Imprimatur hic Liber,
cui titulus,
The Natural History of Oxfordshire.

R A: BATHURST,
Vice-Cancellor. OXON.

April, 13, 1676.
THE
NATURAL HISTORY
OF
OXFORD-SHIRE,
Being an Essay toward the Natural History
OF
ENGLAND.

By R. Pfr-LL. D.

Printed at the Theater in OXFORD, and are to be had there:
And in London at Mr. S. Millers, at the Star near the
West-end of St. Pauls Church-yard. 1677.
The price in sheets at thePrefs, nine shillings.
To Subscribers, eight shillings.
To the most Sacred Majesty of

Charles the Second,

By the Grace of GOD,

King of Great Britan, France and Ireland,
Defender of the FAITH, &c.

May it please Your Majesty,

T had certainly been an unpardono-
able presumption for so mean a person
as the Author of this Essay, to have
presented Your Majesty with a yet
meaner discourse, had not the sub-
ject of it alwaies deserved the notice;
and the Enquirers into it, the favor
of Princes. Thus had Aristotle in writing his Treatise of
Animals the assistance of Alexander; and Pliny the Pa-
tronage of Titus Vespasian to his Natural History.

Beside, this attempt seems more justly to belong to Your
Majesty, than any of their Histories to their respective Pa-
trons, it being so far from exceeding Your Majesties Do-
minions, that it contains but an Enquiry into one of the
smallest parts of them; viz. Your alwaies Loial County
and University of Oxford, whereas their Volumes are
bounded only with the Universe.
The Epistle Dedicatory.

Yet what more particularly moved me to present it to Your Majesty, is not only Your favor to Learning in general, and especially to this place; but much more Your Majesties exquisit insight into the matter itself, insomuch that though the former might have given me some confidence of Your Majesties acceptance, yet it seems more my interest to appeal to Your Judgment, and humbly to implore Your Majesties decision, Whether if England and Wales were thus surveyed, it would not be both for the honor, and profit of the Nation?

Which design, if Your Majesty think fit to disapprove, it will yet be some satisfaction to the Author, that he has shewed his ready (though misguided) zeal to serve his Country: But if Your Majesty shall judge it advantageous to the Kingdom, or but any way worthy Your Majesties diversion, there shall none more industriously and cheerfully proceed in it, than

Your Majesties most Loial
and
most obedient
Subject,

Rob. Plot.
To the Reader.

Though this Essay has swell'd to so much greater a Bulk than ever I expected it could possibly have done, that I might well have superseded any further address than that of Dedication, yet it being but necessary to acquaint the Reader with some matters, that are general, and will serve for all other Counties as well as this, I thought good to put them down briefly as followeth.

And first, that though I dare not pretend the Map of Oxfordshire prefixed to this Essay, is so accurate as any I shall make hereafter, yet I dare promise the Reader it far exceeds any we had before; for beside that it contains all the Mercat Towns, and many Parishes omitted by Saxton, Speed, &c. it shews also the Villages, distinguished by a different mark and character, and the Houses of the Nobility and Gentry, and others of any magnitude within the County; and all these with their bearings to one another, according to the Compass.

And as for the distances, though I dare not promise them Mathematically exact (which by reason of the risings and fallings of the ground, interpositions of Woods, Rivers, &c. I think scarce possible in many places to be given at all) yet some few of them are as true, as actual dimenfuration, and most of them as the doctrin of Triangles, and the best information, all compared together, could direct me to put them: So that provided they have not been moved in the Graving (as I think they have but little) I take them all seated not far from the truth.

As for the scale of miles, there being three sorts in Oxfordshire, the greater, lesser, and middle miles, as almost everywhere else; it is contrived according to the middle sort of them; for these I conceive may be most properly called the true Oxfordshire miles, which upon actual dimenfuration at several places, I found to contain for the most part 9 surlongs and a quarter, of which about 60 answer a Degree: Whereby the way its but expedient that the Reader take notice, that I intend not that there are 60 of these miles in a degree, according to the common account; for reckoning 5280 feet, (or eight
To the Reader.

furlongs) to a mile, as is usual in England, no less than 69 will correspond to a degree; upon which account it is and no other, that of the middle Oxford-shire miles, each containing 9 furlongs and a quarter, about 60 will do it.

According to these miles, the degrees of North latitude are divided into minutes on each side the Map, chiefly made off from the exact Northern latitude of Oxford, collected from the many years observations of Dr. Banbridg, and at last concluded to be seated in the 46 minute of the 51 degree, proxime; the 52nd degree beginning at the small line passing through Mixbury, Clifton, north of Deddington, the two Barfords, South Nuneton, and between Hoke Norton and the Lodge: By which division 'tis ease to know to a minute of a degree, nay almost to a second, in what latitude every Town, Parish, Village, and Gentlemans House is seated.

Beside, for the Houses of the Nobility and Gentry, this Map is so contrived, that a Foreigner as well as English-man, at what distance soever, may with ease find out who are the Owners of most of them; so as to be able to say that this is such or such a Gentlemans House: And all this done by Figures put to every such House, which referring again to Figures of the fame value, placed in order over the Arms in the Limb of the Map, shew in the bottom of each Shield the Nobleman or Gentlemans name, whose house it is; their respective Coats of Arms being always placed between the Figure and Name: which too (all but some few) are cut in their metals, furs, or colours, as born by their Owners.

And not only the Shields, but Ordinaries, Charges, Differences, &c. where they are not too small: if Argent, being left white; if Or, filled with small points; if Gules, lineated perpendicularly, or in pale; if Azure, horizontally, or fels-ways; if Vert, obliquely or bend-ways; if Sable, both pale and fels-ways, as may be seen in the Map, which are all the colours made use of there. And if ever hereafter I shall meet with any bearing Purpure, Ten, or Sanguine; the first shall be represented with Lines in bend finifter; Ten, with lines falter-ways, mixt of Vert and Purpure; and Sanguine, paly bendy, mixt of Gules and Purpure.

According to this method, not only the Arms of the University, all the Colleges, and Towns incorporate in the County (which I have placed in the upper margin of the Map) but on the sides and bot-
To the Reader.

Tom, those of the Nobility and Gentry, are industriously ranged in Alphabetical order, to avoid the difficulties that might otherwise have risen about precedence: which, beside the use above mentioned of discovering the Owners of the Houses, and that they are an ornament to the Map, I hope may also have these other good effects.

1. That the Gentry hereby will be somewhat influenced to keep their Seats, together with their Arms, lest their Posterity hereafter, not without reflexions, see what their Ancestors have parted with.

And secondly, Vagabonds deterred from making counterfeit Passes, by putting false names and Seals to them, both which may be discovered by such Maps as these.

To these add the ancient houses of Kings, the principal Seats of ancient Baronies, ancient Ways, Fortifications, and the sites of Religious houses, all distinguished as described by their respective marks in the Table for that purpose. All which put together, make the sum of the Map, as I intend they shall in all others hereafter, so that those Memento's need no more be repeated, since they are designed to be applied to all following Maps as well as this.

Yet this Map, though it contains near five times as much as any other of the County before, partly by reason of its being the first I ever made, and partly because, either of the pure ignorance or absence of some, and over curious perverseness that I met with amongst others, is not so perfect, I confess, as I wish it were; there being upon these accounts, some few Arms omitted, and others out of place at the foot of the Map, and perhaps here and there a Village overlooked; wherefore I have entertained some thoughts of cutting it again, and perhaps somewhat larger, to be hung up in Frames (without alteration of this for the Book) with all the defects above-mentioned supplied; provided such Gentry as find their Arms omitted, or any Villages near them containing ten houses (under which number I seldom think them worth notice) please to bring in their Arms in colours, with the particular bearings and distances of their Houses and Villages, from the most noted place near them, to the Porter or one of the Keepers of the Bodleian Library, who will be ready to receive them, or any other Curiosity of Art or Nature, in order to the compiling an Appendix to this Work, to be Printed apart.

Which is all concerning the Map, but that the Reader also note, that
To the Reader.

that the Right Honorable the Earl of Berkshire, Lord Lovelace, &c. are designedly left out, in regard that though they have Estates and Seats in this County, yet their chieftest and places of most common residence being elsewhere, I have chosen rather to omit them here, and to place them in those that seem their more desirable Counties.

Concerning the History itself, I can advise little more, but that I undertook it at first for my own pleasure, the subject of it being so pleasant, and of so great variety, that it surprised me to think how many Learned Ages had past (careful and laborious enough in compiling the Civil and Geographical Histories of England) without so much as ever attempting that of Nature or Arts: it seeming to be a design (bad the Undertaker been suitable) more highly deserving of the publick too, than either of the former, as tending not only to the advancement of a sort of Learning so much neglected in England, but of Trade also, which I hope in some measure is made to appear in the following Treatise.

Which though sufficient to justify my choice of this subject, yet I ventured not upon it without the joint approbation of the most knowing in these matters, such as the Honorable Robert Boyle Esq; Dr. Willis, Dr. Wallis, Dr. Bathurst, &c. whose celebrated names serving to remove the groundless suspicions many had of the attempt, I proceeded to give this Specimen of it: Wherein the Reader is only desired to take notice, that most of the Curiosities, whether of Art, Nature, or Antiquities engraven in the Cuts, are so certain truths, that as many as were portable, or could be procured, are in the hands of the Author. But for such things as are inseparable from their places, they remain to be seen as in the History directed; there being nothing here mention'd, but what either the Author has seen himself, or has received unquestionable testimony for it, which for the most part, if not always, the Reader will find cited.

In the Philosophical part, I have chiefly embraced the Principles of Dr. Willis, as the most universally known and received, and therefore most likely (in this inquisitive Age) to be the truest; which if I have anywhere mis-applied (as 'tis manifold odds some where or other I may) yet I doubt not but the Learned and sober Reader will candidly accept of the honesty of my endeavor in excuse of my Error. But as for the hot-headed half-witted Censurer, who perhaps only looks on the Title of a Chapter, or here and there a Paragraph that makes for
To the Reader.

his turn, I must and do expect the lash of his tongue, it being indeed his business to find out the lapses, and decry all attempts, wherein (for-footh) he himself has not been consulted: But I would have such to know (that if I meet with but proportionable encouragement from the former) 'tis not all they can say or do, shall discourage me from my purpose; for if I have erred in any thing, I shall gladly receive the calm reproofs of my Friends, and still go on till I do understand my business aright, in the mean time contemning the verdict of the igno-rant and fastidious that throw words in hast.
(1)

THE

NATURAL HISTORY

OF

Oxford-shire.

CHAP. I.

Of the Heavens and Air.

OXFORD, being not undeservedly by Mr. Camden
stiled, Our most noble Athens, The Muses seat, and, One
of Englands Pillars; nay, The Sun, The Eye, &c. It
would have occasion'd as strange a remark, as any to be me-
tion'd in this whole Essay, had there not some eminent Celestial
Observations been made in this County; especially since that stupen-
dous Mathematical Instrument, now called the Telescope, seems
to have been known here above 300 years ago. But these being
chiefly matters of Art, relating either to the discovery of the
magnitude, figure, or determination of the motions of the Hea-
venly Bodies, must be referr'd (as most proper) to the end of
this Work; if being my purpose in this History of Nature, to ob-
serve the most natural method that may be.

2. And therefore I shall consider, first, Natural Things, such
as either the hath retained the same from the beginning, or freely
produces in her ordinary course; as Animals, Plants, and the
universal furniture of the World. Secondly, her extravagancies and
defects, occasioned either by the exuberancy of matter, or obsti-
nacy of impediments, as in Monsters. And then lastly, as she is
restrained, forced, fashioned, or determined, by Artificial Op-
érations. All which, without absurdity, may fall under the gene-
ral notation of a Natural History, things of Art (as the Lord
Bacon well observeth) not differing from those of Nature in
form and essence, but in the efficient only; Man having no power

* De Augm. Scient. Lib. 2. cap. 2.
over Nature, but in her matter and motion, i.e. to put together, separate, or fashion natural Bodies, and sometimess to alter their ordinary course.

3. Yet neither shall I so strictly tie my self up to this method, but that I shall handle the two first, viz. The several Species of natural things, and the errors of Nature in those respective Species, together; and the things Artificial in the end apart: Method equally begetting iterations and proxility, where it is observed too much, as where not at all. And these I intend to deliver as succintly as may be, in a plain, easie, unartificial Stile, studiously avoiding all ornaments of Language, it being my purpose to treat of Things, and therefore would have the Reader expect nothing less then Words: Yet neither shall my Discourse be so jejune, as wholly to consist of bare Narrations, for where the subject has not at all, or but imperfectly been handled, I shall begin leave either to enlarge, or give my opinion.

4. Since then the Celestial Bodies are so remote, that little can be known of them without the help of Art, and that all such matters (according to my proposed method) must be referred to the end of this Book: I have nothing of that kind to present the Reader with, that's local, and separate from Art, but the appearance of two Parhelia or mock-Suns, one on each side of the true one, at Ensbam on the 29th of May, early in the morning, in the year 1673. With them also appeared a great circle of light concentrical to the true Sun, and passing through the disks of the spurious ones, as in Tab. 1. Fig. 1. which though I saw not the Phenomenon, is as truly drawn (for so it was confess by some that did) as I could possibly have done it if personally present; and yet so incurious was the amazed multitude, that they could not so much as give me ground to guess at the diameter of the circle, much less whether it were interrupted in some of its parts, or intersected (as they usually are) with any other circles of a fainter colour.

5. Whether these appearances are caused by reflection or refraction in the Clouds, according to the old Philosophy; or by both, in a great annulary cake of Ice and Snow, as Des Cartes; or by semiopaque Cylinders, as M. Hugens de Zulichem, will be too too tedious here to dispute. Let it therefore at present suffice, that this Phenomenon is worthy our notice, in regard,
That no circle passes through the true Sun's disk, nor the spurious ones found in the intersection of two Irises, as in those that appeared at Rome, March 20. 1629. and in France, April 9. Anno 1666. 

That whereas generally such mock-Suns appear not so bright, nor are so well defined as the true one is; these according to the agreement of all, appeared of so even and strong a light, that 'twas hard to distinguish the true from the false, and perhaps might not be inferior to the Parhelia mention'd by Cardan 4, or that lately were seen in Hungary. 

When they appear thus bright and illustrious, Astrologers heretofore always presaged a Triumvirate: thus the Triumvirate of Antonius, Augustus, and Lepidus, with all the evils that attended it, was referred to the Parhelia seen a little before; and herein Cardan is so positive, that he fears not to assert, That after such an appearance, we seldom (if ever) fail of one, and therefore refers the Parhelia seen by himself to the Triumvirate of Henry the second King of France, Charles the fifth, and Solyman the Turkish Emperor. And truly, were not these to be more than suspected of vanity, it were easie to adapt a Triumvirate to ours: But my Religion, and that God that hath exhorted us, not to be dismayed at the signs of Heaven, and solemnly professes, that 'tis even He that frustrates the tokens of the Lyars; and makes the Diviners mad, has taught me to forbear. I shall therefore add no more concerning these things, but that though most commonly the Parhelia with the true Sun, appear but three in number; yet that sometimes more have been seen; as four in France, Anno 1666. five at Rome, Anno 1629. five in England, Anno 1233. and six Anno 1525. by Sigismund the first, King of Poland; which are the most that we read were ever seen at a time, though Des Cartes endeavors to shew 'tis possible there may be seven.

And indeed this had been all I thought I should have mentioned concerning the Heavens, but that even now while I am writing this, at Oxon: on the 23d of November, Anno 1675. about 7. at night, behold the Moon set her Bow in the clouds, of a white

---

colour, entire and well determined, which continued so for about half an hour after I first saw it. The reason why such appear not of divers colours, as Rain-bows do that are made by the Sun, has been alwaies ascribed by Philosophers, to the weaknesses of the Moons raisies, not getting so deeply into the opacity of the clouds. But if we may give credit to 1 Dan: Sennerstus, it has once to his knowledge happened otherwise, viz. in the year 1593, when after a great storm of Thunder and Lightning, he beheld an Iris Lunaris adorned with all the colours of the Rain-bow. As for ours, though I could not perceive in any part of it, that it had the least shade of any colour but white; however, I thought it not unworthy our notice, not only for the infrequency of the thing (they never happening but at or near the Moons full, and then but so very seldom too, that Aristotle professes, that he saw but two in above fifty years; and I know several learned and observing Men, that never saw such an Iris in their lives) but also because of the great clemency of the weather, that followed upon it at that time of the year; there falling not one drop of rain, nor any wind stirring for sixteen days after, but so great a serenity, that the waies were as clean and passable then, as we could wish or ever enjoyed them at Midsummer.

8. From the Firmament (waving all considerations of the pure Æther, of which we know so little, that I shall say nothing) I naturally descend to the lowest Heaven, I mean that subtile Body that immediately compasses the Earth, and is filled with all manner of exhalations, and from thence commonly known by the name of the Atmosphere. Whether beside these exhalations, there be any peculiar simple body, called Air, I leave to the more subtile Philosophers, and consider it here only, as 'tis the subject of storms, of thunder and wind, of Echo's, and as it has relation to sickness and health.

9. As to Tempests that have happen'd in this County, though perhaps there have been some heretofore attended with as deporable effects as any where else; yet because they are no where transmitted to posterity, I shall only mention two within our memory, viz. The storm of wind that happen'd one night in February, Anno 1661, which though general (at least all over

1 Sennerstus in Epitom. Phys. 2 Exier tr. &c. vol. i. Meteor. lib. 3. cap. 2.

England)
England yet was remarkable at Oxon: in these two respects. 1. That though it forced the stones inwards into the cavity of All-hallows Spire, yet it over-throw it not. And 2\textsuperscript{19} That in the morning, when there was some abatement of its fury, it was yet so violent, that it laved water out of the River Cherwell, and cast it quite over the Bridge at Magdalen College, above the surface of the River near 20 foot high; which passage, with advantage of holding by the College walls, I had then the curiosity to go see my self, which otherwise, perhaps, I should have as hardly credited as some other persons now may do. But those that have failed, to the Indies can inform them what force Hurricane's and Turbo's have, with what violence and impetuosity they take up whole Seas of water, and furiously mount them into the air\textsuperscript{2}. Now that such as these may also happen at Land (though perhaps for the most part of less strength) I think we have little reason to doubt, since our own Chronicles inform us, that in Q. Maries time, within a mile of Nottingham, all the houses of two little Parishes, with their Churches, were wholly born down by such a Tempest; and the water, with the mud from the bottom of the River Trent, that ran between them, carried a quarter of a mile and cast against Trees, with the violence whereof they were torn up by the roots.

10. Of much such another Land Hurricane, Bellarmin gives us a relation so incredible, that he himself premiseth, \textit{Quod nisi vidisset non crederem}. \textit{Vidi (saies he) a vehementissimo vento effossam ingentem terre molem, eamque delatatam super pagum quendam, ut fovea altissima conspiceretur unde eruta fuerat, et pagus totus coopertus quasi sepultus manferit, ad quem terra illa divenerat}.\textsuperscript{3} Which being sufficient (I suppose) to evince the possibility of my story, I proceed to

11. The second tempest of Thunder and Lightning, on the 10\textsuperscript{th} of May, 1666. which though terrible enough to all parts adjacent to Oxford, yet was mischievous only at Medley, a well known House, about a mile or somewhat more distant from it; two Scholars of Wadham College, alone in a boat, and new thrust off thore to come homewards, being struck off the head of the boat into the water, the one of them stark dead, and the other

\textsuperscript{2} It was observed by an able Seaman of Bristol, that this wind was the fag-end of a Hurricane, which began in New England about three hours before it came hither; the Seamen observed that it went directly towards England.

\textsuperscript{3} Bellarmin, de aeraent. ment. in Deum, Grad. 2. cap. 4.
fluck fast in the mud like a post, with his feet downward, and for the present so disturbed in his senses, that he neither knew how he came out of the boat, nor could remember either Thunder or Lightning that did effect it. Others, in another boat about ten or twenty yards distance from the former, felt a disturbance and shaking in their boat, and one of them had his chair struck from under him, without hurt. But of this no more, a full relation of the accident being already given by the Reverend and Learned Dr John Wallis Savilian Professor of Geometry in the University of Oxford, and publish'd in our English Philosophical Transactions.  

12. What happed before or after those Tempests, I was not so curious in those days to observe, but it might indeed be wish'd, as the learned and observing Dr Beale advises, that some old Almanacks were written instead of new; that instead of the conjectures of the weather to come, some ingenious and fit Persons would give a faithful account from divers parts of the world, not only of the Storms, with the antecedents and consequents of them, but of the whole weather of the years past, on every day of the month: as it was industriously begun above 300 years ago, by William Merle Fellow of Merton College, who observed the weather at Oxford for every day of the month for 7 years together; viz. from January Anno Dom. 1337, to January Anno Dom. 1344. the MS copy of which Observations yet remain in the Bodleian Library: For from hence in time we might examine upon some grounds, as the learned Dr Beale well remarks, how far the posotions of Planets, or other symptoms or concomitants, are indicative of weathers, and probably be forewarn'd of Dearths, Famines, Epidemical Diseases, &c. and by their causes be instructed for remedies, or prevention. Certainly from such Calendars we might learn more in few years, than by Observations at random all the days of our lives; and if they might be had from foreign and remote parts, we should then be in some hopes of true Investigations of heats and colds, and of the breadth and bounds of coasting Rains and Winds.

13. Next the Tragedies (it being as agreeable to my Method, as seasonable to the Discourse) it will not be amiss to present the

---

*Philosop. Transact. Numb. 15. 5 Philosop. Transact. Numb 90. 6 MS. Digby, fol. 176. 7 Such observations of the weather every day of the month through the whole year 1631. were made by Erasmus Bartholome, and are printed in Acta Medica Tho. Bartholinii Obf. 130.
Reader with some of the sports of Nature, and entertain him a-
while with the Nymph Echo; a Mistris she is indeed that is ea-
fily spoke with, yet known to few: if therefore I take pains to
acquaint him with her, I hope I shall not perform a thankless of-
ice.

14. First therefore, that Philechus may not be out in his choice,
whenever he attempts to court her in Oxford-shire, he must know
that of these there are several sorts, and may best, I suppose, be
distinguish'd by their Objects, which are,

\[
\begin{align*}
\text{[Single], such as return the voice but once; and these again} & \\
\text{[Polysyllabical], such as return many syllables,} & \\
\text{[either] are either} & \\
\text{[Tontical], such as return the voice but once, not} & \\
\text{[either] that neither, except adorned with some pec}- & \\
\text{[culiar Musical note.]} & \\
\text{[Manifold], and these return syllables and words, the same} & \\
\text{[either by} & \\
\text{[Simple]} & \\
\text{[Double]} & \\
\text{[Reflection].]} & \\
\end{align*}
\]

15. As for Polysyllabical articulate Echo's, the strongest and
best I have met with here, is in the Park at Woodstock, which in
the day time, little wind being stirring, returns very distinctly
seventeen syllables, and in the night twenty: I made experiment
of it with these words,

\[\text{—Quæ nec reticere loquenti,}
\]
\[\text{Nec prior ipsa loqui didicit resonabilis Echo.}\]

In the day it would return only the last verse, but in the night a-
bout twelve by the clock, I could also hear the last word of the
former Hemistick [loquenti.]. The object of which Echo, or the
Centrum phonocampicium, I take to be the hill with the trees on the
summit of it, about half a mile distant from Woodstock town, in
the way thence to the Right Honorable the Earl of Rochester's
Lodge: And the true place of the Speaker, or Centrum phonicum,
the opposite Hill just without the gate at the Towns end, about thirty paces directly below the corner of a wall inclosing some hay-ricks, near Chaucers house: some advantage I guess it receives from the rivulet that runs as it were in a direct line between the two centers, and from the pond at the foot of the object hill; as also from two other hills that run obliquely up to it: Which may better be apprehended by the prospect of the place, as in Tab. 1. Fig. 2.

