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No 4 9
A
TREATISE
ON THE
BETTER EMPLOYMENT,
AND
More Comfortable Support,
OF THE
POOR in Workhouses.

Together with Some OBSERVATIONS
ON THE
Growth and Culture of FLAX.

With Divers

NEW INVENTIONS, neatly engraved on
COPPER, for the Improvement of the
LINEN MANUFACTURE,

OF WHICH

The Importance and Advantages are considered
and evinced.

By **WILLIAM BAILEY**,
Member of the SOCIETY for promoting Arts and Commerce.

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TO THE
SOCIETY

For the ENCOURAGEMENT of
Arts, Manufactures, and Commerce,

THIS
TREATISE and PLAN

ARE,

By Their PERMISSION, humbly inscribed,

BY

Their most obedient

Humble Servant,

WILLIAM BAILEY.

A
T A B L E
 OF
C O N T E N T S.

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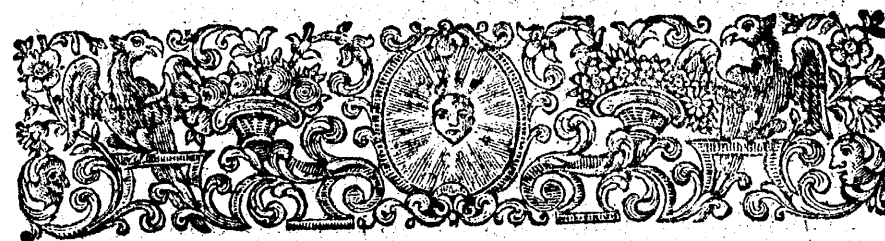
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A TREA-



A

TREATISE

ON THE

UTILITY of WORKHOUSES*.

TO provide a comfortable Subsistence for the Poor is most certainly a Duty highly obligatory upon every Person in whom the Traces of moral Virtue are not quite obliterated; the Performance of which is equally required by Policy and Religion. This is a Charity of the utmost Extent; which, if conducted according to the following Plan, by employing the Poor in Parish Workhouses, will very much promote the Commerce,

* The first Workhouse erected in *London*, 13 & 14 *Ch.* II. Chap. 12.

In *Bristol*, *William III.* Chap. 30.

Worcester, 2 *Anne*, Chap. 8.

Made general over the whole Kingdom, 9 *Geo. I.* Chap. 1.

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Wealth,

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Wealth, and Peace of this Kingdom. These Houses will also become proper Schools to train up the Children of the Poor to Religion, Sobriety, and Industry, who would otherwise be brought up in Sloth, Ignorance, and Vice. They will likewise be Nurseries for Spinners, Weavers, and other Artificers, in the Woollen, Linen, and Cotton Manufactures, and give Occasion to the Exercise of many other Trades and useful Employments. And when Industry is thus planted in different Counties and Parishes, it cannot be doubted but it will soon take Root, and spread by Degrees over the whole Kingdom.

The sick and feeble Poor will be relieved, and comfortably supported, with all Sorts of Necessaries, and Physick proper to their several Complaints, and due and regular Attendance given them by Physicians and Nurses.

The strong and robust will be well fed and clothed, by the Profit of their own Labour; the infirm and tender will be employed only in such Work as they are equal to, and as may be conducive to their Health and Happiness.

Infants will be preserved from Filthiness, Diseases, and premature Death; and it is natural to conclude also, that early and constant Application of these young People to Business will make them very expert in their respective Trades, and be a Means of their making some considerable Improvements in our Manufactures. Controversies and expensive Law-suits for the obtaining of Settlements, with the Trouble and Expence of removing straggling Poor, will in a great measure cease.

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These are Motives so strong and forcible, that the Importance of them can never be denied, nor their Cogency eluded.

For the Attainment of these desirable Ends and Purposes, the following Plan, for relieving, maintaining, and employing the Poor, in Parish Workhouses or Manufactories, is humbly offered to the Consideration of the Publick.

First, Notice shall be given, in Writing, of the Institution of every Manufactory established on this Plan, to the Register of the SOCIETY for the Encouragement of ARTS, MANUFACTURES, and COMMERCE, at their Office in London.

Secondly, The said Society shall give such Premiums as they may, from time to time, think proper, to the Use and Support of such Workhouses, so registered, as shall produce the greatest Number of Yards, in proportion to the Number of Hands so employed, of Dowlas, Canvas, Tarpaulin, Sail-cloth, or Linsley-woolsey, made and manufactured therein, from *English* Flax or Hemp, within a certain Time to be limited by the said Society.

Thirdly, A Certificate, under the Hands and Seals of the President, Managers, Rector, Vicar, or Curate, and Two or more of the Churchwardens or Overseers of the Parish wherein the Manufactory is situated, shall be sent to the Society, from each Workhouse which shall put in a Claim to a Premium, setting forth the Quantity and Quality of the Cloth, and the Number

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of People (their Sex and Ages) employed in each Manufacture, and certifying also that the Poor have not been oppressed or ill treated.

Fourthly, Some Premiums shall be given also to and for the Use of that registered Workhouse, which (in proportion to the Number of People employed in any Trade or Occupation) produces, within a Time to be limited, the greatest clear Profit from the Labour of the People maintained therein. A Certificate of which, to be sent to the Society's Office, signed as above; and with the said Certificate a daily, weekly, and monthly, List of all the Work done, and People concerned in each Employment, specifying their Names, Sex, and Ages.

Fifthly, Some Premiums shall be given to any Person, either a Native or Foreigner, who shall set on foot, introduce, or discover, any new Manufacture, Trade, or Employment for the Poor, in either of the said registered Houses: Such new Manufacture or Employment, if approved of by the Managers, shall be experienced and proved for the Space of Months; and if the Profits arising from the same shall answer to the Satisfaction of the Managers, &c. they shall forthwith send a full and particular Account and Description of the said new Manufacture, with the Number of People employed therein, and the clear Profit arising therefrom, to the said Society's Office; and that a Certificate of the Truth thereof be signed and sent to the said Society, in the same Manner as before-mentioned.

N. B.

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N. B. It may be of great Use that the Governor of any House that gets a Premium from the Society should have a Gratuity from the Parish, and the Poor a Holiday, after the Premium is paid, by way of Encouragement.

A new Method suggested for apprenticing poor Children.*

First, **T**HE present Method of putting out poor Children Apprentices, is very well known to be attended with great Inconveniences, as it lays an Incumbrance on Estates, and Families. Few of those poor Children now serve out their Time, and many of them are driven, by Neglect or Cruelty, into such Immoralities as too frequently render them the Objects of publick Justice. Many of those who take Parish Apprentices are so inhuman, as to regard only the pecuniary Consideration; and having once received that, they, by ill Usage and undue Severity, often drive the poor Creatures from them; and so leave them in a more destitute Condition, at a riper Age for Mischief, than they were in when first they became the Care

* The Churchwardens, by the Assent of Two Justices of the Peace, may bind out poor Children, where they shall see convenient. 43 Eliz. Chap. 2. Sect. 5.

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of the Parish Officers. To remedy this for the future the following Proposals are offered.

Secondly, That all Children relieved by the Parish be bound Apprentices to the Master or Governor of the Manufactory, and his Successor, for the Time being; who should immediately set them to work, and see that they are duly and constantly instructed and employed in their respective Trades, as shall be stipulated in their Indentures, till they arrive at the Age of Twenty-one Years *; whereby they will, in a short Time, be so expert in their respective Occupations, as to be able to instruct new Comers into the House; and also by their Earnings, and Dispatch in Business, they will contribute greatly towards the Maintenance of the Sick, Aged, and Infirm.

Thirdly, That the Money which is usually given with Parish Apprentices be given as a Portion to the said Apprentices, at the Expiration of their Time, if they do honestly and industriously serve it out: And that the Money appropriated for this Purpose be annually paid into the Hands of the Treasurer, and laid up as a Fund for that Use only.

Fourthly, That such Apprentices as are willing to work Over-Time, or are so tractable and diligent as to dispatch more Work than what is allotted them, be allowed Pence out of each

* All Persons to whom the Overseers shall, by the 24th of *Eliz.* bind out Children Apprentices, may take and keep them Apprentices. 21 *James I.* Chap. 28. 3 *Charles*, Chap. 4. Sect. 5.

Shilling

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Shilling for all such Earnings. This will be a Spur to their Diligence, and be a Means of increasing their Portion.

Fifthly, That such Apprentices as distinguish themselves by Industry, Honesty, or Ingenuity, be encouraged therein by some proper Reward *.

Sixthly, That the Money given to Parish Apprentices be to enable them to set up their respective Trades, when their Time is out.

Seventhly, That all hired Teachers be dismissed, as soon as the most expert in each Employment are capable of instructing the Ignorant, and such as are imperfect in their Business.

When these Apprentices and others are kept fully employed, there will be little or no Occasion to make Rates for their Maintenance, as will appear by the Calculation, Page the Tenth.

As Variety of Trades and profitable Employments of the Poor must be necessary in Workhouses, where there will be such Difference of Education and Ability, the following Branches of Manufactures are recommended; and as they require but little Room for each Person to work in, and but a small Stock of Money and Materials, some of these may suit one Parish, and some ano-

* By the 5th of *Charles*, Chap. 15. all Persons whatever, who were employed in the Linen Manufacture, or Tapestry Work, have Privilege to set up their Trades in any Part of the Kingdom.

† Foreigners also enjoy all Privileges as natural-born Subjects. Sect. 1.

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ther,

ther, according to the different Situation of the Place; and they are such as may keep the Poor fully and constantly employed.

A LIST of useful TRADES and EMPLOYMENTS.

- To swingle Flax.
- To heckle Flax.
- To spin Flax.
- To spool Linen and Woollen.
- To twist Linen and Woollen Yarn.
- To wind Quills for the Weavers.
- To card Tow and Wool.
- To weave Linen and Woollen.
- To weave Linsey-Woolsey.
- To buck and bleach Linen.
- To weave Wadding.
- To weave Bed-Lace.
- To weave Hair-Sieves.
- To warp for the Weavers.
- To knit Stockings, Caps, &c.
- To knit Nets.
- To make Pegs for the Tilers.
- Ditto for the Shoemakers.
- To make Pasteboard Boxes.
- To make Gloves.
- To knit Cawls for Wigs.
- To pick Hairs for Barbers.
- To make Thread and Hair Buttons.
- To make Slays and Harnesses for the Weavers.
- To make all Sorts of Wicker Ware.
- To make Straw and Chip Hats for the Women.
- To make Bone Lace.
- To make Beehives and Haffocks.
- To make Matches and Mops.
- To cut Corks.
- To make Baskets and Door-Mats.
- To teaze Ochum and beat Hemp.
- To make English Carpets and Tapestry.
- To make Papier Maché.

A MANU-

A MANUFACTORY, where there are 150 Poor in it, may be employed in the following Manner.

	People.
To attend the Sick and young Infants	5
To instruct Children and others in their Occupations	6
To dress the Victuals, and clean the House	4
To salt and cut the Victuals	1
To do the Taylors Work for Men, Women, and Children	2
To make and mend the Linen, Stockens, &c.	4
To wash and get up all the Linen	6
To make and mend all the Shoes	2
Sick, Superannuated, and Children that are too young to do any Sort of Work	20
Old and infirm People and Children, who can earn only One Penny a Day	20
Such grown People and Children as can earn only Two Pence a Day	20
Apprentices, and such People as are in Health, may, after a few Months Practice in weaving, warping, swingling, heckling, whitening, &c. earn Four Pence per Day one with the other, after the first Year Six Pence per Day, and at the Expiration of Two Years Eight Pence or Ten Pence per Day, and for the Four or Five last Years from One Shilling to Eighteen Pence per Day	60

150

According

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According to the common Way of providing for the Poor, if 150 People are maintained at the Rate of 2 s. 4 d. per Week each, the Sum total per Day will be

	l.	s.	d.
	2	10	0

If the same Number of People are employed according to the following Plan, their Earning will be

	l.	s.	d.
	2	10	10

30 employed about Family Affairs	-	0	0	0
20 sick People and Infants	-	0	9	0
20 old People and Children at 1 d. per Day	-	0	1	8
20 grown People and Children at 2 d. per Day	-	0	3	4
10 Apprentices and grown People at 4 d. per Day	-	0	3	4
10 Ditto after a Year's Practice, at 6 d. per Day	-	0	5	0
15 Ditto after Two Years Practice, at 8 d. per Day	-	0	10	0
20 Ditto for the last Four or Five Years at 1 s. per Day	-	1	0	0
5 Ditto of the most expert 1 s. 6 d. per Day	-	0	7	6
		£.	2	10
			10	

N. B. Nothing is here reckoned for the Profits arising from the Sale of the Goods, which must be very considerable, especially after the Managers and Governors have attained some considerable

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considerable Knowledge of the different Sorts of Goods, and the Expence of the Teachers is struck off.

If this Affair is rightly conducted (which this Plan it is hoped will make easy), it is probable that, in a few Years, the Earnings of the People, together with the Profits of the Goods manufactured in the House, will amount to much more than will maintain the Poor therein; and such Surplus may be laid up as a Fund, in order to add somewhat to the Portion of the Apprentices, particularly to such as shall, at the Expiration of their Time, marry one who has lawfully and honestly served an Apprenticeship in the Manufactory.

By this Method of providing for the Poor, all Workhouses (the Foundling Hospital not excepted), may become Schools, and Nurseries for Industry, Ingenuity, and publick Oeconomy, and Market-Places, where the Farmer will find an immediate Demand for his Flax, Hemp, and other Commodities.

As it is evident from the foregoing Estimate, that the Poor's Rates may be considerably diminished, if not totally taken away, it is hoped that this Method will be vigorously prosecuted:—In order to which I humbly beg Leave to offer the following Hints.

First, Let there be chosen a President, Treasurer, and Eight or more Managers, out of which Number One at least should be in the Commission of the Peace; and Four (when no more can attend)

attend) shall make a Board, and meet once a Week, to inspect the Conduct, Management, and Behaviour of the Governor, Matron, Teachers, &c.---to be informed of the Behaviour of the People,---to hear such Complaints as may be laid before them,---to reform and adjust all Disorders and Irregularity,---and to receive the Governor's Accounts, and examine into the State of the Manufactures.

Secondly, Let Two of the Managers attend every *Saturday*, at the Manufactory, to see the Weight and Goodness of the Provisions, and to receive the Governor's Lifts.

Thirdly, Let a Committee be appointed to meet once a Quarter, to audit the Accounts, and to consider what Improvements have or may be made in the Manufactures, or Management of the House.

As the Choice of a Master or Governor is a Matter of great Consequence, the following Observations may be of some Use.

The President, Managers, Minister, Churchwardens, and Overseers, and some of the other most substantial Inhabitants of every Parish, may, by Ballot, make Choice of a prudent sedate Man for a Governor, One who is not incumbered with a Family, who must constantly reside in the Manufactory, and be always present with the People under his Care; it being impossible that there can be due Oeconomy and Dispatch of Business, or Care of the People, if he is not constantly with them.

The

The smaller the Governor's Salary is, the longer it will be before he grows too great for his Place: And a Man who is but little removed above the Poor themselves, and has worked for a Livelihood, will accept of small Wages, and bear the Fatigue and Confinement of his Office much better than One who has lived at Ease and in Plenty.

It may perhaps be objected, That so mean a Person for a Governor may want Spirit or Prudence to keep the People in Subjection; and that they will be disobedient, and regardless of a Person so near a Level with themselves: But I answer, *First*, That Preferment will increase his Diligence, Spirit, and Care: *Secondly*, That he hath it in his own Power to preserve his Authority, by punishing the Obstinate, Careless, and Disobedient, and such as will not be won by fair Means and good Usage.

