art of *Book Keeping*, or *Merchants Accompts*, after the *Italian* Manner, by Way of Double Entry.

It is not without good Reaſon that moſt People of Buſineſs and Ingenuity, are deſirous to be Maſters of this Art; for if we conſider the Satisfaction that naturally ariſeth from an Account well kept; the Pleaſure that accrues to a Perſon by ſeeing what he gains by each Species of Goods he deals in, and his whole Profit by a Year's Trade; and thereby alſo to know the true State of his Affairs and Circumſtances; ſo that he may, according to Diſcretion, retrench or enlarge his Expences, *&c.* as he ſhall think fit.

This Art of *Book-Keeping*, or *Merchants Accompts*, is talked of by many, but truly underſtood but by very few: For every petty School-Maſter in any By-Corner, will be ſure to have *Merchants Accompts* expreſſed on his Sign, as a principal Article of his Ability, in Teaching; though, ſtrictly ſpeaking, for want of the Practical Part, knows hardly any Thing of the Matter, and conſequently incapable of teaching it.

Inſtructions, Notes, Rules, and Directions for the right ordering and keeping *Merchants Accompts*, by the excellent Order of Charge and Diſcharge, commonly called *Debtor* and *Creditor*.

Of the Books in Uſe.

THE Books of principal Uſe, are the *Waſte-Book*, (or by ſome called the *Memorial*) *Journal*, and *Leidger*.

Waſte-Book.

IN this Book muſt be daily written whatever occurs in the way of Trade; as buying, Selling, Receiving, Delivering, Bargaining, Shipping, *&c.* without Omiſſion of any one Thing, either bought or ſold, *&c.* as Money lent, or received at Intereſt. But not Money received or paid for Goods ſold or bought at Times; for that will come of courſe, and muſt be entered into the *Caſh-Book*, from whence it is poſted into the *Leidger*.

The *Waſte-Book* is ruled with one Marginal Line, and three Lines for Pounds, Shillings, and Pence, and the Day

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of the Month, and Year of our Lord, is inserted in the Middle of the Page. In this Book any One may write, and, on Occasion, any Thing may be blotted out, if not well entered, or any Error be made.

JOURNAL.

INTO this Book every Thing is posted out of the *Waste-Book*, but in other Terms, in a better Stile, and in a fairer Hand, without any Alteration of Cyphers or Figures; and every Parcel, one after another, promiscuously set without Intermission, to make the Book, or several Entries of it, of more Credit and Validity, in case of any Law Dispute, or any other Controversy that may happen between Merchant and Merchant. In this Book you are to distinguish the Debtor and Creditor (or in quainter Terms, the *Debit* and *Credit*.) And to this Book you must have Recourse for the Particulars of an Accompt, which in the Leidger are entered in Gross, that is, in one Line. In this Book also, the Day of the Month must be placed in the middle of the Page; and is ruled with double marginal Lines, for References to the Leidger; and with three Lines for *l. s. d.* as the Waste-Book.

Of the Leidger.

FROM the *Journal* or *Day-Book* (as derived from the *French*) all Matters or Things are posted into the *Leidger*, which by the *Spaniards* are called *El Libro Grande*, as being the biggest Book, or Chief of Accompts. The Left-hand Side of this Book is the *Debtor*, and the Right the *Creditor*; and the *Numbers* and *Folios* of each Side must be alike, as 45 *Debtor*, and also 45 *Creditor*. The Day of the Month (in this Book) by most is set in a narrow Column on the Left-hand, and the Month on the Left of that: But where I kept Books, the Number in the narrow Column referred to the Journal Page, and the Month and Day was placed in the broad Column, to the Right of that; and at the Head of each Folio is the Name of the Place of Residence, and the Year of our Lord; as thus:

London, Anno——————1753.

But the examples of the several Books hereafter following, will make the foregoing Hints of them much more intelligible.—And as I am upon the Doctrine of Book-keeping, I'll take this as an universal Text (for so it is): *viz.*

All

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All Things received, or the Receiver, are Debtors to the Delivered, or the Deliverer.

		l.	*s.*	*d.*
	Waste-Book Entry.			
	London, January 1, 1753.			
	Bought of *William Wilkins*, of *Norton-Falgate*, 120 Yards of white Sarcenet, at 2*s.* 3*d. per* Yard, to pay in two Months. —— —— —— ——	13	10	—
	The Journal Entry of the same.			
1	Wrought Silk, Debtor to *William Wilkins*, *l.* 13—10 for 120 Yards of white			
2	Sarcenet, at 2*s.* 3*d. per* Yard, to pay in two Months. —— ——	13	10	—
	In this Example, the Account of Wrought Silks is the Receiver, and therefore Debtor to William Wilkins *the Deliverer.*			
	Again,			
	Waste-Entry Book.			
	January 4.			
	Sold *Henry Hartington* 246 lb. nett of Indico Lahore, at 6*s.* 6*d. per* lb. to pay in 3 Months.	79	19	—
	Journal Entry.			
3	*Henry Hartington* Dr. to Indico, for			
4	246 lb. nett, at 6*s.* 6*d. per* lb. to pay in 3 Months.	79	19	—
	Once more.			
	Waste-Book Entry.			
	Bought of *George Goodinch*, Sen. *viz.*			
	Cheſh. Cheese 430 C. $\frac{1}{2}$, at 23*s.* 4*d. per* C. —— }	*l.* 502—5		
	Butter, 50 Firkins, qt. nett 2800 lb. at 3*d. per* lb to pay in 6 Months. }	35—0		
		537	05	—
	Journal Entry.			
5	Sundry Accounts Dr. to *Geo. Goodinch*, *l.* 537—05 —— *viz.*			
4	Cheese of *Cheshire*, for 430 C. $\frac{1}{2}$ 23*s.* 4*d. per* C. }	*l.* 502—5		
5	Butter, for 50 Firkins, qt. nett 2800 lb. at 3*d. per* lb. }	35—0	537	05 —

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Waſte-Book.

			l.	s.	d.
	Sold *James Jenkins*, viz.				
	White Sarcenet 50 Yards, at 3*s.* *per* Yard	7 10 0			
	Indico Lahore 50 Pounds, at 7*s.* *per* Pound.	17 10 0			
				25	

Journal Entry of the laſt.

6	*James Jenkins* Debtor to ſundry Accounts, *viz.*				
7	To white Sarcenet for 50 Yards, at 3*s.* *per* Yard	7 10 0			
8	To Indico Lahore for 50 *lb.* at 7*s.* *per lb.*	17 10 0			
				25	

From theſe few Examples of Entry, it may be obſerved, that an experienced Perſon in Accompts, and a good Writer, may keep a *Journal* without a *Waſte-Book*, or a *Waſte-Book* without a *Journal*, ſince they both import one and the ſame Thing, though they differ a little in Words, or expreſſing, for the Leaves of both are numbered by Pages, or Parcels, as ſome do.

But however, I ſhall give Methods of keeping each as far as Room will give me Leave.

(1)

The Waſte-Book.

London, January 1 ——— 1753.

An Inventary of all my Effects of Money, Goods, and Debts, belonging to me A. B. *of* London, *Merchant*, viz.

In Caſh for trading Occaſions	3500,—,—			
In Tobacco 4726 *lb.* at 9*d.* *per lb.*	177, 4, 6			
In Broadcloth 6 Pieces, at 50*s.* *per* Piece—	15,—,—			
Dowlas 1000 Ells, at 2*s.* 4*d.* *per* Ell—	116, 13, 4,			
Canary Wines, 9 Pipes, at 20*l.* *per* Pipe—	270,—,—			
Due to me from *Henry Bland*, *per* Bond—	60,—,—			
		4138	17	10

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(1)

Journal.

Inventary, &c. as above.

			l.	*s.*	*d.*
—	Sundry Accts. Dr. to Stock —	4138,17,10			
1	*viz.*				
1	Cash for trading Occasions — —	3500,—,—			
	Tobaccoes 4626 *l.* at 9 *d. per lb.* — —	177, 4, 6			
1	Broadeloths, 6 Pieces, at 50 *s. per* Piece —	15,—,—			
1	Dowlas 1000 Ells, at 2 *s.* 4 *d. per* Ell —	116,13,4			
1	Canary Wines 9 Pipes, at 30 *l. per* Pipe —	270,—,—			
3	*Henry Bland* due on Bond	68,—,—			
			4138	17	10

I shall make one Page serve for Waste-Book and Journal Entries, to save Room, and also to have both Methods of Entry under Eye, to make them more intelligibly useful to the Reader, he hereby being not obliged to turn over Leaf to see their Difference of Entry.

1 *Waste-Book.*

London, January 1, —— 1753.

		l.	*s.*	*d.*
Owing to *William Webb*, by Note of my Hand —	50——			
Ditto to *Roger Ruff*, to Ballance of his Account —	16 12 4			
Ditto to *Henry Hern*, due the 4th of *May* next ——	62——			
	——	128	12	4

Journal.

1	Stock Debtor to sundry Accounts,				
—	*l.* 128—12—4 — *viz.*				
3	To *William Webb*, by Note of my Hand ——	50——			
4	To *Roger Ruff* for Ballance of his Account ——	16 12 4			
5	To *Henry Hern*, due the 4th of *May* next ——	62——			
		——	128	12	4

Waste-

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Waſte-Book.

London, Feb. 2d. —— —— —— 1753.

	Sold *Thomas Townſend*, *viz.*			
	246 *lb.* of *Virginia* Cut Tobacco, at 14 *d. per lb.*	14 07 —		
	460 Ells of Dowlas, at 3 *s. per* Ell —— —— ——	69 — —		
			83	07 —

Feb. 2.

Journal.

6	*Thomas Townſend*, Debtor to Sundries, *viz.*			
1	To Tobacco, for 246 *lb.* at 14 *d. per lb.* —— —	14 07 —		
1	To Dowlas, for 460 Ells, at 3 *s. per* Ell. ——	69 — —		
			83	07 —

Waſte-Book.

Ditto 24th.

	Bought of *Leonard Legg*, 4 Pipes of Canary, at 28 *l. per* Pipe. —— ——		112	— —
	To pay in 6 Months.			

Ditto 24th.

Journal.

1	Canary Wine, Debtor to *Leonard Legg*,			
—	for 4 Pipes, at 28 *l. per* Pipe. ——		112	— —
2	To pay in 6 Months.			

The ſhort Lines ruled againſt the Journal Entries are, or may be, termed Poſting Lines, and the Figure on Top of the Lines denotes the Folio of the Leidger where the Debtor is entered; and the Figure under the Line ſhews the Folio of the Leidger where the Credit is entered; and the other ſmaller Figures againſt the ſundry Debtors, or ſundry Creditors (whether Goods or Perſons) ſhew alſo in what Folios of the Leidger they are poſted. And the Figures in the narrow Column towards the Left-hand of the Pounds, Shillings, and Pence Lines, direct to the Folio in the Leidger where the Debit or Credit is poſted, that is, to the

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Accompt of Goods, or of the Person immediately following the Words *To* or *By*; the first being proper to the Left or Debit Side in the Leidger; and the other used always on the Right or Credit Side of the Folio's in the Leidger.

There are several other Books used by Merchants besides those three before-mentioned; as the *Cash-Book*, which is ruled as the Leidger, and folio'd likewise, wherein all Receipts of Money are entered on the Left-hand Folio, and Payments on the Right; specifying in every Entry the Day of the Month (the Year being set on the Top) for what, and for whose Account the Money was received, or paid; and the Total Debit or Credit of each Side is to be posted into the Leidger, to the Account of Cash therein, in one Line of either Side, *viz.* to or by sundry Accompts, as *per* Cash-Book, Folio, *&c.* which is to be done once a Month, or at Discretion; and the Particulars of each Side, Article by Article, are to be posted into the Leidger to the proper Accompts unto which they belong; with References in the Cash-Book to the several Folio's in the Leidger; and carry the Ballance over Leaf in the Cash Book; by which you may know at any time what Cash you have, or ought to have, by you.

Another Book, is a Book of Charges of Merchandize, wherein is to be entered the Custom and petty Charges of any shipp'd Goods; as Porterage, Wharfage, Warehouse room, *&c.* and once a Month is transferred into the Cash Book on the Credit Side, making Reference to the Book of Charges of Merchandize; and likewise the same in the Debtor Side of the same Accompt in the Leidger for the Particulars thereof.

The next Book I shall name, is the Invoice Book, or Book of Factories: In this Book is to be copied all Invoices or Cargaisons of Goods shipped, either for Accompts proper or partable; and also of Goods received from Abroad, which must always be entered on the Left-side, leaving the Right-side Blank; and on the Advice of the Disposal of Goods sent Abroad, and also on the Sale of Goods receiv'd from Abroad, enter them on the Blank or Right-side; so that at first View may be seen how the Accompt stands, *&c.*

The next a Bill-Book, wherein is enter'd Bills of Exchange accepted, and when they become due; and when paid, made so in the Margin.

The

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The next is a Book of Houſhold Expences, for the Monthly Charge ſpent in Houſe-keeping; likewiſe Apparel, Houſe-rent, Servants Wages, and Pocket Expences; and this may be monthly ſummed up, and carried to the Credit of Caſh.

Beſides the above mentioned, there muſt be a Book to copy all Letters ſent Abroad, or beyond the Seas; wherein the Name of the Perſon or Perſons to whom the Letter is ſent, muſt be written pretty full, for the readier finding the ſame.

The next is (and what is very neceſſary) a Receipt Book, wherein is given Receipts for Money paid, and expreſſed for whoſe Accompt or Uſe, or for what it is received; to which the receiving Perſon muſt ſet his Name for himſelf, or ſome other, with the Year and Day of the Month on the Top.

Laſtly, A note or Memorandum Book, to minute down Affairs that occur, for the better Help of Memory; and is of great Uſe where there is Multiplicity of Buſineſs.

Having given an Account of the ſeveral Books, and their Uſe, the next Thing neceſſary will be, to give ſome few Rules of Aid to enable the Book-keeper to make proper Entries; and to diſtinguiſh the ſeveral Debtors and Creditors, *viz.*

Firſt, For Money received make Caſh Dr. to the Party that paid it (if for his own Account) and the Party Cr.

Secondly, Money paid make the Receiver Dr. (if for his own Accompt) and Caſh Cr.

Thirdly, Goods bought for ready Money, make the Goods Dr. to Caſh, and Caſh Cr. by the Goods.

Fourthly, Goods ſold for ready Money, juſt the contrary, *i. e.* Caſh Dr. and the Goods Cr.

Fifthly, Goods bought at Time: Goods bought are Dr. to the Seller of them, and the Seller Cr. by the Goods.

Sixthly, Goods ſold at Time, juſt the contrary, *i. e.* the Party that bought them is Dr. to the Goods, and the Goods Cr. by the Party.

Seventhly, Goods bought Part for ready Money, and the reſt at Time. Firſt, make the Goods Dr. to the Party for the Whole. Secondly, make the Party Dr. to Caſh for the Money paid him in Part of thoſe Goods.

Eighthly, Goods ſold, Part for ready Money, and the reſt at Time. Firſt, make the Party Dr. to the Goods for the whole. Secondly, Caſh Dr. to the Party received of him in Part of thoſe Goods.——Or either of theſe two laſt Rules

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Rules may be made Dr. to Sundries; as Goods bought, Dr. to the selling Man for so much as is left unpaid, and to Cash for so much paid in ready Money. And so on the contrary for Goods sold.

Ninthly, When you pay Money before it is due, and are to have Discount allowed you, make the Person Dr. to Cash for so much as you pay him, and to Profit and Loss for the Discount; or make the receiving Man Dr. to Sundries as before.

Profit and Loss is Dr.

To Cash for what Money you pay and have nothing for it, as Discount of Money paid you before due, and to Abatement by Composition, Houshold Expences, *&c.*

Per Contra Dr.

By Cash for all you receive, and deliver nothing for it; as Discount for prompt Payment, any Legacy left you, Money received with an Apprentice, and by the Profit of every particular Commodity you deal in, by Ships, in Company, by Voyages, *&c.*

To ballance or clear an Account when full written.

1. FIRST, if the Dr. Side be more than the Credit, make the Old Accompt Cr. by the New; and if the contrary, make the new Accompt Dr. to the Old: But if the Debtor Side be less than the Credit, then make the Old Accompt Dr. to the New, and the New Accompt Cr. by the Old, for such a Rest or Sum as you shall find in the Accompt.

2. An Accompt of Company, wherein you have placed more received of another than his Stock; then add as much on the Debit Side as you find on the Credit Side; to the End that, in the new Accompt, you may have so much Debit as you put in, and so much Credit as you have received.

3. In Accompts of Merchandize, you must enter the Gain, or Loss, before you make the Old Accompt Cr. by the New, and the New Dr. to the Old, for the Remainder of Goods unsold.

4. In the Foreign Accompts, which you are to keep with a double Margin, or Column, for Dollars, for Crowns, or any *Foreign* Coins whatsoever, which have been received or paid by Bills of Exchange for Goods sold by Factors or Correspondents,

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respondents, or brought by them for the Accompts before; here you must first balance the said Inward Margin of Dollars, Crowns, &c.

To remove an Account full written to another Folio.

Sum or add up, the Dr. and Cr. Sides, and see the Difference, which place to its opposite; as, admit the Cr. Side exceeds the Dr. then you are to write the Line in the Old Accompt to balance on the Dr. Side, to answer the Line on the Cr. Side of the New Accompt.

How to balance at the Year's End, and thereby to know the State of your Affairs and Circumstances.

YOU must make Accompt of Balance on the next void Leaf or Folio of your Leidger to your other Accompts; but after so done, do not venture to draw out the Accompt of Balance in the said Folio, till you have made it exact on a Sheet of Paper, ruled and titled for that Purpose; because of Mistakes or Errors that may occur or happen in the Course of balancing your Leidger; which are to be rectified, and will cause Erasements or Alterations in that Accompt, which ought to be very fair and exact; and after you have made it to bear in the said Sheet, copy fair the said Accompt of Balance in the Leidger.

The Rules for Balancing are these, *viz.*

1*st*, Even your Accompt of Cash, and bear the Nett Rest to balance Dr.

2*dly*, Cast up all your Goods bought, and those sold, of what kind soever, in each Accompt of Goods; and see whether all Goods bought, be sold or not; and if any remain unsold, value them as they cost you, or according to the present Market Price, ready Money; and bear the Nett Rest to balance Dr.

3*dly*, See what your Goods or Wares severally cost, and also how much they were sold for, and bear the Neat Gain or Loss to the Accompt of Profit and Loss.

4*thly*, Even all your Drs. and all your Crs. in order as they lie, and bear the Nett Rest of every Dr. and Cr. to Balance.

5*thly*, Even your Voyages, your Factors Accompts, wherein is either Gain or Loss, and bear the Nett Gain or Loss to the Accompt of Profit and Loss, and the Goods unsold to Balance.

6*thly*,

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6thly, Even the Accompt of Profit and Loss, and bear the Nett Rest to Stock or Capital, as an Advance to your Stock or Capital.

7thly, Even your Stock, and bear the Nett Rest to balance Cr.

Then cast up the Dr. and Cr. Sides of your Balance; and if they come out both alike, then are your Accompts well kept; otherwise you must find out your Error by pricking over your Books again; to see whether you have entered every Dr. and Cr. in the Leidger as you ought.

Note, *By pricking over the Book is meant, an Examining every Article of the Journal, against the Leidger, and marking it thus,—or thus* †; *and upon the second Examination thus* ‡; *and upon a third Examination thus* ‖; *or any other Mark.*

Note also, *in all Accompts of Goods, you must keep a Column in the Middle of the Leaf, of each Side, for Number, Weight or Measure.*

And also Note, *That the Money, Wares, or Goods remaining in your Hands, and the Debts owing to you, must ever balance with the Nett Stock and Debts owing by you.*

Though all that hath been said in relation to Book-keeping, and the several Rules thereunto belonging, may seem a little abstruse to the altogether Unlearned therein, yet there is no such mighty Difficulty to instruct them as they may imagine; for these following Hints may render what hath been already said intelligible to an ordinary Capacity.

1st, Stick close to the Text, or general Rule beforementioned, *viz.* That all Things received, or the Receiver, are Debtor to all Things delivered, or the Deliverer; for this Rule holds good in all Cases.

2dly, When the Dr. (whether Person or Goods) is known, the Cr. is easily understood, without mentioning it: For if *A* be Dr. to *B*, then *B* is Cr. by *A*, for what Sum soever it be; also, if Goods be Dr. to *C*. then *C* is Cr. by those Goods for the Sum they amount to———This I mention, because that most Authors (if not all) that I have met with on the Subject of Book-keeping, spend a great many Words, which I think (begging their Pardon if I err) might be saved, in declaring the Creditor, as well as shewing the Debtor, when it may be understood, as aforesaid.

3dly, This Art of *Italian* Book-keeping, is called *Book-keeping by double Entry*, because there must be two Entries;

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the first being a Charging of a Person, Money, or Goods; and the second a Discharging of a Person, Money or Goods.

4thly, Strictly note, That if the first Entry be on the Dr. or Left-hand Side of your Leidger; the next or second Entry, must always be made on the Right or Credit Side of your Leidger; for when ever one Person or Thing is charged, then always another Person or Thing is discharged for the Sum, let it be what it will.

And so it is on balancing or evening an Accompt, and carrying it to another Folio; for if the old Accompt be evened by Balance on the Credit Side, then the new Accompt must be debited or charged on the Debit Side, for the Sum that balanced the old Accompt.

Much more might be said to this *Art of Book-keeping*, if I had Room; but I have plainly spoke to the principal Fundamentals thereof, which I hope may be sufficient for the Instruction and Improvement of any intelligent Reader.

The next Matter I shall go upon, is to shew, or give Examples of various Kinds of Receipts and promissory Notes; also Bills of Parcels in different Trades; likewise Bills of Book-Debts, Bills of Exchange, with Remarks on them; and some other Precedents of Writings in Trade and mercantile Affairs.

And first of Receipts of different Form.

	l.	*s.*	*d.*
RECEIVED, *September* 23, 1752, of Mr. *Anthony Archer*, the Sum of Six Pounds, Nine Shillings, on Account for my Master *Bryan Murray, per* me *Caleb Catchmoney.*	6	09	00

London, September 23, 1752.

RECEIVED of Mr. *Kendrick Keeptouch*, Ten Pounds Eleven Shillings and Six Pence, in full, *per* me *Henry Hasty.*	10	11	06

Note, *the Sum received must always be expressed in Words at Length, and not in Figures, in the Body of a Receipt; but it may and ought to be expressed in Figures behind a Brace (as in the two foregoing Examples, or under the Left-hand Part of the Receipt, as in the following) as well as in the Body of the Receipt.*

When

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When a Receipt is given in a Book, there is no Occasion to mention the Man's Name of whom you receive the Money; because that is implied, he being the Owner of the Book.

A Receipt in Part of Goods sold.

REceived the 24th of *September*, 1752, of Mr. *Timothy Truſtlittle*, Fifty Pounds in Part of *Indico* ſold him the the 22d Inſtant *per* me *Lawrence Lovemoney.*

£.50—00—0

A Receipt given in a Receipt Book.

REceived the 26th of *September*, 1753, the Sum of Forty-five Pounds, by the Order, and for the Accompt of *George Greedy*, Eſq; *per* *Timothy Truſty.*

£.45—0—0

REceived the 27th of *September*, 1753, of Mr. *Daniel Davenport*, and Company, One Hundred Pounds, on Accompt of Self and Partner, *per* *James Jenkins.*

£.100—0—0

REceived of Mr. *Timothy Tennant* this 25th Day of *October*, 1753, Six Pounds, for a Quarter's Rent, due at *Michaelmas* laſt, for my Maſter *Lancelot Letfarm*, *per* me *Francis Faithful.*

£.6—0—0

REceived *Auguſt* 14, 1753, of Mr. *Peter Biſhop*, Twenty-nine Pounds Six Shillings, in Part of a Bill of Sixty Pounds, due the 3d of *Xber* next, to Mr. *Sampſon Shuffle*, *per* *Francis Fidal.*

£.29—6—0

A Receipt on the Back of a Bill of Exchange.

September 30th, 1753, received the full Contents of the within mentioned, being 500 Pieces of Eight, *per* *Nathaniel Needy.*

Promiſſory Notes.

I Promiſe to pay to Mr. *Timothy Teazer*, Sixty Sounds, on the 20th of this Inſtant *September*; witneſs my Hand this 15th of *September*, *Anno* 1741.

Daniel Dilatory.

£.60—00—00

I Promiſe to pay to Mr. *Chriſtopher Caſh*, or his Order, five Pounds for Value received; witneſs my Hand this 26th Day of *October*, 1753.

Robin Ruck

£.5—00—00

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A Note given by Two.

WE, or either of us, promiſe to pay to Mr. *Matthew Miſtruſt*, or his Order, Six Pounds Sterling, on Demand, for Value received: Witneſs our Hands this 27th of *September*, 1753.

£6—00—00

Nathan Needy,
Samuel Surety.

Witneſs, Nicholas Notice.

A Bill of Debt.

MEmorandum, That I *William Want*, of *London*, Weaver, do owe and am indebted unto Mr. *Timothy Truſt*, of *Weſtminſter*, Watchmaker, the Sum of Twenty-five Pounds Six Shillings of lawful Money of *Great-Britain*; which Sum I promiſe to pay to the ſaid *Timothy Truſt*, his Executors, Adminiſtrators, or Aſſigns, on or before the 10th Day of *December* next enſuing. Witneſs my Hand this 22d Day of *October*, 1753. *William Want.*

Witneſs, Titus Teſtis.

A Bill of Parcels.

IT is uſual when Goods are ſold, for the Seller to deliver to the Buyer, with the Goods, a Bill of Parcels; which is a Note of their Contents and Prices, with a Total of their Value caſt up, *&c.*——Theſe Bills ought to be handſomely writ, and in methodical Order, according to the beſt and cuſtomary Way of each particular Trade.

I ſhall therefore ſhew the Forms of Bills of Parcels in ſome Trades and Profeſſions, with the ſhorteſt Methods of caſting up the ſeveral Articles in each Bill.

A Mercer's Bill.

London, December 26, 1752.

Bought of *Abel Atlas*, and *Ben. Burdett*, viz.

12 Yds ¾ of rich flowered Sattin, at 12*s.* 6*d. per* Yd.
8 Yds of ſprigg'd Tabby, at 6*s.* 3*d. per* Yd.
5 Yds ¼ of Farrindon, at 6*s.* 8*d. per* Yd.
6 Yds of Mohair, at 4*s.* 2*d. per* Yd.
17 Yds ½ of Luteſtring, at 3*s.* 4*d. per* Yd.

16—7—8

Sometimes the Money is paid preſently, then the Receipt is made as follows. Re-

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REceived the 26th of *September*, 1753, Sixteen Pounds, seven Shillings, and eight Pence, in full of this Bill, for my Master *Abel Atlas*, and Company, *per* me

Francis Fairspoken.

A Woollen Draper's Bill.

London, September 24, 1753.

Bought of *Benjamin Broadcloth*, 22d of *September* 1753.

viz.	*s.*	*d.*	
7 Yards of fine Spanish Black, at ——	18	4	*per* Yd.
5 Yds ½ of Ditto, at —— ——	12	4	ditto.
6 Yds ¾ of fine mixt Cloth, at ——	15	9	ditto.
16 Yds ¾ of Frize, at —— —— ——	3	6	ditto.
4 Yds of Drap-de-berry, at —— ——	13	5	ditto.
5 Yds ⅞ of superfine *Spanish* Cloth, at	18	10	ditto.

A Linnen Draper's Bill.

September 26, 1753.

Bought of *Marmaduke Muslin*, viz.

16 Ells of Dowlas, at 1*s.* 4*d. per* Ell.
14 Ells of Lockram, at 1*s.* 3*d. per* Ell.
22 Ells ½ of Holland, at 3*s.* 4*d. per* Ell.
1 Piece of Cambrick, at 15*s.*
85 Yards ½ of Diaper, at 1*s.* 10*d. per* Yd.
19 Yds. ¾ of Damask, at 4*s.* 3*d. per* Yd.
2 Pieces of Muslin, at 18*s.* 10*d. per* Piece.

The several Articles of these Bills are purposely omitted being cast up, for the Exercise of the Reader in the Rules for *Practice*; or by the Rules of *Multiplication of Money*, before shewn; which indeed is the best Method of all, for the ready casting up the divers and sundry Articles contained in any Bill of Parcels whatsoever.

Example.

We'll take the last Article of the Woollen-Draper's Bill, *viz.* 5 Yds ⅞, *&c.* at 18*s.* 10*d. per* Yard.

	5⅞		18—10
			7
l.	4—14—2		
	16—5½	8)	131—10
Facit l.	5—10—7¾.		16—5¼

In this Example the Price is multiplied by the Quantity, *viz.* 5 Yards ⅞, according to the Rules delivered in *Multiplication*

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tiplication of Money; and the Product by 5 is *l.* 4—14—2. Then for the $\frac{7}{8}$ of a Yard, I multiply the Price of the Integer, *viz.* 18*s.* 10*d.* by the Numerator of the Fraction, *viz.* 7, and divide by the Denominator 8, and the Quotient is 16*s.* 5*d.* $\frac{3}{4}$ agreeable with the Rule spoke to in the Doctrine of Fractions.——Which 16*s.* 5*d.* $\frac{3}{4}$ added to the Product of 18*s.* 10*d.* multiplied by 5, gives *l.* 5—10—7$\frac{3}{4}$ as in the Operation above.

A Grocer's Bill.

Bought of *Robert Raisin*, and *Peter Plumb*, *October* the 4th, 1753, *viz.*

	C.	qrs.	lb.	*l.*	*s.*	*d.*	*l.*
Sugar 2 Hhds qt. —	17	2	17	at 1	10	6	*per C.*
Raisins 3 Barrels —	6	1	19	at 1	14	5	
Tobacco 1 Hhd —	4	0	12	at 4	19	4	
Rice 1 Barrel — —	1	0	15	at 2	16	4	
Pepper 1 Bag ——	1	3	19	at 3	12	4	
Brimstone —— —	2	1	19	at 1	19	1	

A Hosier's Bill.

Bought of *Silvester Slipstocking*, *Octob.* 5th, 1753, *viz.*

5 Pair of Womens mixt Worsted Hose, at —— 5*s.* 7*d.*
3 Pair of Womens Silk Hose, at —— —— 9*s.* 4*d.*
22 Pair of Men's Woollen ditto, at —— — 3*s.* 2*d.*
8 Pair Womens ditto, at —— —— —— 2*s.* 2*d.*
21 Yards of Flannel, at —— —— —— 1*s.* 11*d.*
8 Pair of Thread Hose, at —— — —— 3*s.* 4*d.*

The best and most expeditious Way of casting up these several Articles is by the Method shewn in *Multiplication of Money*.

A Fishmonger's Bill.

Bought of *Leonard Ling*, 6th of *October*, 1753.

	l.		
3 C. of Haberdine, at —— ——	*l.* 7	10	6 *per C.*
1 $\frac{1}{2}$ of Ling, at —— —— ——	8	2	6
1 $\frac{1}{2}$ of Stock-Fish, at —— ——	4	10	6
6 $\frac{1}{2}$ Barrels of White Herrings, ——	3	10	2
1 Barrel of red Herrings, at ——	2	12	6
95 dried Salmon, at —— ——	0	01	2

The Amount of each Article is purposely omitted for the young Man's Exercise in *Arithmetick*.

Note, *Haberdine or Ling*, 124 *is a Hundred*: *Stock-fish and Herrings*, 120 *to the Hundred*, 1200 *to a Thousand*, *and* 4 *Barrels a Last*.

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A Leather-seller's Bill.

Bought of *Henry Hide*, the 7th of *October*, 1753. *viz.*

		s.	*d.*	*l.*
15	Large oil'd Lamb Skins, at	1	3 ½ *per* Skin.	
13	Kipp of Goat Skins, at	3	4	
137	Allom'd Sheep Skins, at	1	3	
19	Calf Skins, at	4	3	
85	Oil'd Buck Skins, at	12	9	
10	Russia Hides, at	12	9	
60	Dicker of Hides, at *l.* 15	11	6	

Note, 50 *Goat Skins make a Kipp; and other Skins, five-score to the Hundred. A Dicker is* 10 *Hides or Skins; and* 20 *Dicker a Last.*

A Pewterer's Bill.

Bought of *Andrew Antimony*, *October* the 7th, 1753, *viz.*

		l.	*s.*	*d.*
9	Hard Metal Dishes, wt. 42 *lb.* at 14 *d. per lb.*	2	19	—
1	Dozen of ditto Plates,	0	17	—
1	Chamber-pot of ditto,	0	4	—
1	Standish of ditto,	0	4	—
2	Tankards of ditto,	0	5	10
18	Best Spoons,	0	4	6
3	Hard Metal Porringers,	0	3	—
1	Salt of ditto,	0	1	10
1	Sett of Castors,	0	10	—
		4	19	2

Examples of Casting.

22 pr. of Woollen Hose, at 3 *s.* 2 *d. per* Pair,

7 and 3

1—2—2

3

3—6—6

3—2 the odd Pair.

l. 3—9—8 *Answer.*

42 *lb.* of Pewter, at 1—2

7

8—2

6

Answer l. 2—9—0

Bills

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Bills on Book Debts.

A Woollen Draper's Bill.

1753. Mr. *Francis Frize*, Dr.

		s.	d.	
April 20	To 16 Yds. ½ of Black Cloth, at ——— ——— ———	18	3	*per* Yd.
ditto 24	To 4 Yds ⅛ of Drap-de-berry, at ——— ——— ———	15	6	
May 4	To 35 Yds mixt grey Cloth, at ——— ——— ———	10	5	
17	To 9 Yds of fine ditto, at	17	3	
June 12	To 12 Yds ½ of fine Broad Cloth, at ——— ———	17	3	

If the Gentleman pays the whole Bill, then make the Receipt thus:

Received the 19th of *Octo.* 1753. of Mr. *Francis Frize*, the Sum of Fifty-four Pounds, *&c.* in full of this Bill, and of all Accompts, for my Master, *David Draper*, *per Michael Measurewell.* } *l.* 54, *&c.*

A Mercer's Bill.

1753. Madam *Dinah Dilatory*, Dr, to *Bryan Brocade*, viz.

Yards.		s.	d.	
Mar. 16	To 16 ½ of flower'd Sattin, at —	14	9	*per* Yd.
April 14	To 14 of Venetian Silk, at ——	11	8	
ditto 16	To 99 of Mohair, at—— ——	6	3	
May 16	To 14 ½ of flower'd Damask, at	9	7	
June 7	To 5⅛ of Genoa Velvet, at ——	21	9	
ditto 26	To ¾ of Lutestring, at ——	4	7	

If Part of this Bill is paid, write thus:

Received of Madam *Dinah Dilatory*, Twelve Pounds Ten Shillings, in Part of Payment for my Master, *Bryan Brocade*, *per Henry Hunter.* } *l.* 12 *s.* 10 *d.* 00.

A Corn Chandler's Bill.

1753. Mr. *Robert Racer*, Dr. to *Lional Livery.*

		s.	d.	
April 14	To 5 Quarters of Oats, at——	2	3	*per* Bush.
May 16	To 9 Bushels of Beans, at——	4	10	
June 12	To 7 Bushels of Bran, at ——	1	10	
	To 19 Bushels of Oats, at ——	1	11	
ditto 14	To 16 Bushels of Beans, at——	3	11	

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A Tobacconiſt's Bill.

1753. Mr. *Francis Fume*, Dr, to *Richard Raiſecloud*, viz.

		d.
May 1	To 1 Hhd of Tobacco, qt. nett, 569 *lb.* at —— —— ——	10 ½ *per lb.*
ditto 25	To 1 Box qt. 75 *lb.* ½ nett, ——	11 ¾
June 4	To 5 Bags of Old *Spaniſh*, qt. nett, 671 *lb.* at —— —— ——	3 ¼
July 12	To ½ Hhd, qt. 334 Groſs, Tare 42 nett, 293 *lb.* at —— —— ——	5 ½
7ber 7	To 2 Rolls of Tobacco, qt. 94 *lb.*	9 ½

A Stationer's Bill.

1753 Mr. *Siſcera Scribler*, Dr. to *Phineas Foolſcap*, viz.

	Reams	s.	d.	l.
July 12	To 57 of Demy Paper, at ——	10	9	*per* R.
ditto 13	To 195 of 2d Foolſcap, at —	6	3	
Auguſt 24	To 375 of 2d Demy, at ——	8	2	
7ber 6	To 95 of French Royal, at —	2	6	
8ber 29	To 26 Rolls of Parchment, at —	15	11	

Note, *A Roll of Parchment is* 60 *Skins*: *A Ream of Paper* 20 *Quires*; *and a Bale of Paper* 10 *Reams.*

A Bricklayer's Bill.

1753. Mr. *Martin Meſſuage*, Dr. to *Peter Pantile*, viz.

Mar. 27	To 25 Thouſand of Bricks, at 16 *s. per* M.
ditto 30	To 11 Thouſand Plain Tiles, at 20 *s.* 6 *d. per* M.
April 1	To 28 C of Lime, at 12 *s. per* C.
ditto 9	To 20 Load of Sand, at 3 *s.* 6 *d. per* Load.
May 20	To 140 Ridge Tiles, at 8 *s.* 6 *d. per* C.
June 24	To 90 Days Work my ſelf, at 3 *s. per* Day.
	To 90 Days my Man, at 2 *s.* 6 *d. per* Day.
	To 90 Days another Bricklayer at 2 *s.* 6 *d.*
	To 90 Days for two Labourers, at 20 *d. per* Day each.

Note; 1000 *plain Tiles is* 1 *Load*; *and* 25 *Bags or Buſhels of Lime* 1 C. *A Brick muſt be* 9 *Inches long, and* 4 *Inches* ½ *broad. Bricks are of three Sorts*, Plaice Bricks, Red and Grey Stock Bricks.——

Here it is neceſſary to give a general Rule for the caſting up any Thing ſold by the Thouſand; as Bricks, Tiles, Clinkards,

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Clinkards, or *Flanders* Paving Bricks, and several other Things mentioned in the Book of *Rates, viz.* Barrel Hoops, Goose Quills, Oranges and Lemons, Squirrel Skins, Billets, *&c.*

And the easy Rule is this, viz.

Multiply the given Number by the Shillings in the Price, (if the Price be at so many Shillings *per* M) and always cut off three Figures or Places towards the Right-hand; and the Figures towards the Left-hand are Shillings, which divide by 20, to bring them into Pounds; and those Figures separated towards the Right-hand, multiply by 12, the next inferior Denomination; and still cut off, or separate three Places towards the Right-hand, and the Figures toward the Left are Pence; and the three last Figures cut off, multiply by 4; and still separate three Places toward the Right-hand, and the Figures toward the Left are Farthings.——And if the Price be Shillings and Pence *per* Thousand, then reduce the Price into Pence, and multiply the given Number by the Pence contained in the Price, cutting off three Places toward the Right as aforesaid, and the Figures toward the Left are Pence, which bring into Pounds, according to Rule; and multiply the Remainder, or Figures cut off by 4, *&c.*

Example.

24650 Bricks, at 17*s.* *per* Thousand.

17

172550
24650

Ans. Shillings 41,9|050 20*l.* 19*s.* and $\frac{600}{1000}$ of a Shil.
or *l.* 20,19 $\frac{12}{600}$

261324 plain Tiles, at 16*s.* 6*d.*

198 12

2090592 198 *d.*
2351916
261324

Pence 51742,152
Divide *per* 12) 4

20)s. 4311—10*d.* (608

l. 215—11—10 and $\frac{608}{1000}$ of a Penny.

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When Things bought by the Thousand, and retailed by the Hundred, as particularly *Dutch* and *English* Pantiles; then follow this Rule, *viz.*

Multiply the given Quantity by the Price, whether Shillings, or Shillings and Pence. If Shillings, multiply by the Number of Shillings, and cut off two Figures or Places toward the Right-hand, and those toward the Left are Shillings; which reduce to Pounds as usual; and what remains, that is, the Figures cut off, multiply by 12; and again cut off two Places more toward the Right-hand, and the Figures to the Left are Pence; and what remains multiply by 4, *&c.*

Example.

1726 Pantiles, at 7*s.* *per* C.

7
120|82
12
9|84
4
3|36

That is, 6*l.* 00*s.* 9*d.* $\frac{3}{4}$ and $\frac{36}{100}$ of a Farthing.

If the Price be Shillings and Pence, multiply by the Pence contained in the Price, and proceed as before; and then the Figures toward the Left-hand will be Pence; which reduce to Pounds, according to Rule.

Example.

2964 Stock Bricks, at 2*s.* 6*d.* *per* C.
30 Pence

Pence 889|20
4
80

That is, 3*l.* 14*s.* 1*d.* and $\frac{80}{100}$ of a Farthing, or $\frac{20}{100}$ of a Penny.

This Method is preferable to *Practice*, because of its Exactness for the odd Number above Thousands or Hundreds, which would be puzzling to be very exact as to the odd Number; but by this Method, the Question is solved to the 1000 or 100 Parts of a Farthing; as may be seen by the foregoing Examples of the Operation.

Of

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Of Bills of Exchange.

BILLS of Exchange are either Inland, or Foreign: The Inland Bills are drawn by one Trader in one City or Town, upon another of another City or Town in the ſame Kingdom; as *London* upon *Briſtol*, or *Exeter* upon *London*, *&c.* and theſe chiefly concern our Shop-keepers, and wholeſale Traders, either of Town or Country, and the Foreign more immediately concern the Merchant.

Bills of Exchange, if handſomely drawn, muſt be written in a fair Hand, on a long Piece of Paper, about three Inches broad; and writ in Form after the following Precedents.

A Bill payable at Sight.

Philadelphia, 6th October, 1753.

AT Sight hereof, pay to Mr. *George Greedy*, or his Order, the Sum of Fifty Pounds, *New-York* Currency, for Value received of *Chriſtopher Caſh*; and place it to the Accompt, as *per* Advice, of

To Mr. Peter Punctual, *Merchant* in *New-York.*

Your humble Servant, *Daniel Drawbill.*

Note, A Bill at Sight is payable three Days after the Acceptor ſeeth it.

New-York, November 4th, 1753.

SEven Days after Sight hereof, pay to Mr. *Nathan Needy*, or his Order, Twenty-four Pounds, Ten Shillings, *New-England* Currency, old Tenor, for Value received here of Mr. *Timothy Tranſfer*, and place it to Accompt, as *per* Advice from

To Mr. Simon Certain, *Hatter, in* Milk-Street, *Boſton.*

Your Friend and Servant, *Michael Moneyman.*

If Mr. *Needy* ſends his Servant, *Andrew Benſon*, to receive the Money; after he hath writ his Name on the Back of the Bill, (which is his Order) the Servant muſt write a Receipt to his Maſters Name, thus:

RE*ceived*, November 17, 1753. *the full Contents of the within mentioned Bill, being Twenty-four Pounds, Ten Shillings.*

Witneſs, *Andrew Benſon.*

Nathan Needy.

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A Foreign Bill of Exchange.

Philadelphia, May 1st. 1753.

Sir;

AT thirty Days after Sight of this my first of Exchange, my second, third or fourth, of the same Tenor and Date, not being paid, pay to Mr. *Stephen Emerson*, or Order, the Sum of One Hundred and Sixty Five Pounds *Sterling*, Value received here, and place the same to Accompt, as *per* Advice from

To Mr. Simon Surepay, Merchant *in* London. — Your humble Servant, *Ebenezer Reynolds.*

The Acceptance is thus wrote under the Bill;

Accepted this 16th *Day of* November, 1753.

per Simon Surepay.

Notes on Bills of Exchange.

1. *THE Acceptor of any Bill is become absolute Dr. to the Person to whom the Bill is payable for the Contents thereof.*

2. *The Person to whom the Bill is payable, must demand the Money the very Day it becomes due, and if the Acceptor die before it becomes due, it must be demanded of the Executor or Administrator.*

3. *The Drawer of any Bill must always give his Correspondent a Letter of Advice, that he hath drawn such a Bill on him for such a Sum,* &c.

4. *None may pay a Bill without such a Letter of Advice.*

5. *A Bill is due the third Day after the Expiration of the Time mentioned in the Bill.*

Of Endorsing.

IT frequently happens, that between the Acceptance of a Bill, and the Time of Payment, the Party to whom it is first made payable, hath Occasion to pay it away; if so, he writes his Name on the back of the Bill, which is his Order, (as said before) and gives it to the Person he is indebted to, and then he is impowered to receive the Money: And it may be, the second Person also wants to pay it away; and then he writes his Name likewise under the o[illegible] and de-

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livers it to a third Perſon to receive the Money; and it may be, the third does the ſame, and delivers it to a fourth Perſon, *&c.* All that do ſo are Endorſers; and he that laſt hath the Bill, if the Acceptor will not pay it, may ſue him, or the Endorſers, or Drawer, or any of them, for the Money.

An Endorſement is generally in theſe Words, *viz. Pay the Contents of the within mentioned Bill to* Henry Haſty,

George Greedy.

But many times the Name only is accounted ſufficient.

Of Proteſting.

WHEN a Bill is to be *proteſted*, the Party that hath the Bill muſt go to a *Publick Notary* (not a Common *Scrivener*) whoſe Buſineſs it is, and he goes with you to the Acceptor's Houſe and demands Payment, *&c.* and then he draws up a *Proteſt* according to Law; which is to be returned to the Drawer within the Time limited, *&c.*

It is needleſs to give here the Form of a *Proteſt*, becauſe no Man can do it of himſelf.

Another Bill of Debt.

KNOW *all Men by theſe Preſents, that I* Lawrence Lackcaſh, *of* Boſton Vintner, *do owe and am indebted unto* Charles Creditman, *of the ſame Place* Salter, *the Sum of One Hundred and Fifty Pounds lawful Money of* Boſton, *old Tenor, which ſaid Sum I promiſe to pay unto the ſaid* Charles Creditman, *his Executors, Adminiſtrators, or Aſſigns, on or before the* 24*th of* December *next enſuing the Date hereof. Witneſs my Hand and Seal, this* 6*th Day of* October, 1753.

Sealed and Delivered, Lawrence Lackcaſh.

A Bill for Money borrowed.

RE*ceived and borrowed of* Oliver Overcaſh, *of* Philadelphia, *Merchant, Fifty Pounds, which I do hereby promiſe to pay on Demand. Witneſs my Hand this* 6*th Day of* October, 1753.

Peter Penury.

l. 50

The

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The Form of an Invoice.

Port Royal, in Jamaica, July 24th, Anno 1753.

INVOICE of five Barrels of Indico, five Hhds. of Sugar, and five Hhds. of Pymento, ſhipped on board the *George* of *London*, *George Jones*, Commander, for Accompt and Riſque of Meſſrs. *John* and *Thomas Fiſher*, of *London*, Merchants, being mark'd and number'd, as *per* Margent; Contents, Coſts and Charges, *viz.*

			l.	*s.*	*d.*
I F	Indico 5 Barrels				
	143 *lb.*				
N°.	412				
1a 5	146				
	152				
	173				
	756 *lb.* nett, at 2*s.* 2*d.* per *lb.*		81	18	—
	Sugar.				
	5 Hhds Tare				
	C. qr. lb. *C. qrs. lb.*	*C. qr. lb.*			
	11-3-27—1-2-19	Groſs 68-0-00			
	12 2-19—1-3-00	Tare 8-3-12			
	13-2-13—1-2-16				
1a 5	14-1-15—1-3-11	Nett 59-0-16			
	15-1 10—1 3-22	at 24*s. p.r. C.*	70	19	5
	68-0-00—8-3-12				
	Pymento	*lb.*			
	5 Hhds. Tare	2026 Groſs			
	lb. *lb.*	389 Tare.			
	432—84				
	396—72	Nett 1637 at 11*d.* $\frac{1}{4}$	76	14	$8\frac{3}{4}$
1a 5	410—81	*per lb.*			
	376—70	Charges			
	432—82	To Coſt of 5 Barrels and 10 Hhds. 4-7-9			
	2026—389	To Storage —— 1-0-0	5	7	9
			234	19	$10\frac{1}{4}$
		To Commiſſion at 5 *per Ce*	11	14	$11\frac{3}{4}$
		Errors excepted, *per A. B.*			
			246	14	10

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The Form of an Account of Sales.

1753

AN Account of Sales of 2756 Ells of brown Oznabrigs; 1112 Yards of blue Linen; 2 Pieces of blach Cloth, qt. 39 Yards; 40 Pair of Thread Stockings; and 175 Ells of Bag Holland; received from on board the Ship *Good Succefs*, *Samuel Sharp*, Commander, for Account of Mr. *Lawrence Lucky*, of *London*, Merchant.

Dr.	*l.*	*s.*	*d.*
March 17 To Porteridge of ditto,	0	17	6
To Commiffions on Sales, at 5 *per C.*	12	16	9
To Storage, at 2 ½ *per Cent*, —— ——	6	8	4½
	20	2	7½
To your Account Current for the Nett Proceed, bad Debts excepted, — ——	236	12	7½
l.	256	15	3

1746. *Contra* *Cr.*	*l.*	*s.*	*d.*
March 2 By Cafh, for 2765 Ells of brown Oznabrigs, making 3456 ¼ Yards, fold at 8*d.* ½ *per* Yard, —— —	22	8	2
ditto 29 By *Benja. Baker*, fold him 1112 Yds of blue Linen, at 7*d.* ½ *per* Yard,	34	15	0
ditto 31 By *James Smart*, for 39 Yards of black Cloth, fold him at 15*s.* *per* Yard, —— —— ——	29	5	0
April 2 By *Lawrence Monk*, fold him 40 Pair of Stockings, at 7*s.* 10*d.* *per* Pair, —— —— —— —	15	13	4
ditto 8 By ditto for 175 Ells of Bag Holland, at 6*s.* 3*d.* *per* Ell, ——	54	13	9
	l. 256	15	3

Philadelphia, *April* 13, 1753.
Errors excepted, *per Charles Carefull.*

The Extraction of the Square and Cube Roots, of great Use in Measuring, Gauging, &c.

The Square Root.

1st. A Square Number is any Digit, or any other Number, which being multiplied into itself, produceth a Square Number; as 4 multiplied by 4, produceth 16; so 16 is the Square Number, and 4 is said to be the Root of 16, because it grows from, or is produced of 4; so 4 is the Square of 2, for twice 2 is 4, and 9 is the Root of 81, for 9 times 9 is 81, *&c.*

2dly, To extract the Square Root of any Number, is to find another Number, which multiplied by (or into) itself, produces the Number given, and is a Proof of the Work.

3dly, Square Numbers are either single or compound.

4thly, All single Square Numbers, with their respective Roots, are contained in the following Table, *viz.*

Roots.	1	2	3	4	5	6	7	8	9
Squares.	1	4	9	16	25	36	49	64	81

5thly, When the Root of any Square Number is required less than 100, and yet not exactly a single Square expressed in the Table above; then you are to take the Root of the Square Number expressed in the Table, which (being less) comes the neareſt to the given Number to be squared: As suppose 60, the neareſt Root to it (as being less) is 7, and 12 being given, the Root belonging to it is 3.

6thly, A compound Square Number is that which is produced of a Number consisting of more Places than one, multiplied by itself, and never less than 230: So 459 is a compound Square Number, produced by the multiplying 27 into itself.

7thly, The Root of any Number under 100 may be easily known by the foregoing Table of single Squares: But to extract the Root of a compound Number of several Places, observe the following Directions, in Relation to the Finding the Root of this Square Number 45796.

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1. Set a Point over the Place of Units thus, 45796, and so succeſſively over every ſecond Figure towards the Left-hand, as thus, 45796; and again thus, 45796. Thus muſt your Number be prepared for Extraction in Natural Numbers; But in the Decimals, you muſt point from the Place of Primes towards the Right-hand, omitting one Place, as above; and if the Decimals are odd, affix a Cypher towards the Right-hand of them to make them even. Your Number thus prepared, draw a crooked Line on the Right of the Number, as in Diviſion; and indeed the Operation of the Square Root is not much unlike Diviſion; only there the Diviſor is fixt, and in the Square Root we are to find a new One for each Operation. I ſay having made a crooked Line thus, 45796 (ſeek the neareſt Root in the foregoing Table, to the firſt Point on the Left-hand, which here is 4, the Root of which is 2, which Place behind the crooked Line thus:

```
  . . .
45796 (2.
  4
-----
 (0)
```

and ſubſtract it, and there remains 0: Then to the Remainder, bring down the next Point 57 thus:

```
  . . .
45796 (2
  4
-----
 057
```

which call the Reſolvend; then double the Root of the firſt Point, and place it on the Left hand of the Reſolvend (or proper enough the Dividend) thus;

```
  . . .
45796 (2
  4
-----
 4) 57
```

The 4, the double of the Root 2 on the Left-hand of the crooked Line, call the Diviſor, then ſeek how often 4, the Diviſor, can be taken in 5, the firſt Figure of the Reſolvend

(57,

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57) for you are to omit the last Figure towards the Right-hand) which here is one, which 1 place behind the Root 2, and also behind the Divisor 4 thus:

45796 (21
4
41) 57

Then multiply the Divisor (now) 41, by the Figure last placed in the Root, *viz.* 1, and place it under the Resolvend thus, and subtract it therefrom.

45796 (21
4
41) 57
41
16

Then bring down the next Point, *viz.* 96, and place it on the Right of the Remainder 16 for a new Resolvend or Dividend thus; next double the Quotient, or Part of the Root, *viz.* 21, and place it for a new Divisor to the new Resolvend 1696, thus:

45796 (21
4
41) 57
41
42) 1696

Then seek how oft 42 in 169? (still reserving or omitting the unit Figure of the Resolvend or Dividend, as aforesaid) and I find I can have it 4 times, which I place in the Quotient, or Place of the Root, and then the Work appears thus;

45796 (214
4
41) 57 Resolvend.
41
424) 1696 Resolvend.
1696 Product.

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In the last Step, I place 4 in the Root, and likewise 4 behind the Divisor 42, which makes the new Divisor 424 to the Resolvend 1696; which Divisor multiplied by 4, the Figure last placed in the Root, produces 1696; equal with the Dividend or Resolvend aforesaid, as in the Operation may be seen. So that the Square Root of 45796 is 214; for 214, multiplied into itself, produces 45796, the Number given, whose Square Root was sought.

More Examples.

What's the Square Root of 12299049 (3507 the Root?

9

1st Divisor 65) 329 Resolvend.
325 Product.

2d Divisor 700) 490 Resolvend.
000 Product.

3d Divisor 7007) 49049 Resolvend.
49049 Product.

(0)

Decimally.

160,000000 (12,649
1

1st Divisor 22) 60
44

2d Divisor 246) 1600
1476

3d Divisor 2524) 12400
10096

4th Divisor 25289) 230400
227601

(2799)

Note,

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Note, *That when the Diviſor cannot be had in the Reſolvend, then place a Cypher in the Quotient, and alſo in the Right of the Diviſor, and bring the Reſolvend a Step lower, and then bring down the next Square, &c. as in the Example above may be ſeen.*

Note farther, *If any Remainder happen to be after Extraction, you may proceed by annexing Pairs on Cyphers to the Left of the given Number, and ſo come to what Exactneſs you pleaſe.*

Note alſo, *Such Numbers given Extraction that leave Remainders, are by ſome called* Irrationals, *becauſe their Roots cannot be exactly diſcovered, but ſtill there will be ſomething remaining, though you work by whole Numbers or Fractions: As in the Example above, where the Remainder is* 2799.

The Extraction of the Cube Root.

TO extract the Cube Root of any Number, is to find another Number, which multiplied by itſelf, and that Product by the Number found, produces the Number given for Extraction.

From the foregoing Table for Extraction of the Square Root, proceed the ſeveral Squares of the Cube Root, *viz.*

Roots,	1	2	3	4	5	6	7	8	9
Squares,	1	4	9	16	25	36	49	64	81
Cubes,	1	8	27	64	125	216	343	512	729

1*ſt*, To prepare any Number for Extraction, make a Point over Unity, and ſo ſucceſſively over every third Figure, miſſing two between each Point; but in Decimals, you muſt point from the Place of Units to the Right-hand, *&c.*

Example.

Extract the Cube Root of 46656, prepared thus, as above directed.

46656

Here are but two Points, therefore the Root will have but two Places.

