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REFLECTIONS  
ON THE  
IMPORTATION  
OF  
BAR-IRON,  
From our own  
Colonies of NORTH-AMERICA.

IN  
Answer to a late Pamphlet on that Subject.

HUMBL Y  
Submitted to the Consideration of the Honourable the  
HOUSE of COMMONS, *March 14, 1757.*



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# REFLECTIONS

ON THE

## Importation of BAR-IRON.

**T**HAT Iron, as a Metal, is of infinitely more real Use than Gold, is a Fact too obvious to stand in Need of Proof; since the very Necessaries of Life could neither be procured, nor any useful Art or Manufactory carried on without the Assistance drawn from that valuable Material. It must therefore be of the highest Import to every Nation to procure a Supply of this essential Article sufficient for all its Uses; and if such Nation could procure the Whole, or even but Part of it, out of its own Bowels, it would (in Proportion to the Quantity which it drew from within itself) have the less Reason to depend on a Supply from distant Countries, in Time of War, or any other Emergency, which very Emergency would render the Navigation more tedious and precarious. This is a Truth which I believe will hardly be contested. When therefore we see so considerable a Body of Men, as the Proprietors of the Iron-Works, (several of whom are Persons of the first Rank and greatest Property in the Nation) treated as the lowest and dirtiest of Men. represented so mean as to prefer their own Interest to the general Good of the whole Community, and stigmatized with the opprobrious Name of *Monopolizers*, an Appellation calculated to expose them

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to the Fury of popular Resentment; Self-Defence then becomes a *Duty*, and when the Case is *fairly* stated, the *Cause* of the Proprietors of the Iron-Works will appear to be the *Cause* of the *Publick*.

A late Pamphlet avowedly written to procure the Importation of Bar-Iron from *America* to every Port of this Kingdom *Duty-free*, abounds with *Invectives* of this Nature. It is fraught with bold Assertions without Proof, gross Misrepresentations, and groundless Suggestions; and an Air of Popularity is thrown over the whole. To remove therefore those *Impressions*, which the Varnish of Popularity may make upon those who are either Strangers to, or have but lightly consider'd the Subject, I shall

I. State the Case of the Iron-Works in this Kingdom.

II. Shew the Nature of the Supplies of Iron which we receive from *Russia* and *Sweden*

III. Prove, that the Detriment arising to the Nation from this Bill, if it should pass into a Law, would greatly outweigh the Benefits proposed by the Importation of Bar-Iron *Duty-free* from *America* to every Port of this Kingdom; and I shall consider the Objections of this Writer, as they fall under each respective Head.

Iron is the natural Produce of this Island, as well as Tin, Lead, and Coals, and consequently a considerable Part of our *intrinsic national Wealth*. Our Mines of this most *useful* of all Metals are inexhaustible, and would afford a *Quantity* equal to the greatest possible Demands of this Nation, as far as the Quality will admit of. We have Hands and Industry for Labour, Rivers proper for the Motion of Mills and other Engines, and waste Lands sufficient for the Production of Cord Wood, the want of a proper Quantity of which is the only Disadvantage we labour under: but still a Disadvantage which might easily be removed by proper Attention and Encouragement. Could we raise a proper Supply of Cord Wood, it would be a great Inducement to open new Mines, some of which might per-

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haps produce Iron of a superior Quality to any we have at present.

As the Case now stands, we have 109 Forges in *England* and *Wales*, exclusive of the Works in *Scotland*. Of the Produce of the 14 Forges in *Surry*, *Kent*, and *Sussex*, we have no certain Account; but the annual Produce of Iron made in the other 95 Forges amounts to 16,000 Tons. The Number of Hands employ'd in making so large a Quantity of Iron, and reducing it to different Assortments proper for the Handy-craft Trade is so well known, that I have no Occasion to speak of it: But the Quantity of Wood made use of (allowing eleven Cords to every Ton of Iron) amounts to 176,000 Cords of Wood. How great a Number of Acres are requir'd to produce this Wood, and how large a Supply of Bark this vast Quantity of Wood annually yields to the Tanners may be easily imagin'd. An Article so essential to the very *Being* of the Leather Trade in this Kingdom; yet as it is an Article strongly in Favour of the Proprietors of the Iron Works, the Writer abovemention'd has very *prudently* passed it over in silence, an Omission however which every unprejudiced Person must deem extremely unfair.

But as neither the *Quantity* or *Quality* of our Iron will answer the Demands of our Country for every *particular Use*, we are obliged for a Supply of *proper* Iron to have recourse to.

2. *Sweden* and *Russia*, the Nature of which Supply, I am now to consider. It is self-evident that Iron is of *different Kinds*; that each *different Kind* has *peculiar different Qualities*, and that each *different Quality* is adapted to *peculiar different Uses*.