Rules, Orders, and Regulations, to be observed by the Governor.

First, The Governor shall have an Apartment for his own Residence in the Manufactory.

Secondly, He shall employ himself in no Business but such as belongs to the House.

Thirdly, He shall be watchful that all under his Care be kept fully employed from Six in the Morning until Seven in the Evening in Summer, and from Seven in the Morning until Six

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Six in the Evening in the Winter (Meal-times excepted) †.

Fourthly, He shall appoint the best and most diligent Workman or Workwoman of each Trade or Occupation, to be Foreman or Forewoman; and see that the Persons so appointed inspect, assist, and direct, all Apprentices and others under their Care, twice a Day, or as often as may be necessary.

Fifthly, He shall regulate and measure out the Places assigned for each Employment; and to prevent Confusion and Disorder, the Space allotted for each Person shall be numbered on the Floor, Wall, or Table, where the Work is done: And when the working Hours cease, and when the Foreman or Forewoman of each Company has inspected and taken an Account of the Work done, every Person should then carefully lay by the Work, Tools, and Implements, in their proper Places.

Sixthly, He shall summon the Foremen and Forewomen of each Employment every Night, or as soon as they leave Work, to know how much Work they and their respective Companies have performed that Day, and enter the same in his List, as described in Table IX.

Seventhly, He shall punish such Persons as shall neglect or wilfully spoil the Work allotted them;

† Chap. Stat. 5th *Eliz.* Cap. 4. Sect. 12. All Labourers hired by the Day are to work from Five in the Morning till after Seven at Night, from *March* to *September*; and from *September* to *March*, from the Spring of Morning until Night.

and

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and the Second Offence shall be reported to the Managers.

Eighthly, He shall read or cause to be read Prayers every Morning and Evening, and observe that none be absent who are capable of attending.

Ninthly, He shall be careful that no Person come into the House on any Pretence whatever, without Leave; and that none go out without a Permission under the Governor's Hand; and that none be allowed to be absent more than Hours; and he shall give the Managers an Account, once a Week, of the Names of such Persons, upon what Occasion they were permitted to go out, and how long they were absent.

Tenthly, He shall be always present and say Grace at Meal-times, to see the Distribution of the Victuals, and to take Care that the People sit decently and in good Order.

Eleventhly, He shall give the Overseers or Managers a weekly List of all the Victuals and Drink consumed each Day, and the Number of People fed therewith, and likewise of the Increase or Decrease of People in the House, as is set forth in Table X.

N. B. Thus it will be easily known who are diligent and who are idle; and likewise what Employments make the best Return: That every Quarter-day some Perquisite or Privilege be given by the Parish to the Foreman or Forewoman whose Company performs the most and best Work, and also to the Second best, and also the Third best, in Proportion.

Twelfthly,

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Twelfthly, He shall give the Managers a List once a Month, or oftener if need be, of the People who want Cloathing, with their respective Names, Ages, and Employments; and also of the different Sorts of Apparel wanted for each Person, as described in Table VIII.

Thirteenthly, He shall lay before the Managers, Overseers, &c. once a Fortnight, a full and particular Account of the Quantity, Quality, and Price of each Sort of Materials taken in for the Employment of the People, the Work manufactured therewith, and the clear Profits of the Work.

Fourteenthly, He shall give a List once a Month of all the Stock of manufactured Goods in the House, specifying the Quantity, Quality, and Price of each Sort.

Fifteenthly, He shall give a List once a Month of all the Cloaths and Effects which are in his Custody, on account of Deaths and new Comers into the House.

Sixteenthly, He shall take an Account every Sunday Morning of all who are capable of going to Church, and at their Return, after Morning and Evening Service, shall call over the People one by one; and whoever has been absent, shall forfeit the next Meal.

Seventeenthly, He shall call over the whole Family at the Hour appointed every Morning and Evening; and whoever is absent without Leave shall be punished.

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The Matron's Duty is,

First, To take due Care that all the Linen and other Household Goods are kept clean, and in good Repair.

Secondly, To deliver out daily to the Under-Servants, Nurses, &c. Coals, Candles, Soap, Salt, Sugar, Oatmeal, and such other Necessaries, as are wanted for the Family and the Sick.

Thirdly, To appoint proper Persons to weigh, salt, dress, and distribute the Victuals, and to keep the Larder, Store-rooms, and Utensils thereto belonging, clean, sweet, and decent.

Fourthly, To appoint proper Persons in the Laundry to wash and get up all the Linen, and to see that all the Beds are changed once a Month, and each Person shirred or shifted once a Week.

Fifthly, To expose the Bedding to the open Air once in Eight or Ten Days (or as often as needful), in such Houses as are not supplied with Ventilators.

Sixthly, To see that no Bread be cut till it is Two Days old.

Seventhly, To see that the Bed-rooms, Kitchens, Infirmary, &c. be kept clean, neat, and decent.

Eighthly, To inspect the Conduct and Management of the Cook, Laundry-women, Nurses, and Under-Servants; and if any One of them behave disorderly, or have been negligent in their Business, to report the same to the Overseers.

Ninthly, To appoint proper Persons to dress, wash, and comb the Children.

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The Schoolmaster's Duty.

First, To hear all the Boys read twice a Day, from Five Years old and upwards.

Secondly, To teach the Boys Writing and common Accounts, Two Hours every Day, for One Year, before they are apprenticed.

Thirdly, To catechise them every *Sunday*.

Fourthly, To attend the Boys to and from Church, and at their Return, after Morning and Evening Service, to call them over one by one, and to chastise such as have been disorderly at Church.

Fifthly, To assist the Governor and Matron in settling their Accounts, every Morning and Evening, before and after School-Hours.

The Schoolmistress's Duty.

First, To teach all the Girls to read, knit, and work at their Needle.

Secondly, To teach all the Boys to read, till they are Five Years old; at which Age they should be put under the Master's Care.

Thirdly, To catechise all the Children under her Care twice a Week.

Fourthly, To attend the Girls to and from Church every *Sunday*.

Fifthly, To examine all the Children's Linen, and, with the Assistance of Two or more of the biggest Girls, every Day before and after School-Hours,

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Hours, to mend and keep the same in good Repair.

Articles of Oeconomy.

First, As the Labour of the Poor in Work-houses is moderate and easy †, perhaps it may not be thought unreasonable to enjoin the People to work one Hour every Day more than is usual in such Places, [See the Governor's Orders, Article 3.] by which Means 900 Hours, which is Seventy-five Days, will be gained every Week in a House where 150 People are thus employed.

Secondly, That at the Admission of every new Comer into the House, they deliver up all their Cloaths and Effects: And as there is somewhat of a Genius or Talent to be discovered in most People, for particular Things, preferable to others, they should be shewn all the Trades and Employments carried on in the House, and be permitted to chuse that which they seem most inclinable to: But if any, after a short Trial, be found inapt or aukward in Work enjoined or chosen, such should be immediately tried in some other Employment.

Thirdly, The Old and the Young, the Males and the Females, shall have separate Apartments in the House.

Fourthly, That all Avenues to and from the manufacturing House, except One, shall be

† By Stat. 23d & 25th *Edw.* III. the Poor are compelled to work a limited Number of Hours.

locked,

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locked, and never opened but upon extraordinary Occasions. All Money given to the Apprentices and others, as a Reward for their Industry or Ingenuity, shall be laid up in the Hands of a Treasurer, till the Expiration of their Apprenticeships, at which Time it should be paid them, with the Portion given by their respective Parishes.

Sixthly, When any poor Persons or Apprentices shall happen to die in the Workhouse, possessed of any Goods or Effects, an Account shall be taken thereof, and the same shall be given to their legal Representative.

Seventhly, Private Families, Retailers, and others, shall be supplied with such Goods as are manufactured in the House, paying ready Money for the same; and such Money shall be paid over weekly into the Hands of the Treasurer or Managers.

Eighthly, A Carpenter shall be hired for Three or Four Years, or as long as shall be thought necessary, to be employed in the following Manner: To make and repair all the Spinning-wheels, Looms, Tools, and all the Implements of Wood used in the House, and also the Chairs, Stools, Tables, Coffins, Bedsteads, &c. and all the Bobbins, Clues, Spools, and all Sorts of Turner's Work, that may be wanted in the House; the said Carpenter, in Consideration of a yearly Salary, and his Lodging, Washing, and Diet, in the House, shall engage to perform all the Work above-mentioned, and also to instruct and teach Two, Three, or more of the Governor's Apprentices,

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prentices, to do and perform all such Carpenter's and Turner's Work, as may be required to be done in the said House.

Ninthly, The Taylor, Shoemaker, and all other hired Teachers (the Schoolmaster and Mistress only excepted), shall be hired upon the same Footing as the Carpenter; and none of the said Hirelings be suffered to have their Relations or Acquaintance frequent the House, on any Pretence whatever.

Tenthly, The Schoolmaster and Mistress, and other Teachers, shall be chosen out of the People of the House, if any Person shall be found therein properly qualified.

Eleventhly, All hired Teachers shall be dismissed, as soon as the Foremen, Forewomen, Apprentices, or others in each Employment, are capable of instructing, directing, and managing, the unskilful in each Occupation.

Twelfthly, Such Teachers, Hirelings, Foremen, Forewomen, or Apprentices, as may be conveniently spared, should, at the Request of any other Manufactory newly set up, be turned over to the said new House, provided it be set on Foot, in all Respects, on the same Plan.

Twelfthly, Proper Persons in the House shall be appointed to grind their own Wheat and Malt, bake their Bread, and brew their Beer.

N. B. The Grains and Wash may feed a great Number of Hogs and Poultry. Dr. Stonehouse's Collection of Receipts for a cheap Diet may be of Use [See the Northampton Mercury of November 28th, 1757].

Thirteenthly,

Thirteenthly, The Number, Weight, and Measure, of all Sorts of Provisions and Necessaries, made use of in the House, shall be particularly specified in the Governor's and Matron's Accounts; and nothing whatever shall be inserted in the said Accounts as Sundries or Contingencies.

Fourteenthly, No spirituous Liquors shall be permitted to be brought into the House*.

Fifteenthly, Such People as shall quarrel, curse, swear, or steal, shall be punished with the utmost Rigour.

Sixteenthly, A convenient Piece of Ground for Country Manufactories shall be allotted for a Garden, wherein Two, Three, or more of the strongest Boys should work, under the Direction of a proper Person, whose whole Employment should be to raise Roots, Cabbages, Greens, and Pot-Herbs, for the Use of the House.

Seventeenthly, When the Governor, Schoolmaster, and other Officers, are generally present at all Meetings and Debates, they have an Opportunity of discovering to any Person (whom they are inclined to favour) how, where, and to whom they may apply, in order to make a Party for carrying into Execution any new Scheme or Project, by which Means Disputes and Controversies do often arise, Matters of Consequence are rejected, and lucrative Schemes are artfully introduced: In order, therefore, to prevent these Inconveniencies, the Governor, Schoolmaster, and

* 24 Geo. II. Chap. 40. Sect. 17.

other

other Officers, shall be required punctually to observe the Rules and Orders given them by the Managers, without any Attempt to form Methods of their own.

Eighteenthly, Proper Methods shall be taken to render the washing of Linen, &c. cheap, easy, and expeditious; and that no Hireling be employed for that Purpose.

In order to regulate this Article of Washing, I have enquired into the Management of it in my own and some other Families, and find it attended with a considerable Expence, and many Inconveniencies (especially in a Family where there is a Number of Servants), and where Chairwomen are permitted to come in and go out at unseasonable Hours; I thought this an Affair of such Consequence, that I could not disengage my Mind from it, till I had used my best Endeavours to remove or lessen this Evil: In order to which I carefully examined the Machine Washing-Tubs, which were some Time since much in Use; but finding they were ineffectual for the Purpose, and the Work extremely unhandy and laborious, I almost despaired of making any Use of them. However, I have now made such considerable Improvements in this Machine, that One Person may, with great Ease, perform the Work of Three or Four People, and save much Soap, Fire, and Candle: And that so useful a Machine may be easily come at, or made
in

in any Part of the Kingdom, I have hereunto annexed a perspective Draught of it, with a Description of all its Parts and Movements, by which every common Cooper or Carpenter may make them, for about Fifty Shillings or Three Pounds.

These Machines may be of very great Use, not only in Workhouses and Hospitals, but also in Boarding-Schools, great Inns, private Families, and in our Men of War and Merchants Ships :

And also to the Linen Manufacture, in bucking and whitening all Sorts of Linen :

To the Woollen Manufacturers, in washing of Wool and Woollen Goods :

To the Stocken Manufacturers, in washing and scouring all Sorts of Knit and Stocken Frame Work :

It may be of Use also to the Dyers :

To the Leather-Washers :

To the Papier Maché Makers, &c.

A Bill

A Bill of Fare.

	Breakfasts.	Dinners.	Suppers.
<i>Sundays.</i>	Bread and Cheese or Butter.	Boiled Beef and Garden Stuff.	Milk or Broth.
<i>Mondays.</i>	Broth.	Hasty Pudding, or Rice Milk.	Bread and Cheese or Treacle.
<i>Tuesdays.</i>	Water Gruel.	Pork and Pease in Winter, Mutton and Roots in Summer.	Frumenty or Milk Pottage.
<i>Wednesdays.</i>	Milk Pottage.	Boiled Beef and Garden Stuff.	Pease Pottage.
<i>Thursdays.</i>	Broth.	Suet Pudding or Millet Pudding.	Bread and Cheese or Treacle.
<i>Fridays.</i>	Bread and Cheese or Butter.	Pork and Pease in Winter, Mutton and Roots in Summer.	Hasty Pudding or Flummery.
<i>Saturdays.</i>	Pease Pottage.	Bread and Cheese.	Milk.

E TABLE

[27]

TABLE I.

Shewing what Quantity of Meat is sufficient to feed any Number of People in the House, allowing Two Pounds to be a Meal for Three Persons.

Sundays and Wednesdays.

People.	Flesh.		People.	Flesh.	
	lb.	oz.		lb.	oz.
1		11	144	96	
2	1	6	156	104	
3	2		168	112	
4	2	11	180	120	
5	3	6	192	128	
6	4		204	136	
7	4	11	216	144	
8	5	6	228	152	
9	6		240	160	
10	6	11	252	168	
11	7	6	264	176	
12	8		276	184	
			288	192	
24	16		300	200	
36	24		312	208	
48	32		324	216	
60	40		336	224	
72	48		348	232	
84	56		360	240	
96	64		372	248	
108	72		384	256	
120	80		396	264	
132	88		400	266	11

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TABLE II.

Shewing what Quantity of Rice and Milk is sufficient for any Number of People in the House, allowing each Person One Statute Pint of Milk and Two Ounces of Rice for a Meal.

Monday.