2*dly*, The Number being prepared, ſeek in the foregoing Table the neareſt Root to the firſt Point or Period 46, which you will find to be 3, which place in the Quotient thus, 46656 (3 the Cube or Triple whereof, *viz.* 3, is 27, which

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which place under your first Point 46, as in the Margent; the which subtract from 46, and there rests 19; this is your first Work, and no more repeated. Then to the Remainder 19, bring down the next Period, *viz.* 656 (which is the last) and place it on the Right of the Remainder 19, thus;

```
46656 (3
27
---
19
```

```
46656 (3
27
---
19656 Resolvend.
```

Then draw a Line under the Resolvend; next square the 3 placed in the Quotient; which makes 9, which multiplied by 300 makes 2700 for a Divisor, which place accordingly thus;

```
46656 (3
27
---
2700) 19656
```

Then seek how often 2 in 19? *Answer*, but 6 times, because of the Increase that will come from the Quotient, then multiply the Divisor by 6, and the Product will be 16200; which place orderly under the Dividend thus;

```
46656 (36
27
---
19656
---
16200
```

Then proceed to find the Increase coming from the Quotient thus; Square your last Figure 6, and it makes 36; which multiply by 3, the other Figure of the Quotient, it gives 108; which multiplied by 30, makes 3240. This place also orderly under the last Number before set down, *viz.* 16200, and the Work will appear thus;

```
46656(36
27
---
2700) 19656 Dividend.
16200
3240
 216
---
19656
```

Then

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Then cube the Figure last placed in the Quotient, *viz.* 6, and it makes 216; which place orderly likewise under the Line 3240, as above, then add the three Lines together, and they make 19056 (for so many you always have after the first Operation.) And seeing the Total to be equal to the Dividend above, *viz.* 19656, and no more Periods to bring down, I see the Work is finished, and find the Cube Root of 46656 to be 36.

Some Geometrical Problems useful in Mensuration.

Upon a right Line given to erect a Perpendicular, as in Figure 1.

LET *C D* be the Line given to have a Perpendicular raised on it from *B*, with the Compasses (opened at a small convenient Distance) place one Foot in the Point *B*, and with the other make two marks *E* and *F*, on either Side of *B*; then open the Compasses to a more large and convenient Distance, and make the Arch *G G*, by setting one Foot in *E*, and as near as you can over the Point *B*, then (the Compasses being open at the same Distance) place one Foot on the Point *F*, and describe the Arch *H H*, crossing the former at the Point *A*; thro' which Intersection with a Ruler draw the Line from *A* to *B*, which will be perpendicular to the Line *C D*.

How to raise a Perpendicular on the End of a Line.

This is effected several Ways; but I shall instance only two, which are very easy.——————See Figure 2.

First Method.

Suppose the Line *A B* be given to raise a perpendicular towards the End.

First open your Compasses to any small Distance, and set one Foot in the Point *A*; and with the other, describe the Arch *F E D*; then with one Foot of the Compasses in *D* (they being opened to the same Distance) cross the Arch in *E*; and then setting one Foot in *E*, with the other make the Arch *A F G*, crossing the first Arch in *F*. Again, set one Foot in *F*, and with the other describe the small Arch *H H*, crossing the former in the Point *C*; so the Line *A C* being drawn is the Perpendicular required.

The

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The Second Method.

Admit *B* be the Point given on which to draw the Perpendicular *B I*. Open the Compaſſes to any ſmall Diſtance; and ſetting one Foot in the Point *B*, pitch down the other Foot at Random, as ſuppoſe at *K*; then the Foot reſting in *K*, turn the other about till it croſs the Line *A B* in *L*; then draw the Line *K L*, and ſet the ſame Diſtance *K L* (at which the Compaſſes already ſtand from *K* to *M*; ſo a Line drawn from *B*, thro' *M*, is the Perpendicular on the End of the Line *A B*.

How to divide a Right Line into two equal Parts, and at Right Angles; as in Figure the 3d.

Suppoſe the Line *A B* be given to be divided into 2 equal Parts, at Right Angles. Take in the Compaſſes any Diſtance above Half the Length of *A B*, and ſetting one Foot in the Point *A*, with the other draw the Arch *C D E*; then (the Compaſſes unaltered) ſet one Foot in *B*, and with the other croſs the former Arch both above and below the Line, in the Points *F* and *G*; then a Line drawn from *F* to *G* ſhall interſect, or cut the given Line in *H*, and divide the Line *A B* into two equal Parts, and at Right Angles.

Of Parallel Right Lines.

Right lined Parallels, are Lines drawn on a Plane of equal Length and Diſtance; and tho' infinitely extended will never meet, and in all Parts retain an equal Diſtance, ſuch as theſe underneath.

B——————*C*

C——————*D*

To draw a Right Line Parallel to another Right Line at a Diſtance given; as in Figure the 4th.

Take in your Compaſſes the given Diſtance *G H*, then ſetting one Foot in *E*, draw the Arch *I K*; then moving to *F*, deſcribe the Arch *L M*; then laying a Ruler on the Top of the two Arches, juſt touching them, draw the Line *N O*, which will be parallel to the given Line *E F*.

To bring any three Points (not in a ſtrait Line) into a Circle, by finding the Centre, ſo that the Circle ſhall paſs thro' thoſe Points; as in Figure the 5th.

Let the three Points given be *A B* and *C*, through which is required that a Circle be drawn. Firſt, ſet one Foot of the

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Fig. 1.

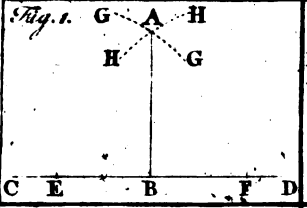


Fig. 2.

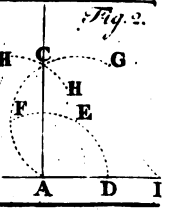


Fig. 5.

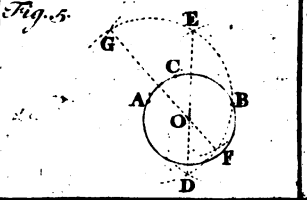


Fig. 6.

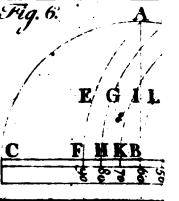


Fig. 9.

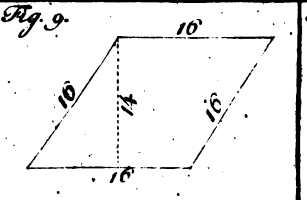


Fig. 10.

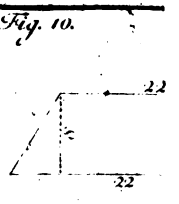


Fig. 13.

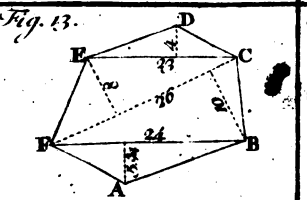


Fig. 14.

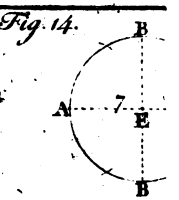


Fig. 17.

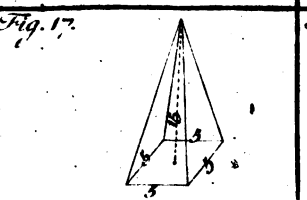
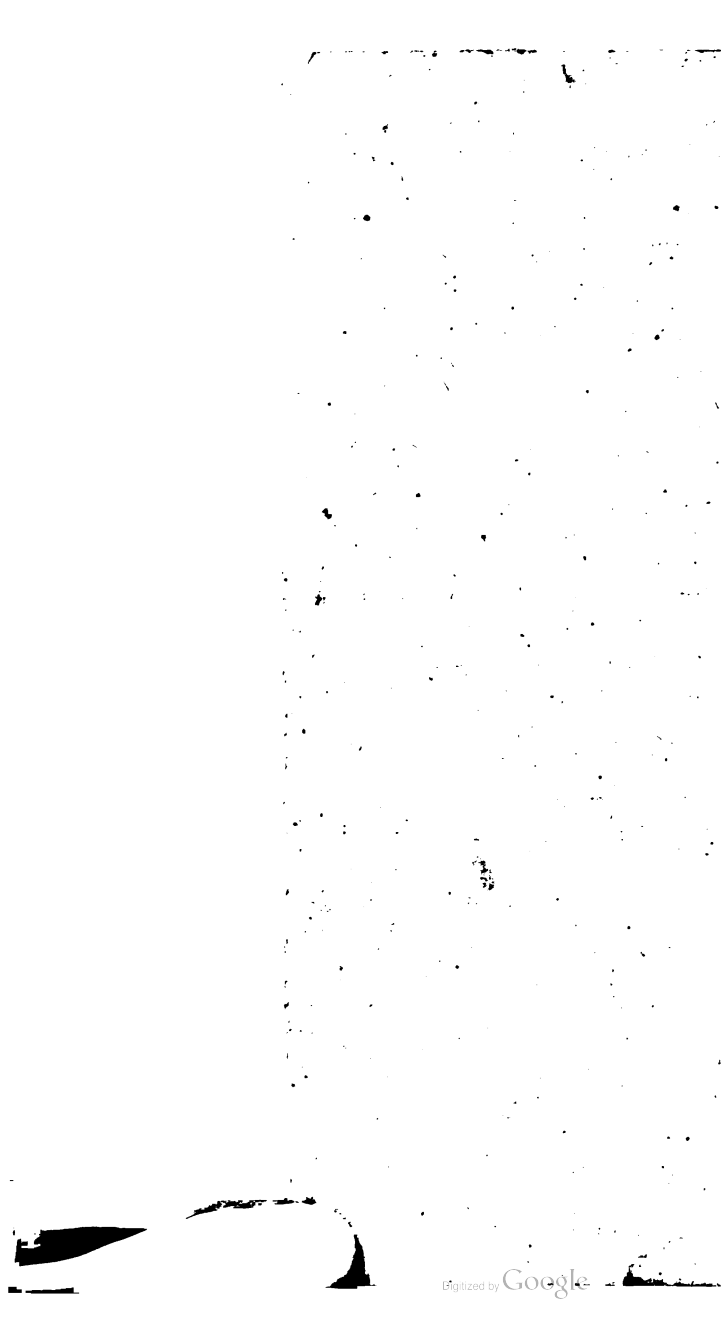


Fig. 18.



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the Compasses in one of the given Points, as suppose in *A*, and extend the other Point to *B*, another of the Points, and draw the Arch of a Circle *G F D*; then (the Compasses not altered) set one Foot in *B*, and with the other cross the said Arch with two small Arches, in the Points *D* and *E*, and draw the Line *D E*. Thirdly, set one Foot in *C*, (the Compasses being at the same Distance) and with the other Foot cross the first Arch *G F D* in the Points *F* and *G*, and draw the Line *F G*, crossing the Line *D E* in the Point *O*, which is the Centre sought for; in which, place one Foot of the Compasses, and describe the Circle at the Distance *O A*, and it passes through all the given Points *A B* and *C*.

How to make a Line of Chords Geometrically, to any assigned Length or Radius.

Since in the Art of Dialling, there is frequent Use made of the Line of Chords, it is proper here to shew the Making thereof.

A Line of Chords is 90 Degrees of the Arch of a Circle, transferred from the Limb of the Circle to a straight Line; now every Circle, whether great or small, is divided (or supposed to be divided) in 360 equal Parts, called Degrees: So the Semi or Half Circle contains 180, the Quadrant or Quarter 90, and the Radius or Semi-diameter (which is that Line on which the Circle or Semi circle is drawn or described) noted in Figure the 6th of the *Line of Chords*, with the Letters *A B*, is always equal to 60 Degrees of that Circle which it describes, and therefore 60 Degrees of a Line of Chords is called the Radius thereof.

To make the Line of Chords; as in Figure the 6th.

First, draw a Line of any Length, as *C B D*, and on the Middle thereof draw the Perpendicular *A B*; next open your Compasses to the Radius or Length that you would have your Line of Chords be of; which admit *A B*, and with that Distance on *B* as the Centre, describe or draw the Semicircle *C A D*, which is divided into two equal Parts, or Quadrants, by the perpendicular Line *A B*; thirdly, divide the Arch or Quadrant *A R D*, into 90 equal Parts or Degrees; which is done by taking the Length of the Line *A B*, and setting that Distance on the Quadrant *A D*, and from *D* to *R*; so is *D R* 60 Degrees, and *A R* 30 Degrees; then take the Distance *A R*, and set it from *D* to *S*, so is the Quadrant divided into three equal Parts, at the Point *S*, and *R*, each

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containing 30 Degrees; this done, divide the several Spaces between *A R*, *R S*, and *S D*, into three equal Parts, each of which will be 10 Degrees, according as the Numbers are seen and set apart to them: And these again divided into two equal Parts, each Part contains 5 Degrees; and every of those into 5 smaller, as in the Representation; and so the whole Quadrant is divided into 90 Degrees. Fourthly, The Quadrant *A R S D* being thus divided into 90 Degrees, set one Foot of the Compasses in *D*, and open the Foot to *A*, and describe the Arch *A E F*, touching the Line *C D* in *F*, so is the Point *F*, upon the Right Line *C D*, the Chord of 90 Degrees. Fifthly, open the Compasses from *D* to 80 Degrees, and describe the Arch 80 *G H*; so shall the Point *H* be the Chord of 80 Degrees. Sixthly, Open the Compasses from *D* to 70, describe the Arch 70 *I K*, so is *K* the Chord of 70 Degrees. Again, Open the Compasses from *D* to *R*, the Radius of 60 Degrees, and describe the Arch *R L B*, so is *B* the Chord of 60 Degrees, equal to the Radius. Do the same by 50, 40, 30, 20, and 10, and then you will have the Line *D F* divided into 90 unequal Parts, called Chords, as in Figure 6.

Thus much for the Line of Chords, frequently made use of in Dialling, where there is not the Conveniency of having a Mathematical Instrument-maker near at hand.

Note, *A Degree is the 360th Part of any Circle, and every Degree is supposed to be divided into 60 equal Parts, called Minutes; and every Minute is supposed to be subdivided into 60 equal Parts called Seconds, &c.*

Of Mensuration of Plains and Solids.

THE several Kinds of Measuring are three, *viz.*

1*st*, *Lineal*, by some called *Running Measure*, and is taken by a Line, and respects Length without Breadth; the Parts of which are,

12 Inches 1 Foot, 3 Feet 1 Yard, 16 Feet and Half 1 Rod, Pole, or Perch.

All Kinds of ornamental Work, such as Cornice Freeze, &c. are measured by *Running Measure*.

2*dly*, *Superficial*, or flat square Measure is that which respects Length and Breadth; and the Parts are, *viz.*

144 Inches one Foot, 72 Inches Half a Foot, 36 Inches one Quarter of a Foot, 18 Inches Half a Quarter of a Foot, 272 Inches and a Quarter one Rod, 136 Feet Half a Rod; 1296 Inches, or 9 Feet, one superficial square Yard. 3*dly*,

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3dly, Solid, or Cube Measure, which respects Length, Breadth and Depth, or Thickness; and the Parts are, *viz.* 1728 Inches 1 Foot, 1296 Inches three Quarters of a Foot, 864 Inches Half a Foot, 432 Inches one Quarter of a Foot, and 27 Feet 1 solid Yard.

Superficial Measure.

TO measure Things that have Length, and Breadth, such as Board, Glass, Pavement, Wainscoat, and Land, is to take the Dimensions of the Length and Breadth, according to the customary Method used in each Particular; as Board and Glass are measured by the Foot, but the Dimensions are taken in Feet and Inches, and the Content given in Feet.

Wainscoat and Paving by the Yard, as are also Plaistering and Painting, and the Dimensions are taken in Feet and Inches, and the Content given in Yards.

Dimensions of Land are taken by the Pole or Chain, of 4 Poles in Length; all which is taken in square Measure superficial, that is, an Inch, Foot, Yard, or Pole; which is not only sometimes in Length, but also as much in Breadth too; or if it wants of it one Way, it must be made up the other.

Of the Square.

The squaring of any Number, is multiplying it into itself, as 12 Inches multiplied by 12 Inches, make 144 Inches square, on the Flat. The Square of any Thing is found four several Ways, *viz.* by whole Numbers, by Decimals, by Practice, and by Cross Multiplication; in each of which Methods I shall give Examples of Operation.

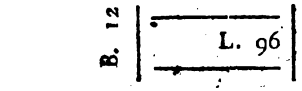
When any Thing is to be measured, it must be considered what Form or Fashion it is of: and then it must be measured according to the several Rules for each Figure.

First, If it be a Square of equal or unequal Sides, that is, one Way longer or wider than the other (as Boards are almost always much longer than they are broad) then the Length and Breadth must be multiplied one by the other, which makes it square Measure, as was hinted before; and if that Product be divided by its proper Divisor, as 144 is the Divisor, for flat or superficial Measure, and 1728 the Divisor for cube or solid Measure; the first being the square Inches in a superficial square Foot, and the other the cubick square Inches in a solid Foot square.

Example.

Admit a Board be 12 Inches broad, and 8 Feet, or 96 Inches long, how many square superficial Feet doth it contain?

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96
12

144) 1152 (8 Feet.
1152

(0)

Here the Length in Inches is multiplied by the Breadth in Inches, and the Product 1152 divided by 144, the square Inches in a Foot, quotes 8 Feet square for the Contents of the Board.

A General Rule for Dispatch.

If the Length of a Board, or Piece of Glass, be given in Feet, and the Breadth in Inches, multiply one by the other (without any Reduction) and divide the Product by 12, and the Quotient will be the Answer in Feet, and the Remainder will be Parts of a Foot. So the foregoing Example might have been sooner done by dividing 96 the Length, by 12 the Breadth, and it quotes 8 Feet for the Content, as by the former Way.

Example.

Suppose a Board be 14 Feet long, and 15 Inches broad, what's the Content in square Feet?

14 Feet Long.
15 Inches broad.

12) 210

Feet 17—6, $\frac{6}{12}$ or $\frac{1}{2}$

So the Answer is 17 Feet and $\frac{1}{2}$. And so for any other Example of this Kind.

Or concisely thus,

14
by 1—3

14
3 In. $\frac{1}{4}$ $\frac{3}{4}$ or $\frac{3}{4}$.

Answer. 17 $\frac{1}{2}$

Here 3 Inches is the of a Foot, wherefore $\frac{1}{4}$ of 14 is taken, and added to 14, and it makes 17 Feet and $\frac{2}{4}$, equal to $\frac{1}{2}$.

If a Board be wider at one End than the other, then take the Breadth in the Middle, or add the Measure of both Ends toge-

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together, and take the Half for the mean Breadth, which multiply by the Length.

Example.

Suppose a Board to be 120 Inches long, and the narrowest End 10 Inches wide, and the broadest End 24 Inches wide; what is its Content in superficial Feet?

Add { 34 broadest End. / 10 narrowest.

the 44
Half ——
is 22 the Medium.
120 the Length.

144) 2640 (18 Feet $\frac{1}{3}$ *Answer.*
144
1200
1152

Rem. 48 | 4 | 1 ——— or 4 Inches; 48 the Remainder is $\frac{1}{3}$ of 144.
144 | 12 | 3

Or thus,

Feet	*Inches.*
10	00 narrowest End.
1	10 the mean Breadth.

	In. 10	00
For 10 In.	$6\frac{1}{2}$ 5	00
	$4\frac{1}{3}$ 3	04
	18	04 *Answer.*

If a Board or Piece of Glass be ever so irregular, it may be measured very near, by taking the Breadth in 5 or 6 Places, and add the several Breadths together, dividing the Total by the Number of Places, and the Quotient will be the mean Breadth; which multiply by the Length, *&c.*

Having the Breadth in Inches of any Board, or Piece of Glass, to know how much in Length of that Board or Piece of Glass, will make a Foot Superficial.

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Rule. Divide 144 by the Inches in Breadth, and the Quotient will be the Length of that Board that will make a Foot.

Example.

If a Board be 9 Inches broad, what Length of that Board will make a ſuperficial Foot?

Or by the Rule of Three Reverſe, thus,

9) 144 — *I.b* *I.l.* *I.n.*

Inches 16 *Anſwer.* If 12 give 12, what 9 broad?

12

9) 144

Anſwer 16 Inches.

If a Board be 12 Feet ¾ long, and 15 Inches broad, how many ſquare Feet doth it contain?

VULGARLY.

Inches.

150 long.
15 broad.

750
15

144) 2250 (15 Feet,
144

810
720

Remainder 90
Multiply by 12 Inches 1 Foot.

144) 1080 (7 Inches.
1008

Remainder, 72
by 4 ½ of an Inch.
144) 288 (2 ¼ or ½
288

DECIMALLY.

12,5
1,25

625
250
125

Feet 15,625
12

Inches 7,500
4

Quarters 2,000

By

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By Croſs Multiplication:

	Feet.	*In.*
	12	6
	1	3
	12	0
	0	6
	3	0
	0	1 $\frac{1}{2}$
Anſwer	15	7 $\frac{1}{2}$

By Practice.

	Feet.	*In.*
	12	6
		1—3
	12	6
3 Inches $\frac{1}{4}$	3	1 $\frac{1}{2}$
Facit	15	7 $\frac{1}{2}$

Here the Content is found four ſeveral Ways, *viz.* by multiplying the Inches together, and dividing by 144, *&c.* The next Work is performed Decimally; the third Method is by croſs Multiplication; and the laſt and beſt is by Practice.

Any of theſe Methods may be eaſily underſtood by the Uſe of the Arithmetical Part of this Book, except the Method by Croſs-Multiplication, which, I think, hath not been ſhewn; wherefore I ſhall explain it here.

In the Example, 1 Foot 3, ſtands under 12 Feet 6; and having drawn a Line, ſay, once 12 is 12; then I ſay Croſs-way, 6 times 1 is 6 Inches; ſo that Line is 0 Feet, 6 Inches; Then Croſs-ways again, I ſay 3 times 12 is 36 Inches, the 12's in 36 is 3 times, or 3 Feet; ſo that Line is 3 Feet 0 Inches: Laſtly, I multiply the Inches together, ſaying, 3 times 6 is 18, the 12's in 18 once, and there remains 6, or $\frac{6}{12}$, equal to $\frac{1}{2}$, as in the Work.

Proper Directions for Joyners, Painters, Glaſiers, &c.

Rooms being generally various in their Forms, take this general Rule in all Caſes, *viz.*

Take a Line, and apply one End of it to any Corner of the Room; then meaſure the Room, going into every Corner with the Line, till you come to the Place where you firſt began; then ſee how many Feet and Inches the String contains, and ſet it down for the Compaſs or Round; then take the Height by the ſame Method.

Glaſiers are to take the Depth and Breadth of their Work, and multiply one by the other, dividing by 144; Glaſs being meaſured as Board.

Having

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Having thus ſhewn the Methods of caſting up Dimenſions, I come now to Particulars; and the firſt of

Glaſiers Work, by the Foot.

If the Windows be ſquare, multiply the Length by the Breadth, which will produce the Content, as aboveſaid.

Examples.

A Window glaized

By Croſs Multiplication.

Feet.	*In.*	
8	9	high.
7	3	broad.
56	0	
2	0	
5	3	
	2 ¼	
63	5 ¼	*Anſwer.*

Feet.	*In.*	
8	9	
	7	Feet 3
61	3	
3 Inches ¼ 2	2 ¼	
63	5 ¼	*Anſw.*

If the Windows are arched, or have a curved Form, no Allowance is made by reaſon of the extraordinary Trouble, and Waſte of Time, Expence or Waſte of Glaſs, *&c.* And the Dimenſions are taken from the higheſt Part of the Arch, down to the Bottom of the Window, for the Height or Length; which multiply by the Breadth, and the Product will be the Anſwer in Feet, *&c.*

Glaſiers are often ſo very nice, as to take their Dimenſions, and to meaſure to a Quarter of an Inch.

Example.

Feet In.

4—3 ½ long.

2 Feet 7 ¾ broad.

8	7	
2	1 ¾	
	6 ¼ ¾	
	1 ¼	
11	4 ¼	

6 Inches is ½

1 ½ is ⅜

¼ is 4 ⅛

Glaſs is meaſured by the Foot, as ſaid before; and the Price of Work in England, in Sterling Money is as follows, *viz.* Engliſh

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Engliſh Glaſs *per* Foot	0—5
French and Crown Glaſs	1—0
Common Work, Leading included, for every Foot ſquare	0—6
New Leading old Glaſs *per* Foot	0—3
Common Diamond Squares, each	0—1

Painters Work by the Yard.

WHEN the Wainſcoat of a Room is painted, you are to meaſure round the Room with a Line, as hinted before, without girting the Mouldings, which are to be meaſured by a String, and added to the other; then multiply the Compaſs by the Height, with the addition of the Mouldings, *&c.* and you have the Content in Feet and Inches, which reduced to Feet, bring into ſquare Yards by dividing by 9.

Example 1.

A Room painted,

Feet In.	
Being 45—8 in Compaſs, 10 Feet 6 high.	What is the Content in ſquare Yards?

456—8	2. 6
22—10	2. 6.
9) 479—6	4 —
Yards 53—2—6 *Anſwer.*	1 — 3
	1 — 3

Example 2.

If the Height of a Room painted be 12 Feet 4, and the Compaſs 84 Feet 11; what ſquare Yards doth it contain? Anſwer, 116 Yards 3 Feet 3 $\frac{2}{3}$.

Feet In.	
84—11 Compaſs, 12 F. 4 high.	
In. 1019—00	
4 $\frac{1}{3}$ 28—03 $\frac{2}{3}$	
9) 1047—03 $\frac{2}{3}$	
Yds. 116—03—3 $\frac{2}{3}$ *Anſ.*	

Note, Double Work is allowed in Window-Shutters; Saſh-Frames and Mantlepieces are reckoned by themſelves, unleſs the Mantlepieces ſtand in the Wainſcoat, and then they are to be meaſured as plain Work, deducting nothing for the Vacancy.

Prices

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Prices in England.	*s.*	*d.*
Common coloured, 3 Coats in Oil, *per* Yard	0	6
On old Colour	0	4
Walnut-tree Colour	1	0
Marble Colour, from 16*d* to	2	0
Sash Frames, each	1	0
Sash-Lights, each	0	1
Window-Lights, one with another	0	3
Iron Casements	0	3

Joiners Work.

WAINSCOATING, the Dimensions are taken as in Painting, *viz.* by measuring the Height (indenting the String where ever the Plane goes, as well as the Painters do where ever the Brush goes) and then the Compass; which multiply one into the other, dividing the Product by 9, and the Quotient is the Answer in square Yards.

Example.

What is the Content of a Piece of Wainscoating that is 9 Feet 3 Long, and 6 Feet 3 broad?

Feet.	*In.*
9	3
6	F. 6.
55	6
6 In. $\frac{1}{2}$ 4	7 $\frac{1}{2}$

The Length and Breadth being multiplied together, brings it into square Feet; which divided by 9, (the square Feet in a Yard) produces 6 Yards $\frac{2}{3}$ for the Answer, as *per* Margin.

9) 60—1 $\frac{1}{2}$ (6 Yds. $\frac{2}{3}$ *Ans.*
54
6

By Cross Multiplication thus;

Feet	*In.*
9	3
6	6
54	0
4	6
1	6
	1 $\frac{1}{2}$

60—1 $\frac{1}{2}$ as before, which divide by 9, &c.

Once

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Once more.

There is a Room wainſcoated, the Compaſs of which is 47 Feet 3 Inches, and the Height 7 Feet 6 Inches; what's the Content in Yards ſquare? *Anſwer* 39 Yards $\frac{1}{3}$.

Feet	*In.*
47—	3 Compaſſes
7	F. 6 the Height.
330—	0
6 In $\frac{1}{2}$ 23—	$\frac{3}{4}$
9) 354—	4 $\frac{1}{2}$

Anſwer. 39 Yds $\frac{3}{9}$ or $\frac{1}{3}$

Or thus,

Yds.	*In.*
15—	9
	2 Yds 6
31—	6
6 In. $\frac{1}{2}$ 7- 1	$\frac{1}{2}$

Anſwer 39— 4 $\frac{1}{2}$

The Prices per Yard.

	s.	*d.*
For good Wainſcoat	6—	0
Wainſcoating, not finding Stuff, *&c.*	2—	0
Coarſe Wainſcoating	1—	0
Deal Wainſcoat, finding Stuff	3—	0
Not finding Stuff	1—	6

Carpenters Work.

ROOFING, Flooring and Partitioning, the principal Carpentry in modern Building, are meaſured by the Square of 10 Feet each Way, that is 100 ſquare Feet.

For Roofing, multiply the Depth and half Depth, by the *Front*; or the Front and half Front by the Depth, and you'll have the Contents.

The Dimenſions are taken in Feet and Inches.

Example.

How many Squares doth that Piece of Work contain that meaſures 199 Feet 10 Inches in Length, and 10 Feet 7 Inches in Height? Anſwer 21 Squares, 14 Feet, 10 Inches $\frac{5}{6}$.

Operation.

Feet	*In.*
199—	10 long.
	10 F. 7 high.
1998—	4
6 $\frac{1}{2}$ 99—	11
1 $\frac{1}{6}$ 16—	7 $\frac{5}{6}$

This Work is done by cutting off two Places toward the right Hand, and the Number on the Left are Squares, *&c.*

21 | 14—10 $\frac{5}{6}$ *Anſ.* 21 Squares, 14 Feet 10 In. $\frac{5}{6}$.

Again,

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Again.

If a Floor be 49 Feet 7 Inches 4 Parts long, and 26 Feet 6 Inches broad; how many ſquare Feet?

The Operation by Croſs Multiplication.

Feet.	*In.*	*Parts.*
49	7	4
26	6	0
294	0	8
980	0	0
15	2	0
24	6	0
	3	6
	8	8
	0	2
13	14	8	4

Anſwer 13 Squ. 14 Feet, 8 In. 4 Pts.

Note, *In meaſuring Roofing, no Deduction is made for Sky-Lights, Chimney Shafts,* &c.

In meaſuring Flooring, take the Dimenſions of the whole Floor at once in Feet, and then meaſure the Content in ſuperficial Feet of the Vacancy for the Stairs, Hearths, *&c.* which deduct from the whole Floor, and the Remainder is the true Content; which bring into Squares as before.

Note, *In Partitioning, you muſt meaſure the Doors, Door-caſes and Windows, by themſelves, and deduct their Content out of the Whole; except by Agreement they are included; and then you muſt mention in the written Agreement, Doors, Door-caſes and Windows, included.*

There are divers Sorts of Carpenters Work belonging to a Building, *viz.* Cantaliver-Cornice, Modilion-Cornice, Plain-Cornice, Guttering, Rail and Ballusters, Lintale, Penthouſe-Cornice, Timber-front, Story, Breaſt-ſommers, Shelving, Dreſſering, *&c* all which are meaſured by Lineal, or Running Meaſure. There are alſo Doors and Door-caſes, Lanthorn-Lights, with their Ornaments, Balcony-Doors and Caſes, Cellar-Doors and Curbs, Columns and Pilaſters, Cupola's, *&c.* all which are valued by the Piece.

Carpenters Work in England is done at the following Sterling Prices, viz.

	l.	*s.*	*d.*
Flooring, finding Boards, the Square	1	15	0
Not finding Boards, from 2 *s.* 6 *d.* to	0	06	0

Roofing

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Roofing with Oak	2—00—0
Not finding Timber,	0—12—0
Partitioning *per* Square	0—15—0
Not finding Timber	0—07—6
Stairs with Rails and Ballusters compleat	1—10—0
Sawing of Oak and Elm *per* 100 Feet	0—02—6
Trees for Fences	0—02—0

Oak Timber is commonly sold for 40*s.* *per* Tun that is 40 Feet square in the Place; Ash 30*s.* and Elm 28*s.* *per* Tun.

Note, *Carpenters measure the Timber Frames of any Building (which they call the Carcase) by the Square of* 10 *superficial Measure, or* 100 *square Feet, as hinted before.*

Bricklayers and Tylers Work.

Of Walling.

WALLING is measured by the Rod Statute-Measure, being, 272 Feet and $\frac{1}{4}$ superficial. The Method of taking their Dimensions is thus: For a Wall round an Orchard or the like, they measure the Length by a Line going over the Buttresses; and for the Height, they measure over the Mouldings (pressing the Line into them) even to the Middle of the Coping: They likewise take Notice of the Thickness of the Wall, that is, how many half Bricks in Length the Wall is in Thickness; for three half Bricks, that is, a Brick in Length, and one in Breadth, is Standard Thickness; And all Walls, whether less or more, must be reduced to that Thickness, by this Rule, *viz.* Multiply the Product of the Length and Height, by the Number of half Bricks that the Wall is in Thickness; which Product divide by 3, and then the Quotient by 272 (the $\frac{1}{4}$ being generally neglected in Vulgar Working) and the Quotient will be Rods, at a Brick and half thick Standard Measure.

Example.

Admit the Face of the Wall measure 4085 Feet, and the Thickness be two Bricks and a Half, or five half Bricks thick, how many Rods doth it contain?

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4085
5

5) 20425

272) 6808 (25 Rods, *Answer.*

1368

(8)

When the Work is wrought Decimally, then you divide by 272 $\frac{1}{4}$, or 272,25, which gives the Quotient somewhat less. But the Measuring of Brick-Work may be shortened by having the Rod of 16 Feet $\frac{1}{2}$ centesimally divided into 100 equal Parts, with which you take the Dimensions, and the Length of the Wall in those Rods; and 100 Parts multiplied by the Height, give the Content in Rods, of any Wall that is a Brick and half Thick. Deduction must be made for Doors, Windows, *&c.*

A Table to reduce Brick-Work to Standard Measure, *i. e.* a Brick and a Half Thick.

Brick.			
1	Substract	$\frac{2}{3}$	
2	Add	$\frac{1}{3}$	
3	Multiply	2	Reduces to a Brick and Half.
$4\frac{1}{2}$		3	
5		4	

Example.

Suppose a Garden-Wall to be 254 Feet round, and 12 Feet 7 Inches high, and three Bricks thick; how many Rods doth it contain?

	254	In this Operation, the Aggregate, or Total, is multiplied by 2, because twice 3 is 6, the Number of half Bricks; and that reduces the Work to Standard-Measure, as by the Table above.
	12	
In.	3048	
6 $\frac{1}{2}$	127	
$1\frac{1}{2}$	21—2	
	3196—2	

272) 6392—4 (23, *&c.* Rods.

Of

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Of Chimnies.

This Brick Work is commonly agreed for by the Hearth, and alſo ſometimes by the Rod; and the Method of taking Dimenſions is thus: If the Chimney ſtands ſingly, not leaning againſt, or being in a Wall, and worked upright over the Mantle-tree to the next Floor; it is girt about the Breaſt for the Length, and the Height of the Story is taken for the Breadth, and the Thickneſs of the Jaumbs for the Thickneſs. But if the Chimney ſtands againſt, or in a Wall, which is before meaſured with the reſt of the Building; then the Breadth of the Breaſt or Front, together with the Depth of the two Jaumbs, is the Length; the Height of the Story the Breadth, and the Thickneſs of the Jaumbs the Thickneſs; but if the Chimney ſtands in the Corner of a Room, and have no Jaumbs, then the Breadth of the Breaſt is the Breadth, the Height of the Story the Length, and the Thickneſs the Thickneſs. And for the Shaft it is commonly girt in the ſmalleſt Part, for the length; and the Thickneſs of both Sides, for the Thickneſs; in Conſideration of the Widths, Pargiting, Scaffolding, *&c.*

Note, *There is nothing to be deducted for the Vacancy between the Hearth and the Mantle-tree, becauſe of the Widths and the Thickening for the next Hearth above.*

Arches are meaſured by taking the Breadth and half the Breadth of the Arch, and add them together; and then to multiply the total by the Length, for the Content in Thickneſs of the Arch.

Gable Ends.

Take half the Perpendicular for the Breadth, and the Width of the Houſe for the Length, or half the Width of the Houſe for the Breadth, and the Perpendicular for the Length; which brings the Meaſure to an Oblong, which is eaſily meaſured by multiplying the Length by the Breadth, *&c.*

Note, *A Perpendicular is a down or upright Line in the Work thus*; *There are ſeveral other Things in Bricklayers Work; as Cornice, Facias, Streight Arches, Scheme Arches, Hips and Valleys in Tiling, and Water-Courſes: All which are meaſured by the Foot-Lineal, or Running Meaſure. Alſo Peers, Pilaſters, Ruſtick Work, &c. which are valued by the Piece. Engliſh Prices in Sterling Money.*

	l.	*s.*	*d.*	
For Walls, finding Materials	5	00	0	*per* Rod,
Not finding Materials	1	00	0	ditto,

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Prices.	*l.*	*s.*	*d.*	
For Tyling, finding Materials ——	1	05	0	*per* Square.
Not finding Materials ——	0	05	0	ditto.
For Tyling, finding Materials (except Tiles) that is 15 Feet ſquare	0	10	0	*per* Rod.
For ſtripping without taking down —	0	05	6	ditto.
With taking down —— ——	0	07	0	ditto.
For Pointing —— —— ——	0	02	0	ditto.

Paving.

Pavement for Cellars, Waſh-houſes, *&c.* is meaſured by the Square Yard.

Example.

If a Cellar, Waſh houſe or Court-Yard, be paved with Bricks, or pitched with Pebble, being 9 Yards 2 Feet long, and 6 Yards 2 Feet broad; how many Yards ſquare doth it contain? *Anſwer*, 64 Yards 1 and 4 Feet, as by the following Work.

Yds.	*F.*		*Yds.*	*F.*
9	2		9	2
6	2		6 Yards 2	
54	0		58	0
6	0		3	2
4	0		3	2
	4		64	4
64	4	*Anſwer*		

Feet.
29
20
9)580
Yards 64⅘

Here the Anſwer is found by three different Operations, and the Reſult of each, to the ſame Amount, *viz.* by Croſs Multiplication, by Practice, *&c.*

Slating.

Is valued by the Square of 10; in ſome Places by the Rod of 18 Feet ſquare; that is 36 ſquare Yards, or 324 Feet.

☞ In Tyling and Slating, where there are Gutters and Valleys, there is commonly Allowance, which is to take the Length of the Roof all along upon the Ridge, which makes the

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the Gutter double Measure; which in some Places is allowed, in others not. Sometimes there is an Addition for hollow Ware, that is, Ridge Tiles, Gutter Tiles, Corner and Dormer Tiles; and here Customs differ: For in some Places they account one superficial Foot for every Foot lineal or running Measure; then 100 Feet lineal is reckoned a Square. In other Places, for every 100 of such Tiles they reckon one Square.

Plaistering.

Is of two Kinds, *viz. First*, Work lathed and plaistered, sometimes called Ceiling. *Secondly*, Plaistering upon Brick-Work, or between the Quarters in Partitioning, by some called Rendering; both which are measured by the Yard square, as the Joiners and Painters do. In taking Dimensions of Ceiling, if the Room be wainscoated, they consider how far the Cornice bears into the Room, by putting up a Stick perpendicular to the Ceiling, close to the Edge of the uppermost Part of the Cornice; and measure the Distance from the perpendicular Stick to the Wainscoat; twice which Distance must be deducted from the Length and Breadth of the Room taken upon the Floor, and the Remainder is the true Length and Breadth of the Ceiling. As suppose a Floor is 24 Feet long, and 18 Feet broad, and the Cornice shoots out 6 Inches; deduct a Foot for both Ends, and the Length of the Ceiling is 23 Feet; and the same for the Breadth; it leaves 17 Feet broad; which (if the Room be square) multiplied together, the Content is 391 Feet, or 43 Yards and a Half.

Example 1.

23 Feet the Length.
17 Feet broad.

161
23

9) 391. (43 Yards, 4 Feet.
36

31
27

4

If the Ceiling of a Room be 19 Feet 10 one Way, and 17 Feet 6 the other, how many square Yards doth it contain?

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By Croſs Multiplication, thus,

19 : 10
17 : 6

133
19
14 . 2
9 . 6
5

9) 347 . 1 (38 Yds. 5 Feet 1 Inch.

Example 2.

How many Yards ſquare are there in a Piece of Plaiſtering that is 47 Feet 4 Inches 7 Parts long, and 18 Feet broad?

F. I. Pts.

47—4—7
3 and 6

142—1—9
6

9) 852—10—6 (94 Yds 6 Feet, 10 Inch. 6 Parts, *Anſwer.*

In meaſuring Partitioning for Doors, Windows, and other Vacancies, there muſt be an Allowance or Deduction made, they being Deficiencies.

Prices per Yard in England.	*s.*	*d.*
For every Yard of common Plaiſtering, finding Laths, Nails, &c.	0	9
Not finding Laths	0	4½
For White-waſhing with Size	0	1½
Partitioning, finding all Materials	0	8

Maſons Work.

THE Maſons Work, conſiſting of Stone, is of two Sorts, *viz.* Superficial and Solid. Pavement, and the Face of Stone Walls, Houſes, &c. are meaſured as Brick work. If the Work have Ornaments, as Capitals, Pilaſters, Rails and Balluſters, &c. then they are valued by the Piece.

Engliſh Prices.	*s.*	*d.*
For every Foot of Plain Work in Walls, &c.	0	8
For plain Cornice, about	1	5

For

	s.	d.
For rough Stone Wall, with Lime, 16 Feet ½ long and 1 Foot high *per* Rod	1	2
Without Lime, *per* Rod	0	3
Paving, digging the Stone, and all Workmanship, *per* square Foot	0	3

Prices of Stone and Urns.

Rough Paving 1 *d. per* Foot; Rough Asher, or Coping, 1 *d.* ½ *per* Foot; Fine Asher 3 *d. per* Foot; Base *per* Foot 4 *d.* Carbe *per* Foot, 6 *d.* Urns 3 Feet high, 1 *l* 4 Feet high 1 *l.* 10 *s.* 5 Feet high 2 *l.* and 6 Feet 3 *l.*

Glaziers Work.

IT may be done thus; Multiply the Length in Inches and Parts, by the Breadth in Inches and Parts, and separate the Decimals (if any) as before shewn,

Example.

In. Pts.

A Piece of Glaising 29,5 long.
and 7,0 broad

144) 206,50 (1,5
144

So the Content is 1 f. 5 and ⅝ of an Inch.

12) 62 (5
60

(2)

Here, after the two Places are separated by a Comma, the Remainder is divided by 144, and then what remains by 12, *&c.*

Or thus, as if Shillings and Pence.

s. d.
2—5 ¼
7
F. I.
12) 17—0 ¾ (1,5 ¼ *Answer.*

An Expeditious Way.

When the Length of any Superficies, either of Board or Glass, is given in Feet, and the Breadth in Inches, then only multiply the one by the other, and divide by 12, and the Quotient will be the Answer in Feet, and the Re-

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Remainder will be the Parts of a Foot; as hath been ſpoken of before.

Example.

Admit a Window to be 15 Feet long, and 12 Inches broad.

12 Inches broad.

12) 180 (15 Feet Anſwer.

Of Board Meaſure.

WHENEVER the Breadth is given in Inches, and the Length of the Board in Feet, then only multiply one by the other, and divide the Product by 12, and the Quotient will be the Anſwer in ſquare Feet: But if the Breadth and Length be given both in Inches, then multiply one by the other, and divide by 144, and the Quotient will be the Anſwer in ſquare Feet.

Example 1.

Suppoſe a Board (or any other thing of flat Meaſure) be 15 Inches broad, and 16 Feet long, what is the Content in ſquare Feet?

192 Length in Inches.
15 Breadth in Inches.

144) 2880 (20 Feet.
288
(0)

15 Breadth in Inches.
16 Length in Feet.

90
15

12) 240 (20 Feet.
240

Here the Example is wrought both Ways, as aboveſaid, and the Anſwers are both alike.

Example 2.

Suppoſe a Board be 8 Inches and $\frac{1}{4}$ in Breadth, and 16 Feet long; what is the Content in ſquare Feet? The Work follows.

8 $\frac{1}{4}$ Breadth
4 and by 4

33
4

12) 132

Anſwer 11 Feet.

In this Example, I multiply by 4 and 4, the component Parts of the Ratio's of 16 the Length.

Example

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Example 3.

Again, admit a Board 17 Inches $\frac{3}{4}$ broad, and 28 Feet long, what is the Content?

17 $\frac{3}{4}$
7 and 4

124 $\frac{1}{4}$
4

12) 497

This Example is multiplied by 7 and 4, the Ratio's of 28 the Length.

Answer 41 Feet $\frac{5}{12}$

Once more by the other Way. Suppose a Board be 32 Inches broad, and 37 Feet, or 444 Inches in Length; what is the Content? 4 and 8 Breadth.

1776
8

144)14208 (98 Feet and $\frac{2}{3}$
1296

1248
1152

(96)

The Parts of a Superficial Foot is 144 *square Inches.*

Inches.
72 half a Foot
108 three Quarters.
126 three Quarters and half a Quarter.
36 a Quarter of a Foot.
18 half a Quarter.

In the last Work, I multiply 444, the Inches of the Length, by 4 and 8, the component Parts of 32, the Inches of the Breadth; and then divide the last Product by 144, and the Answer is 98 Feet, and 96 square Inches remain, which is two Thirds of a Foot.

Mr. *Darling*, in his Treatise of the *Carpenter's Rule*, hath with great Pains, (and no doubt with as great Care) given a great many Tables for the Answer of sundry Dimensions in Board and Timber Measure; but he measures best, that doth it experimentally by Arithmetick, by those short and easy Rules

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Rules before and hereafter mentioned, and takes not Things upon truſt; for tho' Tables may be right, ſo perhaps they may be alſo wrong (for Error is endleſs) and then to be wholly guided by ſuch Tables, it would be of ſad and very pernicious Conſequence; and if the Artiſt is ignorant of Arithmetick, he will be bewildered and plunged into inextricable Difficulties.——I muſt confeſs that Tables are of conſiderable Help in caſe of Expedition; but then you muſt be very well acquainted with them; otherwiſe I can in much leſs time caſt up the Dimenſions, than you ſhall be in finding out your ſeveral Numbers, and adding or ſubſtracting them, *&c.* No Man that is wiſe, ought to depend upon any Table for his Government, till he hath proved the Truth of every Line, and he that is able to do that, is capable of making any Table for his own Uſe; which if he takes care that it be correct, he is well provided, and need not be led into Error or Confuſion by falſe Tables.

Of Land Meaſure.

LAND is uſually meaſured by the Acre; the Dimenſions are taken with a Pole of 16 Feet and a Half; or a Chain called Gunter's Chain, conſiſting of 4 Poles in Length, and is divided into 100 equal Parts, called Links, anſwering to Decimal Arithmetick.

Note, 1 *Acre contains* 160 *ſquare Poles*; 1 *Rod or Quarter of an Acre*, 40 *ſquare Poles*.

Note alſo, *In any Number of Chains are ſo many* 100 *Links, as* 4 *Chains are* 400 *Links, and* 6 *Chains is* 600 *Links* &c. *In a ſquare Chain are* 16 *ſquare Poles; and if you divide* 160 *(the ſquare Poles in one Acre) by* 16 *(the ſquare Poles in a Chain) the Quotient is* 10, *the ſquare Chains in* 1 *Acre.*

A ſquare Chain contains 10,000 *ſquare Links, (or* 100 *multiplied by* 100) *and conſequently* 1 *Acre contains* 100,000 *ſquare Links.*

To meaſure a Geometrical, or True Square.

A Square is contained under 4 Equal Sides, and 4 Right Angles.

Let Figure 7, repreſent a ſquare Piece of Land to be meaſured, every Side whereof is 20 Poles; multiply 20 by 20, being both the Length and Breadth, and the Product

is

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is 400, for the Content in ſquare Poles, which divide by 160 (the ſquare Poles in 1 Acre) and the Remainder 80 by 40 (the ſquare Poles in 1 Rod) quotes 2 Acres, and 2 Rods for the Content, as in the Operation.

20
20

16|0)40|0(2 Acres
32

4|0)8|0(2 Rods.
80

(0)

Note, *The ſquare Root of the Area of any Square is the Side thereof; as in Fig.* 7, *the Area or Content is* 400, *whoſe ſquare Root is* 20, *the Side of the Square.*

To meaſure a Parallelogram, or Long Square.

A Parallelogram, is contained under 4 Right-angles, but not 4 equal Sides; yet the oppoſite Sides are equal.

Admit Figure 8, to be a Parallelogram, or Long-Square, whoſe Length is 21 Chains, 36 Links, and Breadth 11 Chains, 64 Links; what is the Content of that Piece of Land?

The Method of caſting up the Contents of any Dimenſions taken with Gunter's Chain, is to multiply the Chains and Links together, and cutting off 5 Figures towards the Right-hand, the Remainder on the Left-hand will be Acres; then multiply thoſe Figures towards the Right-hand by 4, and from that Product cut off 5 Figures as before; ſo will the Figure on the Left-hand be Rods: Again multiply the Remainder laſt cut off by 40, cutting off alſo from the Product 5 Figures to the Right-hand, and the Figures towards the Left-hand will be Poles; and if there be any Remainder it will be Decimal Parts of a Pole. So in the preſent Example, the Anſwer is 24 Acres, 3 Rods, 18 Poles, and $\frac{864}{1000}$ Parts of a Pole.

21,36

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21,36 Length
11,64 Breadth

8544
12816
2136
2136

Acres 24|86304
4

Rods 3|45216
40

Poles 18|08640

To meaſure a Rhombus.

A Rhombus or Diamond like Figure, is contained under 4 equal Sides, but not Right-Angles; yet the oppoſite Angles are equal.

Admit Figure 9 to be a Rhombus, whoſe Side is 16, and Perpendicular 14; which multiplied together, the Product is 224, for the Area.

To meaſure a Rhomboides.

A Rhomboides is contained under 4 Lines, whoſe oppoſite Sides are equal, and oppoſite Angles equal; yet not all equal Sides, nor any Right-Angles.

Admit Figure 10, to be a Rhomboides, whoſe Length is 22, and perpendicular, or parallel Diſtance, 8, which multiplied together, the Product is 176, for the Area.

To meaſure any Manner of Triangle.

Every Triangle is half that Long-ſquare, whoſe Length and Breadth is equal to the Perpendicular and Baſe. Therefore from the greateſt Angle, draw a Line perpendicular to the Baſe, which multiply by half the Baſe, and the Product is the Area.

Admit Figure 11 to be a Triangle, whoſe Baſe or longeſt Side is 26 Poles, and the Perpendicular 16 Poles, which multiply

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multiply together, and the Product is 416, for the Area of the Long-square *EFCB*, half of which is 208, the Area of the Triangle *ABC*.

Or if you multiply the Base 26, by 8 the half Perpendicular, the Product is 208, the Area as before.

Or else multiply half the Base 13, by the whole Perpendicular 16, the Product is 208 as before.

To measure a Trapezium.

A trapezium is contained under 4 unequal Sides, and 4 unequal Angles.

Admit Figure 12 represent a Field; to measure which draw the Diagonal *D B*; so is the Figure divided into two Triangles, which you may measure according to the last Example, by letting Perpendiculars fall from the Angles *A* and *C*, upon the Diagonal *D B*, which will be the Base Line to each Triangle.

But with more Brevity, you may add the two Perpendiculars together, and multiply the Sum of them by half the Base, and the Product will be the Area of the Trapezium.

Suppose the Sum of the two Perpendiculars is 22 Poles, and half the Base is 14 Poles, which multiplied together, the Product is 308, the Area in square Poles; or 1 Acre, 3 Rods, and 28 Poles.

To measure any irregular Piece of Land.

First, take care that the whole Plot be divided into Trapeziums and Triangles, according to your own Fancy, and the Nature of the Thing will bear; then measure those Trapeziums and Triangles, as is before directed, and add the several Contents together; so will the Sum be the Contents of that irregular Figure.

Admit Figure 13 represent a Field to be measured, which is divided into one Trapezium, and two Triangles, as the Figure directs.

Now to find the Content of this Figure, measure the Trapezium and Triangles as before directed, and add them together as followeth.

Trapezium	*FBCE*	234
Triangles	*ABF*	69
	ECD	46

The Area of the Figure *ABCDEF*, 340 square Poles.

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Of a Circle.

Figure the Fourteenth.

A Circle is contained under one Line, called the Circumference or Periphery; as *ABC*. All right Lines drawn from the Center *E* to the Circumference, are equal, and called Radius's, or half Diameters; and the long Line through the Centre from *A* to *C*, is the Diameter.

To divide a Circle into 6 equal Parts, extend the Compasses to half the Diameter, as from *A* to the Centre *E*, and the Extent will do it.

Half the Semi-circle of the Circle, that is, half of the Half of the Circle, is called a Quadrant, or Quarter.

If the Diameter of a Circle be 7 Inches, or 7 Feet in Length; then is the Periphery or Compass 22 Inches, or 22 Feet about.

Example 1.

If the Compass of a Circle be 66 Feet, what is the Diameter?

Multiply 66 by 7, and divide the Product by 22, and the Quotient gives the Diameter.

66
7
---
22) 462 (21 Feet, Answer:
44

22
22
---
(0)

Example 2.

If the Diameter be 21 Inches, what is the Circumference?

The Operation is just the Reverse, viz.

21
22

42
42
---
7) 462

Inches 66 *Answer.*

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If a Globe be 31 Inches $\frac{3}{7}$ in Compaſs, what is the Diameter?

Work'd Fractionally thus:

Say 7 times 1 is 7, and 3 the Numerator makes 10, o and carry 1; then 7 times three is 21, and 1 carried is 22: So the Product is 220 the Dividend; which divide by 22, agreeable to the Proportion before mentioned.

Example of Operation.

$31\frac{3}{7}$

7

22) 220 (10 *Anſwer*, 10 Inches Diameter.

(0)

Example 3.

Contra. If a Circle be 10 Inches Diameter, what is the Circumference?

The Work.

22

10

7) 220

$31\frac{3}{7}$ *Anſwer and Proof.*

To meaſure the ſuperficial Content of a Circle, either in Inches or Feet.

Rule, Multiply half the Periphery or Compaſs, by half of the Diameter, and the Product will be the Content.

Example.

Admit a round Table to be 14 Inches Diameter, and 44 ditto in Compaſs; what's the ſuperficial Content in ſquare Inches?

22 half the Compaſs,
7 half the Diameter.

154 *Anſwer.*

Or if the Diameter be ſquared or multiplied into itſelf, and that Product multiplied by 11, and the Reſult thereof divided by 14, gives the ſame Content.

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Example. 14 multiplied
by 14
produces 196
multiply by 11
196
196
divide by 43) 2156 (154 Quotient.
&c. as before.

Figure the Fifteenth.

To measure half a Circle or round Table, *viz.*

Rule. Square the Semidiameter *C D*, and that Product multiply by 22, and divide by 14 so the Answer is 77 square superficial Inches.

Inches.
7
7
49
22
98
98
14) 1078 (77

To measure the Quarter or Quadrant of a Circle.

Rule. Multiply the Line *CE* into itself, and proceed as before, but multiply the first Product by the Half of 22, *viz.* 11.

Decimally ought to be thus.

3,5
3,5
12,25
11
1225
1225
14) 13475 (9,62½
126
87
87
35
28
7

$3\frac{1}{2}$
$3\frac{1}{2}$
$10\frac{1}{2}$
$1\frac{3}{4}$
$12\frac{1}{4}$
By 11
14) $134\frac{3}{4}$ (9 In, $\frac{3}{4}$ of $\frac{7}{14}$
126
&c.

The

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The Decimal Work produces the ſame Anſwer as the other *viz.* ——— ——— ——— { 9, 62 / 100 } equal to half an Inch, and $\frac{7}{125}$ or half of half an Inch.

By theſe Methods may a Piece of Timber, that is half round, or a Quarter round, at the Baſe or End, be meaſur'd; that is, by multiplying the ſquare Inches at the End by the Inches of the Length.

Solid Meaſure.

IS that which hath Length, Breadth, and Thickneſs, as Timber, Stone, and ſuch like, which are meaſured by the Foot; and herein you are to obſerve, that a Foot of Timber or Stone, is accounted a Foot ſquare every Way, in the Form of a Dye, which hath ſix Sides.

The Rule for working is to multiply the Length and Breadth together, and that Product by the Depth or Thickneſs, and the laſt Product will be the Content in Cubick Inches; which if Timber or Stone, divide by 1728, (the Cubick Inches in a ſolid Foot) and the Quotient gives the Content in ſolid Feet.

Example.

Admit Figure the 16th to repreſent a Solid in Form of a Cube; whoſe Length, Breadth and Thickneſs, is 12 Inches; multiply 12 by 12, and the Product is 144, which multiplied by 12, the Product is 1728, for the Content in Cubick Inches: Hence it appears that a Cubick Foot is 12 Times more than a Superficial Foot; ſo that a Superficial Foot is 144 Inches, and a Cubick Foot 1728 Inches.

The Dimenſions of Timber are conſidered in Breadth, Thickneſs and Length; the Breadth and Thickneſs are commonly called the Square.

Note, The Parts of a Solid Foot, being 1728 Inches,

Three Quarters, Half, A Quarter, Half a Quarter } of a Foot is { 1296, 864, 432, 216 } Inches.

40 / 50 } Solid Feet of { round / hewn } Timber is a Tun or Load.