Hardness is the *Quality* in which the *British* Iron is found to be deficient. Hence arises the Demand for an Iron proper to convert into Steel, the Manufactory of which makes a very extensive Branch of the Commerce of this Nation. *This Quality* is likewise absolutely necessary for the Construction of Anchors, Chain-Plates, and other Articles in Ship-Building, &c. the want of this *Quality* in our own Iron oblig'd, and (unless this Defect can be remedied) will ever oblige

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us to have recourse to *Sweden*, as the *Swedish* Iron is of all others the most applicable to these Uses. As the *American* Iron, from Experience, is found to be equally deficient with *English* Iron in the Quality of Hardness, and consequently as incapable, by its very Nature, of being applied to the Uses of *Swedish* Iron, it must follow, that it cannot possibly supply the Defect of that *essential Quality* so much complain'd of in the *English* Iron; since by all Experiments hitherto made, it invariably appears to be of the very *same Nature*; consequently it can never, in the very Nature of Things, interfere with the *Swedish* Iron; nor save any Part of those Sums which we are obliged to send annually to *Sweden* in Exchange for that *necessary Commodity*.

*Swedish* Iron is in this Light, in the strictest Sense of the Word, a *Naval Store*, and how necessary Naval Stores are to a commercial Nation, and how essential they are to our very *Being*, as a Maritime Power, we leave to every Man's Judgment to determine.

*Russia* is a Country which enjoys more *natural Advantages*, with respect to Commerce, than any other Country in the known World. The Extent of her Dominions is immense, and stretches through a variety of Climates. The Number and Size of her Rivers open a Communication not only through every Part of her wide extended Dominions, but into almost every Part of the Globe, and the Carriage by Sledges is so very cheap and commodious, that the most severe Winter rather facilitates than obstructs this Communication. The Cheapness of Land and Labour exceeds that of every other Country, and enables her, not only to supply all her own Wants of Naval Stores of all Kinds, but in a great Measure the large Demands of this Island. Our *Russia* Company imports annually from 12 to 15000 Tons of Iron, which is all made in *Siberia*, a Country superior in Extent to all our *American* Plantations put together, and at least equal to them in every Advantage, with respect to Naval Stores. Land is there at least as cheap, and Provisions as plentiful as in *America*. The Wood of their vast For-  
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rests costs no more than the Trouble of cutting, and the Pay of a Labourer *per Diem*, does not exceed an *English* Half-penny. To crown these *natural Advantages*, they are inaccessible to a foreign Enemy, and consequently in no Danger of Invasion from any ambitious Neighbour. How large a Quantity of Iron the People in *Siberia* are able to make may be gathered from the following Relation, "When the Empress *Anna* declared War against *Sweden*, one *Demetoff*, chief Master of the Iron Works in *Siberia*, proposed an effectual Method of ruining *Sweden*, without striking a Blow." His Proposal was this---"That if the Empress would secure to him the sole Property of the Mines in *Siberia*, for a Time specified in his Proposals, he would engage at all Times to sell his Iron Thirty *per Cent.* cheaper than the *Swedes* could possibly afford to sell theirs; and even to reduce the Price of his still lower if it should be found expedient." The Proposal was not indeed accepted, as the Court was afraid to trust so much Power in the Hands of *one Man*, in a Country at so vast a Distance from the Capital. This is a Fact extremely well known to several Merchants now living, who at that Time resided in *Russia*.

*Russia* Iron though as yet inferior to the *Swedish*, is still as far as we can judge, superior in Quality to the *English* or *American*, which are both relatively soft, when compared with the Iron of the *North*, and consequently less proper for the Conversion into Steel.

It is supposed that all the various Kinds of Iron are capable of being converted into Steel; but of all the Sorts of Steel that are made from the *Swedish Orgrund* Iron, is by much the best that we are able to prepare in this Nation, nor can we possibly make the fine edged Tools without it. If then Steel prepared from *Swedish* Iron only is so essentially necessary to so considerable a Branch of the Iron Manufactory, and the *Swedish* Iron is equally as necessary for the Construction of our Shipping, it amounts to the Force of a Demonstration, that *American* Iron, which is confessedly destitute of those valuable Qualities, can never possibly interfere with

with, or lessen the Demand for that Iron which we are compelled to buy from Sweden.

If on the other Hand *Russia* is able to make so immense a Quantity of Iron as I have already shewn; if she can sell that Iron to us at a much lower Price than our *American* Colonies either can, or in all human probability ever will be able to afford it; the Consequence is equally as certain that the *British* Iron, and that only must be the Sacrifice.

The Writer seems greatly alarm'd, and endeavours to alarm his Readers too, at the present Connection between *France* and *Russia*, which he urges as a conclusive Argument in Favour of the Bill: But the Man must be a shallow Politician indeed, who does not know that there can be no durable Connection between Nation and Nation, but what is founded upon mutual Interest, and that the late patch'd up Affair between those two Powers is (like his seeming Fright) no more than a temporary Expedient just to serve a present Turn. Interest is the only Tye between Princes; and all other Alliances, whether founded on Inter-Marriages or present political Exigencies, must give way as soon as ever they clash with this indissoluble Tye.