16. That this Echo makes return of so many syllables, and of a different number in the day and night, being indisputable and matter of fact; I proceed in the next place to the reasons of these certainties, which possibly to every body may not be so plain. First then, the causes why some Echo's return more, and some fewer syllables, I take to lye in the different distances of the objects (returning the voices) from the places of the speakers: for by experience 'tis found, that if the Speaker be too near the object, the return is made so quick upon him, that the Echo is as it were drowned in the voice: but if he remove farther from it, then it begins to be clear and distinct; and if it be a polysyllabical one, it first repeats one syllable, then two, three, four, five, or more, according as the speaker removes farther off it, which I take to be the only true way of measuring the proportions of the spaces of the ground, requisite for the return of one or more syllables. That this is true, I shall use no arguments to persuade, because the experiment is subject to every manstrial; and if so, it must necessarily be admitted, that the reason why this Echo returns so much, is because of the great distance of the object from the speaker.

17. What distance is required to the return of each syllable, is best indeed determined by such a procedure, where the object is fore-known, and the condition of the place will admit of the experiment: but both these being wanting here (Echo's themselves being generally first known, and not the objects) I was forced to make use of a new analytical method, and find out the object by the number of syllables already returned, which being seventeen in the day time, and twenty by night; and having before found by frequent experience, that according to Blancanus* no one syllable will be returned clearly, under the distance of 24

*Blancani Echometria Theorem 5.
Of OXFORD-SHIRE.

Geometrical paces, or 120 feet, I guess'd that the object could not be removed less than 400 of the former, and 2000 of the latter. For the better understanding of which Analysis, and for the Readers more secure finding of the true distance of the speaker in any other place, it may be convenient that he take notice, that all Echo's have some one place whither they are returned stronger, and more distinct than any other, and is always the place that lies at right angles with the object, and is not too near; or too far off; for if a man stand at oblique angles with it, the voice is better returned to some other person at another place, than to the speaker; and so if he stand too near, or far off, although he do stand at right angles with it, which is plain by the diagram, Tab. 1. Fig. 3. where

a. is the true place of the speaker.

a b. the vocal line falling at right angles on the object.

c d. places on each hand the true place, and oblique to the object.

e f. places above and below the object, whence also the voice comes obliquely to it.

g h. places whence (tis true) the voice goes in right angles to the object; but g is too far off, and h too near.

Now the speaker standing in a, and his voice going in the straight line a b, and striking upon the object so as to make right angles with it, must needs return to the speaker again in the same line, and no farther, because he is supposed to stand at the two extremes of the whole mix'd line of action: but if he stand too near at b, then the Echo repeats more syllables, and distincter at g than either at b or a, because g is now the extremity of the line of action; for how much the nearer the speaker is to the object, by so much the more forcible he strikes it, which causes the rebound to be so much beyond him; and thus if he stand as much too far off, as at g, then the Echo repeats more syllables and distincter at b, then either at a or g, because the distance being too great from g to b, and the reflexion weak, the Echo must needs terminate so much the shorter at b; all these being supposed to take up the whole line of the voices direct and reflex action. Again, if the speaker stand in c obliquely to the object, the Echo is better heard at d, than either at a or c; and so if he stand at d, it is better heard at c then any other place: thus if he stand at c above
above the object, the *Echo* is best heard in the valley, & vice versa. All which, may be well enough made out by throwing a ball against a wall, to which, if it be thrown in an oblique line, it returns not to the thrower but to another place; and though the projectile do so throw it, that it strikes at right angles with the wall, yet (like as in the voice) if he stand too far off, it will fall as much too short in the rebound, as it will exceed if he stand too near.

18. According to these grounds I carefully examined this *Echo*; and found, upon motion backward, forward, and to each hand, the true *centrum phonicum*, or place of the speaker, to be upon the hill at Woodstock town's end, about thirty paces below the corner of the wall aforesaid, directly down toward the Kings Majesties Manor: from whence by measure to the brow of the hill, on which my Lord Rochesters Lodge stands, are 456 Geometrical paces, or 2280 feet; which upon allowance of 24 Geometrical paces, or 120 feet to each syllable, to my great satisfaction I found to be agreeable to the return of 19 syllables, viz: one fewer than it returns in the night, and two more than in the day.

19. The measure I must confess had been much more easie and natural, could I have began from the object, and so removed backward accordingly as the *Echo* gradually increased in the repetition of more syllables; for then I could have given the due proportion to each, if I had found any inequality upon the increase, which I guess there may be, because the allowance of an equality seems to set the object too far off by a syllable or two. But it not being feasible in this place, I was forced to take the former course; for in the valley between the two hills, being the whole *medium* through which the voice passes, and the *Echo* returns it, there is scarce any such thing as an *Echo* to be found; nay, if you stand at the Manor itself, which is not far from the true place of the speaker, and situate almost as high, and direct your voice toward the place of the object, you shall not have the least return, whence it is most evident that I could not use that procedure here, and therefore must desire to be held excused from giving the proportions of space, which I suppose, according to Kircher, may decrease, according as the number of syllables

---

*Majus Phonoepistola, prob. 5*
Of OXFORD-SHIRE.

20. The reason of the difference between day and night, why it should return seventeen syllables in the one, and twenty in the other, may lie, I suppose, in the various qualities, and constitution of the *medium* in different seasons; the Air being much more quiet, and stock'd with exhalations in the night than day, which something retarding the quick motion of the voice to the object, and its return to the speaker somewhat more, (by reason the voice must needs be weakened in the reflection) must necessarily give space for the return of more syllables.

21. Amongst other trials of this *Echo*, I discharged a Pistol, which made a return much quicker than my voice, and (at which I still wonder) with a much different sound from that the Pistol made, whence I can only conclude, that the more forcibly the Air is stricken, (as also in the projection of a ball) the sooner the response is made, and that possibly there may be some sounds more agreeable to every *Echo* than others. And it being my Lord Bacon's opinion, That there are some letters that an *Echo* will hardly express, and particularly the letter S, which, faies he, being of an interior and hissing sound, the *Echo* at *Pon ti Chat renton* would not return; hereupon I tried, as well as his Lordship, with the word *Satan*, beside many others of the same initial, but found the *Echo* here neither so modest or frightened, but that, though the Devil has been busie enough hereabout (as shall further be shewn near the end of this History) it would readily enough make use of his name.

22. Just such another *polysyllabic Echo* we have at *Magdalen College*, in the water-walks, near the Bull-work called *Dover Peer*; it repeats a whole *Hexameter verse*, but not so strongly as *Woodstock*: Where the true object of this may be, cannot so well be found by measure, because of the many Buildings interposing: but I conjecture it may be about the publick Schools, or *New College* *. I could gladly, I confess, have assigned it something further off, because I fear that distance falls somewhat short of our former account, but the buildings beyond lying all lower then those, it must by no means be admitted; which makes me think, there must be a latitude allowed in these matters, according to the

* Nat. Hist. Cent. 3, Numbr. 251. * Since, New College hath been advanced a Story higher, A.D 1675. this Echo is somewhat alter'd.*

B 2 dif-
different circumstances perhaps of time, as well as place; and that possibly Merfennus might not be so much mistaken, when he assigned to each syllable but 69 feet.

23. Tonical Echo's, such as return but some one particular Musical Note, I have met with several, and do not doubt but they are to be met with in most arched Buildings, though scarce observed or noted by any. Such a one is that in the Gate-house at Brasen-nose College, which answers to no Note so clearly, as to Gamut. The curious and well built Gate of University College, to none so well as B mi. The like Note I met with again at Merton College, in the Vault between the old and new Quadrangles, and in the large arched Vault of Queens College Gate: Whereas the stately arched Stair-case leading into Christ Church great Hall, will return all the Notes through the Scale of Mufick. These I must confess are but Echo's improperly so called, because they will express nothing that's articulate; and therefore rather fall under the notation of a Bombus; yet their cause being somewhat nice and subtile, I thought not fit to pass them by, but to take occasion from hence to advertise the Reader, that there are some other inanimate Bodies beside the Load-stone, that though they have no sense, yet have a sort of perception, which I take to be sufficiently proved from these Vaults, that seem to have a kind of election to embrace that which is agreeable, and exclude all that is ingrate to them: thus are the very seats in Churches and Chappels affected with some peculiar Notes of the Organ; and I have a friend (a Violist) whom I dare believe, that says, his Thigh is thus sensible of a peculiar Note, as oft as he lights on it during his playing: Some have imputed much of this in Buildings, to the figure and accurate structure of the Arch, and that where they have different shapes and magnitudes, there will be different tunings also: But I do not find it agreeable to experience, there being another Vault in the entrance into Merton College Chappel, much less, and of a far different figure from that other before mentioned in the same College, which returns very near, if not exactly the same Note: And so do the Gates of Queens and University Colleges, than which in height, breadth and length, there are few more different.

24. It must therefore rather be referr'd to the pores of the stones, which are fitted to receive some vibrations of the Air; rather
rather than others; just as in two Viols tuned to a Unison, where
the strings being screwed to the same tension, and their pores
put into the same figure, if you strike one, the corresponding
string of the other Viol presently answers it: because the first
string being of such a tension, and having pores of such a form,
makes vibrations in the Air, suitable only to the pores made by
the same tension in the other string.

25. As for Tautological Polyphonous Echo’s, such as return a
word or more, often repeated from divers objects by simple re-
flexion, there are none here eminent; the best I have met with
is at Ewelme, on the side of a bank, in a Meddow south and by
west (about a furlong) from the Church: it returns the same word
three times, from three several objects of divers distances, which
I guess may be, 1. The Manor, 2. The Church and Hospital,
And 3d. Colonel Martins house. Another there is near Oxford,
about the east-end of Christ Church new walk, that repeats three or
four syllables twice over; and a treble one at the most northern
point of the Fortifications in New Parks: But there being many
better than these of the kind no doubt in other places, I shall re-
serve their consideration at large to a better opportunity, and on-
ly take notice here by the way, that these are never of many syll-
ables; and that always, by how many more they are of, by so
many the fewer times they repeat them, because so great distance
will be required for their objects, that they must quickly be re-
moved out of the reflex action of the voice: for suppose but a
sentence of ten syllables, viz. Gemitum nemus omnem remugit, and
allow, as before, for the return of each syllable 120 feet, the first
object must be 1200 feet off, and the second, with abatement for
distance, at least 2000; and the third, certainly out of the
voices reach, beyond all hopes of any response. Indeed, could
we meet with one of Merfennus’s Echo’s, where sixty-nine feet
would return us a syllable, then such an Hemistich might be re-
founded three times, or perhaps a whole Hexameter twice; yet
however small a space may be found for the clear repetition of
such a Verse, I cannot think it can possibly be, that any Echo
should repeat one eight times over: for suppose a smaller distance
would suffice, then that allowed by Merfennus, as but 350 yards
to a Verse of seventeen syllables, and allowing some decrease
for the objects distances; yet I do not doubt, but two or
three of the furthest must needs be out of the voices action.

26. Much less sure can any single object perform this, and yet Jacobus Boiffardus, in his Topography of Rome, reports this to be true upon his own knowledge. On the Appian way (saies he) amongst many other vast ruins, which some think to have been the Castle wherein the Praetorian Soldiers lay, there are many Sepulchers, oblique and solid Pyramids, &c. But the most eminent is of a round form, made of squared white Marble, like a Tower, hollow within and open at the top, erected in memory of Cæcilia Metella: it stands in the corner of another wall, in whose circuit there are carved in Marble, near 200 Bulls heads, whence 'tis called, Capo di Boi. At the foot of the hill where this Tower stands, if any man pronounce an Heroic Verse, a wonderful Echo there is, that returns it often entirely and articulately: I myself, says he, have heard it repeat the first Verse of Virgil's Æneids distinctly eight times, and afterward often broken and confusedly. No place in the World yields the like Echo, &c. And what if I add, nor that neither, since beside the natural impossibility of the thing, the industrious Kircher, after he had used all imaginable care in the quest of it, came away unsuccessful, and found no such matter.

27. But though we have no considerable Tautological Echo's; by a simple reflection, yet we have others of no inferior account made by a double one, which also arising from divers objects, though in a different manner, belong to this place. Of these, though there are scarce any that will return a Triſyllable, occasioned I suppose, by the nearness of the secondary objects, yet a clap with the hands or stamp of the feet, there are some will return eight, nine, or ten times, the noise dying, as it were, and melting away by degrees with such a trembling noise, that I sometime thought of the Epithet [tremulous] to discriminate this sort of Echo from the rest.

28. At Heddington, in the Garden of one Mr Pawling Mercer of Oxon: there is a wall of about 40 yards long, built for the advantage of the Fruit, with divers Niches; to which, if you stand but a little obliquely, so as to see the Peers standing out between each two of them, you have the several objects of such an Echo, not above nine or ten foot distant from each other, which return a clap with the hand, or a monosyllable (the wind being...
quiet and still) at least nine, if not ten or eleven times, but so thick and close, that even a disyllable breeds a confusion. Whereby the way if it be objected, that (the whole wall being but 40 yards, or 120 foot long) according to the afore-limited distance for Echo's, a monosyllable should not be returned above once at most: it is to be noted, that these Echo’s made by a double reflection, begin (quite contrary to all others) at the remotest object from the corpus sonorum, which in as many as I have yet seen, is a distinct wall, falling on that; on which the rest of the objects are, in right angles; and this object it is, that first terminates the voice, clap, or stamp; and from which, by reflection, they next strike the ultimate secondary object, then the penultimate and antepenultimate; which, though nearer to the corpus sonorum in respect of the situation of the objects, yet are still further off in respect of the voice, or other sounds motion; whence it comes to pass, that the nearest object to the corpus sonorum is last stricken, and therefore repeats a syllable as well as any of the rest, because indeed in that respect the furthest from it.

29. After the voice or clap has stricken these secondary objects, by way of accession as it were to the corpus sonorum, it is carried again by a second reflection away from it toward the primary object, and sometimes over it, as it appears to be in this Echo at Heddington, where the sound seems as it were somewhat refracted, for it is heard quite out of the place, as is evident to any one that stands in the North-east corner of the Garden and speaks Westwards, who will hear the Echo rather in the Hortyard on the other side the wall, than in the Garden, which I take most certainly to be occasioned by this second reflection; for let any one that suspects the Echo to be really in the Hortyard, and not in the Garden, go but into it, and he shall there find no such matter as an Echo. All which, is more sensibly explained in Tab. 1. Fig. 4, where:

a. is the place of the Speaker or maker of any other sound.
b. the primary object first terminating the sound, and reflecting it on the Peers of the other wall.
ccccc. the Peers between every two Niches that receive the sound reflected from the primary object and make the Echo.
dddd. the lines wherein the voice is carried back again over the primary object, whereby the Echo appears out of its place.

But
But herein let it be noted, that I am not so sanguine as to exclude all fears that it may be otherwise, but only suggest what seems most probable at present, *cum animo revocandi*, whenever I shall be better informed by another, or my own future experience.

30. At *New College* in the Cloyfters, there are others of this kind, to be heard indeed on all sides, but best on the *South* and *West*, because on those there are no doors either to interrupt or wait the sound: These return a stamp or voice, seven, eight, or nine times, which so plainly is occasion'd by the *Peers* between the windows, that on the *West* and shorter side (being but 38 yards long) the returns are more quick and thicker by much than on the *South*, where the primary obje& being above fifty yards removed from the *corpus sonorum*, and the secondary ones proportionably further; the returns are much flower and more distinct, in so much that on that side the *Echo* will return a *diisyllable*, whereas on the *West* side you can have but a *monosyllable* only. If it be objected, that according to the rule, 38 yards are not enough for the return of a *monosyllable*; I answer, that though it may be likely enough that the return of the primary object on that side is not heard, yet that there is none of the secondary ones, or *Peers* between the windows, but what are distant from the speaker above 40 yards, and therefore may well return a *monosyllable*. And if again it be objected, that the *interval* of an *Echo* must be *liberum* and *patens* *, and it be further demanded how it comes about that we have such *Echo*’s in Cloyfters, when we can have none in wells that are cover’d with houses, because the *interval* is closed at both ends, as this Cloyfter is: It must be answered, that that rule holds only in narrow *intervals* closed up on all sides, and not in such Cloyfters that are open and arched to the top; Which may also be the reason why at *Magdalen College*, where the Cloyfters are covered with a flat roof, they have but an inconsiderable *Echo*, and at *Corpus Christi* none at all; notwithstanding they have all other conditions requisite.

31. In the Cloyfter at *All-souls College*, in the *North* and *West* sides, where no doors hinder, there is much such another, which to the stamp of ones foot, or clap with the hands, answers four or five times, with a noise not unlike the shaking of a door, and in nothing differing from the former, but that to the voice it makes

* *Blancani Echometria, Theoremate, 4.*
makes no response: and indeed, it would be matter of wonder if it should, since no one side of that Cloyster comes near the distance assigned for the return of a syllable, whereas that at Heddington just equals it, and one side of New College much exceeds it.

32. Other Echo's there be that belong to this place, as Echo's upon Echo's, and such as my Lord Verulam's stiles back-Echo's; of which, because I have met with none considerable, I am content to pass them by, having sufficiently, as I suppose, by this time tired the Readers patience with too tedious a consideration of so particular a subject, and make haste to treat of the Air of Oxfordshire, as it stands in reference to Sickness or Health. But all Air of it self being equally pure, and only accidentally good or bad, accordingly as more or less filled with wholesome or noxious vapors ascending from the Waters, or moist Earths; I refer its consideration to the next Chapter, to which it seems more intimately and originally to belong: it being the opinion of Hippocrates, and on all hands agreed, that Waters are of much more concernment in reference to health than the Air can be, because they are as it were part of our aliment, and the Air not so; and may be of themselves fundamentally bad, whereas the Air is only so by participation.

* There is much such another as this, in the Ball-Court at Corpus Christi Coll.; Nat. Hist. Cant. 3, Num. 249, 250.
CHAP. II.

Of the Waters.

That Oxford-shire is the best water'd County in England, though I dare not with too much confidence assert, yet am induced to believe there are few better; since beside the five more considerable Rivers of Thame, Isis, Cherwell, Evenlode, and Windrush, there are numbred no less than threescore and ten at least of an inferior rank, beside smaller Brooks not worthy notice: And all these of so quick a stream, and free from stagnation, so clear, and yet so well impregnated with wholesome primogenial Steams of Salts and Sulphurs, that few (if any) vappid and stinking Exhalations can ascend from them to corrupt the Air. As for standing Pools, Marsh, or Boggy grounds, the parents (at least occasions) of Agues, Coughs, Catarhs, they are fewest here of any place to be found: the Soyl for the most part lying dry, and water'd only with clear and rapid Fountains. In short, so altogether agreeable is this County to Cardan's rule, Solum siccum cum aquis currentibus salubritatem Aeris efficiunt, that had he wanted an instance for confirmation, he might have found one here most suitable to his purpose. And if plenty of wholesome Fith, spontaneous productions of odoriferous Plants, and the scarcity of filthy Reptils, be cogent Arguments of the goodness of Waters, Soyls, and consequently of Air, as heretofore they have been accounted, I know not the place can make better pretences, as shall be shewn more at large in their proper places.

2. Beside its clearness from peftiferous vapors, I take the sharpness we find this Air to be of, to be no small argument of its health and purity. Aristotle, 'tis true, thought Air moderately warm, but its constant return to a brisk coldness, after it has been heated either by fire, the Sun, or warm exhalations, gives us strong suspitions that 'tis naturally cold: All natural Bodies, after they have suffered violence, returning of themselves to their innate condition. To which add, that the Air on the tops of high Mountains, above the reach of the Clouds and other warm Exhalations, as 'tis found to be clear, so 'tis very cold;
cold; whence I think it may not be illogically concluded, That
the colder the Air, the nearer to purity, and consequentially
more healthy: Which is also very suitable to the doctrine of Hip-
pocrates, who speaking concerning the healthy situation of Ci-
ties, says, That such which are placed to cold winds, "οὐκ ἴσως
υἱὸν ἵνα σαλεψήτως ἰπποκράτης, ὥσ ἠδίκ. το πλῆθος γυναικείων
--- τοι ἰξε-
φαλάς υμεῖς, ἤ σαλεψήτω, i.e. that though their Waters are harsh and
cold, yet for the most part they are sweet, and the Inhabitants healthy
and brisk, sound, and free from defluxions. And so indeed in the
main I find them here, of a very cheerfull humor, affable, and
courteous in their Department; neither sparing, nor profuse in
their Entertainments, but of a generous temper, suitable to the
sweet and healthful Air they live in: Whereas the Inhabitants of
fenny and boggy Countries, whose Spirits are clogg'd with perpetual
Exhalations, are generally of a more stupid, and unpleasent conver-
sation.

3. That the qualities of Waters and Soyls, together with the
situations of places to the respective Quarters of the World,
make them more or less healthy, according to the great "Hippocra-
tes, there is no doubt. But to these I must beg the favor of add-
ing, not only more swasive but more irrefragable proof; I mean,
the great age and constant health of persons that have been lately,
and are now living here: Richard Clifford, not long since of Bol-
fleet in this County, died at 114 years of age: Brian Stephens,
born at Cherbury, but Inhabitant of Woodstock, dyed last year at
103. Where also there now lives one George Green (but born at
Ensham) in his hundredth year: at Kidlington one Mr Hill was
born, and lived there above an hundred years: and at Oxford
there is living, beside several near it, a Woman (commonly called
Mother George) now in her hundredth year current. The pleafent
situation of which City is such, and so answerable to the great
Reputation it ever had in this respect, that it must not by any
means be past by in silence.

4. Seated it is on a rising Ground, in the midst of a pleafant
and fruitful Valley of a large extent, at the confluence, and ex-
tended between the two Rivers of Isis and Cherwell, with which
it is encompafs'd on the East, West, and South; as also, with a
ridge of Hills at a miles (or fomwhat more) distance, in the form

1 Hippocr. et alipen, idemus elem. 2 Id. idid.
of a Bow, touching more then the East and West points with the ends, so that the whole lies in form of a Theater: In the Area stands the City mounted on a small hill, adorned with so many Towers, Spires and Pinnacles, and the sides of the neighboring Hills so sprinkled with Trees and Villa's, that no place I have yet seen has equally the Prospect*. 'Twas the sweetness and commodiousness of the place, that (no question) first invited the great and judicious King Alfred, to select it for The Muses Seat; and the Kings of England ever since (especially when at any time forc'd from London by War, Plague, or other inconveniencies) so frequently to remove hither, not only their Royal Courts, but the Houses of Parliament, and Courts of Judicature: Many Synods and Convocations of the Clergy have been also for the same reason held here; of which, as they have promiscuously happened in order of time, take the following Catalogue.

A Catalogue of Parliaments, Councils, and Terms that have been held at Oxford.

A Parliament held at Oxford, in the time of King Ethelred, anno 1002.

A Parliament at Oxford, under King Cnutus, an. 1018.


A Conference at Oxford, in the time of King Stephen.

A Council at Oxford, held against the Waldenses, temp. Hen. 2. an. 1160.