Example

Example:

If a Tree be 16 Feet long, and 18 Inches square, how many solid Feet doth it contain?

Multip. { 18 / 18 } = 324

16 / 12 = 192 the Length in Inches.

324 Breadth and Thickness.

768
384
576

1728) 62208 (36 Feet.
5184

10368
(0)

Decimally:

Square { 1,5 / 1,5 } = 225 Breadth

16 Length

36,00 *Answer.*

By Practice:

1—6
1—6

1—6
6 In. ½ 9

2—3
4 and 4

9—0

Feet 36—0 *Answer.*

Example 2.

Suppose there is given a Square Piece of Timber, whose Breadth is 2,25, and Thickness 1,64 Feet, and Length 36,5 Feet, how many solid Feet are contained therein?

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2,25 Breadth.
1,64 Thickneſs.

900
1350
225

3,6900
36,5

184500
221400
110700

134,68500 *Anſwer*, 134 ſolid Feet.

Example.

Suppoſe a Piece of Timber be 15 Inches ſquare; that is, 15 Inches broad, and 15 Inches thick, and 16 Feet, or 192 Inches long; what is the Content of that Piece of Timber or Stone (or any other thing that is to be meaſured by Cube or ſolid Meaſure) in ſolid Feet?

15 Broad.
15 Thickneſs.

75
15

225
192

450
2025
225

43200 ſolid In

1728)43200(25 Feet.
3456
8640
8640
(0)

So the Anſwer is 25 Feet of ſolid Timber in ſuch a Piece, or in ſuch a Stone or ſuch Dimenſions.

Or if you multiply the Content of the Square by the Length in Feet, and divide that Product by 144, the Quotient will give the ſame Content or Anſwer as before. See the following Work.

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15
15

225 the Square.
16 the Length.

144) 3600 (25 ſolid Feet the Content.

A ſecond Example in this, may be after the ſecond Example in Board Meaſure. That is, ſuppoſe a Piece to be 8 Inches one Quarter Square, and the Length 192 Inches; what is the Content?

1728) 13068 (7 *Anſwer.*
12096

972

Anſwer, 7 Feet and half, and 108 Cubic Inches.

Decimally.

8,25	68,0625 ſquare Inches
8,25	192 Length in Inches.
4125	1361250
1650	6125625
6600	680625
68,0625	13068,0000

Another Example. Suppoſe a Piece of Timber to be 17 Inches three Quarters Square, and 28 Foot long, what is the Content?

17 Inches three Quarters multiplied into itſelf Decimally, the Product will be 315,0625; which multiplied by the Length 336, the Product will be 105861, cutting off the four Cyphers, and the Anſwer will be 61 Feet, and 453 remains, being one Fourth of a Foot, and 21 Inches.

In ſuperficial or flat Meaſure, having the Breadth of a Board, or Piece of Glaſs given, to find what Quantity in Length it will take to make a Foot ſquare.

Rule. Only make the Breadth in Inches Diviſor to 144, the ſquare Inches in a ſuperficial Foot, and the Quotient will be the Length in Inches that will make a Foot.

Example.

If a Board be 8 Inches broad, what Length of that Board (or Piece of Glaſs) will make a Foot?

8) 144

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8)144

Answer, 18 Inches, or 1 Foot and a Half.

Again, If a Board be 16 Inches broad, what Length of it will make a Foot?

16)144 (9 Inches. *Answer*, 9 Inches.

This Method is manifestly true, from this Observation; that a Board a Foot, or 12 Inches broad, will require a Foot, or 12 Inches in Length, to make it exactly square, or 144 Inches. And this is known without Operation. By this Method, may a Table of Board or Glass Measure be proved.

Likewise in solid Measure to know what Length of the Piece of Timber will make a Foot solid, you must make the Inches squared Divisor to 1728, (the square Inches in a Foot solid) and the Quotient will be the Answer in Inches of Length, that will make a Foot solid.

Example.

If a Piece of Timber be 8 Inches square, what Length of it will make a Foot?

64) 1728 (27 — *Answer*, 27 Inches, or 2 Feet 3 Inches in Length.
128
448
448
(0)

Here the Square of 8 is 64, *&c.*

Again, Suppose a Piece be 18 Inches square, what Length will make a Foot? *Answer*, 5 Inches and one Third.

The Square of 18 is 324) 1728 ($5\frac{108}{324}$ equal to $\frac{1}{3}$.
1620
(108)

Once more: Admit a Piece of Timber be 2 Feet, 2 Inches square, *i. e.* 26 Inches square, which is, *&c.*

676) 1728 (2 Inches $\frac{376}{676}$ or $\frac{1}{2}$ *Answer.*
1352
(376)

So if a Piece be 10 Inches square, the Answer will be, that

17

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17 Inches and $\frac{28}{105}$ of an Inch is required for the Length. And thus may a Table of ſquare Timber be proved.

In meaſuring of round Timber, the common Way is to take $\frac{1}{4}$ of the Circumference for the true Square, but it is erroneous, and gives the Solidity ſome what leſs than the true Content: But the true Way is to multiply half the Diameter by half the Compaſs, and then that Product multiply by the Length, which divide by 1728, and the Quotient is the Content. If you cannot come to meaſure the End of the Piece, you may know the Diameter by this Proportion, *viz.* as 22 is to 7, ſo is the Compaſs to the Diameter. Or you may find the Square of a round Piece of Timber by this Rule, *viz.* multiply 3182 by the Inches of the Compaſs, and cut off 4 Figures to the Right-hand.

3182
In. 66 the Compaſs.
19092
19092
21|0012 *Anſ.* 21 In. and $\frac{0012}{10000}$

Having the Breadth and Depth of a Piece of Timber or Stone, to know how much in Length of it will make a ſolid Foot; multiply one by the other, and let it be a Diviſor to 1728, thus:

Inches.
24 broad.
18 thick.

192
24

432) 1728 (4 Inches in Length, *Anſwer.*
1728

And thus you may make a Table to ſerve all Breadths and Depths, by which much Labour may be ſaved in multiplying and dividing, and yet meaſure any Piece of Timber thereby very exactly.

The uſual Way for tapering Timber, is by this Method, *viz.* take the Dimenſions in the Middle, and multiply that by the Length; which, though ſomewhat falſe, yet, if done at ſeveral Lengths, as at every 5 or 6 Feet, it will be very near,

Digging

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Digging.

IS measured by the solid Yard of 27 Feet; that is, 3 times 3 is 9, and 3 times 9 is 27; by which are measured Vaults, Cellars, Clay for Bricks, *&c.* Other Things are measured by the Flore of 324 solid Feet.

Example.

If a Vault or Cellar be digged 9 Feet deep, 4 Feet $\frac{1}{2}$ long, and 3 Feet 9 Inches broad; what is its Content in solid Yards?

Feet.

4 $\frac{1}{2}$ long.
9 deep

40 $\frac{1}{2}$
3 *F.* 9 broad.

121 $\frac{1}{2}$
6 Inches $\frac{1}{4}$ 20 $\frac{1}{4}$
3 $\frac{1}{2}$ of 6 10

27) 151 $\frac{3}{4}$ (5 Yards 16 Feet $\frac{3}{4}$.

(16)

Example 2.

How many Yards of Digging will there be in a Vault that is 25 *F.* 4 long, 15 *F.* 8 broad, and 7 *F.* $\frac{1}{2}$ deep.

per 3 and 5 *F.* 8.

76—0
5

380—0
8—5 $\frac{1}{4}$
8 Inches $\frac{2}{3}$ 8—5 $\frac{1}{4}$ *F.* $\frac{1}{2}$ deep.

396-10 $\frac{1}{2}$
7

2778—1 $\frac{1}{2}$
$\frac{1}{2}$ 198—5 $\frac{1}{4}$

27) 2976—6 $\frac{3}{4}$ (110 *Yards, 6 Feet, and 6 Inches, $\frac{3}{4}$ Answer.*

27

(6)

Example

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Example 3.

There is a Mote that is 648 Feet long, 24 Feet broad, and 9 Feet deep; how many Flores?

648 long
24 broad

2592
1296

15552
9

divide by 324) 139968 (432 *Flores, Answer.*

&c.

(o)

Solid Bodies being frequently painted, it is neceſſary to know how to find their Superficiality. To find the Superficial Content of a Square, or many ſided or round Pillar; multiply the Sum of the Sides or Circumference by the Height in Feet; and the Product divided by 9, the Quotient will be all ſquare Yards.

Of a Globe.

Multiply the Circumference in Feet by itſelf, and then that Product by this Decimal ,0354, and this laſt Product will be the Content in Yards.

Note, A ſolid Yard ſquare of Clay will make about 7 or 800 Bricks; and the Price of making is 7 or 8 *s. Sterling* a Thouſand, 3 Bags (or Buſhels) and half of Lime, and half a Load of Sand, to laying 1000 Bricks.

500 Bricks
1000 Plain Tiles } make a Load.
25 Bags 1 C. of Lime.

To meaſure a Pyramid.

IF a Piece of Timber be right-lined, having but one Baſe, which is ſquare, and ends in a Point, it is called a Pyramid; the ſolid Content of which is found by multiplying the ſuperficial Content or Area of the Baſe, by one third Part of the Length. Or one third Part of the Area of the Baſe, multiplied by the whole Length, gives the Content alſo.

Example

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Example.

Suppose Figure the 17th, represent a Pyramid to be measured, whose Breadth at the Base is 5 Feet, and the Length 15 Feet; what is the Content in solid Feet?

5 } Side of the Base.
5 }

25 Area of ditto.
5 $\frac{1}{2}$ Part of the Length.

Answer 125 the Content in solid Feet.

To measure a Cone.

IF a Piece of Timber be right-lined, having Length, and only one Base, which is round, equally decreasing, and ends in a Point, it is called a Cone; the solid Content of which is found, by multiplying the Area of the Base, by one third Part of the Length; *where Note* (and likewise in the Pyramid) the true Length is from the Centre of the Base to the terminating Point.

Admit Figure the 18th, represent a Cone, whose Diameter at the Base is 5 Feet, and the Length 15 Feet; what is the solid Content?

5 } the Diameter.
5 }

25 the Square of do.
multiply by 11

divide by 14)275 (19 $\frac{9}{14}$
5 $\frac{1}{3}$ of the Length.

Answer 98 $\frac{3}{14}$ the solid Content.

This Method may serve for tapering Timber, or of any other Thing of the Shape represented in Figures 17 and 18.

The next necessary Qualification that I shall touch upon, to introduce a young Man into the Knowledge of Business, is to say something in Relation to the Art.

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Of Gauging.

THERE is a near Sort of Kindred or Affinity between the Art of Meaſuring of Timber, and that of Gauging or Meaſuring of Liquors; for both are performed by cube or ſolid Meaſure, and therefore not improper cloſely to follow one another: For as often as there are found 1728 ſolid or cubick Inches in a Piece of Timber (of what form ſoever) ſo many ſolid Feet is it ſaid to contain. So likewiſe in the Art of Gauging, ſo many Times as 282 (the ſolid Inches in a Beer, or Ale Gallon) are found in any Veſſel of ſuch Liquor, ſo many Gallons is ſuch a Veſſel ſaid to hold. And ſo of Wine; but in that the Diviſor alters, it being 231 ſolid or cubic Inches.

And the Gallon of Dry Meaſure, contains 271 $\frac{1}{4}$ cubical Inches.

Note, *Every cubical Foot in Beer or Ale Meaſure, contains 6 Gallons, and almoſt a Pint.*

The ſame in Wine Meaſure, is 7 Gallons, 2 Quarts, and almoſt a Pint.

A cubical Foot of dry Meaſure contains 6 Gallons, and ſomewhat above half a Gallon.

For 141 Inches make 2 Quarts of Beer or Ale; 70 Inches $\frac{1}{2}$ one Quart, and 35 Inches $\frac{1}{4}$ a Pint.

To find the Content of any Veſſel that hath the Form of a Cube, that is, a Figure whoſe Breadth, Depth, and Length, are all equal, and is very well repreſented by the Shape of a Dye commonly play'd withal.

Rule. Multiply the Side into itſelf, and then again that Product by the Side; which laſt Product, if for Beer or Ale, divide by 282, the Inches in a Beer or Ale Gallon; and for Wine, Brandy, *&c.* by 231, the cubical ſquare Inches contained in a Wine Gallon.

Example.

Suppoſe a Cube, whoſe Side is 79 Inches, I demand the ſolid Content in Beer and Wine Gallons?

79

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79
79
711
553
6241
79
56169
43687
493039 Cube Inches.

282) 493039 (1748 Beer or Ale Gal.
282 ...
2110
1974
1363
1128
2359
2256
(103)

Wine G.
231) 493039 (2134
462 ...
310
231
793
693
1009
924
(85)

To find the Content of a Parallelopipedon, which is a Figure contained under 6 Sides, of which the Oppofites are parallel, and of the Form of Figure the 19th.

Rule. Multiply the Length by the Breadth, and that Product by the Depth; and then divide by 282 for Beer or Ale, and 231 for Wine. *Example.*

Admit the Length of a Ciftern to be 95 Inches; and the Breadth 62 Inches, and the Depth 23 Inches; what is the Content in Beer and Wine Gallons?

95 Length.
62 Breadth.
190
570
5890
23 Depth.
17670
11780
135470 Cube Inches.

231) 135470 (586 Wine Gallons.
1155
1997
&c.
rem. (104).

282) 135470 (480 Beer Gallons.
1128
&c.
rem. (110)

To

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To Gauge a Back, or Square Tun.

Example.

Suppose its Length 112 Inches, Breadth 72 Inches, and its Depth 48 Inches; what is its Content in solid Inches, and also in Beer Gallons?

112 Length.
72 Breadth,

224
784

8064
48 Depth.

64512
32256

387072 solid Inches.

282)387072 (1372 Gal. *Ans.*
282

1050
846

2047
1974

732
564

(168)

To bring these Gallons into Barrels divide them by 36, the Gallons in a Barrel of Beer, thus.

36) 1372 (38
108

292
288

(4)

Answer, 38 Barrels and $\frac{4}{36}$ or $\frac{1}{9}$ of a Barrel; and as for the Remainder 168, it is something above half a Gallon.

To find the Content of any Right Cylinder in Gallons; that is, to compute the Content of any round Tun, Tub, &c. whose Diameters at Top and Bottom are equal, and at Right Angles with its Sides.

Rule. Square the Diameter, which Product multiply always by 11, and divide the Product by 14, and the Quotient will give the Content of the Tub at one Inch deep; then multiply the Quotient by the perpendicular Height of the Cask, and the Product is the Content in solid Inches.

Example.

Let Figure the 20th, represent a round Tub, whose Diameter is 72 Inches, and the Height 56 Inches, what is the Content in Beer Gallons?

72

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72
72

144
504

5184 the Square of the mean Diameter.
11

14) 57024 (4073
56··· 56 the Length.

102 24438
98 20365

44 228088 solid Inches.
42

(2)

The aforesaid solid Inches brought into Gallons, make 808, and 232 solid Inches remain, something above three Quarters of a Gallon; in all 22 Barrels, 16 Gallons, and $\frac{3}{4}$ of Beer.

To find the Content of any round Tun, or Tub, whose Diameters at top and Bottom are parallel, but unequal.

Rule. First square the two Diameters, then multiply the greater Diameter by the lesser, and to the Product add the two former Squares; multiply the Sum of these three by $\frac{1}{3}$ of the Depth, and divide the Product by 359 for Beer Gallons, or by 294 for Wine Gallons.

Example.

Suppose the Diameter at the Top be 30 Inches, the Diameter at the Bottom 36 Inches, and the Depth 24 Inches, what is the Content in Beer Gallons?

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The Square of 30 is ——— 900
The Square of 26 is ——— 676
30 multiplied by 26 ——— 780

The Sum is ——— ——— 2356
multiply by ⅓ of the Depth 8

divide by 359) 18848 (52 Gallons and ⅓.
1795

898
718

180

To gauge a Butt, Pipe, Hogſhead, Barrel or any other cloſe Caſk.

In order to perform this difficult Part of Gauging, the three following Dimenſions of the propoſed Caſk muſt be truly taken in Inches, and decimal Parts of an Inch, *viz.*

1. The Diameter at the Bung within the Caſk.

2. Either of the Head Diameters, ſuppoſing them both equal.

3. The Length of the Caſk within.

In taking of theſe Dimenſions, it muſt be carefully obſerved, that the Bung-hole be in the Middle of the Caſk; and that the Heads of the Caſk are equal and truly circular; if ſo, the Diſtance between the Inſide of the Chine, and the Outſide of its oppoſite Staff, will be the Head Diameter within the Caſk, very near.

Having taken the Dimenſions, the next Thing is to find ſuch a mean Diameter, as will reduce the propoſed Caſk to a Cylinder, which may be found by the following Rules.

Subtract the Head Diameter from the Bung Diameter, and multiply the Difference by 0,7, or by 0,65, or by 0,6, or by 0,55, according as the Staves are more or leſs arching; add the Product to the Head Diameter, and the Sum will be the mean Diameter required.

Note, The firſt of theſe four Rules, (*viz.* 0,7) is commonly uſed amongſt Gaugers for all Sorts of Caſks, but there are very few Caſks that will contain quite ſo much as this Rule will make it. But if the ſecond and third of theſe Rules (*viz.*

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(*viz.* 0,65 and 0,6) be duly applied, they will anſwer very near amongſt the common Sort of Engliſh made Caſks; and the fourth Rule (*viz.* 0,55) will come pretty near the Truth in computing the Contents of Caſks whoſe Staves are almoſt ſtrait betwixt the Head and the Bung, *viz.* ſuch as Wine Pipes, *&c.*

Having found the mean Diameter, the Content of the Caſk may be computed by either of the two following Rules.

Rule 1. Multiply the Square of the mean Diameter by the Length of the Caſk, and divide the Product by 359 for Beer Gallons, or by 294 for Wine Gallons. Or thus,

Rule 2. Multiply the Square of the mean Diameter by 11, and divide the Product by 14; then multiply the Quotient by the Length of the Caſk, and divide the Product by 282, for Beer Gallons; or by 231 for Wine Gallons.

C, S *Example.*

Admit Figure 20, repreſent a Hogſhead to be gauged, whoſe Bung Diameter is 31,5, Head Diameter 24,5 and its Length 42 Inches, what is the Content in Beer and Wine Gallons.

Diameter at the { Bung 31,5 / Head 24,5

The Difference 7,0
multiply by ,65

add { 4,55 / 24,5

the mean Diameter. { 29,05 / 29,05

the Square 843,9025
the Length 42

359)35443,905(98,729
3231, *&c.* *Anſwer*, 98 Beer Gallons, and $\frac{729}{1000}$ of a Gallon.
(,194)

294)35443,905(120,557
294. *&c.* *Anſwer*, 120 Wine Gallons, and $\frac{557}{1000}$ of a Gallon.
(,147)

Or

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Or thus, by the second Rule.

the Square 843,9025
multiply by 11

Divide by 14)9282,9275(663,066
84, &c. 42

282) 27848,772(98,754
2538, &c. Beer Gallons.

(,144)

231) 27848,772 (120,557
231, &c. Wine Gallons.

(,105)

To find the Quantity of Liquor remaining in a spheroidical Cask standing on its Head.

From the Area of the Bung Diameter, subtract the Area of the Head Diameter, and multiply the Remainder by the Square of the Difference between the wet Inches and the Semi-length, and this Product divide by the triple Square of the half Length, and subtract the Quotient from the Area of the Bung Diameter; then multiply the Remainder by the Difference between the wet Inches and the Semi-length, and the Product will be how much Liquor is contained in the Vessel above, or under its half Content.

Example.

Suppose { the Bung —— 40,8 / the Heads —— 35,3 / the Length — 61,8 / the Wet Inches 41,9 } what is the Content in Beer Gallons?

61,8

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61,8 the Length		11
30,9 the half Length		11
41,9 the wet Inches	are	121
30,9 the half Length		
11,0 the Difference:		
Area of the Bung Diameter	4,6362	
Ditto of the Head Diameter	3,4705	ſub.
	1,1657	
The Square of the Difference	121	
	11657	
	23314	
	11657	
The triple Sq. of the ½ Length 2865)	141,0479 (492	
	11460	

30,9	4,6362	Area of the Bung	26449
30,9	ſub. 492	the Quotient	25785
2781	45870		6647
9270	11		5730
954,81	50,4570		(917)
3			
2864,43			

131,25 the half Content of the Veſſel.
50,45 the Liquor qt. above the half Content.
181,70 the Quantity of Liquor qt. in the Veſſel.

To gauge any thing that hath the Shape of a wooden Hand-Bowl, as the Bottom of a round Copper, &c.

Admit the Bowl to be full of Water; the firſt Thing is to meaſure the Surface of the Water; that is done by multiplying half the Circumference by half the Diameter, and that gives the Content in ſuperficial ſquare Inches. Then find the Depth of the Water in different Places; then add thoſe Different Depths together, and divide the Total by the Number of Depths that you take, and the Quotient gives the mean Depth: When you have found the mean Depth, mul-

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multiply it by the Number of Inches that you found on the Surface of the Water, and the Product gives the ſolid Square Inches, which reduce to Gallons, as taught before.

Example.

Suppoſe the Circumference be 120 Inches, the half of which is 60 Inches, and the Diameter admitto be 60 Inches, the half of which is 30 Inches; and ſuppoſe the ſeveral Depths to be 7, 8, 9 and 10, which put together make 34 Inches; which divide by 4, the Number of Depths, quotes the mean Depth, *viz.* 8 $\frac{1}{2}$

60
30
1800
$8\frac{1}{2}$
14400
900
231)15300(66 *Anſwer*, 66 Wine Gallons, 3 Gal. above a Hhd.
1386
1440
1386
(4)

282) 15300 (and 54 Beer Gallons, or a Hhd.
1410
1200
1128
(72)

Some Uſes of the Square and Cube Roots.

Rule. THE Root of the Product of any given Number, is the mean Proportional ſought; ſo the mean Proportional between 16 and 64, will be 32; this is of good Uſe in finding the Side of a Square equal to any Parallelogram, Rhombus, Rhomboides, Triangle, or regular Polygon.

e. To find the Side of a Square equal to the Area of a given Superficies.

Rule. The ſquare Root of the Content of any given Superficies is the Side of the Square.—So if the Content of a given Circle be 160, the Side of the Square equal will be , or in Decimals 12,6411. 3.

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3. *The Area of a Circle being given, to find the Periphery.*

Rule. Say as 113 to 1420, or 1 to 12,56637; so is the Area to the Square of the Periphery—So if the Area of a Circle be 160, the Periphery will be found to be 44,84.

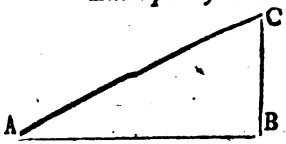
4. *The Area of a Circle being given, to find the Diameter.*

Rule, As 355 to 452, or as 1 to 1,273239, so is the Area to the Square of the Diameter.

5. *Any two Sides of a Right Angled Triangle being given, to find the third Side.*

In this useful Problem lies hid a great Part of the Mathematicks; it being asserted and proved, that the Square of the Hypothenuse, or longest Side of a Right Angled Triangle, is equal to the Sum of the Squares of the Base and Perpendicular, that is, the other two Sides.

Example by the Adjacent Figure.



Let the Base or Ground *B A* represent the Breadth of a Moat or Ditch, and the Perpendicular *B C* represent the Height of a Castle, Tower, or City Wall; and the Hypothenuse, or longest Side, represent the Length of a Scaling Ladder.

In this Figure, the Base *A B* is supposed to contain 40 Yards; and the Perpendicular, or Height of the Tower or Wall, 30 Yards; What length will the Hypothenuse *B C*, or the Scaling Ladder, be?

Rule. The Square Root of the Sum of the Squares of the Base and perpendicular, is the Length of the Hypothenuse, as *per* Work.

1600 the Square of the Base 40.
900 the Square of the Perpendicular 30.

The Sum 2500 (50 Yards the Root or Length of the Scaling Ladder.

25

(0)

And if the Length of the Base, or Breadth of the Ditch, were required; then the Square Root of the Difference of the Squares of the Hypothenuse and Perpendicular is the Length of the Base, or Breadth of the Ditch or Moat. Example *per* Work.

2500

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2500 the Square of the Hypothen. *A C*
900 the Square of the Perpendicular *B C.*

The Differ. 1600 (40 Yards the Root, or Breadth of the Ditch.
16
(0)

And if the Height of the Tower or Perpendicular *B C* were required; then the Square Root of the Difference of the Diſtance of the Square of the Hypothenuſe and Baſe, is the Height of the Perpendicular *B C*, repreſenting a Tower, a Wall, a Steeple, or any thing elſe.

Again, Any Number of Men given to be formed into a Spuare Battalia, to find the Number of Rank and File.

Rule. The Square Root of the Number of Men given, will be the Number of Men to be placed in Rank and File.

Example. Admit an Army of 32400 Men were to be formed into a Square Battalia; the ſquare Root of 32400 will be found 180; and ſo many Men muſt be placed in Rank and alſo in File.

The Uſes of the Cube Root are to find out a Proportion between like Solids, as Globes, Cylinders, Cubes, *&c.*

Example.

Suppoſe a Bullet of 8 Inches Diameter weigh 72 Pounds, what will a Bullet weigh whoſe Diameter is 4 Inches?

Rule. Since like Solids are in triple Proportion to their Sides, Diameters, Lines, *&c.* it holds; as the Cube of the Diameter given is to the Weight thereof, ſo is the Cube of the Diameter ſought to the Weight thereof; as *per* Work.

C D. *lb.* *C D.*
If 512 ——— 72 ——— 64
64

288
432

512) 4608 (9 Pounds.
4608
(0)

Example

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Example 2.

If a Ship of 100 Tons be 44 Feet long at the Keel, of what Length muſt the Keel be of a Ship that carries 220 Tons?

Say, as 100 is to the Cube of 44, that is, 85184; ſo is 220 to 187404,8; whoſe Cube Root is 57,225 the Length of the Keel ſought. *Example* 3.

There is a Cubical Veſſel whoſe Side is 12 Inhces, and it is required to find the Side of a Veſſel that holds three times as much. Here the Cube of 12 is 1728, which multiplied by ——————————3

produces 5184

and the Cube Root of which is 17,306 the *Anſwer* required, or Side ſought.

An eaſy Rule to find the Length of the Maſts of a Ship, viz.

Two Thirds of the Length of the Keel, and the Breadth of the Beam, is the Length of the Main-maſt; and the Rule is therefore, to multiply the Length of the Keel by 2, and to divide the Product by 5, and then to the Quotient add the Breadth of the Beam, and the Total is the Length of the Main-maſt. *Example.*

Suppoſe a Ship to be 108 Feet by the Keel, and 40 Feet by the Beam, what is the Length of her Main-maſt?

108

2

3) 216

Add { 72 two Thirds of the Keel.
40 the Breadth of the Beam.

Anſwer 112

Anſwer, The Length of her Main-maſt is 112 Feet as in the Work. *Again.*

Admit a Ship to be 84 Feet by the Keel, and 31 Feet by the Beam, what is the Length of her Main-Maſt?

84 per Keel.

2

3) 168

Add { 56 two Thirds of the Keel.
31 the Breadth of the Beam.

Anſwer, 87 Feet, the Length of the Main-Maſt.

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If you divide first by 3, and then multiply the Quotient by 2, it gives the two Thirds of any Thing as well as the other Way.

Another Way to find the Length and Thickness of Masts in Yards, viz.

The Way to find the Length of the Main Mast, is to add the Breadth of the Beam, and the Depth of the Hold together, and divide the Total by 1,5 and the Quotient will be the Length of the Main-Mast in Yards.

Example.

Admit a Ship whose Keel in Length is 73 Feet, and the Breadth of the Beam 28,5 Feet, and the Depth of the Hold 12 Feet, what is the Length of the Main-Mast?

Feet.	
28,5	Breadth of the Beam.
12,0	Depth of the Hold.

1,5) 40,5 27 Yards *Answer.*
30

105
105
(0)

Answer, 27 Yards, or 81 Feet, as *per* Work.

Or if, instead of Dividing, you multiply by this Multiplier, *viz.* ,6666 and point off the Decimals, you will have the same Answer.

Example.

40,5 Here the Answer is 26
,6666 Yards and $\frac{18}{27}$ of a Yard,
——— not wanting one Second
,33330 to make it 27 Yards, as
266640 before.

26,99730

Here multiply under by the upper Number to save both Figures and Room.

To find the Thickness of the Mast, having the Length, say, by the Rule of Proportion (or Rule of Three) If 84 Feet long require 28 Inches thick, what 81 Feet long? as in the following Work.

F. I.

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F. I. *In. thick.* *F. I.*
If 84 —— 28 —— 81.

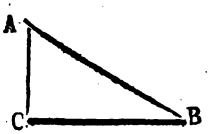
81

648
162

84) 2268 (27 Inches thick Anſwer.
168

588
588

(o)



By *Trigonometry*, or the Doctrine of Triangles, are a Multitude of Queſtions ſolv'd, relating to Sailing on the Seas; to give one Inſtance. Suppoſe two Ships ſet Sail at one time, from one Place, the one ſailing directly Eaſt 48 Leagues, as from *C* to *B*; and the other directly North, as from *C* to *A*, 36 Leagues; the Queſtion is, how many Leagues are they diſtant or aſunder one from the other?

48 multiplied by 48, produces —— 2304
36 multiplied by 36, gives —— 1296

which two Numbers added, give for Total 3600 (60
the ſquare Root of which is 60; and ſo many Leagues are the two Ships aſunder or diſtant one from the other. 36

Here the Diſtance of each Ship's Sailing is ſquared, and their Squares added together, and the Total is 3600; the ſquare Root of which is 60, and the Anſwer to the Queſtion, as in the Work.

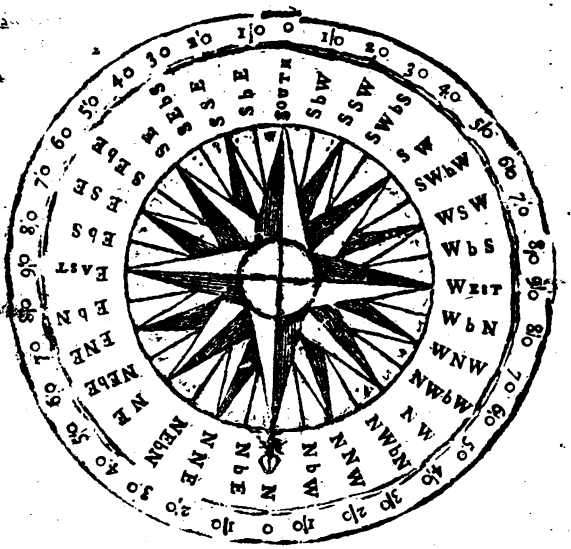
And being here ſpeaking ſomething relating to Sea Affairs, it may not be improper to ſay ſomething concerning the Mariner's Compaſs.

Before the Invention of this excellent and moſt uſeful Inſtrument, it was uſual in long Voyages to ſail by, or keep along the Coaſt, or at leaſt to have it in Sight; as is manifeſt and plainly evident, by the Voyages of St. *Paul, Acts* xx. 12; and 27; which Courſe made their Voyages long,

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and very dangerous, by being ſo near the Shore. But now, by the Help of a Needle touched by the Magnet or Load-ſtone, which by a wonderful and hidden Quality, inclines its Point always Northerly, the ingenious Mariner is directed in his proper Courſe of Sailing, through the vaſt Ocean, and unfathomable Depths, to his intended Port: And if the Wind is favourable, can ſail near 333 Leagues, or 1000 Miles in a Week, tho' in the darkeſt Weather, or darkeſt Night, when neither Land, Moon, nor Stars, are to be ſeen; which before, were the only Guide; and, if not ſeen, the Sailors were at great Loſs, and expoſed to the moſt imminent Danger.

Behold the Figure or Repreſentation of the ſaid Compaſs, with the Cardinal and other Winds that followeth.



The Deſcription.

1ſt, The Cardinal Points are, the *North*, *South*, *Eaſt* and *Weſt* Points of the Horizon. The Needle in the Center, points with its principal End to the *Flower-de-luce*, and ſhews its Direction Northerly: And the ſaid *Flower-de-luce* is alſo placed in Maps to the ſame intended Purpoſe.

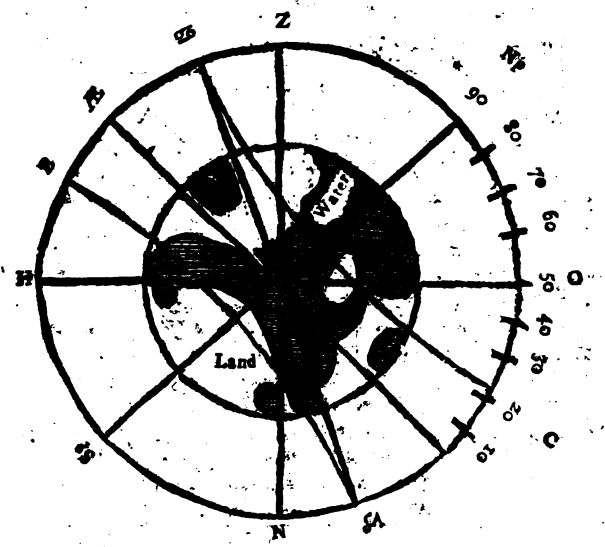
2dly,

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2*dly*, The Letters *N* by *E* on the Right of the ſaid *Flower-de-luce*, ſignifies, and is to be read *North by Eaſt*; and the next after it *N N E*. that is, *North North Eaſt*; and the next *N E* by *N*. to be read *North Eaſt by North*; and ſo round the Circumference, which Mariners uſually have by Heart, particularly the Pilot, who guides the Ship accordingly; and ſometimes he is helped by the Sight of the North Pole Star when on this Side the Equator; and by the South Pole, on the other Side.

The next Thing I ſhall proceed to, is to give the Senſe and Meaning of ſome few Terms uſed in Dialing, Geography, &c.

A ſmall Repreſentation of the Globe.



The *Poles* of the Equinoctial (commonly called the Poles of the World) are two fixed Points in the Heaven, oppoſite one to the other; one pointing to the North, which is therefore called the North, or Artic Pole, marked with the Letters N. P. and the other pointing Southward, and therefore is called the South, or Antartic Pole, marked with S. P.

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The *Axis* of the World, is a Line imagined to pass through the Center of the Earth from one Pole to the other, as the Line N. P. S. P.

The *Equinoctial* in the Heavens, or Equator on the Earth, is an imaginary great Circle of the Sphere, which divides it into two equal Parts, to which the Sun apparently comes the 10th of *March* and 12th of *September*, and then makes equal Day and Night; it is noted by the Letters Æ. Q.

The *Ecliptick* is a great Circle intersecting the Equinoctial in two oppofite Points, the Beginning of *Aries*, and the Beginning of *Libra*, and makes an Angle therewith of 23 Deg. 29 Min. represented by the Line ♋ ♑: It is divided into 12 equal Parts called Signs, each containing 30 Deg. which are as follow.

Aries	♈		*Libra*	♎	
Taurus	♉		*Scorpio*	♏	
Gemini	♊	called Northern Signs.	*Sagittarius*	♐	called Southern Signs.
Cancer	♋		*Capricornus*	♑	
Leo	♌		*Aquarius*	♒	
Virgo	♍		*Pisces*	♓	

The *Zodiack* is a Zone or Girdle, having about 9 Degrees in Breadth on each Side of the Ecliptick, and limits the Latitudes of the Planets in their Revolutions.

The *Meridian*, from Meridies, Noon or Mid-day, is a Circle passing through the Poles of the World, exactly in the Middle between the East and West; to which when the Sun comes every Day it is Noon. The Stars are also said to be South, when they are upon the Meridian.

The *Tropicks* are two Circles parallel to the Equinoctial, and 23 Degrees 29 Min. distant therefrom, being the Bounds of the Sun's greatest Declination North and South. The North Tropick is marked with ♋ C, called the Tropick of Cancer; and the South Tropick with B ♑, called the Tropick of Capricorn.

The *Zenith* or Vertex is an imaginary Point in the Heavens directly over our Heads, as Z.

The *Nadir* is the Point oppofite to the Zenith, and directly under our Feet, as N.

The *Horizon* is a great Circle 90 Deg. distant from the Zenith and Nadir, which encompasses the Earth exactly in the Middle, and appears to every One standing in an open Plain, to divide the visible from the invisible Part of the Heavens. It determines the Rising and Setting of the Sun, Moon, and Stars, in any particular Latitude; as H, O.

The

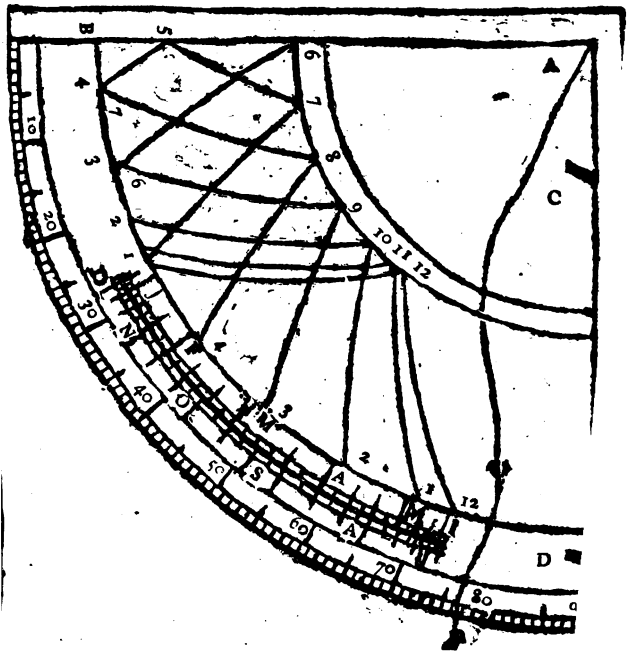
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The Latitude in Geography, or on the Earth, is the Heighth of the Pole of the World above the Horizon, which is always equal to the Arch of the Meridian between the Zenith and Equinoctial.

Longitude on the Earth, is an Arch of the Equator, contained between the Meridian of the Place where the Longitude is aſſigned to begin, and the Meridian of any other Place, and is accounted Eaſterly and Weſterly.

Every Circle circumſcribing the Earth, or Terreſtrial Globe, is ſuppoſed to be divided into 360 equal Parts, called Degrees; each of which is accounted 60 Miles; and if you multiply 90 the Quadrant or Quarter of the Globe, by 60, the Product will be 5400, which multiplied by 4, gives 21600 Miles for the Circumference of the Earth and Sea.

The next Thing I ſhall proceed to, is to ſay ſomething in relation to the Art of making Dials: But it may, and is very proper, to deſcribe and ſpeak of the Uſe of a very neceſſary Inſtrument called a *Quadrant*, the Shape of which is here repreſented.



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This Quadrant, or Quarter of a Circle, is variously useful, on sundry Accounts, *viz.* to take Heighths and Distances, whether accessible or inaccessible; to find the Hour of the Day, &c.

Its Description.

The outward Arch is divided into 90 Parts or Degrees, (being the fourth Part of the Circle of the Sphere) and figur'd from 10, 20, *&c.* to 90; above which Figures, are Letters signifying the 12 Calender Months of the Year, as *J.* for *January*, *F.* for *February*, *&c.* And again, over those Letters for the Months are Lines to know the Hour of the Day: And upon the Line *C D*, are Sights of thin Brass to be spied through, or for the Sun to shine through, from one to the other. Lastly, in the Middle, or Point of the Quadrant, *viz.* at *A*, is a Line or Thread of Silk fixed through a Hole, with a Plummet of Lead at the End of it, and also a small Bead in the Middle.

Some of the many Uses of this Instrument are as follow.

Of Heighths.

Suppose you would know the Heighth of a Steeple, Tower, or Tree; hold up the Quadrant, and view through the Sights the Top of the Steeple, Tower or Tree, and then step forwards or backwards, till you find the Plummet hang at Liberty just at 45 Degrees, that is, just in the Middle of the Quadrant; then is the Heighth of the Steeple, Tower, or Tree, equal to the Distance of your Standing-place from the Bottom of the Steeple, adding for the Heighth that you hold the Quadrant from the Ground.

If the Plummet intersect one Quarter of the Quadrant, or 22 Degrees and a Half, then twice the Distance of your Standing is the Heighth; and if three Quarters of the Quadrant, or 67 Degrees and a Half, then Half the Distance of your Standing is the Heighth.

To find the Hour of the Day.

Lay the Thread just upon the Day of the Month, then hold it till you slip the small Bead or Pins-head to rest on one of the 12 a Clock Lines; then let the Sun shine from the Sight at *C* to the other at *D*, the Plummet hanging at Liberty, the Bead will rest on the Hour Line of the Day.

To find the Latitude of a Place.

Hold up the Quadrant, and thro' the Sights thereof (or along the Edge) spy (in a clear Star light Night) the North-Pole

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Pole Star; the Plummet hanging at Liberty, the Thread will reſt on the Degrees of Latitude of the Place you be in, or where you take your Obſervation. If at *London*, you will find it 51 Degrees and 32 Minutes. If at *Briſtol*, 51 Degrees 27 Minutes. If at *York*, 53 Degrees 58 Minutes; and if at *Berwick*, 55 Degrees 54 Minutes, *&c.*

When it is ſaid that ſuch a Kingdom, Country, City, Town, or Place, lieth from 40 to 50 Degrees North Latitude, it is to be underſtood, that it lieth on the North Side of the Tropick of *Cancer*, or North Boundary of the Sun towards *England*, to which the Sun comes about the 10th or 11th of *June*, and makes our Days the longeſt. And about the 10th or 11th Day of *December*, the Sun enters the Tropick of *Capricorn*, its South Boundary, and is then the farthest from us, and makes our Days the ſhorteſt.

Of Dialling.

Dialling is a very ancient Art, even as old as the Time of King *Hezekiah*, where mention is made of the Dial of *Ahaz*, in the 2d Book of *Kings*, Chap. xx. Verſe 11.

The Gnomon or Subſtile of a Poſt or Horizontal Dial, ſhould point directly South, and its Back will be then directly North. The South may be truly known by a good Watch or Clock, juſt at Noon; for then the Sun is always at the Meridian; and makes juſt 12 o'Clock; ſo that knowing the South, it will not be difficult to find the North, it being its Oppoſite.

To fix a Dial North and South.

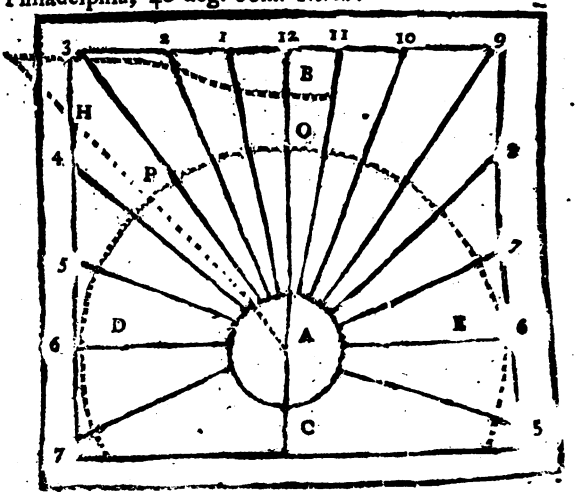
Faſten your Board on the Top of a Poſt, and then with your Compaſſes make 4, or 5, or 6 Circles, one within the other, from the Center or Middle, where place a large Pin perpendicular or upright, and nicely obſerve when the Sun ſhines in the Forenoon, on which Circle the Head of the Pin ſhadoweth; then there make a Mark; and do the ſame in the Afternoon, when the Shade of the Pin's Head comes on the ſame Circle; and from the Mid-way of the two Marks, draw a Line to the Center, on which place your Meridian or 12 o'Clock Line; ſo will the Poſt Dial point North and South.

By the Meridian Line, you may alſo know when the Moon, or a Star of Magnitude, comes to the South; which when they do, they are always at the higheſt, whether by Night or Day.

But

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But to proceed to Dialling, the following Figure repreſents an Horizontal Dial, deſcribed for the Latitude of Philadelphia, 40 deg. oom. *North.*



Firſt, Draw the Meridian or 12 o' Clock Line *B A C*, and croſs the ſame with the Line *D E*, at right Angles in the Point *A*, which muſt be the Center of your Dial, and the Line *D E*, is the 6 o' Clock Line; then take with your Compaſſes 60 Degrees from a Line of Chords, and with that Extent, ſetting one Foot in the Center at *A*, with the other deſcribe the Circle *D O E*, which done, take from the ſame Line of Chords, all the Hour Arches in the following Table; and placing one Foot of your Compaſſes in *O*, (where the Circle croſſes the Meridian) with the other, ſet off the Hour Arches both Ways upon the Circle *D O E*.

Latitude 40 Degrees North.

Hours. Fore-noon.	Hours. After-noon.	Hour. Arches D. M.
11	1	9 46
10	2	20 22
9	3	32 44
8	4	48 4
7	5	67 22

Againſt

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Againſt 11 and 1, is 9 Degrees and 46 Minutes, which take with your Compaſs from the Line of Chords, and ſetting one Foot in the 12 o' Clock Line at *O*, with the other make a Mark in the Circle both Ways; then draw ſtreight Lines from the Center *A*, croſſing the Circle in thoſe two Marks, and you will have the true Hour Lines of 11 o' Clock in the Forenoon, and one in the Afternoon. Then to draw the Hour Lines of 10 and 2 o' Clock, look in the Table for 10 and 2 Hours, againſt which you will find 20 Degrees and 22 Minutes, which take from the Line of Chords, and mark as the other from the 12 o' Clock Line both Ways on the Circle. The ſame is to be done for 9 and 3 o' Clock; and alſo for 8 and 4 o' Clock; and the like for 7 and 5 o' Clock.

Note, *For 5 o' Clock in the Morning, and 7 in the Afternoon, which are below the 6 o' Clock Line, ſet off the ſame Diſtance as 5 and 7 above it.*

Laſtly, For the Heighth of the Gnomon or Stile, take from the Scale of Chords the Poles Elevation, which at *Philadelphia* is 40 Degrees, and ſet that Diſtance from *O* to *P* on the Circle, then draw the dotted Line *A P H*, which ſhall repreſent the upper Edge or Heighth of the Stile, to be erected over the 12 o' Clock Line, and ſo your Dial is finiſhed.

Of Upright Planes.

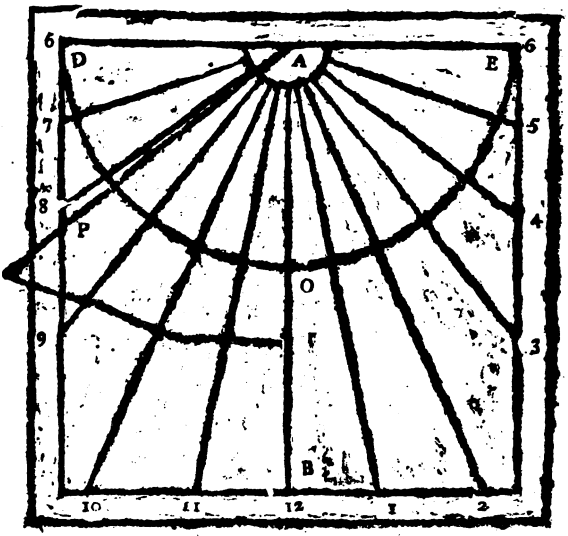
THOSE Planes are ſaid to be Erect or Upright which ſtand perpendicular to the Horizon of the Plane, whoſe upper Part pointeth to the Zenith, and their lower Part to the Nadir; and ſuch are the Walls of Houſes, Churches, Steeples, *&c.* againſt which Dials are commonly made.

Of Upright or Erect Planes, there are two Sorts, *viz. Direct* and *Declining*.

How to draw the Hour-Lines on a Direct South Plane, in the Latitude of 40 Degrees, as deſcribed in the following Repreſentation.

Firſt,

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First, draw the Meridian or 12 o'Clock-Line *A B*, and croſs it with the Line *D E*, for the 6 o'Clock-Line, then with your Compaſſes take 60 Degrees from a Scale of Chords, and placing one Foot at *A*, (where the 6 o'Cock Line croſſes the Meridian) with the other draw the Semi-Circle *D O E*.

Next for the Hour-Arches, you muſt take them out of the following Table, and project them into the Dial, after the ſame Manner as in the Horizontal, only in this you muſt inſert but 12 Hours.

Latitude 40 Degrees North.

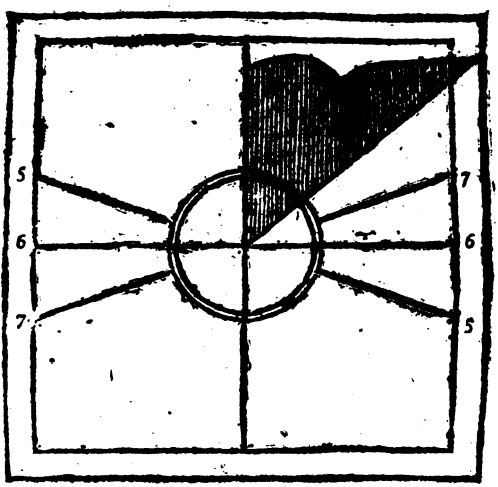
Hours. Fore-noon.	Hours. After-noon.	Hour. Arches D. M.
11	1	11 28
10	2	23 51½
9	3	52 33
8	4	37 00
7	5	19 17

Laſtly

Lastly, for the Heighth of the Stile, take from the Scale of Chords 50 Degrees (the Compliment of the Poles Elevation at *Philadelphia*) and setting that Distance from *O* to *P*, on the Semi-Circle, draw the dotted Line *A P H*, which shall represent the Heighth of the Stile as in the Figure.

In making this Dial, you make two Dials; for the Erect Direct North Dial, is but the Back-side of the South; for as this beholdeth the South Part of the Meridian; so the other faceth the North Part of the Meridian; and as the Meridian Line in the South Dial shews when it is 12 a Clock at Noon, so the Back-side thereof, *viz.* the North-side, represents the Hour Line at 12 a Clock at Midnight, and therefore not expressed, nor the Hour-lines of 8, 9, 10, 11 at Night, or of 1, 2, 3, or 4 in the Morning, the Sun being never seen by us above the Horizon at those Hours: So that the North Dial is capable of only receiving the Hours of 5, 6, and 7 in the Morning, and 5, 6, and 7 in the Afternoon, and (in this Latitude) not all of them neither; for it shines not in this Plane at 8 a Clock in the Morning, nor at 4 in the Afternoon.

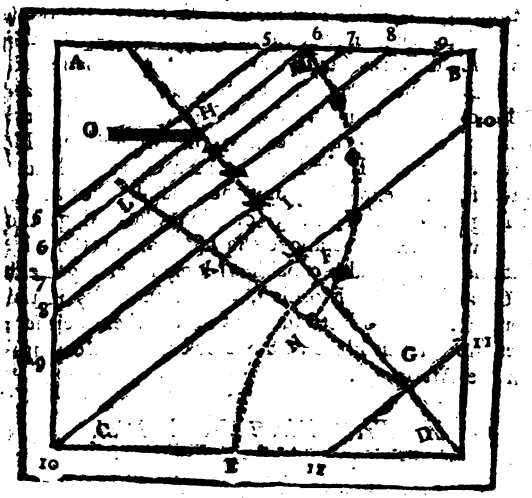
An Erect Direct North Dial.



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To draw Hour-lines on an Erect Direct East or West Plane——Hour-lines in these Dials must be parallel to one another, and the Dial not have any Center, but drawn as follows.

An East Direct Dial, in Latitude 40 Degrees.



Let *ABCD* be the Dial Plane, on which is to be drawn a Direct East Dial, upon the Point *D*, if an East Dial; and on the Point *C*, if a West. With the Radius (or 60 Degrees) of the Line of Chords, describe the obscure Arch *E F*; then from your Chords take 50 Degrees, the Compliment of the Latitude of the Place, and set them from *E* to *F*, and draw the Line *D F* quite through the Plane; then that you may proportion the Stile to the Plane, so that you may bring on all the Hours from Sun-rising to 11 a Clock, assume two Points in the Line *F D*, one towards the End *D* (as the Point *G*) for the Hour Line of 11, and another at *H*, for the Hour Line of 6; and thro' the Points *G* and *H*, draw the Lines 11 *G* 11, and 6 *H* 6, then set one Foot of the Compasses at *I* (open'd to 60 Degrees) and describe the obscure Arch *I K*; from your Scale of Chords take 15 Degrees, and set them from *I* to *K*, and draw the Line *G K*, extending it to the 6 a Clock Line in the Point *L*; so shall *L H* be of the Heighth of the Perpendicular Stile proportioned to this Plane.

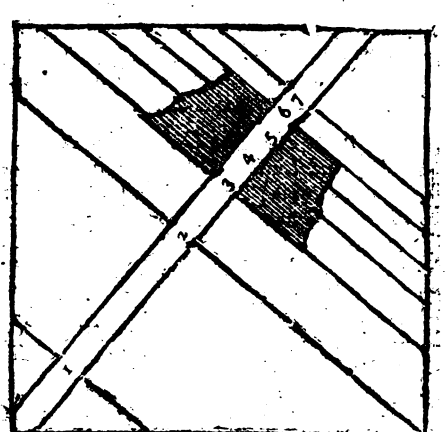
For

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For the drawing of the Hour-lines, set one Foot of the Compasses (opened to 60 Degrees of the Chords) in *L*, and with the other describe the Arch *M N*, between the Hour-line of 6, and the Line *G L*; which divide into five equal Parts in the Points ⊙ ⊙ ⊙ ⊙ ⊙ and a Ruler laid from the Point *L*, to each of these Points ⊙ ⊙ ⊙ &c. will cut the Equinoctial Line *H I* in the Points * * * * *; thro' which Points draw Lines parallel to 6 *H* 6, as the Lines 7 * 7, 8 * 8, &c. as may be seen in the Figure.

And thus you have made two Dials, *viz.* a West Dial as well as an East; only the Arch *E F*, through which the Equinoctial passeth in the East Dial, is drawn on the Right-hand of the Plane; but in the West it must be drawn on the Left; and the Hour Lines 5, 6, 7, 8, 9, 10, and 11 in the Forenoon, on the East Dial, must be 7, 6, 5, 4, 3, 2, and 1 in the Afternoon, upon the West Dial, as in the Figure.

An Erect and Direct West-Dial.



The Stile of the East or West-Dials, may be either a streight Pin of the just Length of the Line *H O* in the other Figure, which is equal to *H L* in the East-Dial fixed in the Point *H*, on the Hour Line of 6, and exactly perpendicular to the Plane, shewing the Hours by the Shadow of the Apex, or very near the Top thereof: Or it may be a Plate of Brass of the same Breadth with the Distance of the Hour-lines of

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6 and 3; which Plate muſt be ſet perpendicular upon the Hour Line of 6, and ſo it will ſhew the Hour by the Shadow of the upper Edge thereof, as in the foregoing Weſt Dial.

An eaſy Way how to fix a Dial North and South.

Fix a ſquare Piece of Board like a Trencher on the Top of a Poſt, and with your Compaſſes draw 4, 5 or 6 Circles, one within another from the Center; in which Center fix a large Pin perpendicularly, and when the Sun ſhines in the Forenoon, note which Circle the Pin's Head ſhadeth, and there make a Mark: Do ſo in the Afternoon, when the Shadow of the Pin's Head comes on the ſame Line; and from the Midway of thoſe two Marks, draw a Line to the Center; upon which Line lay your 12 a Clock or Meridian-line of your Poſt Dial, becauſe it directly points North and South. Thus by this plain Way, without any other Inſtrument, find the Situation of your Dwelling, whether full North or South, or whether it declines Eaſt or Weſt, &c.

Of Beautifying and Colouring Dials.

FIRST, the Boards are to be bruſhed over with Linſeed Oil, thinly ground with Spaniſh Brown, done over three or four times (drying between each time) a little thicker each time with the Colour; and this is called *Priming*.

To make the Fat Oil for Dials.

Boil Red Lead, and Linſeed Oil, and a little Litherage of Gold (about a Pennyworth) together, till almoſt as thick as Syrup; and when cold, and well ſettled, pour the cleareſt into a Bottle or Bladder for Uſe.

The Gold Size for Dials.

Mix fine ground yellow Oker with the aforeſaid fat Oil, to ſuch a Conſiſtency, as when uſed, it may ſettle ſmooth of itſelf.

A Mixture for Hour-Lines.

Grind Vermilion or Lamp-Black with the fat Oil.

To draw Golden Letters or Figures for the Hours.