Two Thirds at least of the *Russian* Exports are taken off by *British* Subjects, and the Balance of this Trade is so much in Favour of *Russia*, that she draws a great Part of the Bullion, which when coin'd circulates in Specie, from the *British* Dominions. And as *Britain* is the chief Mart, at which *Russia* can vend her Exports, the Commerce with *Britain* will be of infinitely greater Value to her, than any Advantages she can ever reap from an Alliance with *France*. How dear this Commerce is to *Russia*, will appear by the Privileges and Immunities which she has granted by express Treaty to the Subjects of *Britain*, in Preference to those of any other Nation: And when that able Minister *Monf. de Dieu*, Ambassador Extraordinary from the States General, in the Year 1745, tried every Method to procure a Treaty of Commerce for his Countrymen the *Dutch*, on the Plan of that between *Britain* and *Russia*: He was put off with this memorable

able Answer, " That when he could prove that *Russia* drew the same Advantage from the Commerce with *Holland*, which she did from the Commerce with *Britain*, that then the *Dutch* should receive equal Favour with the *British* Subjects." A Fact well known to the noble Lord who resided at that very Time at *St. Petersburg*, as Ambassador Extraordinary, and Plenipotentiary from his *Britannic* Majesty. *Russia* always looks upon *Britain* as her hereditary Friend, and even when the Differences between his late Majesty and *Peter the Great* arose to so great a Height, that the Port of *Revel* was actually block'd up by a *British* Fleet, under the Command of Sir *John Norris*; yet the *British* Subjects in *Russia* receiv'd the same Protection, and the same Favours from that great Prince, as they did before that Indignity was offer'd. A Behaviour which undoubtedly arose from a Sense of those signal Advantages which *Russia* receiv'd from *Britain*.

I am sensible, that our Commerce with *Russia* lies open to a very popular Objection, drawn from the large Quantity of Bullion which we annually pay to *Russia*, where the Balance is considerably against us; but I shall refer my Reader for my Answer to this seemingly formidable Objection to the

3d Place, where I now come to prove, That the Detriment arising to the Nation from this Bill, if it should pass into a Law, would greatly outweigh the Benefit proposed by the Importation of Iron Duty free from *America*, to every Port of this Kingdom; and I shall at the same Time consider this Writer and his Objections.

That Colonies under proper Regulations are of great Service to a Nation, is an undoubted Truth; and that they ought to receive the utmost Encouragement (as far as is consistent with the real Interest of their Mother Country) is equally as certain. But if they grow up to a State of Independance, or if they draw off too many useful Hands, or interfere with those Manufactures, which are the chief Source of the Wealth of their Mother Country, they may at last prove



prove the Destruction of that Nation to which they ow'd their *Being*—*Rome* and *Carthage* may in some Measure, ascribe their Ruin to the Number and Extent of their Colonies; and *Spain*, which not two Centuries ago, aim'd at universal Monarchy, is now, by the Loss of her most useful Hands, which together with her Industry pass'd over into *America*, dwindled into little more than the Bullion Carrier of *Europe*, which she was so lately at the Point of giving Law to.

Though (I hope) no Danger of that Kind will ever be apprehended from our Colonies, yet within these few Years, have they not shewn an *encroaching* Spirit with respect to the Manufactures of their Mother Country? Are they not encourag'd in the Production of every Article which does not interfere with the immediate Produce or Manufactures of *Britain*? Are they not encourag'd to import as great a Quantity of *Raw* Materials as they are able? Yet did they not rival us so far in the Hat Manufactory, that the Legislature in the Year 1733, were oblig'd to restrain them by a Law, without which this Nation must have inevitably lost that valuable Manufactory? Do they not however still continue to manufacture Hats? Have they not set up many Looms both for Woollen and Linen Cloths, in Spite of all our Laws and Restrictions? Was not a large Præmium allow'd by the Government of *New-England* to the *American* Manufacturer for Scythes, Nails, &c. out of their publick Money, and is not the Demand for Scythes from this Country for that Colony now at an End, and does not their Demand for Nails, and such Edge Tools as may not require, by the Uses to which they may be adapted, so fine Steel as that which is converted from the *Swedish* Iron, diminish annually? But I shall make no more Reflections upon the Behaviour of those Colonies, which at this Time may be term'd invidious, since their present Distress calls loudly for the strongest Assistance from their Mother Country?

That Iron and Timber are of the most essential Use to this Country must be allow'd; and that we were able

able to produce a Quantity of each of those Articles equal to our Wants from our own Island, must be the sincere Wish of every Lover of his Country. Whatever Scheme therefore tends to lessen the Production of those valuable Materials, must be highly injurious to our own Country.—But as this Bill, if it should pass into a Law, would not only lessen, but in the End destroy the Productions of those Materials; (I mean *deprive* us of the very Means of producing Iron from the Ore to a State fit for the Manufacturers) we have all the Reason to hope from the Wisdom and Sagacity of a *British* Parliament, that this Bill will never pass into a Law. The two first of these Propositions will scarce be deny'd by the most strenuous Advocate for this Bill; the Conclusion therefore drawn from the Premises remains only to be prov'd, which will bring the Point in dispute to a short Issue.