A general Council at Oxford, at which King Hen. 2. made his Son John King of Ireland, an. 1177.


A Conference at Oxford, in the time of King John.

* Ab unamirate situs Bellofitum dictum.
Of OXFORD-SHIRE.

A Parliament held at Oxford, temp. Hen. 3. an. 1218, which first gave occasion to the Barons Wars.


A Council at Oxford, under Stephen Arch-Bishop of Canterbury, and his Suffragans, an. 1230, 14 Hen. 3.


A Council at Oxford, under Edmund Arch-Bishop of Cant.


A Term kept at Oxford, 31 Hen. 3.


A Council held by the Bishops at Oxford, an. 1250.

A Parliament held at Oxford, called Parliamentum insanum, 41 Hen. 3.


A Parliament summon'd at Oxford, 4 Edw. 3.


A Term kept at Oxford, 16 Rich. 2.


A Parliament at Oxford, 1 Car. 1. 1625.

A Parliament summon'd at Oxford, temp. Car. 1. an. 1644. The Terms kept at Oxford, eodem temp. it being the Kings Head-Quarters in the late Civil War.


The Term kept at Oxford, eodem temp. the Plague being then at London.
5. Of these there is an imperfect Lift in a MSS. in Corpus Christi College Library Oxon. in which there are also mentioned three Synods held in St. Maries Church: A Provincial Chapter of the Fryars Preachers, and a Council held at Oxon, whose Votes were written by Abraham Woodball. There is also a Provincial Council at Oxford, mention'd in the Catalogue set before the Decrees of Gratian. But these bearing no date, and in all likelihood the same with some of the afore-mentioned; I pass on to another Parliament, which though not at Oxford, yet was held in this County, and therefore I suppose not improper for this place. However, I shall rather venture the danger of impropriety and misplacing, then omit the taking notice of so considerable a Meeting, it being the first Parliament held in the County, and doubtless in England; called it was at Shifford, now a small Village in the Parish of Bampton, and shewing now nothing adequate to so great an Assembly.

6. There is a MSS. in Sir Robert Cottons Library, that gives an account of this Parliament, which, it saies, consisted of the chief of all Orders of the Kingdom, and was called at Shifford (now Shifford) in Oxford-shire, by King Alfred, where the King as Head consulted with the Clergy, Nobles, and others, about the maners and government of the people, where he delivered some grave admonitions concerning the same: The words of the MSS. are these,


i.e. There sate at Shifford many Thanes, many Bishops, and many learned Men, wise Earls, and awful Knights: there was Earl Elfrick very learned in the Law, and Alfred, Englands Herds-man, Englands Darling; he was King of England, he taught them that could bear him how they should live.

7. To which perhaps may be added, the great Council of Kyrtlington held there not long after, in an. 977, at which were present King Edward the Martyr, and St. Dunstan Arch-Bishop of Canterbury; and at which died Sidemannus Bishop of Crediton. This Council by Sir Henry Spelman d is taken to be the same mentioned by Wigorniensis held at Kyrtlinege, which he guesses to be

now Katilage in Cambridge-shire: but I rather believe it was held here, not only for the sake of the name, which remains the same to this day, but because of the one and only Constitution made there, viz. That it should be lawful for the Country People to go in Pilgrimage to St. Mary of Abington; a thing in all likelihood not so desirable to the People of Cambridge-shire, as to ours of Oxfordshire so near the place: Befide, the great reputation that this place was of in ancient times, seems to justify my plea, it enjoying as great Privileges, and perhaps being a fitter place in those days for the reception of such an Assembly, then Oxford it self; for I find it part of the Possessions of the Kings of England, from whom it came to Henry, Son of Edmund Crouchback, Earl of Lancaster, and Father to Henry, the first Duke of Lancaster, by whose Daughter and sole Heir Blanch, it came to John of Gaunt, Duke of Aquitaine and Lancaster, and was free, a Thelonio, passagio, laflagio, pacagio, Stallagio, tallagio, tollagio, caragio, & terragio, per totum Regnum, as I find it in an old Charter in the possession of the Right Worshipful Sir Tho. Chamberleyne, now Lord of the Town, whose singular civilities in imparting this, and some other matters hereafter to be mention'd, I cannot but in gratitude ever acknowledge.

8. From whence (after so long, but I hope not unpleasant digression) I return to the Beautiful Oxford again, a place of so sweet and wholesome an Air, that though it must not be compared with that of Montpellier, yet upon my own knowledge it has proved so advantageous to some, that it has perfectly recovered them of deep Consumptions; and particularly a worthy Friend of mine, who though he came hither sufficiently spent, yet without the help of any other Physick, within few Months felt a sensible amendment; and in fewer Years became of as sanguine a complexion as the rest of his friends, that had almost despaired of him.

9. Some have thought the Small Pox here more then ordinarily frequent, and it must indeed be confessed, That we are perhaps as often, though not so severely infected as some other places; for generally here they are so favorable and kind, that be the Nurse but tolerably good, the Patient seldom miscarries. But admit the Objection be truly made, That it is more subject to the Small Pox than other neighboring Cities about, yet if by so much
much the les it feel the rage of the Plague, I think the edge of
the charge is sufficiently rebated. 'Tis reported amongst the ob-
servations of an ingenious Person that resided long in the Island
Japan, That though the Air be very salubrious there, yet the
Small Pox and Fluxes are very frequent, but the Plague not so
much as ever heard of; which has often made me reflect on the
year 1665, when the Pestilence was spread in a maner all over
the Kingdom, that even then, though the Court, both Houses
of Parliament, and the Term were kept at Oxford, the Plague
notwithstanding was not there at all.

10. Others again, tell us of the Black Asise held in the
Castle here, an. 1577. when a poifonous steam broke forth of
the Earth, and so mortally feized the Spirits of the Judges, Sheriffs,
Justices, Gentry and Juries, beside great numbers of others that
attended the business, that they fickned upon it and almost all of
them dyed: but let it not be ascrib'd to ill fumes and exhalations
ascending from the Earth and poifoning the Air, for such would
have equally affected the Prisoners as Judges, but we find not that
they dyed otherwise then by the halter, which easly perfwades
me to be of the mind of my Lord Verulam, who attributes it
wholly to the smell of the Goal, where the Prisoners had been
long, close, and naftily kept.

11. 'Tis true, that Oxford was much more unhealthy hereto-
fore then now it is, by reason the City was then much les, and
the Scholars many more, who when crowded up in fo narrow a
space, and the then flovenly Towns-men not keeping the street
clean, but killing all maner of Cattle within the walls, did ren-
der the place much more unhealthy. Hence 'tis, that we find
so many reftcripts of our Kings prohibiting maflationem grosiarum
be/iarum infra muros, & quod vici mundentur a fimis & fimariis,
bearing date 13 Hen. 3. 29 Edw. 1. 12 Edw. 3. 37 Hen. 6. &
all allledging the reason, quiaper bas maflationes, &c. aer ibidem
inficitur, because by the killing such maner of Cattle, and laying
the dung in the streets, the Air was infected. Moreover, about
these times the Isis and Cherwell, through the carelesnes of the
Towns-men, being filled with mud, and the Common-floars
by this means ftopt, did caufe the ascent of malignant vapors
whenever there happened to be a Flood; for beside its stirring

the infectious mass, great part of the waters could not timely
pass away, but stagnating in the lower Meddows, could not but
increase the noxious putrid steams. But the former being long
since remedied by the care of the University, and the latter by the
piety and charge of Richard Fox Bishop of Winchester, and Founder
of C.C.C. Oxon. who in the year 1517. cleansed the Rivers,
and cut more Trenches for the waters free passage; the Town
hath ever since continued in a healthful condition: though I can-
not but believe, but were there yet more Trenches cut in some
of the Meddows, the Air might be somewhat better’d still, espe-
cially during the Winter season, when I fear somtimes Floods
stay a little too long, and that not only near Oxford, but in Ot-
moor; and all along the Isis from Enfham to North-moor, Shifford,
Chimly, and Rotcot, which brings me again to the general confe-
dration of the Waters as well of the whole County as City.

12. That the healthiness of Waters consists in their due impre-
gnation with Salts and Sulphurs, and their continuance so, in
their continual motion, is indisputably evinced from the stinking
evaporations of them upon any stagnation. Now that the Rivers
here abound with these, will be altogether as manifest as that
they run, if we consider but the Springs they receive and Earths
they wash. The Isis, ’tis true, till it comes to New-bridge, re-
cieves not (that I find) any eminently salt or sulphureous waters;
but there it admits the nitrous Windsurf, so well impregnated with
that abstrusive salt, that no place yields Blanketing so notoriously
white, as is made at Witney, a Mercat Town on that River, and
upon this account the most eminent in England for that kind of
Trade; though I am not ignorant, that some add another cause
joyntly contributing with the afore-mentioned, to the excellency
of these Blankets; of which more at large when I come to treat
of Arts.

13. Somewhat lower, about Cassington, it receives the Even-
lode, a River whose Banks, especially near the Fountain heads,
are very well saturated with both the Minerals: witness the wa-
ters that rise a little above Sir Thomas Pennyton’s, in the Parish of
Cornwall, from a sort of Earth that may well pass for a Marle;
and the brinifh Bog near Churchill-mill, which though upon the
surface of the ground seems to have no communication with the

adjoining Rivulet, yet being so near, and the Glebe all thereabout being to be presumed of a like nature, it must needs lick some of the Mineral in its passage. About Kingham I was told of a sulphureous Earth, and that some of the Waters there were of such an odour; but whether true or no, I am sure on the other side the water, at a place called Bould in the Parish of Idbury, it is manifestly so; which being not far from the River, at least not from the Stream that runs by Foscut, and so into it, in all likelihood may impart to the waters hereabout no mean quantity of its more volatile parts. Upon the Cherwell we have a salt Spring runs immediately into it; and perhaps the sulphureous Glebe of Deddington may somewhere reach the River. The Banks of the Thame are so well fated with some kind of acid, that no well-water in the whole Town of the name, will either brew, or lather with soap: But none of these give a tinflure so high, that they can be perceived by the most exquisit palte, but only so far forth as may conduce to a due fermentation, and to keep them living: And yet without doubt from hence it is, that the Thames water at Sea, in eight months time, acquires so spirituous and active a quality, that upon opening some of the Cask, and holding the candle near the bung-hole, its steams have taken fire like Spirit of wine, and sometimes endanger'd firing the Ship. Hence 'tis also that its stench is no absolute corruption, and that after a third or fourth fermentation, it equals the waters of the Well in the Haven of Brundufum *; and stinks no more; and though the Mariners are sometimes forced to drink it and hold their noses, yet upon that account they do not sicken; whereas all other waters, as far as has been hitherto observed, become irrecoverable upon stinking, and dangerous to drink.

14. Cardan in his Comment upon Hippocrates *, takes the plenty and goodness of the Fith, to be a sure indication of the wholfomness of waters. And our Country-man, the ingenious Dr Browne *, speaking of the great fecundity of the River Tibifcus, admits it into consideration; whether its exceeding fertility may not be ascribed to the saline Tinflures it receives from the natural salt Mines it licks by the way: which opinions if approved, as rationally they may be, shew the health of our waters and the

---

1 Philo-ph. Trans. Sal. Num. 27. pag. 496. *
2 Plin. Nat. Hist. lib. 2. cap. 103. *
3 De Aere Aquis & locis super Text. 3. *
4 General Description of Hungary pag. 10.

reason
reason of it too: for though we must not compare our 
*Tibiscus* or *Brodrack*; the one whereof is said to consist of *two parts* of water, and one of *Fish*; and the other so replenish’d with them, that in Summer when the River is low, the People say, *The water stinks of Fish*; yet in the year 1674, it gave so ample testimony of its great plenty; that in two days appointed for the Fishing of Mr. Major and the Bayliffs of the City, it afforded between *Swithins-Wear, and Woolvercot-bridge* (which I guess may be about three miles distant) *fifteen hundred* Jacks, beside other Fish; which great fecundity, as it argues the goodness of the *Element*, so 'tis no whether to be refer’d, as to its original cause, but to the various *Salts* upon which depend the propagation of all sorts of *Species*’; and as far as concerns this part of the *Animal Kingdom*, are plentifully to be found at the bottoms of some Rivers.

15. And I said the rather at the bottoms of *Rivers*, not only because Bodies from *Salts* have their solidity and weight, and therefore may well be presumed to reside in the lowest places: but because I find it the joyned agreement of all the *Water-men* hereabout that I have yet talk’d with, that the *congelation* of our *Rivers* is always begun at the bottom, which however surprizing it may seem to the Reader, is neither unintelligible nor yet ridiculous: for beside matter of fact wherein they all consent, *viz.* that they frequently meet the *Ice-meers* (for so they call the cakes of Ice thus coming from the bottom) in their very rise, and sometimes in the under-side including stones and gravel brought with them *ab ino*, it seems upon consideration also consonant to reason: for that *congelations* come from the conflux of Salts, before dispers’d at large, is as plain as the vulgar experiment of freezing a pot by the fire; and that induration and weight come also from thence, sufficiently appears from the great quantities of them that are always found in stones, bones, *tectaceus*, and all other heavy bodies. Now whatever makes things compact and *ponderous*, must needs be inferred with the same qualities itself; and therefore affect suitable places; so that why standing Pools should freeze at the top, might possibly have proved the greater difficulty of the two, had not the Learned Dr. *Willis* already cleared the point, by shewing us, that all standing waters are more or less in a state of

1 *Willis, de Fermant. cap. 2.* 2 *Willis de Fermant. cap. 2.* 3 *Willis de Fermant. cap. 12.*
putrefaction, with their salts and sulphurs ready for flight, and in that posture catch'd by the adventitious cold, are probably so congealed at the top of the water. How consonant to truth this Theory may be, I leave to the Readers judgment and future experience, and by the way would have him take notice, that as this, so my other opinions hereafter to be mentioned, are not magisterially laid down, so as to jumble out better whenever they can be brought, but fairly to have their tryal, and so live or dye. But as to the matter of Fact, as I cannot but think it hard that so many people should agree in a falsity, so methinks 'tis as difficult they should mistake in their judgments, since I was told by one of the soberest of that calling, that he once knew a Hatchet casually fall over-board into the River near Wallingford, which was afterwards brought up, and found in one of these Ice-meers.

16. And so much for the salts that give life to the waters, multiply the Fijb, and are the cause of congelations; for the watry Plants it seems have their vegetation from none of these, but a higher principle, which some will have to be a volatile Niter, brought along with the showers in their passage through the Air. That subaqueous Plants have a proportionable growth to those on the Land after a shower of rain, is also the general voice of the Barge-men; and herein I am the rather inclin'd to believe them, because 'tis a matter so much their interest to observe; our water-men here in these shallow Rivers, praying not so much for rain to fill them when low, as that weeds may also grow to help keep the waters when they have them, which will otherwise too soon glide away, to their no small detriment. Some have thought this vigorous shooting of the aqueous Plants, so presently sensible after plentiful showers, to proceed rather from the soyls brought with them from the hills, and impregnated with salts fit to promote vegetation; but the contrary is evident from the former Paragraphs, for with such as these the Rivers are daily fated, and yet this brisk vegetation is wanting till it rains: whence I guess that terrestrial and subaqueous Plants (that I say not such as delight in uliginous places) have their sprightly shooting from different principles; and if to the former I should assign a more fix'd, and to the latter a volatile salt, perchance I might not be much

*Willis de Ferment. cap. 8.*
out of the way: but it being not so much my business to find the reasons of phenomena, as to give the Reader such hints as may lead his greater sagacity to do it; I forbear saying more, & manum de tabula, only advertizing him, that what has been said of the Isis may be indifferently applied to the rest of the greater Rivers, of which neither have I any thing more to add, but an unusual accident that happened to the Cherwell, An. 1663, which without one drop of rain, or any other visible cause here, but from great and sudden showers that fell in Northampton-shire, swelled to that vast height, that in two hours time, not only the Medows were o’re-flown, Magdalen College cellar drowned, and their raised Water-walks cover’d; but the River Isis driven back as far as Iving-Hincksey, at least a mile from the confluence of the two Rivers.

17. But amongst the many smaller Rivers, perchance it may not be unworthy notice. (1.) That the two considerable Rivers of Stour and Ouse, though but small here and running but little way in it, yet rise in this County; the one at Swalcliff, which goes into the Severn Sea in the west; and the other at Fritwell, whence it runs into the Sea between Lincoln-shire and Norfolk in the east of England. And (2.) that the Fountain-heads of the River Rea ly for the most part in a plain Country, having little more to feed them, than just a declivity to facilitate their passage; which seems to argue, that all running waters owe not their continuance to rain and dews, collected as they say, on the spungy tops of hills, and sent forth again somewhere in the declivity. And so do’s a small Spring at Cleydon, that rises in the street on the south side of the Town, which continues running all the year, but most plentifully like the Scatebra of Pliny, in the dryest weather: to which add a Well at Ewelme, also south of the Church, whose Springs run lowest in the Winter season, and advance in the Summer remarkably higher; as I am credibly informed from Lambourn in Berk-shire, all the Springs in that Town most constantly do. But I decline all engagement in this great Controversie concerning the origin of Springs, till my Travels have supplied me with more, and more certain evidences, as well for the one as other part of the question.

18. That Land-springs, and such as run but once perhaps in many years, have their rise and continuance from plentiful show-
ers, I think we have little reason to doubt, since we have them not at all, or but very weak in any Summer, or the dryer Winters: such are those that fore-tell (and naturally enough) the scarcity and dearness of Corn and Victuals; whereof that of Asserton, near Henly upon Thames, is one of the most eminent that I know of in England; and no question is the same mentioned by Johannes Eu- feb. Nierembergius 9, in his Book (as he calls it) of the Miracles of Nature. In Britannia & territorio Chiltern 1unt fontes multi, &c. by which, I suppose, he must mean the Chiltern Country of Oxford- shire, There are, says he, many Springs, which in fertile years are always dry; but before any defect, as the Harbingers of an approaching dearth, these waters get loose, and as it were breaking prison, they quickly unite into a forcible stream. And so they did lately, in An. 1674. with that violence, that several Mills might have been driven with the Current; and had not the Town of Henly made some diversion for them, their Fair Mile must have been drowned for a considerable time. Of these there are many in the County of Kent, which I know not for what reason they call Nailbourns there, and prescribe them (some will) a certain time for their running, as once in seven, ten, or fifteen years. But the certain natural principle of such Springs, altogether depending upon an uncertain cause, no heed is to be given to such kind of stories, they being equally as vain as the persons that broach'd them.

19. Beside these constant and intermitting Rivulets, that always discharge themselves into Seas or Lakes, we have others here of a peculiar kind that empty themselves into neither of them: but as they first rose out of the Earth, so presently after a short stay on it, engulf themselves again, and are no more seen. Two of these there are at Shot-over Forest, both rising as

I take it on the north side of the hill; the one not far from Hedington Quarry-pits, is constantly fed with a double Spring, yet after it has run about two Bows shoot, is received by a rocky sub-terraneous indraught, and appears no more: for though some have thought it to come forth again at the Pool of a Mill not far from it, yet after diligent search I could find no such matter. Another there is not far from Forest-hill, and I think in the Grounds of Sir Timothy Tyrrell, which sometimes in Winter runs with that violence, and has worn its Inlet to such a capacity, that it can and has received an Ox.
20. Other waters again are of so flow a pace, that they seem rather to sweat than run out of the Earth, part whereof being spent in exhalation, and the rest in fating the dry neighboring Earth, do neither reach the Sea, are received in Lakes, nor swallowed up like the former, but of themselves are ftopt upon the very surface. And yet I have observed, and believe rightly too, that these are the most durable Land springs we have; witness that famous one of this kind at Nettlebed, which I know not from what old Witch heretofore, by way of derifion, they call Mother Hibblemeer; whereas if we consider how serviceable she has been, being never known to fail them in the dryest Summer, and that in a Country so uncappable of Wells, that there's no such thing to be found in the Parish, the rather merits the esteem of the Nymph of the place.

21. In Westphalia they have a Spring they call their Boulderborn, from a noise that it makes at the exit of the water; whether ours may deserve the name, I know not; but such a one there is in the Parish of Glympton, in a wood about a mile south-west from the Church, in a place where there are stones in the form of Cockles, upon which account hereafter I shall mention it again. The Springs, as I remember, are in number three, and the most southern of these 'tis that has the humming noise, much like that of an empty bottle held with the mouth against the wind, which perhaps may be a resemblance So befitting our purpose, that it may help to explain the cause as well as the sound: for provided the channel be large within, and the passage forth somewhat narrow like a bottle, the collision of the water against the lips of the orifice, may well make a noise in a large vault within, especially if the waters be induced with a spirit, as peradventure anon may be proved like enough.

22. Which is all I have to say concerning the flux of Rivulets, but that one there is at Sommerton makes a small Cascade, or fall of water about seven foot high; which were it not in the high-way, but in a Gentlemans Garden, some use might be made on't for divers good purposes, but as the cafe stands I think it can have none, except for experiments of petrifications, for which sure it cannot but be very excellent, since the living blades of grafs of not above half a years growth, within that small time

* Varrenii Geog. lib. 1. cap. 17. prop. 15.
are all covered with stone, and hang down the bank like so many Icicles; and the Earth it self over which it glides, as 'twere foliated over with a crust of stone like the Mofo petrofo of Ferrante Imperato*. Which brings me to a closer consideration of waters, as they are eminently endowed with any peculiar qualities, of Petrification, Saltiness, or Medicinal use; of which in their order as briefly as may be.

23. Of Petrifying waters, though I doubt not but their kinds are as various, as the effects they produce; and the effects again, as the subjects they work on; yet I am inclined to believe that they all agree thus far, that they proceed in the main from the same stock and linage, and are all more or less of the kindred of Salts; which sublimed and rarified in the bowels of the Earth into an invisible steam, are received by the waters as their most agreeable vehicle, and brought hither to us at the rising of Springs, as invisibly as the particles of silver or gold, when each is dissolved in its proper menstruum: where meeting perchance with an ambient Air, much colder and chilling than any under ground, in all likelihood are precipitated, and thrown down on such subjects, as they casually find at the place of their exit, which they presently cloath with a crust of stone; or else (where precipitation or cohesion will not suffice) they pass with the waters through the pores of the subjects, and are left behind in them just as in a filter.

24. The reason of which difference may probably be, that some of these petrifying steams or atoms, may be grosfs and more bulky than some others are, and cannot be held up in the watry vehicle, without such a heat as they have under ground, but fall, and by reason of their bigness, do not penetrate, but adhere to their subjects; whereas others that are fine, more minute and subtile, are easily supported in a volatile condition, and pass with the waters into the closest textures.

25. If any body doubt whether stones, and so petrifications, arise from Salts, let him but consult the Chymists, and ask, Whether they find not all indurated Bodies, such as stones, bones, shells, and the like, most highly fated with the saline principle? Some mixture of Earth and Sulphur 'tis true there is in them, which give the opacity that most stones have; from which, according as

* Dell' Hift. Natural. lib. 27. cap. 8.
they are more or less free, they have proportionable transparency, and some hardnesstoo; as the best of gems, the Diamant, evinces. And if he shall ask what Salis are the aptest to perform this feat of petrification, though the difficulty of the question might well excuse me, yet I le venture thus far to give him an answer, That I have frequently seen at Whitstable in Kent, how their Coperas or Vitriol is made out of stones that 'tis more then probable were first made out of that: to the Spirit of which Vitriol if you add Oyl of Tartar, they presently turn into a fix'd and somewhat hard substance, not much inferior or unlike to some incrustations; which seems to conclude, that from these two, all such like concretions are probably made; and that could we but admit that Ocean of Tartar, which Plato placed in the center of the Earth, and thought the origin of all our Springs, the busines of petrifications were sufficiently clear. To which I also add in the behalf of Vitriol, what's matter of fact, and prevails with me much, That where-ever I find strong Vitriol waters, the petrifying ones are seldom far off; which as far as I have observed, I believe may be reduced to these three kinds that presently follow.

