PREFACE.

AT a time, when the ſtudy of natural hiſtory ſeems to revive in *Europe*; and the pens of ſeveral illuſtrious foreigners have been employed in enumerating the productions of their reſpective countries, we are unwilling that our own iſland ſhould remain inſenſible to its particular advantages; we are deſirous of diverting the aſtoniſhment of our countrymen at the gifts of nature beſtowed on other kingdoms, to a contemplation of thoſe with which (at leſt with equal bounty) ſhe has enriched our own.

A judicious Foreigner has well remarked, that an *Engliſhman* is excuſable ſhould he be ignorant of the papal hiſtory, where it does not relate to *Great Britain*; but inexcuſable ſhould he neglect inquiries into the origin

of parlements, the limitation of the royal prerogative, and the gradual deviation from the feodal to the preſent ſyſtem of government.

The obſervation is certainly juſt, and the application appears too obvious to be pointed out; yet the generality of mankind can reſt contented with ignorance of their native ſoil, while a paſſion for novelty attracts them to a ſuperficial examination of the wonders of *Mexico*, or *Japan*; but theſe ſhould be told, that ſuch a paſſion is a ſure criterion of a weak judgement: utility, truth and certainty, ſhould alone be the point at which ſcience ſhould aim; and what knowlege can be more uſeful than of thoſe objects with which we are moſt intimately connected? and where can we reaſon with greater certainty on ſuch points, than in our own country, where a conſtant recourſe may be had to the ſpecimen of what we have under conſideration? But theſe, and many other arguments for examining into the productions of our own iſland, may here be waved, as the admirable LINNÆUS has diſplayed them at large in an oration *, which for maſterly reaſoning,

* *Amœn. Acad. Tom.* II. p. 409. *Stillingfleet's Swediſh* Tracts, Tr. 1.

and

and happy ingenuity, may vie with the beſt compoſitions.

Yet, as that great naturaliſt has, in the ſame tract, publiſhed an eulogium on *Sweden*; and as an incitement to his countrymen to apply themſelves to the ſtudy of nature, enumerated the natural productions of that kingdom; we ſhall here attempt a parallel, and point out to the *Britiſh* reader, his native riches; many of which were probably unknown to him, or perhaps ſlightly regarded.

Do the heights of *Torſburg*, or *Swucku*, afford more inſtruction to the naturaliſt than the mountains of *Cumberland*, or *Caernarvonſhire?* whoſe ſides are covered with a rich variety of uncommon vegetables, while their bowels are replete with the moſt uſeful minerals. The *Derbyſhire* hills, abounding in all the magnificence of caves and cliffs; the mountains of *Kerry*, and that ſurprizing harbour the *Bullers* of *Buchan* *, may well be oppoſed to the rocks of *Blackulla*, or the caverns of *Skiula*. *Sweden* can no where produce a parallel to that happy combination of grandeur and beauty in *Keſwick* † vale, or

* Between *Aberdeen* and *Peterhead*.

† In *Cumberland*.

Killarny * lake; nor can *Europe* ſhew a natural wonder equal to the *Giant's Cauſeway* in the north of *Ireland*.

The excellence and number of our ſprings (whether medicinal or incruſting) are well known to common inquirers.

Our minerals are as great in quantity, as rich in quality: of gold, indeed, we cannot produce many ſpecimens, yet ſufficient to ſhew that it is found in this iſland †; but ſilver is found in great abundance in our lead ores, and veins of native ſilver in the copper ore of *Muckrus*, on the lake of *Killarny*. The hæmatites iron ores of *Cumberland*, and the beautiful columnar iron ores of the foreſt of *Dean*, are ſufficient to diſplay our riches in that uſeful commodity. No country produces ſo great a quantity of tin as *Cornwall*; and that county, and ſeveral others in the north have been long noted for their inexhauſtible veins of copper; nor leſs famous

* In the county of *Kerry*.

† That our country produces gold, appears in Dr. *Borlaſe*'s Hiſtory of *Cornwall*, p. 214. So late as the year 1753, ſeveral pieces were found in what the miners call *ſtream tin*; one ſpecimen was as thick as a gooſe quill; others weighed to the value of ſeventeen ſhillings, twenty-ſeven ſhillings, and another even to the value of three guineas.

are

are the lead mines of *Derbyſhire*, *Cardiganſhire* and *Flintſhire*, which have been worked for ages, yet ſhew no ſign of the decline of their ſtores.