It is a well known Fact, that there are many Mines of Iron in *England* and *Wales* yet unopen'd for Want of proper Encouragement, and it is no less certain, that *Scotland* abounds both with Wood and Mines of Iron. It is no less certain, that one great Obstacle to Undertakings of this Nature, of late Years has been, least a Bill for importing *Bar Iron* Duty free from *America*, into all the Ports of this Kingdom, should pass into a Law: And an Attempt of this Kind made in the Year 1738, actually quash'd a very large Subscription, enter'd into but a little before that Time, for erecting Iron Works in *Scotland*. Thus the Fear that a Bill of this Kind should either pass then, or might succeed at some other Time, render'd a most beneficial Scheme absolutely abortive; hinder'd a considerable Increase in the Produce of our own natural Iron, and depriv'd both Parts of this Kingdom of the Benefit of so valuable an Acquisition. And this will ever be the Case as long as this Bill is held like a Rod over our own Iron Works.

If the bare Terror, occasion'd from a Bill of this Kind, has already had so bad an Effect upon the Progress of our own Iron Works, it must arise from

this Apprehension; that the inferior Price of the Bar Iron from *America*, would in the End silence our own Forges, and oblige the Owners of our Woodlands to grub them up, and convert them to some other Use, which might be more profitable. But we hope the Wisdom of the Legislature will free them from these Apprehensions, which are but too well grounded.

The Iron Mines in *America* are not only inexhaustible, but the Ore lies so very near the Surface of the Earth, that it may be extracted from the Mine with much less Labour, and at much less Expence than we can possibly do in this Country. Wood, the necessary Material for making Iron, is not only worth little, but in many Parts of that Country is a Nuisance; as it prevents the Owners from forming the Land into profitable Plantations. Thus the Price of Land and Wood in *America*, is little, if at all inferior to *Russia*; but *Russia* has so much the Advantage in the Price of Labour, and the Shortness, Cheapness, and Safety of Navigation (in Time of War) that *American* Bar Iron can never come in Competition with that of *Russia* at the *British* Market. The Labour in *America* is chiefly executed by Negroes, the Price of whom *per* Head, does not amount to so much as one Years Wages of a *British* Artificer. The hard Labour is done by the out-door Negroes, every Family of which has a small Portion of Land allotted them by their Master, on which they build their miserable Huts, and raise their own Provision; consequently the Expence of their Food is little, if at all felt by their Owner; and their wretched Cloathing can stand him in but a Trifle. The Price of the Labour of *British* Artificers in *America* is undoubtedly much higher than that of the same Kind of Artificers in *England*; but as most of the Negroes are capable of being form'd into good Artificers, as many of them actually are so; it is too evident, that notwithstanding the Charge of Freight, (which as Iron is brought in Ballast must be very small) and the Expence of Insuranc; the *American* Iron will always greatly undersell the *British* at Market. Consequently the Plea urg'd by this Writer,

(page 18.) in Favour of this Bill drawn from the Dearness of Labour in *America*, must fall to the Ground. But to avoid Altercation, and to place this Affair in the strongest Light, I shall bring a *Case* in *Point*, which I cannot only aver to be true to my own certain knowledge, but it is a Fact well known to every Exporter of Hats from this Country to the *West-Indies*.—In the Year 1729, I bought a Beaver Hat at *Antigua* of a *Rhode* Island Trader for 13 s. 6 d. Sterling; at my Return the Year following, I shew'd the same Hat to a noted Maker in *London*, who assur'd me, that he could not afford to make one of equal Goodness with mine for 30 s. Now, although the *American* bought the Beaver Wool (the raw Material) at a much cheaper Rate than the *English* Manufacturer possibly could do; yet if the Price of Labour was so excessively high in *America*, as this Writer represents it to be, how was the *American* Trader able to sell his Hats above 100 *per Cent.* cheaper than the *British* Manufacturer could afford to make them for in *London*, notwithstanding the Expence of Freight to *Antigua*, and the Risque he must run from the *Spanish Guarda Costa's*. The Legislature therefore very wisely endeavour'd by an Act of Parliament, to suppress a Manufactory in *America*, which must have been so fatal to our own in *England*. Now if the *American* Manufacturer of Hats, had been permitted to have imported his Hats *Duty free* to this Island, I leave this Writer to judge, whether we should have had a Hat-maker left in *England*, notwithstanding the greater Expence of the Freight from *Rhode* Island to *Britain* than to *Antigua*. Negroes do all the laborious Work in *America*. They work as many Hours *per Diem*, as the *British* Labourer, under the Inspection of a strict Overseer, who is never sparing of the most severe Correction if they are idle, of which I have seen many Instances that were even shocking to human Nature: Spirituous Liquors, the *Bane* of the *British* Labourer, are out of the Reach of the Negroe, why therefore the Negroe should not be as strong and as capable of hard Labour as the *British* Labourer, is to