1. Such as purely of themselves are petrified, the very body of water being turned into stone as it drops from the rocks, which we therefore commonly call Lapides stilatitos, and shall accordingly treat of them in the Chapter of Stones, these not strictly coming under petrifications, where beside the water and saxeous odour, there is always required a subject to work on of a distinct species from either of the two; as in

2. Such as petrife by incrustation, and are only superficial, or

3. Such as petrife per minima, or totum per totum; of both which I shall instantly treat, but of the last more at large in the following Chapter.

26. Incrufations, are petrifications made by such waters as let fall their stony particles, which because either of their own bigness, or closeness of the pores and texture of the Body on which they fall, are fixt only to the superficial parts, as it were, by aggregation, and do not enter the solid body; of which I have met with several in Oxfordshire, and particularly at Sommerton, as was above-mentioned, where the grafts, being one of the fluvia-

Anton. Gulatum de fluominum generibus.
The Natural History

tilia, is covered over with a soft stone; and yet so, that broken off, the grass appeared (for any thing I could see) as fresh and green as any other not crucibled, nothing of the blade being alter'd or impaired, which is the nearest incrustation I ever yet saw: for though some of these petrified blades of grass hung down at least a foot in length, yet flipping them off from about the root, I could take the grass by the end; and pull it clean out as it were from a sheath of stone, so little of cohesion had the one to the other: the reason of which I guess may be, that the pores of the Plant possesst with its own juice, and already furnish'd with a congenial salt, might well refuse adventitious ones.

27. And yet far otherwise is it, but just on the other side the River at North-Afbton, in a Field north-west of the Church, where either the petrifying water, or plants, are so different from what before I had found them at Somerton, that though there too the work be begun by adhesion, yet the roots of rushes, grass, moss, &c. are in a while so altogether eaten away, that nothing remains after the petrification is compleated, but the figures of those Plants with some augmentation.

28. And petrifications of this kind I frequently meet with, that happen on things of much different substances, as shells, nuts, leaves of trees, and many times on their most ligneous parts. In the Parish of St. Clements in the Suburbs of Oxford, about a quarter of a mile distant, on the right hand of the first way that turns east-ward out of Marston-lane, there is a ditch, the water whereof incrustates the sticks that fall out of the hedge, and some other matters it meets with there: but this is so inconsiderable, that I should not have mention'd it, but that it has been taken notice of by so many before, that my silence herein would have looked like a defect. Much better for this purpose is the water of a Pump at the Cro^s-Inn near Carfax, in the City itself, which not only incrustates boards fallen into it, but infers itself so intimately into the pores of the wood, that by degrees rotting it away, there is in the end the succession of a perfect stone; and that not without some coarse representation of the very lineaments of the wood itself: Which though I must confess to be of somewhat a higher kind of petrification than incrustation, yet it being wholly performed by accession of parts, and continual intrusion into the open pores of rotten wood, will not amount to the warranty of a different species.

29. A
29. A curious pattern I have of this kind, in a piece of wood given me by Mr Pomfret School-master of Woodstock (whose care in my enquiries I must not forget) wherein nature has been so seasonably taken in her operation, that the method she uses is easily discovered; for being interrupted in the midst of her work, one may plainly see how the ftony atoms have intruded themselves, as well at the center as superficies, and so equally too into all parts alike, that 'tis hard to discern in any part of it, whether ftone or wood obtain the better fhape.

30. Petrifications of this kind are always friable, and though sometimes they faintly fhew the grain, yet never, that I could see, keep the colour of the wood; in the fire they are as incombustible as any other ftone, and lose nothing of their extension, but their colour for the most part seems to alter toward white: in distilled Vinegar they remain indifoluble, though not without the notion (as Mr Hook* well observes) that the fame spirit has when it corrodes Corals, yielding many little bubbles, which in all probability (as he fays) are nothing else but small parcels of Air driven out of its fhance by that infinuating Menftruum, it still retaining the fame extension: but in aqua fortis, the Sommerton crufet was wholly difsolved into a white fhance, not unlike the white wash used by Plaiferers. All of them increase the bulk of the subject on which they work; and most of them, as the ingenuous Mr Hooke also further notes, seem to have been nothing more but rotten wood, before the petrification began.

31. But some others I have seen of a far nobler kind, that fhew themselves likely to be petrifications per minima, and performed with a fteam fo fine, as permeates the very fechmatisim and texture of the body, that even to a Microfcope seems most folid, and muft in all likelyhood be as tenuious as the subtileft effluviums that come from a Magnet; fome whereof are fo unlike rotten wood, that they keep the colour and texture of heart of Oak, and are fome of them fo hard that they cut Glafs: and with one of them, that seems formerly to have been a piece of Ground-afh, I strook fire to light the candle whereby I write this. But I have nothing more to say of it here, because I guess the change not to have been wrought by water; that therefore I offer not violence to the Chapter of Earths, by which I think this, and all

* Micograph. Obs. 17.
other of the kind, I have met with in Oxfordshire have been performed; I forbear, and proceed to the other salt waters that are more eminently such, and do not petrify.

32. And amongst them, we must remember to reckon all such as are unfit for washing; and will not take Soap; for though these to our taste are not sensibly salt, yet to our touch (as the Learned Willis w notes) they are harsh and unpleasant, which they have from their too great impregnation with Salts: But what is a much more certain evidence of it, we do not find any but instantly lathers, except such as hold an acid salt, and discover themselves such upon evaporation. To which may be added this very easie Experiment, That if to simple water, and such as before would lather well, you add some few drops of Spirit of Vitriol, or some such like acid, it presently refuses to mix with soap: The reason of which seems indeed to be no other, but the congress of the acid salt of the water, with the fix'd and alcalizate one of the soap, which it so wholly subdues to its own inclinations, that it will not permit it any longer to hold the oily parts of the soap, or mix them with the water; but now visibly increased both in quantity and weight, by the considerable acquest of this new prisoner, it may also perhaps so fill up the pores and little cells of the water, that the excluded sulphur or oily parts of the soap (as in their separate nature) are forced to the surface.

33. Many of these waters are every where found, and according to some, all Pump waters are such; but that they are mistaken, my experience has taught me, for I have met with some that will lather very well.

34. At Henley they are troubled with many of them, but not so much as they are at Thame; for there they have a way to let them stand two days, within which time (as I was informed by my worthy Friend Mr. Munday, Physitian there) the Vitriol, or whatever other acid it be, falls down to the bottom of the Vessels that hold them, and then they will wash as well as one can desire. But at Thame, where there is never a Well in the whole Town whose water will wash, or (which is worse) brew: This Experiment, for I caused it to be tryed, will by no means succeed; so that were they not supplied by the adjoyning Rivulet, the place must needs be in a deplorable condition. The reason, I suppose,
suppose, why the *acid* will not fall, as it do's at *Henly* and some other places, is because these waters, beside their salt, in all probability also hold a crude *Sulphur*, whose viscous particles do so tenaciously embrace it, that it will not admit of any separation; which may also perhaps be a hint to the cause why their Beer will stink within fourteen days whenever they attempt to brew with this *water*, for where a *Sulphur* is any thing great in quantity, and its body opened and exalted by the heat in brewing, and the active spirituous particles of Mault, (as I guess the cafe may have itself here) the frame of that *mixture* may probably be loosed, wherein the *spirits* first taking their flight, the *Sulphur* will next begin to *evaporate*, whose steams being *smartly aculeated* by the *salt*, that then bears the chief *sway* in the subject, cause the stink of the Beer that is brewed with such water.

35. Other waters there are that are palatably *salt*, and sufficiently stinking without being brewed, and such is that before-mentioned near *Churchill-mill*; but I think within the bounds of the Parish of *Kingham*; The water as it stands looks of a greenish colour, as most of the palatably *salt* waters do, and to it ressort all the Pigeons in the Country; which should they not do, I should much wonder, since besides its saltness it has such a stink, that it equals the *saltstone*, and *roasted dog* too: so that should the *Proprietor* but build a *Dove-house* here, he might honestly rob all his neighbors of their flights; but that he may not put it to so invicious a use, I shall divert him anon by a more profitable way.

36. As to the *salt* that impregnates this *water*, I do not take it to be a simple one, but some Mineral *concrete* both of *salt* and *sulphur*; for without these two be in their exaltation, and become so far fluid as to endeavor a divorce from each other, it could never acquire so noisom a smell. Which *concrete* should I call a *salt Marine*, peradventure I might not be much mistaken; for if you take but a small quantity of thrice calcined *Bay salt*, and disolve it in a pint of Well-water, upon dissolution you will have much such an odour, as has been observed by a late Author in a short account of the *Sulphur Well* at *Knarsborough*.

37. Nor hinders it at all that the *Sea* is so remote, since whether *springs* have any communication with it or no, such *marine salts* may be had very well; for if the *Sea* grow *salt* by the Earth...
that it licks, which I take to be as certain as that 'tis not so by torrefaction; then if it be possible we may have such Earths, as
give the Sea those salino-sulphurous tinctures, it's altogether as
possible we may have such waters too, without any necessity of
such communication.

38. If it be objected, That the waters of the Sea send forth
no such stench as we find these do, let it be considered that the
flux of the one, and stagnation of the other, may well occasion
such a difference; whil'st the Sea-waters are in their motion, 'tis
true their salts and sulphurs so involve one another, that their
mutual imbraces hinder all evaporation; but whenever they come
to stand but awhile, as they do most times in the holds of Ships,
then their sulphurs evaporate with as great a stink, as can be sup-
posed ours have here at Land; and this the Ships pump doth fre-
quently witness, to the great content of all that travel by Sea, it
being a sure indication of the Ships health, which abundantly
recompenses the inconvenience of the stench.

39. Such another I have heard of in the Parish of Chadling-
ton, in the grounds of one Mr. Rawlison there, not differing in any
thing at all from the former, but only it's somewhat stronger of
the marine salt: this I must confess I saw not myself, yet having
my information from so knowing a Person, and of so unquestion-
able fidelity as Sir Thomas Penniston, I doubt not at all the truth of
the thing.

40. A salt scintillating there is also at Clifton near Deddington, with-
in a Quoits caft of the River side: but its saline particles are so
subtilized in the water, that they scarcely can at all be perceived
by the palate, and yet it lays them down plentifully enough on
the stones and Earth over which it passes. What sort of salt this
is, I care not to determine, because it will be difficult not to
mistake; for upon evaporation of about a gallon, it yielded a
salt of a urinous taint: which at first I must confess was so surpris-
ing to me, that I could not but think, that during my absence,
some waggish fellow had either put a trick on me, or else that I
might have used some unfit vessel; whereupon I caused a new
earthen pot to be bought, well glazed, and then repeated the Ex-
periment very carefully, but found in the end all had been honest
about me, for I had a salt again of the very same taint.

41. How this should come about I cannot divine, unless from
the sweat of the Bodies of Animals, it being much used in cuticular Diseases; but this I think neither can well be, because 'tis a constantly running spring, and would sure carry off what might be left off that nature: I therefore wholly leave it to the Readers greater perspicacity, and shall content my self with this satisfaction, that however improbable the thing may seem, that in the mean time 'tis an improbable truth.

42. I have often since with'd, that I had tryed this water with a solution of Alum, and seen whether it would have given any thing of that milky precipitation it do's with Urines; which being then quite out of my head, is left to the tryal of some ingenious person that lives thereabout; though before-hand I must tell him, that I believe it will not succeed, because the urinous substance seems not to be copious enough.

43. Divers might be the uses of these waters, and particularly of the two first, as good, or perhaps better than that at Clifton, for cuticular Diseases of Men and Beasts; some whereof I have known carried out of these Inland Countries to the Sea side; whereas 'tis likely they might (in all the Diftempers for which we have recourse thither) with much more ease have had a remedy at home.

44. But far more profitable must they surely be, if implored to improve poor and barren Lands, which no question might be done by casting them on it. In Cheshire, near the Salt-pits of Nantwich, 'tis yearly practiced thus to brine their Fields; which though never done, but after the fall of great store of Rain-waters into their pits, which before they can work again must be gotten out, and with it some quantity of their brine too, yet even with these but brackish waters do they so leasen their adjoyning Lands, that they receive a much more profitable return, then they could, have done, from any soil or dung.

45. In Cornwall and Devonshire, so considerable are their improvements by sea-sand, that it is carried to all parts as far as they have the advantage of the water, and afterwards 10 or 12 miles up higher into the Country on horses backs. At which I must confess I marvel not at all, since we are informed by an intelligent Gentleman of those parts, that where-ever this sand is used,

---

used, the seed is much and the straw little, (I have seen, faies he in such a Place, good Barly, where the ear has been equal in length with the stalk it grew on), and after the Corn is off, that the grass in such places turns to Clover. Some of the best of this sand, he faies, lies under Oufe or Mud about a foot deep; and who knows but there may be such a Sand under the briny Bog near Church-hill-mill, or at Chadlington? I am sure the salt spring at Clifton comes from a sand; if so, and the Farmers thereabout get such Corn and Clover-grass, I hope I shall not want the thanks of the Country.

46. However, I do not doubt but the water will be serviceable, either to cast on their Land, as at Nantwich; or to steep their Corn in before they sow it, to preserve it from all the inconveniencies formerly prevented by brining and liming it, and to strengthen it in its growth.

47. Sir Hugh Plat* tells us, of a poor Country-man who passing over an arm of the sea with his Seed-corn in a sack, by mischance at his landing fell into the water, and so his Corn being left there till the next Ebb, became somewhat brackish; yet such was the necessity of the Man, that (notwithstanding he was out of all hope of any good success, yet not being able to buy any other) he sowed the same upon his plowed grounds; and in fine, when the Harvest time came about, he reaped a crop of goodly Wheat, such as in that year not any of his Neighbors had the like.

48. Now let the Owners or Farmers of these springs sit down and consider of what has been said, and if they shall think fit, make trial of them, wherein, if they meet with success, I only beg of them (which I shall gladly accept as the guerdon of my labors) that they would be as free of it to their poor Neighbors that have lean grounds and ill penny-worths, as God has been to them by me his weak instrument in the discovery.

49. Having spoke of such waters as cure faulty grounds, and cuticular distempers by external application, it followeth, that we treat of such as are, or may be taken inwardly, and deserve the repute of Medicinal waters. The first, and perchance the best of these, I found at Deddington, a small Mercat Town, within the Close of one Mr. Lane, where not long since digging a Well,
of OXFORD-SHIRE.

and passing through a blew Clay, adorned with some glittering sparks; and meeting by the way with pyrites argenteus, and a bed of Belemnites, or (as they call them) Thunder-bolts, He came within few yards to this water, of a strong sulphureous smell, the most like of any thing I can think of, to the water that has been used in the scouring a foul gun: in weight lighter than pure Spring-water by an 5s., in a quart, and yet after several trials, I found it so highly impregnated with a vitrioline salt as well as sulphur, that two grains of the powder of galls would turn a gallon of water into a dusky red, inclining to purple; nor did they only so alter the fire and position of the particles, as to give a different colour and consistence, as it happens in waters but meanly rated; but in a quarter of an hour did so condense and confipate the pores of the watery vehicle, that the excluded particles of the Minerals appeared in a separate state, curdled in the Veffel, and of so weighty a substance, that they subsided to the bottom in a dark blue colour.

50. The sediment being great in quantity, I tryed upon red hot Irons, and some other ways, to see whether the salts or sulphur, either by colour, scintillation, or odour, might not by that means betray themselves; but with small success: whereupon I betook me to distillation, putting about a quart into a glafs body, to which fitting a head and clean receiver, I gave an easie heat, till there was distilled off about three or four ounces, which when poured out, I found had neither smell, taft, or any other properties, that might distinguish it from any other spring water distilled: for with galls it would make no more alteration than any other simple common water would. Then ordering the fire to be flackned, to see what precipitate it would let fall; upon filtration of what remained in the body, I procured only a pale calx of a gritty substance, hewing, as it dried in the Sun, many transparent particles intermix'd: in taft it had a faint pleasant piercing, with a gentle warmth diffused on the tongue; but pouring on it Spirit of Vitriol, Oyl of Tatar, &c. I could not perceive any manifest ebullition, so as to judge whether the salt contained in this residence, were either of the acid or lixiviate kind.

51. Wherefore to come closer to the point, and taking directions from that accurate, severe, and profound Philofopher, the Honorable Robert Boyle Esq; the glory of his Nation, and pride
of his Family; and to whose most signal Encouragement of the Design in hand, these Papers, in great part, owe their birth: I took good Syrup of Violets, impregnated with the tincture of the Flowers, and drop’d some of it into a glass of this water as it came from the Well; whereupon, quite contrary to my expectation, not only the Syrup, but the whole body of the water turned not of a red, but a brisk green colour, the Index of a lixiviate, and not that acid Vitriol, which I before had concluded on from the infusion of galls. The Phenomenon at first was very surprizing; till I had further weighed the cautious Expressions of that Noble Author, and found, that he restrains the Experiment of the Syrup of Violets, turning red with acids, with provision always they be distilled Liquors; and what he seems to hint in a former Experiment, that sulphureous salts, (such as the Vitriol of this water will anon more plainly appear to be) being of a quite contrary nature, may have different effects: which may also be the reason why this sulphureous water, notwithstanding it most certainly possestes an acid salt, will yet as certainly lather with soap, and raise a greater sud than other waters commonly do; and if put into milk, though boiled up to the height, will not separate the more gross from the serous parts of it: effects so usually following upon such applications, that perhaps till now they have always been suppos’d, never as yet to have happened otherwise.

52. But Experience, that great baffler of speculation, assures us the contrary to be possible enough, and brings matter of fact to confute our suppositions in the very trawl of this water, wherein the great quantity of Vitriol, is yet so close lock’d up by the viscous particles of Sulphur, and thereby rendered so dull and unactive, that it cannot exert its enmity to (as Dr. Mayow) or friendly embraces with (as Dr. Willis) the alcalizate salt it finds in the soap; or so compress the pores of the milk, as thereby to cause a precipitation: but having as it were thus put on the nature of a fix’d salt, acts not upon its like, not longer enjoys the astringent power of an acid.

53. And under this vizer of a fix’d Alcali it was, that it acted its part, and with Syrup of Violets, gave a green tincture; unless

---

b Hist. of Colour, Exper. 29. * Ibid. Exper. 10. 1 De Thermin Batoniensibus, sub finem. 4 De Per-
we may allow its salt to be a volatile Alcali, with which also that 
Syrup turns to the same colour: to admit such a thought 'tis true 
is very hard, yet finding but a mile off; at Clifton as above-
mentioned, a Spring strangely fated with such a kind of salt; I 
adventur'd to try another Experiment of the aforesaid Honorable 
Author, and according as he directs, made a solution of subli-
mate in fair water (the only Criterion I yet know of, that plainly 
distinguishes the two Alcali's) to which, I added this Well-
water, in great, small, and the intermediate quantities: but it 
answer'd not at all the design of the Experiment, not giving the 
tawny, much less the white precipitate: Whence 'tis easie to con-
clude, that this also succeeds only in discriminating Chymical salts, 
as that great Virtuoso well observes, and not in the immediate pro-
ducts of Nature.

54. One thing more I could not but observe, that notwithstanding the powers of the Vitriol are thus restrained in reference to its acting on soap and milk, that yet it has its usual effect upon Iron: for the corrosion of the Pump-rod I must believe to pro-
ceed from Vitriol, till any one upon better grounds can convince 
me, that 'tis likely it may be from somewhat else; and yet this 
neither do I conceive to be done, but by such streams as ascend 
in the Well; and are freed from the shackles of Sulphur, much 
questioning whether the Pump-rod under, or near the bottom of 
the water, be eaten so or no.

55. To this add, that although the Sulphur do's exercise such 
dominion over, and so closely knits up the Vitriol, whilst toge-
ther in the water, yet it may and do's too, let go its hold; and 
like, what is reported by Henricus ab Heers of his Spadacene, and 
the Sauvenir by Frambesarius, can hardly be kept within any 
bounds, but expires through glasse's topt never so close: 'tis true, I had not the conveniency there of putting it under the 
Hermetick seal, but so easie a passage it made through a good cork 
cover'd over with wax, and both bound down with a double 
leather, that in fix miles riding it lost all its virtues, not giving 
then any tincture with galls, and having but a faint putrid smell 
of the Sulphur: Whether it lost in weight or bulk, as well as vo-
latile Spirits; I must acknowledge I was not then enough curious 
to observe; but imagine it might, since 'tis plain from its not

* Hist. of Colours. Expbr. 40.
tinging, with galls, that not only the Sulphur, but also the Vitrioline particles exhale with it, and corporeally seiz on the next agreeable subject, which 'tis manifest they did on the above-mentioned Pump-rod.

56. Beside the more considerable ingredients of Vitriol and Sulphur, 'tis evident that this water also holds some small quantity of Naptha, one of the liquid Bitumens, which flies not away like the two former, but after separation of the parts, made either by precipitation with galls, or insensible evaporation, remains swimming on the top in a thin skin, variegated as it were with the colours of the Rain-bow, much after the same manner as 'tis frequently seen upon waters standing in boggy grounds, or such places where we dig the bituminous Earths called Peats: But whether this will burn at all, or with any such bright flame exceeding that of sulphur, as 'tis clear, and that, or a less tenacious sulphur: for here I found not the energy of the Vitriol to fetter'd by the vigorous particles of sulphur, but that it had power to make that hostile or friendly congress with the lixiviat salt of soap, and send the oily part to float at top, making no lather or mixture with it; and also so to confipitate the pores of boiled milk, as to separate its parts into curds and whey. The quantity of salt appeared upon evaporation made by the said Dr Lane since I was there, but how much to a quart or gallon he sent me no word. This water has also a volatile part, collected by the said Doctor, which I did not find that Deddington water had; upon the tongue it seems to have a little pricking, but nothing that I could perceive of a saltish taste, wherefore trying further with a convenient Menstruum, it at last confess it self to be Flores sulphuris, precipitating with the same ebullition, smell, and colour, that some others did I had from the shops.

57. At Banbury, another Mercat Town about four miles hence, at Dr Lanes Phyfitian there, Brother to the above-named Mr Lane of Deddington, and my very good Friend; there is also another sulphur. Well, much like the former in taste, but not altogether of so strong a smell, holding, I suppose, either much more salt than that, or a less tenacious sulphur: for here I found not the energy of the Vitriol to fetter'd by the vigorous particles of sulphur, but that it had power to make that hostile or friendly congress with the lixiviat salt of soap, and send the oily part to float at top, making no lather or mixture with it; and also so to confipitate the pores of boiled milk, as to separate its parts into curds and whey. The quantity of salt appeared upon evaporation made by the said Dr Lane since I was there, but how much to a quart or gallon he sent me no word. This water has also a volatile part, collected by the said Doctor, which I did not find that Deddington water had; upon the tongue it seems to have a little pricking, but nothing that I could perceive of a saltish taste, wherefore trying further with a convenient Menstruum, it at last confess it self to be Flores sulphuris, precipitating with the same ebullition, smell, and colour, that some others did I had from the shops.