In all theſe, nature ſports with great luxuriancy; the cryſtallized lead ore of *Tralee* *, the fibrous lead ore of *Tipperary*; the laminated lead ore of *Lord Hoptoun*'s mines; the cryſtalized tins, and the figured ores of *Zink*, are equally noted for their elegance, ſcarcity, and richneſs.

The ore of *Zink*, or *Lapis Calaminaris*, is found in vaſt quantities in the counties of *Somerſet* and *Flint*; while *black lead* or *wadd*, a ſubſtance ſcarce known in other kingdoms, abounds in the mountains of *Cumberland*.

To the *Swediſh Petroleum*, we may oppoſe the Well at *Pitchford*, and that of *St. Catherine*'s near *Edinburgh*. Our amber and our jet, together with our inexhauſtible ſtrata of coal found in ſo many parts of this kingdom, will, in the article of bitumens, give us the ſuperiority over theſe ſo much boaſted productions of *Sweden*.

* In the county of *Kerry*.

To avoid a tedious enumeration, we ſhall only mention our wonderful mines of rock ſalt; our allum and our vitriol works; our various marbles, alabaſters, and ſtones; our moſt excellent clays and earths *; all which articles, and many more unnoted here, might have furniſhed us with an ample field for panegyric.

Our botanical productions are not leſs abundant; but the works of *Ray*, which have lately been much enlarged and methodized, according to the *Linnæan* ſyſtem, by the ingenious Mr. *Hudſon*, in his *Flora Anglica*, are a ſufficient diſplay of our vegetable riches.

Our Zoology would be a copious ſubject to enlarge on, but the work in hand reſtrains us from anticipating our reader's curioſity. We might expatiate on the clouds of *Soland* geeſe which breed on the *Baſs iſland*, or *Puffins* on that of *Prieſtholme:* on our fiſh, and other marine animals; on our inſects, and the various other ſenſitive productions of this kingdom; but we forbear a

* If the inquiſitive reader is deſirous of a farther account of the number and excellence of our ſubterraneous productions, we refer him to the learned Dr. *Woodward's* Catalogue of the *Engliſh Foſſils*, *London* 1729, particularly to p. 5.

parade

parade of uſeleſs declamation, and ſhall only add, that as few countries receive more advantages from their natural breed of quadrupeds, unmixed with any beaſt that preys on man, ſo, few can boaſt a greater variety of birds, whether local, or migratory.

This is a general view of the natural hiſtory of our own country; why then ſhould we neglect inquiring into the various benefits that reſult from theſe inſtances of the wiſdom of our Creator, which his divine munificence has ſo liberally, and ſo immediately placed before us? Such a neglect is certainly highly to be blamed, for (to expreſs ourſelves in the words of an eminent writer) "the Creator did not beſtow ſo much "curioſity, and workmanſhip on his crea-"tures, to be looked on with a careleſs in-"curious eye, eſpecially to have them ſlight-"ed or contemned; but to be admired by "the rational part of the world, to magnify "his own power to all the world, and the "ages thereof; and ſince the works of the "creation are all of them ſo many demon-"ſtrations of the infinite wiſdom and power "of God, they may ſerve to us, as ſo ma-"ny arguments exciting us to a conſtant fear "of

" of the Deity, and a ſteady and hearty obe-
" dience to all his laws." *

Much might be added to this ſubject, if conſidered in a theological light; but ſince the writings of *Boyle*, *Ray*, and *Derham*, fully prove that the ſtudy of natural hiſtory enforces the theory of religion and practice of morality, we had better refer to their works in general, than mangle them by imperfect quotations.

To exalt our veneration towards the Almighty, is the principal end of this ſublime ſcience; and next to that, the various benefits reſulting from it to human ſociety deſerve our ſerious conſideration.

To give an obvious inſtance: what wonderful changes have been made in human affairs by the diſcovery of an obſcure mineral. The antients, ignorant of the application of the magnet, timidly attempted a mere coaſting navigation; while we, better informed of the uſes of it, traverſe the wideſt oceans, and by the diſcovery of the new world, have layed open to ſcience, an inexhauſtible fund of matter.