me incomprehensible; nay, if we consider the *enervating* Quality of spirituous Liquors, from which it is impossible to debar the *British* Artificer, I should imagine the *Negroe* to be much more so. If therefore the *American* by the very Situation of his Mines, can raise his Ore with much less Labour than the *Briton*; if by the inexhaustible Store and Cheapness of his Charcoal, he can run it into Pigs, and forge it into Bars, (which is by much the most laborious Part of the Work) by the Assistance of his *Negroes*, it is evident to Demonstration, that the *American* Bar Iron (if allow'd to be imported *Duty free* into every Port of *Britain*, the Point concluded for by this Bill) can be afforded so much cheaper than the Native Bar Iron of *Britain*; that those fatal Consequences which we so much apprehend must inevitably ensue, *viz.* the silencing of our Forges, and the Destruction of our Woods, which constitute so large a Part of the *landed Interest* of this Kingdom.

I am at a Loss to know what this Writer means (p. 23.) by the Parallel he draws between *Wool* and *Iron*. I know of no foreign *Wool* imported *Duty free*, the *Spanish* *Wool* only excepted, which is as essentially necessary to the Construction of our Superfine Cloths, as the *Swedish* *Iron* is to our Steel Manufactory, or our Shipping. We buy them both from those Countries for the very same Reason, which is, *because we cannot do without them*. If we could grow as fine *Wool* at Home as the *Spanish*; or could procure *Iron* of the same *Quality* as the *Orgroond*, either from the Mines of *Britain* or *America*, should we buy one Ounce of *either* from *Spain* or *Sweden*? Can we import *Wool* from any Country in *Europe* (*Spain* excepted) equal in Goodness, to what grows in our own Dominions? If *Wool* could be procur'd of equal Goodness from *Flanders*, *Germany* and *Poland*, (p. 24.) would *France* purchase ours at so high a Price from our *Owlers*? Would our *Owlers* run the terrible Hazard of Outlawry, and inevitable Death (if taken) if they did not think the Profit *worth* the *Danger*? We grow already more *Wool* than we can consume, witness the present

present very low Price of it, notwithstanding the vast Quantities of which are annually smuggled into *France*. We permit *Irish* *Wool* indeed, to be brought into a few licenced Ports in *England*, not because we really want it, but to prevent that most valuable Material from falling into the Hands of our hereditary Enemies. Alas! the *Woollen* Manufactory has long been in a declining Condition, and I fear declines daily; should we then be oblig'd to grub up our Woodlands, and convert them into *Sheep-Walks*, as I have plainly prov'd, this Bill will oblige us to do, by silencing our Forges, the *Wool* Growers might then raise an Outcry indeed, (p. 23.) since *Wool* in that Case, must either be a *mere Drug* at Home, or increase the *Smugglers* Harvest for a *French* Market.

As this Bill proceeds on the Supposition, that the Importation of *Bar Iron* from *America* *Duty free* to every Port in *England*, will save us those large Sums of *Money* which we send annually to the North for *Iron*, I shall here consider that very popular Topick, which is the Subject of so much plausible Declamation, and appears so formidable to those who are Strangers to the Genius of Commerce.

That *Naval* Stores of all Kinds are essentially necessary to our very Existence as a trading Nation, and a maritime Power will be granted.—Oak we have large Quantities of for *Plank* and *Timber*, and superior in *Quality* to any yet known for those Uses. Elm we have for *Keels* in sufficient Quantity, and sufficient for our largest Demands for that Purpose. How wrong a Measure must it then be to pass any Bill into a Law, which tends so manifestly to lessen, if not totally destroy the Production of those valuable Stores in this Island, which must be the Consequence if this Bill should pass into a Law, as I shall shew presently, *Masts* for our largest Ships we are oblig'd to fetch from *New-England*; because we cannot procure any of so very large a Size from *Russia*. *Masts* for all our Ships of War from fourth Rates downwards inclusively, we import from *Russia*; because we not only find the *Russian* *Masts* to be superior in *Quality*



to any of those brought from *New England*, but also by the Shortness of the Distance less expensive, and much more easily imported from thence than from *New England*, especially in Time of War. Necessity therefore alone compells us to go for Masts to *America*, because we can procure no others of equal Size, and at the same Time cannot fit out our 1st, 2d, and 3d Rates without them. Pitch and Tar we are obliged to import in large Quantities from the North; and must be compell'd to do it till our *American* Tar can be made equal in *Quality* to the Tar of *Sweden* and *Norway*. Hemp we have entirely from *Russia*, which is better for Cordage, and cheaper than any we can possibly procure from any other Country. We receive likewise from thence large Quantities of Flax and Sail-Cloth, as our own Manufactory of Sail-Cloth is yet but in its Infancy. Iron for Anchors, &c. we fetch from *Sweden*. It is allowed that for all these Articles, including Iron, Pot-Ash, Bees-Wax, &c. from *Russia*, we pay annually a very considerable Balance in Foreign Coin, which in the Commercial Language is termed Bullion.