58. An-
58. Another of these of a fulphureous smell that will not take soap, and turns milk, I found at Boulid in the Parish of Idbury, in part of the possession of one M' Loggan, a worthy Gentleman, (whose assistance in the tiral of this water, and furtherance in my other business, I cannot without ingratitude ever forget:) which differs from the former only in this, that besides its tinged red with powder of Galls, with spirit of Urin it turns white, which (as I had observed before at Banbury) that would not do: whence I have ground to suspect, that over and beside the ingredients of that, here must in all likelyhood be something of Alum; and in this opinion I am the more confirmed, since I am informed, by the Controversie between D' Wittie and M' Sympson, that Vitriol and Alum are sometimes found together, as in the Cliff near the Scarborow Spaw. And that in Sweden there is a single stone of a yellow colour, intermixed with streaks of white, and very weighty, that affords Sulphur, Vitriol, Alum, and Minium; now that such a stone is here, though I dare not assert, yet questionless there may be something not so altogether unlike, but whenever there is occasion of digging there-about again, the stones and earth may deserve examination.

59. I should next have proceeded to the waters impregnated with Vitriol only, but that I am called back to Deddington again by another water of a ferd odour, in stench much exceeding all before-mentioned. This I met with in a small Close behind a Barn, within a furlong or less of that at Mr. Lanes; having the House where the Dutchy-Court is kept to the East, and the Guild West, and belonging to Ch. Ch. Coll. in Oxon, in smell so perfectly resembling that of rotten eggs, and accordingly so strongly affecting the sense, that I could not so much as put it to my mouth without danger at least of straining to vomit. Such a one as this is mentioned by Georgius Agrica, at the Castle of Steurewald in the Bisoprick of Hildebein, within a mile of Hafda; where, says he, there is another Spring that sends forth a stink, quals est pulvis bombarde extinsii: a description so agreeable also to our Sulphur well at Deddington, that as I could not at first but wonder, that two such waters should be found at places so far afunder, so strangely alike; fo it gave me a hint, that these

waters in all probability might receive their tinctures from the same Minerals, and that their difference might only lye in the distances they have from the Mineral bed, or more Colanders the one may pass through than the other. Agricola observes, that the water at Steurewald smelling like ours, much like rotten eggs, not only comes forth of a Marble Quarry, but that the belchings of such as drink it fasting, give also the odour of brayed Marble. Whether ours have either such a passage or effect, I must confess I cannot inform the Reader; my Purse not affording me to try the one, nor my Stomach the other. However, I could wish it had not been stop'd up, as I hear it is since my being there, not only for the use it might have, but that Persons better qualified than I, might have made the Experiments.

60. Of Vitriolate and Ferrugineous springs, there are also plenty in this County, one at Nether-Worton, and another at North-Weston*, within less than a Bolts-shot of each of their Churches; both of these, beside their tinging with galls, let fall a sediment of a rusty colour; only with this difference, that Nether-Worton spring is much the quicker and clearer, though I doubt not the other might be very well amended, were but little charge bestowed on it.

61. At Shipton under Which-wood there is another of these, at an Inn there whose sign is the Red-horse, but so weakly impregnated with the Mineral, that it scarce tinges sensibly with the powder of galls, yet lays down the rusty sediment in as great quantities as any of the rest; and I have met with some at other places that have plentifully enough yielded this, which by no means could ever be brought to confess any thing of Vitriol, which has begotten a strong suspicion in me, that this rusty tincture may probably be the effluvium of some other Body, different from, and not of the chalybeat kind: for were it so, I cannot imagin but the salt of Mars must needs be discovered. However, herein I will not be positive, but propound it only as the subject of a severer research.

62. And of these I was told of a very odd one in the Parish of Heddington, near a place called the Wyke (I think) now stop'd up, that in the winter time would strike with galls, but not in the summer; whereof may be given this very caffe reason; that

* I found another since, near Whites-Oak in the Parish of North-Leigh.
during the time of winter, the pores of the Earth being stop'd, and the Mineral thereby not permitted to exhale; the water is then impregnated with it, and gives the tincture; whereas in the summer season it expires so much, that the depauperated water can flow nothing of it. That waters do thus alter according to the Seasons of the Year, I found also to be manifest from the waters of Deddington, which I found sometimes lighter, and at other times heavier than common water; and to give much different sediments at divers trials with the same materials. And this I thought convenient to note, not only to excite Men to more critical Observations, but that the curious Explorator may not be startled, in case he find them at any time not exactly to answer.

63. In the Park at Cornbury, not far from the Lodge, in a pit newly digged, there rises a spring also of a Vitriol kind, colouring the mud and earth under it very black; into this pit, it being designed for a conservatory of Fish, they put over night some of several forts, but found them next day in the morning all dead; which gave me good ground to suspect (having just before met with a relation of Dr. Witties, That Carps put into a Copper Brewing-vessel to be preserved but for one night, were all found dead in like manner in the morning) that here might be something of that nature too; and that the Vitriol wherewith this water is tainted, might rather be that of Venus than Mars: And in these thoughts I was the more confirmed, when I quickly after was informed, of an odd kind of steam that rose hereabout of a suitable effect. But of this no more, leaving its further consideration to the Right Honorable and ingenious Proprietor of the place, and my singular good Lord, Henry Earl of Clarendon, a most effectual encourager of this design.

64. To these I must add another sort of waters, which though in taste they resemble milk, must yet I believe be reduced to this Head, for I find, notwithstanding their eminent sweetness, they all refuse to lather with soap, and therefore conclude them to hold some Acid: Of these we have several within the City of Oxford, one at a Pump over-against the Gros Inn, another near the Mount in New College Garden, and a third at the Pump at Buckley Hall, now the dwelling house of one Mr. Bowman a Book-seller, and several other places*: All which, notwithstanding their laetious

---

* Answer to Hydrologia Chym. p. 25. * I heard of such another somewhere near Wardington.
The Natural History

tart, I guess may be impregnated with something of Vitriol, which though of itself be a smart acid, yet its edge being rebated with a well concocted sulphur, turns sweet, and becomes of that more palatable gust. And herein perhaps I have not guess'd amiss, since we are informed by so eminent, as 'tis a vulgar Experiment, that the austerity that Vitriol gives in the mouth, is corrected by the fumes of Tabacco taken quickly after it; whose sulphureous particles, says the Learned Willis, mixing with the saline pontic ones of the Vitriol, create such a pleasant and mellifluous taste.

65. There are also two small and very weak springs, of a la- teous colour but no such taste, in the way from South-stoke leading to Goreing, by the River side; not many years since of great repute in those parts for Medicinal use, but now quite deserted; whether upon account of the ineffectual use of them, or because they are but temporary springs, sub Judice lex est. The people will tell you they were very sovereign, and never ceased running till some advantage was made of the water, and that Providence till then with-held them not. This water issues forth from a fat whitish Earth, and has always a kind of unctuous skin upon it, yet to the taste I thought it seemed dry and spirituous, as if it proceeded from a kind of Lime-stone, further within the Earth, and not to be seen.

66. But however the case may have it self there, it is not so dubious, that at a Well in Oddington, there is a water of the calcareous kind, and proceeding from some neighboring Lime-stone, which beside its dry and restrictive taste, more signally evidences itself, in the providential cure of a local Diseafe amongst Cattle, frequently catch'd by their grafting on Otmoor, and therefore by the Inhabitants thereabout commonly called by the name of the Moor-Evil: The Diseafe is a kind of flux of the belly, and corresponds (in a Man) to what we call a Dysentery, whereby the Cattle so spend themselves, that in little time from well and good liking, they fall in a manner to skin and bone, and so dye away unless prevented; which is certainly done by giving them dry meat, and suffering them to drink of this water only.

67. Beside these we have many other waters, not apparently (at least to sense) of any Mineral virtue, yet without doubt have their tinctorie from some subterraneous steam, of a much finer than

Of Oxfordshire.

ordinary, and therefore unknown texture. Such are those in
many places accounted so sovereign for the Eyes, and cure of in-
vertebrate Ulcers, after the ineffectual trials of the best Chirurgi-
ons: These for the most part, and perhaps not undeservedly, are
commonly stiled Holy-wells, not only for the good they have for-
merly done, but for that they seem to be the immediate gift of
God, and designed for the poor.

68. A very eminent one of these there is in the Parish of Sand-
ford, not far from Great Tew, which within the memory of many
thereabout, hath done great cures upon putrid and fetid old sores,
a long time before given over for incurable. These waters have
with them, according to the observations of the ingenious Doctor
Beal, a kind of active friction, but intermingling with their aspe-
rities such a pleasant titillation, as invites the Patient to rub on
the tervive water, and will all along recompence the pain of search-
ing the wound, with such speedy and indulgent degrees of san-
tion, as mitigates the torment with variety of pleasures.

69. And thus (as I am informed by persons of unquestionable
fidelity, that have often used them for their eyes, and in some o-
her cases) do the waters of St. Crosses in the Suburbs of Oxford,
whose Well was heretofore, and in some measure yet remains, so
considerable for such like purposes, that the great refort of peo-
ple to it has given occasion of change to the name of the Parish,
which to this very day we call now nothing but Holy-well.

70. But of much greater Fame was the Well of St. Edward,
without St. Clements at Oxford, now quite stop'd up; but as it's
remembred by some of the antientest of the Parish, was in the field
about a furlong S. S. West of the Church; this at least was be-
lieved to be so effectual in curing divers distempers, and there-
upon held to be of so great sanctity, that here they made vows, and
brought their alms and offerings; a custom, though common en-
nough in those days, yet always forbidden by our Anglican Coun-
cils, under the name of wilveortbunga [Wilveortbunga] more right-
ly translated Well-worship than Will-worship, as is plainly made
appear by the Reverend and Learned Dr. Hammond, out of an
old Saxon Penitential, and a Saxon Homily of Bishop Lupus; where
the word pII is rather shewed to significar fontem, than voluntatem.
Against these superstitions so ordinary in those days, there are se-

1 Philos. Transact. Num. 57.  2 Canoni. sub Edg. Can. 60.  3 Annotat. on Epif. Collof. c. 2. v. 23.
veral prohibitions in the fore-cited Penitential and Homily. And of which kind are also divers Injunctions to be seen in the Office of Lincoln, of Oliver Sutton; and amongst them, one particularly against the worship of this Well of St. Edward, without St. Clements in Oxford, and St. Laurence's Well at Peterburgh, &c.

71. And so much for the Waters, with the Minerals they hold; and perhaps too much too in such like matters, may some Man say, for an unskilful Lawyer: However, since what has been said, has not been magisterially imposed, but modestly only, and timorous conjectured; and since I have not invaded another Man's profession, by so much as naming the Diseases they may probably cure, except where they have a known reputation already, I hope I may evade the imputations of rashness, or putting my sickle into another Man's Harvest.
Of OXFORD-SHIRE.

CHAP. III.

of the Earths.

OXFORD-SHIRE, says Mr. Camden, is a fertile County and plentiful, the Plains garnished with Corn-fields and Meddows, and the Hills beset with Woods; stored in every place not only with Corn and Fruits, but also with all kind of Game for hound and hawk, and well water'd with Rivers plentiful of Fish. Which general description of the Soil, though in the main it be true to this day, yet if we come to a more particular and close consideration of it, we shall find, that though Oxford-shire almost in every part, where the industry of the Husbandman hath any thing shewed it self, doth produce Corn of all sorts plentifully enough; yet it has much more cause to brag of its Meddows, and abundance of Pastures, wherein (as in Rivers) few Countries may be compared, perhaps none preferr'd. And as to matter of Fruits, I think I may better assert of it what Giral- dus do's of Ireland, Pascuis tamen quam frugibus, gramine, quam grano, secundior Comitatus, than groundlessly to commend it overmuch.

2. The Hills, 'tis true, before the late unhappy Wars, were well enough (as he says) beset with Woods, where now 'tis so scarce, that 'tis a common thing to fell it by weight, and not only at Oxford, but at many other places in the Northern parts of the shire; where if brought to Mercat, it is ordinarily sold for about one shilling the hundred, but if remote from a great Town, it may be had for seven pence: And thus it is every where but in the Chiltern Country, which remains to this day a woody Tract, and is (as I have very good ground to think) some of the western part of the great Forest of Wessex, or Xanepexerlege, reaching, says Leland, from beside Portus Limenius in Kent, 120 miles westward, which happily falls out to be about this place: To which had Caesar ever arrived, he had never sure left us so much an account, as we find in his Commentaries concerning our Woods: Materia, says he, cujusque generis, ut in Gallia, præter Abietem & fagum, i.e.

* Britan. in Oxfordshire. * Lelandi Comment. in Cyg. Cant. in verbo Limenius. * De Bello Gallico, lib. 5. sub initium.

G 2
that there was here all manner of wood, as in France, except the Fir
and Beech: of the last whereof there is such plenty in the Chil-
tern, that they have now there about scarce any thing else; but
it lies so far from Oxford, and so near the River side, which easily
conveys it to London Mercat, that 'tis scarce beneficial to the rest
of the County.

3. As to the qualifications of the Soil in respect of Corn, I
find them in goodness to differ much, and not only according
to their several compositions (being in some places black, or reddisb
earth: in others a clay or chalky ground, some mixt of earth and
sand, clay and sand, gravel and clay, &c.) but chiefly according to
the depth of the mould or uppermost coat of the earth, and the
nature of the ground next immediately under it: for let the upper-
most mould be never so rich, if it have not some depth, or such
a ground just underneath it, as will permit all superfluous moisture
to descend, and admit also the hot and comfortable streams to ascend, it
will not be so fertile as a much leaner soil that enjoys these condi-
tions.

4. Thus have I often-times seen in this County, in all appear-
ance a very good soil, and such indeed as would otherwise have
been really so, less fertile because of its shallowness, and a
cold stiff clay, or close free-stone next under-neath it, than a much
poorer Land of some considerable depth, and lying over a sand
or gravel, through which all superfluous moisture might descend,
and not stand, as upon clay or stone, to chill the roots and make
the Corn languish.

5. Where by the way let it be noted, that I said a cold stiff
clay or close free-stone; for if there be under a shallow mould, a
clay that's mixed (as 'tis common in the blew ones of this County)
either with pyrites aureus, or braze lumps; or the stones be of the
warm calcareous kind, it may nevertheless be fruitful in Corn, be-
cause these, I suppose, do warm the ground, and give so much
strength, that they largely recompence what was wanting in depth.

6. More possibly might have been added to this general ac-
count of Earths, and not a little instructive to the Farmers of the
Country, but I found most of them froward and to flight my
Quære's; let them therefore thank themselves if I am not so ob-
liging: Befide, it seems a business a little beside my design, there-
fore in haft I proceed to a more particular Consideration of Earths
(as before of Waters) holding some Spirit, Bitumen, or concrete
Juice; and as they are useful in Trades, or are otherwise necessary,
convenient, or ornamental.

7. But herein I shall not shew my self either so angry or igno-
rant, or so much either disrespect my subject; or the civilities of
the Gentry for the sake of the clowns, as not in the next place to
treat of such Earths whose most eminent uses relate to Husbandry,
since they also hold some concrete Juices (whereby they become
improvements of such poor barren Lands) and are therefore
very suitable to my present purpose.

8. The best of these we call commonly Marl, whereof, though
it was believed there were none in Oxford-shire, yet I met with no
less than three several sorts, and in quantities sufficient enough
for use. The Britifh Marl were very famous of old, whereof
Pliny's numbers several sorts; and of principal note were the
Leucargilla, whereby, he says, Britan was greatly enriched:
And of this kind, that I guess may be one, lately discovered by
the much Honored, and my truly noble Friend, Thomas Stonor Esq;
of Watlington-Park, of which he already has had good expe-
rience: of colour it is whitrifh, a little inclining to yellow, not
very fat, and of so easie dissolution, that it may be laid on
the ground at any time of the year, and may be as good, I sup-
pose, for pasture as arable: this he found at a place near Blunds-
Court, but I think within the Parifh of Shiplake, where upon an-
other account sinking a deep pit, amongst other matters he met
with this Marl.

9. Since that, there has lately been another discovered by that
eminent Virtuojo Sir Thomas Pennyfion: in his own Grounds in the
Parifh of Cornwell, about a quarter of a mile north-west of his
House, of a blue colour, and so after five, that it would readily
enough take spots out of cloaths, and gave its owner some ground
to hope, that possibly it might be fit for the Fullers use; but he
quickly, upon tryal, discovered an incurable fault that the Men
of that Trade will never pardon: however, I take it to be so
rich a Marl, that it may amply recompence the industry of its
Master, if laid on its neighboring barren Hills; which I advise
may be done about the beginning of Winter, that the Frosts and
Rain may the better separate its parts, and fit it to incorporate with that hungry Soil.

10. Which condition I suppose may not at all be required; in the manure of a light and hollow sort of Marl, lately found by the worshipful and industrious Improver, George Pudsey Esq; of Elsfield: for in water it dissolves almost as soon as Fullers earth; and is naturally of a self so hollow and spongy, that one would think it were always in the very ferment, and may therefore be used at any fit time of year: of colour when dry, it is of a whitish gray, intermixed with sand, and very friable, and may in all probability be the very same, with the Marga candida arenosa friabilis, of Hildesheim, mention'd by Kentmannus, and out of him by Lachmund. Of just such another Marl as this, brittle and dusty when dry, but fat when wet, we are inform'd there is at Wexford, in the Kingdom of Ireland, by Dr Gerard Boat sometime Physitian there; only that that is blue, and this a whitish gray, and may therefore be fitter for Pasture than Arable. It being observed in the Counties of Sussex and Kent, where Marls are most plenty in any places of England, that the gray suit with Pastures, and the blue (Such perhaps as Sir Thomas Pennyfons) with Arable best.

11. It may therefore be expedient, that these new found Marls be thus agreeably tryed, and though they answer not expectation the first year, as some say they will not, let not their Owners be thus discouraged, but still continue to make frequent tryals, of divers proportions of Earth, at all seasons of the year, with all kinds of Grain upon all sorts of Soil, till they find out the most suitable and necessary circumstances, so shall they in time attain to a knowledge beyond the expectation, and perchance imitation of their Neighbors. But I forbear to instruct such Ingenious Persons, as the Owners of the above-named Marl-pits are: the Orator being accounted little less than a fool, that went about in his Speech to teach Hannibal to fight.

12. But beside these, we have another sort of Earth, of a fat close texture, and greenish colour, so well impregnated with some kind of salt, that put in the fire, it presently decrepitates with no
of OXFORD-SHIRE.

less noise than salt itself; and in water, after a quick and subtile solution, leaves behind it a kind of brackish taint, which I thought might proceed from a sort of Vitriol, and perhaps true enough, though the water would not tinge with powder of galls: it takes grease out of cloaths extremely well, and would it but whiten, as Fullers earth doth, I should not doubt to pronounce it the same with the viridis Saponaria, found near Beichling in Thuringia, and mentioned by Rentmannus in his collection of Fossils. This we have in great plenty in Shot-over Forest, where 'tis always met with before they come to the Ochre, from which it is separated but by a thin Iron crust, and may peradventure be as strict a concomitant of yellow Ochre, as Chrysocolla (another green Earth) is said to be of Gold. At present 'tis accounted of small or no value, but in recompence of the signal favors of its present Proprietor, the Right Worshipful Sir Timothy Tyrrel, who in person was pleased to shew me the pits, I am ready to discover a use it may have, that may possibly equal that of his Ochre. Which brings me next to treat of such Earths as are found in Oxford-shire, and are useful in trades.

13. And amongst these the Ochre of Shotover, no doubt, may challenge a principal place, it being accounted the best in its kind in the world, of a yellow colour and very weighty; much used by Painters simply of itself, and as often mix'd with the rest of their colours. This by Pliny, and the Latines, was anciently called Sil, which we have now changed for the modern word Ochra, taken up as some think from the colour of the Earth, and the Greek word Ἀχρός, Pallidus; or as others, and they perhaps more rightly, from the River Ochra that runs through Brunswick, whose Banks do yield great quantities of it; and from whence in all likelihood we received the name, upon the arrival of the Angles and Saxons in Britian.

14. They dig it now at Shotover on the east side of the Hill, on the right hand of the way leading from Oxford to Whately, though questionless it may be had in many other parts of it; The vein dips from East to West, and lies from seven to thirty feet in depth, and between two and seven inches thick; enwrapped it is within ten folds of Earth, all which must be past through before they come at it; for the Earth is here, as at most other
places, I think I may say of a bulbous nature, several folds of divers colours and consistencies, still including one another, not unlike the several coats of a Tulip root, or Onion.

The 1. next the turf, is a reddish earth.

2. a pale blue clay.
3. a yellow sand.
4. a white clay.
5. an iron stone.
6. a white, and sometimes a reddish Maum.
7. a green, fat, oily kind of clay.
8. a thin iron-coloured rubble.
9. a green clay again.
10. another iron rubble, almost like Smiths cinders.

And then the yellow Ochre, which is of two parts.

1. The stone Ochre, which we may also call native, because ready for use as soon as 'tis dug: and
2. Clay Ochre, which, because of the natural inequality in its goodness, they wash and steep two or three days in water, and then beat it with clubs on a plank into thin broad cakes, of an equal mixture both of good and bad; then they cut it into squares like Tiles, and put it on hurdles laid on trestles to dry, which when thoroughly done 'tis fit for the Merchant.

15. Where perhaps by the way it may be worthy our notice, how different either the Ochres, or opinions of men concerning them, are now, from what they formerly were: for whereas Dioscorides (as quoted by Wormius) commends to our choice the lightest earthy Ochre, highly before the other of stone: We on the contrary, and not without reason, prefer the stone Ochre as far before the clay.

16. I was told of a yellow Ochre somewhere between Ducklington and Witney, that serves them thereabout for inferior uses; and met with it beside at some other places, but none so good as this at Shotover; that at Garston being full of blue streaks, and a small parcel (that was hewn me) taken up about Pyrton intermixed a little too much with red, as if it were now in the transmutation (so much spoke of by Naturalists) by the earth and sun's heat; first into Rubrick, or Ruddle, and thence at last into pugnimity, or else black chalk.
17. Now that Nature indeed proceeds in this method, I am almost persuaded by what I have found in Shotover-hill; and else-where near it: for within two beds next under the Ochre (nothing but a white Sand interceding) there lies another of a much redder hue, which first receiving the fteams of the earth, is now in the way of becoming a ruddle, and in process of time when it grows adust, may at last make a change into a black chalk; which I should not so easily have been induced to believe, but that at Whately Towns end, near the foot of the hill, where lately some attempts were made for Coal, they met with a vein of such kind of chalk, which perhaps long before might have been nothing but ruddle, and as long before that, a yellow Ochre. But whether Nature proceed thus or no; or suppose these are not (as some have thought) the several gradations of the same individual, yet however, I shall not be guilty of misplacing, since all three belong to the Painters Trade.

18. To which may be added a fort of Ceruleum, which in English we may render native blue, because naturally produced by the fteam of some Mineral, latent under the afore-mentioned Marl at Blundis-Court, amongst which it is found in very good plenty; but yet so thinly coating the little cavities of the earth, and some other bodies (of which hereafter) to which it sticks, that no quantities can be gotten for the Painters use, for whom it would otherwise be very fit, as upon tryal has been found by the worthy Mr Stonor. Kentmannus indeed tells us of a cine-reous fort of Earth somewhere near Padua, that affords such a blue; but I guess that ours cannot be (nor perhaps is that) the immediate production of the ambient Earth, but rather of some mineral or metal below it; of which more at large in a fitter place.