People.	Milk.	Rice.		People.	Milk.	Rice.
	<i>Pints.</i>	<i>lb. oz.</i>			<i>Gallons.</i>	<i>lb.</i>
1	1	2		144	18	18
2	2	4		156	19 $\frac{1}{2}$	19 $\frac{1}{2}$
3	3	6		168	21	21
4	4	8		180	22 $\frac{1}{2}$	22 $\frac{1}{2}$
5	5	10		192	24	24
6	6	12		204	25 $\frac{1}{2}$	25 $\frac{1}{2}$
7	7	14		216	27	27
8	8	1		228	28 $\frac{1}{2}$	28 $\frac{1}{2}$
9	9	1	2	240	30	30
10	10	1	4	252	31 $\frac{1}{2}$	31 $\frac{1}{2}$
11	11	1	6	264	33	33
12	12	1	8	276	34 $\frac{1}{2}$	34 $\frac{1}{2}$
				288	36	36
				300	37 $\frac{1}{2}$	37 $\frac{1}{2}$
24	3	3		312	39	39
36	4 $\frac{1}{2}$	4 $\frac{1}{2}$		324	40 $\frac{1}{2}$	40 $\frac{1}{2}$
48	6	6		336	42	42
60	7 $\frac{1}{2}$	7 $\frac{1}{2}$		348	43 $\frac{1}{2}$	43 $\frac{1}{2}$
72	9	9		360	45	45
84	10 $\frac{1}{2}$	10 $\frac{1}{2}$		372	46 $\frac{1}{2}$	46 $\frac{1}{2}$
96	12	12		384	48	48
108	13 $\frac{1}{2}$	13 $\frac{1}{2}$		396	49 $\frac{1}{2}$	49 $\frac{1}{2}$
120	15	15		400	50	50
132	16 $\frac{1}{2}$	16 $\frac{1}{2}$				

TABLE

TABLE III.

Shewing what Quantity of Pork and Pease is sufficient to feed any Number of People, allowing each Person Two Ounces of Meat, and a Pint of Pease, when boiled.

Tuesdays and Fridays.

People.	Pork.	Peafe.	People.	Pork.	Peafe.
	<i>lb. oz.</i>	<i>Pints.</i>		<i>lb.</i>	<i>Pec. Qts.</i>
1	2	$0\frac{1}{3}$	144	18	3 0
2	4	$0\frac{2}{3}$	156	$19\frac{1}{2}$	3 2
3	6	1	168	21	3 4
4	8	$1\frac{1}{3}$	180	$22\frac{1}{2}$	3 6
5	10	$1\frac{2}{3}$	192	24	4 0
6	12	2	204	$25\frac{1}{2}$	4 2
7	14	$2\frac{1}{3}$	216	27	4 4
8	I	$2\frac{2}{3}$	228	$28\frac{1}{2}$	4 6
9	I 2	3	240	30	5 0
10	I 4	$3\frac{1}{3}$	252	$31\frac{1}{2}$	5 2
11	I 6	$3\frac{2}{3}$	264	33	5 4
12	I 8	4	276	$34\frac{1}{2}$	5 6
			288	36	6 0
			300	$37\frac{1}{2}$	6 2
			312	39	6 4
			324	$40\frac{1}{2}$	6 6
			336	42	7 0
			348	$43\frac{1}{2}$	7 2
			360	45	7 4
			372	$46\frac{1}{2}$	7 6
			384	48	8 0
			396	$49\frac{1}{2}$	8 2
			400	50	8 3
24	3	1 0			
36	$4\frac{1}{2}$	1 2			
48	6	2 0			
60	$7\frac{1}{2}$	2 2			
72	9	3 0			
84	$10\frac{1}{2}$	3 2			
96	12	4 0			
108	$13\frac{1}{2}$	4 2			
120	15	5 0			
132	$16\frac{1}{2}$	5 2			

TABLE

TABLE IV.

Shewing what Quantity of Flour and Suet is sufficient to make Puddings, allowing each Person a Pound when boiled.

Thursdays.

People.	Flour.	Suet.	People.	Flour.	Suet.
	<i>lb. oz.</i>	<i>lb. oz.</i>		<i>lb. oz.</i>	<i>lb.</i>
1	7½	2	144	67 8	18
2	15	4	156	73 2	19½
3	1 6½	6	168	78 12	21
4	1 14	8	180	84 6	22½
5	2 5½	10	192	90 0	24
6	2 13	12	204	95 10	25½
7	3 4½	1 14	216	101 4	27
8	3 12	1	228	106 14	28½
9	4 3½	1 2	240	112 8	30
10	4 11	1 4	252	118 2	31½
11	5 2½	1 6	264	123 12	33
12	5 10	1 8	276	129 6	34½
			288	135 0	36
24	11 4	<i>lb. 3</i>	300	140 10	37½
36	16 14	4½	312	146 4	39
48	22 8	6	324	151 14	40½
60	28 2	7½	336	157 8	42
72	33 12	9	348	163 2	43½
84	39 6	10½	360	168 12	45
96	45 0	12	372	174 6	46½
108	50 10	13½	384	180 0	48
120	56 4	15	396	185 10	49½
132	61 14	16½	400	187 8	50

TABLE V.

Shewing what Quantity of Cheefe or Butter is sufficient for One Meal, allowing each Person Three Ounces of Cheefe, or One of Butter.

People.	Cheefe.		Butter.	People.	Cheefe.		Butter.
	lb.	oz.			lb.	lb.	
1		3	1	144	27	9	
2		6	2	156	29 $\frac{1}{4}$	9 $\frac{3}{4}$	
3		9	3	178	31 $\frac{1}{2}$	10 $\frac{1}{2}$	
4		12	4	180	33 $\frac{3}{4}$	11 $\frac{1}{4}$	
5		15	5	192	36	12	
6	1	2	6	204	38 $\frac{1}{4}$	12 $\frac{3}{4}$	
7	1	5	7	216	40 $\frac{1}{2}$	13 $\frac{1}{2}$	
8	1	8	8	228	42 $\frac{3}{4}$	14 $\frac{1}{4}$	
9	1	11	9	240	45	15	
10	1	14	10	252	47 $\frac{1}{4}$	15 $\frac{3}{4}$	
11	2	1	11	264	49 $\frac{1}{2}$	16 $\frac{1}{2}$	
12	2	4	12	276	51 $\frac{3}{4}$	17 $\frac{1}{4}$	
				288	54	18	
				300	56 $\frac{1}{4}$	18 $\frac{3}{4}$	
24	4 $\frac{1}{2}$		1 $\frac{1}{2}$	312	58 $\frac{1}{2}$	19 $\frac{1}{2}$	
36	6 $\frac{3}{4}$		2 $\frac{1}{4}$	324	60 $\frac{3}{4}$	20 $\frac{1}{4}$	
48	9		3	336	63	21	
60	11 $\frac{1}{4}$		3 $\frac{3}{4}$	348	65 $\frac{1}{4}$	21 $\frac{3}{4}$	
72	13 $\frac{1}{2}$		4 $\frac{1}{2}$	360	67 $\frac{1}{2}$	22 $\frac{1}{2}$	
84	15 $\frac{3}{4}$		5 $\frac{1}{4}$	372	69 $\frac{3}{4}$	23 $\frac{1}{4}$	
96	18		6	384	71	24	
108	20 $\frac{1}{4}$		6 $\frac{3}{4}$	396	74 $\frac{1}{4}$	24 $\frac{3}{4}$	
120	22 $\frac{1}{2}$		7 $\frac{1}{2}$	400	75	25	
132	24 $\frac{3}{4}$		8 $\frac{1}{4}$				

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TABLE VI.

Shewing what Quantity of Bread is sufficient for the whole Week, allowing each Person with Four Flesh Dinners, and with Eight Spoon-meat Breakfasts and Suppers, Four Ounces at a Meal, and Five Times a Week to eat with Cheese or Butter, allowing Six Ounces at a Meal; in all $4\text{ lb. } 14\text{ oz.}$ to each Person.

People.	Bread.		People.	Bread.
	<i>lb.</i>	<i>oz.</i>		<i>lb.</i>
1	4	14	144	702
2	9	12	156	$760\frac{1}{4}$
3	14	10	168	819
4	19	8	180	$877\frac{1}{2}$
5	24	6	192	939
6	29	4	204	$994\frac{1}{2}$
7	34	2	216	1053
8	39	0	228	$1111\frac{1}{2}$
9	43	14	240	1170
10	48	12	252	$1228\frac{1}{2}$
11	53	10	264	1287
12	58	8	276	$1345\frac{1}{2}$
	<i>lb.</i>		288	1404
24	117		300	$1462\frac{1}{2}$
36	$175\frac{1}{2}$		312	1521
48	234		324	$1579\frac{1}{2}$
60	$292\frac{1}{2}$		336	1638
72	351		348	$1696\frac{1}{2}$
84	$409\frac{1}{2}$		360	1755
96	468		372	$1813\frac{1}{2}$
108	$526\frac{1}{2}$		384	1872
120	585		396	$1930\frac{1}{2}$
132	$643\frac{1}{2}$		400	1950

TABLE

TABLE VII.

Shewing how much Beer is sufficient for a whole Week, allowing every Person a Pint each Dinner, and the like with Five Bread and Cheese Suppers; in all Twelve Pints *per* Week to every Person.

People.	Beer.	People.	Beer.
	<i>Gallons.</i>		<i>Gallons.</i>
1	1½	144	216
2	3	156	234
3	4½	168	252
4	6	180	270
5	7½	192	288
6	9	204	306
7	10½	216	324
8	12	228	342
9	13½	240	360
10	15	252	378
11	16½	264	396
12	18	276	414
		288	432
24	36	300	450
36	54	312	468
48	72	324	486
60	90	336	504
72	108	348	522
84	126	360	540
96	144	372	558
108	162	384	576
120	180	396	594
132	196	400	600

TABLE

TABLE VIII.

A Form of the Governor's List, of what Persons are in Want of any Sort of Cloathing, their Names, Ages, and the different Sorts of Apparel which each Person wants, with the Size and Price of each Garment.

Names.	Ages.	Garments.	Sizes.	Materials.	Price.	
					s.	d.
<i>Adam Abbot</i>	44	Pair of Shoes	12th.		4	5
<i>Bat. Berry</i>	22	A Shirt	3½ Yds.	Cloth at 8d.	2	4
<i>Chrif. Carey</i>	9	A Shift	1½	Ditto	1	2
<i>Dan. Duncan</i>	36	A Coat	4½	Kerfey 1s. 8d.	6	9
<i>Elinor Edwards</i>	16	Two Aprons	2	Heffins	1	8
<i>Fran. French</i>	25	Stockens	small		0	10
<i>Geo. Grant</i>	14	A Shirt	2½ Yds.	Cloth	1	8
<i>Han. Hughs</i>	28	Three Caps	1	Irish	1	3
<i>James Fones</i>	15	Breeches		Leather	2	4
<i>Kath. Kelly</i>	19	A Hat			1	6
<i>Laur. Long</i>	29	Stockens	large.		1	2
<i>Mary May</i>	17	A Gown	5 Yds.	Lin. woolf.	5	10
<i>Nat. Nichols</i>	15	A Waitcoat	2½	Kerfey	3	9
<i>Oliver Osbond</i>	6	Stockens			0	8
<i>Patty Perry</i>	32	Shoes	8th		2	8
<i>Quintus Quick</i>	81	A Knit Cap			1	2
<i>Rachel Randle</i>	25	Stays	large	Leather	3	0
<i>Simon Single</i>	27	Handkerchief		Check	1	2
<i>Tho. Taylor</i>	10	Two Caps		Knit Worft.	1	0
<i>Uffa Undel</i>	7	A Petticoat	3 Yds.	Drugget	2	6
<i>Walter Webb</i>	5	A Shirt	3	Cloth	2	0
Total	—	—	—	—	£. 2	8 11

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TABLE IX.

A Form of the Governor's List to be given every Week to the Managers, shewing the Number of People employed in each Buiness, the daily Quantity of Work done, and the Earnings of the People in each Employment.

January 1st, 1758.	30 People Spinning Flax.	26 People Spinning Worsted.	10 People Spinning Cotton.	7 People Making Straw Hats.	5 People Making Brushes & Hair Brooms.	5 People Making Gloves.	3 People Making Nets.	2 People Swing- ling Flax.	2 People Heckling Flax.	4 People Weaving Linen.	3 People Bleaching Linnen.	3 People Making Baskets.
	lb. oz.	lb. oz.	lb. oz.	Doz.	Doz.	Doz.		Doz. Pds.	Doz. Pds.	Yards.		
Monday	15 12	9 10	7 9	1 4	3 2	2 3	10	4 2				
Tuesday †	15 3	9 4	8 1	1 2	3	2 * 5	3		8 5	12½		
Wednesday *	16 1	8 † †	8 3	11	2 11	2 0	2	2 5	7 11			
Thursday	15 11	8 3	7 † 13	1 1	3 1	1 10						
Friday †	14 14	7 14	7 † 2	1 3	3 * 7	2 4		1 2	4 † 5	12		6
Saturday	15 3	8 * 11	7 5	1 2	3 6	1 11						
Total of Work done this Week	92 12	51 10	46 1	6 11	19 3	12 9	15	7 9	20 9	24½		6
Total of Money earned in each Employment	l. s. d.	l. s. d.	l. s. d.	l. s. d.	l. s. d.	l. s. d.	l. s. d.	l. s. d.	l. s. d.	l. s. d.		l. s. d.

The * after *Wednesday* signifies One added to the Number in the House; the † after *Tuesday* signifies One gone out, sick, dead, or absent.

TABLE X.

The Governor's List, to be given in to the Managers every Week.

People.		Beef.				Rice.	Milk.				Pork.	Pease.				Flour.	Suet.				Cheese.	Butter.							
		Mutton.	l.	s.	d.	Consumed.	Gal.	Pts.	l.	s.	d.	Consumed.	lb.	oz.	Pec.	Pts.	l.	s.	d.	Consumed.	lb.	oz.	lb.	oz.	l.	s.	d.		
		Consumed.				Consumed.				Consumed.				Consumed.				Consumed.				Consumed.							
		lb. oz.				lb. oz.				lb. oz.	Pec.	Pts.				lb. oz.	lb. oz.				lb. oz.	lb. oz.							
150	Sunday	100																				24	12	1	2				
+ +	148 Monday					18	8																24	6	1	2			
+ *	* 149 Tuesday									18	10	3	1 $\frac{2}{3}$																
+ + +	146 Wednesday	97																											
*	147 Thursday													68	14 $\frac{1}{2}$	18	6				22	8	2	1					
	147 Friday									18	6	3	1								22	14	1	15					
+ +	146 Saturday																					22	11	2	0				
The Totals.																													

The Governor is always to keep by him a sufficient Number of these Tables, ready ruled or printed, and the Figures to the Quantity consumed of each Sort of Provision.

N. B. The + before the Figures denotes such as die or go out of the House; the * shews the new Comers in

TABLE X.

The Governor's List, to be given in to the Managers every Week.

Milk. Pts.	l. s. d.	Pork.		Peafe. Pec. Pts.	l. s. d.	Flour.		Suet. lb. oz.	l. s. d.	Cheese.		Butter. lb. oz.	l. s. d.	Soap.		Candles. lb.	l. s. d.	Beer.		Bread.	
		Consumed. lb. oz.				Consumed. lb. oz.	lb. oz.			Consumed. lb. oz.	lb. oz.			Consumed. lb.	lb.			Consumed. Gal.	lb. oz.		
										24	12	1	2			2		225	134	1	
3	8									24	6	1	2		28	6		222	92	4	
		18	10	3	1 $\frac{2}{3}$											5		223 $\frac{1}{2}$	111	12	
						68	14 $\frac{1}{2}$	18	6		22	8	2	1		1	4	219	109	8	
		18	6	3	1					22	14	1	15				5	220 $\frac{1}{2}$	91	10	
										22	11	2	0		4	6		220 $\frac{1}{2}$	91	10	
																		219	127	12	

Sufficient Number of these Tables, ready ruled or printed, and the Figures to be inserted every Day, according to the Quantity consumed of each Sort of Provision.

the Figures denotes such as die or go out of the House; the * shews the new Comers into the House.

Considerations on the Importance of the
LINEN TRADE, &c.