Firſt draw them with a Pencil dipped in the Gold Size before mentioned; which when ſo dry as juſt to ſtick to your Fingers, then with a ſmooth-edg'd Pen-knife ſhape your Leaf-Gold to your Mind; take it up with a Piece of Cotton Cloth fixt to the End of a Stick, and lay it on the Size, preſſing it down with the ſame Cotton, and when dry, bruſh off the looſe Gold with a Feather, and ſmooth the rough Edges

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Edges of the Letters with a Pencil dipped in red or black Colour.

Of the Dial Plane.

Let the Board be of the best season'd, finest, clearest Oak, one, two or more Feet square, and about three Inches thick: Take two Boards, and get them planed on both Sides, and then laid in the Sun-shine, or near a moderate Fire 2 or 3 Days together; then plane them again, and fix them with good Joints; and fasten them in gluing with wooden Pegs, as I have seen Coopers fix their Pieces of Heading for their Casks; and when thus glued and dried, plane them again, and then fasten them, by nailing two small Plates of Iron or Tin on the Back. If you cannot get season'd Wood, but green, then boil it about an Hour in Water, to make it tough, and keep it from warping. In the general, Wood is accounted better than Stone, because it keeps the Colouring more stanch or firm.

Before you colour your Dial-plate or Board, fix your Iron Stile, and having marked your Hour-lines with Ink, and fastened a Nail at the End of each Hour-line, that the Head of each Nail may shadow or direct you to the Center when it is coloured; and as it may happen that Golden Letters or Figures may decay in a few Years, you may on that Account make them with White-lead Paint, pointed with Red in a Black Margin.——When your Dial is finished, and dry, dip a Feather in your Oil, and anoint it thinly; for the finer you mix or grind the Colouring with the Oil, the more beautiful it appears, though not so lasting.

These Hints of Colouring Dials, puts me in mind of some other necessary Touches, relating to sundry Mixtures of Colours and dying of Stuffs, &c. collected from Mr. *Salmon*'s *Polygraphy*.

Of Colours and Dying.

Whites, are Ceruse, Flake-white, and White-lead.

Blacks, are Lampblack, burnt Cherry-stones, and old Ivory burnt.

Reds, are Red-lead, Vermilion, Red Oker, and Indian Lake.

Greens, are Verdigrease, Verditer, and Sap-green, made of the Juice of Buckthorn Berries.

Yellows, are Saffron, yellow Pink, and Gambogia.

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Brown, is Umber burnt.

Gold Colour, is Orpiment.

Again, *Verdigreaſe*, with a little Sap-green, makes a good and a right Green.

Blues, are Ultamarine, Smalt, Indigo, and Blue Bice.

Of mixing Colours.

Colours are mixt by being ground on a Stone with fair Water, ſeverally, and dried and kept in Paper Bags for Uſe; except Lamp-black, Saffron, Smalt, Gambogia, and Sap-green.

Blue; to compound, temper a little Indigo and Smalt with Oil.

A light Blue; mix Smalt and White-lead together.

Red Colour, mix Lamp-black, and White-lead together on a Marble.

A Fox Colour, is Umber burnt.

Gold Colour, is Orpiment mixt with fat Oil, by a Knife on an Earthen Plate, or Gally-Tile rather.

To hinder Colours from cracking, put Oil of Walnuts to them.

Yellow Colour; beat Saffron to Powder, and ſteep it in Vinegar.—Or take the Yellow Chives in white Lillies and Gum Water mixt for Writing.

Red; Vermilion with Gum Water mixt for Writing.

Golden Letters; to write, mix Vermilion and Gum Armoniack with Yolks of Eggs.

Of Dying Woal, Stuffs, &c.

To die *Blue*, Take Woad 1 Pound, and mix it with 4 Pints of boiling Water, and dip Whites in it 24 Hours.

To die *Red* of a clear Colour, take 60 Pints of Water wherein Brann has been ſteeped 24 Hours, and when ſtrained, diſſolve 2 Pound of Allom, and 1 Pound of Tartar; in which Water boil what you have to dye for 2 Hours; then take it out, and boil it in half as much freſh Water made of Brann, *viz.* 30 Pints; to which add Madder 3 Pound, and ſo perfect the Colour with moderate Warmth, without Boiling.

To die *Green*, Firſt make a Yellow by the Direction underneath; then take 60 Pints of Water wherein Brann hath been ſoaked, as aforeſaid, then ſtrain it, let 3 Pound of Allom be diſſolved in it, and then boil what you have to dye for 2 Hours.

To

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To dye *Yellow*, Take Woad 2 Pound, of the ſaid Water of Brann, and boil till the Colour is good.

And if you would have the ſaid *Yellow* to be *Green*, put the Stuff into the aforeſaid *Blue Lye*.

To dye a *Sad Colour*, add Logwood to the *Black Dye* before-mentioned.

To dye Linen or Thread, *&c.* like Red: Take Powder of Brazil and Vermilion, of each 1 Ounce, boil'd in Allom-water.

To dye Linen or Thread Yellow; diſſolve Gambogia in Allom Water, *&c.*

To ſtain Skins blue; Boil Eldern Berries, and with the Liquor brush over the Skins, and wring them; then boil the Berries in Allom-water, and wet them twice over.

A Hint of Generals, or Things proper to be known and remember'd on proper Occaſions.

A Ream of Paper 20 Quires.
A Quire of Paper, 24 or 25 Sheets.
A Bale of Paper, 10 Reams.
A Roll of Parchment, 5 Dozen, or 60 Skins.
A Dicker of Hides, 10 Skins.
Ditto of Gloves, 10 Dozen Pair.
A Laſt of Hides, 20 Dickers.
A Load of Timber unhewed, 40 Feet.
A Chaldron of Coals, 36 Buſhels.
A Hogſhead of Wine, 63 Gallons.
Ditto of Beer, 54 Gallons.
A Barrel of Beer, 36 Gallons.
Ditto of Ale, 32 Gallons.
A Groſs, 144, or 12 Dozen.
A Weigh of Cheeſe 256 Pounds.
Days in a Year, 365. Weeks, 52, and Hours, 8766.
Pence in a Pound 240, Farthings 960.
An Acre of Land, 160 Square Poles or Perches.
A Laſt of Corn or Rape-ſeed, 10 Quarters.
Ditto of Pot-Aſhes, Cod-fiſh, White-herrings, Meal, Pitch and Tar, 12 Barrels.
Ditto of Flax and Feathers 17 C. of Gun-powder 24 Barrels, or 2400 lb. of Wool 4368 lb.
A Tun of Wine, 252 Gallons, Oil of Greenland, 252 Gallons; and ſweet Oil of Genoa, 236 Gallons.
A Tun in Weight, 20 C. of Iron, *&c.* but of Lead there is but 19 C. and a Half, called a Fodder or Pother.
A Todd of Wool, 28 Pounds.

Pack

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A Pack of ditto, 364 Pounds.
A Load of Bricks 500; and of Plain-Tiles, 1000.
A Stone of Fish, 8lb. and of Wool 14lb. the same for Horseman's Weight, and also Hay; but Pepper, Cinnamon, and Allom, have but 13 lb. $\frac{1}{2}$ to the Stone.
Ditto of Glass, 5 Pounds; and a Seam of ditto, 24 Stone.
A Truss of Hay, 56 Pounds, and a Load of ditto, 39 Trusses.

Note, *New* Hay *in* June *and* August *ought to be* 60 *Pounds to the Truss; as per Statute of* 2 *of* William *and* Mary, 1693.

A Cade of Red Herrings, 500; and of Sprats, 1000.
Iron and Shot, 14lb. to the Stone.

Barrels of sundry Commodities.

Anchovies, 30 lb.	Raisins, 1 C. wt.
A double Barrel, 60 lb.	Oil, 31 Gallons and Half.
Nuts or Apples, 3 Bushels.	Spanish Tobacco, 2 C. to 3 C.
Pot-Ash or Barrilla, 200 lb.	Gun Powder, 1 C. wt.
White or Black Plates, 300.	Soap, 240 lb.
Candles 10 doz. lb.	Butter, 224 lb.
Salmon or Eels, 42 Gall.	Herrings, 32 Gallons.
Figs, 3 qrs. 14 lb. to 2 C. $\frac{1}{4}$	

Things in Wholesale Trade, bought and sold by the Thousand.

Cuttle Bones.	Bricks.
Oranges and Lemmons.	Clinkers, or Flanders Tiles.
Chair Nails.	Billets and Leaves of Horn.
Tacks and Tenter Hooks.	Barrel Hoops.
Pomgranates and Tazels.	Squirrel Skins.
Goose Quills and Thimbles.	Slat and Hilling Stones.

Pins and small Needles, by the 1000 Dozen.

Things sold and bought at Six Score to the Hundred.

Bauks and Barlings,	Nails, Eggs, and Cod-fish, Cole, Ling, and new Land-fish, Stock-fish of all Sorts.
Barrel and Pipe-Boards.	
Bomspars and Bow-staves.	
Canspars and Caprevans.	Ells of Canvas, and most Foreign Linnens.
Herrings and Deal Boards.	
	And Hhd Staves.

Of *Money.*

THE Current Coin of *England*, is made either of Copper, Silver, or Gold. Of *Copper* is made the Farthings and Half-pence. Of *Silver*, the Pennies, Two-pences,

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pences, Three pences, Groats, Six-pences, Shillings, Half-crowns, and Crowns: But there is very little Silver coined below the Six-pence. Of *Gold* is made the Half-Guinea, the Guinea, and the 5 Guinea Piece: Besides, there are Foreign Pieces of Gold, that pass, tho' with some Scruple, as the *Portuguese Moidore*, at 27 *s.* and the Milled or *French Pistole* at 18 *s.* There are also some few ancient Pieces of Gold of a pale Colour, as being alloyed with Silver, and therefore may be reckoned the best, and sometimes called Angel or Crown Gold; whereas the old Gold or Broad Pieces are mostly alloy'd with Copper, which makes them of a reddish Colour.

Imaginary Money.

We appropriate several Names to Money, of which there is no Coin; as,

	s.	*d.*
The Pound of —— —— —— —— ——	20	0
The Mark —— —— —— —— ——	13	4
The Noble, or half Mark —— —— ——	06	8
The Angel, or —— —— —— ——	10	0

In *England* and its Colonies, Accounts are kept in Pounds, Shillings, and Pence; and their Marks are derived from their Names in Latin, *viz.* *l.* for *Libræ* or Pounds, *s.* for *Solidi* or Shillings, *d.* for *Denarii* or Pence, *qr.* for *Quadrantes* or Farthings, 4 making a Penny; and expressed or set down thus.

l.	*s.*	*d.*	*qr.*
4	16	8	2

but better thus, *l.* 4 16 8 $\frac{1}{2}$; the Mark for Pound standing before the Sum denominates the first Number, and the others are known of course; for after Pounds follow Shillings, and after Shillings succeed Pence, *&c.* When the Price of any Thing is Shillings and Pence, it is set down thus;

s.	*d.*
4	6

or thus, 4/6: And when Shillings and Pence, and Parts of a Penny, expressed thus,

s.	*d.*
4	6$\frac{1}{2}$

or thus, 4/6$\frac{1}{2}$. The latter Way by some is accounted the neater, and best Method to express Parts of a Penny or Farthings; thus,

$\frac{1}{4}$ a

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¼ a Farthing, or one fourth Part of what it follows.
½ a Half-penny, or one Half of what it follows.
¾ three Farthings, or 3-4ths, or qrs. of what it follows.

And being thus set Fraction-wise the under Figure shews how many Parts the Quantity before it is divided into, and the upper Figure shews how many of those under Parts the Fraction stands for; as thus, ½ of an Ell, ¾ of a Foot or 9 Inches, and the same of a Shilling is 9 Pence; of a Pound is 15s.

If you are to set down 6 Yards and a Half, write thus, $6\frac{2}{C}$ Yds.

Nineteen Hundred three Quarters thus, $19\frac{3}{lb.}$

Sixteen Pounds and a Quarter thus, $16\frac{1}{lb.}$

or else thus, 16 C. ¼, 16 lb. ¼, 5 Feet ½, 14 Days ¾. Here the Name is put between the whole Number and the Fraction, which I think is the plainer and better Way: For Example, 6½ Hhd may through Ignorance or Wilfulness, be read, 6 Half Hhds, as well as 6 Hhds and a Half; and at a certain Place where I have had Business, the Wharfingers Clerks express'd their half Hhds in this Manner.

A Table of the Value of Gold and Silver.

		l.	*s.*	*d.*
Gold	1 Pound is worth	48	0	0
	1 Ounce	4	0	0
	1 Penny Weight	0	4	0
	1 Grain	0	0	2
Silver.	1 Pound is worth	3	0	0
	1 Ounce	0	5	0
	1 Penny Weight	0	0	3
	1 Grain	0	0	¼

Instrumental Arithmetick.

AS Problems or Questions in Measurement, *&c.* are solved or answered arithmetically by the Pen, so are they also instrumentally taken by Compasses from certain Lines, *&c.* or Rules made for that Purpose, for the Help of those that are deficient in Arithmetick, or for a quicker Dispatch of Business; and such Performances are called *instrumental Arithmetick*; and of the Instruments, the most in

Vogue

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Vogue or Uſe, are theſe Three: 1. The Carpenter's Plain Rule. 2. *Gunter*'s Line. 3. *Coggeſhall*'s Sliding Rule.

1. *The Carpenter's Plain Rule.*

I ſhall deſcribe and ſay ſomething of the *Carpenter's Plain Rule in relation to its Uſes, &c.*

Its Deſcription.

This Rule is made uſe of in meaſuring Board and Timber, being two Foot in Length, and divided into twenty four Parts or Inches, and every one of thoſe Parts or Inches ſubdivided into half Inches, and each of theſe Halves into Quarters, and each Quarter into two Parts; ſo that every Inch is divided into eight Parts, and the whole Length into 192 *Parts.*

This Rule is well known, and therefore not abſolutely neceſſary of Repreſentation, but however, for the better underſtanding it, I ſhall give one thus;

Under Board Meaſure thus deſcribed,

1	2	3	4	5	6	7
12	6	4	3	2	2	
0	0	0	0	4	0	

This Line begins at 6, and goes on to 36, within 4 Inches of the End of the Rule on the Right hand.

In. deep.	*Its Uſe. Feet.*	*In.*	*Pts.*	
1	12	0	0	A Board be in Length make a Foot Square.
2	6	0	0	
3	4	0	0	
4	3	0	0	
5	2	4	5	
6	2	0	0	

By this Table it is manifeſt, and eaſily underſtood, That a Board of 4 Inches requires 3 Feet in Length to make a Foot Square, and a Piece of 3 Inches broad will require 4 Feet in Length to make a Foot Square, *&c.*

At the other End of this Rule is a Table called *Under Timber Meaſure*; and thus deſcribed.

I

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1	2	3	4	5	6	7	8	——
144	36	16	9	[illegible]	4	2	2	[illegible]
0	0	0	0	9	0	11	3	

This Line begins at 8 and a Half, and goes on (by Divisions) to 36.

If a Piece of Timber be

In. Square.	*Feet.*
1	144, 0
2	36, 0
3	16, 0
4	9, 0
5	5, 9
6	4, 0
7	2, 11
8	2, 3

in Length make a solid Foot.

By this Table it is plain, That if a Piece of Timber be 6 Inches Square, then 4 Feet in Length of that Piece will make a solid Foot.

It is a common Method with Carpenters, to add the Breadth and Thickness of a Piece of Timber in Inches together, and call the Half thereof the Square of that *Piece*; but this Method gives the Content more than it is; and the greater the Difference, the larger the Error: But the true Square may be found in *Gunter's Line*, thus; place one Point of the Compasses upon the Line for the Thickness, half Way of that Extent, and that will be the true Square in Inches.

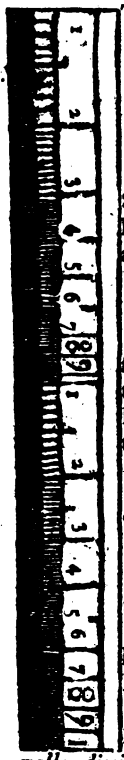
2. *Gunter's Line.*

This Line is commonly set on the Carpenter's plain Rule, and consists of two Lines, one set at the End of the other, and Distances taken by Compasses, as aforesaid; and it is somewhat of the following Form.

Gunter's

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Gunter's Line.



To prove the Line by the Compasses, observe,

1 to 2	equal	2 to 4
5 to 10	Distance	4 to 8
4 to 8	to	3 to 6

To number on the Line.

Observe, That the Figures 1, 2, 3, 4, 5, 6, 7, 8, 9, sometimes signify themselves simply or alone; at other Times 10, 20, 30, 40, &c. Again, at other Times, 100, 200, 300, or 1000, &c.

To find a Number on the Line, as suppose 134.

For the Figure 1, account 1 on the Line; and for 3, take 3 of the large Divisions; and for 4 take 4 of the smaller Divisions; and that is the Point. Again, to find 750 on the Line; for 7 take 7 on the Line, for 50 take 5 of the great Divisions, and that is the Point.

To find a small Number on the Line, as suppose 12.

For 1, take 1 as before, and for 2, take 2 of the large Divisions, and that is the Point.

In measuring Board or Timber, it is best to have a Line of 2 Foot long, and Compasses one Foot long.

Note, *Let the Measurement be by the Inch, Foot, Yard, Pole, Rod, &c. it is best to have it decimally divided, or so supposed, that is, into* 10 *Parts, as the Measurement should require, and on the Carpenter's Rule, the Foot so divided.*

Note also, *That if the Point of the Compasses fall off the Line in the Work, remove it to the same Figure or Place on the other Line; and the lesser Extent you take with the Compasses is frequently the best.*

Multiplication by the Line.

To multiply 5 by 7, set one Foot of the Compasses in 1, and extend the other to 5 upwards, and with the same Extent place one Foot in 7, and the other Foot will fall on 35, the Answer.

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Diviſion by the Line.

Example 1. Divide 63 by 3 : extend from 3 to 1 downwards, and the Extent will reach the ſame Way from 63 to 21, the Quotient.

N. B. *In multiplying you muſt always extend upwards, that is, from* 1, *to* 2, 3, *to* 4, &c. *and on the contrary, in dividing extend downwards.*

Example 2. Divide 288 *l.* equally among 16 Men : Extend from 16 to 1 downwards ; and that Extent will reach the ſame Way, from 288 *l.* to 18 *l.* for each Man.

Again.

Example 3. Suppoſe 750 *l.* were to be divided among 25 Men ; extend from 23 to 1 downwards ; and that Extent will reach the ſame Way, from 750 to 30 *l.* each Man's Share.

The Rule of Three Direct.

Example 1. If a Buſhel of Barley coſt 3 *s.* what will 40 Buſhels coſt ? Extend from 1 to 3 upwards, and that Extent will reach the ſame Way from 40 to 120 *Shillings*, the Anſwer.

Example 2. If one Ell of Holland coſt 3 *s.* 6 *d.* what will 40 Ells coſt ? Extend from 1 to 3 and a Half upwards ; and that Extent the ſame Way will reach from 42 to 140 *s.* the Anſwer.

Rule of Three Inverſe.

Example 1. Admit the Buſhel of Wheat to be worth 3 *s.* 4 *d.* or 40 *d.* and then the *Two-penny* Loaf to weigh 20 *ox.* what ſhall the ſaid *Two-penny* Loaf weigh when Wheat is worth 5 *s.* the Buſhel ? Extend from 60 to 20 downwards, and that Extent the ſame Way will reach from 40 to 13 Ounces and $\frac{1}{2}$ for the Anſwer.

Example 2. If 136 Workmen fortify a Place in a Month or 28 Days, how many muſt be employed to do it in eight Days ? Extend from eight downwards, to 136, and that Extent the ſame Way will reach from 28 to 476 Workmen, the Anſwer.

The Uſe in Board Meaſure.

Example. If a Board be 9 Inches broad, and 19 Feet long, what is the Content in ſuperficial Square Feet ? Extend from 12 (the Center of Foot Meaſure) to 9 downwards,

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wards, and that Extent the same Way will reach from 19 to 14 and $\frac{1}{4}$.

In Timber Measure.

Example: A Piece of Timber 24 Inches square, and 8 Feet long, what is the Content in solid Feet? Extend from 22 (the Center) to 24 upwards, and that Extent twice the same Way will reach from 8 to 32 Feet, the Content.

Brick Work.

How many Rods of Work are there in 4085 Feet? Extend from 272 downwards to 1, and that Extent the same Way from 4085, will reach to 15 Rods, the Answer.

3. *Coggeshall's Sliding Rule.*

The next Instrument I shall speak of, is that which goes by the Name of *Coggeshall's Sliding Rule.* And first of

Its Description.

This Rule is framed 3 Ways, sliding by one another as the Glasiers Rule; sliding on one Side of a two Foot Joint Rule; and one Part sliding on the other, in a Foot of Length; the back Part being flat, on which are sundry Lines and Scales.

Upon the aforesaid sliding Side of the Rule, are four Lines of Numbers, three are double Lines; and one a single Line of Numbers, mark'd (as in the Representation by and by annexed) with *A B C* and *D*, the three marked *A B* and *C*, are called double Lines of Numbers, and figured 1, 2, 3, 4, 5, 6, 7, 8, 9. Then 1, 2, 3, 4, 5, 6, 7, 8, 9, and 10 at the End. That marked *D*, is the single Line of Numbers, and figured 4, 5, 6, 7, 8, 9, 10, 20, 30, and at the End 40, even with and under 10, in the double Line next to it, and that is called the Girt Line, and so marked in the Figure.

The Figures on the three double Lines of Numbers, may be increased or decreased at Pleasure; thus one at the Beginning may be called 10, 100, 1000; the 2 is 20, 200, or 2000; so that when 1 at the Beginning is 10, then 1 in the Middle is 100, and 10 at the End is 1000; but if 1 at the Beginning is counted for 1, then 1 in the Middle is 10, and 10 at the End is 100.

And as the Figures are altered, so must the Strokes or Divisions between them be altered in their Value, accord-

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ing to the Number of the Parts they are divided into; as thus from 1 to 2, 'tis divided into 10 Parts, and each Tenth is divided into 5 Parts; and from 2 to 3, it is divided into 10 Parts, and each Tenth into 2 Parts, and so on from 3 to 5; then from 5 to 6 it is divided into 10 Parts only; and so on unto 1 in the Middle of the Rule, or the first Part of the double Line of Numbers. The second Part or Radius is divided into the like Radius.

The Girt-line marked *D*, is divided from 4 to 5 into 10 Parts, and each Tenth into 2 Parts, and so on from 5 to 10; and then from 10 to 20, it is divided into 10 Parts, and each Tenth into 4 Parts; and so on all the Way from 20 to 40 at the End, which is right against 10 at the End of the double Line of Numbers.

The Lines on the back Side of this Rule that slide on one Side, are these, *viz.* a Line of the Inch Measure from 1 to 12, each divided into Halves, Quarters, and Half Quarters; another Line of Inch Measure from 1 to 12, each divided into 12 equal Parts, and a Line of Foot Measure, being 1 Foot divided into 100 equal Parts, and figured 10, 20, 30, 40, 50, 60, 70, 80, 90, and 100, even with 12 on Inch Measure.

And the back Side of the sliding Piece is divided into Inches, Halves, Quarters, and Half Quarters, and figured from 12 to 24, so that it may be slid out to 2 Foot, to measure the Length of a Tree, or any Thing else you have Occasion to measure.

The Use of the Double Scale.

Example 1.

Suppose there is a Geometrical Square, whose Sides are 3 Feet $\frac{1}{2}$ each; set one Foot on the Line *B*, to $3\frac{1}{2}$ on the Line *A*; and then against $3\frac{1}{4}$ on the Line *B*, is 12 Feet $\frac{5}{4}$ on the Line *A*, which is the Content of such a Square,

F.	*Pts.*	
3	6	
3	6	Arithmetically.
10	6	
1	9	
12	3	Proof.

In

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In this Work by Arithmetick I multiply 3 *F.* 6 Parts by 3, and it produces 10 Feet 6 Inches; then I take the Half of 3 *F.* 6 for the 6 Inches (by the Way of Practice) becauſe 6 Inches is the $\frac{1}{2}$ of 12, *&c.* Again, ſuppoſe there is a Board 27 Feet and $\frac{1}{2}$ long and 16 Feet $\frac{1}{4}$ wide, what is its Content?

$27\frac{1}{2}$		*F. Pts.*
The Area 446 Feet, *&c.*	16 $\frac{1}{4}$	27,50 Length.
		16,25

Anſwer 446,8750 Prod.

Suppoſe the Side of a Rhombus to be 8 Feet 6 Inches $\frac{1}{4}$, and the Breadth, or Line *A B*, 8 *F.* 4 $\frac{1}{2}$, what is the Content? Set 1 Foot on the Line *B*, to 8 Feet $\frac{52}{100}$ on the Line *A*, then againſt 8 Feet $\frac{52}{100}$ on the Line *B*, is 71 Feet $\frac{40}{100}$ Parts, or a Foot on the Line *A*. And to know the Value of the Decimal, or Part of the Foot, look for $\frac{40}{100}$ on the Rule, and you will find againſt it 4 Inches $\frac{1}{4}$, ſo that the Content of this Rhombus is 71 Feet 4 Inches $\frac{1}{4}$.

Again, Suppoſe the Length of a Rhomboides to be 17 *F.* 3, or 17 $\frac{25}{100}$, and the Breadth 8 *F.* 7, or 8 $\frac{58}{100}$ what is the Content? Set 1 Foot on the Line *B*, to 17,25 on the Line *A*, then againſt 8,58 on the Line *B*, is 148 Feet on the Line *A*. The Figure hath been preſented before, and operated arithmetically, therefore here unneceſſary.

To meaſure a Triangle by the Rule.

Every Triangle is Half of that long Square, whoſe Length and Breadth are equal to the Perpendicular and Baſe; therefore from the greateſt Angle or Corner let fall a perpendicular Line to the oppoſite Side (as hath been ſaid before) of the Baſe, and to find its Content take Half the Length of the Baſe, and the whole Perpendicular, or $\frac{1}{2}$ the Length of the Perpendicular, and the whole Baſe, and then multiply, *&c.*

Example.

Let the Baſe of a Triangle be 4 Feet 1 Inch $\frac{1}{4}$, and the Perpendicular 2 Feet 1 $\frac{1}{4}$; the Half of the one, is 2 Feet 7 Parts; and of the other, 1 Feet 7 Parts. Set one on the Line *B*, to 4,15 on the Line *A*; then againſt 1,07, Half the Perpendicular on the Line *B*, is 4 Feet, and almoſt $\frac{1}{4}$ a Foot, for the Content. Or if you ſet 1 on the Line *B*, to

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1,07 on the Line *A*, againſt 4,15 on the Line *B*, is 4, and almoſt $\frac{1}{2}$ a Foot on the Line *A*.

Again, another Way. If you ſet one on the Line *B*, to 4, 1 on the Line *A*, then againſt 2,15 on the Line *B* is 8 Feet $\frac{9}{10}$ (which is about 11 Inches) on the Line *A*, the Half whereof is 4 Feet 5 Inches $\frac{1}{2}$, which is the Content of the Triangle.

Of the Girt Line.

Suppoſe the Diameter of a Circle be 2 Feet $\frac{25}{100}$ what is its Content? Set 11 on the Girt-line *D*, to 95 on the double Line *C*; then againſt 2 Feet $\frac{25}{100}$ on *C*, the Girt-line is 3 Feet $\frac{88}{100}$ on the double Scale of Numbers *D*, which is the Content.

Board Meaſure.

Suppoſe a Board be 27 Inches $\frac{1}{2}$ broad, and 15 Feet $\frac{1}{4}$ long, what is its Content? Set 12 on the double Scale *B*, to 27 $\frac{1}{2}$ on the double Scale *A*; then againſt 15 Feet $\frac{1}{4}$ on the double Scale *B*, is 35 Feet, the Content on the double Scale *A*.

When Dimenſions are Feet and Parts, and the Content required in Feet and Parts.

Admit a Board be 24 $\frac{3}{4}$ long, and 1 Foot $\frac{1}{2}$ broad what is the Content? Set 1 on the double Scale to 1 $\frac{1}{2}$ on the double Scale *A*; then againſt 24 $\frac{3}{4}$ on the double Scale *B*, is 37 Feet $\frac{1}{10}$ on the double Scale *A*, and is the Content.

Suppoſe a Piece of Glaſing be 29 Inches $\frac{1}{2}$ long, and 7 Inches broad, what is the Content? Set 144 (repreſented by 1,44) on the Line *B*, to 7 Inches on the Line *A*; then againſt 29 $\frac{1}{2}$ on the Line *B*, is 1 Foot and almoſt $\frac{1}{2}$ on the Line *A*.

Suppoſe a Room Wainſcotted be 44 Feet in Compaſs, and 9 Feet $\frac{3}{4}$ high, what is the Content? Set one on the double Scale *B*, to 44 Feet $\frac{1}{2}$ on the double Scale *A*; then againſt 9 Feet $\frac{3}{4}$ on the double Scale *B* is 433 Feet $\frac{9}{10}$ on the double Scale *A*, the Content.

Admit a Piece of Painting be 13 Feet $\frac{1}{2}$ broad, and 23 Feet $\frac{1}{2}$ long, what is the Content? Set 9 on the double Scale *B*, to 13 $\frac{1}{2}$ on the double Scale *A*, then againſt 23 $\frac{1}{2}$ on the double Scale *B*, is 35 Yards $\frac{1}{4}$ on the double Scale *A*, and is the Content.

Of

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Of Bonds, and Conditions of Bonds.

A BOND is a Writing Obligatory, for Payment of Money, *&c.* consisting of two Parts. 1st, The Obligation, wherein are inserted the Names of the Parties and their Additions, the Penalty, Date, *&c.* And 2dly, The Condition, which expresly mentions what Money is to be paid, or Thing to be performed, and the limited Time for Performance thereof; for which the Obligation is peremptorily binding.

When the Matter or Thing to be done, or not to be done, by a Condition, is unlawful or impossible, or the Condition is repugnant, insensible or uncertain, it is void: And if a Thing be possible at the Time of making the Obligation, but afterwards becomes impossible by the Act of God, or of the Law, or of the Obligee, it will be void. Also if a Man or Woman is compell'd, for Fear of Imprisonment, to enter into a Bond, *&c.* such Compulsion will frustrate the Bond, *Co. Lit.*

But an Obligation may be good, altho' it contains false *Latin*, or false *English*, if the Intent of the Parties appears, and may be made certain.

Where no Place is mentioned for the Payment of Money on a Bond, the Obliger is to find out the Obligee. And if a Day is not set for the Payment of Money, the Debt is due presently; but if it be on a Mortgage, the Party shall have Time during Life, unless hasten'd by Request. 1 *Inst.* 208, 209.

In Obligations, he to whom the Obligation is made is called the Obligee, and he who is bound is called the Obligor. In other Writings the Parties are stiled according to the legal Terms, as Vendor, Vendee, Lessor, Lessee, Mortgagor, Mortgagee, Grantor, Grantee, Donor, Donee, *&c.* But all Parties must be of the full Age of Twenty-one Years; for Infants cannot make any Obligation or Covenant, *&c.* unless it be for Necessaries, Apparel, Schooling, *&c.* Persons of full Age must also be of sound Mind, and not Lunaticks, Ideots, *&c. Co. Lit.* 171. 4 *Rep.* 126.

A Bond from one to one.

KNOW ALL MEN by these Presents, That I *John A.* of the Township of, *&c.* in the County of, *&c.* Gentleman, am held and firmly bound unto *William B.* of, *&c.* in the County of, *&c.* Esquire, in *One Hundred Pounds* of

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of good and lawful Money of *Great-Britain*, to be paid to the ſaid *William B.* or to his certain Attorney, his Executors, Adminiſtrators or Aſſigns; for which Payment well and truly to be made, I bind myſelf, my Heirs, Executors and Adminiſtrators, firmly by theſe Preſents, ſealed with my Seal: Dated this fifth Day of *October*, in the 27th Year of the Reign of our Sovereign Lord *George* the Second, by the Grace of God, of *Great-Britain*, *France* and *Ireland*, King, Defender of the Faith, *&c.* and in the Year of our Lord One Thouſand Seven Hundred and Fifty Three.

THE CONDITION of this Obligation is ſuch, That if the Above-bound *J. A.* his Heirs, Executors or Adminiſtrators, do well and truly pay or cauſe to be paid unto the above nam'd *W. B.* his Executors, Adminiſtrators or Aſſigns, the full Sum of *Fifty-two Pounds* and *Ten Shillings*, of lawful Money of *Great-Britain*, on or before the fifth Day of *January* next enſuing the Date hereof; then this Obligation ſhall be void, otherwiſe it ſhall remain in full Force and Virtue.

Sealed and Delivered
in the Preſence of

A Bond wherein two Perſons are bound to one.

KNOW ALL MEN by theſe Preſents, that we *William A.* of, *&c.* in the County of, *&c.* Gentleman, and *John B.* of, *&c.* in the County of, *&c.* Yeoman, are held and firmly bound to *Thomas C.* of, *&c.* Eſquire, in *Two Hundred Pounds* of good and lawful Money of *Great-Britain*, to be paid to the ſaid *Thomas C.* or his certain Attorney, Executors, Adminiſtrators or Aſſigns; for which Payment to be well and truly made, we bind ourſelves and each of us, jointly and ſeverally, for, and in the whole, our, and each of our Heirs, Executors and Adminiſtrators, firmly by theſe Preſents, ſealed with our Seals; dated the Day of, *&c.* in the Year of the Reign, *&c.*

THE CONDITION of this Obligation is ſuch, That if the Above-bound *W. A.* and *J. B.* or either of them, their, or either of their Heirs, Executors or Adminiſtrators, do and ſhall well and truly pay, or cauſe to be paid, unto the ſaid *T. C.* his Executors, Adminiſtrators or Aſſigns, the Sum of *One Hundred Pounds* of lawful Money of *America*, with Intereſt for the ſame, after the Rate of,

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of, &c. *per Cent. Ann.* on the Day, &c. which will be in the Year of our Lord, &c. Then, &c. or else, &c.

A Condition of a Counter Bond, or a Bond of Indemnity, where one Man is bound for another.

THE Condition of this Obligation is such, That whereas the Above-named *A. B.* at the Request, and for the only proper Debt and Duty of the Above-bound *C. D.* with him the said *C. D.* is in and by one Bond or Obligation, bearing equal Date with the Obligation above-written, held and firmly bound unto *E. F.* of, &c, in the penal Sum of *Five Hundred Pounds* of lawful Money of *America*, conditioned for the Payment of *Two Hundred* and *Fifty Pounds*, with legal Interest for the same, on, &c. next ensuing the Day of the Date of the said recited Obligation, as in and by the said Obligation and Condition thereof may more fully and at large appear. If therefore the said *C. D.* his Heirs, Executors, or Administrators, do and shall well and truly pay, or cause to be paid, unto the said *E. F.* his Executors, Administrators or Assigns, the said Sum of *Two Hundred* and *Fifty Pounds*, with legal Interest on the said Day, &c. next ensuing the Date of the said recited Obligation, according to the true Intent and Meaning, and in full Discharge and Satisfaction of the said recited Obligation; Then, &c. or else, &c.

A Condition to perform Covenants in a Deed.

THE CONDITION of this Obligation is such, That if the Above-bound *A. B.* his Heirs, Executors and Administrators, and every of them, do and shall in all Things well and truly observe, perform, fulfil, accomplish, pay and keep all and singular the Covenants, Grants, Articles, Clauses, Provisoes, Payments, Conditions and Agreements, which on the Part and Behalf of the said *A. B.* his Heirs, Executors and Administrators, are, or ought to be observed, performed, fulfilled, accomplished, paid and kept, comprised or mentioned, in certain Indentures, bearing even Date with the above-written Obligation, made, or mentioned to be made, between the said *A. B.* of the one Part, and the Above-named *C. D.* of the other Part [or in one Pair of Indentures of Lease made between, &c.] according to the true Intent and Meaning of the same Indentures; Then, &c.

A Con-

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A Condition of an Arbitration Bond, with an Umpirage.

THE CONDITION of this Obligation is such, That if the Above-bound *A. B.* his Heirs, Executors and Administrators, and every of them, do and shall, for his and their Parts and Behalfs, in all Things well and truly stand to, obey, observe, perform, fulfil and keep the Award, Abitrament, Order and Determination of *E. F.* of, *&c.* and *G. H.* of, *&c.* Arbitrators indifferently chosen, as well on the Part of the said *A. B.* as on the Part and Behalf of the Above-named *C. D.* to arbitrate, award, judge of, determine and agree for, upon, touching and concerning all, and all Manner of Action and Actions, Cause and Causes of Action and Actions, Debts, Accounts, Differences, Quarrels, Disputes, Reckonings, Agreements, and all Dues and Demands whatsoever, both in Law and Equity, or otherwise howsoever, which between them the said *A. B.* and *C. D.* or either of them, at any Time heretofore have been, or at the Time of the Sealing hereof had, moved, stirred up, or in any wise depending, so always as the said Award, Abitrament, Judgment, final End, Determination and Agreement, between the said Parties, be made in Writing, indented under the Hands and Seals of the said Arbitrators, ready to be delivered to the said Parties at, or in, *&c.* next ensuing the Date of the above-written Obligation; Then, *&c.*

The Umpirage.

And if the said Arbitrators shall not make and draw up the said Award in Writing, as aforesaid, on or before, *&c.* and the same deliver to the said Parties, as aforesaid; If then the said *A. B.* his Executors and Administrators, and every of them, do and shall stand to, abide, observe, perform and keep the Award, Umpirage, final End and Judgment of *L. M.* of, *&c.* Umpire indifferently elected between the said Parties, for ending and composing of all the Differences aforesaid, so as the said Umpire do make and draw up his said Award, Umpirage and Determination, in Writing, indented under his Hand and Seal, ready to be delivered to the Parties, on or before, *&c.* Then, *&c.* or else, *&c.*

Of Releases of Rights, Actions, Claims and Demands.

A Release is the Discharge of a Right or Action, Debt, Duty or Demand; and all Actions, real, personal and mix'd, may be discharged by Release; also all Debts, Legacies,

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gacies, and other Duties, Annuities, Lands, Rights and Titles, to Lands, *&c.*

A Releaſe of all Actions or Suits bars all Actions and Suits, and Bonds and Statutes, where the Cauſe of Action is ſubſiſting at the Time of the Releaſe. A Releaſe of all Quarrels, diſcharges all Actions real and perſonal, and the Cauſes of ſuch Actions. A Releaſe of all Debts diſcharges all Debts then owing from the Releſſee upon Specialties, Executions, *&c.* A Releaſe of all Duties bars all Actions, Judgments, Executions, Obligations, Rents, *&c.* and by a Releaſe of all Demands, all Rights and Titles to Lands, Conditions, Bonds, Statutes, Recognizances, Contracts, Covenants, and all Manner of Actions, real and perſonal, Debts, Duties, Judgments, Executions, Rents, Annuities, *&c.* are releaſed and diſcharged. *Co. Lit.* 286, 291, 292, *&c.*

By a Releaſe of all a Man's Right to Lands, all Actions, Entry, Title of Dower, Rents, *&c.* are diſcharged; but a Right deſcending to the Releſſor afterwards, it is not thereby releaſed. A Releaſe of Title to Lands is equally extenſive to a Releaſe of Right; and a Releaſe of all Entries, or Right of Entry, bars all Right or Power of Entry into Lands. *Co. Lit.* 289, 345.

If a Creditor be made Executor by his Debtor, or if the Creditor, being a Woman, marries her Debtor, theſe are Releaſes in Law of the Debts. *Co. Lit.* 264.

A General Releaſe of all Demands.

KNOW ALL MEN by theſe Preſents, That I *A. B.* of, *&c.* Gent. have remiſed, releaſed, and for ever quit-claimed, and by theſe Preſents do for me, my Heirs, Executors and Adminiſtrators, remiſe, releaſe, and for ever quit-claim unto *C. D.* of, *&c.* Gent. his Heirs, Executors and Adminiſtrators, all and all Manner of Action and Actions, Cauſe and Cauſes of Action and Actions, Suits, Bills, Bonds, Writings, Obligations, Debts, Dues, Duties, Reckonings, Accounts, Sum and Sums of Money, Judgments, Executions, Extents, Quarrels, Controverſies, Treſpaſſes, Damages and Demands whatſoever, both at Law and in Equity, or otherwiſe howſoever, which, againſt him the ſaid *C. D.* I ever had, now have, or which I, my Heirs, Executors and Adminiſtrators, ſhall or may have, claim, challenge or demand, for or by Reaſon or Means of any

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any Act, Matter, Cauſe or Thing, from the Beginning o the World to the Day of the Date of theſe Preſents. I Witneſs whereof, I the ſaid *A. B.* have hereunto put my Hand and Seal, the Day of, *&c.* in the Year of our Lor One Thouſand Seven Hundred and Fifty Four.

A Releaſe of Perſonal Actions.

KNOW ALL MEN by theſe Preſents, That *A. B.* of, *&c.* have remiſed, releaſed and quit-claim ed, and by theſe Preſents do for me, my Heirs, Executor and Adminiſtrators, and every of them, remiſe, releaſe and for ever quit-claim unto *C. D.* of, *&c.* his Heirs, Exe cutors and Adminiſtrators, and every of them, all and al Manner of Perſonal Actions, Suits, Debts, Duties, Sum and Sums of Money, Claims and Demands Perſonal what ſoever, from the Beginning of the World until the Day o the Date hereof. In Witneſs, *&c.*

Of Letters of Attorney, and other Authorities, &c.

A Letter of Attorney is an Authority given to anothe to do ſome Act, or perform ſome Thing, in like Manner as the Perſon authorizing might do the ſame. And what a Man may do by himſelf, he may generally do by another.

But the Attorney muſt not exceed his Power; if he does what he tranſacts will be void. If a Man makes a Lette of Attorney to another to deliver Livery and Seiſin in ſuch a Place, and he does it elſewhere; or at ſuch a Time, and he does it before or after, the Act of the Attorney will be void. *Ployed.* 475.

In other Caſes it is the ſame; and a Man may limit hi Authority as ſtrictly as he pleaſes.

A Letter of Attorney.

KNOW all Men by theſe Preſents, That I *Charle Careful, of Lewis,* in the County of *Suſſex,* Apothecary (for divers Conſiderations and good Cauſes me hereunto moving) have made, ordained, conſtituted and appointed, and by theſe Preſents do make, ordain, conſtitute and appoint, my truſty Friend *William Wagſtaff,* of *Pemſey,* in the County aforeſaid, Gent. my true and lawful Attorney, for me, in my Name, and to my Uſe, to aſk, demand, recover, or receive, of and from *A. B.* of *Rye,* in the ſaid County,

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County, the Sum of Forty Pounds; giving, and by theſe Preſents granting to my ſaid Attorney, my ſole and full Power and Authority, to take, purſue, and follow ſuch legal Courſes, for the Recovery, receiving and obtaining of the ſame, as I myſelf might or could do, were I perſonally preſent; and upon the Receipt of the ſame Acquittances, and other ſufficient Diſcharges, for me, and in my Name, to make, ſign, ſeal and deliver; as alſo one more Attorney or Attornies under him, to ſubſtitute or appoint, and again at his Pleaſure to revoke, and further to do, perform, and finiſh for me, and in my Name, all ſingular Thing or Things, which ſhall or may be neceſſary touching and concerning the Premiſes, as fully, thoroughly, and entirely, as I the ſaid *Charles Careful*, in my own Perſon ought or could do, in and about the ſame: Ratifying, allowing, and confirming, whatſoever my ſaid Attorney ſhall lawfully do, or cauſe to be done, in and about the Execution of the Premiſes, by Virtue of theſe Preſents. In Witneſs whereof, I have hereunto ſet my Hand and Seal, the Sixth Day of *May*, in the Twenty-ſixth Year of our Sovereign Lord *George* II. by the Grace of God, King of *Great-Britain*, &c. in the Year of our Lord God, 1753.

A Letter of Attorney by a Seaman.

KNOW all Men by theſe Preſents, That I *Timothy Tarpaulin*, Mariner, now belonging to his Majeſty's Ship the *Rye*; for divers good Cauſes and Conſiderations me thereunto moving, have, and by theſe Preſents do make my truſty Friend [or beloved Wife] *Henry Hearty*, Citizen and Baker of *London*, my true and lawful Attorney, for me, and in my Name, and for my Uſe, to aſk, demand, and receive, of and from the Right Honourable the Treaſurer or Paymaſter of his Majeſty's Navy, and Commiſſioners of Prize Money, and whom elſe it may concern, as well all ſuch Wages, and Pay, Bounty Money, Prize Money, and all other Sum and Sums of Money whatſoever, as now are, and which hereafter ſhall and may be due or payable unto me; alſo all ſuch Penſions, Salaries, Smart Money, or all other Money and Things whatſoever, which now are, or at any Time hereafter ſhall or may be due to me, for my Service, or otherwiſe, in any one of his Majeſty's Ship or Ships, Frigates or Veſſels; Giving and hereby granting, unto my ſaid Attor-

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ney, full and whole Power, to take, purſue and follow, ſuch legal Ways and Courſes, for the Recovery, receiving and obtaining, and diſcharging upon the ſaid Sum or Sums of Money, or any of them, as I myſelf might or could do, were I perſonally preſent; and I do hereby ratify, allow and confirm, all and whatever my ſaid Attorney ſhall lawfully do, or cauſe to be done, in and about the Execution of the Premiſes, by Virtue of theſe Preſents. In Witneſs whereof, I have hereunto ſet my Hand and Seal, this 22d Day of *January*, &c. *Timothy Tarpaulin*, ⊕

Of Articles of Agreement.

ARTICLES of Agreement are mutual Covenants entered into by Parties, where both of them are obliged to do ſomething, one in Return to the other.

They are of various Kinds, as Buſineſs falls out; and ſome of them are the following.

Articles for the taking down an old Houſe, and building up a new One, for a certain Sum of Money.

Articles of Agreement made, &c. *between* A. B. *of*, &c. *and* C. D. *of*, &c.

FIRST, The ſaid *C. D.* for himſelf, his Executors, Adminiſtrators and Aſſigns, doth covenant, promiſe and grant, to and with the ſaid *A. B.* his Executors, Adminiſtrators and Aſſigns, by theſe Preſents, in Manner following (that is to ſay) That he the ſaid *C. D.* his Executors, Adminiſtrators and Aſſigns, or ſome of them, for the Conſiderations herein after mentioned, ſhall and will forthwith take down, or cauſe to be taken down, the now Dwelling-Houſe of the ſaid *A. B.* ſituate, &c. and in the Room and Stead thereof ſhall, on or before, &c. next, make, erect, build and ſet up, in a Workman-like Manner, one new Tenement or Dwelling-Houſe, Thirty Feet wide in Front, Fifty Feet long or deep Backwards, and Three Story high, &c. each Story being, &c. Feet; together with a Cellar of the Dimenſions of, &c. And ſhall alſo make four Rooms, &c. on each Floor. And alſo that he the ſaid *C. D.* his, &c. ſhall find and provide, at his or their own Charges and Expence, all Manner of Tiles, Bricks, Laths, Nails, Lead, Iron, Sand and Lime, Timber, and all other Materials what-

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whatſoever, which ſhall be fit and neceſſary to be uſed in or about the ſaid Building, and ſhall carry away all Rubbiſh that ſhall any way ariſe by Reaſon of the ſaid Building.

And the ſaid *A. B.* for himſelf, his Executors and Adminiſtrators, in Conſideration of the ſaid Building ſo to be built and finiſhed in Manner aforeſaid, by the ſaid *C. D.* his, *&c.* doth covenant and grant to and with the ſaid *C. D.* his Executors, Adminiſtrators and Aſſigns, by theſe Preſents, That he the ſaid *A. B.* his Executors, Adminiſtrators and Aſſigns, or ſome of them, ſhall and will well and truly pay, or cauſe to be paid unto the ſaid *C. D.* his Executors, Adminiſtrators or Aſſigns, the Sum of 300l. of, *&c.* at three ſeveral Payments; *viz.* 100l. thereof on, *&c.* (or in Hand at his Beginning of the Work, *&c.*) 100l. more when the Roof of the ſaid Building is framed, timbered and tiled; and 100l. more, Reſidue, and in full Payment of the ſaid Sum of 300l. when the whole Building is fully compleated in a Workman-like Manner, as aforeſaid.

And for the Performance of all and every the Articles and Agreements above mentioned, the ſaid *A. B.* and *C. D.* do hereby bind themſelves, their Executors, Adminiſtrators, and Aſſigns, each to the other, in the Penal Sum of 600l. of, *&c.* firmly by theſe Preſents.

In Witneſs, &c.

Of Bills of Sale, *and Bargains and Sales.*

A Bill of Sale is an Inſtrument uſed for the Transferring of the Property of Goods; but a Bargain and Sale transfers Lands, Tenements, Rents, Advowſons, Tithes, *&c.* in Fee ſimple, Fee-tail, for Life or Years, as well as Goods, and Chattels.

A Man may bargain and ſell his Goods at any Time; and if the Bargain is, that you ſhall give me ſo much for a Horſe, and you give me a Shilling or a Penny in Earneſt, which I accept, this is a perfect Sale. *Noy. Max.* 87.

Where Lands are conveyed by Bargain and Sale, there muſt be a good Conſideration given; and where the Freehold is to paſs, Inrollment is neceſſary (within ſix Months) as it is provided by *Stat.* 27. *H.* 8. and it needs no Livery of Seiſin, *&c.* to perfect it. But a Bargain and Sale may be made of Goods and Chattels, Leaſes, *&c.* without Conſideration or Inrollment, with Livery and Seiſin. 5 *Co.* 12 *Cro.* 240.

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A Bill of Sale of Goods.

KNOW all Men, &c. That I *I. K.* of, *&c.* for and in Consideration of the Sum of, *&c.* to me in Hand paid at and before the Sealing and Delivery of these Presents, by *T. S.* of, *&c.* the Receipt whereof I do hereby acknowledge, have bargained and sold, and by these Presents do bargain and sell, unto the said *T. S.* all the Goods, Houshold-Stuff and Implements of Houshold, and all other Goods whatsoever, mentioned in the Schedule hereunto annexed, now remaining and being in, *&c.* in the Possession of, *&c* To have and to hold all and singular the said Goods, Houshold-stuff and Implements of Houshold, and every of them, by these Presents bargained and sold unto the said *T. S* his Executors, Administrators, and Assigns, for ever. And I the said *I. K.* for myself, my Executors and Administrators, all and singular, the said Goods and Houshold-stuff unto the said *T. S.* his Executors, Administrators and Assigns, against me the said *I. K.* my Executors, Administrators and Assigns, and against all and every other Person and Persons whatsoever, shall and will warrant, and for ever defend by these Presents. Of which Goods, I the said *I. K.* have put the said *T. S.* in full Possession, by delivering him one Silver Tankard, *&c.* at the Sealing hereof. In Witness, *&c.*

A Bill of Sale of Part of a Ship, with its Furniture, &c.

TO all People, *&c.* I *H. I.* of, *&c.* send Greeting. Know ye, that I the said *H. I.* for and in Consideration of the Sum of, *&c.* to me in Hand paid by *T. S.* of, *&c.* the Receipt whereof I do hereby acknowledge, *&c.* have granted, bargained and sold, and by these Presents I the said *H. I.* do grant, bargain and sell, unto the said *T. S.* one Eighth Part (the whole in eight equal Parts to be divided) of the Ship called, *&c.* of the Port of, *&c.* and Burthen of, *&c.* now lying and being within the Harbour of, *&c.* together with one full Eighth Part of all the Masts, Sails, Sail-yards, Anchors, Cables, Ropes, Cords, Boats, Oars, Pieces of Ordnance, Guns, Gunpowder, Shot, Tackle, Apparel, Ammunition, and Furniture to the said Ship belonging, or appertaining: To have and to hold the said Eighth Part of the said Ship, and all other the Premises, hereby granted, with the Appurtenances, unto the said *T. S.* his Executors, Administrators and Assigns, as his and their own

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own proper Goods, and to his and their own proper Uſe and Uſes for ever. And I the ſaid *H. I.* do for myſelf, my Heirs, Executors and Adminiſtrators, covenant and grant to and with the ſaid *T. S.* his Executors, and Aſſigns, by theſe Preſents, that I the ſaid *H. I.* at the Time of Sealing and Delivery of theſe Preſents, am the true and lawful Owner and Proprietor of the ſaid Eighth Part of the ſaid Ship, and Premiſes hereby granted, with the Appurtenances. And that I have full Power and Authortiy to grant, bargain and ſell the ſaid Eighth Part of the ſaid Ship, with the Premiſes hereby mentioned to be granted, with the Appurtenances, unto the ſaid *T. S.* his Executors, Adminiſtrators and Aſſigns, in Manner aforeſaid: And alſo, That it ſhall and may be lawful to and for the ſaid *T. S.* his Executors and Aſſigns, from Time to Time, and at all Times hereafter, quietly and peaceably to have, hold, poſſeſs and enjoy, the ſaid Eighth Part of the ſaid Ship, and all other the Premiſes hereby granted or mentioned, or intended to be granted, with the Appurtenances, without the Lett, Trouble, Denial, Moleſtation, Hindrance or Diſturbance, whatſoever, of me the ſaid *H. I.* my Executors, Adminiſtrators or Aſſigns, or of any other Perſon or Perſons whatſoever, lawfully claiming, or to claim from, by or under me, them, or any of us, and that freed and diſcharged of and from all former and other Bargains, Seals and Incumbrances, whatſoever made, done, or committed by me the ſaid *H. I.* &c. In Witneſs, &c.

A Bargain and Sale of Lands.

THIS Indenture made, &c. between *H. I.* of, &c. of the one Part, and *T. R.* of, &c. of the other Part, witneſſeth, That the ſaid *H. I.* for and in Conſideration of the Sum of, &c. to him in Hand paid by the ſaid *T. R.* the Receipt whereof the ſaid *H. I.* doth hereby acknowledge, he the ſaid *H. I.* hath granted, bargained and ſold, aliened and confirmed, and by theſe Preſents doth grant, bargain and ſell, alien and confirm unto the ſaid *T. R.* his Heirs and Aſſigns, for ever, all that Meſſuage, &c. and all that Piece or Parcel of Land, &c. ſituate, &c. and alſo all Trees, Woods, Under-woods, Tithes, Commons, Common of Paſture, Profits, Commodities, Advantages, Hereditaments, Ways, Waters and Appurtenances, whatſoever, to the ſaid Meſſuage and Lands above-mentioned belonging, or any

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wise appertaining, [redacted] also the Reversion and Reversions, Remainder and [redacted]rs, Rents and Services, of the said Premises, and [redacted]art thereof; and all the Estate, Right, Title, I[redacted]laim and Demand, whatsoever of him the said *H.* [redacted]nd to the said Messuage, *&c.* and Premises, and ev[redacted]hereof. To have and to hold the said Messuage or T[redacted], and all and singular the Premises above-mentioned, [redacted]ry Part and Parcel thereof, with the Appurtenances, [redacted] the said *T. R.* his Heirs and Assigns, to the only proper Use and Behoof of the said *T. R.* his Heirs and Assigns, for ever. And the said *H. I.* for him and his Heirs, the said Messuage or Tenement, and Premises, and every Part thereof, against him and his Heirs, and against all and every other Person and Persons whatsoever, to the said *T. R.* his Heirs and Assigns, shall and will warrant, and for ever defend by these Presents. In Witness, *&c.*

Of Gifts, Grants, Exchanges, &c.

A Deed of Gift may be made of Lands or Goods; but Care must be taken that it be not fraudulent; for a Deed of Gift made with Intent to defraud Creditors of their just Debts, as against such Creditors, *&c.* is void. *Stat. 27 El.*

When a Woman is married, all her Goods and Chattels become the Goods of the Husband by Gift in Law; but he is liable to the Payment of her Debts. And when a Man is made Executor, the Law gives the Goods and Chattels of the Testator to the Executor; but subject to Payment of the Testator's Debts, 3 *Rep.* 27.

All Grants must be of Things certain; and Office, or any Goods or Chattels personal, may be granted by Word, without Deed. And if a Man make Apparel for another, and put it upon him to use and wear, this amounts to a Gift or Grant in Law, of the Clothes itself. 1. *H.* 4. 31.

A Deed of Gift of Goods and Chattels.