The riſe and progreſs of medicine, kept

* *Derham*'s Phyſ. Theol. Book XI. c. 24.

pace

pace with the advancement of this moſt important diſcovery; and though neceſſity was the parent of the mechanic arts, yet they alſo throve, and grew to maturity, under the ſame influence.

Many more inſtances might be added to this brief view of the utility of natural knowlege; but we ſhall only give ſome of its uſes in the polite arts, which have hitherto been too little connected with it.

To inſtance particularly in painting, its uſes are very extenſive: the permanency of colors depends on the goodneſs of the pigments; but the various animal, vegetable, and foſſil ſubſtances (out of which they are made) can only be known by repeated trials; yet the greateſt artiſts have failed in this reſpect: the ſhadows of the divine *Raphael* have acquired an uniform blackneſs, which obſcures the fineſt productions of his pencil, while the paintings of *Holbein*, *Durer*, and the *Venetian-ſchool*, (who were admirably ſkilled in the knowlege of pigments) ſtill exiſt in their primitive freſhneſs.

But theſe advantages are ſmall, compared to thoſe derived from the knowlege of nature in the repreſentation of objects: painting is an

an imitation of nature; now, who can imitate without conſulting the original? But to come to what is more particularly the object of our inquiries; animal and vegetable life are the eſſence of landſcape, and often are ſecondary objects in hiſtorical paintings; even the ſculptor in his limited province would do well to acquire a correctneſs of deſign with a perfect knowlege of the muſcles of animals. But the painter ſhould have all this and more; he ſhould be acquainted with all their various tints, their manner of living, their peculiar motions or attitudes, and their places of abode *, or he will fall into manifeſt errors.

Plurimus inde labor tabulas imitando juvabit
Egregias, operumque typos, ſed plura docebit
Natura ante oculos præſens, nam firmat et auget
Vim genii, ex illâque artem experientia complet †.

* That great artiſt, Mr. *Ridinger*, of *Auſburg*, exceeds all others in the three laſt particulars; nothing can equal his prints of animals for propriety of attitudes, for a juſt idea of their way of life, and for the beautiful and natural ſcenery that accompanies them. His fineſt works are, his *Wilde Thiere*, *Kleine Thiere*, and *Jagdbare Thiere*; but there are ſcarce any of his performances that can fail giving pleaſure to all admirers of nature repreſented as herſelf.

† *Freſnoy de arte graph. lin.* 537.

Deſcrip-

Deſcriptive poetry is ſtill more indebted to natural knowlege, than either painting or ſculpture: the poet has the whole creation for his range; nor can his art exiſt without borrowing metaphors, alluſions, or deſcriptions from the face of nature, which is the only fund of great ideas. The depths of the ſeas, the internal caverns of the earth, and the planetary ſyſtem are out of the painter's reach; but can ſupply the poet with the ſublimeſt conceptions: nor is the knowlege of animals and vegetables leſs requiſite, while his creative pen adds life and motion to every object.

From hence it may be eaſily inferred, that an acquaintance with the works of nature is equally neceſſary to form a genuine and correct taſte for any of the above mentioned arts. Taſte is no more than a quick ſenſibility of imagination refined by judgement, and corrected by experience; but experience is another term for knowlege *, and to judge of natural images, we muſt acquire the ſame knowlege, and by the ſame means as the painter, the poet, or the ſculptor.

* See the Eſſay on the origin of our ideas of the ſublime and beautiful.

Thus

Thus far natural hiſtory in general ſeems connected with the polite arts; but were we to deſcend into all its particular uſes in common life, we ſhould exceed the bounds of a preface: it will be therefore neceſſary to confine our inquiries to the inveſtigation of a ſingle part of the material world, which few are ſo ignorant as not to know is divided into the animal, vegetable, and foſſil kingdoms.

Vaſt would be the extent of the inquiries into each of theſe; but though ambition may tempt us to pervade the whole field of ſcience, yet a little experience will open to our views the immenſe tracts of natural knowlege, and we ſhall find it an arduous taſk only to inveſtigate a ſingle province, ſo as to ſpeak with preciſion and certainty; without which there can be no real improvements in natural hiſtory.