WHEN we read the repeated Accounts which we receive from all Parts of the World, of the unwearied Affiduity with which foreign Princes and States are promoting the commercial Interests of their Dominions, and reflect on the perpetual Demands made at all Times, and in all Places, for Linen Cloth, the Riches and Power acquired by this Manufacture, and the great Numbers, of all Ages, that are continually employed, and comfortably supported by it, and consider what vast Quantities we still take of it from foreign Nations, it will naturally be hoped that the *Society, for encouraging Arts, Manufactures, and Commerce,* will judge this Article deserving of a Place in the first Rank of Premiums, and that the utmost Efforts will be made to promote and establish it throughout the Kingdom.

That the best Information may be obtained, it is to be hoped that those who are experienced in the Linen Manufacture, and the Cultivation of Flax and Hemp, will so far contribute to this laudable Undertaking, as to impart their Knowledge.

For my own Part, I am sensible of my Inability to communicate my Thoughts with that Clearness and Perspicuity which the Subject deserves; but as the Society is always ready to receive with

Chearfulness and Candour every useful Proposal, I humbly hope that the following Thoughts will meet with a favourable Reception from them, and from the Public.

It is a received Opinion, that the *Dutch, Germans, Russians, &c.* take great Quantities of our Woollen Cloth in Barter for their Linen. But the Truth is, that what they take of our Manufactures, bears but a small Proportion to the Quantity we take of theirs; and as they are now giving all possible Encouragement to the Woollen Manufacture in their own Countries, there is no Doubt but, as they improve in it, they will load what they import from us with heavy Duties; and when they arrive at any tolerable Degree of Excellence, will prohibit our Goods either absolutely or virtually, by increasing those Duties.

As there is no Probability of putting a Stop to this Danger, the landed Interests of these Kingdoms must needs suffer, the Poor will become more numerous, and the Rates made to support them will be greatly augmented. I mention this only to shew the Connexion of this Essay on Linen Manufactures, with the foregoing Treatise on the Employment of the Poor.

CHAP. I.

*Motives for the promoting the Linen Manufacture in this Kingdom. **

AS there is Danger that the growing and spinning of Flax and Hemp may, in a few Years, fall totally into the Hands of Foreigners, nothing can be of greater Consequence than to revive, support, and encourage, them among ourselves, by which the Cultivation of Land would be promoted, Linen Cloth would be obtained from the Labour of our own Poor, and Employment and Subsistence furnished for a Multitude of Men, Women, and Children. Whereas at present immense Sums are sent abroad to feed, cloath, and enrich the Poor, the Landholder, the Manufacturer, and Merchants of foreign Countries; the Consequence of which may be, that in a few Years we shall neither know how to grow, harvest, swingle, heckle, or spin Flax or Hemp at all; and then probably foreign Dealers may take it into their Heads to raise the Price of Yarn, which they now sell very cheap, or perhaps refuse to supply us with it at any Rate: So that we shall be obliged to buy it manufactured into Cloth, and wholly lose this valuable Manufacture, which in many respects is preferable even to the Woollen itself.

* The 16th of Geo. II. *An Act for the Encouragement of Linen Manufactures in these Kingdoms.*

In the first place, it being a ready Money Trade (at least it is so in most Parts of the West of *England*) it causes a quicker Circulation of Money, with little or no Risque.

Secondly, It produces Employment for a great Number of People, who cultivate the Land, and harvest the Flax and Hemp.

Thirdly, These Materials are always ready at hand to employ the Wives, Children, and Servants, of the Farmers, in the Evenings, but more particularly in the wet Weather, and at all other Times when there is no Call for their Labour out-of-doors.

Fourthly, As Children of Six or Seven Years old are capable of spinning Flax or Hemp, and as Four of them require no more Room to perform this Work than One Spinner of Wool, there cannot be a better Employment for the Children of the poor Cottagers. It is fit also for old and infirm Persons, and in general for the numerous Poor which are maintained by Parishes.

Fifthly, It does not require the Dyer's Art to invent and match an infinite Variety of Colours; nor the Fuller's Aid to scour, mill, dress, press, and artfully pack up the Goods, before they are fit for Sale: And as it wants none of these Operations, it is more convenient and easy to be dispersed and carried on throughout the whole Kingdom, as well in the smallest and most remote Villages, as in the largest and most populous Towns and Cities.

Sixthly, As there is, and always will be, a greater Demand for coarse than for fine Linen, and as

coarse Cloths are fit for Sale as soon as they are out of the Loom, those Manufacturers who have but a small Stock to begin with, will find Vent for their Goods in every Town, Parish, or Family: Thus they will be always furnished with ready Money to carry on and improve their Trade.

All Parts of the Linen Manufacture, from the Harvesting of Flax to the Sale of the Cloth, may be performed by Women, Boys, and Girls; consequently there will be no Misapplication of Strength in this Business, and in Time of Scarcity of Men, there will always be found a sufficient Number of able Hands (incapable of Riots and pernicious Combinations) to carry on the weaving Trade, and all other Branches of the Linen Manufacture.

As the Sense of the Importance of this Trade begins to revive, many have engaged their whole Fortunes in it; and as this Manufacture will afford much Employment for Curiosity and Experiment, and seems to be yet in such a State as may admit great Improvement, an honest Ambition may perhaps be kindled, and Perfection may be in time attained by Emulation, in Honour or in Profit.

We have excelled in the Woollen Manufacture, why may we not excel in the Linen also? Is the Soil or Situation of any Country better adapted to it? Or can there be a more proper Time than the present (when the War in *Germany* may furnish us with many useful Hands to enable us) to carry on and improve every Branch of it to the highest Perfection?

It would be vain to suggest any sort of Improvement for a thing wherein no real Fault can be found; but the slow, the slovenly, and unskilful Method, with the aukward unhandy Tools and Implements made use of in the Linen Manufacture, amply make appear that most Parts of it are very imperfect, and capable of great Improvements.

But Schemes of public Advantage are often so misunderstood, as to be absolutely rejected, or at least so far overlooked, or examined with so much Indifference and Inattention, that we remain ignorant both of their Value and Use, till some foreign Nation takes the Pains to shew us our Folly, by adopting Arts which we had rejected.

There have been no Advances made in this Manufacture in *England* for near a Century past, and therefore it may be easily imagined that the several Operations of Swingling, Heckling, Bucking, Bleaching, Warping, and Weaving, may be so improved, that in a few Years the *English* Yarn, as well as Cloth, may become as cheap as what is imported from Abroad; nay, it is probable, that we may be able to undersell those very Foreigners that now supply us with this Commodity.

The lower and middle Sort of People, and Servants, chiefly wear coarse Linen; and the best Families also make use of a great deal of this Sort for Household Uses, besides vast Quantities exported to our Colonies.

It is very evident, therefore, that the Demand is much greater for coarse Linen than for fine, consequently there always will be full Employment for

for young Beginners, and for such as are incapable of manufacturing fine Goods.

Some are of Opinion that the establishing this Manufacture in *England*, would be detrimental to *Scotland* and *Ireland*, and that the Undertaking would be attended with so many Difficulties, as to render it quite impracticable. But the late Mr. *Goodchild*, the Society's worthy Treasurer, in his *Treatise* on the *Linen Manufacture*, makes it evidently appear, "that the Linen Manufacture is as much, "if not more, the immediate Concern of *England*, than either *Scotland* or *Ireland*, considered separately, but vastly so of the whole Three Kingdoms united." He has calculated, "that the Linen which we import from Abroad (exclusive of what comes from *Scotland* and *Ireland*) amounts to upwards of Two Millions Sterling *per Annum*, and that the Quantity of Cloth thus imported employs at least 338,020 People."

Now if the like Number of our Poor were employed in this Manufacture in *England*, the above Sum of Two Millions *per Annum* would be kept at Home, and circulate amongst our own People.

When we reflect on our naval Strength, we easily perceive that it arises from our national Trade; can we then behold with Indifference the Decay of this national Bulwark? If the Balance of Trade be in our Favour, it supplies us with Bullion, and advances the Value of our Lands; but if it be against us, our Riches are carried from us, and an almost intolerable Burthen left upon our Estates. This Balance can only be preserved by

our Manufactures; and our Manufactures alone will furnish sufficient Employment for the Poor in every Parish where the foregoing Plan is set on foot; so that those very People, who are now idle and useless Members of the Community, might advance the Power of their Country, by enlarging its Commerce.

To establish such Manufactories may, at first Sight, appear so difficult a Task as to discourage the Attempt; but if we consider that this great and useful Undertaking may be accomplished without the Expence of much Time or much Treasure, and that an easy, regular, and practicable Method is laid down to proceed therein, what further Difficulties are to be surmounted?

It is probable that in every County of the whole Kingdom there are Land and Water fit for the Purpose, and in every Parish many idle, and some industrious, poor People, who cannot get Employment suitable to their Age, Strength, and Genius.

The Linen Manufacture consists of such a Diversity of Employments, as is suitable to almost all Ages and Capacities. The Situation and Soil of this Nation are well adapted to it. The Poor, when taken out of Habits of Idleness, and taught to know the Comforts of honest Industry, would rejoice to be employed in it, and the Rich are ready and willing to promote and encourage it. What then can possibly obstruct the Undertaking, especially if it be pursued with Resolution, and the Foundation of this noble Structure be laid in Parish Workhouses, as before mentioned?

C H A P. II.

Of the great Advantage that will accrue to the Farmers from the Growing of FLAX and HEMP.

WHEN the great Profits that will accrue to the Farmers from the growing of Flax and Hemp, are distinctly set forth, I make no doubt but they will pursue a Method so apparently to their Advantage; especially when they are well instructed how to till and harvest it, and in what Manner to dispose of it to the best Advantage.

Those Farmers who have acquired Fortunes by this Species of Husbandry, have artfully propagated an Opinion, that it impoverishes the Ground more than any other Seed. This monopolizing Insinuation hath universally gained Credit, and consequently retarded the Prosecution of this Part of Agriculture; both Landlords and Tenants being prepossessed with a Notion, that their Estates will be ruined by it.

But, in order to remove all Difficulties and Objections to the Growing of Flax,

First, I shall set forth the Profits that will arise from a Crop of Flax.

Secondly, I shall endeavour to prove the Falseness of the above Suggestion.

Thirdly, I will shew what Soil is most proper for its Reception.

- Fourthly*, I shall make some Observations on preparing the Ground.
- Fifthly*, On the Seed, and Quantity sufficient.
- Sixthly*, On sowing the Seed.
- Seventhly*, On pulling, rippling, and watering the Flax.
- Eighthly*, On grafting it.
- Ninthly*, On Swingling, Schuchling, &c.
- Tenthly*, On Heckling.
- Eleventhly*, On Spinning.
- Twelfthly*, On Bucking and Bleaching.

Of the Profits that will arise from a Crop of FLAX.

An Acre of new rich Ground generally produces Two Packs of Flax; which, upon an Average, sells for Eight Pounds; Twenty Dozen Pounds in a Pack, which is Two hundred and Forty Pounds Weight. The Seed will more than pay for harvesting, &c.

Some Proofs that Flax does not impoverish the Ground.

A Piece of Ground that is in good Condition will produce Two succeeding Crops of weighty Flax, and afterwards Wheat and other Grain. An Instance of which I experienced in a Piece of new Ground, which produced the following Crops, with one Manure only:

- First, a fine Crop of Flax. After it, Turnips.
- Second Year, a better Crop of Flax than the first. After it, a Crop of Mustard-Seed.
- 5 Third

Third Year, a fine Crop of Wheat. After it, Turnips.

Fourth Year, a weighty Crop of Wheat.

Fifth Year, Barley and Clover.

Whereby it is reasonable to conclude, that Flax doth not destroy the Fertility of the Ground so much as some have suggested. This will more fully appear by the following Letter, written by a Gentleman of *Ireland*, and sent to a Member of the Premium Society.

“ In this Province we think any light dry Land
 “ good for Flax. The poorer Sort of Farmers
 “ generally sow their Potatoe Ground the Spring
 “ after they dig their Potatoes. Any lay Land that
 “ is not a stiff Clay, that has not been under Pas-
 “ ture for Eight or Ten Years, will give very
 “ good Flax. But as our Manufactures, for some
 “ Years past, are greatly increased, and the Pota-
 “ toe and lay Land not sufficient, we have, with
 “ Success, plowed Lands before *November*, which
 “ being out of Tilt, have produced but a bad
 “ Crop of Oats. The preceding Harvest har-
 “ row them in *March*; give them a second Plow-
 “ ing in *April*, and sow Flax; and though our
 “ Crop is not so full and plentiful a one as on the
 “ Two first-mentioned Grounds, yet the Stalk is
 “ finer, produces finer Flax, which manufactures
 “ into finer Yarn, and brings more Money. We
 “ have no Notion that Flax destroys the Tilt of
 “ the Ground, so as to unqualify it for succeeding
 “ Crops. The Potatoe Lands will give Four or
 “ Five good Crops of Oats. Our lay Lands we
 “ plow immediately after we pull our Flax:
 “ About

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“ About *Michaelmas* lay on a small Quantity of
 “ Manure, and sow a Grain, much in Esteem
 “ with us, called Bear, of which we have great In-
 “ crease, and when malted produces more Ale,
 “ but not so light or pleasant as Barley. Others
 “ sow Wheat without Manure, or plow the Lands,
 “ about *November*, and in Spring lay on a small
 “ Quantity of Manure, and sow Barley. Either
 “ of these Methods I have known attended with
 “ Success, and Three, Four, or Five, good Crops
 “ of Oats afterwards. I think, in our pleasing
 “ Chats I have mentioned to you, that if I had
 “ laid on Manure on my Fallows for Wheat, it
 “ would all lodge, and be scarcely worth reaping.
 “ This, though Fact, is so opposite to the Prac-
 “ tice in *England*, that you will smile when you
 “ reap Wheat without Manure in our heathy
 “ mountain Lands, as bad as any Commons in
 “ *England*, equal to *Bagshot*. In Summer the Heath
 “ is either pulled or burnt. In *Autumn* about
 “ Twenty Barrels of Lime are laid in each *English*
 “ Acre: In *November*, Covering, of what we call a
 “ Mooring, is laid over the Lime, which is a kind
 “ of Mire: In Spring, a small Quantity of Dung;
 “ then Potatoes are planted, and generally con-
 “ tinue for Two Crops; then Flax is sowed
 “ with great Success, and Five or Six very good
 “ Crops of Oats afterwards. No Wheat or Bear
 “ grows in these Grounds; which, in my Opi-
 “ nion, is owing to the Obstinacy of our Natives,
 “ whom even Example will scarce get out of
 “ the Tracks their Fathers pursued. We are
 “ quite unacquainted with the raising of Hemp:
 “ It

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“ It requires richer Soil then we are blessed
 “ with; and therefore the little of that done in
 “ this Kingdom, is raised in *Munster* and *Con-*
 “ *naught*. As that Culture generally exceeds ours,
 “ there can be no Doubt of the having good
 “ Crops of Barley, Wheat, or Oats, after Flax.
 “ My Steward is now busy in finishing about
 “ Twelve Acres of Flax on lay Lands, which I
 “ shall reckon as One Plowing to my Fallows for
 “ next Season.”

Of the Soil.

In the Course of Vegetation it is impossible to
 discover what Mixtures are in the Earth, where-
 with the oleaginous Particles of the Seed, when
 sown, intermix and co-operate. It is however evi-
 dent, the best and most certain Crops are those
 that grow on a light black Soil, mixed with Earth
 and Clay. And though it is well known that
 frequent sowing any Sorts of Seeds, especially of
 the same Kind, will weaken the Fertility of the
 Earth, yet Experience hath often proved, that
 several Crops of Flax have been produced succes-
 sively from rich new light Ground. Black or
 blueish Soil produces the finest and best coloured
 Flax. A reddish Soil bears good Crops of Seed,
 and strong Flax; but as it will not whiten well, it
 is generally used for striped or dyed Ticks or
 Linen.