TO all People, &c. I *A B.* of, &c. send Greeting. Know ye, That I the said *A. B.* for and in Consideration of the natural Love and Affection which I have and bear unto *C. D.* &c. and also for other good Causes and Considerations me thereunto moving, have given and granted, and by these Presents do give, grant and confirm unto the said

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ſaid *C. D.* all my Goods, Chattels, Leaſes, Debts, Plate, Jewels, &c. and all my other Subſtance whatſoever, moveable and immoveable, of what Kind, Nature and Quality ſoever the ſame are, and in what Place or Places ſoever the ſame ſhall be found, as well in my own Cuſtody or Poſſeſſion, as in the Poſſeſſion, Hands, Power and Cuſtody of any other Perſon or Perſons whatſoever (or all thoſe Goods and Chattels in the Schedule hereunto annexed mentioned) To have and to hold all and ſingular the ſaid Goods, Chattels, Leaſes, Debts, and all other the aforeſaid Premiſes unto the ſaid *C. D.* his Executors, Adminiſtrators and Aſſigns, to his and their own proper Uſe and Uſes for ever. And I the ſaid *A. B.* all and ſingular the aforeſaid Goods, Chattels and Premiſes to the ſaid *C. D.* his Executors, Adminiſtrators and Aſſigns, againſt all Perſons, do Warrant, and do for ever Defend by theſe Preſents. In Witneſs, &c.

Livery and Seiſin muſt be endorſed thus: *Memorandum* the Day, &c. Livery and Seiſin was delivered by the within named *A B.* unto the ſaid *C. D.* of one Piece of Plate, &c. in the Name of all the Goods and Chattels within mentioned, to hold to him the ſaid *C. D.* his Executors, &c. for ever, according to the within written Deed.

A Deed of Gift of Lands, &c.

THIS Indenture made, &c. between *A. B.* of, &c. of the one Part, and *C. B.* of, &c. Son of the ſaid *A. B.* of the other Part, witneſſeth, that the ſaid *A. B.* for and in Conſideration of the natural Love and Affection which he hath and beareth unto the ſaid *C. B.* And for the better Maintenance and Livelihood of him the ſaid *C. B.* hath given, granted, aliened, infeoffed and confirmed; and by theſe Preſents doth give, &c. unto the ſaid *C. B.* his Heirs and Aſſigns, All that Meſſuage or Tenement, ſituate, &c. and alſo all thoſe Pieces or Parcels of Land lying, &c. containing, &c. in the Tenure and Occupation of, &c. and all and ſingular the Houſes, Edifices, Buildings, Barns, Stables, Courts, Gardens, Orchards, Feedings, Woods, Under-woods, Commons, Common of Paſture, Ways, Paths, Paſſages, Waters, Water-courſes, Eaſements, Profits, Commodities, Advantages, Hereditaments, and Appurtenances whatſoever to the ſaid Meſſuage or Tenement, Lands and Premiſes above-mentioned, or any Part thereof, belonging, or in any ways appertaining, or therewithal commonly uſed,

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uſed, occupied or enjoyed, or accepted, reputed, taken or known as Part, Parcel, or belonging of or to the ſame: And the Reverſion and Reverſions, Remainder and Remainders, Rent and Services of all and ſingular the ſaid Premiſes; and all the Eſtate, Right, Title, Intereſt, Property, Claim and Demand whatſoever, of him the ſaid *A. B.* of, in and to the ſaid Meſſuage, Lands and Premiſes, and of, in and to every Part and Parcel thereof, with their and every of their Appurtenances, and all Deeds, Evidences and Writings concerning the ſaid Premiſes only, or only any Part thereof, now in the Hands or Cuſtody of the ſaid *A. B.* To have and to hold the ſaid Meſſuage or Tenement, Lands, Hereditaments, and all and ſingular the Premiſes hereby granted and conveyed, or mentioned or intended to be granted and conveyed, with their Appurtenances, unto the ſaid *C. B.* his Heirs and Aſſigns, to the only proper Uſe and Behoof of him the ſaid *C. B.* his Heirs and Aſſigns for ever: And the ſaid *A. B.* for himſelf, his Heirs, Executors and Adminiſtrators, doth covenant, promiſe and grant to and with the ſaid *C. B.* his Heirs and Aſſigns, by theſe Preſents, that he the ſaid *C. B.* his Heirs and Aſſigns, ſhall and lawfully may, from henceforth for ever hereafter, peaceably and quietly have, hold, uſe, occupy, poſſeſs and enjoy the ſaid Meſſuage or Tenement, Lands and Premiſes above-mentioned to be hereby granted, with their and every of their Appurtenances, free, clear and diſcharged, or well and ſufficiently ſaved and kept harmleſs of and from all former and other Grants, Bargains, Sales, Gifts, Jointures, Feoffments, Leaſes, Dowers, Eſtates, Entails, Rent Charges, Arrearages of Rents, Statutes, Judgments, Recognizances, Executions, and of and from all other Titles, Troubles, Charges and Incumbrances whatſoever, had, made, committed, done or ſuffered, or to be had, made, &c. by him the ſaid *A. B.* his Heirs, Executors or Adminiſtrators, or any other Perſon or Perſons lawfully claiming or to claim, by, from or under him, them, or any, or either of them. In Witneſs, &c.

Of Indentures.

INDENTURES are Deeds indented, cut at the Top one into the other, and are ſometimes of many Parts. When a Deed is of two Parts, it is called Bipartite; when there are three Parts, Tripartite; when there are four Parts, Qua-

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Quadrupartite; when five Parts, Quinquepartite; and when it is of six Parts, Sixtipartite. And every Party to the Deed is to have a Part of it: The Grantor, &c. signs the Original, and the rest are Counterparts.

There are other Indentures, smaller in their Nature, as Indentures of Apprentiship, Partition, &c.

An Indenture for placing forth an Apprentice.

THIS Indenture made, &c. witnesseth, That *A. B.* Son of, &c. hath of his own free and voluntary Will (or by and with the Consent of his Father) placed and bound himself Apprentice unto *D. E.* of, &c. Pewterer, to be taught in the said Trade, Science or Occupation of a Pewterer, which he the said *D. E.* now useth, and with him as an Apprentice to dwell, continue and serve from the Day of the Date hereof unto the full End and Term of Seven Years from thence next ensuing, and fully to be compleat and ended; During all which Term, the said Apprentice his said Master well and faithfully shall serve, his Secrets keep, his lawful Commands gladly do, Hurt to his said Master he shall not do, nor wilfully suffer to be done by others, but of the same to his Power shall forthwith give Notice to his said Master. The Goods of his said Master he shall not imbezle or waste, nor them lend without his Consent to any; at Cards, Dice, or any other unlawful Games he shall not play; Taverns or Alehouses he shall not frequent; Fornication he shall not commit; Matrimony he shall not contract; from the Service of his said Master he shall not at any Time depart or absent himself without his said Master's Leave; but in all Things, as a good and faithful Apprentice, shall and will Demean and Behave himself towards his said Master, and all his, during the said Term. And the said Master his said Apprentice the said Trade, Science, or Occupation of a Pewterer, with all Things thereunto belonging, shall and will teach and instruct, or cause to be well and sufficiently taught and instructed, after the best Way and Manner that he can; and shall and will also find and allow unto his said Apprentice, Meat, Drink, Washing, Lodging, and Apparel, both Linnen and Woollen, and all other Necessaries fit and convenient for such an Apprentice during the Term aforesaid. And at the End of the said Term shall and will give to his said Apprentice one new Suit of Apparel, &c. In Witness, &c.

Licence,

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Licence.

A *Licence* is a Power to do and execute ſome Act or Thing; or to enjoy ſome Benefit, or Privilege, or Protection.

A Licence to a Debtor.

TO all People, &c. We *A. B. C. D. E. F.* &c. whoſe Names are here under written, and Seals affixed, Creditors of *L. M.* of, *&c.* Merchant, ſend Greeting. Whereas the ſaid *L. M.* on the Day of the Date hereof, is indebted unto us his ſaid Creditors in divers Sums of Money, which, by Reaſon of great Loſſes and Misfortunes, he is not at preſent able to pay unto us without Reſpite of Time to be given for that Purpoſe: Know ye therefore, that we the ſaid Creditors do, by theſe Preſents, give and grant unto the ſaid *L. M.* free Licence, and our ſure and ſafe Conduct to come and go, and reſort unto us, and every of us, to compound and take order with us, and every one of us, for our and every of our ſaid Debts; and alſo to go about his or other Buſineſs and Affairs at his free Will and Pleaſure, from the Day of the Date hereof unto the full End and Term of one whole Year next coming, without any Lett, Suit, Trouble, Arreſt, Attachment or other Diſturbance to be offered or done unto him the ſaid *L. M.* his Wares, Goods, Money or Merchandizes whatſoever, by us, or any of us, or by the Heirs, Executors, Adminiſtrators, Partners or Aſſigns of us, or any of us, or by our or any of our Means and Procurement. And we the ſaid Creditors ſeverally and reſpectively, each for himſelf, his Executors and Adminiſtrators, doth ſeverally and apart, and not jointly covenant and grant to and with the ſaid *L. M.* by theſe Preſents, That if any Trouble, Vexation, Wrong, Damage, or Hindrance ſhall be done unto him the ſaid *L. M.* either in his Body, Goods or Chattels; within the ſaid Term of one whole Year from the Date hereof, by us, or any of us, the ſaid Creditors, or by any Perſon or Perſons, by or through the Commandment, Procurement or Conſent of us, or any of us, againſt the Tenor and Effect of this our Licence, that then he the ſaid *L. M.* by Virtue of theſe Preſents, ſhall be diſcharged and acquitted for ever towards and againſt him and them of us, his and their Executors, Adminiſtrators, Partners and Aſſigns, and every of them, by whom, and by whoſe Means he ſhall be vexed, arreſted, troubled

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troubled, impriſoned, attached, grieved, or damnified, of all Manner of Actions, Suits, Quarrels, Debts, Duties and Demands, either in Law or Equity whatſoever, from the Beginning of the World to the Day of the Date of theſe Preſents. In Witneſs, &c.

Of Leaſes, Diſtreſs for Rent, &c.

A Leaſe is a Deed whereby Lands and Tenements, *&c.* are demiſed and letten for a leſs Time than he that doth lett them hath therein: And Leaſes are either for Life or for Years: Leaſes for Life are called *Freehold*, and require Livery of Seiſin: Leaſes for Years are called *Chattels*, and are not inheritable by Heirs, but go to the Executors, *&c.* and a Leaſe for a Thouſand Years is but a Chattel.

A Leaſe may be made for Weeks, Months, Quarters, *&c.* until ſuch a Term is expired: But in every Leaſe for Years the Term muſt have a certain Commencement and Determination, or by Reference to a Certainty be made certain.

If a Tenant for Years ſet up Wainſcoat, Doors, Windows, Benches, *&c.* they may be taken down by ſuch Tenant, ſo as it be done before the End of the Term, and he leave the Freehold in as good Condition as he found it. *Co. Lit.* 53. 272.

Tenants in Tail, Biſhops, *&c.* may make Leaſes for Lives or Years upon certain Conditions; they are to be made by Deed indented, to begin from the making; they are not to exceed three Lives, or Twenty one Years; they muſt be of Lands commonly lett to Farm; and the accuſtomed yearly Rent, or more, is to be reſerved. *Stat.* 32. *H.* 8.

A Leaſe of a Houſe for a Term of Years.

THIS Indenture made the fifth Day of *October*, in the Year of our Lord One thouſand ſeven hundred and fifty three, and in the Twenty-ſeventh Year, of the Reign of our Sovereign Lord *George* the Second (by the Grace of God) King of *Great-Britain*, *France* and *Ireland*, Defender of the Faith, *&c.* between *A. B.* of the Pariſh of, *&c.* in the County of, *&c.* Gentleman, of the one Part, and *C. D.* of, *&c.* in the County of, *&c.* Mercer, of the other Part, witneſſeth, That the ſaid *A. B.* for and in Conſideration of the yearly Rent and Covenants herein after reſerved and contained, on the Part and Behalf of the ſaid *C. D.* his Executors,

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cutors, Adminiſtrators and Aſſigns, to be paid, obſerved and performed, hath demiſed, granted, and to Farm letten, and by theſe Preſents doth demiſe, &c. unto the ſaid *C. D.* all that Meſſuage or Tenement called, &c. now in the Poſſeſſion of, &c. ſituate and lying in, &c. with all and ſingular Ways, Waters, Lights, Eaſements and Appurtenances, to the ſaid Meſſuage or Tenement belonging, or in any ways appertaining; together with the Uſe of the Goods in the Schedule hereto annexed mentioned; to have and to hold the ſaid Meſſuage or Tenement and Premiſes abovementioned, with the Appurtenances, unto the ſaid *C. D.* his Executors, Adminiſtrators and Aſſigns, from, &c. next, for and during the Term of ſeven Years thence next enſuing, and fully to be compleat and ended; Yielding and Paying therefore yearly during the ſaid Term unto the ſaid *A. B.* his Heirs and Aſſigns, the yearly Rent of 30l. of, &c. in and upon the Feaſts of, &c. by even and equal Portions. And if it ſhall happen the ſaid yearly Rent above reſerved, or any Part thereof, to be behind and unpaid in Part or in All, by the Space of Twenty-one Days next after any or either of the ſaid Days appointed for Payment thereof; then and from thenceforth it ſhall and may be lawful to and for the ſaid *A. B.* his Heirs and Aſſigns, into the ſaid Premiſes to re-enter, and the ſame to have again, repoſſeſs and enjoy, as in his and their firſt and former Eſtate, Right and Title; any Thing herein contained to the contrary thereof in anywiſe notwithſtanding. And the ſaid *C. D.* for himſelf, his Executors, Adminiſtrators and Aſſigns, doth covenant and grant to and with the ſaid *A. B.* his Heirs and Aſſigns, that he the ſaid *C. D.* his Executors, Adminiſtrators and Aſſigns, ſhall and will well and truly pay, or cauſe to be paid unto the ſaid *A. B.* his Heirs and Aſſigns, the ſaid yearly Rent above reſerved, at the Days and Times, and in Manner and Form above expreſſed, clear of, and over and above all Taxes, Rates and Payments whatſoever (except, &c.) and alſo that he the ſaid *C. D.* his Executors, Adminiſtrators and Aſſigns, ſhall and will from Time to Time, and at all Times during the ſaid Term hereby granted, well and ſufficiently repair, maintain, ſuſtain, uphold, amend and keep the ſaid demiſed Premiſes, and every Part thereof, with the Appurtenances, in, by and with all and all Manner of needful and neceſſary Reparations whatſoever, when and as often as Need ſhall require; And the ſame ſo well and ſufficiently repaired, maintained, ſuſtained, upheld and kept, at the

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End of the ſaid Term unto the ſaid *A. B.* his Heirs and Aſſigns ſhall and will peaceably and quietly leave and yield up; and alſo ſhall and will then leave unto the ſaid *A. B.* his Heirs and Aſſigns, All ſuch Goods as are mentioned in the Schedule hereto annexed, in as good Condition as they are now in (reaſonable Uſage of them, and the Caſualty of Fire in the mean Time excepted.) And the ſaid *A. B.* for himſelf, his Heirs and Aſſigns, doth covenant and grant to and with the ſaid *C. D.* his Executors, Adminiſtrators and Aſſigns, that he the ſaid *C. D.* his Executors, Adminiſtrators and Aſſigns, ſhall and may, by and under the yearly Rent and Covenants herein before reſerved and contained, peaceably and quietly have, hold, occupy, poſſeſs and enjoy, All and ſingular the ſaid Meſſuage or Tenement and Premiſes above-mentioned, with the Appurtenances, for and during the ſaid Term hereby granted, without the Lett, Trouble, Hindrance, Moleſtation, Interruption and Denial of him the ſaid *A. B.* his Heirs and Aſſigns, or of any other Perſon or Perſons claiming, or to claim by, from or under him. In Witneſs whereof the Parties firſt above named, have to theſe preſent Indentures interchangeably ſet their Hands and Seals, the Day and Year above written.

Of Aſſignments.

AN *Aſſignment* is the ſetting over all a Man's Right, in Land or Goods, to another Perſon. There is an Aſſignee in Deed, and an Aſſignee in Law: An Aſſignee in Deed, is he to whom a Leaſe, Eſtate or Intereſt, is aſſigned by Deed: And an Aſſignee in Law, is ſuch as the Law appointeth without Deed, as an Executor is an Aſſignee in Law, *Dy.* 5.

If a Leſſee for Years aſſign over his Term, the Landlord may charge which of them he will; but an Acceptance of the Rent from the Aſſignee (knowing of the Aſſignment) determines the Election. 3 *Co.* 24.

An Aſſignment of a Bond.

WHEREAS *A. B.* of, &c. in and by one Bond or Obligation, bearing Date, &c. became bound to *C. D.* of, &c. in the Penal Sum of 500 l. conditioned for the Payment of 250 l. and Intereſt, at a Day ſince paſt, as by the ſaid Bond and Condition thereof may appear. And whereas

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there now remains due to the ſaid *C. D.* for Principal and Intereſt on the ſaid Bond, the Sum of 275l. of, &c. Now know all Men by theſe Preſents, that the ſaid *C. D.* for and in Conſideration of the ſaid Sum of, &c. to him in Hand paid by *E. F.* of, &c. the Receipt whereof the ſaid *C. D.* doth hereby acknowledge, he the ſaid *C. D.* hath aſſigned and ſet over, and by theſe Preſents doth aſſign and ſet over unto the ſaid *E. F.* the ſaid recited Bond or Obligation, and the Monies thereupon due and owing. And all his Right, and Intereſt of, in and to the ſame. And the ſaid *C. D.* for the Conſiderations aforeſaid, hath made, ordained, conſtituted and appointed, and by theſe Preſents doth make, &c. the ſaid *E. F.* his Executors and Adminiſtrators, his true and lawful Attorney and Attornies irrevocable, for him and in his Name, and in the Name and Names of his Executors and Adminiſtrators, but for the ſole and proper Uſe and Benefit of the ſaid *E. F.* his Executors, Adminiſtrators and Aſſigns, to aſk, require, demand, and receive of the ſaid *A. B.* his Heirs, Executors and Adminiſtrators, the Money due on the ſaid Bond; and on Nonpayment thereof, him, his Heirs, Executors, and Adminiſtrators, to ſue for, recover and receive the ſame. And on Payment thereof, to deliver up and cancel the ſaid Bond, and give ſufficient Releaſes and Diſcharges thereof; and one or more Attorney or Attornies under him to conſtitute; and whatſoever the ſaid *E. F.* or his Attorney, ſhall lawfully do in the Premiſes, the ſaid *C. D.* doth hereby allow and confirm. And the ſaid *C. D.* doth covenant with the ſaid *E. F.* That he the ſaid *C D.* hath not received, nor will receive the Monies due on the ſaid Bond, or any Part thereof, neither ſhall or will releaſe or diſcharge the ſame, or any Part thereof, but will own and allow of all lawful Proceedings for Recovery thereof, he the ſaid *E. F.* ſaving the ſaid *C. D.* harmleſs of and from any Coſts that may happen to him thereby. In Witneſs, *&c.*

Of Mortgages, &c.

A Mortgage is defined to be a Pawn of Lands, Tenements, &c. for Money borrowed: And may be made by Leaſe for a long Term of Years (the uſual Way) Leaſe and Releaſe, Aſſignment, &c. It is a Deed upon Condition, and until Failure in Payment of the Money borrowed, the Mortgagor is to enjoy the Lands; and tho' Failure be made he has a Right of Redemption. If

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If any Perſon, who has once mortgaged Lands, mortgage the ſame to any other Perſon, without diſcovering to the ſecond Mortgagee the prior Mortgage, the Mortagor ſhall forfeit his Right of Equity of Redemption; and the ſecond Mortgagee may redeem. *Stat.* 4 & 5. *W.* & *M.*

Beſides Mortgages of Lands, Goods may be granted on Condition, in the Nature of Mortgage.

A Mortgage of Goods.

THIS Indenture made, &c. between *L. M.* of, &c. of the one Part, and *W. H.* of, &c. of the other Part, witneſſeth, That the ſaid *L. M.* for and in Conſideration of the Sum of, &c. to him in Hand paid by the ſaid *W. H.* at and before the Sealing and Delivery of theſe Preſents, the Receipt whereof the ſaid *L. M.* doth hereby acknowledge; He the ſaid *L. M.* hath bargained and ſold, and by theſe Preſents doth bargain and ſell unto the ſaid *W. H.* One Waggon, with the Horſe-Tackle and other Appurtenances thereto belonging, &c. To have and to hold the ſaid Waggon, and all other the Goods and Chattels above, by theſe Preſents bargained and ſold unto the ſaid *W. H.* his Executors, Adminiſtrators and Aſſigns for ever. Provided always, and upon Condition, That if the ſaid *L. M.* his Executors, Adminiſtrators and Aſſigns, do and ſhall well and truly pay, or cauſe to be paid unto the ſaid *W. H.* his Executors, Adminiſtrators and Aſſigns, the full Sum of, &c. in and upon, &c. next coming, That then theſe Preſents, and every Thing herein contained, ſhall ceaſe, determine, and be void; any Thing herein contained to the contrary in any wiſe notwithſtanding. And the ſaid *L. M.* for himſelf, his Executors and Adminiſtrators, doth covenant and grant to and with the ſaid *W. H.* his Executors, Adminiſtrators and Aſſigns, that he the ſaid *L. M.* his Executors, &c. ſhall and will well and truly pay, or cauſe to be paid unto the ſaid *W. H.* his Executors, &c. the ſaid Sum of, &c. at the Day and Time, and in Manner and Form aforeſaid, according to the true Intent and Meaning of theſe Preſents. In Witneſs, &c.

A Mortgage of Lands.

THIS Indenture made, &c. between *A. B.* of, &c. of the one Part, and *C. D.* of, &c. of the other Part, witneſſeth, that the ſaid *A. B.* for and in Conſideration of

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the Sum of, &c. to him in Hand paid by the ſaid *C. D.* the Receipt whereof the ſaid *A. B.* doth hereby confeſs and acknowledge; he the ſaid *A. B.* hath granted, bargained and ſold, and by theſe Preſents doth grant, bargain and ſell unto the ſaid *C. D.* All that Meſſuage or Tenement, &c. ſituate, lying and being, &c. And alſo the Reverſion and Reverſions, Remainder and Remainders, Rents and Services of all and ſingular the ſaid Premiſes above-mentioned, and of every Part and Parcel thereof, with the Appurtenances. To have and to hold the ſaid Meſſuage or Tenement, Lands and Premiſes above-mentioned, and every Part and Parcel thereof, with the Appurtenances, unto the ſaid *C. D.* his Executors, Adminiſtrators and Aſſigns, for and during the Term of 500 Years next and immediately enſuing and following, and fully to be compleat and ended: Yielding and paying therefore yearly during the ſaid Term, one Pepper Corn in and upon the Feaſt of, &c. if demanded. Provided always, and upon Condition, that if the ſaid *A. B.* his Heirs, and Aſſigns, do and ſhall well and truly pay or cauſe to be paid unto the ſaid *C. D.* his Executors, Adminiſtrators or Aſſigns, the Sum of, &c. with legal Intereſt for the ſame, in and upon, &c. next enſuing the Date hereof; then theſe Preſents, and every Thing herein contained, ſhall ceaſe, determine, and be void; any Thing herein contained to the contrary notwithſtanding. And the ſaid *A. B.* for himſelf, his Heirs and Aſſigns, doth covenant and grant to and with the ſaid *C. D.* his Executors, Adminiſtrators and Aſſigns, that he the ſaid *A. B.* his Heirs and Aſſigns, ſhall and will well and truly pay, or cauſe to be paid unto the ſaid *C. D.* his Executors, Adminiſtrators or Aſſigns, the ſaid full Sum of, &c. in and upon the ſaid, &c. next coming, according to the true Intent and Meaning of theſe Preſents. And alſo, in caſe Failure ſhall be made, that he the ſaid *C. D.* his Executors, &c. ſhall and may at all Times after Default, in Performance of the Proviſo or Condition herein contained, peaceably and quietly enter into, have, hold, occupy, poſſeſs and enjoy all and ſingular the ſaid Meſſuage, Lands and Premiſes above-mentioned, and every Part and Parcel thereof, with the Appurtenances, for and during the Remainder of the ſaid Term of 500 Years hereby granted, which ſhall be then to come and unexpired, without the Lett, Hindrance, Moleſtation, Interruption and Denial of him the ſaid *A. B.* his Heirs and Aſſigns, and of all and every other Perſon and Perſons

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Perſons whatſoever. And further, That he the ſaid *A. B.* and his Heirs, and all and every other Perſon and Perſons, and his and their Heirs, any Thing having or claiming in the ſaid Meſſuage or Tenement and Premiſes above mentioned, or any Part thereof, ſhall and will at any Time or Times, after Default ſhall be made in Performance of the Proviſo or Condition aforeſaid, make, do and execute, or cauſe or procure to be made, &c. All and every ſuch further and other lawful and reaſonable Grants, Acts and Aſſurances in the Law whatſoever, for the farther, better and more perfect granting and aſſuring of all and ſingular the ſaid Premiſes above-mentioned, with the Appurtenances, unto the ſaid *C. D.* To hold to him the ſaid *C. D.* his Executors, Adminiſtrators and Aſſigns, for and during all the Reſt and Reſidue of the ſaid Term of five hundred Years above-mentioned, which ſhall be then to come and unexpired, as by the ſaid *C. D.* his Executors, Adminiſtrators or Aſſigns, or his or their Counſel learned in the Law, ſhall be reaſonably deviſed, adviſed and required. And laſtly, It is covenanted, granted, concluded and agreed upon by and between the ſaid Parties to theſe Preſents, That until Default ſhall be made in Performance of the Proviſo or Condition herein contained, he the ſaid *A. B.* his Heirs and Aſſigns, ſhall and may hold and enjoy the ſaid Meſſuage or Tenement and Premiſes above-mentioned, and receive and take the Rents, Iſſues and Profits thereof to his and their proper Uſe and Benefit; any Thing herein contained to the contrary thereof in any wiſe notwithſtanding. In Witneſs, &c.

Of Conveyance, Feoffments, Wills.

THE uſual Conveyance of Lands at this Time, is by Leaſe and Releaſe. A Leaſe for a Year, or a Bargain and Sale, is firſt drawn to give Poſſeſſion, by Force of the Statute 27 *H.* 8. and then the Releaſe is made to convey the Fee of the Premiſes to the Perſon intended.

A Releaſe made by one that hath no Right to the Lands, is void: And a Releaſe to one, that at the Time of the Releaſe had nothing in the Lands, is alſo void; for he ought to have a Freehold, Poſſeſſion or Privity. A Releaſe of a Man's Right in Fee-ſimple, is not ſufficient to paſs the ſame; but a Releaſe to a Man and his Heirs, will paſs as a Fee-ſimple, and to the Heirs of his Body, as in Eſtate Tail. *Co. Lit.*

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A Feoffment was our antient Conveyance of Lands; to which Livery and Seiſin is neceſſary, the Poſſeſſion being thereby given to the Feoffee: And this Deed is ſaid to excel a Fine or Recovery, it clearing all Diſſeiſins, and other wrongful Eſtates, which no other Conveyance doth; and for that it is ſo ſolemnly and publickly made, it has been of all other Conveyances the moſt obſerved. *Plowd.* 554.

By Leaſe and Releaſe, Feoffment to Uſes, Fine and Recovery of Lands, &c. Marriage Settlements and Jointures are made to Women (in Conſideration of their Fortunes) which the Law is ever careful to preſerve; and whereof the Woman may not be diveſted, but by her own Fine. 2 *Co. Rep.*

All Grants, Conveyances, &c. made of Lands or Tenements, to defraud any Purchaſer of the ſame for valuable Conſideration as againſt ſuch Purchaſer, and all claiming under him, ſhall be void. *Stat.* 27 *Eliz.*

A Leaſe or Bargain and Sale for a Year, as the Foundation of a Releaſe.

THIS Indenture made, &c. between *A. B.* of, &c. of the one Part, and *C. D.* of, &c. of the other Part, witneſſeth, That the ſaid *A. B.* for and in Conſideration of the Sum of Five Shillings of, &c. to him in Hand paid by the ſaid *C. D.* the Receipt whereof is hereby acknowledged, he the ſaid *A. B.* hath granted, bargained and ſold, and by theſe Preſents doth grant, &c. unto the ſaid *C. D.* all that Meſſuage, &c. and the Reverſion and Reverſions, Remainder and Remainders, Rents and Services of the ſaid Premiſes above mentioned, and of every Part and Parcel thereof, with the Appurtenances; To have and to hold the ſaid Meſſuage or Tenement, Lands, Hereditaments and Premiſes abovementioned, and every Part and Parcel thereof, with the Appurtenances, unto the ſaid *C. D.* his Executors, Adminiſtrators and Aſſigns, from, &c. for and during unto the full End and Term of one whole Year from thence next and immediately enſuing and following, fully to be compleat and ended; Yielding and Paying therefore one Pepper-Corn in and upon the Feaſt of *St. Michael* the Archangel (if demanded) To the Intent that by Virtue of theſe Preſents, and by Force of the Statute for transferring of Uſes into Poſſeſſion, he the ſaid *C. D.* may be in the actual Poſſeſſion of all

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all and singular the said Premises above-mentioned, with the Appurtenances, and be thereby enabled to accept and take a Grant and Release of the Reversion and Inheritance thereof to him and his Heirs, to the only proper Use and Behoof of him the said *C. D.* his Heirs and Assigns, for ever. In Witness, &c.

A Release or Conveyance of Lands.

THIS Indenture made, &c. between *A. B.* of, &c. of the one Part, and *C. D.* of, &c. of the other Part, witnesseth, That the said *A. B.* for and in Consideration of the Sum of, &c. to him in Hand paid by the said *C. D.* the Receipt whereof the said *A. B.* doth hereby confess and acknowledge, and for divers other good Causes and Considerations him thereunto moving; he the said *A. B.* hath granted, bargained and sold, aliened, released and confirmed, and by these Presents doth fully, freely and absolutely grant, bargain, &c. unto the said *C. D.* (in his actual Possession now being, by Virtue of a Bargain and Sale to him thereof made for one whole Year, by Indenture bearing Date the Day next before the Day of the Date of these Presents, and by Force of the Statute for transferring of Uses into Possession) and to his Heirs and Assigns for ever, all that Messuage or Tenement, situate, &c. with the Rights, Members and Appurtenances thereof, and all Houses, Edifices, Buildings, Orchards, Gardens, Lands, Meadows, Commons, Pastures, Feedings, Trees, Woods, Under-Woods, Ways, Paths Waters, Water-courses, Easements, Profits, Commodities, Advantages, Hereditaments and Appurtenances whatsoever, to the said Messuage or Tenement belonging, or in any wise appertaining, or which now are, or formerly have been accepted, reputed, taken, known, used, or occupied or enjoyed to or with the same, or as Part, Parcel or Member thereof, or of any Part thereof, situate, lying and being in, &c. aforesaid: And also the Reversion and Reversions, Remainder and Remainders, Rents and Services, of all and singular the said Premises above-mentioned, and of every Part and Parcel thereof, with the Appurtenances: And also all the Estate, Right, Title, Interest, Claim and Demand whatsoever, as well in Equity as in Law of him the said *A. B.* of, in and to all and singular the said Premises above mentioned, and of, in and to

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to every Part and Parcel thereof, with the Appurtenances; and alſo all Deeds, Evidences and Writings, touching or concerning the ſaid Premiſes only, or only any Part thereof, together with true Copies of all other Deeds, Evidences and Writings, which concern the ſaid Premiſes, or any Part thereof, jointly with any other Lands or Tenements, now in the Cuſtody or Poſſeſſion of him the ſaid *A. B.* or which he can or may get or come by without Suit in Law; the ſame Copies to be made and written at the Requeſt, Coſts and Charges, of the ſaid *C. D.* his Heirs and Aſſigns: To have and to hold the ſaid Meſſuage or Tenement, Lands, Hereditaments, and all and ſingular the Premiſes above-mentioned, and every Part and Parcel thereof, with the Appurtenances, unto the ſaid *C. D.* his Heirs and Aſſigns, to the only proper Uſe and Behoof of the ſaid *C. D.* his Heirs and Aſſigns, for ever. And the ſaid *A. B.* for himſelf, his Heirs and Aſſigns, doth covenant and grant to and with the ſaid *C. D.* his Heirs and Aſſigns, That he the ſaid *A. B.* now is the true, lawful and rightful Owner of all and ſingular the ſaid Meſſuage, Lands, Tenements, Hereditaments and Premiſes above-mentioned, and of every Part and Parcel thereof, with the Appurtenances: And alſo, that he the ſaid *A. B.* now is lawfully and rightfully ſeiſed, in his own Right, of a good, ſure, perfect, abſolute and indefeaſible Eſtate of Inheritance in Fee-ſimple, of and in all and ſingular the ſaid Premiſes above-mentioned, with the Appurtenances, without any Manner of Condition, Mortgage, Limitation of Uſe or Uſes, or other Matter, Cauſe or Thing, to alter, change, charge or determine the ſame: And alſo, that he the ſaid *A. B.* now hath good Right, full Power, and lawful Authority, in his own Right to grant, bargain, ſell and convey, the ſaid Meſſuage, Lands, Tenements, Hereditaments and Premiſes above-mentioned, with the Appurtenances, unto the ſaid *C. D.* his Heirs and Aſſigns, to the only proper Uſe and Behoof of him the ſaid *C. D.* his Heirs and Aſſigns, for ever, according to the true Intent and Meaning of theſe Preſents; and alſo, that he the ſaid *C. D.* his Heirs and Aſſigns, ſhall and may at all Times for ever hereafter, peaceably and quietly have, hold, occupy, poſſeſs and enjoy, all and ſingular the ſaid Meſſuage, Lands, Tenements, Hereditaments and Premiſes above-mentioned, with the Appurtenances, without the

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the Lett, Hindrance, Moleſtation, Interruption and Denial, of him the ſaid *A. B.* his Heirs or Aſſigns, and of all and every other Perſon or Perſons whatſoever; and that freed and diſcharged, or otherwiſe well and ſufficiently ſaved and kept harmleſs and indemnified, of and from all former and other Bargains, Sales, Gifts, Grants, Leaſes, Mortgages, Jointures, Dowers, Uſes, Wills, Entails, Fines, Poſt-fines, Iſſues, Amerciaments, Seizures, Bonds, Annuities, Writings Obligatory, Statutes Merchant, and of the Staple, Recognizances, Extents, Judgments, Executions, Rents and Arrearages of Rents, and of and from all other Charges, Eſtates, Rights, Titles, Troubles and Incumbrances whatſoever; had, made committed, done or ſuffered, or to be had, made, &c. by the ſaid *A. B.* or any other Perſon and Perſons whatſoever, claiming or to claim, by, from or under him, them or any of them; and further, that he the ſaid *A. B.* and his Heirs, and all and every other Perſon and Perſons, and his and their Heirs, any Thing having or claiming in the ſaid Premiſes above mentioned, or any Part thereof, by, from or under him, ſhall and will, from Time to Time, and at all Times hereafter, upon the reaſonable Requeſt, and at the Coſts and Charges of the ſaid *C. D.* his Heirs and Aſſigns, make, do and execute, or cauſe or procure to be made, &c. all and every ſuch farther and other lawful and reaſonable Act and Acts, Thing and Things, Device and Devices, Conveyance and Conveyances, in the Law whatſoever, for the further, better and more perfect granting, conveying and aſſuring of all and ſingular the ſaid Premiſes above-mentioned, with the Appurtenances, unto the ſaid *C. D.* his Heirs and Aſſigns, to the only proper Uſe and Behoof of the ſaid *C. D.* his Heirs and Aſſigns, for ever, as by the ſaid *C. D.* his Heirs or Aſſigns, or his or their Council learned in the Law, ſhall be reaſonably deviſed, or adviſed and required. And laſtly, It is covenanted, granted and agreed upon, by and between the ſaid Parties to theſe Preſents, and the true Meaning hereof alſo is, and it is hereby ſo declared, that all and every Fine and Fines, Recovery and Recoveries, Aſſurance and Aſſurances, Conveyance and Conveyances, in the Law whatſoever, already had, made, levied, ſuffered, executed and acknowledged, or at any Time hereafter to be had, made, &c. by or between the ſaid Parties to theſe Preſents, or either of them, or by or be-

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between them, or either of them, and any other Perſon or Perſons whatſoever, of the ſaid Meſſuage, Tenement, Lands and Premiſes above-mentioned, with the Appurtenances, either alone by itſelf, or jointly with any other Lands, Tenements, or Hereditaments, ſhall be and enure, and ſhall be adjudged, eſteemed and taken to be and enure, as for and concerning all and ſingular the ſaid Premiſes above-mentioned, with the Appurtenances, to and for the only proper Uſe and Behoof of the ſaid *C. D.* his Heirs and Aſſigns, for ever, according to the true Intent and Meaning of theſe Preſents, and to and for none other Uſe, Intent or purpoſe, whatſoever. In Witneſs, &c.

A Deed of Feoffment of a Meſſuage.

THIS Indenture made, &c. between *H. I.* of, &c. of the one Part, and *K. L.* of, &c. of the other Part, witneſſeth, that the ſaid *H. I.* for and in Conſideration of the Sum of Five Hundred Pounds of lawful Money of *Great-Britain*, to him in Hand paid by the ſaid *K. L.* the Receipt whereof the ſaid *H. I.* doth hereby confeſs and acknowledge, and for other good Cauſes and Conſiderations him thereunto moving, he the ſaid *H. I.* hath granted, bargained and ſold, aliened, enfeoffed, releaſed and confirmed, and by theſe Preſents doth grant, &c. unto the ſaid *K. L.* All that Meſſuage, &c. now in the Poſſeſſion of, &c. ſituate and lying, &c. and alſo the Reverſion and Reverſions, Remainder and Remainders, Rents and Services thereof; and alſo all the Eſtate, Right, Title, Intereſt, Claim and Demand, whatſoever of him the ſaid *H. I.* of, in and to the ſame Premiſes, and of, in and to every Part and Parcel thereof; To have and to hold the ſaid Meſſuage, &c. and Premiſes above mentioned, with the Appurtenances, unto the ſaid *K. L.* his Heirs and Aſſigns, to the only proper Uſe and Behoof of him the ſaid *K. L.* his Heirs and Aſſigns, for ever, under the yearly Rent of Four Pence; (*or* to be holden of the Chief Lord or Lords of the Fee of the Premiſes, by the Rents and Services therefore due, and of Right accuſtomed.) And the ſaid *H. I.* for himſelf, his Heirs and Aſſigns, doth covenant and grant to and with the ſaid *K. L.* his Heirs and Aſſigns, that he the ſaid *H. I.* now is lawfully and rightfully, ſeiſed in his own Right of a good, ſure, perfect, abſolute and

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and indefeasible Estate of Inheritance in Fee-simple, of and in all and singular the said Messuage and Premises above-mentioned, and of every Part thereof, with the Appurtenances, without any Manner of Condition, Mortgage, Limitation of Use or Uses, or other Matter, Cause or Thing, to alter, change, charge or determine the same: And also that he the said *H. I.* now hath good Right, full Power, and lawful Authority, in his own Right, to grant, bargain, sell and convey, the said Messuage and Premises above-mentioned, with the Appurtenances, unto the said *K. L.* his Heirs and Assigns, to the only proper Use and Behoof of the said *K. L.* his Heirs and Assigns, for ever, according to the true Intent and Meaning of these Presents. And also, that he the said *K. L.* his Heirs and Assigns, shall and may, from Time to Time, and at all Times hereafter peaceably and quietly have, hold, occupy, possess and enjoy, all and singular the said Premises above-mentioned to be hereby granted, with the Appurtenances, without the Lett, Trouble, Hindrance, Molestation, Interruption and Denial, of him the said *H. I.* his Heirs or Assigns, and of all and every other Person and Persons whatsoever, claiming or to claim by, from or under him, them, or any of them. And further, that he the said *H. I.* and his Heirs, and all and every other Person and Persons, and his and their Heirs, any Thing having or claiming in the said Messuage and Premises above-mentioned, or any Part thereof, by, from or under him, shall and will at all Times hereafter, at the Request and Costs of the said *K. L.* his Heirs or Assigns, make, do and execute, or cause or procure to be made, done and executed, all and every further and other lawful and reasonable Grants, Acts and Assurances in the Law whatsoever, for the further, better, and more perfect granting, conveying and assuring of the said Premises hereby granted, with the Appurtenances, unto the said *K. L.* his Heirs and Assigns, to the only proper Use and Behoof of the said *K. L.* his Heirs and Assigns, for ever, according to the true Intent and Meaning of these Presents, and to and for none other Use, Intent or Purpose whatsoever. And lastly, the said *H. I.* hath made, ordained, constituted and appointed, and by these Presents doth make, ordain, constitute and appoint, *M. N.* of, &c. and *O. P.* of, &c. his true and lawful Attornies jointly, and either of them severally, for him, and in his Name,

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into the ſaid Meſſuage and Premiſes, with the Appurtenances, hereby granted and conveyed, or mentioned to be granted and conveyed, or into ſome Part thereof, in the Name of the whole, to enter, and full and peaceable Poſſeſſion and Seiſin thereof for him, and in his Name, to take and have, and after ſuch Poſſeſſion and Seiſin ſo thereof taken and had, the like full and peaceable Poſſeſſion and Seiſin thereof, or of ſome Part thereof, in the Name of the whole, unto the ſaid *K. L.* or to his certain Attorney or Attornies, in that Behalf, to give and deliver; To hold to him the ſaid *K. L.* his Heirs and Aſſigns, for ever, according to the Purport, true Intent and Meaning of theſe Preſents; ratifying, confirming and allowing all and whatſoever his ſaid Attornies, or either of them, ſhall do in the Premiſes. In Witneſs, &c.

A Will with Deviſe of Lands, Goods and Chattels.

IN the Name of God, Amen. I *H. I.* of, &c. being weak in Body, but of ſound Memory (bleſſed be God) do this Day, &c. in the Year, &c. make and publiſh this my laſt Will and Teſtament in Manner following; (that is to ſay) Firſt I give to my Son *K. I.* the Sum of Five Hundred Pounds. Alſo I give and bequeath to my Daughter *M. I.* the Sum of Four Hundred Pounds. Alſo I give to my dear Wife *E. I.* the Sum of Three Hundred Pounds. Alſo I give to my Brother *T. I.* and Couſin *L. I.* each the Sum of One Hundred Pounds, to be paid within Six Months next after my Deceaſe. Alſo I give all that Meſſuage or Tenement, ſituate, &c. wherein I now live, to my ſaid Son *K. I.* to hold to him during his Life; and after his Deceaſe I give the ſame to my Daughter *M. I.* during the Remainder of my Eſtate and Intereſt therein. Alſo I give all my Lands in the Pariſh of, &c. to my Wife *E. I.* to hold to her during her natural Life, ſhe making no Waſte or Deſtruction thereupon; and from and after her Deceaſe, I give and deviſe the ſame to my ſaid Son *K. I.* for the Term of his natural Life; and after his Death I deviſe the ſame to my Daughter *M. I.* during her natural Life; and after the Determination of that Eſtate, I give and deviſe the ſame to my loving Friends *C. D.* and *E. F.* and their Heirs, during the Life of my ſaid Daughter *M.* to the Intent to preſerve and ſupport the contingent Uſes and Re-

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Remainders her ein after limited; but nevertheleſs, in Truſt to permit my Daughter *M.* to receive the Rents and Profits thereof during her Life; And from and after the Deceaſe of my ſaid Daughter *M.* then to remain to the firſt Son of my ſaid Daughter *M.* and the Heirs of the Body of ſuch firſt Son lawfully iſſuing; And for Default of ſuch Iſſue, then to the Uſe and Behoof of the ſecond, third, fourth, fifth, and all and every other Son and Sons of my ſaid Daughter *M.* begotten; the elder of ſuch Son and Sons, and the Heirs of his Body, lawfully iſſuing, to be always preferred, and to take before the Younger of ſuch Sons, and the Heirs of his Body: And for Default of ſuch Iſſue, then I give the ſame to, &c. for and during the Term of his natural Life; And after his Deceaſe, to remain to his Iſſue in Tail, in ſuch Manner as I have limited the ſame to my Daughter *M.* and for Default of ſuch Iſſue, then to remain to, &c. and the Heirs Male of his Body begotten, &c. And for Default of ſuch Iſſue, to remain to my own right Heirs for ever. All the reſt of my Lands and Tenements whatſoever, whereof I ſhall die ſeiſed, in Poſſeſſion, Reverſion or Remainder, I give to my ſaid Son *K. I.* his Heirs and Aſſigns, for ever. Alſo, I give to, &c. Eight Guineas a Piece to buy them Mourning, &c. Alſo, I give to my Servant Man, &c. and the two Servant Maids that ſhall be living with me at the Time of my Deceaſe, Ten Pounds a Piece. Alſo, I give to the Poor of the Pariſh of, &c. Fifty Pounds. Alſo, I give my Wife *E. I.* during her Life, the Uſe of all my Plate and Houſhold-ſtuff; And after her Death the ſame to remain to, &c. Alſo, All the Reſt and Reſidue of my Goods, Chattels, and perſonal Eſtate whatſoever, I give to my ſaid Wife *E. I.* And I make and ordain her my ſaid Wife ſole Executrix of this my Will, in Truſt for the Intents and Purpoſes in this my Will contained. And I make my loving Friends, &c. Overſeers of this my Will, to take care and ſee the ſame performed according to my true Intent and Meaning; and for their Pains, I give each of them, &c. In Witneſs whereof, I the ſaid *H. I.* have to this my laſt Will and Teſtament ſet my Hand and Seal, the Day and Year above written.

Signed, ſealed and delivered by the ſaid *H. I.* as and for his laſt Will and Teſtament, in the Preſence of us, who were preſent at the Signing and Sealing thereof.

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A Will gives and conveys Estates, and alters the Property of Lands and Goods, in like Manner as a Deed executed in a Man's Life-time. It was ordained by Statute 32 *H.* 8 and by 29 *Car.* 2. all Devises of Lands, &c. are to be made in Writing, and signed by the Devisor in the Presence of three Witnesses.

Wills are to be governed by the Intention; and the Intent in Devises may sometimes make Estates to pass contrary to the Rules of the Law, with Respect to other Deeds. The first Grant and last Will stand in Force. *Co. Lit.* 25. *Plowd.* 162.

There must be three Witnesses to the Signing and Sealing of a Will.

A short, but comprehensive Account of all Arts and Sciences.

ALCHYMY, is that sublime Part of Chymistry, which teaches the Art of transmuting Metals, and making the Grand Elixir, or Philosopher's Stone, as some are weak enough to believe. But the best Definition of it is, that it is an Art without Art, which begins with Lying, is carried on with Labour, and ends with Beggary.

ALGEBRA, commonly called the Analytick Art, because it teaches how to resolve Questions, and demonstrate Theorems, by searching into the fundamental Nature and Frame of the Thing. It is the Science of Quantity in General, or a peculiar Method of Reasoning, which takes the Quantity sought, as if it were known, and then by the Help of another, or more Quantities given, proceeds by undeniable Consequences, till at length the Quantity first only supposed to be known, is found to be equal to some Quantity or Quantities certainly known.

ANATOMY, is that Art which teaches to dissect or take to Pieces any Animal Body, in a curious and dexterous Manner, in order to discover and explain the Original, Nature and Use, of its several Parts, for the Improvement of Physick and natural Philosophy.

ARCHITECTURE, is the Art of erecting Edifices proper for Habitation. The Antients have established five Orders of Architecture, called the *Tuscan*, the *Dorick*, the *Ionick*, the *Corinthian*, and the *Composite*, or *Roman* Order, the Difference between which Orders consists in the Column,

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Column, with its *Base* and *Capital*, and the *Entablature*, that is, the *Architrave*, *Frise* and *Cornice*; for these are the Parts which constitute the Order, and each One hath its proper and peculiar Measures. The Rules of Architecture require *Solidity*, *Convenience* and *Beauty*, *Solidity* implies the Choice of a good Foundation, and good sound Materials to work with. *Convenience* consists in so ordering and disposing the Parts of an Edifice, that they may not hinder or embarrass one another. *Beauty* is that due ranging and agreeable Union and Symmetry of all the Parts, which, upon the Whole, exhibits to the Eye of the Spectators a beautiful Form and Appearance. Architecture may likewise be divided into *Civil*, *Military* and *Naval*. *Civil Architecture* teaches to contrive and erect commodious Buildings for the Uses of Civil Life; such as Churches, Palaces and private Houses. *Military Architecture* shews the best Way of raising Fortifications about Cities, Towns, Camps, Sea Ports, &c. *Naval Architecture* is employed about the Building of Ships, Gallies, and other Vessels for the Water, together with Ports, Moles, Docks, &c. on Shore.

ARITHMETICK, is the Art of numbering truly, and of finding all the Properties and Powers of Numbers.

ASTROLOGY, is that foolish Science which pretends to foretel future Events from the Motions of the heavenly Bodies, and their Aspects one to another; or from some imaginary, hidden Qualities, which the weak Admirers of this Cheat will have to be in the Stars.

ASTRONOMY, is a mathematical Science, which teaches us the Knowledge of the Stars or heavenly Bodies, *viz.* Their Magnitudes, Distances, Motions and Eclipses.

BOOK-KEEPING, is the Art of keeping so distinctly all the Transactions of a Man's Business, that he may know at any Time the true State of his Affairs with Ease and Certainty.

BOTANY, as it relates to the Science of *Medicine*, teaches to discover and enumerate the several Virtues of Plants and Simples: As it relates also to *Natural History*, it teaches to distinguish the several Kinds and Species of Plants, Trees, Shrubs, &c. one from another, and to give just Descriptions of them.

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CHYMISTRY teaches how to ſeparate the different Subſtances that are found in mixed Bodies, as Animals, Plants or Minerals, and to reduce them to their firſt Principles.

CHIROLOGY, the Art of dumb Language, or a Method of talking by Signs made with the Hands.

CHIRURGERY (or, as it is commonly written and pronounced, *Surgery)* is the third Branch of the curative Part of Medicine, and teaches how ſeveral Diſeaſes and Accidents, incident to the Body of Man, may be cured by manual Operation. It is divided by ſome into five Parts. 1. *Syntheſis*, a ſetting together Things that are ſeparated. 2. *Diæreſi*, a ſeparating Things that were before connected. 3. *Diorthoſis*, a correcting of Things ſqueezed together and contorted. 4. *Exæreſis*, the taking away of Superfluities. 5. *Anapleroſis*, the reſtoring of that which was deficient. It is a common Saying, that a good Surgeon ſhould have an Eagle's Eye, a Lion's Heart, and a Lady's Hand.

CHRONOLOGY, is the Art of computing Time from the Creation of the World for hiſtorical Uſes, and preſerving an Account of remarkable Tranſactions, ſo as to date truly the Beginnings and the Ends of Reigns of Princes, the Revolutions of Kingdoms and Empires, ſignal Battles, *&c.*

COSMOGRAPHY, teaches to deſcribe the whole Frame of the Univerſe, with the ſeveral Parts thereof, according to their Number, Poſitions, Motions, Magnitudes, Figures, &c. The Sciences of Aſtronomy and Geography are comprehended in this.

DIALING, is the Art of drawing Lines on a given Plane, in ſuch a Manner as to ſhew the Hour of the Day when the Sun ſhines. *Papyrius Curſor* ſet up the firſt Sun-dial in *Rome*, about the Year of the City 447; and before that, according to *Pliny*, there was no Account of Time, but the Sun's riſing and ſetting.

ETHICKS, is the Science of Morality, by which we are taught the Rules and Meaſures of human Action; the Writers upon it uſually divide it into two Parts: The firſt contains an Account of the Nature of moral Good and Evil: The other enumerates the ſeveral Virtues in which the Practice and Exerciſe of Morality conſiſts, and which are the proper Means for us to obtain true Felicity, the End of all Moral Actions.

GEOGRA-

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GEOGRAPHY, teaches to describe the whole Globe of the Earth, and all its Parts. It is usually divided into *General* and *Particular*. *General*, or *Universal Geography*, considers the whole entire Globe of Earth and Water, as to its Figure, Magnitude, Motions, Land, Sea, &c. without any Regard to particular Countries. *Particular*, or *Special Geography*, considers the Constitution of the several Countries, or Regions, their Figure, Bounds, Parts, &c. The Forests, Mountains, Mines, Rivers, Animals, Plants, &c. As also the Climate, Seasons, Weather, Heat, Cold, Distance from the Equinoctial, &c. the Inhabitants, Arts, Communities, Cities, Commodities, Foods, Language, Customs, Policy, Religion, &c.

GEOMETRY, originally signifies the Art of measuring the Earth, or any Distances or Dimensions on, or belonging to it; but it is now used for the Science of Quantity, Extension or Magnitude, abstractedly considered, without any Regard to Matter. *Geometry* may be divided into four Parts, 1. *Planimetry*, or the Mensuration of plain Surfaces. 2. *Altimetry*, or the taking and measuring of Heights, whether accessible or inaccessible. 3. *Longimetry*, or the Art of taking the Distances of Things afar off, as Steeples, Houses, Trees, &c. 4. *Stereometry*, or the Art of measuring solid Bodies.

GRAMMAR, is the Art of Speaking or Writing properly, or of expressing the Relation of Things in Construction, with due Accent in Speaking, and Orthography in Writing, according to the Custom of those whose Language we learn.

HERALDRY, is the Art of Armoury, or Blazoning. It consists in the Knowledge of what relates to royal Solemnities, Cavalcades and Ceremonies at Coronations, Interviews of Kings, Instalments, Creation of Peers, Funerals, Marriages, &c. and also in giving the proper Coat-armour to all Persons, regulating their Right of Precedency in Point of Honour, and restraining those from bearing Coat-armour that have not a just Claim thereto, &c. The Herald's College is a Corporation established by *Richard* III. consisting of Kings at Arms, Heralds, and Pursuivants, who are employed to denounce War, proclaim Peace, &c.

HUSBANDRY, is the Art of tilling or cultivating the Earth, in order to render it fertile, and to assist Nature in bringing to greater Perfection the Products thereof.

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HYDRAULICKS, the Art of making all Sorts of Engines to carry or raise Water, or which are moved by Water, and serve for other Uses.

HYDROGRAPHY, is that Part of Geography which considers the Sea, and teaches the Art of making Sea Charts, measuring and describing the Sea, accounting for its Tides, Counter-tides, Currents, Bays, Soundings, Gulfs; also its Sands, Shallows, Shelves, Rocks, Promontories, Distances from Port to Port, with whatsoever is remarkable either out at Sea, or on the Coast.

HYDROSTATICKS, is the Doctrine of Gravitation in Fluids, or that Part of Mechanicks that considers the Weight or Gravity of fluid Bodies, especially Water, and also of solid Bodies immerged therein.

LAW, applied to the several Policies and States of People, is the Maxims and Rules they have agreed upon, or received from their Magistrates, in order to live in Peace and mutual Society; or it is a Command or Precept coming from some superior Authority, which an inferior is obliged to obey. *Aristotle* defines it to be a Declaration determined by the Common Council of a City, shewing in what Manner Things are to be done: But *Chambers*, in his Dictionary, thinks this is not so properly a Law as a Covenant.

LOGICK, is the Art of conducting the Understanding in the Knowledge of Things, and the Discovery of Truth. It may be divided into four Parts, *Apprehension*, *Judgment*, *Discourse*, and *Method*; as in order to think aright it is necessary to apprehend, judge, discourse and methodize rightly. My Lord *Bacon* divides Logick into four Branches, according to the Ends proposed in each; for a Man reasons either to find what he seeks, or to judge of what he finds, or to retain what he judges of, or to teach what he retains; and from hence arise so many Arts of Reasoning, viz. The Art of Inquisition or Invention, the Art of Examining or Judgment, the Art of Preserving, or of Memory, and the Art of Elocution or Delivering.

MATHEMATICKS, is the Science of Quantity, and comprehends whatever is capable of being numbered or measured. It may be divided into *Speculative*, which rests in the bare Contemplation of the Properties of Things; and *Practical*, which applies the Knowledge of those Properties to some Uses in Life, as in Astronomy, Architecture, Geography, Mechanicks, Musick, Opticks, Perspective, &c.

MECHA-

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MECHANICKS, is a mix'd mathematical Science, which conſiders the Nature and Laws of Motion and moving Powers, with the Effects thereof in Machines, &c.

METAPHYSICKS, may be called the Science of natural Theology; it conſiders Being in general, abſtracted from all Matter, *viz.* The Eſſence of it, which ſeems to have a real Being, though it does not exiſt, as a Roſe in the Depth of Winter. It is ſo ſublime, or rather ſo abſtruſe a Science, that there is a great Difference among Authors about its Nature and Ideas.

MUSICK, is the Science of Sound, or the Art of diſpoſing and conducting Sounds, of proportioning them among themſelves, and ſeparating them by juſt Intervals in ſuch a Manner, as to produce Harmony and Melody.

NAVIGATION, is the Art of ſailing or conducting a Ship or Veſſel from one Place to another, the ſhorteſt and moſt commodious Way. It likewiſe comprehends the Art of building and loading of Ships.