For theſe reaſons, a partial examination of this ſcience is all that a conſiderate mind will aim at, which may perhaps be moſt naturally guided to give the preference to the moſt exalted ſubject of it.

Zoology is the nobleſt part of natural hiſtory, as it comprehends all ſenſitive beings, from

from reaſoning man, through every ſpecies of animal life, till it deſcends to that point where ſenſe is wholly extinct, and vegetation commences: and certainly none will deny, that life, and voluntary motion are ſuperior to a mere vegetating principle, or the more inactive ſtate of the foſſil kingdom.

Should we follow the train of reflections which naturally ariſe from the contemplation of animals, they would ſwell this preface into a volume: and ſhould we only mention the various uſes of *Britiſh* animals in common life, yet even theſe would greatly exceed the bounds to which we have thought it right to limit ourſelves. The knowlege of *Diætetics* is a neceſſary branch of medicine, as by a proper attention to that article, an obſtinate diſtemper may be eradicated, when common remedies have failed; but this can never be attained, without the ſtudy of Zoology, which aſſiſts us greatly in learning the different qualities of animal food; and how far a difference of nutriment may contribute to cure the diſeaſe.

Cloathing is eſſential, not only to our comfort, but ſubſiſtence; and the number of our manufactures, relative to this ſingle article,

ticle, demand our care for their extenſion and improvement; eſpecially as the maintenance of thouſands depends on theſe important branches of commerce; yet theſe may be enlarged, by diſcovering new properties in animals, or by the farther cultivation of thoſe already diſcovered. The ſcience of Zoology is requiſite for each of theſe; and if we reflect but a little on the unwearied diligence of our rivals the *French*, we ſhould attend to every ſiſter ſcience that may any ways preſerve our ſuperiority in manufactures and commerce.

Domeſtic œconomy is an object of equal conſequence; and the author* of the *Calendar* of *Flora* has eſtabliſhed the uſes of Zoology in this particular, with undeniable evidence. This excellent writer has united a happy invention, with the moſt ſolid judgment, and certainly merits the higheſt commendations, as a friend of human kind. Our ingenious countryman, and worthy friend, the late Mr. *Stillingfleet*, in the ſame year purſued almoſt the ſame plan as far as his time would permit, with equal ſucceſs,

* *Alex. Mal. Berger.*

and

and manifeſtly proved the utility of the project, in a learned diſcourſe prefixed to his work *.

If then Zoology can ſuggeſt ſo many hints towards enlarging and improving our manufactures and agriculture; we ſhall not think our time miſapplied, in offering to the publick, the NATURAL HISTORY of the *Quadrupeds* and *Birds* of GREAT BRITAIN. This compilation had its peculiar difficulties; but the labor of travelling through a dry arrangement of the ſubject, was very frequently alleviated by the beautiful ſpecimens we met with in our progreſs: beſides, we own with pleaſure that we have been greatly aided by the lovers of natural hiſtory, who ſince the appearance of the firſt edition have contributed to enrich the preſent with ſeveral valuable obſervations; by collecting and digeſting theſe materials, we have not only rendered the work more complete, but are alſo encouraged to trace the *Britiſh Zoology* through ſome of the remaining claſſes.

Let therefore every merit that may appear in the preſent edition, and every error that

* *Swediſh* Tracts, tranſlated from the *Amæn. Acad.* ſecond edition.

may have been ſuppreſſed from the former, be attributed to the kind informations we have received from our learned and ingenious friends; among whom we are ambitious of naming the Honorable *Daines Barrington*; the Reverend Sir *John Cullum*, Baronet; the Reverend Mr. *George Aſhby*, and the Reverend Mr. *Green* of *Cambridge*; *William Conſtable*, Eſquire; *Joſeph Banks*, Eſquire; the late *Benjamin Stillingfleet*, Eſquire; *Thomas Falconer*, Eſquire, of *Cheſter*; Doctor *John Reinold Forſter*; the Reverend Doctor *Buckworth*; the Reverend Mr. *Hugh Davies*, of *Beaumaris*; Mr. *Travis*, Surgeon, of *Scarborough*; Mr. *Latham*, Surgeon, of *Dartford*; *Thomas Tofield*, of *Yorkſhire*, Eſquire; Mr. *Plymly*, of *Longnor*, *Shropſhire*; *Owen Holland*, Eſquire, of *Conway*; *Henry Seymer*, Eſquire, of *Hanford*, *Wilts*; Doctor *Lyſons*, of *Gloceſter*; Doctor *Solander*; the late Mr. *Peter Collinſon*; the Reverend Mr. *White*, of *Selborn*, *Hants*; and that Father of *Britiſh* Ornithologiſts, the late Mr. *George Edwards*, of the College of Phyſicians.