Such Ground as lies much exposed to the Winds,
 or is naturally very dry, is not proper for Flax;
 neither is tough Clay or boggy Ground, or such as
 is

is surrounded with tall Hedges and Trees. It is presumed there are a great Number of Acres of Land in most Counties, of a Soil proper for Flax or Hemp.

Of preparing the Ground.

The best Manure of Flax-Ground is Fern or Wood-ashes, Sea Weed, Sea Sand, Marle, and Lime: These are judged most proper, as they are not so subject to produce Weeds as most other Manure. New Ground generally produces the best Crops of Flax; but it ought to be broken up and lie fallow the Summer and Winter before the Seed is sown; and it will require Three Plowings at least, the last whereof should lay the Ground quite flat, or in extreme broad Ridges. Many bad Crops of Flax are occasioned by the Farmers not taking due Pains in harrowing and clodding the Ground, which cannot be too finely pulverized for Flax. This Operation is often performed by a wooden Roller; but I should rather be at the Expence of breaking the Clods by Hands, as it not only leaves the Ground lighter, but the Person who does it may likewise cleanse it from Weeds.

Of the Seed, and Quantity sufficient.

The best Seed is brought from *Riga*, and is sold for Fourteen or Fifteen Shillings a Bushel *Winchester* Measure. *American* Seed is now thought to be very near as good as *Riga*, and is sold for about Nine Shillings a Bushel.

Sow

Sow Two Bushels an Acre, and the Produce will be Ten or Twelve Bushels an Acre, if it stands till it is quite ripe.

Foreign Seed may be sown Three or Four Years following with good Success. Good *English* Seed is sold in some of our Northern Countries for Seven or Eight Shillings a Bushel: The best Seed is known by the Bloom on it, and by its Fulness, Weight, and Colour, which is a bright Brown. if it did not ripen fully in the Ground, it will appear less shining, flat, light, and withered at the Corners and Edges.

Of sowing the Seed.

The Season for sowing of Flax-Seed is from *March* till the latter End of *April*, or the Beginning of *May*. When the Seed is sown in a very dry Season, a great Part of it is devoured by the Birds, and Vermin, and Insects; consequently a bad Crop will ensue. Now as a very little Moisture will cause it to spring up, and be out of Danger in Eight or Ten Days after sowing, it is pity but some Contrivance could be found out to sow, harrow, and water, at the same time.

N. B. The Flax should be weeded when it is about Four or Five Inches above the Ground.

Of pulling the Flax.

The proper Time for pulling the Flax, is when the Stalk grows yellow, and the Seed of some of the Boles begins to drop out. It is very certain,

I that

that if the Flax stand in the Ground till the Seed is quite ripe, it will harle the better, and be somewhat the stronger; but then it will require a longer time in the Water to digest or rot the Bunn, and be more difficult to break, heckle, and whiten.

That Flax which is most seasonably and judiciously pulled and watered, will discharge itself best from the Bunn, will handle soft and silky, fwingle and heckle most kindly, and with the least Waste.

Of Rippling.

After the Flax is pulled, the Seeds should be rippled clean off as soon as possible. The ripe and the unripe Seed should be carefully sorted in separate Parcels. The ripe Seed may be used or sold for the next Year's Tilth; and the unripe is fit for the Oil-Mills, or to feed Cattle, as are the Husks of the Seed after the Oil is extracted from them.

Where there is a large Quantity of Flax to be rippled, there ought to be a proportionable Number of rippling Benches, with Two Ripplers and Two Tenders to each Bench, in order to get it ready for the watering Place as soon as possible.

The ripe and the unripe, the coarse and the fine Flax (as before-mentioned), should be carefully laid in separate Parcels, and tied loosely up in small Bundles.

Of Watering.

When Flax is stacked or housed before it is watered, the Sap becomes oily and glutinous; consequently

sequently as it dries, the Lint clings to the Stalk, which injures its Colour, and renders it more difficult to fwingle, heckle, buck, and bleach; it will also cause it to work coarse and harsh. On the contrary, when it is watered as soon as it is pulled, the Sap is easily extracted from it, the Harle is loosened, the Bunn is easily digested, the Lint is kept soft and mellow, its Colour is preserved, and it is sooner turned into Money. Besides, after it has been watered, it is not so much in danger of being destroyed by Rats and Mice, who get into the Stacks of unrippled Flax, feed on the Seed, and find soft warm Nests for themselves and their Progeny.

Fine Flax, and such as is not fully ripe, will ferment in the Water sooner than coarse or ripe Flax. Consequently the latter ought to be so judiciously placed in the Pond, as to imbibe the Water more freely than the former.

As the whole Pile of Flax must be sunk under the Surface of the Water, it ought to be expanded to such a Breadth, that its Depth may not reach to the Bottom of the Pit, where the Mud will injure the Lint, and the Coldness of the Water retard its Fermentation. If a Quantity of Fern, Mallows, Hemlock, or some such Vegetables, be laid under the first, and over the last Lay of the Pile, it will subtilize the heterogenous Particles of the Flax, and quicken its Fermentation.

When the whole Pile is thus prepared, lay thereon a sufficient Quantity of Stones to sink it, as above mentioned. Some sink their Piles with Logs of Wood; but as its Bark and Sap are apt to

tinge the Flax, I think it very improper for the Purpose.

All mineral and foul Waters are improper for Flax. Cold Springs and running Streams are also bad, as they are apt to disorder and entangle the Flax, and obstruct its Fermentation. Still soft clear Pit Waters should be chosen, if possible; and the Flax Dressers and Manufacturers will find, that the Flax so watered will go through all the necessary Operations with less Trouble and Expence, and be in all respects better, and more valuable. There is nothing in the Process of Flax Dressing, that requires so much Care and Watchfulness, as watering; the Intent of which is (as before mentioned) to digest or rot the Bunn, to separate the Harle from the same, and to soak out the Sap from the Lint. This is performed in a longer or shorter time, according to the different Qualities of the Flax and Water. I have seen Flax well and duly watered in Four Days, and have known some near Three Weeks in the Water before the Bunn was properly digested.

Of Grassing.

When the Flax is to be laid on the Grass, you are to make a Choice of a level Piece of Ground, not exposed to the Wind, or liable to overflow with Water, or in danger of being disordered by Cattle, Fowls, or Vermin. The Flax is to be spread thin on the Grass, with the Roots to that Side of the Field which is most exposed to the Wind, each Row lying over the other, with Poles or Ropes of

refuse Flax fixed upon it at convenient Distances, to prevent the Wind from blowing it about. Flax will require longer or shorter Time on the Ground, according to the Weather, or the Time it was in Water.

It will be ready to house or stack the sooner, and be the better coloured, if it is often turned, which is absolutely necessary immediately after wet or windy Weather: If it is not turned at those Times, it will be apt to spot and decay. As soon as you see the Lint begin to separate and grow loose from the Stalks, it is to be housed; but be sure to let it be thoroughly dry first; in order to which, bind it up in small Bundles, otherwise it will be apt to be discoloured, and rot.

According to the different Strata of the Earth, there will be different Kinds and Qualities of Flax in a Piece of Ground, which will appear by its being of different Tincts or Shades. When it has been some time on the Grass, and when it comes to be taken up, each Sort should be carefully put by itself in Parcels. Those that incline to a blueish or silver Colour, are by far the best.

Of Swingling.

After the Flax has been housed or stacked, it is to be swungled and scutchled; and, in order to facilitate those Operations, it is first dried on a Stage made of Poles or Sticks (which is commonly placed under a Hedge or a Tree near to the swingling House); or otherwise in a large Oven in or near the said House.

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The Way first mentioned is so extremely bad, ineffectual, hazardous, and detrimental, to the Lint, that it is now but little used. The latter has the following Defects: The Heat of the Oven rarifies the confined Air to such a Degree, as to be very injurious, not only to the Texture and Colour of the Lint, but also to the Health of the Person that manages it in the Oven, where the oily, resinous, and saline Particles are so heated, dissolved, and blended together, as to become a Kind of Varnish; which, when cold, is so hard, and adheres so closely to the small Fibres of the Lint, as to require repeated Steepings in strong Lixiviums and Acids, and frequent Buckings, Boilings, and Bleaching, to disengage and extract it.

Drying is of no other Use than to make the Bunn break crisp and easy; for which Purpose the Method set forth in Plate the Second, will be found preferable to all others now in Use. The Dome described in this Plate, is so contrived as to admit of a Current of Air to pass through it; and by means of a Valve or Damper, the Dome, and the Air contained therein, may be so heated as to perform this Operation with great Regularity, Ease, and Dispatch.

When the Flax is well dried, it is carried to the Break to be swungled and scutchled (whilst it is warm, if it can be so done). These Operations are at present the most imperfect, awkward, and wasteful Performances that ever were devised.

To remedy which, some People have turned their Thoughts to find out a Method of breaking and discharging the Bunn, without such intolerable

Waste

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Waste of the Flax; and I am credibly informed, that a Machine has been invented which fully answered the Purpose, and that some Attempts have been made to bring it into Use; but as the Tow or waste Flax is generally the Swinglers Perquisite, or purchased by them for a Trifle, they would not encourage or make use of a thing so contrary to their Interest.

Of Heckling.

This Operation may probably admit of some Improvement. A good Hand generally produces Eight Pounds of long, and One Pound of short Flax, and Three Pounds of Tow, out of each Dozen of the strongest and longest Flax. The Tow is generally allowed to pay the Expence of Heckling, the different Prices of which are as follows:

Flax dressed, fit for Two or Three Hanks *per* Pound, Four Pence *per* Dozen.

Nine and Ten Hanks *per* Pound, Seven Pence *per* Dozen.

It may not be improper to observe, under this Article of Heckling, that Wool cannot be improved and brought finer by combing, as Flax can be by heckling. For the very finest spun Wool, even when dyed in Grain of the richest Colours, cannot be sold for above Eight Pence *per* Ounce; whereas Flax, by the Heckler's and Spinner's Arts, may be brought to such a Degree of Fineness, as to sell for Thirty or Forty Shillings *per* Ounce:

What an immense Sum then would an Acre of

Flax

Flax of this Fineness amount to; and what Encouragement is here for the Hecklers and Spinners Improvement!

Of Spinning.

The Spinners should be particularly careful never to draw their Yarn beyond the Staple, as most of the Foreign Yarn is; which indeed produces a great Number of Yards, and makes the Yarn handle soft and filky, and look much finer, but destroys the Texture of the Cloth, and brings Disgrace on the Manufacture. So fearful are the *Irish* of these Practices creeping into their Manufactories, that they have already made penal Laws to punish those who attempt to introduce such Deceits in fabricating these Goods.

It is well known that we import Thread from Abroad that sells for Thirty or Forty Shillings *per* Ounce. This Thread, I am credibly informed, is spun chiefly by Children. Now, if Children in foreign Countries are capable of such dexterous Performances, it cannot be doubted but the *English*, with due Care and Application, may also arrive to the same Perfection in this Art.

In Workhouses or Schools, where a Number of Pupils are at once put under a Teacher's Care, it may probably be a means of their being neglected, and occasion great Waste of Materials *. To prevent which, Six or Eight only of the most docile

* The Stat. 43 of *Eliz.* direct the Overseers, &c. to raise a sufficient Stock of Flax and Hemp, Wool, &c. to set the Poor to work.

Children (Boys or Girls) should be first taught and made perfect in spinning an even round Thread; and when they are capable of so doing, they should be appointed Overseers and Assistants to the Teachers, who should so intersperse them between the other young Spinners, that they may not only mind their own Work, but be so disposed as to overlook and instruct all those under their Care. The Method before mentioned will, in a great measure, prevent it, and be a means of forwarding the young Beginners *.

At the first Institution of any Manufacture, there will unavoidably be some Waste of Time and Materials; and such Thread as will not serve for one Use, may possibly be very fit for another. But the very worst and coarsest Sort of Spinning will sell to the Shoemakers and Shopkeepers, or may be made into Linsey-Woolsey; and a diligent Teacher will soon bring her Pupils to make good Work, and be careful of their Materials.

Such Spinners as are capable of spinning a neat fine Thread, may earn Six Pence or Eight Pence *per* Day, and much more when they come to be expert enough to use the Two-handed Spinning-wheels; and there is no doubt but when Flax and Hemp become more or less the Produce of every County, the Wives, Children, and Servants, of many thousands will employ themselves this way. As it is so neat, so clean, an Employment, it is to be hoped many Ladies of

* The Legislature, in this whole Statute, appears to have had the Employment of the Poor under Consideration.

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Distinction may chuse to amuse themselves sometimes in this Way, rather than waste their whole Time and Spirits at Cards, and other pernicious, or at least uselefs Diversions; and that Examples of this Kind would stir up the lower Sort of People to practise and delight in an Employment so beneficial to themselves and the Public.

On Bucking and Bleaching before Weaving.

Bucking is the first and principal Operation in Whitening: This is performed two different Ways, *viz.* in Yarn before, and in Cloth after weaving. I shall confine my Observations chiefly to the first Method, as being the more proper for young Beginners, who are situated in Country Towns and Villages, have but a small Capital, and require a quicker Return of Money.

Many People have employed their Thoughts to improve the different Processes of Bucking and Bleaching, and render them more effectual, and less expensive; but as it does not appear that any considerable Improvement has been made in these Arts of late Years, I shall endeavour to set forth, in as concise a Manner as possible, *First*, The present Method of Bucking, or extracting the foul Matter from the Lint; *Secondly*, Point out the Defects and Impediments in the common Way of Bucking; *Thirdly*, Describe some Improvement which I have made in the Operation of Bucking; *Fourthly*, Make some Observations on the common Way of Bleaching; *Fifthly*, On the Defects and

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and Inconveniencies that attend it; and *Lastly*, Describe some Improvements which I have made in the Method of Bleaching. See P. 79. Plate IV.

The present Method of Bucking in the West of England.

When the Hanks of Yarn are tied with Laybands, they are to be laid in a stone Cistern or wooden Vat, in Rows crossing each other. Between each Lay sift Fern or Wood-ashes. Some People mix Pearl-ashes, Lime, and Pot-ashes, with it. When the Pile is erected to the Height intended, fill the Cistern with soft clear Water, in which the Yarn must be steeped Twenty-four Hours; then draw off the Liquor into the Boiler, the upper Part of which is generally level, or rather a little below the Bottom of the Cistern. As soon as the Liquor is Blood-warm, dip it up with a small Pail or wooden Bowl, and continue pouring it on the Yarn for Two Hours at least after it begins to boil. All this while the Cock in the Cistern should be turned, that the Liquor may run from thence into the Boiler again to renew its Heat. When it becomes very foul and discoloured, and the Yarn feels soft and slimy, draw off the Lye, and press it well out of the Buck, laying thereon a sufficient Quantity of Cloths to prevent its cooling too fast. When it has lain thus covered for Twelve or Fourteen Hours, it should be taken out, clean washed, and hung on Poles to dry. And here it may be observed that the Lint, by repeated Steepings in Lye, or strewed with Ashes, as before mentioned,

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tioned, imbibes its vegetable Salts and Acids, which separate and loosen the gross Particles of the Sap that adhere to its Fibres; but when it has been immersed some time in this Liquor, it will be so contracted as to bind up and confine the unctuous Matter contained therein. In order, therefore, to relax, mollify, and render it fit for another Bucking, it is carried to the Field to be bleached. These Operations are alternately repeated till the Yarn is brought to a sufficient Degree of Whiteness.