OPTICKS, is a mixed, mathematical Science, which explains the Manner wherein Viſion is performed in the Eye; treats of Sight in general, gives the Reaſons of the ſeveral Modifications or Alterations which the Rays of Light undergo in the Eye; and ſhews why Objects at different Diſtances, and in different Situations, appear greater, ſmaller, more diſtinct, more confuſed, nearer, or more remote.

PAINTING, is the Art of repreſenting natural Bodies, and giving them the Appearance of Life. It may be divided into four Parts, *Invention*, *Deſign*, *Diſpoſition*, and *Colouring*.

PERSPECTIVE, is that Part of the Mathematicks which gives Rules for the repreſenting of Objects on a plain Superficies, after the ſame Manner as they would appear to our Sight, if ſeen through that Plain, it being ſuppoſed as tranſparent as Glaſs,

POETRY, is the Art of inventing and compoſing Fables, Stories, Allegories, *&c.* in Verſe. It is related to Painting, as it deſcribes the Paſſions and Manners of Men; and to Muſick, as its Stile conſiſts of Numbers and Harmony.

PHILOSOPHY, is the Knowledge or Study of Nature and Morality, founded on Reaſon and Experience. Philoſophy owes its Name to the Modeſty of *Phythagoras*, who refuſed the Title of *Wiſe* given to his Predeceſſors, and contented himſelf with the Appellation of a Friend, or Lover of Wiſdom.

PHY-

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PHYSICK or MEDICINE, is the Art of healing Diſeaſes. According to *Boerhaave*, it conſiſts in the Knowledge of thoſe Things by whoſe Application Life is either preſerved healthy and ſound; or when diſordered, again reſtored to its Health and Vigour.

PHYSIOGNOMY, is the Art of knowing (or rather gueſſing) the Humour, Temper, or Diſpoſition of a Perſon, by the Lines and Characters of his Face.

RHETORICK, is the Art of ſpeaking in the moſt elegant and perſuaſive Manner; or as my Lord *Bacon* defines it, the Art of applying and addreſſing the Dictates of Reaſon to the Fancy, and of recommending them there ſo as to attract the Will and Deſires.

SCULPTURE, is the Art of cutting or carving Wood, Stone, Marble, *&c.* and of forming various Figures and Repreſentations therein, particularly of Men, Beaſts, Birds, *&c.*

THEOLOGY or DIVINITY, is that Science which inſtructs us in the Knowledge of God and divine Things. It is generally divided into five Parts. 1. *Natural Theology*, is the Knowledge we have of God from his Works by the Light of Nature and Reaſon. 2. *Supernatural Theology*, is that which we learn from Revelation. 3. *Poſitive Theology*, is the Knowledge of the Holy Scriptures, and of the Signification thereof, conformably to the Opinions of the Fathers and Councils, without the Aſſiſtance of any Argumentation. 4. *Moral Theology*, is that which teaches the divine Laws relating to our Manners and Actions. 5. *Scholaſtick Theology*, is that which proceeds by Reaſoning, and taking certain eſtabliſhed Principles of Faith for granted, from thence deduces Abundance of ſtrange Things, and has made a fine Piece of Work of it indeed. The Antients had a Three-fold Theology. The firſt *Fabulous*, which flouriſh'd among the Poets, and was chiefly employed in the Genealogies of the Gods, *&c.* The ſecond *Political*, which was embraced by the Politicians, Prieſts and People, as moſt ſuitable and expedient to the Safety, Quiet, and Proſperity of the State. The third, *Natural*, chiefly cultivated by the Philoſopers, as moſt agreeable to Nature and Reaſon. This laſt acknowledged only one Supream God.

Of

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Of the Seven Wonders of the World.

THE *Pagans* did commonly boast of seven stately Structures, that were named, *The Seven Wonders of the World.*

I. The greatest Wonder, and most incomparable Work, was the Temple of *Ephesus*, dedicated to *Diana.* It was first begun by *Ctesiphon*, and seated (for Fear of Earthquakes) in marish Ground; it was 425 Feet long, and 220 Feet broad; it had in it 127 stately Marble Pillars, each of which had been the sole Enterprize and Work of a King who was resolved to make his Piety and Magnificence appear upon his Pillar. It was 200 Years in building, though many Thousands of Men were employed in the Work; it was re-built at the Command of *Alexander the Great*, by *Dinocrates*, his Engineer.

II. The Walls of *Babylon*, and the pleasant Gardens which Queen *Semiramis* planted; about this Work 300,000 Men were continually employed many Years. These Walls were 300, or 350 *Stadia* about, which make about 22 *English* Miles; they were 50 Cubits high, and so broad, that two or three Chariots might go upon them abreast, without any Danger.

III. The Lybyrinth of *Egypt*, built by *Mares*, or *Menis*, for his Tomb, in which 16 large Apartments, or sumptuous Palaces, were built, to equal the 16 Governments, or Provinces of *Egypt*; there were in it so many Ways and artificial Walks, that it was no easy Matter to find the Way out of it. *Dædalus* took his Model from this, to build his Labyrinth in *Crete.*

IV. The Pyramids of *Egypt*, which remain to this Time; there were three of them; the greatest was built by *Chemnis*, King of *Egypt*, as a stately Monument of his Power, and to be his Sepulchre after his Death: It was placed about 16 *English* Miles from *Memphis*, or *Grand Cairo*, and was about 1440 Feet in Height, about 143 Feet long on each Side of the square Basis, and 600,000 Men were employed in building it, during the Space of 20 Years. It is built of hard *Arabian* Stones, every one about 30 Feet long. *Chemnis* was torn in Pieces in a Mutiny of his People, and could never obtain the Honour of being interred in this Sepulchre. *Cephus*, his Brother, succeeded him, and imitated his vain glorious Actions, in erecting another less than the former.

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former. The laſt was built by King *Mycerinus*, or (as ſome ſay) by the famous Strumpet *Rhodope*; upon this appears a great Head of black Marble, of 102 Feet round about the Temples, and about 60 Feet high from the Chin to the Crown of the Head.

V. The Mauſolæum of *Caria*, which Queen *Artemiſia* built, as a Sepulchre for her deceaſed Huſband *Mauſolus*; ſhe enriched it with ſo many rare Ornaments, that it was eſteemed one of the greateſt Wonders of the World; and all Monuments of this Kind have ſince been called *Mauſolæa*. This Queen did love her Huſband ſo much, that beſides this Edifice, which ſhe erected for him, ſhe cauſed the Aſhes of his conſumed Body to be put into a Cup of Wine, and drank it, to give him a Lodging next to her Heart.

VI. The *Coloſſus* of *Rhodes* was made by *Chares*, of *Aſia Minor*, of Braſs, in the Space of 12 Years, and was dedicated to the Sun. It coſt about 44000 l. *Engliſh* Money, and was placed at the Entrance of the Harbour of the City, with the right Foot ſtanding on one Side of the Land, and the Left on the other; between the Legs the talleſt Ships, with their Maſts, did enter into the Haven. When it fell to the Ground by an Earthquake, few Men were able to embrace the little Finger of this prodigious Statue. It was 800 Feet high, and of a proportionable Bigneſs; and when broken down and beat to Pieces by the *Saracens*, that took the Iſland, *Anno Dom.* 684, they loaded above 900 Camels with it.

VII. The Statue of *Jupiter Olympius* was the neateſt of all theſe Works; it was erected by the *Eleens*, a People of *Greece*, and placed in a Temple dedicated to *Jupiter*, which was enriched afterwards with many curious Repreſentations, and excellent Statues: This of *Jupiter* was ſitting in a Chair half naked, but from the Girdle downwards he was covered; in the right Hand he held an Eagle, and in the Left a Scepter. *Caligula* endeavoured to tranſport it to *Rome*, but thoſe that were employed about it were frighted from their Enterprize, by ſome unexpected Accident. This Statue was made by *Phidias*, and was 150 Cubits high; the Body was of Braſs, but the Head was of pure Gold.

Among the many renowned Buildings and Erections of the Antients, the *Capitol* at *Rome* may juſtly claim a Place; it was conſecrated to *Jupiter Imperator*; upon Mount *Tarpeia*

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it was built, and was a famous Edifice, the richeſt and moſt noted in all *Italy*. It was beautified with the Statues and Images of all the Gods, with the Crowns of Victory, and with the Spoils of the Nations conquered by the *Romans*. It was ſeated in the moſt eminent Place of the City, by *Tarquinius Priſcus*, and *Servius Tullius*, two Kings of *Rome*, and afterwards mightily enlarged by the following Generations. The Temples of *Neptune*, *Vulcan*, *Saturn*, *Mars*, *Æſculapius*, *Hercules*, *Veſta*, and *Janus*, are noted by Authors to have been brave Structures, worthy of the *Roman* Grandeur; as alſo the *Pantheon*, dedicated to all the Gods.

To theſe may be added, the Royal Palace of *Cyrus*, King of *Media*, built in a very grand and extravagant Manner, by *Menon*, who cemented the Stones with Gold; alſo the Temple built at *Athens* to *Minerva*, and another in the ſame City to *Mars*, where the Judges met to examine Cauſes of Life and Death; with the glorious Temple, or Fabrick, at *Delphos*, where *Apollo* gave Oracles. This Temple was enriched with innumerable Gifts, which came from every Part of the World: In it was a Woman Prieſt named *Phœbas*, otherwiſe *Pythia*, or *Pythoniſſa*, that received the Enthuſiaſm, ſitting upon a little Table ſupported with three Feet; it was called *Tripous*, or *Cortina*, becauſe it was covered with the Skin of the Serpent *Python*, whom *Juno* had ſent to diſtreſs *Latona*, *Apollo*'s Mother, in the Iſland of *Delos*; when *Apollo* came of Age, he killed this Serpent with his Bow and Arrows, after a long and grievous Combat; during which theſe Words, *Io Pæan*, were frequently heard in the Air, and which afterwards were frequently uſed in publick Rejoicings.

Of the MUSES.

THE *Muſes* had ſeveral Names given them by the antient Poets, according to the ſeveral Places where they dwelt; ſometimes they were called *Pierides*, on account of the Foreſt *Pieris*, in *Macedonia*, where they were ſaid to be born; ſometimes *Heliconiades*, from Mount *Helicon*, which was near their beloved *Parnaſſus*, and ſometimes by other Names, according to the Pleaſure of the Mythologiſts, in their fabulous Accounts of the Heathen Deities.

They were ſuppoſed to be the Daughters of *Jupiter* and *Memory*, which Fiction was introduced, becauſe *Jupiter* was

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was supposed to be the first Inventor of Disciplines, which are necessary in order to a regular Life.

These *Muses*, by the Assistance of *Apollo*, invented Musick; their chief Office was to be present at solemn Festivals, and sacred Banquets, and there to sing the Praises of famous Men, that they might encourage others to undertake glorious Actions, as *D'Assigny* observes.

They were represented as *Women*, because *Disciplines* and *Virtues* have feminine Names assigned to them; they were painted young, handsome and modest; agreeably dressed, and crowned with Flowers; they were much esteemed for their Chastity, and it is written of them, that when *Adonis*, the Favourite of *Venus*, offered to stir up in them some Inclinations to Love, they fell upon him, and killed him.

They were at first but three, and called *Melete* [Meditation] *Mneme* [Memory] and *Aonide* [Singing] but a certain Carver of *Sycion*, having Orders to make three Statues of the three *Muses* for the Temple of *Apollo*, mistook his Instructions, and made three several Statues of each Muse; and these happening to be very curious and beautiful Pieces, they were all set up in the Temple, and from thence began to be reckoned nine *Muses*; afterwards *Hesiod* named them, *Calliope*, *Clio*, *Erato*, *Thalia*, *Melpomene*, *Terpsichore*, *Euterpe*, *Polyhymnia*, and *Urania*.

Calliope was supposed President of *Heroick Poetry*, *Clio* of *History*, *Erato* of the *Lute*, *Thalia* of *Comedy*, *Melpomene* of *Tragedy*, *Terpsichore* of the *Harp*, *Euterpe* of *Wind Musick*, *Polyhymnia*, of *Musick*, *Urania* of *Astronomy*.

Alexander Ross says, there were at first three *Muses*, to shew the three Sorts of *Musick*, *Singing*, *Blowing*, and *Playing*; the first in the *Throat*, the second in *Wind-Instruments*, and the third upon *Strings*: Or to shew the Three-fold chief Learning in the World, *Philosophy*, *Rhetorick* and *Mathematicks*: *Philosophy* is Three-fold, *rational*, *moral* and *natural*; there are three Parts in *Rhetorick*, the *Demonstrative*, the *Deliberative*, and the *Judicial*; there are also three Parts of *Mathematicks*, *Arithmetick*, *Geometry*, and *Musick*. Afterwards the Number of *Muses* increased to seven, either because of seven *Holes* in *Wind Instruments*, of seven *Strings* on other *Instruments*, of the seven *liberal Sciences*, or of the seven *Planets*. Lastly, they came to be nine in Number, from the nine *Spheres*, which they held made a *musical Harmony*. They were called the

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the Daughters of *Jupiter* and *Mnemosyne*, to shew that *Learning* cannot be had without the *Intellect* and *Memory*, which are most eminent in learned Men; or rather that GOD is the Author of *Learning*, and *Memory* the Mother or Nurse thereof; therefore the Poet ascribes to the *Muses*, *Memory*, and *Utterance*; by the one they are preserved, by the other they are heard.

They are called *Musæ* from *Maiosthai*, to enquire; this belongs to *Invention*; and from *Muesthai*, to initiate into *sacred Mysteries*, by which is meant *Judgment*; so that the *Muses*, or *Learning*, consists in *Invention* and *Judgment*.

The *Muses* were winged, to shew the Nimbleness of *good Wits*, and the Quickness of *Poetry* and *Musick*, in moving the *Affections*; they bore *Palms* in their Hands, to shew that they conquer Mens *Passions*; they did all dance in a Ring to shew the Agreement and Harmony among the *liberal Sciences*; and the *Graces* were joined with them, to shew the solid Joy that is the constant Attendant on *Learning* and *Virtue*.

They had divers Names from divers Occasions, as *Nymphs* and *Goddesses* of Water, to shew the Clearness of *Poetry*; *Parnassides, Heliconides, Pierides, Aonides, Pegasides, Aganippides, Libethrides, Thespiades*, &c. to shew the various Kinds of *Learning*, and the many Labours the *Scholar* must undergo, before he can attain unto Excellency. The particular Names of the *Muses* are also very significant, as *Clio*, from *Cleous* [Glory] because great is the *Glory* of *Learning*, though Ignorance be its Enemy; *Euterpe*, from *Euterpus* [delightful] because there is no Delight comparable to that of virtuous, learned Men; *Thalia* from *Thalein* [to grow green] for *Learning* will still flourish, and never wither; *Melpomene*, from *Meletenpoiomene* [making Melody] for the Life of a Scholar is still chearful and melodious; *Terpsichore*, from *Terpo* and *Choria* [to delight in Singing or Dancing] for the Mirth of learned Men is within themselves; *Erato*, from *Eratus* [Love] for the more a Man knows *Learning*, the more he loves it; *Polyhymnia*, or *Polymnia*, from *Polus* and *Umnos*; no Mens Minds are so full of Melody and spiritual Comfort, as the Minds of learned Men; *Urania*, from *Uranos* [the Heaven] for *Learning* came from thence; *Caliope*, from *Calei opos* [a good Voice] there is no outward Voice so charming and melodious as the inward Voice of *Knowledge* in the Mind, by which a Man

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discourseth with himself, and is never less alone than when he is alone.

The *Ancients* built Temples to the *Muses* remote from Cities, and described them sitting on the Top of *Parnassus*, to shew *Learning* hath its Seat in the *Head*, which is the Top and Capital of Man's Body; and as all *Gods* and *Goddesses* had their *Birds* dedicated to them, so had the *Muses* the laborious *Bees*, who very much resemble *Scholars* in their *Providence*, *Industry*, *Labour*, *Order* and *Harmony*; they are content with little, yet afford much Benefit to the Owner; so do *Scholars* to the *State*; neither is there any Creature, to which *learned Men* and *Students* are more beholden, than to the *Bee*, which both affords them *Food* and *Physick* in its *Honey*, and *Light* in their *Lucubrations* in its *Wax*.

Of HERCULES.

THERE has been no King, nor other Person, that we read of in profane History, that has rendered his Name more famous than *Hercules*, who, for his noble Acts, and glorious Deeds, was deified and placed among the Stars.

His Father is said to be *Jupiter*, and his Mother *Alcmena*; when his Mother was big with Child with him, *Sthelenus*, King of *Mycene*, was in great Hopes of obtaining speedily a Son, afterwards named *Eurystheus*. *Jupiter* took an Oath, that he that should be born first, should be King, and have an absolute Command over the other; which when *Juno* (*Jupiter*'s Wife, the sworn Enemy of all her Husband's Concubines, and of all the Children that were born of them) had accidentally heard, she caused *Eurystheus* to come forth of his Mother's Womb, at the End of seven Months, and by that Means procured unto him the Scepter with the Sovereign Command.

'Tis said that when *Jupiter* lay with *Hercules*'s Mother, he spent three Nights (which he caused to be joined together) in begetting him; his Body and Stature were answerable to the Pains and Power of his Father, for he was seven Feet high, had three Ranks of Teeth in his Mouth, and out of his Eyes Sparkles of Fire and Light did sometimes proceed.

Juno, at the Intercession of *Pallas*, seemed to be reconciled to *Hercules*; as a Testimony of her Good-will to him, when in his Infancy, she gave suck to him of her own Breast;

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Breast; by that Means it happened, that the little *Hercules*, having spilt some of the Milk out of his Mouth, he whited that Part of the Sky that is called the Milky Way. This Kindness was only feigned to satisfy the Request of *Pallas*; for a while after, when he was yet in his Cradle, she sent two dreadful Serpents to devour him, which did not however answer her Expectation; for the Child, without any Show of Fear, caught them in his Hands, and tore them in Pieces.

When he came to Years of Understanding, he was put under the Tuition of such Masters as did excel in many Arts and Sciences, to learn of them the Things that were required to make him accomplished. He was taught by *Teutares*, a *Scythian*, to handle the Spear and Dart; *Lucius*, the Son of *Apollo*, taught him the Rudiments of Learning, and because he had chastised him with a Rod, *Hercules* killed him when he came to be of Age; from *Eumolpus* he learned the Art of playing upon Instruments of Musick; *Chiron* gave him an Insight into Astrology, and *Harpolicus* made him understand the other Sciences that were necessary to accomplish a Man of his Birth and Valour.

He was scarce eighteen Years of Age, when *Eurystheus* engaged him in the most difficult Enterprizes, and exposed him to all Manner of Dangers to make him perish; so that once he took a Resolution to obey him no longer; but the *Oracle* informed him, that it was the Will of the Gods, that he should pass twelve Times more through Dangers, in Obedience to the Commands of this Tyrant. These are named the twelve Adventures or Labours of *Hercules*:

1. He was appointed to destroy a great Lion of the Forest of *Nemea*, that was fallen from the Moon, and spoiled the Country round about; he discharged all his Arrows at this wild Beast to little Purpose, and then encountered it with his Club only in his Hand, but the Skin was so tough and hard that no Weapon could enter it, which when *Hercules* perceived, he caught hold of the raging Lion, and tore him in Pieces with his Hands. Ever after he delighted in wearing the Skin of this Lion about him, as a Token of his Victory, and in Imitation of him all Heroes have Skins of Lions, or other wild Beasts upon their Bucklers; and some say, this is the Lion that was placed among the twelve Signs of the *Zodiack*.

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2. He was sent to the Lake of *Lerna*, near *Argos*, to encounter with an Hydra, a notable Serpent, or Dragon of a strange Nature; for it had seven Heads, and when one was cut off, many others did immediately burst forth, so that it was not possible to overcome this Monster, unless all his Heads were cut off at one Time, and the rest of his Body destroyed by Fire and Sword, which was executed by *Hercules*.

3. *Eurystheus* sent him to Mount *Erymanthus*, in *Arcadia*, where a wild Boar of extraordinary Bigness destroyed all the neighbouring Fields: *Hercules* dragged him alive to *Eurystheus*, who was almost frighted out of his Wits when he beheld him.

4. He got hold of the Stag of the Mountain *Menelaus*, whose Feet were of Brass, and Horns of Gold, when he had pursued it a whole Year.

5. He put to Flight the Birds of the Lake *Stymphalus*, that were so numerous, and of such a prodigious Greatness, that they darkened the Air, and hindred the Sun from shining upon Men, when they flew over them; besides they did often take up some, and carry them away to devour them. But these Encounters were not worthy to be compared with his Combat against,

6. The *Amazons*, who were Women of *Scythia*, dwelling upon the Coasts of the *Hircanian Sea*, who having followed their Husbands in the War, and seeing them all cut off by the Enemy, near the River *Thermodon*, in *Cappadocia*, they resolved to maintain the War themselves, and not to suffer any Man to have Command in the Army, or Kingdom, or to live among them. They went among their Neighbours to fetch from them Children; the Males they destroyed, but kept the Females, and brought them up in a warlike Manner; and that they might be more ready to handle the Bow and Arrows, they burnt their right Paps in their Infancy. They behaved gallantly in the Siege of *Troy* under the Conduct of *Penthesilea*; but were forced to yield to the Valour of *Hercules*, who being accompanied by *Theseus*, went against them, according to the Command of *Eurystheus*, and took their Queen *Hippolite*, who was afterwards married to *Theseus*.

7. He undertook to cleanse the Stables of *Augeas*, King of *Elis*, in which Thousands of Oxen had been daily fed, so that the Dung, by a long Continuance, was much increased, and filled the Air with Infection; *Hercules* therefore

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fore turned the Current of the River *Alpheus* from its ordinary Course, and caused it to pass through the Stables; thus he carried away the Filth in one Day, according to his Bargain; but *Augeas* was not grateful to him for his Pains, for he denied him the tenth Part of the Oxen that were kept there; this caused the Death of *Augeas*, and the Loss of his Goods.

8. He seized upon a Bull, that did breathe nothing but Fire and Flame, which *Neptune* had sent into *Greece*, to punish some Disgraces and Affronts, which he had received from that Country.

9. He passed into *Thracia*, where he caused the Tyrant *Diomedes* to endure in his own Person, that which he made others to suffer, which was, he gave all Strangers that he could catch in his Kingdom to be devoured by his Horses. *Hercules* served *Busiris* King of *Egypt*, in the same Manner, because he was so cruel to all Strangers, as to cut their Throats upon the Altars of *Jupiter*, that he might cloke his Cruelty by a Pretence of Piety.

10. *Geryon*, King of *Spain*, who was reported to have three Bodies, because he commanded three Kingdoms, was no less cruel than the former; he fed some Oxen, which he highly esteemed, as *Diomedes* did his Horses, and to keep them, he had a Dog with three Heads, and a Dragon with Seven. When *Hercules* was sent thither by *Eurystheus*, he treated him as he had formerly done *Diomedes*.

11. He was required to put into the Possession of *Eurystheus*, certain Golden Apples belonging to *Juno*, that were in the Custody of some Nymphs, the *Hesperides*, Daughters of *Hesperus*, the Brother of *Atlas*; but before any one could come at them, a great Dragon that was at the Entry of the Gardens where they grew, was to be first overcome. He found Means to accomplish this Enterprize also; some say he made Use of *Atlas*, who went to gather them, while he took his Burden upon him, and bore up the Heavens with his Shoulders.

12. The last Injunction which he received from *Eurystheus*, was to fetch from Hell the Dog *Cerberus*, from whence he brought also *Theseus*, that was gone down to keep Company with his dear Friend *Pirathous*.

These glorious Actions made *Hercules* dreadful to *Eurystheus*, and to all Princes in the World. Afterwards there was no Tyrant, nor Monster known, but he undertook to

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destroy them; thus he put to Death *Cacus* (the Son of *Vulcan*, who had three Heads) because he was a notable Robber, who did spoil and destroy all that came near the Mount *Aventin*. From thence he went to Mount *Caucasus*, where he delivered *Prometheus*, and killed the Eagle that devoured his Liver. He had also an Encounter with *Antæus*, the Son of the Earth, who was of a prodigious Bigness and did commit all Manner of Cruelties; *Hercules* lifted him up in his Arms, and pressed the Breath out of his Body.

But as *Hercules* was big, and of an high Stature, a small Master was not sufficient to nourish him, for as he walked in the Fields, one Day when he was hungry, he met *Theodamus* tilling the Ground, he snatched from him one of his Oxen, which he laid upon his Shoulders, and devoured every Bit of it before *Theodamus*, who loaded him all the while with Curses and Imprecations.

He made a Journey into *Spain*, where he separated the two Mountains, *Calpe* and *Abyla*, to let the main Ocean into the Land, by the Straits of *Gibraltar*; these two Mountains situated one against another, *Calpe* in *Spain*, and *Abyla* in *Mauritania*, do appear afar off as two Pillars, they are said to be the two Pillars of *Hercules*, where he engraved these Words, *Non plus ultra*; as if these were the utmost Bounds of the World, beyond which he could not enlarge his Dominions. In all his Conquests, he made Use of a Club of an Olive Tree, which at last he dedicated to *Mercury*, the God of Eloquence, whose Virtue he acknowledged to be more profitable than the Power of Arms.

To re-count all that the Antients have recorded of this famous Man, would make a pretty large Volume, and perhaps not be so agreeable to some Persons as this Epitome; therefore we will just hint at the Catastrophe of *Hercules*, and conclude our Narrative.

Like the Heroes of old, he was enamour'd with Women; he married *Megara*, the Daughter of *Creon*, King of *Thebes*, whom he afterwards killed; then he became a Slave to *Omphale*, Queen of *Lydia*, for whom he changed his Club for spinning Instruments, and his Lion's Skin for the Garments of a Waiting Maid. Afterwards he became amorous of *Dejanira*, for whom he was to fight *Achelous*, the Son of [illegible] and returning with her to a [illegible] service to [illegible] nor

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came over, he would have abused her, had not *Hercules* pierced him with an Arrow to the Heart; when he was ready to expire, he resolved to revenge himself in this Manner: He gave his Garment dropping with his Blood to *Dejanira*, persuading her, that if her Husband did wear it but once, he would never have Love for other Women. The silly Creature believes him, therefore she sent it to him by *Lychas* his Man, when he was sacrificing upon Mount *Oeta*; but it fell not out as she had imagined, for as soon as he had put on this Coat, the Blood of *Nessus*, which was a most powerful Poison, caused so great a Burning all over his Body, that in Despair he cast himself into a flaming Pile of Wood, and there was consumed to Ashes.

His Servant *Lychas* was drowned in the Sea, where he was changed into a Rock, and *Dejanira*, for Grief, killed herself, with a Blow of her Husband's Club.

Hercules, before he died, obliged *Philoctetes*, the Son of *Pean*, his Companion and Friend, to swear unto him never to discover the Place where his Ashes and Bones were buried; he then delivered unto him his Arrows, colour'd with the Blood of the *Hydra*, which were afterwards carried to the Siege of Troy.

A short Historical Table *of the most remarkable* Events, *that happened in the* World, *from the Creation to the Death of* Julius Cæsar.

	A. M.	B. C.
THE most antient History we have, is the Bible; from that we learn, that it is now upwards of 5700 Years since the World was created. But the Account which *Moses* gives is so very concise, that for the first 2000 Years we have very little Information what was done amongst Mankind, save that they were so exceeding wicked, that in all the World only *Noah*, and his Family, found Favour with God, and were preserved from that Deluge which destroyed the whole Earth besides.	1657	2347
The Building of *Babel* (or *Babylon*) The Division of Languages, and the Dispersion of Mankind.	1575	2247

Nimrod

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	A. M.	B. C.
Nimrod the Son of *Cush* founds the *Babylonian* Empire, *Assur* the Son of *Shem* builds a City (which was afterwards called *Nineveh*) and founds the *Assyrian* Empire.	1814	2190
The Monarchy of *Egypt* established by *Misraim*, the Son of *Ham*.		
Fohi first King of *China*.		
The *Arabians* Pastoral Kings of *Egypt*.	1920	2084
The Death of *Noah* in the 950th Year of his Age, 350 Years after the Flood.		
The Birth of *Abraham*.	2009	1996
The Kingdom of the *Argives*, established under *Inachus*.	2168	1836
The *Chaldeans* take *Babylon*.	2242	1762
Joseph sold into *Egypt*.	2299	1705
The Birth of *Moses*.	2430	1574
A Colony from *Egypt*, under the Command of *Cecrops*, build the City of *Athens*.	2467	1537
The *Chaldeans* drove out of *Babylon* by the *Arabians*.	2494	1510
The *Israelites* delivered from *Egypt* by *Moses*.	2513	1491
Sesostris, King of *Egypt*, conquers *Arabia*, *Persia*, *India*, *Scythia*, *Thrace*, *Asia the Less*, *Syria*, in about nine Years.	2522	1482
The famous Philosopher *Hermes Trismegistus*, was Privy Counsellor to this Monarch.		
The Destruction of *Troy*.	2820	1184
Æneas flies into *Italy*, kills *Turnus* King of the *Rutuli*, in a single Combat; marries *Lavinia*, Daughter of *Latinus*, and builds the City of *Lavinium*. The *Æneid* of *Virgil* is built upon this Story.	2835	1169
The Temple of *Jerusalem* built by *Solomon*.	3000	1004
The *Olympick* Games, which were first instituted by *Hercules*, at the Foot of Mount *Olympus*, in Honour of his Father *Jupiter*, are revived in *Peloponnesus* by *Iphytus*. From hence the *Greeks* begin the Epocha of their *Olympiads*.	3228	776
Rome built by *Romulus*, first King of *Rome*.	3251	753
About this Time lived *Homer* and *Hesiod*, *Greek* Poets.		

Sardo-

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Sardanapalus having provoked his Subjects by his Effeminacies to rebel againſt him, and being beſieged in *Nineveh* by *Nabonaſar* and *Arbaces*, his Lieutenants-General, burns himſelf, his Wives, his Children, and all his Treaſures. A. M. 3257

Lycurgus perſuades the *Lacedemonians* to change their Form of Government, which was monarchial, to a mixt Form of Monarchy and Ariſtocracy. 3278

Corinth, about 600 Years after its firſt Building, alters its Form of Government from Monarchial to a Republick. 3290

Numa Pompilius, ſecond King of *Rome*, begins to reign, divides the Year into twelve Months. 3291

The Deſtruction of the firſt Temple of *Jeruſalem*, by *Nebuchadnezzar* King of *Babylon*. 3416

About this Time lived *Daniel* the Prophet; *Arion*, *Alceus*, *Epimenides*, *Greek Poets*; *Sappho* the Poeteſs, and *Pythagoras* the Philoſopher.

Cræſus, the laſt King of *Lydia*, defeated and taken Priſoner by *Cyrus*. 3456

About this Time lived the ſeven wiſe Men of *Greece*, viz. *Thales* the *Mileſian*, *Chilon* the *Lacedemonian*, *Cleobulus* of *Corinth*, *Byas* of *Pryene*, *Pittacus* of *Mytilene*, and *Solon*, of *Salamis*.

Cyrus ſets the *Jews* at Liberty. 3464

Now ſung the merry Poet *Anacreon*.

Tarquin the Proud, the ſeventh and laſt King of *Rome*, expelled. *Rome* had now been governed by Kings 245 Years. Afterwards two Conſuls were annually elected in their Place. 3496

Rome beſieged by *Porſenna*, King of the *Tuſcans*, in Favour of *Tarquin*. 3496

Darius King of *Perſia*, ſends to demand Earth and Water, as Homage from the *Grecian* Cities in *Europe*; and having ſent a great Army againſt the *Grecians*, they win the famous Battle of *Marathon*, by the Conduct of *Miltiades* the *Athenian* General. 2511

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	A. M.	B. C.
Tribunes eſtabliſhed for the *Roman* People.	3520	484
Quintus Cincinnatus the firſt Dictator choſe by the *Romans.*		
Leonidas, at the Streights of *Thermopilæ*, with 300 *Lacedemonians*, who all died upon the Spot, kills 200 *Perſians.*	3525	479
Pindar and *Symonides*, Lyrick Poets, and *Sophocles* and *Euripides*, Tragick Poets, flouriſhed about this Time.		
The *Jews* finiſh the Building of their Temple, from whence they begin their ſeventy Weeks.	3550	454
About this Time lived *Æſchylus* the Poet, *Herodotus* and *Thucydides* the Hiſtorians, and *Iſocrates* the Orator.		
The *Peloponneſian* War began between the *Athenians* and *Lacedemonians.*	3571	433
Themiſtocles baniſhed by the *Athenians.*	3590	414
Ariſtophanes the Poet, *Socrates* the Philoſopher, and *Alcibiades* the *Athenian* General, lived about this Time.		
Alexander the Great born.	3648	356
Plato dies.		
Demoſthenes the *Athenian* Orator, *Diogenes* the Cynick, and *Ariſtotle* the Philoſopher, lived about this Time. *Alexander*, after having reigned 12 Years, in which Time he conquered the greateſt Part of the known world, dies in the 32d Year of his Age.	3680.	324
Now flouriſhed *Heraclitus*, *Democritus*, *Zeno*, *Euclid*, and *Epicurus.*		
Arſaces frees the *Parthians* from the *Macedonian* Yoke, and lays the Foundation of the *Parthian* Empire.	3758	246
About this Time lived *Beroſus* the *Chaldean*, who writ the Hiſtory of *Aſſyria* and *Babylon*, and *Plautus* a Poet at *Rome.*		
The firſt *Punick* War begun.	3768	236
The ſecond *Punick* War begun by *Hannibal.*	3795	209
Scipio vanquiſhes *Hannibal* in *Africa.*	3802	202
About this Time lived *Ennius* and *Terence*, *Roman* Poets.		
Diviſions at *Rome* between the Senate and People. *Marius* ſides with the People. *Sylla*		op-

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opposes and kills him. This was the first Civil War among the *Romans*. A. M 3923

Diodorus Siculus, the *Greek* Historian, flourished about this Time, and *Cicero* the *Roman* Orator. *Cato* being besieged by *Cæsar* at *Utica*, kills himself. 3958

At this Time the *Julian* Account came in Use, *Cæsar*, as sovereign Priest, having reformed the Kalendar.

Cæsar returning to *Rome*, celebrates five Triumphs, for *Gaul*, *Egypt*, *Pontus*, *Africk* and *Spain*. 3959

The great Power and Honours given to *Cæsar* by the *Romans*, alarm some of the chief Nobility, and occasion the Conspiracy against him by *Brutus*, *Cassius*, *Trebonius*, *Casca*, and others, who kill him in the Senate House 3960

The Senate and People of *Rome*, by general Consent, confer on *Octavianus* the whole Monarchy of the *Roman* Empire, with the Name of *Augustus*, which he and his Successors ever after bore.

The Glory of the *Romans* was now at its full Height. At this Time flourished *Dionysius Halicarnasseus* the *Greek*, and *Titus Livius* the *Roman* Historian; together with the Poets, *Virgil*, *Horace*, *Ovid*, *Cornelius*, *Gallus*, *Tibullus*, *Propertius*, with many others of great Note. In fine, all Kinds of polite Learning and Science, did never so universally flourish, as in the *Augustan* Age.

A short Abstract of the History *of* England.

JULIUS CÆSAR invaded *Britain*, and made it tributary to the *Romans* in the Year o the World 3945. About 100 Years after,

Claudius Cæsar made an Expedition into *Britain* and conquered Part of the Island.

Nero succeeding in the Empire, sent his Lieutenan *Suetonius Paulus* into *Britain*; but the *Britons* set upo him, and slew 70,000 *Romans*; but in the next En counter 80,000 *Britons* were slain.

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Titus Vespasian sent his Deputy, *Julius Agricola*, who victoriously extended the *Roman* Province in *Britain* beyond all his Predecessors. A.D. 79

And thus the *Romans* for the Space of 500 Years reigned in *Britain*: At last the *Britons* elected themselves several Kings to manage their Wars against the *Picts* and *Scots*; and being deserted by the *Romans*, they invited the *Saxons* to their Assistance, who accordingly landed in the Island under the Conduct of two Brothers, *Hengist* and *Horso*, who advancing as far as *Stamford* in *Lincolnshire*, gave Battle to the *Scots* and *Picts*, and vanquished them. 448

The *Saxons* by Degrees over-run the whole Island, and divided it into seven Kingdoms (called the *Heptarchy*.) The Island continued in this State upwards of 360 Years, when *Egbert* King of the West *Saxons* reduced all the contending Kings under his Subjection, and gave the Name of *England* to the Kingdom, from the *Angles* whence he came. He was the first sole Monarch of *England*, and having reigned 17 Years died. 836

In his Reign the *Danes* first invaded *England* with 32 Ships, consisting of 23000 Men, but were put to Flight.

Ethelwolf, *Egbert*'s eldest Son, succeeded and reigned 20 Years. 856

Ethelbald, eldest Son of *Ethelwolf*, succeeded his Father, and reigned two Years, 858

Ethelbert, his Brother, succeeded, and reigned seven Years. 865

Ethelred, third Son of *Ethelwolf*, succeeded; and having reigned seven Years, was slain in Battle against the *Danes*, who were now very numerous in the Kingdom. 872

Alfred, fourth Son of *Ethelwolf*, succeeded; he fought nine Battles with the *Danes* in one Year, and forced them to depart the Kingdom. He first put the *English* upon building Ships, and so securing themselves by Sea: He cleared the Land of Thieves and Robbers: And for the better Administration of Justice, he divided the Kingdom into Shires, Hundreds and Tithes. He founded the first College in *Oxford*, now called *University* College. For his Vir-

tues.

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tues, Learning and Abilities, he was honoured with the Title of *Alfred the Great*, and may justly be called the first Civilizer of the *English* Nation. He reigned 20 Years. A. D. 901

Edward the elder succeeded his Father, and reigned 23 Years. 924

Ethalstan, *Edward*'s eldest Son, succeeded, and reigned 16 Years. He caused the Bible to be translated into *English*. 940

Edmund succeeded his Brother *Ethalstan*, and reigned 6 Years. 946

Eldred reigned 9 Years. 955

Edwin reigned 4 Years, and was deposed by the Monks. 959

Edgar his Brother succeeded; he cleared the Land of Wolves and wild Beasts. He reigned 16 Years. 975

Edward the Younger reigned 3 Years. 978

Ethelred reigned 38 Years, in his Reign there was a great Massacre of the *Danes*, who were become intolerable to the *English*. He dying, 1016

Edmond Ironside, the Son of *Ethelred*, succeeded; but he was rivalled by *Canute* the *Dane*, with whom he was forced to share the Government; and after his Death the *Danes* became sole Masters of the Island, after it had been in Possession of the *Saxons* 566 Years, and continued their Sovereignty about 24 Years, under 3 Kings, *viz.*

Canute, who reigned 14 Years.

Harold I. who reigned 7 Years, and

Hardicanute, who reigned 3 Years. 1042

Then succeeded *Edward the Confessor*, the 7th Son of King *Ethelred*. He collected all the Laws of his Predecessors into one Body, which is the Origin of our Common Law. He was the first of our Kings that attempted to cure the King's Evil with a Touch, and the first that signed his Patents with the Seal now called the King's Broad Seal. He reigned 24 Years. 1060

After his Decease, *Harold*, Son of *Godwin*, Earl of *Kent*, was chose King; but before he had reigned a Year, *William* Duke of *Normandy*, pretending a Right to the Crown of *England*, landed in *Sussex* on the 8th of *September* 1066, and on the 14th of *Oc-*

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tober following was fought the memorable Battle of *Haſtings*, in which was killed King *Harold* and his two Brothers, moſt of the *Engliſh* Nobility, and 97974 common Soldiers. A.D.

WILLIAM the Conqueror,

Was crowned King of *England* on *Chriſtmas* Day. 1066

He built the Tower of *London*.

He cauſed a Survey to be taken of the whole Kingdom (which is ſtill to be ſeen in the Book called *Doomſ-Day Book*, kept in the Tower of *London*) and raiſed from every Hide of Land (or 100 Acres) *Six Shillings*.

He firſt appointed Juſtices of the Peace and Juries, ordained the Courts of Chancery and Exchequer.

He pulled down 36 Pariſh Churches, and diſpeopled the Country in *Hampſhire* for 30 Miles in Compaſs, to make a Chace for hunting, now called the *New-Foreſt*.

In the Year 1072, *Waltheof*, Earl of *Huntington*, was beheaded, the firſt Nobleman that ever was beheaded in *England*.

He reigned 21 Years, and was crowned every Year a new.

He appointed, by his Will, his ſecond Son,

WILLIAM RUFUS,

To ſucceed him, who was crowned. 1087

Anſelm, Archbiſhop of *Canterbury*, is baniſhed the Kingdom, for maintaining the Pope's Supremacy againſt the King's Prerogative.

Malcolm, King of *Scotland*, invades *England*, and is killed by King *William*.

In this King's Reign the Holy War was firſt undertaken, which continued near 300 Years.

He built *Weſtminſter-Hall*, which is 270 Feet long, and 74 broad.

The Sea overflowed its Banks, and drowned 4000 Acres of Land, which had been Earl *Godwin*'s, now called *Godwin*'s Sands in *Kent*.

Having reigned near 13 Years, he was ſhot by Sir *Walter Tyrrel*, levelling at a Deer.

HENRY I.

The youngeſt Son of the Conqueror ſucceeded. 1100

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In this Reign St. *Bartholomew's Hospital*, in *Smithfield*, was founded by a Jester of the King's, named *Rejer*. Before this, *Smithfield* was the Place where all Malefactors were executed. Now lived *Jeoffroy* of *Monmouth* the Historian. The first Parliament of *England* was summoned by this King at *Salisbury*. He died by a Surfeit of Lampreys, after he had reigned 35 Years. A.D

STEPHEN,

Grandson of the Conqueror, by *Alice* his Daughter, succeeded to the Crown. 1135

He granted to his Subjects a Charter of some Immunities, dated under his Hand at *Oxford*.

In this Reign great Part of the Cities of *London*, *York* and *Rochester*, were destroyed by Fire.

He reigned 18 Years and 10 Months.

HENRY II.

Son to *Maud* the Empress, sole Daughter of *Henry* I. succeeded. 1154

Coaches were now first used in *England*.

Thomas Becket, Archbishop of *Canterbury*, murdered in the Church. *London-Bridge* built of Wood.

The City of *Leicester* was burnt by the King's Command.

He divided the Kingdom into six Circuits, and appointed three itinerant Justices for each of them.

He kept the famous *Rosamond*, Daughter of Lord *Clifford*, in a secret Bower at *Woodstock*; but being discovered by Queen *Eleanor*, she was poisoned.

He reigned 35 Years, and was succeeded by his Son 1189

RICHARD I.

He was surnamed for his Courage, *Cœur de Lion*.

On his Coronation Day, the 3d of *September*, was a great Slaughter of the *Jews*.

About this Time lived *Robin Hood* and *Little John*.

In this Reign was the first Lord Mayor chosen, named *Henry Fitz Alwyn*, who was Mayor 24 Years together. *London* before was always governed by a Magistrate called the *Port Shreve*, or *Provost*.

He reigned upwards of 9 Years, and was succeeded by his Brother

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A.D.

JOHN.

He had like to have loſt his Kingdom to the *French*. 1199

The Barons Wars begun.

King *John* ſubmits himſelf, and his Kingdom, to the Pope's Legate.

He grants Letters Patents to the Citizens to chuſe a Mayor Yearly.

In the Year 1209, *London-Bridge* (which before was made of Wood) was built of Stone, by three Merchants, *viz. Mercer*, *Alman* and *Boetwright*.

He reigned about 17 Years, and was ſucceeded by his Son

HENRY III.

This King confirmed the Statute of *Magna Charta*. 1216

Made his eldeſt Son Prince of *Wales*, which Title the King's eldeſt Son hath retained ever ſince.

He fortified the *Tower* of *London* with a Bulwark, which was built twice, and twice overthrown in one Year's Time.

He cauſed a Cheſt of Gold to be made for laying up the Relicks of King *Edward the Confeſſor*, in the Church of *Weſtminſter*.

He reigned 56 Years, and was ſucceeded by his Son

EDWARD I.

This King firſt ordered Farthings and Half-pence to be made. 1272

In his Reign Corn was firſt ſold by Weight.

His Conſort Queen *Eleanor*, dying near *Lincoln*, was brought up to be buried at *Weſtminſter*, and at every Place where the Corpſe reſted he built a magnificent Croſs, with her Image upon it. *Coventry* Croſs, *Cheapſide* Croſs, and *Charing* Croſs, were three of them.

In the Year 1294, was the firſt Alderman choſe, being *Nicholas Farringdon*.

He reigned upwards of 34 Years, and was ſucceeded by his Son

EDWARD II.

Who rendered himſelf hateful to his Subjects, by his unreaſonable Attachment to his Favourites *Pierce*, *Gaviſton*, and the *Spencers*; and having reigned up- 1306

wards

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wards of 19 Years was depoſed by the Parliament, A.D.
and forced to reſign his Kingdom to his Son.

In his Reign lived Sir *John Mandeville*, the greateſt Traveller, and the greateſt Liar in the World.

EDWARD III. 1326

This was one of the greateſt Princes that ever ſat on the *Engliſh* Throne; he ſubdued *Scotland*, conquered *France*, and appointed himſelf to be called King of *England* and *France*, quartering the Arms of the two Kingdoms together.

He inſtituted the Order of the Garter; his Son the Black Prince took the King of *France* Priſoner, and brought him to *England*.

He commanded all Pleas to be made in *Engliſh*, and not in *French*, as had been uſed from the Conqueſt.

He built the Caſtle of *Windſor*.

Fifty Thouſand died in *London* of the Plague in one Year.

About this Time lived *Wickliffe*, one of the firſt who ventured to expoſe the Errors of the Church of *Rome*, and Dr. *Orum* of *Oxford*, who wrote an Epiſtle from *Lucifer* to the Clergy, thanking them for ſending ſo many Souls to Hell.

He reigned 50 Years, and was ſucceeded by his Grandſon.

RICHARD II. 1377

In his Reign, Powder, and the Uſe of Guns, were firſt found out.

The Rebellion of *Wat Tyler* and *Jack Straw*.

Chaucer the Father of *Engliſh* Poetry lived now.

Richard II. For many Enormities, was depoſed, after he had reigned 22 Years, and was afterwards murdered in *Pomfret* Caſtle.

HENRY IV.

Son of *John* of *Gaunt*, Duke of *Lancaſter*, ſucceeded him, being choſen by the Conſent of the People. 1399

In this King's Reign, at *Skinnerſwell*, near *Clerkenwell*, was a great Play which laſted ſeven Days, containing a Repreſentation of ſeveral Things from the Creation of the World: Moſt of the Nobility and

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Gentry of the Kingdom were present at it; and afterwards began a royal Tournament in *Smithfield*. A. D.

He reigned 13 Years, and was succeeded by his Son

HENRY V.

Who, though during his Father's Reign, he lived dissolutely, robbing upon the Highway, and associating only with Whores and Villains, yet when he came to the Crown, proved one of the wisest and most valiant Kings the *English* ever had. 1412

In his Reign Sir *John Oldcastle*, Sir *Roger Acton*, and 28 more, were hanged and burnt at *Smithfield*, for maintaining Dr. *Wickliffe*'s Opinions.

He reigned upwards of nine Years, and was succeeded by his Son

HENRY VI. 1422

In his Reign was paid the first Custom for all Merchandizes imported and exported out of the Realm, settled by an Act of Parliament but for three Years, in which was a Proviso, that it should never be made a Precedent for the like to be done after that Term was expired: But all his Successors have had it for Life, so forcible is a Precedent once fixed in the Crown.

Eleanor Cobham, Dutchess of *Glouceſter*, is accused and convicted of Witchcraft, and obliged to do publick Penance for the same.

In 1450 was *Jack Cade*'s Rebellion.

Printing first invented.

After he had reigned 38 Years he was deposed by

EDWARD IV. 1460

Who after nine bloody Battles was quietly seated in his Dominions.

This King sat in Person three Days together, to see how his Laws were executed.

In this King's Reign, *George Nevill*, Archbishop of *York*, made a Feast, an Account of which is among the Records of the *Tower*, *viz.* 300 Quarters of Wheat, 300 Tons of Ale, 100 Tons of Wine, 104 Oxen, 6 Wild Bulls, 100 Sheep, 608 Calves, 400 Swine, 3000 Geese, 1000 Capons, 3000 Pigs, 400 Plovers,

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Plovers, besides Quails, Rees, Peacocks, Mallards, Teals, Cranes, Kids, and above 20 other several Sorts of Things, each in proportionable Numbers to what is above.

He reigned 22 Years, and was succeeded by his Son

EDWARD V. 1483

Who was but 13 Years old, and before his Coronation was murdered in the Tower of *London* by his unnatural Uncle

RICHARD III.

The *Engliſh Nero*, who to make his Way clear to the Crown, murdered, 1. King *Henry* VI. 2. Prince *Edward* his Son. 3. *George* Duke of *Clarence* his Brother. 4. *Haſtings*, a faithful Servant to King *Edward* IV. 5. *Rivers*. 6. *Vaughan*. 7. *Grey*. Three of the Queen's Kindred. 8. *Edward* V. his Sovereign, with, 9. his young Couſin *Richard*. 10. *Henry* Duke of *Buckingham* his dear Friend, and great Coadjutor in theſe impious Practices. And, 11. his Wife *Anna*, in order to make Way to an inceſtuous Match with his Couſin *Elizabeth*.

There was at this Time, at the *French* Court, *Henry* Earl of *Richmond*, of the Houſe of *Lancaſter*; to him the Crown of *England* was propoſed, with this Proviſo, that he ſhould marry *Elizabeth* eldeſt Daughter of King *Edward* IV. and thereby unite the two Houſes of *York* and *Lancaſter*. Upon this the Earl makes Haſte into *England*, and being ſtill reinforced as he advanced, he at laſt encounters King *Richard* at *Boſworth* in *Leiceſterſhire*; in which Battle King *Richard* was killed, and the Crown conferred upon the Earl.

And thus an End was put to the Wars between the two Houſes of *York* and *Lancaſter*, which began upon the Intruſion of King *Henry* IV. and in which was fought 12 pitched Battles, and two Kings, 1 Prince, 10 Dukes, 2 Marquiſſes, 21 Earls, 27 Lords, 2 Viſcounts, 1 Lord Prior, 1 Judge, 139 Knights, 441 Eſquires, and 84998 private Soldiers were ſlain.

King *Richard* having thus tyrannized upwards of two Years,

HENRY VII.

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HENRY VII. 1486

Son to *Edmond Tudor*, Earl of *Richmond*, and Grandſon to *John* of *Gaunt*, Duke of *Lancaſter*, was crowned King of *England*.

He called a Parliament, in which an Act was paſſed for ſettling the Crown upon the Perſon of King *Henry*, and the Heirs of his Body ſucceſſively forever.

He firſt appointed the Band of tall Men to attend him, called Yeomen of the Guard, which no King before, but all the Kings and Queens ſince, have kept under that Denomination.

In this King's Reign happened that ſtrange Diſeaſe called the Sweating Sickneſs, which laſted about a Month, and killed many Thouſands of People; two Lord Mayors died of it in one Week.

About this Time the Pox was firſt known in *England*.

In 1491, *Ferdinand* V. King of *Spain*, took the City and Country of *Granada* from the *Moors*, which they had been poſſeſſed of above 700 Years, on which Account the Pope gave him the Title of the Moſt Catholick King.

Henry VII. reigned 23 Years and 8 Months, and was ſucceeded by his Son

HENRY VIII. 1509

This King began the firſt Reformation of Religion, baniſhing the Pope's Supremacy out of *England*, though formerly he himſelf had wrote a Book againſt *Martin Luther*, for which Pope *Leo* X. entitled him, *Defender of the Faith*, &c.

He built St. *James*'s Houſe, and converted the Meadows about it into a Park, called St. *James*'s *Park*.

In his Time Beef and Mutton were firſt ordered to be ſold by Weight, *viz.* Beef at a Halfpenny a Pound, and Mutton at three Farthings.

The principal Favourite, and firſt Miniſter of this King, was the famous Cardinal *Woolſey*, who built *Whitehall*; and, though but the Son of a Butcher, roſe to a greater Power, and was inveſted with more Honour than any Subject of *England*, either before or ſince.

King

King *Henry* VIII. having reigned 37 Years, died, and was ſucceeded by his Son

EDWARD VI. 1546

Who purſued the Reformation begun by his Father, and, in 1548, the Church Service was firſt ſung in *Engliſh*.

Having reigned upwards of ſix Years, he died, and appointed for his Succeſſor the Lady *Jane Grey*, Daughter of the Dutcheſs of *Suffolk*, who was accordingly proclaimed Queen of *England*; but,

Queen MARY, 1552

Aſſerting her Right, as King *Edward*'s Siſter by Queen *Catharine*, the firſt Wife of *Henry* VIII. and coming to *London* with ſome Forces, was proclaimed Queen of *England*, and crowned.

In her Reign died 3 Dukes, 3 Lords, the Lady *Jane Grey*, and ſeveral others who profeſſed the Reformation.

In her Time a Barrel of Beer, with the Caſk, coſt but Six-pence, and four great Loaves of Bread were ſold for a Penny.

Queen *Mary* reigned but five Years, and was ſucceeded by her Siſter

ELIZABETH. 1557

She again encouraged the Reformation, which Queen *Mary* had diſcountenanced: She was, perhaps, the greateſt and moſt powerful Monarch that ever ſat on the *Engliſh* Throne. She ſuccoured the *Scots* againſt the *French*, the *French* Proteſtants againſt the *Papiſts*, and both againſt the *Spaniards*. She commanded the whole Ocean, and deſtroyed the *Spaniſh* Armada, which was thought to be invincible.

In her Reign Sir *Thomas Greſham*, built the *Royal Exchange*.

Tobacco was firſt brought into *England*. Sir *Walter Raleigh* firſt diſcovered *Virginia*, ſo called by him in Honour of his Virgin Miſtreſs Queen *Elizabeth*.

In her Reign lived the great Poets *Spencer* and *Shakeſpear*; Likewiſe Lord *Bacon*, Sir *Philip Sidney*, Sir *Walter Raleigh*, Sir *Francis Drake*, and ſeveral other great Men.

Queen

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Queen *Elizabeth* reigned upwards of 44 Years, and was ſucceeded by

JAMES I. 1603

Of the Family of the *Stuarts* (the Name of the *Tudors* expiring in Queen *Elizabeth*) Kings of *Scotland*. He united the Kingdoms of *England* and *Scotland*, which then took the Denomination of *Great-Britain*.

He cauſed the Bible to be new tranſlated from the Original Languages, which is the Tranſlation now uſed.

In this Reign the *Engliſh* Plantations were firſt ſettled in the *Weſt-Indies*.

In the Year 1605 was a terrible Plague in *London*, of which died near 100,000 Perſons.

Silk Worms firſt brought into *England*.

King *James* reigned 22 Years, and was ſucceeded by his Son

CHARLES I. 1625

This unhappy King, though a weak Man, had ſome Virtues, but endeavouring to extend the Prerogative of the Crown too far, and in ſome Inſtances exerciſing an arbitrary Power, he was accuſed by his own Subjects of High Treaſon againſt the Laws of the Land; and, after a troubleſome Reign of near 24 Years, was beheaded on a Scaffold before the Gates of his own Palace.

But though King *Charles* was generally for extending the Royal Power beyond its legal Bounds, yet in his Reign ſeveral excellent Laws were made for the Security of the Subjects Liberties; particularly, in his third Year the Petition of Rights was made into a Law, in which it is enacted, That no Subject ſhall be compelled to any Gift or Contribution to the King, but by Conſent of Parliament: Soldiers are forbidden to be quartered in private Houſes, and Martial Law is annulled. In his 16th Year was paſſed, what was then called the Triennial Act, intituled, *A Bill to prevent Inconveniencies from long Intermiſſion of Parliament*. By this Act, if the King ſhould refuſe to ſummon a Parliament at the End of three Years, the Chancellor or Keeper might iſſue out Writs to ſummon the Peers, and elect the

Com-

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Commons: If the Chancellor or Keeper ſhould neglect this, any 12 of the Peers might ſummon the Parliament: If the Peers ſhould not ſend out their Summons, the Sheriffs in Counties, and other Magiſtrates, might cauſe Election to be made; and if theſe ſhould omit their Duty, the Electors might aſſemble themſelves, and chuſe Members.

After the Death of King *Charles*, the Government of *England* was changed from Monarchial to a Commonwealth, in which

OLIVER CROMWELL 1648

Preſided by the Title of the Lord Protector, and continued to direct the Affairs of the Nation for the Space of 12 Years

At this Time, and in the preceding Reign, the whole People of *England* were ſtark mad with Bigotry and Enthuſiaſm.