19. Hither also may be referr'd a gritty fort of Umbers, found in all parts of the County where there are Quarries of Stone: a courfer kind of them I met with near Witney, and a somewhat finer at Bladen Quarry; these somtimes are found in the fteams of the Rocks, and somtimes again in the body of the Stone; and notwithstanding their gritty texture, yet prove useful enough to dressers of Leather. But yet a much finer than either of the former, has been lately taken up at Waterperry, in the ground, and near the House of the Right Worshipful Sir Thomas Curson; of so
rich and beautiful a colour, that perhaps it might better have been placed among the \textit{Ochres}, but that mix'd with Oyl, it turned darker than that they call \textit{English}, and much more so than the \textit{spruce-Ochre} of \textit{Shotover Forest}.

20. Befide thefe, we have another \textit{fine Earth}, of a white colour, porous and friable, insipid and without scent, dissoluble in water; and tinging it, of a milky colour, and somtimes raifing a kind of ebullition in it; found frequently in the fissures or seams of the Rocks, or sticking to the hollow roofs of them: in short, so altogether agreeable to what \textit{Conradus Gesner} (and out of him \textit{Boetius de Boot}, \textit{Calceolarius}, \textit{Aldrovandus}, and \textit{Olaus Wormius}) calls \textit{Lac Luna}, that I could not but think it the very fame. And to put all out of doubt, I tried the Experiment of \textit{Daniel Major} (who wrote no less than a whole \textit{Treatife} concerning it) and found according to him, that with \textit{Lacca}, though I could get none good, it gave the skin so florid a whitenes, that I dare pronounce it a good \textit{Cosmetick}, and upon that very score have given it place here.

21. I observed it first near the \textit{Worcester road}, about mid-way between \textit{Holton} and \textit{Sir Timothy Tyrrells}, where the Stones taken up, for I know not what use, as also at some places in \textit{Whately field}, were all in a manner covered with it. And I met with it again near \textit{Hafeley}, in the fields between that and \textit{little Milton}, and quickly after at \textit{long Hanborough}, upon stones provided for walling there: I enquired of the Quarry-men what it might be, whether they had made any use, or observations of it, but all I could get would amount to no more; but that it was a \textit{sign} of a very good \textit{Lime-stone}.

22. Which alfo it seems is its \textit{character} amongst our Neighbors in \textit{Ireland}, where (we are \textit{told}) the best \textit{Lime-stone} is of a gray colour, and if broken, has a white duft that flies away from it. But if we may believe \textit{Olaus Wormius}, 'tis a \textit{sign} also of something much better than that, who apprehends it to be nothing lefs than a certain \textit{effect} of \textit{Metallick vapors}: \textit{Oritur}, (faies he, speaking of \textit{Lac Luna}) \textit{ad vaporibus metallicis, qui indies subiles vehunt exhalationes, qua ubi per saxa in cavitates exsudaverint, humido evocato, quod succum est remanet & in medullam banc raram, teneram, & friabilem concrevit.}\footnote{De \textit{figuris Lapidum}, cap.6.}\footnote{\textit{Boats Nat. Hift. of Irel.} t.20. feq. 4.}\footnote{\textit{Ol. Wormii Museum}, cap.4.}\footnote{\textit{more}}

\textit{To which Daniel Major} not only agrees, but
more particularly adds, that the matter of this Earth proceeds from the metallick vapours of silver ore, by some fermentation raised and sublimed, and then condensed on the sides of the Rocks.

23. Of which, says Gesner, there are two sorts; the one gross and gritty, because immature and crude; the other more perfectly concocted, whiter, lighter, and softer: And of both these we also find here, but whether indicative of silver ore, as in the mentioned places by Joh. Daniel Major, is the great question. In answer whereunto I cannot but add, that though I should be very unwilling, that any Owner, Farmer, or others, should hazard their Fortune upon my weak judgment, without the advice of ancient and experienced Bermen; yet that at Shot-over, beside Lac Lunae, there are other Symbols of silver Ore.

24. Whereof, if any heed may be given to Pliny, the Ochre before-mention’d may be accounted one: In argenti & auri metallis nascentur etiam optima pigmenta Sil & caeruleum; where by Sil he means such yellow Ochre, than which, there is no place we know of in the world that has greater plenty, or of equal worth. To which we may add a sort of Iron-flone, which is not Iron-ore, found peradventure in as great quantities here, as it is upon the hills near Schemnitz in Hungary, the greatest Mintown in that Kingdom: where it seems it is not only a sign of the Ore, but is also of great use in melting of it; whereof saies Dr. Brown, in his Journey thither, that of a liver-colour is counted best. Now that we have such an Ore, though I dare not promise, yet provided we had in the greatest plenty, the liver-colour’d Iron-flone (I dare say it) would not fail us.

25. But if Lac Lunae alone may be a sufficient Index, and if we are not mistaken in the thing it self, as I verily think we cannot be, none of the places already mention’d can shew it in quantity and goodness too, equal to a Quarry in the Parish of Cornwall, south west and by west about a hundred yards from the Right worshipful Sir Thomas Penysdons house; where it is found so well concocted, and of so great purity, that the driven Snow never appeared whiter; and yet in so great quantity too, that I cannot guess the Mineral, or whatsoever other metal it be, that
gives so great a stream as this, can lie very deep, or be very poor: Yet I shall not presume to advise its owner, the eminent Virtuoso Sir Thomas Penniston, any further to dig in quest of it, than according as he shall want Stone upon other occasions, to sink his Pit for the future, perpendicular to the Horizon, whereas now he takes it as it rises in plano: So that in time, when he is gotten through the Rock, a more certain judgment may be past on what lies under, with little charge or damage to him: Where if in time he finde a Treasure, I am sure the Discoverer will not want his reward, from so Ingenious, and every way so accomplisht a Person, at least in such proportion as has alwaies been allowed by the Societies of the Mines Royal, and Mineral Battery-works.

26. Befide the notice it gives of Mines, and use it has in covering the blemishes of the Face, like the Earth Quei of China, mention'd by Kircher; its Medicinal uses are very great. For by Georgius Agricola, and Fernante Imperato; the former whereof calls it Stenomarga, and the latter Agaricus Mineralis: it is thought to have the virtues of the Samian Earth, and to be very beneficial in stopping of blood, and womens diseases. Boetius holds it to be a good narcotick, and that it safely may be given to procure sleep. And Gesner affirms it to be commonly sold by the Apothecaries of Lucern, and used by Chirurgians to dry gleetting fores; and that given to Nurses, it increases their milk, and quickly makes their Breasts apparently swell. And upon this account it serves me as a seasonable transition to pass next to the Earths of Medicinal use.

27. Of which the most likely I have met with yet, is dug amongst the clay they use for bricks, in the Parish of Nettlebed, not far from the Wind-mill, of as red a colour as Bolus Armenus, but not like that discoloring the hands; strongly adhering, if put to the tongue, but whether provocotive of sweat or no, I have not hitherto been able to perswade a tryal. However, let it prove never so good, I'le not promise the owner any great profit, because of the humor we have of despising our own, and only admiring and esteeming those things that are far fetched and dearly bought.

28. But quite of another mind was that famous Physitian,
MR. Henry Sayer of Magdalen College Oxon, who commonly made use of a cinereous Earth, somewhat tending to yellow, and finely chamletted, that he found at the Quarries, in the gullies of the Rocks in the Parish of Heddington: with which, as I am informed by my worthy Friend Mr. Cross once his Apothecary, and still living, he did as frequently, and as well procure Sweats, as with any of the Forreign earths whatever.

29. To these may be added a whitish fat earth, formerly of some use in external applications, which they fetch'd, whilst the waters continued in request, from the orifice of the afore-mentioned spring at Goreing, andphanied it at least, to be a very good remedy for the ach of Corns, and some other such maladies: but as soon as the waters began to fail, the earth too (though still there remain enough) began to decline in its reputation, and is now of very little, if of any esteem.

30. There is another white earth of some use in this Country, which some will have also, as well as Lac Lune, to deserve the name of a mineral Agaric: it grows for the most part within round hollow Flints, to be had almost every where in the Chiltern Country, and good to stop fluxes boiled in milk; and I was told by an eminent Phyistian, has been used in Consumptions with good success. The stone in which it grows they call here a Chalk Egg, and is the same with the Geodes of the ancient Naturalists, of which, because further in the Chapter of Stones, I forbear to add more concerning it here.

31. Hither also must be referred not only the earths that are found to be soveraign for Mans preservation, but according to the Logical rule of contraries, such as often have been his destruction too: Whereof there are some in the Parish of North Leigh, that send forth such sudden and deadly stews, that they kill before the Patient can give the least notice, of which they have had two very deplorable examples.

32. The first whereof happened in August, about twenty years since, when two men of the place employed to dig a well, first fickned, and wisely withdrew from the work: whereupon it was undertaken by two others of Woodstock, men of greater resolution and less wisdom; who before they could do any thing, considerably in it, sunk down and irrecoverably dyed in the well: which quickly being perceived by a woman above, a Miller hard
by was called to their assistance, who as unhappily as willing-
ly descending to them, also suddenly fell down upon them, and
dyed: To whom, after some deliberation taken, another ventures
down with a rope about his middle, but he fell from the Ladd-
der in just the same manner, and though presently drawn up by
the people above, yet was scarcely recover'd in an hour or
more.

23. And now again but lately, on the 20th of August 1674,
upon a buckets falling casually into a well, on the south side of
the Town, about a furlong from the former, a woman calls her
neighbor, a lufty strong man, to go down by a Ladder to fetch
up her bucket, who altogether unmindful of the former acci-
dent, soon granted (as it proved) her unhappy request; for
by that time he came half way down, he fell dead from the
Ladder into the water: the woman amazed, calls another of
her Neighbors, a lufty young man of about eight and twenty,
who hastily descending to give his assistance, much about the
same place also fell from the Ladder, and dyed, without giving
the least sign of his change, so suddenly mortal are the damps of
this earth.

34. Dr. Boat, in his Natural History of Ireland, gives ac-
count of an accident that happen'd at Dublin, in a well there so
very like ours, that they scarcely differ in any circumstance. And
we have a relation in our Philosophical Transactions, of such kind
of damps that happen'd in Coal-mines belonging to the Lord
Sinclair in Scotland. Now though we must not conclude from
hence, that here must therefore needs be Coal; yet, conjoined
with others I know hereabout, I take it not to be so unlikely a
sign, but that of all others I know of in the County, I guess this
may be the most probable place.

35. For though I think those poifonous and killing st eens
may indeed more immediately have their rise from a Pyrites, or
Coperas, found here in great plenty where-ever they dig; a
piece whereof brought me by a friend from thence, upon take,
proved a Vitriol so strong and virulent, that presently from my
mouth it so affected my stomach, that I confess for a while I was
fearful of danger: yet, it being the common consent of Natu-
ralists, that such Pyrites are nothing but the efflorescence of Mine-

* Cap. 19. sect. 4. v Philosophical Transactions. Num. 3.
ral,$ latent underneath them in the bowels of the earth, my conjecture thereby is not made the less valid.

36. With the Pyrites cinereus, or Copperas stone, not unlikely there may also be some mixture of Arsenic, which advances its malignity to that deadly strength, that no man may approach under pain of death: But that for the future, the insensible invasions of this secret enemy may for ever be avoided; let all workmen, and such as upon any account whatever have occasion to dig or go down in these wells, first throw down into them a peck of good Lime, which flaking in the water, and fuming out at the top, will so effectually dispel all such poisonous vapours, that they may safely go down, and stay some time unhurt.

37. From these mischievous ones of Vitriol and Arsenic, I proceed to some other more innocent salts, before promised more fully to be handled here, with which some earths being peculiarly qualified, are accordingly disposed to petrifde bodies. How all petrifications are performed by salts, and petrifications per minima, by their subtilest st eens, I suppose has already sufficiently been shown, as also how waters most probably effect them: It remains only therefore now to be proved, that earths as well as waters, do afford such st eens as permeate also the most solid texture.

38. To which purpose I met with a curious instance in the Fields between Clifton and Nuneham-Courtney, of a stone that represents a found piece of Ash, cut both parallel and transversely to the pores, and retaining the grain and colour so well and lively, that no body at first believes it to be other than a firm and solid piece of wood; and yet this was taken out of grounds thereabout, as far from water as one need to wish. In short, the version seems so very perfect, its subject appearing to have been very found and free from rottenness, that either we must own such petrifications as this, to be truly such, and totum per totum, or else allow that stones may grow in grain and colour exactly like wood.

39. But that the latter of these may not so far take place (though the possibility of the thing must not be denied) as to exclude a possibility of its being sometimes otherwise; I take leave to instance in another petrification made also by an earth, and not by water, that seems to carry a necessity with it, of its subjects once being solid wood: for beside, that it shews the close grain of Oak,
and therefore by Naturalists called Drytes; it was taken up in great quantities too, and out of some of the pieces, (whereof I have one) it may be plainly seen where twigs have come forth, the knots still remaining where they were cut off; so that unless we fly to the sports of Nature, and allow her to imitate almost all things in stone, we cannot well avoid a consent, that this was sometime really Wood. It was casually dug up in the Parish of Wendlebury, in a gravelly ground not far from the Church, and is, I believe, the same Earth mentioned so good for this purpose in our Philosophical Transactions.

4c. Thus having considered the principal Earths used in Husbandry, Painting, Medicine, &c. I proceed in the next place to treat of some others, left in value, and put to inferior uses: Amongst which we may reckon the very uppermost Turf; which beside for Bowling-greens, and Grafs-walks in Gardens, is here not unfrequently used by Thatchers, and laid on Mud-walls, and the tops of Houses, in the place and manner of those we call Ridge-tiles; not that it is so good as Thatching (though some say it better resists the winds) but because in some places Wood is so scarce, that they cannot get praises to fasten on Thatch; or else the people so poor that they care not to buy them.

41. Also at some other places for want of Wood, they make use of another sort of Turf for fewel, not the upper Green-sword, but an inferior stringy bituminous Earth, cut out like Bricks, for the most part from moorish boggy grounds; in some Countries called Peat-pits, in others Mosses. The best of this Turf that I have seen in Oxfordshire, I met with at Mr. Warcups in the Parish of North Moor, but dug as I was informed in Stanton-Harcourt, about a mile distance S. West from the Church: it lies but one spits depth within the ground, and is supposed to be at least four foot thick: They cut it in March, and lay the pieces called Peats to dry on the grass, sometimes turning them; which when reasonably well done, they then pile up like Wheelwrights felleys, leaving every where empty spaces between, that the Air and Wind passing through them, they at length may become dry enough for the fire. They think that the stringy roots, that together with the Bitumen, make up the Peats, do never flourish above the surface: if so, I am something confirmed in an opinion, that there are
many subterraneous Plants not noted, of which I intend a diligent enquiry. After the Peats are taken out, they fill up the ground again with the gritty earth that was first cut up. And at Cowley, where they also dig them, they finally leave the depth of one shade-graft at the bottom, as a foundation whereon they may grow again, which in the space of twenty or thirty years, 'tis observ'd they will do in the North of England.

42. The scarcity also of fireing has induced some People to burn a sort of black substance, of a grain somwhat like rotten wood half burnt, but participating also of a Mineral nature, and therefore by Authors called Metallophytem, or Lignum fossile: put into water, it will not swim; and into fire, it consumes but slowly, and sends forth very unpleasant fumes; it is found in a Quarry called Langford-pits, in the Parish of Kidlington, not far from Thrup, about eighteen foot deep under the Rock, where there lies a bed about four inches thick. But at Ducklington I met with a much finer kind, and richer in bitumen; for though on the out fide it looks like wood, yet broken, it shews a smooth and shining superficies, not unlike to stone-pitch, and put in the fire, has not near so ill a smell. This was dug, and kindly bestowed upon me by the Worshipful William Bayly Esq; who told me beside of an Aluminous earth that he somwhere also found in his ground. As for the substance, Lignum fossile it is thought to be originally a cretaceous earth, turned to what it is by subterraneous heats, which probably at Kidlington may indeed be great; because reflected by the Quarry above it, for that it was never formerly wood, notwithstanding its specious and outward likenefs, is plain, from its never being found with roots or boughs, or any other signs of wood.

43. At Marb Balden Heath, and Nuneham-Courteny, they have a sort of earth of dustile parts, which put in the fire scarcely cracks, and has been formerly used by Potters, but upon what account I know not, now neglected. There is also a Clay near Little Milton that might very well serve for the Potters use. And at Shotover-bill there is a white clay, the fourth fold of earth in the way to the Ochre, which during the late wars, in the siege of Oxford, was wholly used for making Tobacco-pipes there; and is

still in part put to that service, mixed with another they have from Northampton-shire. It is also of excellent use to Statuaries, for making Moddels, Gargills, or Anticks; and containing a hard, but very small grit; in polishing Silver, it comes near to Tripela.

44. And so do's an anonymous very white earth, found in the seams of the Quarries at Teynion, which at first I concluded a crude Alabaster, because I found near it a piece that was perfect: but reducing it into a very fine powder, and putting it over a quick fire, it would not boil like Alabaster dust, nor keep the colour, but turned reddish. Many other tryals were made with it, in Plants, Polishing, Painting, &c. but my endeavors succeeded in nothing so well, as in polishing smaller silver Vessels, that could not endure burnishing well; to which it gave a more glorious brightness than Tripela would, though perhaps not so lasting; and not far behind that of burnish'd Plate.

45. And yet neither this, nor the former will polish brass, nor any thing else that is not of its colour, which has lately engaged my thoughts in a Query; whether in all other Metals the rule does hold: for I find, that Sulphur gives a lustre to Gold; and that nothing does brighten Copper so well, as a sort of stuff they call rotten stone, also something of its colour.

46. At Teynon also, within a spit of the surface, they dig a sort of earth they there call Lam, of a whitish colour inclining to yellow; which mixt with sand, and some other earth, makes the best earthen floors for ground-rooms and barns: it dissolves as quick as Fullers-earth, and were it not for a fault which might possibly be help'd, it may serve their turns perhaps as well as any they use.

47. To these may be added another whitish earth, which corruptly I suppose from its colour is called Which-earth; mixed with straw, they use it for side-walls and ceilings, and with horse-dung it makes mortar for laying of stones: it seems to be a natural mixture of lime and sand, found at Thame, Waterperry, and Adwell, and flakes in water (like Gypsum) without any heat.

48. At Milton near Adderbury, Great Tew, and Stunsfield, I met also with another sort of spungy chalk, which though it will not flake like the former; yet at Milton and Adderbury used for pointing, seems to binde the stones of their walls very well: and theirs at Great Tew being somewhat finer, serves as well to white their rooms
rooms within (as I saw at Swerford,) as to point walls without; but at Stunfield there was no body knew of its use.

49. Other earths there are that I find in this County, for whose names, as well as natures; I am quite at a loss; whereof there is one in Sir Thomas Pennyston's Park, which for the strangenes of its quality deserves the first place. Of colour it is extremly white, of little taint, and less smell; lying in veins in a yellowish clay, like a medulla about the bigness of one's wrist: taken out with a knife, it falls into a fine powder, somewhat gritty, but of so very great a weight, that its double at least to any other earth of its bulk; put in the scale against white Marble dust, it equall'd its weight; and exceeded that of Alabaster by almost a fourth part: set in sand in a glass retort, and driven with a quick and strong fire, it sublimed to the fides of the glafs a little, but still preserved its colour and weight, till put between two Crucibles, one inverted upon the other; well luted, and strongly forced in a wind-furnace for about two hours, it lost above the moiety of its weight; for as I well remember, of three ounces put in, there came not out full one and a half, and yet nothing sublimed in the top of the Crucible: the colour still remained as white as ever, and the bulk (as near as I could guess) the same, but now of a strong salt and urinous taint; which after solution, filtration, and evaporation, came at last; to what people as little understood, as what became of its ponderous ingredient.

50. We tried it also at Cornwell, in Sir Thomas Pennyston's Laboratory, because of its weight with divers fluxing salts, in hopes of some kind of metalline substance, but all, as before, to little purpose. So that I cannot tell what to divine it should be, except the Gur of the Adeptifs congealed, which they describe in their Books to be much such a thing, which for want of more time to spend in its service, I leave to the discovery of future ages.

51. In the Chalk-pits almost every where in the South-east parts of Oxford-shire, they finde a sort of iron-colour'd terra lapidosa, in the very body of the chalk, which I think they call Iron-moulds, and particularly at a place between Brightwell and Berrick, of an oval figure: how they came to be of that shape, or at all grow, in a substance of so different a nature as chalk, I confess to be a problem beyond my knowledge, as well as the
use they may probably have, which I also remit to posterity to find.

52. They have an earth about Teynton of a yellowish colour, adorned all over with glittering sparks, which unless they are particles of the specular stone, or English Talc, with the former must be reckoned amongst the unknown earths.

53. To which add another kind of terra lapidofa found about Thame, at the bottom of their Quarries; it is much of the colour of the Turkish Rusina, hollow and spongy, and full of shining grains like a sort of Pyrites, but of what nature or use I can no where find. Nor of another sort of Clay found at Hampton-Gay, holding a grit of a golden colour, much of the nature of Pyrites aureus, only 'tis not found like that in great pieces, which by our modern Naturalists are called Brafs lumps.

54. And thus I had concluded the Chapter of Earths, but that I think it belongs to this place to mention also such accidents as attend them; and therefore must not be altogether silent of an eminent Prospect about a mile from Teynton, where from a Hill North-east from thence, ten Mercat towns in a clear day may plainly be seen. Nor of a small Earth-quake, that on the nineteenth of February, 1665. was observed at divers places near Oxford; as at Blechington, Stanton St. John, &c. But it shall suffice just to mention it, Relations (with the concomitants) of it, being already published: 'one by the Honorable Robert Boyle Esq; and the other by the Learned Dr. John Wallis.

CHAP. IV.

of Stones.

As in the Chapters of Waters and Earths, I treated only of such as eminently held some salt or sulphur, and were some way or other useful to Man: I intend in like manner in this of Stones strictly to observe the same method, and take notice only of such as either plainly drew those Minerals, and supply the necessities; or are for the ornament, or delight of Man-kind.

2. How stones are chiefly made out of salts, with a mixture of earth and sometimes of sulphur, was formerly hinted in another place. It remains only that I consider them in a more particular manner, and shew which they be, and where they are, that hold any of these principles more signally than other, which I suppose by their effects may best be discover’d.

3. In the Road from Oxford toward London, not far beyond Tetworth, in a hollow way on the rising of a hill, I found a soft stone there-about called Maume, of a whitish colour; whose salt is so free from the bonds of sulphur, that with the frosts and rain it flakes like lime: perhaps half the firing used to burn away the sulphur in other lime-stone, might serve the turn here. An Experiment so very likely to be beneficial to the Country, that I left it with the Son of the ingenious Improver, Sir Thomas Tipping, as a thing not unworthy of his Fathers trial; but whether he have at all, or but unsuccessfully made any, I have not yet had the favor to hear.

4. In the way to Whitsfield, as I rode thither from Tetworth, I found the ways mended with this kind of stone; I suppose because they could get no other, for certainly otherwise there were nothing more unfit, than a stone of so loose and open a salt: much rather with such should they mend their Lands than High-ways, that like lime, marles, and chalk, will flake in the Winter; which I take for so sure a mark of its improving quality, that I cannot but commend it to the tryal of the Country.