In the proſecution of our plan, we ſhall, to avoid the perplexity ariſing from forming a new

a new ſyſtem, adopt (as far as relates to the *Quadrupeds* and *Birds*) that of the inеſtimable *Ray*, who advanced the ſtudy of nature far beyond all that went before him; and whoſe abilities, integrity, and mildneſs, were no leſs an ornament to the human ſpecies in general, than to his own country in particular. Yet, as this excellent man was in a manner the founder of ſyſtematic Zoology, ſo later diſcoveries have made a few improvements on his labors: wherever then, he is miſtaken in the arrangement, we ſhall attempt a reform, aſſiſted by the more modern ſyſtems, all of which owe their riſe to the plan chalked out by our illuſtrious countryman. It is unneceſſary to detain the reader in this place with the reaſons for our deviation from the order we obſerved in our laſt edition, for they are given at large in the Prefaces to our *Synopſis of Quadrupeds* and *Genera of Birds* *.

We have, in our deſcriptions, wholly omitted the anatomy of animals; as that part, unleſs executed with the greateſt ſkill, would be no ſmall blemiſh to the reſt of this

* Printed at *Edinburgh*, 1773.

performance; but the reader may judge of the extent of our plan, by the following heads: the character of the genus ſhall firſt be mentioned: then the ſpecific name: the ſynonyms from different authors; and the genera in which thoſe authors have placed the animal. The names ſhall be given in ſeveral *European* languages*; and we ſhall conclude with a brief, but ſufficient deſcription, adding at the ſame time, the various uſes, and natural hiſtory of each individual.

If this plan ſucceeds, in promoting the knowlege of nature in this kingdom, we ſhall think ourſelves amply rewarded. Could our exhortations avail, we ſhould recommend this ſtudy moſt earneſtly to every country gentleman. To thoſe of an active turn, we might ſay, that ſo pleaſing and uſeful an employment would relieve the *tædium* ariſing from

* In the ornithology the *European* names are prefixed to the author referred to in the ſynonyms,

Italian	to	Aldrovand, Olina, or Zinanni.
French		Briſſon, or de Buffon.
German		Geſner, or Kramer.
Swediſh		the Fauna Suecica.
Daniſh and *Norwegian*		Brunnich.
Carniolan		Scopoli.

a ſame-

a ſameneſs of diverſions; every object would produce ſome new obſervation, and while they might ſeem only to gratify themſelves with a preſent indulgence, they would be laying up a fund of uſeful knowlege; they would find their ideas ſenſibly enlarged, till they comprehended the whole of domeſtic œconomy, and the wiſe order of Providence.

To thoſe of a ſedentary diſpoſition, this ſtudy would not only prove agreeable, but ſalutary: men of that turn of mind are with difficulty drawn from their books, to partake of the neceſſary enjoyments of air and exerciſe; and even when thus compelled, they profit leſs by it than men of an illiberal education. But this inconvenience would be remedied, could we induce them to obſerve and reliſh the wonders of nature; aided by philoſophy, they would find in the woods and fields a ſeries of objects, that would give to exerciſe charms unknown before; and enraptured with the ſcene, they will be ready to exclame with the poet:

> On every thorn, delightful wiſdom grows;
> In every rill, a ſweet inſtruction flows. YOUNG.

Thus would the contemplative naturaliſt learn from all he ſaw, to love his Creator for

his goodneſs; to repoſe an implicit confidence in his wiſdom; and to revere his awful omnipotence. We ſhall dwell no longer on this ſubject, than to draw this important concluſion; that health of body, and a chearful contentment of mind, are the general effects of theſe amuſements. The latter is produced by a ſerious and pleaſing inveſtigation of the bounties of an all-wiſe and beneficent Providence; as conſtant and regular exerciſe is the beſt preſervative of the former.

Downing,
March 1. 1776. *THOMAS PENNANT.*