I have fairly stated this very popular Plea, and I must now ask, --- which Way is the Exportation of Foreign Coin or Bullion in the least prejudicial to the national Interest? The national Coin is render'd sacred by Law, as it ought always to be in every Country which is destitute of Mines of Gold and Silver; but Foreign Coin, or Bullion, is in a commercial Light as much a Commodity as Lead or Tin. Industry is the true Source of Wealth, and whilst we have that, our Manufactures will produce us Gold and Silver.

If therefore the Argument drawn from the Exportation of Bullion, be at all conclusive, it will conclude much more strongly against the *East-India* Company, which pays annually a much larger Balance in Bullion for Commodities, some of which are useless, and many others mere Articles of Luxury only; whereas the Commodities imported from the North are absolutely necessary to our very Exigence, as a Trading Nation, and a  
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Maritime Power. Yet that Company always has received, and does still receive, the greatest Support and Encouragement from the Wisdom of the Legislator.

This Writer triumphs much (p. 13) on the happy Consequences of making Pitch and Tar in our own Plantations. I believe every Man who sincerely loves his Country, is as much pleased with the Success of that Undertaking as himself. For as Pitch and Tar never were, nor ever can be produced in our native Country; a Scheme of that kind never could do the least possible Injury to our *Landed Interest*, which ought always to be the *first Object* of our Concern. But the Case of the Importation of Bar-Iron, as contended for in this Bill, is widely different; since (if it should pass into a Law) it must give a fatal Blow to a considerable Part of our *Landed Interest*. I have already proved this, and shall confirm it still more by the following Consideration; --- That by silencing our Forges, it will oblige us to grub up our Wood Land, and in the End prove the Destruction of our Timber, and the ruin of our Leather Trade. Every one who is acquainted with the Nature of Vegetation, must be sensible how absolutely necessary Coppices are for the Growth of Timber, since the young tender Saplings could neither stand the Cold in Winter, nor the Heat in Summer, without the Defence and Shelter of Underwood. Now the Method of the Wood-Owner is this, --- He divides his Wood into a Number of *Cuts*, proportionable to the Number of Years required by the Soil to produce Wood fit for Charcoal. At the first cut he leaves all those Saplings which appears most likely to come to good Timber, and he does the same in every other Cut till he returns to the first Cut, which now succeeds in Rotation, and affords a fresh Supply of Charcoal. He then takes away the least promising of the Trees left before for Timber, and so on in every succeeding Cut, gradually thinning the Timber Trees in every Cut, as they advance in Size, 'till he leaves room for a sufficient Supply of Nourishment for every Tree, 'till it comes to its full Growth. That  
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this is the constant Practice of the Wood-Owners, who supply the Forges, may be proved by ocular Demonstration, to any one who will look over the large Old Woods destin'd for that Purpose, which abound with Timber Trees up to the Growth of even *one hundred Years*. Thus our Iron Furnaces and Forges are *real Nurses* for Coppices and Timber, and *real Wood Preservers*, instead of *Wood Devourers*, as this Writer (p. 22) is pleas'd *ludicrously to stile them*, in which *ludicrous Term* consists the whole Force of his *Proof*.

How essentially necessary the Oak-Bark is to the Manufactory of Leather, every Tanner can inform us. By the Assistance of our Coppices preserved for the Use of our Forges, we are able not only to supply our own Demand, but *Ireland* likewise with this most useful Material. I again repeat the *Assistance* of our Coppices *preserved* for our Forges, because the Supply of Bark from them is, and (whilst the Forges remain) ever will be *permanent and constant*, whilst the Supply from *casual Falls* of Wood must be extremely *precarious*. For as the Prospect of Profit from Timber only is extremely distant, the Profit arising from Bark alone would never pay the Rent of the Ground which the Underwood must shade. Thus our Timber, our Coppices, and our Bark, must (if this Bill pass into a Law) all sink in one common Ruin with our Forges. As this Writer has no where pointed out to us any Resource for a Supply in case of such an Event; I suppose he expects that we should import *this Material* too from *America*, and reserves it to make up his Cargo of *light and heavy*.

I shall pass over his Assertions relating to the *Qualities* of *American Iron*, (p. 11 and 16) because *bare Assertion* without *Proof* is of no Weight on either Side, and proper Proof will be undoubtedly required by those who are to be the *final Judges*. But I must just remark upon his Assertion, (p. 13) that Iron in Bars can be more commodiously *stow'd* in the *Hold* of a Ship than Iron in Pigs; that from the little Knowledge I have of the Stowage of a Ship) it is just as absurd, as if any one should assert, that Wood in Plank

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is of more commodious *Stowage* in the *Hold* of a Ship than Wood Billets.