Some Time after the Death of *Oliver Cromwell*, the Nation weary with perpetual Changes of Government and Religion, recalled the Son of their late Monarch from Baniſhment, and accordingly on the 23d of *April*

CHARLES II. 1661

Was crowned King of *Great-Britain*. He was a Man of much Wit and Gallantry; and in his Reign the Manners of the People were quite changed: For whereas before, it would have been eſteemed profane and irreligious, even to have eat an Oyſter without a long Prayer or a Pſalm; it was now thought almoſt ſuperſtitious to believe in God.

In the 5th Year of his Reign happened a dreadful Fire in *London*, which in the Space of three Days burnt 78 Pariſh Churches, and 13000 Houſes.

King *Charles* II. reigned 36 Years including the Protectorſhip of *Cromwell*, and was ſucceeded by his Brother

JAMES II. 1684

Who endeavouring to introduce the *Roman Catholick* Religion, was obliged to quit his Dominions; which brought about the Revolution under

WILLIAM III. 1688

In which the Civil and Religious Liberties of the People of *England* were fixed upon better Princi-

ples,

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ples, and a ſurer Foundation, than they ever had been before.

Queen ANNE

Was proclaimed on the 8th of *March*, 1701. She was the youngeſt Daughter of King *James* II. by the Lady *Hide*, Daughter of the Earl of *Clarendon*. She reigned in the Hearts and Affections of her Subjects 12 Years, 4 Months, and died, univerſally lamented, on *Auguſt* 1, 1714, leaving the Throne to

GEORGE I.

Who reigned 12 Years 4 Months, and died at *Hanover*, leaving the Imperial Crown of theſe Realms to his Son

GEORGE II.

Our moſt gracious Sovereign now reigning; whom God long preſerve,

To innoculate FRUIT-TREES.

ABOUT *Midſummer*, or a Month before or after, take off a vigorous Shoot from a Tree you would propagate; then make Choice of a Stock about three or four Years Growth, and in a ſmooth Part of it make a downright Slit in the Bark, a little above an Inch long, and another croſswiſe at the Bottom of that, to give Way to the Opening of the Bark; then with your Penknife gently looſen the Bark from the Wood on both Sides, beginning at the Bottom; next prepare your Bud, by cutting it off with your Knife, entering pretty deep into the Wood as much above as below the Bud, to the Length of the Slit in the Stock; after the Bud is thus prepared, with the Point of your Knife and your Thumb take out the woody Part of it, carefully preſerving the Eye of the Bud; then put your Bud in between the Bark and the Wood of the Stock at the croſs Slit, leading it upward by the Stalk, where the Leaf grew, till it exactly cloſes; then bind it about with coarſe Woollen Yarn, the better to make all Parts of it cloſe regularly, and the Bud incorporate with the Stocks, and the Operation is done.

The Bud will be incorporated in about three Weeks Time, and then you muſt looſen the Yarn, that it may not gall the Place too much; the quicker this is done the bet-

ter

ter. You may put two or three Buds into one Stock of *Peaches* and *Nectarines*, that if one don't ſucceed another may; and if your Buds inoculated in the Month of *June*, or before, don't hit, you may make a ſecond Attempt the ſame Year, and on the ſame Stock, with better Succeſs. Let all Buds be taken off of the vigorous growing Shoot, and uſed immediately.

To graff FRUIT-TREES.

Graffing (or Ingraffing, or Grafting) is of four Sorts. 1. In the *Cleft*. 2. In the *Bark*. 3. By *Approach*. And 4. *Whip-Graffing*. Of each of theſe in order. 1. *Graffing in the Cleft*, or *Slit Graffing*. This is performed on the *Pear*, *Cherry* and *Plumb Stocks*. After you have choſe your *Stock*, cut off the Head in a ſmooth Place, ſloping; then even the Top horizontally with your Knife; this being done, make a Slit near two Inches deep down the Middle of the *Stock*, with a large ſtrong Penknife; then prepare your Cyon (taken from a vigorous Shoot of the foregoing Year, which was prepared in *January*) ſloping it on each Side, from a Bud or Eye, but leaving it thiner on that Side which goes into the Stock than on the Outſide, ſo that it may conform itſelf to the Slit in the Stock; then place the Cyon in the Stock, and cloſe the Bark of both exactly. After this is done, temper Clay and ſhort Hay together, and putting it round the Stock and the lower Part of the Cyon, but ſo as not to diſturb the Cyon, which muſt be left with more than three or four Eyes above the Stock. In caſe the Stock be large, you may put two Cyons in the Cleft; one on each Side. If the Stock be very large, uſe a Mallet and large Knife to make a Slit or Cleft. Let not your Cyons be looſe nor pinched.

2. *To graff in the Bark.* This is only uſed for *Apples*; and you are to cut the Head of the Stock as in the former, and inſtead of ſlitting the Stock, ſlit only the Bark a little more than an Inch on the South-Weſt Side, as long as the ſloped Part of the Cyon; at the Top of the Slit looſen the Bark with your Knife, then with a ſmooth Inſtrument of Ivory or hard Wood cut ſloping as the Cyon, make Room for the Cyon, by thruſting it down between the Bark and the Wood of the Stock, where it was ſlit; next take your Cyon (being prepared with a flat Slope about an Inch long, ending in a Point, and begun from the Back of an Eye) and put it into the Stock, thruſting the Top of the Slope as

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low as the Top Surface of the Stock; then order the Bark on each Side the Cyon, that it may fall close to the Stock; then clay it over as before.

3. *Graffing by Approach* or *Inarching*. This is performed where the Stock grows so near another Tree whose Fruit you would propagate, that it may be joined with a Branch of that Tree, by cutting the Sides of the Branch and Stock about three Inches long, and so fitting them, that the Passages of the Sap may meet; in which Posture let them be bound and clayed. When they are cemented, cut off the Head of the Stock, about four Inches above the Binding, and in *March* following cut off the Stub that was left of the Stock, and then close the graffed Place, that it may subsist by the Stock only. This *Graffing* is also performed by cutting off the Head of the Stock at first, sloping it about two Inches long, and joining the Cyon thereto. This Manner of *Graffing* agrees best with *Vines*, *Oranges*, *Pomegranates*, and such like.

4. *Whip Graffing*. This is where the Stock and Cyon are of the same Bigness; the Stock must be sloped an Inch or more, and also the Cyon; and then one is tied upon the other; or else a Shoulder may be made on the Cyon, to suit with which, the Top of the Stock should be cut; then bind them together, and clay them.

All these four Kinds of *Graffing* are performed chiefly in the Month of *February*.

Of Pruning FRUIT-TREES.

When a Tree is planted, and has produced two well disposed Branches, with some weak Ones intermixed, they are all to be shortened equally, to the Length of five or six Inches; and if the Position of the two Branches be irregular, there must be only one left to begin the Formation of the Figure of the Tree. It sometimes happens, that a Tree will shoot five, six, or seven Branches, the first Year, in which Case three or four only of the best Branches are to be preserved. A Multitude of Branches the first Year, is not always a Sign of Vigour; for they sometimes prove weak, occasioned by the Infirmity of the Roots: But in the *Pruning*, generally a vigorous Tree cannot have too many Branches, if they are well disposed; nor a weak Tree have too few. The Sap of all Trees must be kept in due Bounds, and a greater Liberty is to be allowed to strong Trees than weak Ones: For which Reason, strong,

vigorous

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vigorous Branches, are left a greater Length than feeble Ones, and it is best to prune weak, sickly Trees, early, that the Sap may not waste itself too much.

The most seasonable Time for this Work, is about the Month of *February*; but the more luxuriant a Tree is, the later it is pruned the better; and in such a Case, it is not too late to do it after the Tree has begun to shoot. Some Trees (especially the *Vine*) require several Prunings in the Year.

A new Sort of Melasses *made of Apples; the Account communicated to the* Royal Society, *by* Paul Dudley, *Esq; of* New-England, *and published in the* Philosophical Transactions, *Numb.* 374.

THE Apple that produces the Melasses is a Summer Sweeting of a middling Size, pleasant to the Taste, and full of Juice, so that 7 Bushels will make a Barrel of Cyder.

The Manner of making it is thus; you must grind and press the Apples, and then take the Juice and boil it in a Copper till three Quarters of it is wasted, which will be done in about 6 Hours gently boiling, and by that Time it comes to be of the Sweetness and Consistency of Melasses.

Some of our People scum the Cyder as it boils, others do not, and yet there seems to be no great Difference in the Goodness.

This new Melasses answers all the Ends of that made of the sweet Cane imported from beyond Sea. It serves not only for Food and Brewing, but is of great Use also in preserving of Cyder; two Quarts of it put into a Barrel of rack'd Cyder, will both preserve, and give it a very agreeable Colour.

The Apple Melasses was discovered a few Years since, by a Gentleman of my Acquaintance, at *Woodstock*, in this Province, a Town remote from the Sea, and where the *West-India* Melasses is dear and scarce; he ingenuously confesses the Discovery was purely accidental, but ever since he has supplied his Family with Melasses out of his Orchard, and his Neighbours also now do the like, to their great Advantage.

Our Country Farmers run much upon planting Orchards with these Sort of Sweetings, for fattening their Swine, and assure me it makes the best Sort of Pork. And I know

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the Cyder made of them to be better than that of other Fruit, for Taste, Colour and Keeping.

A short Account of the British Plantations.

HUDSON's BAY,

A Very cold Country, and but thinly peopled with *Indians*. The *English* have a Fort or two on the Bottom and West Side of the Bay, for the Sake of Trade with the Natives for Skins, which are chiefly Beaver, value about 200,000 £. *Sterling per Annum.*

NEWFOUNDLAND,

A large Island, cold and barren; the Settlements and Fortresses few, and made only for the Sake of the Fishery upon the Coasts, which is the greatest in the World; the *English*, *French*, &c. loading near 600 Sail yearly with Codfish, which is carried to the *Mediterranean*, and other Parts of *Europe*. The Fishery in these Seas is an inexhaustible Fund of Wealth, and the Possession of it deemed preferable to the Mines of *Peru*: It breeds great Numbers of hardy Seamen.

NOVA-SCOTIA, or *ACADIA*,

A fine, fertile Country, but not hitherto much cultivated. Its Coasts have many good Harbours, and Plenty of Fish. The Government is *English*, but most of the Inhabitants *French*, who submitted in the last War, on Condition of retaining their Possessions, and remaining Neuter in all future Wars between the two Nations. *Annapolis Royal* was the Capital, a fortified Town, with an *English* Garrison. The Islands of *Cape-Breton*, belonging to this Territory, were given to *France* at the Peace of *Utrecht*, on which they built *Louisburg*, and fortified it with incredible Art and Expence; but in the late War, it was reduced and taken, by the Wisdom of Governor SHIRLEY, and the Bravery of his *New-England* Troops, under General PEPPERRELL, countenanced by a Squadron of British Ships, commanded by the late active, vigilant and successful Commodore WARREN. At the Peace it was restored to *France*, and the *English* have since built *Halifax* on *Chebouctou* Harbour.

NEW-ENGLAND

Comprehends four several Governments, or Colonies; 1. The *Massachusets* 2. *New-Hampshire*. 3. *Connecticut*. 4. *Rhode-Island*. The Climate is healthful; the People hardy, industrious and sober; the Laws and Government good; but

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but the Soil generally not very fertile, and there being no Staple Commodity for Exportation, the Country is poor, and under great Difficulties to pay for what it wants from abroad. There are many fine Harbours and Plenty of Fish on the Coasts, a great Number of pretty Towns, in every one of which is a Free School; BOSTON, the Capital, is esteem'd at present the greatest Town in *North-America*, and the best govern'd. *Portsmouth* is the chief Town in *New-Hampshire*. *Newport* the Capital of *Rhode Island* Government; and *Hartford* of *Connecticut*. In the two last named Governments they annually elect their Governors, *&c.* In the two former the Governors are appointed by the Crown. In *Rhode-Island* there is the greatest Liberty in Matters of Religion. Their Money is Paper, continually decreasing in Value; Silver and Gold, when any appears among them, is bought up and remitted to *England*. Their first Settlement began about 1620. 'Tis supposed the disciplin'd Militia in the four Governments make near 100,000 Men.

NEW-YORK,

Is a Royal Government; both Governor and Council being appointed by the Crown. The People chuse the Assembly. It has not much Territory, and does not people very fast, being hindred, some say, by the exorbitant Grants of Lands made to particular Persons, who will not divide and sell, but keep it for their Posterity. The Capital NEW YORK, is seated at the Mouth of *Hudson*'s River, very convenient for Trade, and makes a beautiful Appearance. The Inhabitants, a Mixture of *English*, *Low-Dutch*, and *French Protestants*, and are a genteel, generous People. The Produce Wheat, Bread, and Flour. The Money Gold and Silver, mixed with Paper. The first Settlement by the *Dutch* about the same Time with that of *New-England* by the *English*.

NEW-JERSEY,

A flourishing Colony, situated between *New-York* and *Pennsylvania*. The Soil is in many Parts very fertile, producing all Sorts of Grain, *&c.* The Government like that of *New York*. The chief Towns, are *Burlington*, *Amboy*, *Brunswick* and *Trenton*. The Country in general well timber'd and water'd, and inhabited by a very good Sort of People.

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PENNSYLVANIA.

One of the happieſt Countries at this Time in the World; God grant it may long ſo continue.

MARYLAND and *VIRGINIA,*

Pleaſant and fertile Countries. Their chief Produce Tobacco. The People remarkable for their Hoſpitality. The Settlement of *Maryland* began about 1631; that of *Virginia* 30 or 40 Years before.——The Governments of both Colonies are by Governor, Council and Aſſembly, but the Laws of *Virginia*, are ſaid to be the moſt favourable for the People. No Countries in the World are better accommodated with navigable Waters.

NORTH and *SOUTH-CAROLINA'S,*

Are yet but thinly peopled. The Climate temperate; but the Air, in the low, flat Country, where the principal Settlements have hitherto been made, not healthful. Their chief Produce is Rice, Pitch, Tar and Turpentine. Back towards the Mountains the Land is ſaid to be equally fertile, and the Air more wholeſome, ſo that a fine Country may be expected there in Time. The firſt Settlement of the *Carolina's* was about the Year 1680.

GEORGIA,

A new, but declining Colony. There are few Inhabitants at preſent beſides the Soldiery, who are maintained there by *Great-Britain.*

BERMUDAS,

Firſt ſettled in 1612. No Part of the World enjoys a purer Air, or more temperate Climate than theſe Iſlands, ſo that for Health they are reckoned the *Montpelier* of *America.* They are ſituated in Lat. 32. Deg. 30. Min. N. above 200 Leagues from the Continent.

JAMAICA,

Was taken from the *Spaniards* in 1655. A wealthy Iſland, but unhealthy, and ſubject to Earthquakes.

LEEWARD ISLANDS,

Were ſettled by the *Engliſh*, viz. *Antigua* in 1666. *Montſerrat* in 1632. *Nevis* in 1628. *St. Chriſtophers* in 1626. *Barbuda* in 1627. *Anguilla* in 1630. The chief Iſland and Seat of Government is ANTIGUA.

BARBADOS,

Was ſettled about the Year 1625. The Produce of this and the other *Weſt-India* Iſlands is chiefly Sugar, Rum, &c. The Labour chiefly done by Slaves, as in *Maryland, Virginia,*

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Virginia and *Carolina*: Their Governments generally much alike, by a Governor, Council and Assembly. The People rich, genteel, generous and hospitable. The Trade of the Colonies with one another and *Great-Britain*, employs a vast Number of Ships and Seamen. And most of those on the Continent encrease continually in People, particularly *Pennsylvania*.

The FAMILY'S BEST COMPANION; *giving instructions how to pickle and preserve; to make divers Sorts of Wines of our Product; together with many excellent and approved Medicines, Salves, &c. necessary in all Families.*

Of Pickling, Preserving, Candying, &c.

To Pickle Cucumbers.

WASH them and dry them in a Cloth; then take Water, Vinegar, Salt, Fennel Tops, some Dill Tops, and a little Mace; make it sharp enough to the Taste; then boil it a while; then take it off, and let it stand till cold; then put in the Cucumbers, and stop them down close; and within a Week they will be fit to eat.

To pickle Cucumbers green.

Take two Quarts of Verjuice or Vinegar, and a Gallon of fair Water, a Pint of Bay-salt, a Handful of green Fennel or Dill; boil it a little, and when cold, put it into a Barrel, and then put the Cucumbers to the Pickle, and you may keep them all the Year.

To pickle French Beans.

Take them before they are ripe, and cut off the Stalks; then take good Wine Vinegar, and boil with Pepper and Salt; season them to your Palate, and let it stand till cold; then take the Beans, and put them into a Pot, placing Dill between the Layers, and then put in the Pickle, and cover them close for three Weeks; then take the Pickle, and boil and put it to the Beans boiling hot; cover them close again, and, when cold, they will be fit to eat.

Or *French* Beans may be pickled thus: Take your Beans and string them, boil them tender, then take them off, and let them stand till cold; then put them into Pickle of Beer, Vinegar, Pepper, Salt, Cloves, Mace, and a little Ginger.

To pickle Eldern, or any other Buds of Trees.

Give them one or two Walms with Vinegar, Salt, whole Pepper, long Mace, and a little Lemon Peel in Pieces; th

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then drain them, and let the Buds and Liquor cool separately; afterwards put them into a Pot, and cover them with your Pickle.

To pickle Walnuts to eat like Mangoes.

Take green Walnuts before the Shell is grown to any Hardneſs in them; pick them from the Stalks, and put them into cold Water; and ſet them on a gentle Fire till the outward Skin begins to Peel off; then with coarſe Cloths wipe it off; then put them into a Pot, and put Water and Salt therein, ſhifting it once a Day for ten Days, till the Bitterneſs and Diſcolouring of the Water be gone; then take a good Quantity of Muſtard-ſeed, which beat up with Vinegar, till it becomes coarſe Muſtard; then take ſome Cloves of Garlick, ſome Ginger, and a little beaten Cloves and Mace; make a Hole in each Nut, and put in a little of this; then take White-wine Vinegar, and boil them together, which put to the Nuts boiling hot, with ſome Pepper, Ginger, Cloves and Mace, as alſo ſome of the Muſtard and Garlick, which keep cloſe ſtopped for Uſe.

To pickle Muſhrooms.

Firſt blanch them over the Crowns, and barb them beneath, then put them into a Pan of boiling Water, then take them forth, and let them drain; when they are cold, put them into your Pot or Glaſs, and put to them Cloves, Mace, Ginger, Nutmegs and whole Pepper; then take White-wine, a little Vinegar and Salt: So pour the Liquor into the Muſhrooms, and ſtop them cloſe for Uſe.

To pickle any Sort of Flowers for Sallads, as Clove-Gilly Flowers, &c.

Put them into a Gally-pot, with as much Sugar as they weigh; fill them with Wine Vinegar: To a Pint of Vinegar, a Pound of Sugar.

To pickle Samphire, Broom Buds, Aſhen-Keys, Purſlain, &c.

Take Samphire, and pick the Branches from the dead Leaves; then lay it in a Pot, and make a ſtrong Brine of Water, or Bay Salt; in the Boiling ſcum it clean; being boiled, and cold, put it to the Samphire; cover it, and keep it for all the Year; and when there is Occaſion to uſe it, take and boil it in fair Water, but the Water muſt boil before you put it in; when it is boiled, and become green, let it cool; then take it out, and put it into a wide mouth'd Glaſs, and put to it White Vinegar to it, and keep it cloſe for Uſe.

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To pickle Lemon and Orange Peel.

Boil them in Vinegar and Sugar, and put them into the ſame Pickle; Obſerve to cut them in ſmall long Thongs, the Length of Half the Peel of your Lemon; it ought to be boil'd in Water before it is boiled in Vinegar and Sugar.

To preſerve green Apricots.

Take them when they are ſmall and tender; peel them and put them in hot Water, but let them not boil; let them lie there till they begin to be green, then take them out, and put them in cold Water, then boil your Sugar, and let your Apricots run a little of the Water from them; then put them into the Sugar, and let them boil till the Syrup becomes thick; then put them into an Earthen Pan, and let them remain there a Week; then put them into a Preſerving Pan, and make them boil again till the Syrup grows thick; then put them once more into an Earthen Pan, and let them ſtand till they are cold; then take them out of their Syrup, and lay them on your Ardoiſe; then dry them in your Stove, and turn them often till dry; then put them in Boxes on Paper.

To preſerve Fruit Green.

Take Pippins, Apricots, Pears, Plumbs or Peaches, when they are green; ſcald them in hot Water, and peel them; then put them into another Water, not ſo hot as the firſt; then boil them very tender, and take the Weight of them in Sugar, and put to them as much Water as will make a Syrup to cover them; then boil them ſomewhat leiſurely and take them up; then boil the Syrup till it be ſomewhat thick, and, when cold, put them together.

To preſerve Raſberries.

Take good Raſberries that are not too ripe, but very whole; take away the Stalks, and put them into a flat bottomed Earthen Pan; boil Sugar, and pour it over your Raſberries, then let them ſtand to be cool, and when they are cold pour them ſoftly into your Preſerving Pan, and let them boil till their Syrup be boiled pretty thick; ſcum them very well in the boiling; this done, put them in Pots, and, when cold, cover them up cloſe for Uſe.

To preſerve Barberries.

Take one Pound of Barberries pick'd from the Stalks, put them into a Pottle Pot, and ſet it in a Braſs Pot full of hot Water, and when they be ſtewed, ſtrain them, and put

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to the Barberries one Pound ½ of Sugar, and to them put a Pint of red Roſe Water, and boil them a little; then take Half a Pound of the faireſt Cluſters of Barberries you can get, and dip them in the Syrup while it is boiling; then take the Barberries out, and boil the Syrup till it is thick, and, when cold, put them into Gally-pots or Glaſſes with the Syrup.

To preſerve Currants.

Lay a Layer of Currants, and then a Layer of Sugar; and ſo boil as before preſcribed for Raſberries; ſcum them in boiling till the Syrup is pretty thick; then take them off, and, when they are cold, put them in Gally-pots or Glaſſes cloſely ſtopped.

To preſerve Walnuts Green.

Boil the Walnuts till the Water taſtes bitter, then take them off, and put them in cold Water; peel off the Bark, and weigh as much Sugar as they weigh, and a little more Water than will wet the Sugar; ſet them on the Fire, and when they boil up, take them off, and let them ſtand two Days, and then boil them again once more.

To preſerve Grapes.

Stamp and ſtrain them; let them ſettle a while; before you wet a Pound of Sugar, or Grapes with the Juice, ſtone the Grapes, and ſave the Juice in the Stoning; take them off, and put them up.

To preſerve Cherries.

Firſt take ſome of the worſt Cherries, and boil them in fair Water, and when the Liquor is well coloured, ſtrain it; then take ſome of the beſt Cherries, with their Weight in beaten Sugar; then lay one Layer of Sugar, and another of Cherries, till all are laid in the Preſerving Pan; then pour a little Liquor of the worſt Cherries into it, and boil the Cherries till they are well colour'd; then take them up, and boil the Syrup till it will button on the Side of a Plate, and when they are cold, put them up in a Glaſs cloſe covered for Uſe.

To candy Cherries.

Take Cherries before they be full ripe, and take out the Stones; then take clarified Sugar boiled to a Height, and pour it on them.

To candy Pears, Plumbs, Apricots, &c.

Take them and give every one a Cut Half through; then caſt Sugar on them, and bake them in an Oven, as hot as for

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for Manchet, cloſe ſtopped; let them ſtand Half an Hour, then lay them one by one upon Glaſs Plates to dry, and they will appear very fine and clear: In this Manner you may candy any other Fruit.

To candy Flowers.

Pick them very clean, and to every Ounce of Flowers, put two Ounces of hard Sugar, and one Ounce of Sugar-candy, and diſſolve them in Roſe Water; then boil them, till they come to Sugar again, and when it is almoſt cold, put in your Flowers, and ſtir them together, *&c.*

Of making ſundry Sorts of Wines.

Currant Wine.

PICK the Curants (when they are full ripe) clean from the Stalks, then put them into an Earthen Veſſel, and pour on them fair and clean hot Water, that is, a Quart of Water to a Gallon of Currants; then bruiſe or maſh them together, and let them ſtand and ferment; then cover them for twelve Hours, ſtrain them through fine Linen into a large Earthen Crock (as they ſay in *Suſſex*) and then put the Liquor into a Caſk, and thereto put a little Ale-Yeſt, and when worked and ſettled, bottle it off: This is exceeding pleaſant, and very wholeſome for cooling the Blood: In a Week's Time it will be fit for bottling.

Artificial Claret.

Take ſix Gallons of Water, two Gallons of the beſt Cyder, and thereto put eight Pounds of the beſt Malaga Raiſins bruiſed; let them ſtand cloſe covered in a warm Place for two Weeks, ſtirring them every two Days well together; then preſs out the Liquor into the Veſſel again, and add to it a Quart of the Juice of Barberries, and a Pint of the Juice of Bramble-berries, or Raſberries (which perhaps is the beſt) to which put a Pint of the Juice of Black Cherries; work it up with Muſtard-ſeed covered with Bread Paſte for three or four Days by the Fire-ſide; after which let it ſtand a Week, then bottle it off, and it will become near as good as, if not exceed, common Claret.

Gooſberry Wine.

The beſt Way is to take to every three Pounds of Fruit, one Pound of Sugar, and a Quart of fair Water; boil the Water very well, but you muſt put the aforeſaid Quantity of Sugar when it is boiled; bruiſe the Fruit, and ſteep it Twenty-four Hours in the Water, ſtir it ſometimes, then ſtrain

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ſtrain it off, and put the Sugar to it, and let it ſtand in a Runlet cloſe ſtopped for a Fortnight; then draw it off, and ſet it up in a cool Cellar, and in two Months it will be fit to drink.

Raſberry Wine.

Take the Raſberries clear from the Stalks; to a Gallon of which put a Bottle of White Wine, and let them infuſe in an Earthen Veſſel two or three Days cloſe covered; then bruiſe the Berries in the Wine, and ſtrain thro' fine Linen gently; then let it ſimmer over a moderate Fire, ſcum off the Froth, and then ſtrain it again, and with a Quarter of a Pound of Loaf Sugar, to a Gallon, let it ſettle; then in Half a Pint of White Wine boil about an Ounce of well-ſcented Cinnamon, and a little Mace, and put the Wine ſtrained from the Spice into it, and bottle it up.

Damſon Wine.

Dry the Damſons in an Oven after you have drawn your Bread; then to every Quart of Damſons put three Quarts of fair Water, but firſt boil it very well; then put the Water and Damſons into a Runlet, with Sugar; and having ſtood a Time ſufficient, bottle it off.

Wine of Grapes.

When they are fully ripe, in a dry Day, pick off thoſe Grapes that are ripeſt, and ſqueeze them in a Fat or Preſs made for that Purpoſe, in which muſt be a fine Canvas Bag to contain the Grapes; and when in the Preſs, do not ſqueeze them ſo hard as to break the Stones, if you can help it, becauſe the bruiſed Stones will give the Wine a diſagreeable Taſte; then ſtrain it well, and let it ſettle on the Lees, in ſuch a Caſk or Veſſel as you may draw it off without raiſing the Bottom; then ſeaſon a Caſk well with ſome ſcalding Water, and dry it, or ſcent it with a Linen Rag dipped in Brimſtone, by fixing it at the Bouge, by the Bung or Cork; then put the Wine into it, and ſtop it cloſe for 48 Hours; then give it Vent at the Bouge, with a Hole made with a Gimblet; in which put a Peg or Faucet, that may eaſily be moved with the Fingers; then in about two Days Time cloſe it up; and in about two or three Months Time it will be fit for drinking, and prove almoſt as good as *French* Wine.

Wine of Strawberries or Raſberries.

Maſh the Berries, and put them into a Linen Bag, as is beforeſaid for the Grapes, and ſqueeze them into a Caſk, and the

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then let it work as aforesaid in the Grape Receipt, *&c.* In this Manner may Cherry Wine be made; but then you must break the Stones, contrary to what was said before concerning the Grapes.

A short Way for Cherry Wine.

Squeeze the Juice of Cherries into a Cask, and thereto put a small Quantity of Sugar corresponding to the Quantity of Juice; and, when stood a Month, it will be pleasant Liquor.

Black Cherry Wine.

In the same Manner, take a Gallon, or more, of the Juice of Black Cherries, and keep it in a Vessel close stopped till it works; and, after it is fine, add an Ounce of Sugar to each Quart, and a Pint of White Wine.

To make Cyder.

Grind, stamp or pound your Apples, and put them into a Press, and Squeeze them through Hair Bags into a Tub; then let it settle, and, according to your Quantity of Juice, put in some Sugar at Discretion; then work it up with Ale-Yest, and let it stand a Week; then prepare your Vessels according to the Quantity, clean and dry; then put it up; after which put into a Bag two Pounds of stoned Raisins, two Ounces of whole Ginger, and two Ounces of Isingglass, and see it tied tight with a strong String fixed without-side the Barrel, that the Bag may sink to the Bottom; and after two Months it will be fit for Use.

Mead.

Take six Gallons of Water, and thereto put six Quarts of Honey, stirring it till the Honey be thoroughly mixed; then set it over the Fire, and, when ready to boil, scum it very well, then put to it one Quarter of an Ounce of Mace, and as much Ginger, and Half an Ounce of Nutmegs, some Sweet Marjoram, Thyme, Sweet Briar, together a Handful, then boil them in the Liquid, then let it stand by till cold, and then barrel it up for Use.

Of Jellies.

Let them be of Apples, Currants, Raspberries, *&c.* Take out the clear Liquor (when squeezed) and boil it with Sugar till it is as thick as a Jelly, then put it up in Glasses.

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Every Man his own *DOCTOR*: Or the *POOR PLANTER's PHYSICIAN.*

[*Wrote by a Gentleman in* Virginia, *and first printed there*]

THE moſt acceptable Service we can render to GOD is Beneficence to *Man*. There are three Ways of benefiting our Fellow Creatures. We may be uſeful to their Souls by good Inſtruction, and good Example: We may be helpful to their Bodies, by feeding the Hungry; cloathing the Naked, and preſcribing eaſy Remedies to the Sick: We can aid them in their Fortunes, by encouraging of Induſtry, by relieving the Diſtreſſed, and doing all the kind Offices we are able to our Neighbours. Theſe are the ſeveral Ways of improving the Talents our Maker has entruſted us with; and we muſt every one expect hereafter to give an Account how we have employed them.

I wiſh it were in my Power to ſerve Mankind, more than I do, in each of theſe Particulars; but the gracious Acceptance of the Widow's Offering, encourages me alſo to caſt in my Mite into the Treaſury. I publiſh this Treatiſe to lead the poorer Sort into the *pleaſant Paths of Health*; and when they have the Misfortune to be *ſick*, to ſhew them the cheapeſt and eaſieſt Ways of *getting well* again.

Our Country is unhappily ſubject to ſeveral very ſharp Diſtempers: The Multitude of Marſhes, Swamps, and great Waters, ſend forth ſo many Fogs, and Exhalations, that the Air is continually damp with them: This, in Spight of all our Precautions, is apt to ſhut up the Pores at once, and hinder inſenſible Perſpiration. From hence proceed *Fevers, Coughs, Quinſies, Pleuriſies* and *Conſumptions*, with a diſmal Train of other Diſeaſes, which make as fatal Havock here, in Proportion to our Number, as the *Plague* does in the *Eaſtern* Parts of the World.

In the mean Time, this is a cruel Check to the Growth of an Infant Colony, which otherwiſe, by the Fruitfulneſs of our Women, and the great Number of Recruits ſent from our Mother Country, would, in a few Years, grow populous, and conſequently conſiderable.

It is impoſſible to ſee theſe Calamities return every Year, without the tendereſt Commiſeration. Certainly nothing can

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can be more melancholy, than to have so many poor People perish, purely for want of using timely Means for their Preservation. They neglect to take any Remedy till their Case is grown desperate, and Death begins to glare them in the Face. They consider not, that a moderate Skill may recover a Patient in the Beginning of a Distemper, while he has Strength to go thro' all the necessary Operations, when the whole *College* would not be able to save him, after his Spirits are sunk, and all the Principles of Life near extinguished.

This unhappy Temper occasions a great deal of Mortality: And what makes the Misfortune the greater, is, that it falls heaviest on the Younger Sort, who are most liable to hurrying Distempers. Indeed, some would be glad of Assistance, if they did not think the Remedy near as bad as the Disease: For our *Doctors* are commonly so exorbitant in their Fees, whether they kill or cure, that the Patient had rather trust to his Constitution, than run the Risque of beggaring his Family.

These Considerations made me account it a Work of great Charity and publick Spirit, to communicate to the poor Inhabitants of this Colony, a safe Method of curing themselves, when they shall be so unhappy as to fall into any of our common Maladies. And for their greater Encouragement, the Remedies I shall prescribe, may be procured with little Trouble and Expence, being, for the most Part, such as grow at their own Doors, or may be easily propagated.

But notwithstanding this well-meaning Essay has really no other View than the Love of Mankind, yet it could not escape being grosly attack'd by some *Fysts* of the Faculty. However like *Æsop*'s Viper, while they endeavour to make a venomous Impression on the File, they only broke their own Teeth. In the mean Time, whatever my Obligations may be to 'em for their *Scurrility*, the honest *Printer* has reason to thank them, because nothing contributes so certainly to the quick Sale of any Performance, as a stupid Answer to it.

Providence has been so good, as to furnish almost every Country with Medicines proper for the Distempers incident to the Climate; and such domestick Remedies are always sufficient for the Poor, who live upon homely Fare, and for the Temperate, who make a right Use of GOD's

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Bleſſings. Their Caſes are ſeldom complicated, and proceed, for the moſt Part, from Cold, or ſome ſlight Tranſgreſſion. In ſuch Ailments, the Symptoms cannot eaſily be miſtaken, nor is the Cure difficult; all the *Secret* lies *in taking the Diſtemper in Time*: And this will be the more neceſſary, becauſe moſt Diſeaſes that happen from Cold, are exceedingly violent, and call aloud for ſpeedy Aſſiſtance.

I muſt therefore conjure my dear Countryfolks to begin with themſelves as ſoon as they can diſtinguiſh what Sickneſs they have, while Nature is ſtrong and able to co-operate with the Medicines they take. Nor can we hope, that Heaven will aſſiſt us in our Calamities, unleſs we endeavour, at the ſame time, to aſſiſt ourſelves.

In ſetting down the following Preſcriptions, I have been cautious of talking like an *Apothecary*; that is, of uſing hard Words, that perhaps neither my Patient, nor I myſelf underſtand. Nor have I taken them lightly upon Truſt, but am able to recommend moſt of them upon more than Twenty Years Experience; and for the reſt, I have credible Authority. In the mean time, I hope none will object, like *Naaman*, the *Syrian*, to the Eaſineſs of any of theſe Remedies; but rather rejoice, that they can have the greateſt of all Bleſſings ſo very cheap. And in Truth, People muſt love Difficulty extremely, to ſlight Health, as they would a Miſtreſs, for being gained with little Trouble.

That this *Treatiſe* may be as uſeful as poſſible, I have made ſome ſmall Additions here and there in this Edition, but ſo as neither to ſwell the Book, or enhance the Price. And as the whole is deſign'd for thoſe who can't afford to die by the Hand of a *Doctor*, I hope the Legitimate Sons of *Eſculapius* will be the more merciful. But as for the ſpurious Breed, they have no Right to find Fault with what they can't mend, and it will be prudent to make a Secret of their own Ignorance.

Before I mention the Cure, I ſhall endeavour to deſcribe the *Symptoms* of each Diſtemper, in ſo plain a Manner, that any Perſon may be Maſter of his own Caſe, if he will but attend carefully to what he feels; otherwiſe he might miſtake his Illneſs, and apply an improper Remedy. I ſhall alſo recommend the *Diet* fitteſt to be uſed in each Caſe; which often contributes more to the Patient's Recovery, than his *Phyſick*: At the ſame time, he ſhall have my beſt Advice,

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Advice, to prevent every Particular Ailment; which will be happier for him, than to know how to cure it.

COUGH.

I SHALL begin with a *Cough*, which is the Foundation of many bad Diſtempers, and therefore ſhould be taken Care of as ſoon as poſſible. It may be cured in the Beginning with riding moderately on Horſeback every Day, and only taking a little *Ground Ivy Tea* ſweeten'd with *Syrup* of *Horehound*, at Night when you go to Bed. But in caſe it be violent, it will be proper to *bleed* eight Ounces, and be conſtant in the Uſe of the other *Remedies*. In the mean while, you muſt uſe a ſpare and cooling *Diet*, without either Fleſh or ſtrong Drink. Nor ſhould you ſtove yourſelf up in a warm Room, but breathe as much as poſſible in the open Air. And to prevent this Miſchief, don't make yourſelf tender, but waſh every Day in cold Water, and very often your Feet.

WHOOPING COUGH.

The *Whooping Cough* (often fatal to Children) is attended with a ſtronger Convulſion than ordinary, which cauſes the *Whooping*.

For this, boil *Hyſop* and *Elicampane*, a Handful of each, in 2 Quarts of Water, ſtrain it off, and adding 1 Pound of clean *Muſcovado Sugar*, boil it again, and give the Patient 2 Spoonfuls every 3 Hours.

This ſame Remedy is good for a Shortneſs of Breath, and a Hoarſeneſs, only in theſe Caſes, *Linſeed Tea* ſweeten'd with *Honey*, ſhould be the conſtant Drink, and a ſpare and cooling *Diet* punctually obſerved.

PLEURISY.

A common Conſequence of a violent Cough is a *Pleuriſy*; which diſcovers itſelf by a briſk Fever, and ſharp Pain, pretty low in one of the Sides, ſhooting now and then into the Breaſt, and ſometimes quite back into the Shoulder Blades: It is uneaſy every Time the Patient draws his Breath, and more ſo when he coughs; which is generally the Caſe in this Diſeaſe.

The Moment any Perſon finds theſe Tokens upon him, he muſt, without Loſs of Time, take away 10 Ounces of *Blood*, and repeat the ſame 3 or 4 Days ſucceſſively, if the Pain go not away before. On the third Day, he may vomit with 30 Grains of *Indian Phyſic* (*Virginian Ipecacuanha*).

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cuanna) and every Night drink 7 Spoonfuls of *Pennyroyal Water*, or the Decoction of it, moderately ſweeten'd. In the mean Time, let him every three Hours, take Half a Spoonful of *Honey* and *Linſeed Oyl* mix'd together. He ſhould alſo ſtrew *Indian Pepper* upon *Pennyroyal Plaiſter*, and apply it very hot to the Place where the Pain lies, and be ſure to keep himſelf warm, and abſtain from cold Water: Tho' if the Diſtemper ſhould prove obſtinate, you muſt apply a *Bliſter* to his Neck, and one to each Arm, on the fleſhy Part above the Elbow.

The Patient's *Diet* ſhould be light and cooling; and his conſtant Drink, either *Linſeed* or *Balm Tea*, a little ſweeten'd.

The beſt Way to prevent this Diſtemper, will be, to *bleed* in the Beginning of any great Hoarſeneſs, or Cough, and alſo to forbear ſwilling great Quantities of Water, or Small Beer, in ordinary Life.

FEVER, Pain in the Head, Eye, or Ear.

Something a-kin to this, is a *Fever*, accompanied with a violent Pain in the Head, Neck, or Shoulder, or with an Inflammation in the Eye or Ear. In all theſe Caſes, you muſt, without Loſs of Time, *bleed* 10 Ounces. The next Day *purge* with the *Decoction of Mallows*, and three Spoonfuls of *Syrup of Peach Bloſſoms*. If the Pain ſhould continue, you muſt bleed again the third Day, and the Morrow following repeat the *Purge*: And if the Pain be ſtill obſtinate, you muſt renew both *Bleeding* and *Purging* a third Time. In the very Beginning, apply the following *Poultis* to the Part where the Pain lies: Boil the Leaves of *Sage*, *Wormwood* and *Rue* together, and having beat them ſoft, grate Nutmeg thick upon them, and bind them on warm, renewing the ſame Night and Morning: And in caſe the Diſeaſe hold out againſt all this, your laſt Refuge muſt be a *Bliſter*, near the Place where the Pain lies.

Your *Diet* ſhould be moiſt and cooling, ſuch as *thin Hominy*, *Chicken-Broth*, or *Water Gruel*; and your Drink *Linſeed* or *Ground-Ivy Tea*, moderately ſweeten'd.

This Diſeaſe will be alſo beſt prevented by *Bleeding* in a ny violent Cold.

But when there happens a violent Pain in the Breaſt, with cold Fleſh, and a low, quick and uneven Pulſe, and an exceſſive Weakneſs from the very Beginning of the Diſtemper, you muſt forbear *Bleeding* by all Means, till you have warm'd

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warm'd the *Flesh*, and rais'd the *Fever*. In order to which, give him a Decoction of *Snakeroot* and *Pennyroyal*, and endeavour to raise a Sweat between 2 Blankets, if possible. And because the Case is very dangerous, apply a *Blister* to the Breast where the Pain is, in the very Beginning.

Let his *Diet* be *thin Hominy* enrich'd with grated *Nutmeg*, and taken often to recruit the Spirits.

QUINSEY.

Another Distemper consequent to a Cold is a *Quinsey*, known by a Fever, with an Inflammation of the Glands about the Throat, and of the *Uvula*, to that Degree as to render all Swallowing difficult, and painful. For this, *bleed* immediately 10 Ounces, rather in the Jugular Vein, than in the Arm; and for Safety apply a *Blister* to the Neck: If the Inflammation should continue, *bleed* again next Day. The Morning after take a *Purge* of the *Decoction* of *Mallows*, with *Syrup* of *Peach Blossoms*, repeating the same three several Times, resting one Day between. From the Beginning, *gargle* with Dr. *Papa*'s Liquor hereafter described; and if the *Uvula* be much relax'd, drink Half a Pint of the same, Night and Morning, when you don't purge.

SORE-THROAT.

But in case it prove no more than a common *Sore Throat*, *purge* only once, and *gargle* with *Papa*'s Liquor, or Sage Tea, sharpened with a little Allom.

In both Cases, your *Diet* ought to be moist and cooling; and your Drink *Cinquefoil Tea*.

In order to prevent these Complaints, remember to wash your Neck, and behind your Ears, every Morning, in cold Water; nor muffle up yourself too warm, either Night or Day.

CONSUMPTION.

Next follows a *Consumption*, a Distemper slow and sure, that is lately grown very common amongst us. Here young People are more in Danger than their Elders, because more liable to Inflammations. It is usher'd in by a Cough of long Continuance, which, by Degrees, inflames and ulcerates the Lungs, brings on a Hectick Fever, with a Spitting of bloody and corrupted Matter, and is generally attended with a Hoarseness, and Night sweats. In the mean Time, the Patient will waste in Strength and in Flesh, while perhaps he may eat rather more than he used to do when he was well.

After

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After the Ulcer comes to be formed in the Lungs, it will be difficult for inward Remedies to reach it. They may before that, perhaps, cool the Inflammation, as well as ſweeten and diminiſh the ſharp Defluxion, ſo as to prevent an Ulcer, but can rarely heal it. So likewiſe, *Bliſters* and *Iſſues* may revulſe the Humour, and prevent the Miſchief, if ſeaſonably made uſe of.

Therefore all the Good we can hope for, in this melancholy Caſe, muſt be done while the Conſumption is apprehended only, and not actually begun. I would then recommend *Bleeding* 2 or 3 Ounces every third Day, with a conſtant Riding about on Horſeback, and Change of Air. This will help Nature to throw off the Evil that threatens her, by calming the Blood, opening the Pores, and promoting inſenſible Perſpiration. It may alſo enable her to make a vigorous Effort, by Means of a ſeaſonable Boil, or Impoſthume, on the outward Parts of the Body. For that Intention, I would alſo adviſe the Patient to *ſhave* under the Arms, and apply ſtrong *Poultiſes*, in order to draw the Miſchief, if poſſible, that Way. And for inward Medicines, let him only chew *Saſſafras Root* every Morning faſting. I would likewiſe intreat him, before he goes to Bed, to take 3 *Pills*, made of *Turpentine* and *Deers Dung*, in equal Quantities: And, beſides theſe, let him once a Week take a *Purge* of *Mallows*, and *Syrup* of *Peach Bloſſoms*.

Let his *Diet* be without Meat, and mix'd with Abundance of *Turnips*, *roaſted Apples*, *Raiſins*, and *Liquorice*; and let his Drink be Beer brew'd with *Ground-Ivy*; avoiding ſtrong Liquors of every Sort, as he would Poiſon.

The Way to prevent this waſting Diſeaſe, is never to ſuffer a Cough to dwell upon you; but *bleed* in Time, and *purge* gently once a Week. In the mean while eat not one Morſel of Meat, nor drink any Thing ſtronger than a little ſound *Cyder*: And, to make the Game ſure, ride every fair Day, and breathe as much as poſſible in the open Air.

BLOODY-FLUX.

Another miſchievous Diſtemper is the *Bloody-Flux*; the Signs of which are, a ſmall Fever, and grievous Griping. The Patient will alſo void ſlimy Excrements ſtreak'd with Blood; and, at the ſame Time, be cruelly tormented in his Bowels.

Upon

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Upon the first Appearance of these Symptoms, part with 8 Ounces of *Blood*. The next Day take 80 Grains of *Indian Physick*, by Way of *Vomit*, and work it well with 2 Quarts of warm Water. The third Day, take 70 Grains of the same *Indian Physick*, in hot Broth, made pretty salt; and then 'twill go off by Way of Stool, and strengthen the Bowels.

In the mean time let the Food he takes be either *poach'd Eggs*, *Mutton* or *Chicken-Broth*, and his constant Drink, a *Decoction* of *calcin'd Deers Horn*, with a *Plantain Leaf* boil'd in it.

To prevent this Disease, avoid sleeping on the cold Ground, and wading in cold Water: Never eat immoderately of any Sort of Fruit, nor venture to drink new or foul Cyder by any Means.

And because some People, by fancying this Distemper catching, are fearful of going near those unhappy Persons that have it, by which they often want the Assistance that is necessary; I may venture to assure them, their Apprehensions are groundless; and the Reason this Disease goes sometimes round a Family, is, because they live on the same *Diet*, and breathe in the same Air; and then no wonder if they fall into the same Disorders, one after another, without any Manner of Infection.

WHITE-FLUX.

There is also a Kind of *White-Flux*, that will hurry a strong Man out of his Life in a short Time. In this Case the Stools are frequent, without Gripes or Blood, but flowing from the Patient like Water, and having a small Fever attending it.

Lose no Time in this hasty Disease, but *vomit* with *Indian Physick*, and *purge* the next Day with the same. In the mean while, you will do well to wear some Skin girt tight on your Stomach and Belly, with the Fur next you, or else a Piece of soft Flannel.

Let your Food be *Hasty-pudding*, *Panada*, or *Broth thickened with Flour*, grating *Nutmeg* into every Thing you eat; and let your Drink be a *Decoction* of *Deers Horn*, made with a Leaf of *Plantain*.

In order to prevent this Disorder, avoid walking and riding in the Night Air, guzzling huge Draughts of cold Water, and devouring unreasonable Quantities of Fruit, especially of that which is not ripe.

LOOSE-

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LOOSENESS.

A *Common Looſeneſs* needs no Deſcription; and may b eaſily ſtopped in the Beginning; tho' ſome People hu band it ſo well, as to keep it running for many Years: S that all the Humours of the Body taking that Turn, make i difficult to cure.

Therefore, to check this Ailment in Time, you muſ *vomit* with *Indian Phyſick*; then live three or four Day upon *new Milk boil'd thick with Flour*, or *Tuckahoe*, an drink the above-mentioned *Deers Horn Decoction*.

Or mix an equal Quantity of *Decoction* of *Mint Root* and *Brandy*, with the *Yolks* of two *Eggs*. This drink warm three Nights together at going to Bed.

Then, to prevent it, eat not intemperately; nor drink windy or foul Liquors, or too much cold Water.

There is an eaſy Remedy for all Sorts of *Fluxes*, uſed by ſome *Doctors* of *Negro* Ships, with great Succeſs. They boil one Ounce of *Bees-Wax* in *Rice*, or *Haſty Pudding*, ſufficient for one Meal. They continue this a few Days, and ſuffer the *Patient* to drink very little Water, enlivened with about a fourth Part of *Rum*. This Method ſeldom fails, even in *Bloody-Fluxes*, as well as *Others*, and is the more valuable for being neither dear nor diſagreeable.

GRIPING.

But in caſe of an ordinary *Griping* in the Belly, or *Wind* in the Stomach, drink a Gallon of *warm Whey*, and if that cannot be had, a Gallon of *warm Water*, as faſt as you can ſwallow it; and afterwards *purge* with *Mallows*, and *Syrup* of *Peach Bloſſoms*, once or twice.

For a few Days content yourſelf with a moderate and eaſy *Diet*; and let your Drink be *Balm Tea*.

It may be prevented by keeping your Back-door conſtantly open, abſtaining from windy Meats, and fermented Drinks, and being always careful not to overload your Stomach.

CHOLICK.

The *Cholick* is lately grown a very common Diſtemper, and begins generally with a grievous Pain in the Bowels; and, by being neglected, fixes at length in the Pit of the Stomach, where it ſeems to bore like an Augre: The Patient frequently vomits every Thing he ſwallows, and can hardly go to Stool, even with the Help of purging Medicines.

People

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People thus afflicted are apt to fly to Drams for Relief; but with lamentable Succeſs. Theſe may eaſe a Fit ſometimes; but are ſure to add Fuel to the Fire, and make the Diſeaſe return with more Violence. Beſides, theſe Cordials have another bad Conſequence; they are apt to make People ſoberly enough inclin'd, by Degrees, grow too fond of their Phyſick. To cure all which bad Effects at once, I would recommend this certain and eaſy Remedy: Let him leave off all ſtrong, windy and fermented Liquors, and drink nothing but *Water*, enriched with a brown Toaſt.

But if this Remedy ſhould be eſteemed worſe than the Diſeaſe, I would, however, for the eaſing a particular Fit, recommend two or three Quarts of *warm Water*. And to force a Paſſage, you muſt take three or four Spoonfuls of *Bears Oil*, which will ſeldom fail; or elſe drink a Quarter of a Pint of the Decoction of *Peach Leaves*, with two Spoonfuls of Syrup of *Peach Bloſſoms*; and this Purge you ought to repeat two or three Times to carry off all Remains. But if you would root out the Diſtemper for ever, take the ſame Medicines every full Moon; and drink every Morning, for ſome Time, *Saſſafras Tea*; and, at Night, take as much *Snakeroot Powder* as will lie upon a Six pence, in *Mint-water*, or *Decoction*.

The Food proper in this Diſtemper, is *Chicken* or *Mutton Broth*; and the Drink *Balm Tea*, ſweeten'd with *Syrup* of *Mallows*.

And to prevent it, eat ſparingly, forbearing every Thing that is ſalt and windy; and never drink Spirits, one Drop of *Green Tea*, or brew'd Liquor of any Kind.

DRY-GRIPES.

The *Dry-Gripes* are now (bleſſed be God) grown much rarer than formerly. This is the cruelleſt Kind of *Cholick*, called in *Europe*, the *Cholick* of *Poitiers*; though here it might be called the *Caribbee Cholick*, becauſe very common in theſe Iſlands; and I wiſh we may not have deriv'd it from thence, by too liberal an Uſe of their Commodities.

It makes itſelf known by a moſt tormenting Pain in the Pit of the Stomach, and the adjacent Parts. The Guts feel as if they were twiſted, and all Motion downward is interrupted; by this Misfortune, the unhappy Patient is inclined to vomit up every Thing; inſomuch, that ſometimes his very Excrements are caſt out at his Mouth. In the firſt Place, a Thoroughfare muſt by all Means be attempted,

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tempted, by 3 Spoonfuls of *Bears Oil*, or by the *Decoction* of *Peach Leaves*, above mentioned. If these Remedies should fail, you must submit to a *Tobacco Glister*, performed by blowing the Smoak through a Pipe into the Fundament. And if the first Operation should happen to fail, it must be repeated, till a Passage be opened. At the same time, make a strong Infusion of *Tobacco*, and therewith anoint the lower Region of the Belly.

After the Passage is perfectly clear'd, your *Diet*, for some Days, ought to be either *Mutton* or *Chicken Broth*, in which *Mallows* have been boil'd; and your Drink *Balm Tea*.

Some have unadvisedly, in this Distemper, ventur'd also to drink Rum, and other Spirits, to ease their Pains; but this has cost them dear, by taking away the Use of their Hands, and other *Paralytick* Misfortunes; to cure which, the same Remedies must be used, as are prescribed hereafter for the *Palsey*.

The best Way to prevent the *Dry Gripes*, is to get rid of *Agues* and *Cholicks* as soon as you can; to eat sparingly of Fruit, and forbear all foul and windy Liquors; nor meddle with Rum, or other Spirit, after it has been poisoned with foul Sugar and Lime-juice.

HEART-BURN.

The *Heart-burn* is an uneasy Heat at the Mouth of the Stomach, accompanied with sour Belchings, and sometimes a Hiccup.

This is remov'd by chewing *Sassafras Bark*, or by a *Decoction* of it.

It is prevented by forbearing Spirits and foul Liquors, and also the Use of high season'd and sour Things, which kindle too sharp an Acid in the Stomach.

PALSEY.

A *Palsey* comes suddenly upon us, with dreadful Symptoms, not easy to be mistaken. We are bereft of Sense and Motion, either in one, or more Parts of the Body; or at least we find them numb'd and disabled; and where the Disease is extreme, one Side is taken quite motionless, and insensible.

At the first Appearance of these melancholly Tokens, *purge* with *Indian Physick* every other Day, for 3 Times. The Mornings you don't *purge*, cause yourself to be plung'd over Head and Ears into cold Water; and this should be repeated

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repeated thrice every Week, for 3 Months together. You are also to mix equal Quantities of *Spirit of Scurvy-grass*, and *Hungary Water*, and dipping a stiff Comb-brush therein, cause your Head, being close shav'd, to be well brush'd with it several Times a Day; likewise let the Palms of your Hands, the Soles of your Feet, and Nape of your Neck, be often rubb'd with the same Mixture. After this has put some Sense and Motion into your Limbs, beat *Rosemary* in a Mortar, and make a little Ball of it, which you must roll and work about in your Hands continually, renewing the same every Day; now and then too, put Tobacco up your Nostrils, letting it lie there for some Time, in order to drive the clammy Phlegm from your Brain. These easy Remedies will, by the Grace of GOD, do great Good in the Beginning of this Disease, by restoring the Nerves to their natural Tone, and giving new Vigour to the Animal Spirits, which have been clogg'd and obstructed.

The Patient's Food should be dry, and of easy Digestion, with *Mustard* and *Horse-radish* mix'd with it; and let *Sage* or *Balm Tea* be his constant Drink.

To prevent this Distemper, feed seldom on salt or high season'd Dishes, nor eat much Milk, or other phlegmatick Food; never sleep in the dangerous Dew, or on the moist Ground, or continue long in a Cellar; or other damp Situation. Use much Exercise, and let your Motion be always nimble, in order to quicken the Circulation, and frisk your sluggish Spirits.

EPILEPSY.

Another Disease of the Head, is an *Epilepsy*, or *Falling Sickness*, not unusual in this Country. It discovers itself by very terrible Symptoms; the unhappy Person falls down suddenly, depriv'd of all Sense and Understanding. No sooner is he fallen, but he's immediately shaken with strong Convulsions, grinds his Teeth, rolls his Eye-balls, and foams at the Mouth in a most frightful Manner. So soon as the Fit is over, his Senses return, but commonly a Pain in the Head, and great Depression of the Spirits remain upon him for some Time after. The Return of these melancholly Fits is uncertain, tho', for the most Part, they come near the Full or Change of the Moon.

In the first Place, Care should be taken to calm the Spirits of the Patient, and keep them from running Riot in this unhappy Manner. For that Intention, *bleed* him, and

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then burn Feathers often under his Noſe, or elſe Leather, or the Hoofs of any Animal.

Four Days before the Full Moon, let him take a *Vomit* of *Indian Phyſick*; and four Days after the Full Moon, let him take a *Purge* of the ſame; and be ſure to do the like again before and after the Change: And this muſt be repeated for ſeven Months together. On the Mornings when he takes no Phyſick, he muſt ſwallow as much *Powder* of *Miſleto*, as will lie upon a Shilling, in a Spoonful of the *Decoction* of *Pennyroyal*.

For this Purpoſe, the Leaves and tender Twigs of *Miſleto* muſt be gather'd in *January* (being then in their Prime) dry'd over an Oven moderately warm, and kept all the Year for the Uſe above mentioned.