5. And for their encouragement, let me farther tell them, that at a place called Hornton in the North of this County, they commonly
monly use the chippings of the stone dug there in the Quarry, for improvement of the Land, and that not without apparent success; and yet the stone is of a much harder kind, than this at Tetworth and in the way to Whitfield.

6. Amongst some MSS. notes of Natural things, I met with one of a stone at Oriel College; commonly called (says the Author) The sweating stone; at which the Birds were constantly pecking and licking; as I guess (if ever there were any such thing) for some kind of saltiness they found come from it: I say, if ever there were any such thing, for I find it not in this new, nor remains there any tradition of it in the old College. I therefore pass it by without further notice.

7. However, in short, all stones have so much salt in them, that in some measure they are an improvement of Land, for though it be so close lock'd up with sulphur, that the greatest frosts and rain will not make the stones run, yet there is still such an emission of saline steam, that some earths have their whole fertility from them. Thus have I seen Fields cover'd with Flints and Pebbles produce better Corn than where there were none, which perhaps may be a better reason than what is brought by Pliny, why the Foreign Colonies came to Syracuse to inhabit there, and practise Husbandry; after they had cleared the ground of all the stones, could have no Corn, till they had laid them again on the very same ground from whence they had taken them but just before.

8. The like may be observed in walls and buildings, where several sorts of vegetables, yea trees of great bigness, will thrive and prosper remote from the earth, without any further nourishment, than that they have from the fertile stones, and lime they are laid with, also made out of stones.

9. If it be objected that Pebbles and Flints also hold a sulphur, as well as a salt, and that in all probability Corn and other Vegetables may receive their flourishing verdure, rather from the warm comfortable steam of that, then the others of salt, I shall not so much as contend about it, but gladly accept of the opportunity by this means to pass from stones holding salt only, to such as have also a mixture of sulphur.

10. And such are all that with steel, or any other fit body,
will strike fire, and therefore by a very fit name called *Pyrites*, under which genus may be reckoned not only *Pyrites* strictly taken, but *Flints*, *Pebbles*, *Sand*, and whatever else by any quick and sudden attrition may have its parts kindled into sparks: of which as many as I find eminent in their kind, or are fit for uses, as briefly as may be.

11. And amongst them (as I think most due) for the prerogative of its colour, I assign the first place to the *Pyrites aureus*, or golden fire-stone, whereof they find great plenty in digging of Wells about Banbury and Cleydon, and somewhere in the River at Clifton near Dorchester: Some of them are taken up in great lumps (and are therefore also called *Brass lumps*) of uncertain form, whereof I had very rich ones out of the Well of one Boreman of Cleydon. But thole from Clifton aforesaid seem to be laminated, and some of them shot into angles like Bristol Diamonds, and are mentioned by Aldrovandus, which he calls, *Pyrites cum fluoribus adnascentibus*, and *cujus partes coharent tanquam lapilli angulos*. These strike fire in great plenty, and for that reason formerly have been much used for *Carabines* and *Pistols*, whilst *Wheel-locks* were in fashion; and are also very weighty, and perhaps hold *metal*, which, were it not for the too great proportion of *sulphur* (whence such Minerals, faith the Learned *Willis*, have chiefly their concretion) that carryeth it away while it melteth in the *Crucible*, by over *volatilizing* it, which the *Mine-men* therefore term *the Robber*, might otherwise be procured with advantage to the owner.

12. At Aston Rowant, Nettlebed, and Henly, and indeed all along the Chiltern Country, they have another sort of *Marchasite*, within side of a golden, and without of a darkish rufly colour, and therefore at some of the afore-mentioned places called commonly *Crow-iron*: this sort, if broken and laid in the air, or any other moist place, dissolves into a *salt* that tasteth like *ink*, and is no question the *Pyrites of Kentmannus*, which for that reason he terms *atramenti parens*. And such a one is the *Pyrites* found at North-Leigh, brought me thence by my worthy Friend Dr. Perrot, which not only like the former gave the taft of *ink*, but expos'd to the *air* awhile, became cover'd with a white downy *salt* of the very same taft, which I take to be such a natural *atramentium*
13. Next to these, in order of nature as well as dignity, comes the silver Marchastite under consideration, of a white glistering colour, and to be had in the bottom of the River between Clifton and Burcot: this strikes fire as well as the golden Pyrites, but notwithstanding it was exposed in the fittest places, yet would never, that I could perceive, send forth any efflorescence. Another sort of them I met with at Deddington, taken out of the afore-mentioned sulphur: Well there, of as glorious a colour as the former; but several times tryed on the best Steel I could get, would never yield the least spark of fire: whence I rather concluded it to be argentum felium, or Cat-silver, but that it would not shine in the dark, or consume in the fire: However, it may pafs for a sterile nitidum, so often mentioned by Naturalists, it being a glorious nothing, of no kind of use.

14. That Flints, Pebbles, and Sands, are also Pyrites, needs no further evidence than that they strike fire, a thing so obvious to the meanest Observer, that to spend time to prove it, would be loft time to the Reader; it shall suffice therefore to enumerate the several kinds of each, and chiefly to insist upon such as have uses.

15. All along the Chiltern Country of Oxford-shire, Flints are as plentiful as any where else; amongst them the black one, well polish'd, will supply the place of the Lydian stone; and at Henly they use them in making of Glass, of which more anon in the Chapter of Arts. They are found beside of divers other colours, and some of them so transparent, that they seem not only to imitate, but to be the very fame with Achats. I have one, found at Dorchester, about an inch and half square, of a flesh colour; and so transparent, that it may well enough deserve the name of Sardachates. Such as this were also shewn me, by the truly Ingenious; the Right Honorable James Lord Norreys of Ricot, and found, as I think his Lordship told me, some where thereabout, and are I do not question the very same stones, that Kentmannus a indeed places in his Title of Flints, yet calls them, Pellucentes Sardæ colore.

16. Of Pebbles there are some also transparent, to be had a-

---
a Tit. 2. cap. Sorj. & de succia efflorescent. a Kentmann. tit. 8.
Of Oxfordshire.

bout Finstock, and Nuneham-Courtney; I found them also in the way between New-yate and Ensham, but none comparable to what was shewn me by that great Virtuoso, the Right Worshipful Sir Anthony Cope of Hanwell, the most eminent Artist and Naturalist while he lived, if not of England, most certainly of this County, whose House me thought seemed to be the real New Atlantis, which my Lord Viscount Verulam had only in fancy. The Pebble I remember was about the breadth of one hand, of a flat form, and yet not much less than an inch in thickness; so clear and pellucid, that no Chrysal that ever I saw yet excell’d it; so that had not its Master, the cautious Artist, took care to leave on it part of its outward coat, few would have believed it had ever been a Pebble.

17. These Pebbles when transparent, make an excellent ingredient for the Glass-works; and so do those which are white, though not transparent, called by some Authors by the name of Quocoli, and perhaps not much different in nature from the Cuogolo of Ferrante Imperato, and such are the Pebbles gathered at Tefino, with which they make the purest Glass at the Moran.

18. There are about Goreing and Nuneham-Courtney, a sort of Pebbles of a blue-black colour, that if polish’d, might supply the place of Touch. And about Fawler and Stunsfield are a reddish kind, very hard, and for the most part of an oval Figure, so excellent for pitching streets and stables, and for Painters mullars, that none can be found more fit and durable.

19. After consideration of Flints and Pebbles apart, let us now take a view of them jointly together, for so I found them at Caversham, and Greenvil, and in the way from Pushill to Stonor-house, in clusters together of divers colours, and united into one body, by a petrified cement as hard as themselves, and most of them I believe capable of polished. But the best of all are in the Close at Stonor, of which there are some so large and close knit, that could the Ingenious Proprietor, Thomas Stonor Esq; find a way to flit and polish them without too much charge, he might make him rich Chimney-pieces and Tables of them, so far excelling Porphyrie and Marble, that perhaps they might compare with the best Jasper or Achat. For I have seen such as these found about Hampsted, curiously wrought into handles of

K knives.
knives by that eminent Artist Sir Anthony Cope; to which few Aechats might be compared, perchance none preferr’d, either in the polish or variety of colours.

20. The Ingenious Mr. Ray, amongst other Observations made in his Journey through Italy, &c. tells us, That in the Church of the Benediftines at Ravenna, the Monks did flrew him two Marble pillars, for which they faid, the Venetians offer’d them no less than their utmost weight in Silver. But the like he fays, he had feen elsewhere, at the Library at Zurich, and at Verona in our Ladies Chappel, in the Garden of Seignior Horatio Guifli: their generation at frift, fays he, was out of a mass of small Flints and Pebbles, united by a cement as hard as themselves, and capable of politure; which cement, he fufpects, was separated by degrees from a fluid wherein the ftones formerly lay: which I take to be a description fo agreeable to ours, that nothing more need be faid to promote their tryal.

21. Hither also must be reduced a courtier fort of Smiris, dug up in the pits at Whately Towns end, of a cinereous colour, hard and rough, and striking fire as well as a Flint. The best fort of Smiris ferves for feveral ufls; but ours is fit only to cut the hard-er fort of ftones, that the Sand commonly ufed will not so well do, and perhaps for fome other inferior ufls.

22. And to these must be added the feveral forts of Sands, which upon violent motions all strike fire, and are commonly, and fometimes promifeoufly ufed, for Building, Hour-glafles, and cutting of Stone. But fome there are of a more peculiar and confiderable ufe, and fuch is that dug in the Parish of Kingham, which after ‘tis washed and duly ordered, fo perfectly resembles Calis-Sand, that it ferves and is fold for the very fame: it is not found in every place, but they have signs, (like Miners) to know where it lies; viz. a fort of stuff that looks almost like rotten wood, which if they meet with under the Turf, they feldom fail of the Sand a little deeper; which they fift cleanfe from rubbish, and the greater ftones, by putting it through a course fieve, then they wash it in a trough and lay it a drying; which when fufficiently done, they separate again by a finer fieve, the courfer part of it from the finer: the courfer ferves for whetting fithes, but the finer fort for scouring penuer, for which purpose it feems ‘tis fo very excellent, that the Retailers sell it for a penny a pound,
23. Other sands there are also of very good use, to give a consistancy and body to glass; the naturally whitest are at Nettlebed and Shot-over, but the finest by much at Finstock and Ledwell, which when washed and cleansed, at least equal the former. The first of these has been tried with success at the Glass-house at Henley: and any of the rest, perhaps, might prove as good Tarfe as any they have from France, or is used in Italy, were they but in place where they might be tried.

24. From Sands, I proceed to Lapis arenarius, commonly called Free-stone, and used in Building; of which we have as great plenty and variety in Oxfordshire, peradventure as in any other part of England. The Quarry at Heddington, scarce two miles from Oxford, supplies us continually with a good sort of stone, and fit for all uses but that of fire; in which, that of Teynton and Hornton excel it. In the Quarry it cuts very soft and easy, and is worked accordingly for all sorts of Building; very porous, and fit to imbibe lime and sand, but hardening continually as it lies to the weather.

25. Of it in general, there are two sorts; one that they call Free-stone, and the other Rag-stone: but these again are subdivided into several species, according as they are cut or put to divers uses. The Free-stone, if cut cubically into very great blocks, is then by way of eminence called nothing but Free-stone; but if cut into oblong, or other sorts of squares, of a lesser bulk, they then call it Ashler; and the fragments of these of inequilateral, multangular Figures, Scabbable-burs. The two first are used in principal Buildings, and the last, if squared, is sometimes mixed with Ashler in Range-work; or by itself in that they call Planten-work in the meaner Buildings: but when not squared at all, is commonly thrown in amongst Rag-stone for walling; for which only, and making lime, that second sort is good, except it rises flat in the bed, and then 'tis worth the while to hew it for paving.

26. Of the stone afore-mentioned consists the gross of our Buildings; but for Columns, Capitels, Bases, Window-lights, Door-cases, Cornisibing, Mouldings, &c. in the chiefest work they use Burford-stone, which is whiter and harder, and carries by much a finer Arris, than that at Heddington: but yet is not so hard as
that at Teynton, nor will it like that endure the fire, of which
they make Mault-kills, and hearths for Ovens; but then they take
care to surbed the stone, i.e. set it edg-ways, contrary to the
posture it had in the bed, for otherwise there will be some danger
of its flying.

27. Befide the fire, it endures the weather, for of this mix-
ed with another fort dug near Whately, on the Worcester road side,
as it passes betwixt Holton and Sir Timothy Tyrrells, are all the
oldest Colleges in Oxford built; as Baliol, Merton, Exeter, Queens,
Canterbury (now part of Ch. Ch.) College, Durham (now Trinity)
College, New College, Lincoln, All Souls; Magdalen, Brasen-nose;
and the outermost Quadrangle of St. John Bapt. Coll. yet it en-
dures not the weather so well as Heddington, by reason, I sup-
pose, of a salt it has in it, which the weather in time plainly dis-
folves, as may be seen by the Pinnacles of New College Chappel,
made of this stone, and thus melted away.

28. And yet the moisture of water has no such power over
it, but that they make of it Troughs and Cifiterns, and now of
late Meß-fats for Brewing; first hinted, 'tis true, by Mr. Bayly of
Ducklington, but practisef by one Mr. Veysey of Teynton, who had
the first made him by one Strong a Mason, which it seems did an-
swer expectation so well, that it has since obtained in many other
places. Of these, that generous and courteous Gentleman, Sir
Compton Read of Shipton under Whichwood, has one that holds a-
bout sixty five bushels, drawn home with no less than one and
twenty horfes; they ordinarily meß in it three quarters of Mault,
but can, when at any time necessity requires, meß five at a time:
the dimensions of which Vessal of one single stone, taken within
the hollow and abating its thickness, because of its vast unusual
magnitude, I thought fit to note, and give as followeth;

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>long</td>
<td>2 yards</td>
<td></td>
<td></td>
</tr>
<tr>
<td>broad</td>
<td>1 yard</td>
<td>8</td>
<td>an inch</td>
</tr>
<tr>
<td>deep</td>
<td>1 yard</td>
<td>6</td>
<td></td>
</tr>
</tbody>
</table>

yet much larger than this might be had from the Quarry, were
there use for them, or could portage be contrived; for as I was
informed by many credible witnesses, there was one single stone
dug in this Quarry, containing no less than three hundred tuns.
And another in the year 1673, measured by Mr. Veysey, of an
hundred
hundred and three tun, accounting sixteen foot cubic to the tun.

29. Other Quarries there are also of considerable use, as Bladen, Little Milton, Barford, and Hornton, whereof the last has the best Fire-stone of any in the County; some of it seems to have Iron-colour'd veins, that receive (as I have seen) a tolerable polish, and is the Stone I mention'd before, whose chippings (laid on it) improve their land, by reason I suppose of the salt there is in it, which may also be the cause it endures fire so well.

30. At Cornbury Park there was a sort of stone, the Quarry whereof is now quite exhausted, that never would sweat in the moistest weather, of which the pavement of the Hall in the house there, still remains as a sufficient testimony: of this, did it rise in great blocks, might possibly have been made very good Mill-stones, the not sweating being a principal qualification in all stones whatever used for Corn-mills.

31. But before we take leave of materials for Building, we must not forget that the Houses are covered, for the most part in Oxford-shire (not with tiles) but flat-stone, whereof the lightest, and that which imbibes the water least, is accounted the best. And such is that which they have at Stunsfield, where it is dug first in thick cakes, about Michaelmas time, or before, to ly all the winter and receive the frosts, which make it cleave in the spring following into thinner plates, which otherwise it would not do so kindly. But at Bradwell (near the Grove) they dig a sort of flat-stone, naturally such, without the help of winter, and so strangely great, that sometimes they have them of seven foot long, and five foot over: with these they commonly make mounds for their Closes, and I have seen a small hovel, that for its whole covering has required no more than one of these stones: and some of them are of so hard and close a texture, that I have known them by Painters of very good skill, preter't before Marble for grinding their colours.

32. To stone used in Building they sometimes add Lime, which because for the most part, is here made of stone, must also be handled in this place; for which they count the hardest rag-stone best, but any will make it, says the Learned Willis, except such
as is made up of a reddish kind of gravel: the best sign of it here, as well as in Ireland, has been sufficiently hinted in the former Chapter, to be that white and flumpy kind of matter, that sticks to the stones in the caverns of the Rocks, and so plentifully found at Cornwall and Whately; at Hanborough, Fawler, and in Cornbury Park. Not but that very good Lime may be had from stone that fhews not the least of this sign, as at Bladen Quarry, and many other places, but that none makes better then the stone that has it; except hereafter it may be found true here, what Lachmund afferts of the BisHoprick of Hildeſheim, where the best (he says) is made of the hardeft stone, quod varia in fe Conchylia continent, set full of petrifed shell-fish: for if so, our best Lime-stone must be at Charleton and Langley; at Little Milton, and Shot-over Forrest, in the Quarry there on the north side of the Hill, not far from the way to Sir Timothy Tyrrells; at all which places, the stone is stuck full of Cockles, Escallops, and Oysters, of which more anon in the following Chapter.

33. Befide the stone that is used for the substance, there is other that serves for the ornament of Building, a sort of gray Marble dug in the Parish of Blechington, in the Lordſhip of the Right Honorable Arthur Earl of Angleſey, Lord Privy Seal: Of this there are several Chimney-pieces and Pavements, in his Lordſhips House there, well worth the notice; as also at the Right Honorable the Earl of Clarendons at Cornbury. And of this are the Pillars of the Portico's at St. Johns College in Oxford. They make befide of it Tomb-Stones and Tables, and of late also Mill-stones, good enough for the Oyl-mills; but not for the Corn-mills, because of its supposed sweating, to which this is subject in rainy weather, like all other Marbles.

34. Some other stones there are of inferior use, which yet must by no means be past by in silence; whereof I know one so like the Tripoli-stone, in colour, confiftence, and for all its uses, that I cannot but think it of the very fame kind: to ſilver it gave that very laſting brightneſs, that another piece of Plate that was tryed against it, receiv'd from the Gold-smiths Tripoli-stone, and proved it ſelf in all respects so much the very fame; that would any thing please us not far fetch'd, perhaps there might be no further need of ſending any more to Africa for it.
35. Nor must I forget the Iron-stone at Shot-over, though occasionally mention'd, and its uses declared, in the immediately preceding Chapter of Earths: so called, not from any such metal that it holds, but meerly I suppose from the colour 'tis off. This I tried with the Load-stone and Aqua fortis, thinking thereby, if it held any Iron, it must needs have confessed to one of those two. But I since have found the Experiments but ill applied, for neither will Cavala (which is the best Iron-ore) answer either of them: So that I do not now condemn it to be no Iron-ore, upon those grounds as at first, but from other considerable differences it has from the known Iron-ores of Gloucester-shire and Sussex.

36. There is also near Thame on Cutthbrook-side, another Iron-colour'd stone, but more spungy than the former, and including within it a blackish kind of Cinder; the moft like, of any thing I yet have seen, to Magnesia (in the Glass-houses, called Manganeze) only it wants of its closeness of texture and weight: what it should be, or for what use likely, to me I confess is wholly unknown, unless I may call it the Siderites of Pliny. I therefore desist to say more about it, but commend it to the discovery of future ages.

37. At Eyfield-merrymouth, in the Field above the Cave lately made by Mr. Bray, in the bank near the Brook, I found a Stone of a light yellow colour, made up of glittering Lamellae, or Plates, which according to the description of Georgius Agricola⁠, seems not unlike the Samian-stone, found also about Hafda in the Bishoprick of Hildesbeime, and good only for polishing Silver and Gold. Such laminated Stones by Nicolas Steno⁠ are thought to be nothing but incrustations; made in the confines of a fluid and solid, an opinion that seems to come near to the truth. However it be, it is somthing formed, and may well serve to usher in the next Chapter, which I have wholly reserved for formed stones.

---

1 Hist. Nat. lib. 37. c. 10. 2 Poëlimon, lib. 5. 3 In Preddrôme.
After Stones made to serve the necessities of Man, and not brought into form but by the tool of the Artift, come we next to consider those that are naturally formed, and seem rather to be made for his admiration than use. Whereof the World is beautified with so great variety, that as on the one hand I cannot but wonder at the great Providence of God, and his most perfect Workmanship, that has thus created the Universe for Mans delight as well as use: so on the other, I cannot but reprehend the petulant despisers of this innocent sort of Learning, who in derision have called it, picking of stones; as if what the Omnipotent and most wise God hath thought fit to create, were not worth the consideration of weak Man. But let such malicious Scoffers know, that 'tis their pride and ignorance that has engaged them in this Censure: for as God has created them, so some things must be written off meerly for information, as well as others that tend to our advantage. Befide, who knows but these things may have a use, that hereafter may be discover'd, though not known at present. Since then their Exceptions are so ill grounded, that they vanish in a manner as soon as named, 'tis but just that I pay them in their own coyn, and flight their judgment more than they dare do my subject.

2. In the handling whereof, though in a particular Chapter, I shall observe the method of the whole Essay: And first treat of such formed stones as either in name, or thing, or both, relate to the Heavenly Bodies or Air; and next, such as belong to the Watery Kingdom: After them, such as resemble Plants and Animals, whether in the whole, or parts. And lastly such stones, wherein contrary to all rule, Dame Nature seems to imitate Art; for so far from idlenefs (says a very good Author ¹) is Nature in the bowels and dark caverns of the earth, that she continually plays the Geometrician there, and presents us with Bodies, almost of all kinds, in stone.

¹ Enclius, de re Metallica, cap. 7.

3. Amongst
3. Amongst the stones that have relation to the Heavenly Bodies, the first place I think may be reasonably given to such as respect the greater Lights; upon which account, since the Heliotrope is not found here, much less the Gemma Solis, mentioned by Pliny\(^k\); The Selenites or Moon-stone must have the precedence, which we find in great plenty in a bluish clay that lies above the Rock at Heddington Quarry, and in digging Wells, &c. at Hampton-Cay and Hanborough.

4. Whereby the way let it be noted; that I intend not by the Moon-stone, the grey Tephrites of Pliny\(^1\), that grows like a Crescent; by the Greeks called Menoïs; nor that other strange stone mention'd by Pliny and the Poet Marboedus\(^m\), corporeally containing the Figure of the Moon increasing and decreasing, like that in the heavens; but a stone so called, not from its figure, but (as 'tis honestly confess'd by Gesner\(^n\) and Agricola\(^o\)) that only represents the Image of the Moon, in all its phases, but best at full, just as it were in a glass, and therefore by Authors is somtimes called also Lapis specularis.

5. And thus much will our Selenites do, if obverted to the rates of the Moon in right angles; which if all that is really intended by the name, (for the very same reason) I know not why it may not as well be called the Sun-stone too, since it equally represents the one as well as the other.

6. But though it hath nothing of the Moon in figure, yet it is commonly found of a certain shape, in circuit hexangular, but with two of the sides broader and more depresed, in the form of a Rhomboides, as in Tab. 2. Fig. 1. a. and therefore the learned Steno\(^p\) (which I think its best name) not unfitly stiled it Selenites Rhomboides. Befides the two larger Rhomboideal sides, it hath eight others of an oblong square, in all making up a decahedrum parallelepipedum; whereof the squares of the two shorter sides of the great Rhomboides, one is somtimes a right angled inequilateral parallelogram, as in Tab. 2. Fig. 1. and the other a Rhomboid; and somtimes again they are both Rhomboids; but those on the longest sides of the great Rhomboids, as far as I have observed, are always Trapeziums.