Some Remarks on the Errors and Imperfections in the foregoing Method of Bucking.

First, The dipping up the Liquor is very laborious, dangerous, and ineffectual.

Secondly, The Yarn is often melted, as they call it, by strewing the Ashes, Lime, &c. irregularly between the Hanks of Yarn. This melting or burning is a great Detriment to the Yarn, and frequently renders it unfit for Cloth of a good Fabric; to prevent which, omit strewing the Ashes, &c. between the Hanks, and buck with Lye duly prepared and heated, as before mentioned.

Thirdly, The Yarn being in a State of Inaction during the Time of bucking, this Operation is greatly retarded thereby. The hot Lixivium in which the Yarn is steeped, co-operates with the vegetable Salts and Acids in separating and loosening the foul Matter which adheres to the Lint; it seems, therefore, absolutely necessary to discharge this foul Matter by a gentle easy Friction
of

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of the Yarn, and a rapid Motion of the Liquor through its Fibres during the Time of bucking. This occurred to my Thoughts many Years ago, when I tried some Experiments to agitate the Yarn and the Liquor without entangling the Thread. In this I succeeded so well, that I was soon convinced of the good Effects it had; however, I was not fully satisfied till I had made repeated Trials of it on Materials of different Qualities, in all which Experiments I had the Pleasure to find the Motion given answer to my entire Satisfaction; which was a Motive sufficient to induce me to erect an Apparatus for Bucking, according to the Method I had discovered, a perspective Draught of which is described in Plate III. Figures 1. and 2.

On Bleaching.

When the Yarn is laid on the Ground to bleach, it should be well shaken or sprung, with this Precaution, at the first laying it down, to place the Knots in the Middle of each Hank; and at every succeeding Springing and Laying, to move the Knots at different Places, and spread the Hanks as thin, loose, and even as possible, leaving Room to pass and repass between the Rows.

As frequent sprinkling and turning will expedite the Bleaching, Watchfulness and due Attendance ought to be given in this Operation, especially after wet or windy Weather. The Yarn will require a longer or a shorter Time on the Ground, according to the Quality of the Lint, the Management
ment

ment of it in bucking, or the Seasonableness of the Weather whilst it is on the Ground. No certain Time, therefore, can be fixed for the due Performance of this Operation. Experience only can direct in this Particular.

On the Inconveniencies which attend the above Method.

When the Yarn is laid on the Ground, it is liable to be injured by the following Causes:

First, By heavy Rains, and sprinkling it with Water, which so entangle and mat it together, as to require much Time to separate, pick, and spring it.

Secondly, Springing wastes the Substance of the Yarn, and makes a fuzzy Downiness even on the Cloth as well as on the Yarn.

Thirdly, It is the means of breaking a great Number of Threads; the tying of which occasions a Loss of Time to the Spooler, Warper, Quill-winder, and Weaver; by which the Fabrick of the Cloth is also greatly injured.

Fourthly, In wet Weather the Yarn is frequently drawn into the Ground, dirted, and gnawed thro' by the Worms.

Fifthly, It is liable to be disordered and entangled by Wind, Insects, Birds, and Vermin.

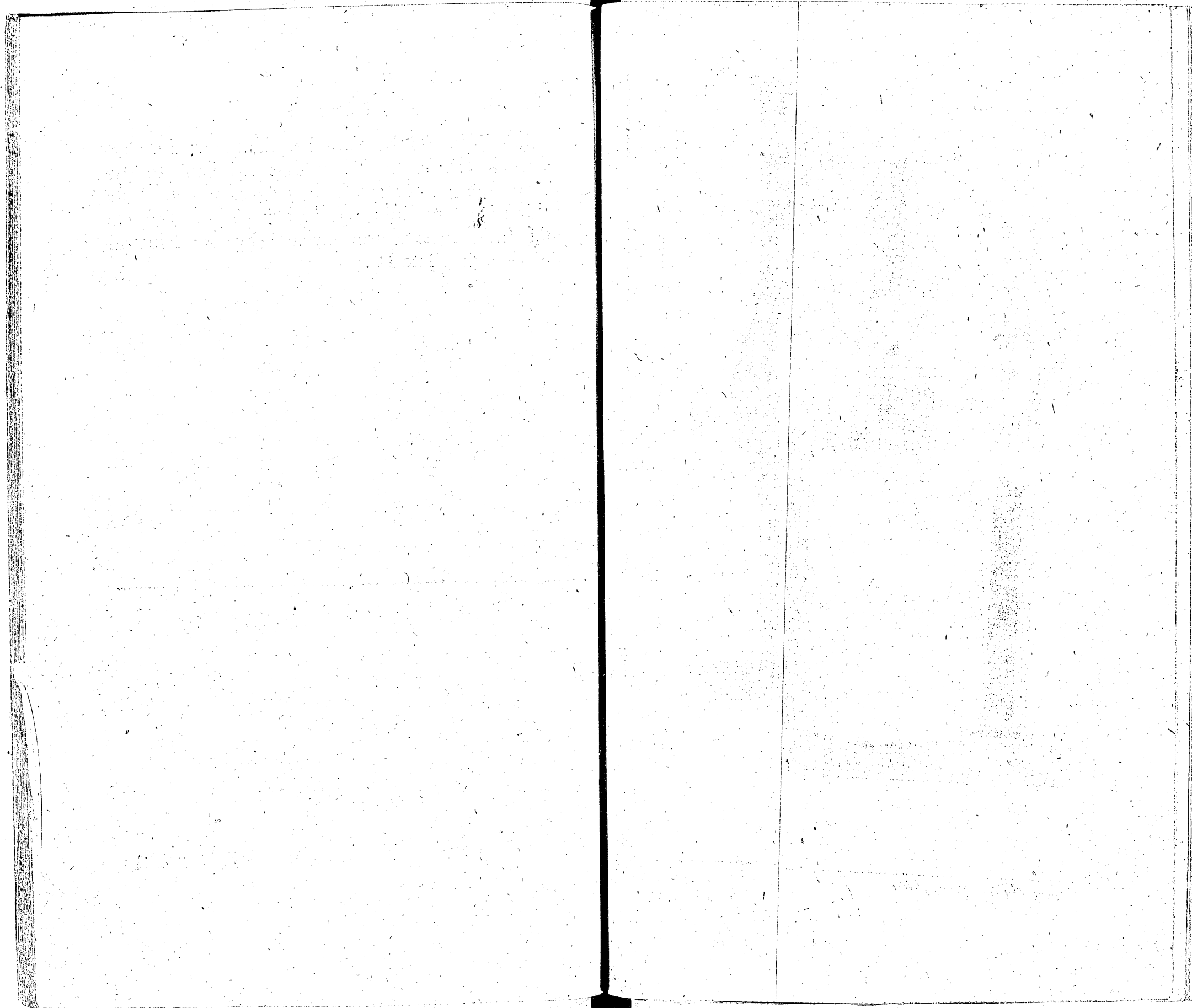
Sixthly, As every single Hank ought to be picked, sprung, and laid on the Ground thin, loose, and even, it requires a long Time, or a Number of Hands, to dispatch it as it ought to be.

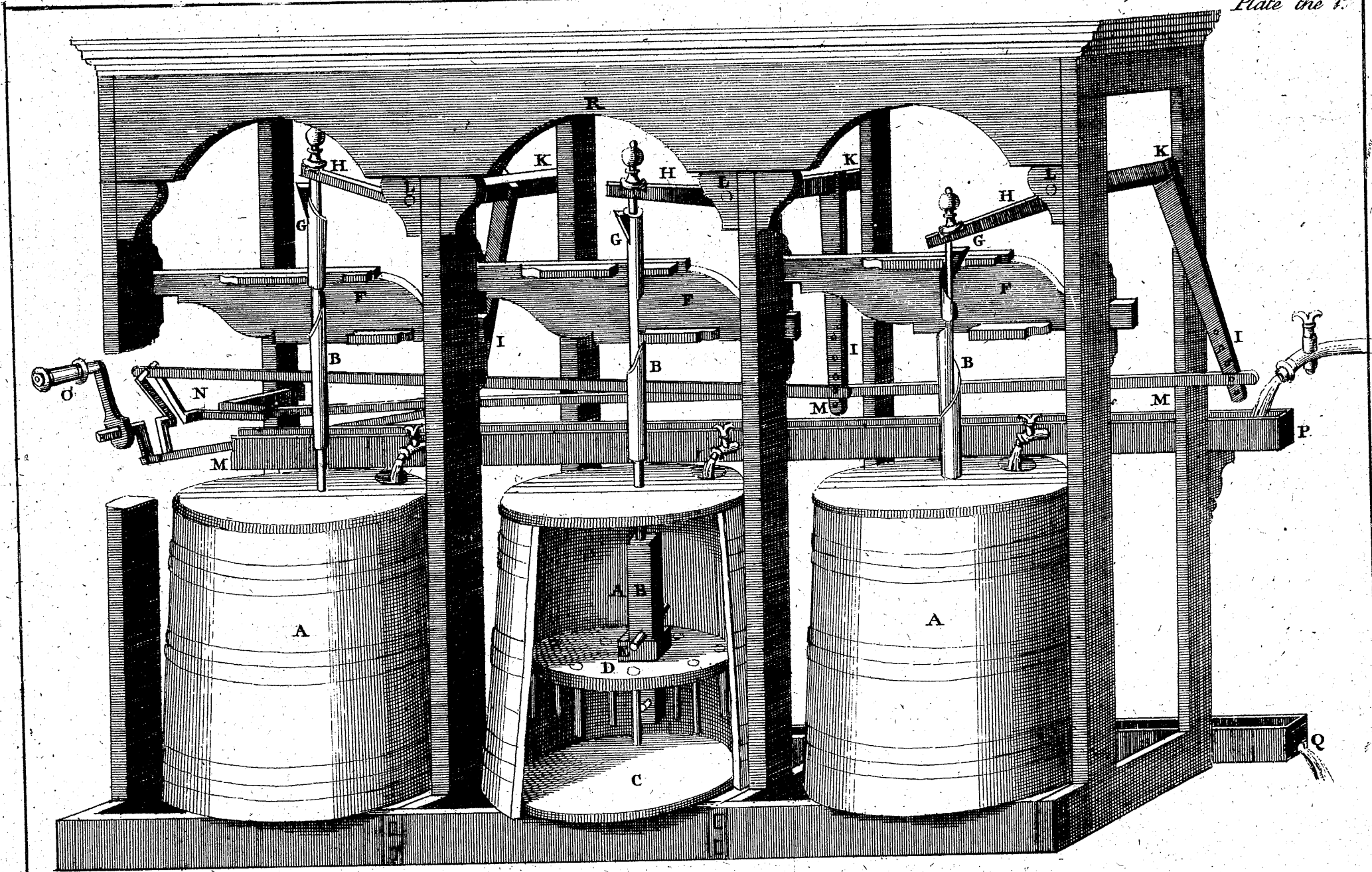
Seventhly,

Seventhly, As the Yarn lies double at the End of each Hank, the Parts that are next to the Ground are kept moist so long as to retard its whitening, and injure the Lint. These Defects and Impediments are obviated by the Method described in Plate IV.

EXPLA

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A Machine for Washing &c.

William Bailey Jun. delin.

E X P

P I

A A A. The
Two F

B B B. The
Eight

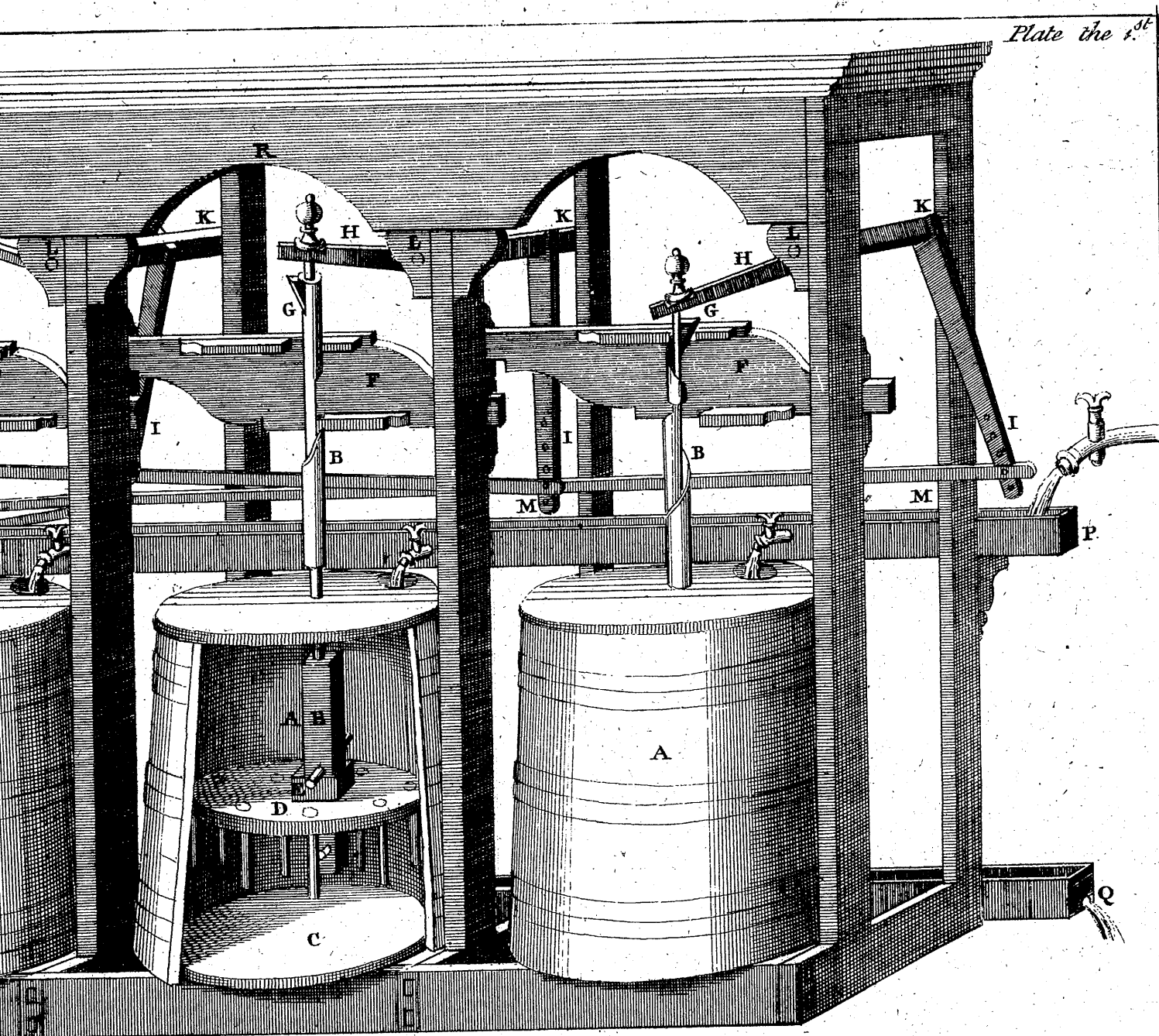
H H H
(end)
on the

C. A Section
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Sockets

D. The F
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E. A Squar
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F. A slidin
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A Machine for Washing &c.

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E X P L A N A T I O N
O F
P L A T E I.

A Machine for Washing.