The Argument on which this Writer depends most, is drawn from the following Consideration, (p. 15) that as the *Americans* are not able to take from us a Quantity of our Manufactory equal to their Demands for them, because they are not able to make proper Returns for such Manufactures, by way of Barter or Payment; therefore if the *Americans* were allowed to send us *more raw Materials*, they would be able to take *more wrought Goods* from the *British* Manufacturers in Exchange, a Commerce which would prove to be most highly advantageous to both Countries: Hence he infers the Reason (which he calls the most interesting to *Great Britain*) why this Bill should pass into a Law.

In answer to this I must observe, with respect to the Importation of Bar-Iron, (the *only Material* contended for in this Bill) the very *Reverse* of this Proposition is *most probable*; and in Cases of this Nature we are able to reason on both Sides only from Probability.

If the *Americans* would supply us in Barter, or Payment, with unmanufactured Commodities, such as Iron in Pigs, Hemp, Flax, Pot-Ash, Bees-Wax, and such kind of *raw Materials*, or with such kind of manufactured Commodities as would neither interfere with our Landed Interest, or Home Manufactures, as Pitch, Tar, Yards, Masts, and such like, his Argument would be extremely just. But if the *American* Manufacturer, by the Cheapness of his Iron, by the Profit of manufacturing that Iron at Home, by saving the many Expences, and by avoiding the many Delays and Disappointments, and the Damage which must necessarily attend the Exportation of his Bar-Iron to *Britain*, and the Importation of the manufactured Goods back again to *America*, will upon an Average reap an Advantage of *45 l. per Cent.* then the Probability will be strongly against the Benefits proposed by this Bill.

It is objected by this Writer (p. 17) (who treats all Apprehensions of this Nature as Chimerical) "that

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“ nothing but *absolute Necessity* can oblige the *Americans* to commence *Manufacturers*, which *Necessity* *must arise* from our not allowing them *the Means* of purchasing our *Manufactures*; and that this *their Necessity* has been the Cause of their setting up so *Works* already of different Kinds.”

But this Objection (by this Writer's own Confession) *comes too late*. For he acknowledges in his very Objection, that the *Americans* have *already set up many Works* of different Kinds, from a *Necessity* which (as he affirms) is *caused by our not allowing them the Means of purchasing our Manufactures*. But this Writer must pardon me if I affirm, that this Assertion is not strictly true. In the late War with *France*, many *Works* were set up in *America*, particularly *Looms* for *Woollen and Linen Cloth* in such Number, that a Governor of *Maryland* reported to the Secretary of State for that Department, “ That the Houses in *Maryland* alone were full of them.”

The *true Plea* for this Proceeding of theirs, was this; that the Merchant Ships freighted with those Commodities for the Use of our Northern Colonies, were *detain'd* so long at *Spithead*, by contrary Winds, or waiting for Convoy, that the Goods were either *so much damag'd* by lying so long on Board, or so dear from the Expences necessarily occasion'd by that Delay; that they were either *utterly unserviceable*, or offer'd to Sale at a Price *too high for their Ability to purchase*. This was the *true State of the Case*, which arose not from *our Fault*, but from our *Misfortune*, since the *British* Exporters in that Case, must be the *greatest*, if not the *only* Sufferers. Now as we never have been, nor can ever hope to be *long at Peace* with *France*, the *same Plea of Necessity* will be always a ready Excuse for the *Americans* to make in Favour of *new Works*, and *new Manufacturies*. For can human Power insure a fair Wind; or can the Necessities of Government always permit them to provide an *immediate sufficient Convoy*, when at War with a formidable Power?

Consequently this Bill (if it should pass into a Law) would be so far from procuring to us the Benefits proposed

posed by its Advocates, that the *Americans* will be no more persuaded to *break up their already numerous Works and Looms*, merely to please the *British Manufacturers*, than (to make Use of his own Concession, in his own Words, p. 17.) “ They will *now* be persuaded to “ break up their numerous Iron Works to please the “ Iron Masters of *England*.”

To enforce this Objection, this Writer asserts, (p. 18.) “ That a supposed *Rivalship* between our Colonies and us is *impossible*, as far as concerns the Iron “ Manufactory,” from the high Price of Labour in *America*; from the Inability of the Negroes to perform the Work *so cheap*, or *so well as White Men*; and from the Want of *Pit-Coal*; as he looks upon this Stroke as *decisive*, he triumphs greatly, (p. 19.) on his imaginary Victory. But if we bring this sanguine Writer to the Test of Truth, we shall find him just as *unfortunate* in his *Assertions* in this Objection, as he was in those in the former.