Let the Patient's Head be ſhaved, and a Plaiſter made of the Juice of *Rue*, *Sage*, and *Pennyroyal*, worn on the back Part of it.

Let him often put *Tobacco* up one of his Noſtrils, keeping it there as long as it has any Strength, to clear the Head of cold and clammy Phlegm. And let him now and then, beſides, chew a Stick of *Miſleto*, and ſwallow the Juice.

Theſe Directions muſt be purſu'd ſeven Months, or more, to cure any Perſon intirely of this Diſtemper; and, if it be taken in Time, there will be great Probability of Succeſs, at leaſt in young People.

Let his Victuals be ſparing, and eaſy of Digeſtion; and his conſtant Drink, either *Sage* or *Balm Tea*.

As People commonly fall firſt into this Misfortune while they are Children, ſo, in order to prevent it, Care ſhould be taken never to fright, or ſtrike them violently on the Head, Back-bone, or Nape of the Neck.

LETHARGY.

A *Lethargy*, commonly called the *Sleepy Diſeaſe*, is an exceſſive Drowſineſs, attended with a Fever, in which the Patient is light-headed when awake. But he is apt to fall into a deep Sleep, from which it is no eaſy Matter to awake him.

In this Caſe mix *Rennet* with very ſtrong *Vinegar*, and force it down the Patient's Throat. This muſt be repeated 3 or 4 Times, and it will generally recover him from his State of Forgetfulneſs, and by Degrees get the better of the Diſtemper,

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Distemper, especially if you add a perpetual *Blister* between the Shoulders. A very spare *Diet*, and living on dry Food as much as possible, will prevent the Return of this Disease.

FEVER, with violent Purging and Vomiting.

A *Fever, with violent Purging and Vomiting*, can't easily be mistaken. The Stools, tho' frequent, are with great Pain and Difficulty; both the Stomach and Bowels feel exceeding uneasy, and the whole Frame is in universal Disorder.

As this Disease will hurry a Man soon to his long Home, without speedy Help, you must forthwith make 2 Gallons of thin *Broth*, either of Half a Fowl, or a small Chicken, and drink it all in the Space of 2 or 3 Hours; some of this will come up, and some go down, and cleanse your Stomach and Bowels in such a Manner, as to make you well before you expect it.

Only be careful to live some Days upon light and innocent Fare, boiling *Mint* in every Thing you eat, and grating *Nutmeg* into all your Drink.

Would you prevent this boisterous Illness, forbear all Kind of Surfeiting and Excess, never exposing yourself to be wet to the Skin, if possible.

I must not omit a *Fever and Ague*, which is an Epidemick Distemper in this moist and variable Climate. 'Tis true, it seldom kills now a Days; but if neglected too long, corrupts all the Juices of the Body, and ends either in a *Jaundice, Dropsy, Dry-gripes*, or *Cachexy*. Therefore I conjure all my good Patients, as they tender their Health and good Looks, to dispossess this *Devil* as soon as they can.

AGUE.

An *Ague* returns either every Day, every third, or every fourth Day; and the Way to know which of these any Person hath, is only to abide two Fits. If it come every Day, it will be often accompanied with a Pain in the Head; in which Case, after the second Fit, you must *bleed* 8 Ounces. The next Day *purge* with *Indian Physick*, and two Days after that, repeat the same again. This must be followed, by taking every Morning and Evening 20 Grains of the Powder of *Sassafras Root*, mix'd with 10 Grains of *Snake Root*, in two Spoonfuls of the *Decoction* of *Wormwood*.

If the Fit return every third Day, omit *Bleeding*, in case there be no Pain. After the second Fit, *vomit* one Day with *Indian Physick*, and *purge* with the same the

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next. If these should not master the Distemper, you must compleat the Cure with the *Powders* of *Sassafras* and *Snake-root*, taken in the Manner aforesaid.

But in case the Return should be every fourth Day, you must after the *Vomit* and *Purge*, take a *Cold Water Sweat*; That is, so soon as the cold Fit is off, and the Fever begins to come on, go into naked Bed, and drink a Pint of *cold Water*; then cover yourself up, and, in a little Time, the Disease will be driven all out at your Pores. However, take the *Powders* after this Operation for some Time, that you may make sure Work of it.

Your *Diet* should be moist and temperate, and drink *Cinquefoil Tea*.

It would be difficult to prescribe Rules to prevent a Distemper, to which our Situation is so unhappily subject; however, Prudence may be useful even in this Case. Ride therefore a great deal in the hot Months, to sweat out all indigested Humours; and don't chill your Bowels too much with cold Water. Avoid, as much as may be, being abroad in the Rain, or in the Dews of the Night. Be cautious too of sleeping on the Ground, or with your Windows or Doors open, to let the Wind blow upon you.

CONTINUAL FEVERS.

In case of a *Continual Fever*, *bleed* immediately ten Ounces. The Day following, *vomit* with *Indian Physick*; and the Morning after, *purge* with the same. And if you should be light-headed, be convuls'd, or incline too much to Sleep, lay a large *Blister* to the Neck, and to the fleshy Parts of each Arm; and take a *Glister* every Night of *Mallows* and *Syrup* of *Peach Blossoms*, to abate the Heat of the Distemper.

It matters not how little People eat in one of these *Fevers*, because the Spirits requisite for Digestion, are employ'd in struggling with the Disease; But what little Sustenance they do take, should be moist and cooling; and their Drink a *Decoction* of *Cinquefoil*, taken plentifully.

To prevent this furious Malady, avoid all Excesses of strong Drink, especially of Spirits, which inflame the Blood, at the same time that they vitiate the Ferment of the Stomach; upon which all Digestion, and consequently all Health, depends.

SLOW

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SLOW FEVER.

But there is a *Slow Fever*, more difficult to manage than all the reſt, which is the true *Scorbutick Fever*. The Signs of it are a low, but quick Pulſe, a conſtant Thirſt, a Falling away of the Fleſh, and a ſallow Complexion. There will be ſometimes too, a hard Swelling on one Side of the Belly, that ſeems to move about.

As this lurking Diſorder comes by a long Courſe of ill Management, ſo it will need ſome Time to root it out. For that End, take a *Vomit* of *Indian Phyſick*, and the next Morning a *Purge* of the ſame; which *Purge* ought to be repeated once a Week for ſix Times at leaſt. The Mornings you don't take *Phyſick*, drink conſtantly a Quarter of a Pint of *Saſſafras Tea* faſting; and every Night, as much *Powder* of *Snake-root* as will lie upon a Shilling, in three Spoonfuls of *Decoction* of *Dittany*. And if you ſhould be coſtive, take a *Gliſter* every other Day of *Decoction* of *Mallows*, with *Syrup* of *Peach Bloſſoms*. This Method faithfully purſued for two Months, with moderate Riding, and a proper Diet, will go near to finiſh the Cure.

In the mean time eat no Milk, nor any Thing ſalt or hard of Digeſtion; but let your Sauce be *Muſtard*, *Garden Creſſes*, and *Horſe-radiſh* in Abundance; and your beſt Drink will be ſound *Cyder*, with an hot Iron quench'd in it, or Beer brew'd with *Sorrel Tree Leaves*.

Then, to prevent this Illneſs, you muſt indulge no ſlothful Inclination, but ſtir about your Buſineſs briſkly, and ride as often as you can; never drink more than a Pint of Water, or other Drink, in 24 Hours. Breathe as much as poſſible in the open Air in the Day Time, and avoid it in the Night.

WORM FEVER.

There is beſides, another Kind of *Fever* hard to be diſtinguiſhed, eſpecially among Children, and that is a *Worm Fever*. There will be a quick Pulſe, and often a Pain in the Side, in the Stomach, or Bowels, and all occaſioned by Worms. Now and then too, there will be the Symptoms of the *Flux*, and even Convulſions; ſo that like the Devil it appears in all Manner of Shapes. The only Way I know of diſcerning it, is by a ſwell'd Body, a tainted Breath, or a greedy Appetite, beyond what is uſual in other feveriſh Diſorders.

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Give a *Vomit* of *Indian Phyſick* one Day, and a *Purge* of the ſame the next. Beat the *Seed* of *Jeruſalem Oak*, and take a Spoonful of it, mix'd with the *Juice* of *Rue* or *Wormwood*, for three Mornings. From the Beginning, ſoak a cur'd *Leaf* of *Tobacco* in *Vinegar*, and apply it warm to the Stomach or Belly; and it will make the Worms much ſicker than it doth the Patient.

Let his Food be ſeaſon'd with a great deal of Salt; and his Drink, Beer brewed pretty bitter, with *Wormwood* inſtead of *Hops*.

It is difficult to hinder Worms from hatching and harbouring in our Bodies, becauſe we ſwallow their eggs almoſt with every Thing we eat; eſpecially ſuch as live much upon *Pulſe* and *Indian Corn* will be full of them. So that I may venture to ſay, three Fourths of the Children that die in theſe Parts of the World, die of *Worms*.

The beſt Way to prevent them, is to make Uſe of a great deal of *Pepper* and *Salt* with your daily Food, and as little *Vinegar* as poſſible, which is full of ſmall Inſects, to be ſeen by Millions with a Glaſs.

CACHEXY.

I took Notice that a *Cachexy* was one of the Conſequences of letting a *Fever* and *Ague* continue too long; tho' the ſame is produced likewiſe by an unwholſome Diet, by a ſlothful Habit, and drinking Abundance of cold Water. The Signs of it are a ſlow Fever of the *Hectick* Kind, a continual Thirſt, a Shortneſs of Breath, and a very cadaverous Complexion.

For the Cure of this lazy Diſtemper, you muſt proceed in the ſame Method as is directed in the Caſe of *ſlow Fevers*; only I would adviſe the Patient, over and above, to take every Day, at Ten in the Morning, and Four in the Afternoon, a Dram of *Rum*, wherein the *Flowers* and Tops of *Centory* have been infuſs'd, and during the whole Courſe of the Cure, the Patient muſt, by all Means, ſhake off his lazy Diſpoſition, riſe early in a Morning, and ſtir about as briſkly as his ſtrength and Breath will permit.

His Food ſhould be freſh, and eaſy of Digeſtion; and his Drink Beer brew'd with *Wormwood*, and the *Leaves* of the *Sorrel Tree*.

To prevent falling into it, never ſuffer *Agues* or *ſlow Fevers* to taint your Blood; be nimble in your Motion, and drench not yourſelf with cold Water between Meals.

YEL-

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YELLOW JAUNDICE.

Another bad Effect of keeping an *Ague* too long, is the *Yellow Jaundice*. This discovers itself by the yellow Hue of the Face and other Parts of the Body; nay the Whites of the Eyes and Urine will be also ting'd with it.

For this Illness take a *Purge* of *Indian Physick*, and repeat it the third Day again. After that drink every Morning and Evening, for six Weeks, a Quarter of a Pint of *Decoction* of the *inner Bark* of *Elder*, and the *Root* of *Sassafras*, in equal Quantities. In the mean time, force yourself to stir about, and ride on Horseback every fair Day.

Let all your Victuals be light and temperate; and your Drink Beer brew'd with *Sorrel Leaves*, *Pine Tops*, *Root* of *Ash*, and a little *old Iron*.

To ward off this ungracious Disease, cure your *Agues* in the Beginning, lingering *Fevers* as soon as possible, and use Agility in your Motion.

DROPSY.

But the most fatal Consequence of keeping an *Ague* or *Jaundice* too long, is a *Dropsy*. This dire Calamity befals antient People sometimes, by Means of natural Decay; and sometimes those that are young, when they have made too bold with their Constitution. 'Tis also apt to follow too great a Loss of Blood, or too long a Familiarity with *Opiates*.

A *Dropsy* first shews itself by the Swelling of the Legs about the Ancles, in such a Manner as to retain the Impression of your Finger. This Swelling appears most at Night, and is usually attended with a Shortness and Difficulty of Breath, ever most troublesome when the Patient lies down.

He must therefore resolve upon proper Remedies, before the Waters rise high enough to drown him; and if he have but the Gift of Self-denial, he may, by God's Help, get the better of this mortal Enemy; provided there be no universal Decay, no Depravation of the Liver, or other Organs, necessary for Blood-making.

Now I can't recommend the Remedies for this Disease better, than by giving three remarkable Instances of Persons of an advanced Age, who have been perfectly cur'd by them.

The first was Sir *Thomas Millington*, an eminent Physician, who fell into a *Dropsy*, at near 70 Years of Age. After draining the Water, by two or three smart *Purges*, he performed

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formed the rest of the Cure by a resolute Self-denial. He eat nothing but what was light and nourishing; and for his Drink, confined himself rigorously to a Quarter of a Pint of *Rhenish* Wine in 24 Hours (and hard *Cyder* would have done the Business as well.) The first Week his Thirst was hardly to be endured; but after that grew more tolerable. He continued this Course for two Months, and recovered compleatly.

The Second was the late Earl of *Orford*, who had this Distemper in his *grand Climacteric*. He *purg'd* two or three Times, drank sparingly of *Canary* and *Water*, *thickened* with the *Yolk* of a *new-laid Egg*; and all his Victuals besides were cook'd with Abundance of *Garlick* and *Horseradish*. This Method was pursued with great Constancy for three Months, and blest with intire Success.

The last Instance is an *ancient Gentleman* who trusted to the Remedies of our own Country, with the like happy Effect. He drank the *Decoction* of *Sassafras* as soon as he got up, and chew'd the *Root* of it all the rest of the Morning till Dinner; then observed a light and nourishing *Diet*; and drank moderately of clear sound *Cyder*, wherein an *hot Iron* had been plentifully quench'd, and a little *Allom* dissolv'd.

Of these several Remedies you may please to take your Choice; or, instead of *Sassafras*, you may hold the *Seeds* of *Pelitary of Spain* in your Mouth, which will salivate still more powerfully.

The rest of the Cure must be compleated with restorative Meats, and a very short Allowance of Drink. For your *Diet* I would recommend *Poach'd Eggs*, *thin Hominy*, *Hogs Feet*, *Cow Heel*, and *Jelly Broth*; all which will renew and enrich the Blood, without provoking too much Thirst; and for Drink use none but *Sorrel-Beer*, or sound *Cyder*, wherein an *hot Iron* has been quench'd several Times.

To guard yourself against this wretched Distemper, be cautious of scorching your Liver with Spirits, or Excess of other strong Drink. In case you be troubled with *Bleeding*, stop it as soon as you can. By no Means accustom yourself to *Opiates*, or suffer an *Ague*, the *Jaundice*, or lingering *Fevers*, to dwell long upon you.

Because I mentioned Loss of Blood to be one Cause of the *Dropsy*, I will hint at some Means to stanch those *Bleedings* that threaten the most Danger.

BLEED-

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BLEEDING PILES.

In Men the exceſſive *Flux of the Bleeding Piles* ſometimes ends in a *Dropſy*, if not ſtopp'd in Time, in that Caſe *purge* with *Indian Phyſick* two or three Times; and the Mornings you don't take that, drink the *Expreſt Liquor* of *freſh Aſs Dung*, ſweetened with *Syrup* of *Quinces*, to be repeated three Times. In the mean while, take an Ounce of *Conſerve* of *Roſes*, twice or thrice a Day; and after every Stool, waſh your Fundament clean with *Decoction* of *Comfry Leaves*, made very warm.

Live all the Time upon a cooling *Diet*, without Meat; and only drink *Burnet* or *Yarrow Tea*, ſweeten'd with *Syrup* of *Quinces*.

Thoſe that are liable to this, or the like Infirmities, ſhould avoid heating themſelves with ſtrong Drink, or too boiſterous Motion; nor muſt they fall into violent Paſſions, either of Love or Anger.

FLOODING.

In Women a *Dropſy* is often caus'd by *Flooding, or the immoderate Flowing of their Courſes.* Let them for this, in the firſt Place, take away eight Ounces of *Blood*, and then proceed as in the foregoing Caſe; only they muſt inject the *Decoction* of *Comfry Leaves*, and govern their Paſſions if they can; nor muſt any Part of them, not ſo much as their Tongue, be allowed to have too much Motion.

This Infirmity comes upon the Sex about 50 Years of Age; and after *Bleeding* and *Vomiting*, nothing cures it better than the Uſe of the *Cold Bath*.

BLEEDING at the NOSE.

The *Bleeding at the Noſe* muſt be treated juſt in the ſame Manner, except the *Decoction* of *Comfry Leaves* ſhould be often ſnuffed up the Noſe, and a Tent ſoak'd in the ſame frequently thruſt into the Noſtrils; and if a little *Allom* were diſſolv'd in the *Decoction*, it would be ſo much the better.

SPITTING or PISSING of BLOOD.

Then for *Spitting* or *Piſſing* of *Blood*, *bleed* eight Ounces. The next Morning *purge* with *Indian Phyſick*; and drink nothing but *Tea* made of *Comfry Leaves* or *Root*, and ſweeten'd with *Syrup* of *Quinces*. But whenever a *Fever* produces Loſs of Blood, the Heat of that muſt be taken off by *cooling Medicines*, before the *Bleeding* will ceaſe.

WHITES.

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WHITES.

In the *Whites* too I would recommend *Bleeding* in the Beginning, and *Purging* two or three Times with *Indian Physick*. When she don't *purge*, let her Night and Morning drink Half a Pint of *Papa*'s Liquor, with an Ounce of *Conserve* of *Roses* dissolv'd in it; and often inject the same. For the rest, she must use the same *Diet*, the same *Drink*, the same moderate Motion, and Freedom from Passion, as are mentioned before.

GLEET.

A *Gleet*, or *Running of the Reins*, in Men, must be treated in all Respects as the foregoing Weakness in the other Sex; provided always it be not Venereal.

DIABETES.

A *Diabetes* discovers itself plainly, by making Water abundantly, which has commonly a greasy Skim upon it. 'Tis also attended with a low sneaking *Fever*, and much stronger Inclination to drink than eat. At the same Time the Patient finds himself weak and low spirited, with a Listlessness to all Manner of Motion.

For this bad Distemper there is this easy and cheap Remedy, which rarely fails. Dissolve as much *Allom* in a Pint of Posset Drink as will sit on the Patient's Stomach without vomiting. Of this let him sip now and then two or three Spoonfuls, till all the *Symptoms* go off.

In the mean time, let his Food be easy of Digestion, and his Drink *Balm Tea*, moderately taken, or *Bristol Water*, if it can be got.

And the Way to avoid this *Disease* is, by a temperate Use of such *Meat* and *Drink* as breed good Blood.

VAPOURS.

There is no Disease puzzles *Physicians* more than the *Vapours*, and *Hysterick Fits*. These Complaints are produced by so many Causes, and appear in so many various Shapes, that 'tis no easy Matter to describe them. However, some of the *Symptoms* are a Thumping at the Heart, a Croaking of the Guts, and a Fulness of the Stomach, which the Patient endeavours to ease, as much as she can, by Belching; every now and then too, something seems to rise up to her Throat, that almost stops her Breath; she has moreover, a great Heaviness and Dejection of Spirit, and a Cloud seems to hang upon all her Senses. In one Word, she has no Relish for any Thing, but is continually out of Humour, she

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she knows not why, and out of Order, she knows not where.

This is certainly a miserable Condition, and the more so, because the Weakness of the Nerves makes the Cure exceeding difficult.

Because the *Stomach* is suspected to be much in Fault, I would have that cleansed in the first Place, with a *Vomit* of *Indian Physick*; the next Day purify the *Bowels* by a *Purge* of the same; which must be repeated two Days after. The rest of the Cure must be performed by the exact Observation of the following *Rules*. Endeavour to preserve a cheerful Spirit, putting the best Construction on every Body's Words and Behaviour; plunge three Mornings every Week into cold Water over Head and Ears; which will brace the Nerves, and rouze the flaggish Spirits surprisingly. Observe a strict Regularity and Temperance in your *Diet*; and ride every fair Day small Journeys on Horse-back. Stir nimbly about your Affairs, quick Motion being as necessary for Health of Body, as for Dispatch of Business. In the mean while, I absolutely forbid all Sorts of *Drams*, which will raise the Spirits only to sink them lower; nor do I allow her one Pinch of *Snuff*, or one Drop of *Bohea Tea*, which make People very lumpish and miserable.

Her *Food* must be fresh and easy of Digestion, neither salt nor windy, nor may she eat one Morsel of *Beef*, which affords a gross Nourishment, and inclines People too much to hang themselves. And for her Drink, she must forbear *Beer*, with all windy and fermented Liquors; and stick to *Balm Tea* entirely.

To escape this Disorder, she must suffer none of the idle Disturbances, or Disappointments of an empty World, to prey upon her Mind, or ruffle her sweet Temper. Let her use just Exercise enough to give a gentle Spring to her Spirits, without wasting them; and let her be cheerful in spite of a churlish Husband, or cloudy Weather.

SUPPRESSION of the COURSES.

Now I am upon *Female Infirmities*, it will not be unseasonable to touch upon a common Complaint among unmarried Women, namely, *The Suppression of the Courses*. This don't only disparage their Complexions, but fills them besides with sundry Disorders. For this Misfortune, you must *purge* with *Highland Flagg* (commonly called *Belly ach Root*) a Week before you expect to be out of Order; and repeat the

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the ſame two Days after; the next Morning drink a Quarter of a Pint of *Pennyroyal Water*, or *Decoction*, and as much again at Night when you go to Bed. Continue this 9 Days running; and after reſting 3 Days, go on with it for 9 more. Ride out every fair Day, ſtir nimbly about your Affairs, and breathe as much as poſſible in the open Air.

You muſt feed upon a warm and cordial *Diet*, enrich'd with a great deal of *Muſtard*, *Nutmeg*, *Horſe-radiſh* and *Garden Creſſes*; at the ſame time avoiding every Thing that is aſtringent, phlegmatick and windy. And let your *Drink* be *Beer*, brew'd with *Sorrel Leaves*, or elſe *Ground-ivy Tea*.

To prevent this Complaint, young Women muſt ſhake off Sloth, and make uſe of their Legs as well as their Hands. They ſhould be cautious of taking *Opiates* too often, or *Jeſuits Bark*, except in Caſes of great Neceſſity; nor muſt they long for *pretty Fellows*; or any other *Traſh* whatſoever.

STONE in the BLADDER.

Heaven be prais'd there is little Occaſion to ſay any Thing of the *Stone in the Bladder*, there being few Inſtances of it in this Colony. Among the Gentry, the *Madeira Wine*, which has but little *Tartar* in it, and the *Melaſſes Beer*, being ſoft and cleanſing, are happy Defences againſt this Scourge of Luxury and Lazineſs: And then, for the common Planters, their *Pone*, and other Preparations of *Indian Corn*, being ſmooth and ſlippery, are likewiſe excellent Preſervatives.

GRAVEL.

Nevertheleſs, ſome few of us, by ſitting too long either at our Book or our Bottle, have, now and then, ſome Touches of the *Gravel, or Stone in the Kidneys*. This makes itſelf known by a Pain acroſs the Loins, by Urine ting'd with Blood, and mix'd with Sand, and jagged little Stones; the Stomach too is ſometimes affected, and inclined to vomit.

When you find theſe concurring *Symptoms*, drink 3 or 4 Quarts of *Whey* as faſt as you can, wherein the *Root* of *Prickly Pear* has been boil'd. When that has all paſt, ſqueeze the *Juice* of *Wild Garlick* into clean ſound *Cyder*, and drink a moderate Glaſs of it Night and Morning for 6 or 7 Days.

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In the mean time, let your Food be *thin Hominy*, or *Broth*, with a few *Mallows* boil'd in it; and your Drink, a *Decoction* of *Mallows*, sweeten'd with *Syrup* of *Violets*.

And the Way to ward off this painful Disease, is to be temperate in all your Enjoyments, to eat a great Deal of *Milk*, and Meats made of *Indian Corn*; but above all Things, be cautious of sitting still too much.

SUPPRESSION of URINE.

A Common Consequence of the *Gravel*, is a *Suppression of Urine*, occasioned, sometimes, by small Stones lodging in the narrow Passages, that lead from the Kidneys to the Bladder. The Signs of this Complaint are too plain to any One who has his Feeling; and to cure it, you must proceed in much the same Method as for the *Gravel*; only you should add *Parsley Tea* to your Drink, sweeten'd with *Syrup* of *Violets*.

But if the Suppression arise from an Ulcer, or Inflammation in the Neck of the Bladder, then the *Sypmtoms* are a great Heat and Pain in that Part, with an urgent Need to make Water, but a Disability to do it at all, or, at most, not faster than Drop by Drop.

For this, boil one Part of *Oil* with two Parts of good *Cyder*, and thereof swallow a Spoonful or two Night and Morning.

Let your *Diet* all the while be cooling and easy of Digestion; and your Drink, *Parsley Tea* or *Cyder*, with a *Plantain Leaf* boil'd in it.

To prevent this Ailment, eat seldom of pepper'd or high season'd Meats; and drink moderately of hot Liquors: Tho', above all Things, you must forbear using artificial Provocatives to recommend you to the delightful Sex; but, for that, let Nature be your only Prompter.

BLIND PILES.

The *Symptoms* of the *Blind Piles*, are little painful Swellings, appearing just without the Fundament. They are occasioned by the Flowing of corrupted Blood into the Vessels thereabouts, which sometimes creates so much Anguish, as to put the Patient into a *Fever*, and render every Posture uneasy.

For this Complaint, take every Morning fasting, in the *Yolk* of a *new laid Egg*, 12 Grains of *Brimstone*, finely powder'd; and wash it down with a small Draught of *Decoction* of *Mallows*. And to assuage the Pain, make Use

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of this *outward Application*: Stamp a *roaſted Onion*, with a little *Ointment* of *James-Town Weed*; which muſt be laid on warm, and renewed twice a Day.

In the mean time the afflicted Perſon's *Diet* ought to be moderate and cooling, without Meat of any Kind; and his conſtant Drink, *Milk* and *Water*.

But, in order to prevent this Affliction, and root it out for ever, uſe the following Remedy. Boil a Handful of *Mullein Leaves* in a Pint of *new Milk*, and ſweeten it with *Syrup* of *Violets*. Drink this every Night, for 6 Weeks together, juſt before you go to Reſt.

RUPTURE.

A *Rupture* is a common Misfortune, eſpecially among *Children*. The Tokens of it are a painful Swelling and Inflammation in the Cods, occaſioned by a Fall, or other Violence, that forces down the Guts into that Part, and is moſt painful when the Accident firſt happens.

For this, let the Patient immediately have a *Truſs* made, that may hold the Part ſuſpended. Then apply freſh *Cow Dung*, which muſt be renewed Night and Morning, till the Pains are aſſwaged. After that, put on another *Poultis*, made of the *Roots* of *Swamp Lillies*, and *Sumack Berries*, boil'd and beat well together; which muſt alſo be refreſhed twice a Day, till the Swelling diſappears. From the Beginning, let him gird a Belt tight about his Loins, and wear it continually, till the Bowels are drawn up to their natural Situation.

Let his *Diet* be cooling, and eaſy of Digeſtion; and his conſtant Drink, a *Decoction* of *Garden Creſſes*, ſweeten'd with *Syrup* of *Quinces*.

In order to prevent this Diſaſter, Care muſt be taken never to over-ſtrain yourſelf, uſe too violent Motion, or fall in ſuch a Manner as to injure yourſelf in thoſe ſenſible and tender Parts.

KING's EVIL.

The *King's Evil* proceeds from a foul and obſtinate Humour in the Body that breaks out into Swellings and Sores, and is often derived from our Parents.

For this great Misfortune take a clean *Spunge*, and dry it well in an Earthen Pot, and having reduced it to a fine Powder, take as much as will lie upon a Shilling, Morning and Evening, in warm *Aſſes Milk*. This muſt be continued for three Months to compleat the Cure. In the mean time,

Care

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Care ſhould be taken never to ſcorch the *Spunge*. While this Remedy is taken inwardly, apply a Poultis of *Saſſafras* to the Sores that are broke, which will both draw and heal them.

A Spare *Diet* ſhould be uſed all the while, without Salt Meat, or ſtrong Drink.

The beſt Way to prevent this impure Diſtemper, is for thoſe that have it never to marry, nor do worſe, that they may not tranſmit their Misfortunes to Poſterity.

YAWS.

The *Yaws*, or *Country Diſtemper*, is very bad to cure perfectly, eſpecially when grown inveterate. This is the higheſt Kind of *Scurvy*; and the *Symptoms* of it are, eating Ulcers in the Throat, or Palate, and filthy Sores in other Parts of the Body, having near Reſemblance to thoſe of the *Pox*.

This unclean Diſeaſe often yields to Dr. *Papa*'s Remedy; or at leaſt may be kept under by it.

PAPA's REMEDY.

Take 1 Ounce of the Bark of *Sumack Root*, 1 Ounce of the *inner Bark* of *Spaniſh Oak*; boil theſe together in 2 Quarts of *Water*, till the *Decoction* be very ſtrong. Of this Liquor drink a full Pint, Milk-warm, and immediately after it Half a Pint, quite cold: and it will give you a powerful *Vomit*.

The next Morning take Half a Pint of the ſame *Drink* warm, and the ſame Quantity again in the Evening; and continue ſo doing for 6 Weeks or 2 Months; only the *Vomit* muſt be repeated every ſeventh Day. In the mean time *gargle* your Throat, and waſh all your Sores and Ulcers with the ſame warm *Liquor*, which ought to be made freſh every 2 Days. Beſides all this, you muſt chew the *Sumack Root* very often, and ſwallow the healing *Juice*.

Every Night, before you go to reſt, take 2 *Pills*, made of *Turpentine* and *Deers Dung*, in equal Quantities.

POX.

The *Pox* may be cured exactly in the ſame Manner; and, becauſe the *Symptoms* are much the ſame, it is very probable the One was a Graft of the other. The pious *Spaniards* catch'd it from their *Negroe* Miſtreſſes in the *Weſt-Indies*, and had the Honour of propagating it from thence to all the reſt of the World.

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again, and take a Quarter of a Pint, *blood-warm*, Morning and Evening, for 3 Days, and you will find Relief.

As this Diſtemper happens by a violent cold, great Care ſhould be taken to prevent the unhappy Cauſe.

GOUT.

I ſhall next ſay ſomething of the *Gout*, which I obſerve with Pleaſure to be grown leſs frequent in the Country, than in the Time of our Fathers. It makes itſelf known with a Vengeance, by a painful Inflammation in ſome of the Joints, eſpecially of the Hands and Feet.

It would be great Preſumption, after ſo many vain Attempts, for me to recommend any other Remedy for this obſtinate Diſtemper, than a ſtrict and ſevere Temperance, both in Eating and Drinking. Nevertheleſs, I am not ſo hard hearted, as to deny my Patient any Kind of freſh and plain Food, that agrees with his Stomach: All I intreat of him, is to confine himſelf religiouſly to a moderate Quantity. Nor can he do better, than to follow the Example of *Cornara*, a noble *Venetian*, who tied himſelf down to 12 Ounces of Eatables, including Bread, and 14 Ounces of Drink, in the 24 Hours. He ſtuck cloſe to this ſhort Allowance, uſing moderate Exerciſe; and, from being a Cripple by the *Gout*, recovered his Health, and his Strength, to a Wonder: And having found ſo much Benefit by theſe Rules, purſued them ſtrictly to the End of a very long and happy Life.

Nor are theſe Weights ſo ſcanty as they may ſeem to be to ſome keen Stomachs; but, upon a fair Trial, they will be found ſufficient to give Strength to the Body, Chearfulneſs to the Heart, and Vigour to all the Faculties of the Soul. And, beſides theſe happy Effects, they will do more: They will place you above the Influence of the Stars; and make you able to ſubdue your Paſſions, to the Empire of a cool and unclouded Underſtanding.

The ſame Temperance that cures this Diſtemper, will certainly not fail to prevent it; make you live a great while, and very eaſy while you do live.

BITE of a RATTLE SNAKE.

If any One ſhould have the Misfortune to be bit by a *Rattle Snake*, let him kill the *Viper* immediately, and apply its *Fat* to the Wound. This will ſheathe the *Poiſon*, and give Time for other Remedies to expel it out of the *Blood*. The readieſt Cure I know, is St. *Andrew's Croſs*, which grows

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grows providentially all over the Woods, during the whole Seaſon that the *Snakes* are miſchievous.

Let him take 60 Grains of the *Root* reduced to *Powder*, or a ſtrong *Decoction* of the Leaves and tender Branches, and if one Doſe ſhould not finiſh the Cure, he muſt take a Second. There are other Plants growing in this Country that will anſwer the ſame Intention, ſuch as the *Fern Rattle-ſnake Root*, *Ginger Snake-root*, the ſmaller *Aſſa Rebecca*, *Oak of Jeruſalem*, and *Dittany*; but St. *Andrew's Croſs* is as powerful as any, and much eaſier procur'd, being the Growth of every Soil, that hath not been clear'd thro' the whole Colony. Nor is there any *Indian* Trader, but can bear Witneſs to its Virtue in this Particular.

BITE of a MAD DOG.

For the *Bite of a Mad Dog*, which may be reckoned among the greateſt of Calamities, Dr. *Mead* has communicated the following Remedy to the World which he had tried on more than 500 Perſons, with great and conſtant Succeſs.

The Patient, as ſoon as poſſible after his Misfortune, ſhould *bleed* about 10 Ounces. Then let him take of *Aſh-colour'd Ground Liver Wort*, dry'd and powder'd, Half an Ounce; which grows on moiſt ſandy barren Soils. He muſt mix with this two Drachms of *powder'd black Pepper*. Divide thoſe into Four *Doſes*, and let him take one every Morning faſting in Half a Pint of *warm Milk*. After this, the Patient muſt be plung'd over Head and Ears in very *cold Water* every Morning faſting, for a Month together, never ſtaying longer than Half a Minute at a Time. When he has bath'd in this Manner ſo long, he need go in no more than three Times a Week for a Fortnight longer, by which Time the Cure, by the Grace of G O D, will be happily compleated.

The *Liverwort* ſhould be gathered in *October*, and dry'd carefully in the Shade.

FILM.

In caſe a *Film* ſhould grow over the Sight of the *Eye*, occaſioned by a Blow, a ſharp Humour, or other Accident, you may take it off with this eaſy and cheap Remedy. Dry *Human Dung* in the *Sun* that is yellow, and of a good Conſiſtence, and having reduced it to a very fine *Powder*, blow it thro' a Quill two or three Times a Day into the *Eye*, and your Sight will be happily reſtored in a ſhort Time.

SORE

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SORE EYES.

Common *Sore Eyes* may be cur'd by waſhing them with *Breaſt Milk*, warm *Sage Tea*, or with *Roſe Water*, taking Care in the mean time not to rub them if they itch, or expoſe them to the cold Air.

SPRAIN.

If by any *Fall*, or *Falſe Step*, you ſhould happen to ſprain a Joint, clap it into *cold Water* as ſoon as poſſible, and keep it there for ſeveral Minutes. Then cover the Part all over with a Poultis of *Clay* well temper'd with *ſtrong Vinegar*, which muſt be bound on ſecurely. When the firſt grows dry, apply another, which will probably finiſh the Cure without the Expence of a *Surgeon*.

And now I mention *Surgeons*, by the good Leave of thoſe Gentlemen, I will recommend to my poor Countrymen an eaſy Remedy for ſome little Complaints that fall within their *proper Province*. Nor will they take it amiſs, I hope, if I endeavour to help ſuch indigent Perſons as cannot purchaſe their Aſſiſtance.

BROKEN SHIN.

If any One therefore ſhould break a *Shin*, or have any other *green Wound* (which, by being neglected, often comes to be very troubleſome) let him only make uſe of that *Balſam*, which the compaſſionate *Samaritan* apply'd to the Wounds of the poor *Iſraelite* who fell amongſt Thieves. Boil *Oil Olive* and *Wine* in equal Quantities (and if you add a little clean *Muſcovado Sugar*, it will be ſo much the better) Drench a *Pledget* well in this *Balſam*, with which cover the whole Sore, and keep it on with any ſticking Plaiſters, and it will be healed in one or two Dreſſings. I have likewiſe cur'd very bad Ulcers with it, but then I kept the Patient to a ſpare and cooling *Diet*, making him drink *Papa*'s Liquor all the Time, and cleanſe the Sore with the ſame every Time it was dreſſed. In theſe Caſes, it need not be dreſſed more than once in two Days, becauſe it ſhould be expoſed as ſeldom as poſſible to the cold Air.

SWELLING to DISCUSS.

If you have a *Swelling* in any Part which you would diſcuſs, mix *powder'd Brimſtone*, with the Juice of *James Town Weed*, and thereof make an Ointment with freſh *Hogs Lard*. Anoint with this twice or thrice a Day, keeping the Part warm, and you will rarely fail of Succeſs.

SWEL-

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SWELLING to BREAK.

But if you would draw a *Swelling* to a *Head*, chew *Saſſafras Root*, and apply it by Way of Poultis, and it will not only break the *Swelling*, but cure it alſo in a ſhort Time, without any other Application.

SEAR CLOTH.

If you ſhould have a Pain in the *Back*, *Loins*, or other Part, that requires a *Sear Cloth* to aſſwage it, the moſt effectual One I can recommend to you, is made after the following Manner. Powder the Root of *Aſſa Rebecca*, *Comfry* and *Snake Root*, then mix them with as much common *Turpentine* as will make a large Plaiſter, which apply hot to the Part, and it will give ſpeedy Relief.

DEAFNESS.

If any one ſhould by Cold or other Accident become *Deaf*, let him take the *Bulb* of a large *Onion*, and ſcoop out a pretty deal of the Inſide. Then let him fill the hollow Part Half full of *Rattle Snake Oil*, and place it on a *Grid-Iron* over *live Coals*, till the *Pulp* of the *Onion* incorporate with the *Oil*. Then ſtrain it, and going to Bed, drop two Drops into the Patient's Ear very warm. Afterwards ſtop it with *Cotton*, and repeat it ſix or ſeven Times, and you will have Reaſon to applaud the Medicine.

Thus I have run through moſt of the common Complaints, to which the Inhabitants of this Colony are ſubject; and preſcrib'd ſuch innocent Cures, as will generally ſucceed, if timely made Uſe of; yet am far from pretending that any of them are infallible; We all know that *Death* ſtrikes ſo home in ſome Caſes, that all *Phyſick* is vain. There are many Inſtances too, where the Diſeaſes of our Climate have a little *Daſh* of the *Pox*, the *Scurvy*, or the *Gout*; and then they need a *RATCLIFF* or a *FRIEND* to get the better of them.

In the mean time, it may ſeem ſtrange, that, among the Remedies I have preſcribed, no honourable Mention is made of *Mercury*, *Opium*, or the *Peruvian Bark*, which have almoſt obtain'd the Reputation of *Specificks*. I acknowledge the powerful Effects of theſe Medicines, but am perſwaded they ought to be adminiſtred with the greateſt Skill and Diſcernment. And, as I write only for the Service of the Poor, who are wholly left to judge for themſelves, I was fearful of putting ſuch dangerous Weapons into their Hands.

If

If those of better Circumstances find any Thing here that may, in any Manner, deserve their Attention, I should be exceeding glad; tho' I own these Directions were not designed for such as are in Condition to purchase more *learned Advice*. It was only to those whom Fortune has placed below the Regard of our *Doctors*, that I address this short Essay; and if one single Person shall be recovered thereby, or receive the least Relief, I shall account my Pains happily bestowed.

In the mean Time, there is no Question, but some of my *Brother Quacks* will make themselves merry with these Prescriptions. Let them shoot their *harmless Bolts*. I by no Means envy those Gentlemen the only Way they have of appearing wiser than their Neighbours. Tho' after all, it is not impossible, but they may do by some of these, just as the good People of *England* do by the *French* Fashions, *laugh* at them first, and then have the Humility to follow them.

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The foregoing Distempers are the most fatal and troublesome we are afflicted with in this Country. I have been as short as I could, lest I might lose the Benefit of the Proverb, which says, *The shortest Follies are the best.* The Remedies I have prescrib'd, are almost all of our own Growth, there being no more than 5 or 6 foreign Medicines; and they so very cheap, that if I happen not to cure my Patient, I am sure I shall not ruin him. And surely, no Man can say, he dies very unfairly, when there is so little to pay, either to the *Doctor* or the *Apothecary.* Besides, I have another Thing to recommend me, that I don't cram my Patients with too much *Physick.* My Prescriptions are generally single, and not compounded, like a *Spanish Oleo,* of all Sorts of Ingredients, which must certainly confound and defeat the Virtues of each other. Neither do I ransack the Universe for outlandish Drugs, which must waste and decay in a long Voyage; nor import the Sweepings of the Shops, which I am sure are decay'd; but am content to do my Execution with the Weapons of our own Country.

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Theſe

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Theſe Ingredients every Maſter of a Family may provide himſelf with; as he ſhould alſo with a *Lancet*, a *Glyſter-pipe*, and a *Syringe*, that he may not be at a Loſs in his Diſtreſs; and ſpend that Time in running after Remedies that ought to be made uſe of in applying them; Delays being never ſo dangerous, as in the Care we ought to take of the Sick.

The Printer to the Reader wiſheth Health.

THIS Book, intituled, *Every Man his own Doctor*, was firſt printed in *Virginia*, for the Uſe of which Colony it was written by a Gentleman reſiding there. Great Numbers have been diſtributed among the People both in *Virginia* and *Maryland*, and 'tis generally allowed that Abundance of Good has been thereby done. And as ſome Parts of *Pennſylvania*, the *Jerſeys*, and the Lower Counties on *Delaware*, by the Lowneſs and Moiſtneſs of their Situation, are ſubject to the ſame Kind of Diſeaſes, I have been adviſed to reprint this Book here, for the Uſe and Benefit of thoſe People in theſe Countries, as live at too great a Diſtance from good Phyſicians. It is neceſſary, however, to give the Reader this one Caution, that the *Ipecacuana* or *Indian Phyſick*, ſo frequently preſcribed by the Author, is much weaker in *Virginia*, than that which grows in *Pennſylvania*; ſo that whereas he preſcribes 80 Grains for a Vomiting Potion, and 70 for a Purge; 12 Grains of our *Indian Phyſick*, or *Ipecacuana*, will be ſufficient for a Vomit, and 10 for a Purge: There is another Sort which comes to us from *Europe*, and is to be found in the Apothecaries Shops, of which 30 or 32 Grains is commonly given for a Vomit, and 27 for a Purge, which will work moſt Conſtitutions ſufficiently.

POSTSCRIPT.

A Phyſician in *Virginia* has lately publiſhed an Eſſay on the *Pleuriſy*; in which he diſcovers a Method of treating that fatal Diſtemper, that he ſays he always found to ſucceed. The principal Part of the Cure depends on the Uſe of a Simple that begins to be known in this Country by the Name of *Rattle Snake Root*, being the ſame which the *Indians* uſe in curing the Bite of that venomous Reptile.

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Pestile. The Method which the Author practiſes and recommends, is as follows.

" Let the Patient firſt have 10 Ounces of Blood taken from the Arm of the well Side or Foot, if both Sides are affected; and every ſix Hours 3 Spoonfuls of the following Tincture is to be given, the firſt Doſe immediately after, and continued till the Symptoms abate.

" Take of the *Rattle Snake Root*, 3 Ounces, *wild Valerian Root*, an Ounce and a Half, let them be well bruiſed in a Mortar, then mix them with a Quart of old *Canary*, and digeſt in a proper Veſſel in a Sand Heat for ſix Hours, afterwards decant for Uſe.

" Let fifteen Drops of *Balſam Capivi*, and as many of *Sal Volatile Oleoſum*, be given in a little ordinary Drink, twice between each Doſe of the Tincture, beginning with the firſt Doſe two Hours after the Tincture; and give the ſecond Doſe two Hours after.

" Let the ordinary Drink be a Tea made of *Marſhmallow Roots*, always given warm.

" If the Patient has been ill ſome Days before any Thing adminiſtred, the *Balſam* is to be continued for ſome Days after a conſiderable Amendment.

" Blood-letting is to be repeated the ſecond Day, and in the ſame Quantity as the firſt, if the Patient is not much better, or the ſame Day, unleſs ſomething better in four Hours: But ſuch is the Efficacy of this Medicine, that there is ſeldom Occaſion. The Symptoms generally abate conſiderably in 24 Hours, and the Recovery certain.

But becauſe every One may not have Conveniency for preparing this Tincture, nor have the other Medicines mentioned at Hand, and don't live within Reach of a Phyſician, it is neceſſary to acquaint the Reader with what the Author adds further, *viz.*

" A Decoction of the *Rattle Snake Root* alone in Spring Water, three Ounces to about one Quart; together with Pectoral Teas ſweetened with Honey, *will prove effectual* without *any thing elſe*, if the Patient has been let Blood as ſoon as taken, and this Decoction immediately given afterwards."

This is to be underſtood of the genuine *Pleuriſy* or *Peripneumony* attended with a Fever.

As for the other Diſeaſe, which often perſonates a *Pleuriſy* in theſe Parts, the Symptoms of which are, that the

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patient is cold in a *somniferous* State, and sometimes convulsed.

In this Case the Author omits Blood-letting as pernicious; but says the Tincture aforesaid is as effectual here as in the genuine *Pleurisy*, only advises that the *Rattle Snake Root* and Valerian be in equal Quantity.

We have not Room to add more out of the abovementioned Essay; and indeed the greatest Part of it being taken up in abstracted Reasonings on the Texture of the Blood, and the Operations of different Medicines, &c. to make a larger Extract would be of little Use to the unlearned Reader, for whom this Book was originally intended; and it is supposed that in Cases of Danger, the Patient will always consult a skilful Physician where it can possibly be done.

But while we are solicitous about the Health of the Body, let us not forget, that there are also *Diseases of the Mind*, which concern us no less to be thoroughly cured of. The divine Assistance and Blessing on our Endeavours is absolutely necessary in both Cases; which we ought therefore piously and devoutly to request. And being healed, let us gratefully bless and praise that GREAT PHYSICIAN, from whose Goodness flows every Virtue, and the Discovery of every useful Medicine.

An Addition of some further RECEIPTS.

BRUISE or SCALD outward.

TAKE a Quart of Neats-foot Oil, Half a Pound of Red-lead, two Ounces of Bees-wax; boil them together three Hours, and stir them well.—Or, Oil of Eldern bathed or rubbed on the Place will have the same Effect.

BRUISES INWARD.

Drink the *Decoction* of *Comfry* with *Bread* and *Butter*.

BOUND in the BODY.

Take Cream of Tartar mixed with Honey very frequently.

CANKER in the MOUTH.

Take the Juice of Plantain and Rose-water mixed, and with it frequently wash your Mouth.

For

For a COUGH.

When you are going to Bed, drink Brandy, Treacle and Sallad Oil, mix'd: Or, take a Mixture of Butter and brown Sugar.

CONVULSIONS in CHILDREN.

Take unſlacked Lime one Quart, and put to it five Quarts of Spring Water; let it ſtand 24 Hours, in which Time ſtir it three times, ſcum it, and take the clear Water and let it ſtand 12 Hours more, and ſtrain it through a Cloth; and being put into an Earthen-pot, put to it Aniſeed and Fennel Seeds, of each a Quarter of a Pound; Liquorice bruiſed and Saſſafras, of each an Handful; let them ſtand four or five Days, and then let the Child drink a Quarter of a Pint, Morning and Evening, as long as it laſteth.

For the Stone or Stoppage in the Urine.

Take a Quantity of Thyme, Parſley, Tops of Fennel, and Cinquefoil a like Quantity, five or ſix Cloves of Garlick; and ſtamp them all together, and ſtrain them into White-wine or Ale, and drink of it Morning and Evening.

To make Melilot excellent for Plaiſters.

Take Melilot, Pimpernel and Scabious, of each two Handfuls; cut them ſmall, then beat them in a Mortar with two Pounds of Hog's Lard; let it ſtand in the Sunſhine ſeven or eight Days (it being uſually made in *June*) then melt and ſtrain it well; then add as many more freſh Herbs, and ſet it in the Sun as before, and then melt and ſtrain it again; then boil it till the Juice is conſumed; then take it off the Fire, and put to it beaten Roſin, Bees-wax, and fine Turpentine, of each one Ounce; when cold, put it up in Pots, or make it up in Rolls.

Advice to a young Tradeſman, written by an old One.

To my Friend *A. B.*

As you have deſired it of me, I write the following Hints, which have been of Service to me, and may, if obſerved, be ſo to you.

REMEMBER that TIME is Money. He that can earn *Ten Shillings* a Day by his Labour, and goes abroad, or ſits idle one Half of that Day, tho' he ſpends

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three-pence during his Diversion or Idleness, [illegible] reckon that the only Expence; he has really [illegible], or rather thrown away, *Five Shillings* besides.

Remember that CREDIT is Money. If a Man lets his Money lie in my Hands after it is due, he gives me the Interest, or so much as I can make of it during that Time. This amounts to a considerable Sum where a Man has good and large Credit, and makes good Use of it.

Remember that Money is of a prolifick generating Nature. Money can beget Money, and its Offspring can beget more, and so on. *Five Shillings* turned, is *Six*: Turn'd again, 'tis *Seven* and *Three-pence*; and so on till it becomes an *Hundred Pound*. The more there is of it, the more it produces every Turning, so that the Profits rise quicker and quicker. He that kills a breeding Sow, destroys all her Offspring to the Thousandth Generation. He that murders a Crown, destroys all it might have produced, even Scores of *Pounds*.

Remember that *Six Pounds* a Year is but a *Groat* a Day. For this little Sum (which may be daily wasted either in Time or Expence unperceiv'd) a Man of Credit may, on his own Security, have the constant Possession and Use of an *Hundred Pounds*. So much in Stock briskly turn'd by an industrious Man, produces great Advantage.

Remember this saying, *That the good Pay-master is Lord of another Man's Purse*. He that is known to pay punctually and exactly to the Time he promises, may, at any Time, and on any Occasion, raise all the Money his Friends can spare. This is sometimes of great Use; therefore never keep borrow'd Money an Hour beyond the Time you promised, lest a Disappointment shut up your Friend's Purse for ever.

The most trifling Actions that affect a Man's Credit, are to be regarded. The Sound of your Hammer at Five in the Morning, or Nine at Night, heard by a Creditor, makes him easy six Months longer. But if he sees you at a Billiard Table, or hears your Voice in a Tavern, when you should be at Work, he sends for his Money the next Day. Finer Cloaths than he or his Wife wears, or greater Expence in any Particular than he affords himself, shocks his Pride, and he duns you to humble you. Creditors are a Kind of People, that have the sharpest Eyes and Ears, as well as the best Memories of any in the World.

Good

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Good-natur'd Creditors (and such one would always chuse to deal with if one could) feel Pain when they are oblig'd to ask for Money. Spare 'em that Pain, and they will love you. When you receive a Sum of Money, divide it among 'em in Proportion to your Debts. Don't be asham'd of paying a small Sum because you owe a greater. Money, more or less, is always welcome; and your Creditor had rather be at the Trouble of receiving *Ten Pounds* voluntarily brought him, tho' at ten different Times or Payments, than be oblig'd to go ten Times to demand it before he can receive it in a Lump. It shews, besides, that you are mindful of what you owe; it makes you appear a careful as well as an honest Man; and that still encreases your Credit.

Beware of thinking all your own that you possess, and of living accordingly. 'Tis a Mistake that many People who have Credit fall into. To prevent this, keep an exact Account, for some Time, of both your Expences and your Incomes. If you take the Pains at first to mention Particulars, it will have this good Effect; you will discover how wonderfully small trifling Expences mount up to large Sums, and will discern what might have been, and may, for the future, be saved, without occasioning any great Inconvenience.

In short, the Way to Wealth, if you desire it, is as plain as the Way to Market. It depends chiefly on two Words, INDUSTRY and FRUGALITY; *i. e.* Waste neither Time nor Money, but make the best Use of both. He that gets all he can honestly, and saves all he gets (necessary Expences excepted) will certainly become RICH: If that Being who governs the World, to whom all should look for a Blessing on their honest Endeavours, doth not in his wise Providence otherwise determine.

An Explanation of Mr. *J. B*'s Twelve Cyphers.

By practising which, the young Writer may more speedily acquire a perfect Idea of the Proportions of the Round-hand Letters, and their Relations to each other, than by any other Method yet known.

THESE Twelve Cyphers are contrived, to let the Writer see, by inverting them, whether he has given his Letters their true Form. He must make Allowances

for the Dots, and also for the beginning and ending [illegible] of n or u, being alike in this Example, the common Rule being to make the beginning Turns sharp, and then the Explanation of the Cyphers will be as follows:

No. 1. Is *hu* together, or *hi* separate; being inverted, it is *ny* together, or *nj* separate.

2. Is *ny* together, or *nj* separate; being inverted, it is *hu* together, or *hi* separate; the Reverse of No. 1.

3. Is *hy* together, or *hj* separate; and the same when inverted.

4. Is *hu*, and when inverted, *ny* together, or *mj* separate.

5. Is No. 4. inverted.

6. Is *mu* together, or *mi* separate; being inverted, it is *nu*.

7. Is *nu* together, or *mi* separate; being inverted, it is the same.

8. Is only *y* and *h* both Ways; but by Inversion, chang'd one for the other.

9. Is *h* and *y* alike each Way.

10. Is made of two contrary *c*'s.

11. Is made of two contrary *c*'s,

12. Is *f* either End upward.

FINIS.

AC 105
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1753

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Lately published, and to be sold by B. FRANK-LIN, *and* D. HALL, *at the* New-Printing-Office, *the following* BOOKS, *viz.*

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I he ECO Parts. Translated fr an ancient BRAMIN the Manner in wh In two LETTER siding in *China*. Edition. *(Pr*

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Universal Acceptation and Approbation in England, *no less than five Editions having been printed and sold there in a few Months.*

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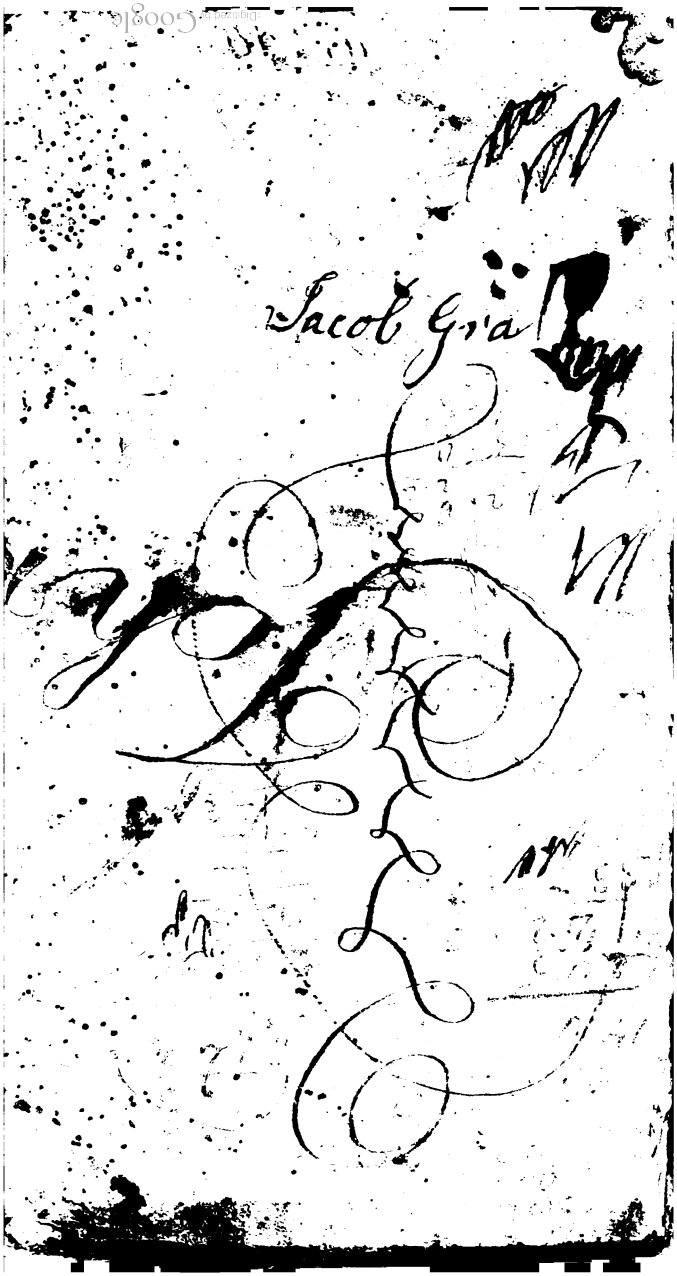
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[illegible]CHILD; or *Motives* [illegible]N. In a Let[illegible] to a [illegible] *up a Child* [illegible] *Way* [illegible] *be will not depart from*

[illegible]een a *Blind Man* [illegible]*ish* Language, and [illegible] By PHILIP [illegible] *Four-Pence.*)

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