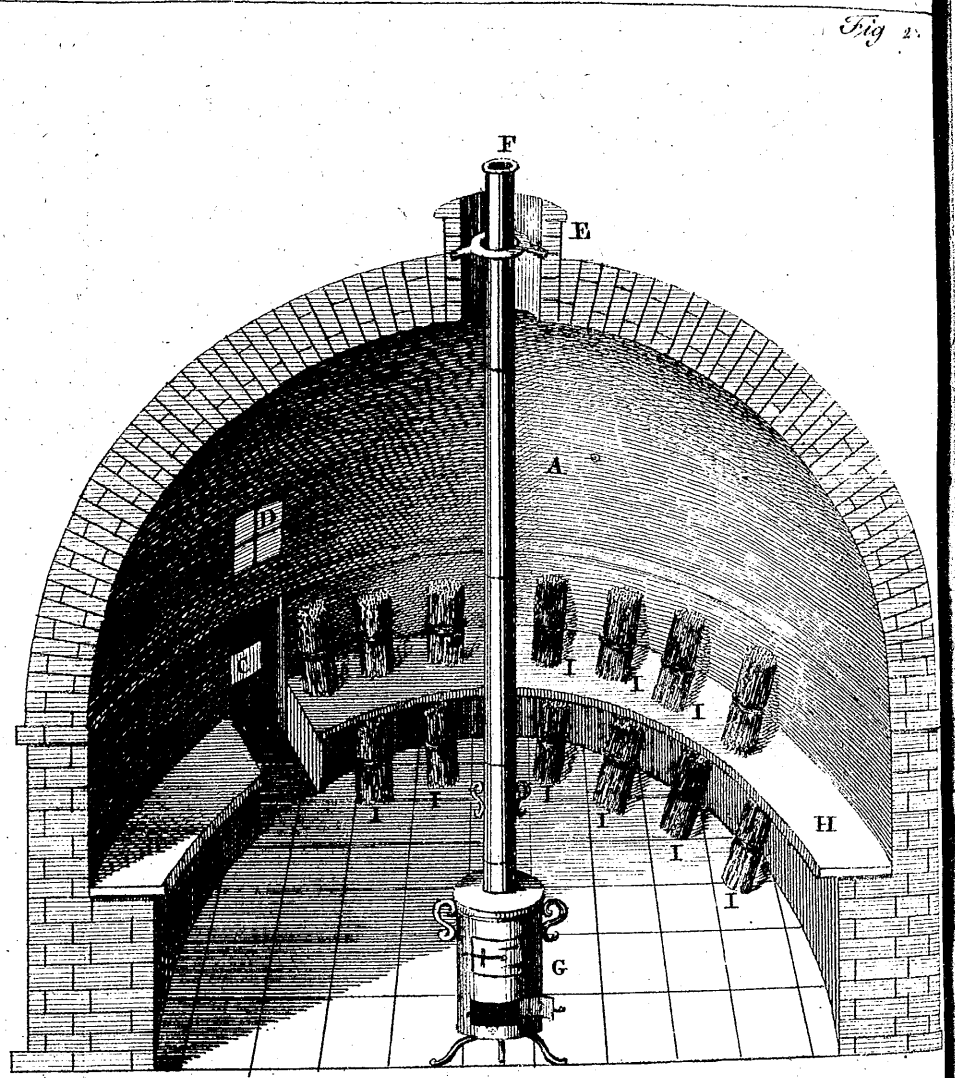
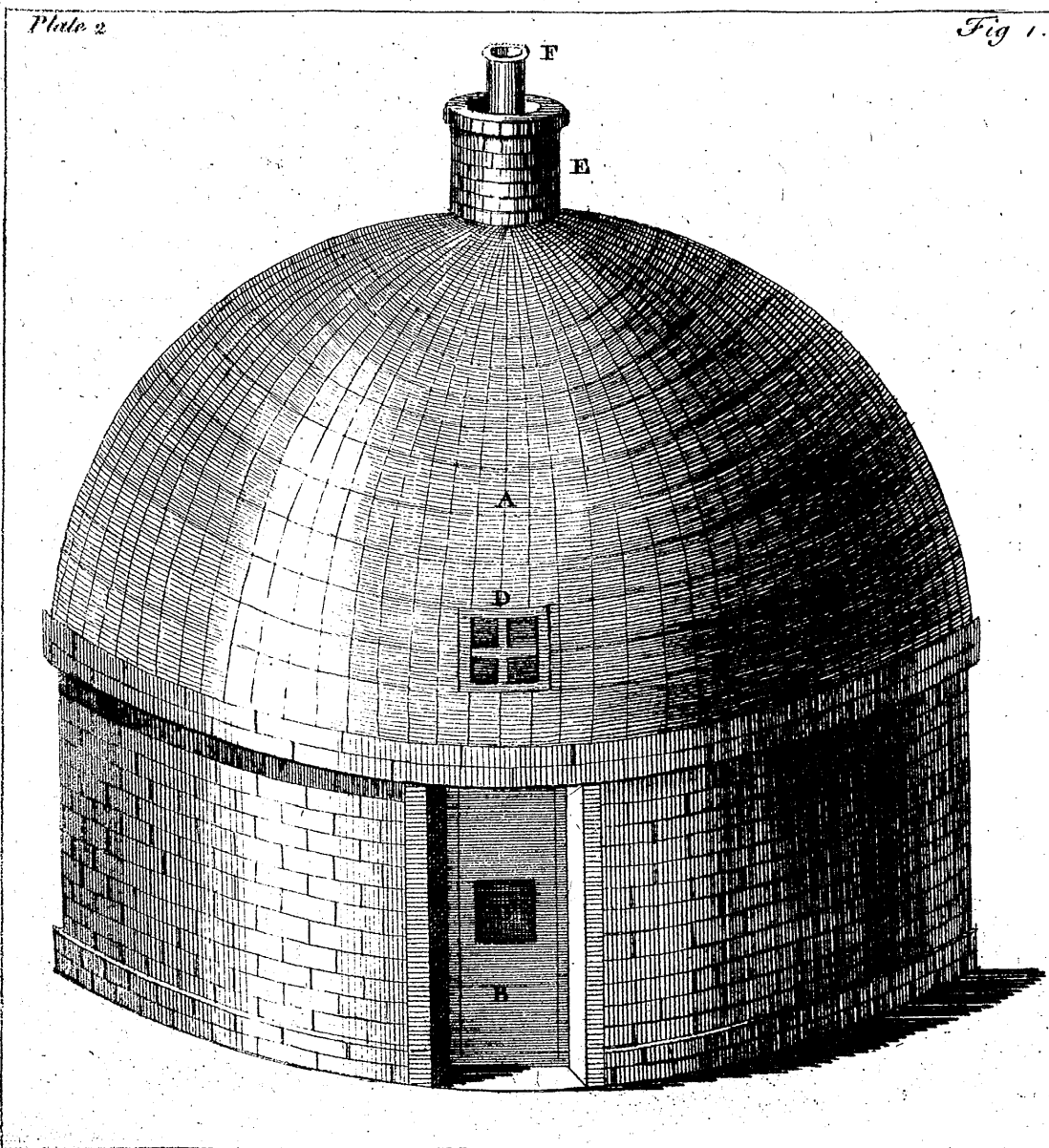
- AAA.* The Washing Tubs, Two Feet high, and Two Feet Diameter.
- BBB.* The Shafts of the Fullers, which are lifted Eight Inches perpendicular, by the Levers *HHH*, and turn half round (as they ascend) by the sliding Bolt and inverted Worm on the Top of the Shafts.
- C.* A Section of One of the Tubs, wherein is represented the under Part of the Shaft, Socket, and Fuller.
- D.* The Fuller, which turns with the Shaft *B*, but does not rise with it till the Shaft is lifted up Four Inches.
- E.* A square wooden Box or Socket to guide the Shaft, as it passes through the Fuller.
- F.* A sliding Bolt, which the Wedge forces forward when the Shaft falls. This Motion of the Bolt, Shaft, and Wedge, is reversed by the inverted Worm on the Top of the Shaft.

L

GGG.

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- GGG.* Wedges fastened to the Shafts, by which the sliding Bolts are alternately forced from the right to the left when the Shaft falls.
- H.* A horizontal Lever (mortised into the Axis *K*), by which the Shaft is lifted up Eight Inches, and the Fuller Four.
- I.* A perpendicular Lever (mortised also into the Axis *K*) which is actuated by the triple Crank, *N*.
- K.* The Axis, in which are inserted the Levers, *H I*.
- LLL.* Brackets, fastened with Screws to the Posts of the Frame.
- M.* Leaders, which communicate with the Crank and perpendicular Levers.
- N.* A Triple Crank.
- O.* A Handle which turns the Crank, and works the Machine.
- P.* A Shute, which conveys the Water from the Boiler to the Tubs.
- Q.* A Shute, which carries off the foul Water by Cocks, at the Back of each Tub.
- R.* The Frame, to which the Movements are fixed.
- S.* A strong wooden Pin through the Bottom of the Shaft, by which the Fuller is lifted.



Alex. Malyin Bailey delin.

E X P

P

- A. A Dom high.
- B. A Door
- C. A Sluic Air, a
- D. A Win
- E. A Chi Curre
- F. An Iron the C conve

- A. A Se
- B. The D
- C. The Sl
- D. The V
- E. The C fix d Brick

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EXPLANATION OF PLATE II.

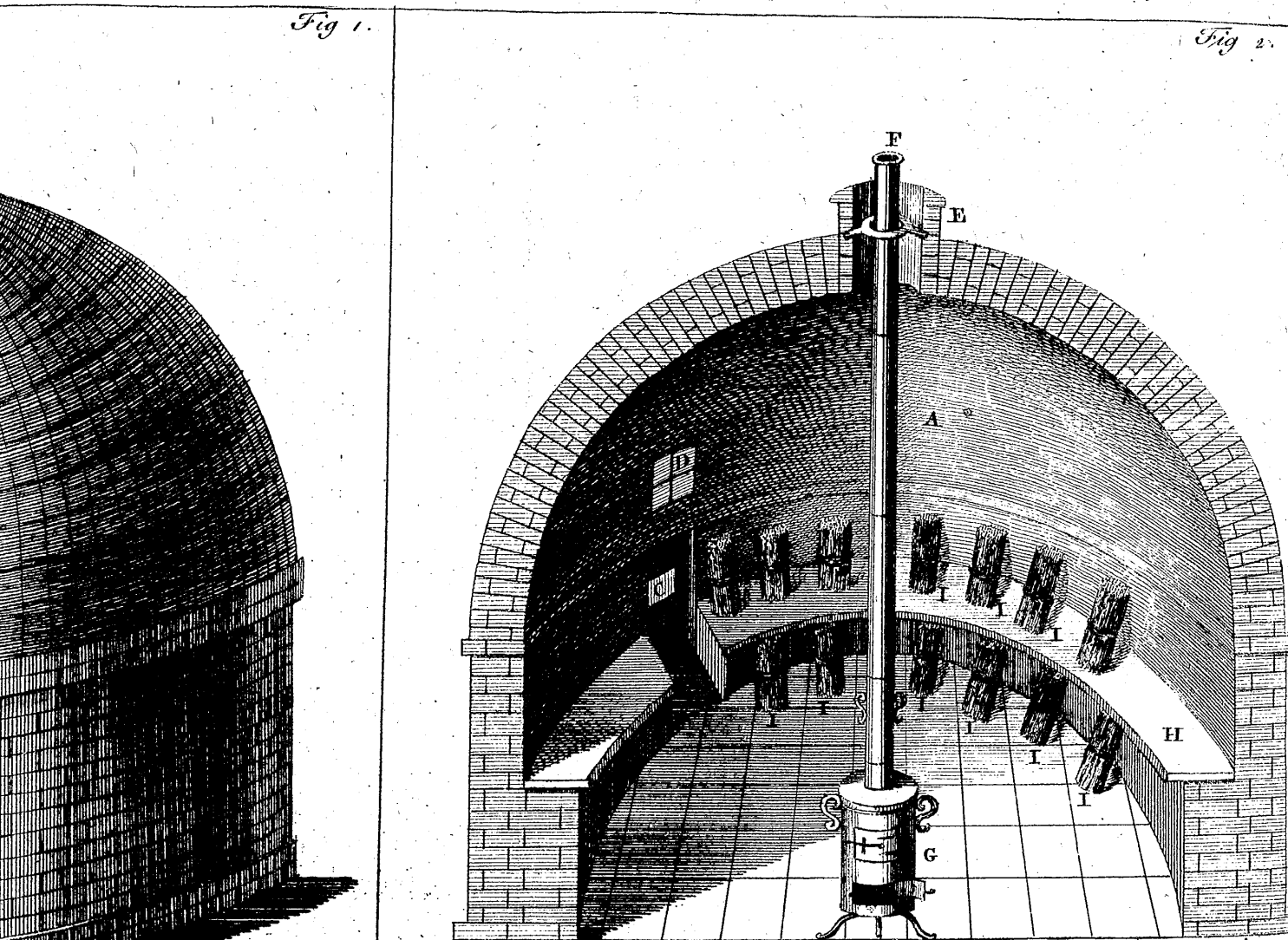
FIG. I.

- A.* A Dome Twelve Feet diameter, by Twelve high.
- B.* A Door, which opens into the Dome.
- C.* A Sluice or Damper, to regulate the Current of Air, and Degrees of Heat in the Dome.
- D.* A Window, to give Light into the Dome.
- E.* A Chimney, through which is conveyed a Current of warm Air to dry the Flax, &c.
- F.* An Iron Funnel, elevated Ten Inches above the Chimney, through which the Smoak is conveyed from the Stove.

FIG. II.

- A.* A Section of the Dome,
- B.* The Door,
- C.* The Sluice or Damper,
- D.* The Window,
- E.* The Chimney, in the Center of which is fix d an Iron Ring, with Arms let into the Brick-work, to keep the Funnel steady.

L 2

F. The

F. The Funnel.

G. A Dutch Stove,

H. A Stone Bench, on which the Sheafs are placed to dry.

III. Sheafs of Flax or Hemp.

N.B. This Dome may be applied also to the following Uses :

To dry Malt.

To dry Hops.

To dry Madder.