The Objection drawn from the *high Price of Labour* in *America*, and the *supposed Inability of the Negroes* to perform the *Work* in the Iron Manufactory *so cheap and so well as white Men*, I have spoke to and disproved already. But this Writer asserts, “ That the *Americans* have *no Pit-coal* on this Side of the *Apalathean Mountains*, a Space which comprehends almost all the Land worth inhabiting which the *French Cosmographers* are pleas'd to allow us on the Continent of *America*. We on the other Side affirm, that they have *Pit-Coal*, and may find vast Quantities of it in that immense Tract of Land which lies on this Side of the *Apalathean Mountains*, as soon as their troublesome Neighbours will suffer them to live in Peace. But admitting even that they had no *Pit-Coal* how would the want of that render their *Iron Manufacturies* unable to rival ours? It is a well known Fact; that Iron can be *slit and manufactur'd by hand* at a reasonable Expence without the Aid of *slitting Mills* where there is great Plenty of *Charcoal*; and that we make use of *Pit-Coal* in our own Country; because it is much cheaper to us than *Charcoal*. The Argument will then

then turn upon this short Point.—Either the *Americans* have Pit-Coal or they have not. If they have Pit-Coal, the Objection drops; if they have it not, they must find their end answered as well by the Use of Charcoal. For it has been proved at the Board of Trade and before several Committees upon former Occasions, by the clearest Evidence, “ That so long ago  
 “ as the Year 1733. there were six Furnaces and  
 “ nineteen Forges in *New England* only; and that such  
 “ Improvements had been made there in the mechanic  
 “ Arts; that Hoes, Axes, Scythes, Nails, and other  
 “ Iron Utensils, were made there not only for their own  
 “ Use, but exported from thence to the other Planta-  
 “ tions.

This Writer asserts, (p. 18.) “ That the *Swedes* are  
 “ far behind us in the Iron-Manufacture (he might  
 “ have added the *Russians* too) and he imputes “ this  
 “ Backwardness of theirs in the Iron-Manufacture to  
 “ the Want of Pit-Coal because they cannot procure  
 “ them but at such a Price as will necessarily turn the  
 “ Balance in our Favour.

But if Charcoal will supply that Defect, of which both those Countries possess an inexhaustible Store, besides the excessive Cheapness of their Labour, the true Cause must be (and it really is in Fact) the Want of Skill and able Artificers in the Iron-Manufactures, in which Articles it is well known that the Artificers of our own Country exceed all the rest of *Europe*. This Writer apprehends (p. 9.) “ that as both *Swedish* and  
 “ *Russia* Iron are liable to the Comptroll of their respective  
 “ Governments, the Exportation of their Iron may  
 “ be stopp'd at Pleasure (and from the present Appearance of publick Affairs he knows not how soon) or  
 “ may have additional Duties laid upon them in proportion as those Governments shall take a *Disgust*  
 “ to or perceive that the *British* Nation cannot do  
 “ without their Iron.

His political Apprehensions arising from the present Appearance of publick Affairs in the North, I have already shewn to be groundless. But if they should stop the Exportation of their Iron from any *Disgust* to  
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the *British* Nation, we may venture to affirm, that this *Disgust* will arise from their Jealousy of our Colonies if this Bill should pass into a Law. I say this supposed *Disgust* will arise from *this Jealousy only*. For it is certain that both *Sweden* and *Russia* are jealous, lest our Colonies should in time deprive them of the Trade with *Britain*, the Sweets of which they have so long experienced. Should they stop the Exportation of their Iron at *this time* (as this Writer apprehends they may do it soon) how deplorable our Situation must be is but too evident, since we have no other Resource; a Consideration which should induce us to reject this Bill, and encourage the opening of new Mines in *Great Britain*, and increasing the Quantity of our own Iron, which as it could give no Umbrage to those Powers; would be the best Remedy for the Inconveniencies arising from the Want of Iron (if true) which are so loudly complained of by this Writer.

I sincerely wish we could supply ourselves with Hemp, Flax, as well as with Pitch and Tar from our Northern Colonies; but alas! this Writer has been unfortunate in the Choice of his Spot (p. 14) for that purpose; since by Account received from *America* dated last *October*, it too plainly appears, that as we have been obliged to leave the Country of the Six Nations to the Mercy of the *French*, “ That fine  
 “ Country on the *Mohawks* River down to *Albany*, is  
 “ by this Step left open to the Ravages of the *Enemy*, and an easy Passage opened to the *French* and  
 “ their *Indians* into the Provinces of *Pensylvania* and  
 “ *New Jersey*.” If then Affairs of that Country are in so desperate a Situation, as they are represented to be by our last Accounts, God alone knows how long our Northern Colonies may continue in our Possession.

F I N I S.



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The first part of the document  
 discusses the general principles  
 of the system and the  
 various components involved.  
 It is divided into several  
 sections, each dealing with  
 a specific aspect of the  
 overall process. The first  
 section covers the basic  
 concepts and the second  
 section describes the  
 hardware requirements.  
 The third section discusses  
 the software development  
 and the fourth section  
 covers the testing and  
 validation procedures.  
 The final section provides  
 a summary of the work  
 done and the conclusions  
 reached. The document is  
 intended for use as a  
 reference for anyone  
 interested in the  
 subject matter.