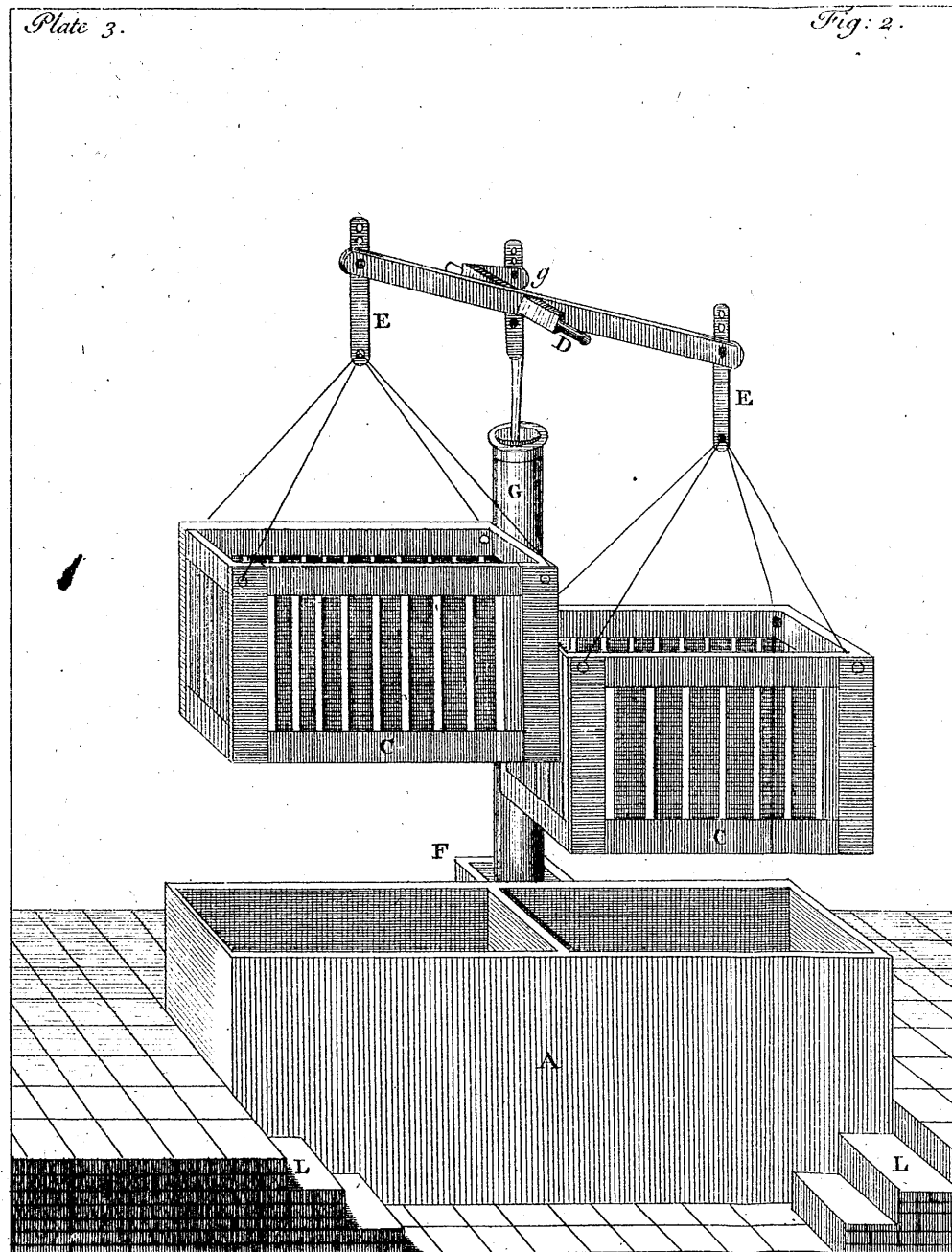
To dry Roots and Herbs for the Chymists.

To dry Linen and Woollen Yarn.

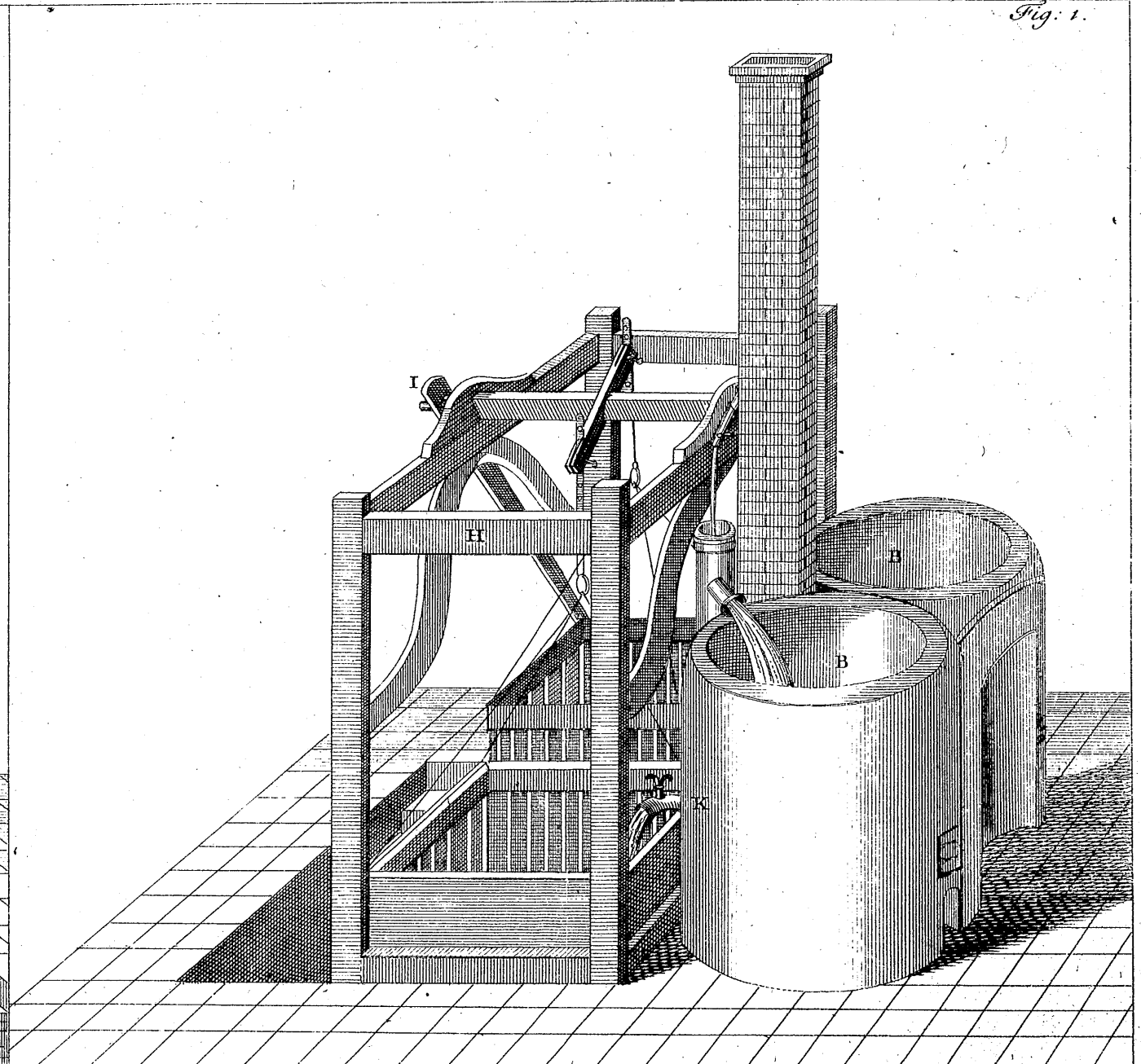
To whiten Wool, and Woollen Yarn, Stockens, &c.

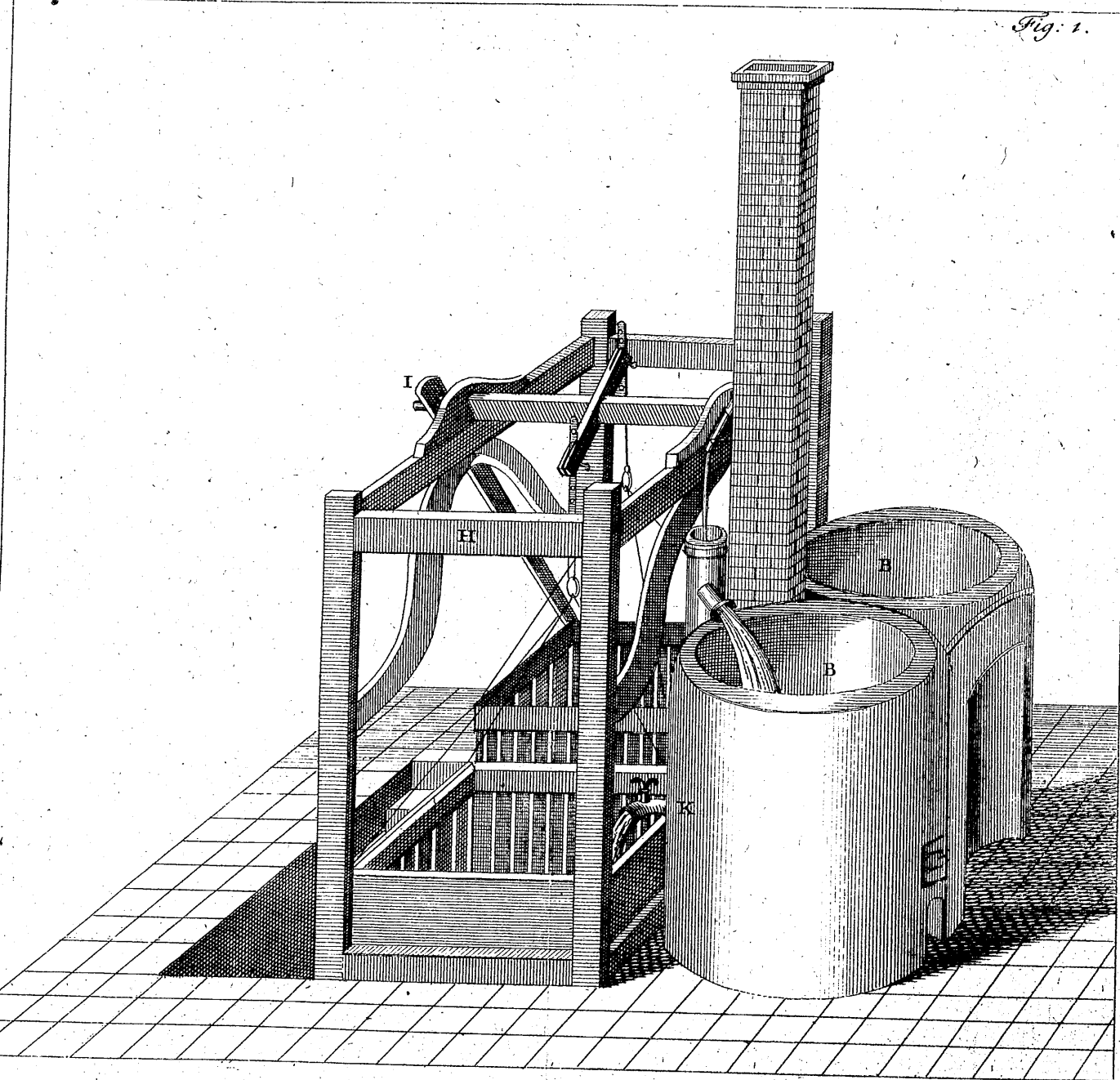
To whiten Chip Hats, and Wicker Ware.

To dry Paper Machée, &c. &c.



W. Bailey jun. delin.





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 E X P L A N A T I O N
 O F
 P L A T E I I I .

F I G . I .

- A.* A Stone Cistern Five Feet long, by Three Feet Six Inches wide, having a Communication with the Well *F*, from whence the Liquor is pumped up to renew its Heat in the Boilers. The Partition in the Middle of the Cistern is laid open at the Bottom, for the Liquor to pass freely from one Part to the other.
- B B.* Two Boilers, which supply the Cistern with hot Liquor.

F I G . I I .

- CC.* Two wooden Crates, wherein the Yarn is laid to be bucked.
- D.* The Axis or Beam, to which the Crates are hung with Ropes.
- EE.* Two Brass Bars, which serve to raise the Crates to their proper Height, by means of an Iron Pin fitted to the Holes in the Bars.
- F.* The Well which hath a Communication with the Cistern.

GG. The

- GG.* The Pump. *g* An Arm fixed to the Axis for working the Pump.
- H.* The Framing which supports the Movements.
- I.* A Lever fixed to the Axis *D*, the working of which plunges the Crates alternately into the Liquor in the Cistern.
- K.* Two Cocks to let the Liquor out of the Boiler into the Cistern.
- LL.* Steps to go down into the Pit, where the Person stands to work the Crates, and pump with the Lever *I*.

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EXPLANATION

OF

PLATE IV.

- AAA.* Squares Piles or Stakes driven into the Ground at proper Distances, to receive the bleaching Frames.
- BBB.* Grooves or Notches in the Heads of the Piles, wherein the Spindle Rails turn.
- C.* A bleaching Frame, consisting of Two Rails and Two Bars, or cross Pieces.
- D.* The Spindle Rail, Nine Feet long.
- E.* The sliding Rail, of the same Dimensions as the Rail *D.*
- FF.* The Bars or cross Pieces inserted in the Rail *D*, and pass freely through the Mortises in the Rail *E.*
- GG.* Pegs and Holes which serve to strain the Yarn tight on the Frames.
- HH.* The Hanks of Yarn spread thinly over the Frames.
- I.* A smooth small Rod to spring or beat the Yarn with, to prevent its entangling or matting together.

F I N I S.

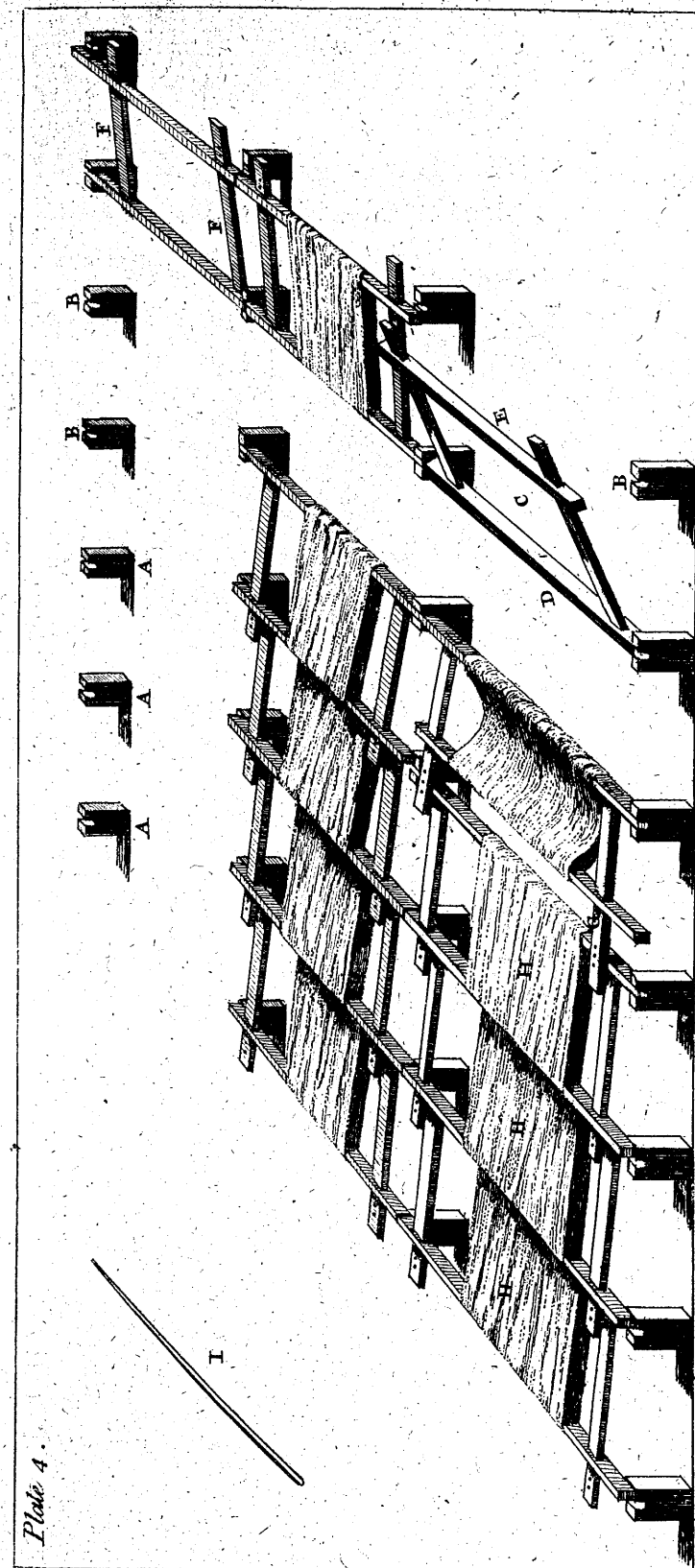


Plate 4.