7. As to its texture, the grain runs several ways, but slits the

---

\(^{k}\) Nat. Hist. lib. 37. cap. 10.  
\(^{n}\) Nat. Hist. loco citato.  
\(^{m}\) Museum Calcularium, lib. 1.  
\(^{p}\) De figuris lapidum, cap 2.  
\(^{o}\) De Natura Fossilium, lib. 5.  
\(^{1}\) In Prodromo, pag. 74.
easiest of any of them, in a planum to the more depressed Rhomboidal sides; which way it may be cut into very thin plates by Aldrovandus 9, called Scalias, for which reason 'tis called also Alumen Scialoe; not that it has the taste of Alum, or any thing like it. It breaks also another way into small threads, of which it seems chiefly to be composed, much after the manner of Amianthus or Tale, but its parts not so pliant as either of them: these threads lie for the most part, close and parallel to the longer sides of the great Rhomboids, as they are describ'd in Tab. 2. though I have seen them sometimess also parallel to the shorter; but they seem not to be continued the whole breadth of the Rhomboid, but divided by other parallel lines of a greater distance, that sometimes are subtended to the acute angles of the Rhomboid, but most commonly run in a more oblique posture, as may likewise be seen in Fig. 1.a. In these lines its parts are also easily separated, but breaking short off, and nothing so flexible as they are when broken as the threads run. According to some peculiar positions of these parts, there are some of them that really represent the Rain-bow, whereof I have some with the colours as vivid, as I ever saw any in a gla\s Prism. Of these Aldrovandus had one out of Cyprus, of which he has given us a Cut in his Museum; but it being in Mans power to make these Rain-bows as he pleases, I think even those we find thus, to belong of the two rather to casualty than nature, and therefore pass them by.

8. There is, 'tis true, a sort of them of a different figure, not so easily to be met with, with only two depressed sides, and scarce any angles, but what are so obtuse that they deserve not the name, in the whole almost of an Oval form, as represented Tab. 2. Fig. 1.b. This sort of Selenites, besides the shape, is also so different from the former in texture, that it flits not like that into plates or scales, parallel to the most depressed sides, but quite contrary parallel to the thickness only; which I take to be a character abundantly sufficient, to make it of a different species from the other, though in the rest of their texture they be much the same.

9. About the origin of this matter, Authors differ much; amongst whom Galen 10 makes it the dew of Heaven, congealed, as he says, by the light of the Moon, and therefore calls it by the name of Aphrofelinum, but restrains the performance of the feat

---

9 Museum Metallicum, lib. 4. cap. 33. 1 Lib. 4. cap. 33. 2 Lib de Simp. Med. ad Patern.
to Egypt. Enceius* thinks it a sort of moisture of the earth, so concreted, that like Chrystal it will not dissolve, but remains as it were an indissoluble ice, whence the Germans took occasion to call it Glacies Maris. But that learned and industrious investigator of Nature, Georgius Agricola, differs from them all, and makes it a product of *Lime-stone and water, Gignitur (says he) *ex *saxo calcis *cum *paqua aq[ua] *permisto*; and thus I find it to grow here with us at Heddington, in a blue clay that lies over the Quarry, whose outermost crust is a hard *Lime-stone.

10. The learned and ingenious Steno w in his *Prodromus, thinks Chrystal and Selenites's, and all other Bodies having a smooth surface to have been already hardened, when the matter of the Earth, or stones containing them, was yet a fluid; if so, indeed Agricola must be out in his aim. But I cannot see how our bed of clay at Heddington, above the Quarry at some places ten foot thick, could have been a fluid within some ages past; and yet of the Selenites's of the Rhomboideal Figure, I find some as small as a Barley-corn; some about three inches, and others again at least half a foot long: so that they seem rather to have some succession of growth, and now to be in fieri; than to have been all together already hardened, when the clay that now contains them was but a fluid. Beside, they then would have been found close together, whereas we here meet them some higher some lower, and mix'd all together little and great; and the very clay it self, as tis broken to pieces, seeming somewhat inclinable to this sort of form.

11. A third sort we have of them also found here at Heddington, in the very same clay, as also at Cornwell and Hanwell; with two sides like the former, more depressed then the other, in compass also hexagonal (the thinnest sides of them being divided by a ridge) but in the form, not of a Rhomboid, but an inequilateral parallelogram, as in *Tab. 2. Fig. 1. d*. Some of these we find single, lying in any posture, the biggest scarce an inch broad, or above four inches long; and others joined together in a certain position, with their flattest sides towards each other, and edges downward, and their ends constantly meeting in a center. The Ingenious Sir Thomas Penniston has observed, that at Cornwell they generally lye in ternaries, but here at Heddington we find them

* De *Lapidibus & Gemmis, lib. 3. cap. 56. u *De *Natura Fossilium, lib. 5. w *Prodromi prop. 1. obser-

vat. 1. * There are such as these in Spain, Thuringia, and Cappadocia. Aldrovand, lib. 4. cap. 33.
oftentimes more, and not unfrequently irradiating all manner of ways into the form of a Globe, the several Selenites, like so many radii, all pointing to the center, as is plainly represented by one half of such a globe of them, in Tab. 2. Fig. 1. c.

12. The texture of these is something agreeable, and something different from the Rhomboideal Selenites, for they all cleave in a planum to the flattest fides, and seem to consist of small threads like them; but some have the threads running obliquely to the whole square, as in the lower part of Fig. 1. d. others have them meeting in the middle of the flat in an obtuse angle, as in the upper part of the same Figure.

13. The meeting of which threads so in an obtuse angle, I thought at first might have very well occasioned that representation of the gramen segetum paniculâ parva, fair panicked corn or bent-grass, to be seen in most, if not all of this kind (which like a fly or fider in amber) seem to be included at each end of them, with the panicles turned contrary to each other: But I quickly found my self mistaken, by flitting of several, whereby I discovered, that the threads sometimes ran quite contrary to the spreading panicles of the corn or bent-grass (so very well counterfeited in many of them) and therefore not likely to give that form: And that the thing it self was nothing but clay, thus prettily dispersed in the form of a bent; which beside the pleasure of the surprizal, gave me another argument against Steno’s opinion, That Selenites’s were all hardened, when their beds they now lie in were nothing but fluids: for it cannot well be conceived how the clay should any way get to be within them, had it not had a being before the selenites, and thus included at the time of their formation.

14. Of formed stones, though there are few that have any, yet some there are of eminent use, and such is our selenites or specular stone; good taken inwardly for many distempers, number’d up by Cerutus ², Aldrovandus ³ and Galen ⁴; and externally to take away the blemishes of the face. In ancient times, before the invention of glafs, it was of very great use for Lanterns and Windows; it being easily flit into very thin plates; yet loosing nothing thereby of its diaphaneity. Of this says Agricola ⁵, are the

¹ In Mufeo Caleario. fol. 3. ² Lib. 4. cap. 33. Mus. Meta. ³ Di Sinp. Med. faciis. lib. 3. ⁴ Di Na- turae Histolium. lib. 5.
Church-windows made at Caswick, in Saxony, and Merseburg in Thuringia, which certainly must be of a different sort, from what is described by Aldrovandus and Wormius: the one whereof says 'tis imbrium impatiens; and the other, humido corruptibilis. I exposed this of ours many rainy days, but could not find that from the weather it received any damage, and therefore guess it to be the same describ'd by Agricola: I steeped it likewise many days in water, but found not any sensible alteration of its body; though it gave the water both an odd smell and taste. As for Lanterns and Windows; so they anciently used it in making of Bee-hives; that through it they might see the Bees operations, as in glass-hives now: an Invention by some people taken for new, though very well known in the days of Pliny:

15. Out of burnt selenites is made the belt gypsum, for Plaistering, Images, Fret-works, &c. When burn'd, it turns to a pure white Calx, by the Italians called Geffo, from the Latin word gypsum: Of this they make those curious counterfeit Tables, like Marble in-laid with divers Preious stones, in the forms of Animals, Plants, &c. The way of making them is taught us by Kircher; but there is a friend of mine has a better method, who intends very speedily to make some attempt to make them in England, and of English materials. And so much for our first formed stone Selenites, on which I had not dwelt so long, but to supply the defects of other Authors, whose descriptions of it are but mean and imperfect.

16. After the Moon-stone, the Asteria, or Star-stones, next offer themselves to our consideration, which, to avoid the confusion of other Authors, I shall only call those, whose whole Bodies make the form of a Star, as in Tab. 2. Fig. 2, 3, in opposition to the Aströites, which in the whole are irregular, but adorned as it were with a Constellation, as in Fig. 4, 5, 6 and 7.

17. The Asteria, or star-stone, otherwise by Gesner called Sphragis Asteros, or signillum stellae, because of the use it is sometimes put to, is plentifully found in the Fields at Cleydon, the most Northern Parish of the whole County, Northward from the Church, and particularly on the Furlong called Horë-stone Furlong: the texture of as many as I have yet seen, seems to be

---

*Footnotes:*
- c Mas. Metal. lib. 4. c. 33.
- d In Muscio, cap. 7.
- f Kircheri Mundus Subterr. Lib. 12. sect. 5. part. 3. cap. 3.
- g De Figuris Lapidum, cap. 2.
of thin lamellae or plates, lying obliquely to the Horizontal position of the Star, much after the manner of Lapis Judaicus, and their colour various, according to the different Soils they are found in; whence 'tis; that in Glocefter-shire and Yorkshire, where they are taken out of a clay, they are almost themselves of the same colour, breaking, as the Ingenious Mr. Lifter informs us  

\[ h \]

Flint-like, and of a dark shining politure. In Warwickshire they are accordingly, and in some places also of Glocefter-shire, of a cinereous colour. And here at Cleydon, because taken forth of a yellowish earth, of a yellow colour, herein varying from all I had seen before. They differ much also from those of other Counties in circumference and softness; for here we have them ordinarily of above an inch and half, and scarce any so little as an inch in compass; than which in those Counties there are but few bigger. And whereas in other Counties they are so hard and so firmly cemented, that 'tis very difficult, if at all possible, to separate them from each other, without spoiling the Intagli or workmanship of the Stars; these if but steeped a night in vinegar, or other sharp liquor, may be divided the next morning with safety and ease.

18. And as in colour, circumference, and hardness; so these sometimes differ from those of other places in figure too, as Tab. 2. Fig. 2. where beside the sculpture that makes up the angles, there is plainly represented a rose, or other uniform figure, in the middle of it, which I never saw at any other place, nor indeed are such often to be met with there.

19. In all other matters, I think these Asteriae of Cleydon agree with the accurate description of them, by the Ingenious Mr. Lifter; all seeming to be fragments, and no intire Bodies, and found either in one single joint, as in Tab. 2. Fig. 2. or in 2, 3, 4, 6, 8, 10, or 15 heaped together, as in Fig. 3. making a pentagonal cylindrical column, of which I met with none that were full an inch long; but however, guess that about 20 joints, as in other places, may go to an inch: every joint consists of five angles, which in some are very obtuse, in others more acute; the middle of each angle is a little hollowed, and the edges more prominent and thick furrowed, by which the several joints are knit together, their ridges and furrows being alternately let into
Of Oxfordshire.

One another. In the center of the five angles is a small hole, conspicuous enough in most of them; but in some I have observed the small hole on one side, and a little prominence on the other, fit as it were to be let in to the Central-hole of the next joint, after the manner of the ridges and furrows of the angles.

20. Many of these longest jointed Afterie, have certain joints thought broader and more prominent than others, dividing the whole body as it were into certain conjugations, of two, three, or more joints; which conjugations, says the learned and curious Observer, Mr. Lister, are marked (as he calls them) with sets of Wyers, which though I could not perceive in any found at Cleydon, yet when I put a column of them into Vinegar, at those very places I could perceive bubbles, standing as it were at the orifices, where formerly these Wyers were in all likelihood inserted, by no means otherwise visible to the eye. And whereas 'tis certain that most of these in other Counties, if of any considerable length, are not straight, but visibly bent and inclining; these are not now, or scarce appear to have ever been so, though possibly this may rather be referred to the shortness of those I met with, or ill luck in finding none of the kind, than to any different operation in nature here, from her usual performances in other places.

21. They are found also about Swerford of the same colour, but nothing so plentifully, or large as these at Cleydon, for the biggest I found there was scarce an inch round; in all other respects they correspond with them, only the conjugations, made by the prominence of some joints beyond the rest, are more visible in these than in any at Cleydon.

22. Of Astriotes or Starry-stones, such as in bulk are irregular, but adorned all over with many stars, there are no less in this County than four several sorts: Whereof, in two, the stars are in mezzo Rilievo, prominent, and standing outward, with the strike or breaks descending from the Center at the top, on all sides to the Rock on which they grow. Some of these are of a larger, as Tab. 2. Fig. 4. and others of a smaller kind, as Tab. 2. Fig. 5: both found in the Quarries of rubble-stone, dug only for mending the High-ways, not far from the foot of Shot-over Hill, on the right hand of the road from Oxford to London, in the Parish of Heddington.

*Philosoph. Transact. loco citato.

23. A
23. A third fort there is, and indeed the most beautiful of any it has been hitherto my luck to meet with, to be had in the Fields about Steeple-Barton, first discovered to me by a worthy Gentleman, since deceased, the Worshipful Edward Sheldon Esq; to whose furtherance of my design I am not a little indebted. But these, quite contrary to the former, are Intagli, deeply engraven like a seal, and striated from the prominent edges above (which for the most part are Hexagons, and sometimes Pentagons) to a center in the bottom, as in Tab. 2. Fig. 6. yet agree with the former in this, that the Stars of all three are only superficial, and not to be found in the body of the stone, and have none of them (that I know of) been any where noted before.

24. To these add a fourth fort, imperfectly described by Gesner, and out of him by several others; whose frieze, like the third fort, descend in a concave, but from edges most times round, or quinquangular at the top, and tend to a center not of their own kind, as in Fig. 6. but smooth; and not depressed, but visibly prominent, as in Fig. 7. These are found in the afore-mentioned Quarries of rubble-stone in the Parish of Heddington, and are stellated not only in the superficies of the stone, but quite through the whole depth of it, yet not so that one continued star (as some have thought) does reach through it; but many, according to the thickness of the stone, about ten of them lying in the depth of an inch, much after the manner of the Asteria or star-stones, only they are not separate, but joined together, and making as it were so many ranges in the stone, which are clearly represented by Fig. 8. which shews the face of such a stone, cut parallel to the descent of the stars in its body, which lie within one another like so many cones.

25. Of this fort in France there are some so great, as Gesner was informed by Petrus Bellonius, that they used them in building of Walls and Houses; to which use 'tis true we do not put ours, but I suppose it is not for want of bigness, but because we have much better stone for that purpose; for here we have them likewise so plentifully and great, that we commonly pave our Caufey with them, as may be seen in the Caufey without St. Clements, leading from Oxford up Heddington hill.

26. Having hitherto considered these stones apart, and seen

1 De Figuris Lapidum, cap. 2. m Vid.
how they differ from one another, let us now consider them all together in that admired quality of their moving in Vinegar, which in some measure is found in the Astroites, but is much more signal in the Asteria or Star-Stones: for the Astroites must be broken in very small pieces before they will move, though put in good Vinegar, but the Asteria will move not only in a whole joint, but two or three of them knit together, which I have often seen done by the yellow ones of Cleydon, though of greater bulk than those of other places; which joined, with some other circumstances anon to be mention'd, has given me ground to suspect, if not conclude, that though it may be true enough what Mr. Lister a has asserted, as well of all fossils, as the stones Astroites, that as many of them as Vinegar will corrode as a Menstruum, do all move in it; yet none of them reach the effects it has on the Asteria, to which therefore I must crave leave to allow somewhat more than either to the Astroites or any other fossils.

27. For beside the progresive motion to be seen in those, the Asteria has a motion of circumgyration, and moves brisker and longer than any of them; for though it hath been steeped in Vinegar three or four days, yet upon infusion of a fresh acid, it still sends forth many little bubbles as at first, from underneath it, in the instant of its motion: which seems to argue, that it has it not wholly from the corrosion of the Menstruum, but in part at least from some other principle, which I take to be a spiritual, yet corporeal effluvium, continually flowing from it, when provoked by an acid.

28. Whereof there is one, which hereafter shall be publick, found out indeed by chance at the House of Mr. Wildgose, Physician at Denton, and an ingenious Chymist, whose affittances (in gratitude) I must ever own: where not having Vinegar so ready at hand, we thought fit to make use of another suitable liquor, which so effectually excited the effluviums of the stone, that they ascended in a cloud to the surface of the Menstruum, and there fered exactly in the form of the stone, and that not only of a single joint, but a whole column of them together: which persuaded me, that Cardan o was not so far out of the way, nor deferred so much the reproofs of Aldrovandus p and others, for asserting the motion of such stones to arise, from vapors expelled from

them by the power of the Vinegar. Since perhaps his position (though not so well made out) comes nearer to truth than any his Animadverters have brought for it since.

29. After the stones some way related to the Celestial Bodies, I descend next to such as (by the vulgar at least) are thought to be sent us from the inferior Heaven, to be generated in the clouds, and discharged thence in the times of thunder and violent showers: for which very reason, and no other that we know of, the antient Naturalists coined them suitable names, and called such as they were pleased to think fell in the Thunder, Brontia; and those that fell in showers, by the name of Ombrìe: Which though amongst other Authors has been the only reason why these have had place next the tellurial stones, yet methinks it is due to most of them, by a much better pretense, having somthing upon them that rather resembles a star of five points, than any thing coming from the clouds, or the Fifth Echinus; to the shell whereof deprived of its prickles, Ulyfes Aldrovandus, and some others, have compared them, and therefore called them Echinìtes. However, I think it rather to retain the old names, though but ill applied to the nature of the things, than put myself to the trouble of inventing new ones.

30. Of Brontìa therefore, or Ombrìe (call them which you will) we have several sorts in Oxford-shire, which yet all agree in this, that they are a sort of solid irregular Hemispheres; some of them oblong, and having somewhat of an oval; others either more elevated, or depressed on their bases. All of them divided into five parts, most times unequal, rarely equal, by five rays issuant from an umbilicus or center, descending from it down the sides of the body, and terminating again somewhere in the base. They are never found in beds together, like some other formed stones, nor that I have yet heard of (says the Ingenious Mr. Ray') in great numbers in one place: but in the latter I must take leave to inform him, that though I think it in the main to be true, yet that at Tangley, Fulbrook, and all about Burford, they are found in such plenty, that I believe it were easie in a little time, to procure a Cart-load of the first sort of them, carefully exhibited in Tab. 2. Fig. 9, 10.

31. Whose innermost texture, though it seem to be nothing

\footnote{Museum Metallic. lib. 4. cap. 1. 1 Observations Topograph. srt. p. 116.}
more than a coarse rubble-stone, yet is thinly cas'd over with a fine laminated substance (the plates lying obliquely) much like Lapis Jaudicus: In form they are flat; depressed upon the bafis; in colour generally yellow, their rays made of a double rank of transverse lines, with void spaces between the ranks, visible enough on the top of the stone Fig. 9, but not so distinguishable on the bottom Fig. 10. the whole body of the stone, as well as the spaces included within the rays, being elsewhere filled with An- nulets, much more curiously wrought by Nature, than by the tool of the Graver.

32. The center of these rays, by Pliny called Modiolus, by Arifotle, Umbilicus, is never placed on the top of the stone, but always inclining to one side; as that at the bottom do's to the other; the Axis lying obliquely to the Horizon of the stone. Which gave occasion to a Learned Society of Virtuosi, that during the late Usurpation lived obscurely at Tanglely, and had then time to think of so mean a subject, by consent to term it the Polar-stone; having ingeniously found out, by clapping two of them together, as suppose the Fig. 9, and 10. that they made up a Globe, with Meridians descending to the Horizon, and the Pole elevated, very nearly corresponding to the real elevation of the Pole of the place where the stones are found.

33. The two next, represented Fig. 11,12. like the former, being flat and depressed on their bases, having also some resemblance of a star of 5 points, were therefore thought fit to be placed next. Whereof the 11 indeed is a beautiful stone, found somewhere in the Chiltern about Aston Rowant; whose inner substance, though of black Flint, to outward view is of a cinereous colour, and adorned by Nature with somwhat more than ordinary. For beside the Modiolus, and the issuing rays made of double ranks of points, with transverse lines interceding them, it is also set with other points surrounded with double Annulets; on each side the stone with a single, and from the terminations of the rays with double ranks. The points thus surrounded, are neither deeply excavated, nor any thing prominent above the superficies of the stone; but the rays as they are but short (not extending above half way to the rim of the stone) so they are deeply hollowed down within it, wherein it differs,
33. From that of Fig. 12. found in the Fields about Ifley, whose rays like those of the Polar stones, are made of double ranks of transverse lines, whereof the outermost are much the longer, and extended likewise to the rim of the stone; its substance also like that seems to be a yellow rubble, but not cased that I can perceive with any such laminated substance, or adorned with Annulets, yet the Umbilicus of some of them, is more beautiful than theirs, it being somtimes divided and foliated like a Rose. And so much for the Brontice depressed on their bases.

35. Let us now proceed to others of a more elevated kind, whereof those expressed Fig. 13. found somwhere in the Chilterns, by the Country people called commonly Cap-stones, from their likeness to a Cap laced down the sides, are of any the most uniform. For the centers of these, both at the top and bottom, are on all hands equidistant from the rim of the stone, and the rays interceding the centers being also equidistant, cut it exactly into five equal parts; which in none of the former, nor thosethat are to follow, either by reason of their shape, or eccentricity of their Modioli, can possibly be found. The rays of these are made of two rows of points set pretty deep in the body of the stone, out of which you are to suppose, according to Aldrovandus (who resembles this stone to a disarmed Echinus) proceeded the prickles that Animal is fenced with.

36. As also that other (somwhat of an oval form, Tab. 2: Fig. 14,) whose center corresponds with the figure of the stone, and is not concluded within the rays, as in the former, but is extended in a ridge to the rim of it: from which center there descend as it were double rays, made up of two double sets of points; which, expanding themselves as they draw toward the rim, at about midway are surrounded with single Annulets, which each of them including two points apiece, are therefore all of an oval Figure. Its substance within is a black Flint, though without it appear of a cinereous colour, and was found in the Fields between Ewelm and Brightwell.

37. At Pyrton I met with another of these, a black Flint within, and cinereous without, of oval figure and center like the former, but the descending rays from it of a quite different kind: for whereas they were made of points hollow and deep, these on the contrary are all prominent; and whereas they descended
To the right Worshp.
The learned and curious Artist W. HOVEN COPE Baron.
This second Table of formed STONES wherein if 9th
in. are found in his own grounds is humbly dedicated by
R. P. L.L. D.

Burgheron, pinx. et sculp.
scended in double branches and points, which near the rim were included in oval Annulets; the double and protuberant points of these, about mid-way to the rim are turned into single, though much larger ones, as in Tab. 3. Fig. 1. which now descending in single points, and meeting in an Umbilicus not in the middle of the basis, but so much to one side, that the branches upon this account being some longer some shorter, and crossing the basis in a much different manner, make a figure somewhat resembling a Flower-de-lis, as in Tab. 3. Fig. 2. which had been all I should have said concerning these Brontie, but that perhaps it may not be unworthy our notice.

1. That the protuberancies of this last stone are all hollow, which when broken, look just like the hollow points of the former; which has given me some ground to suspect, that the deep points of that may have formerly been eminencies like the raised points of this, and are only broken down by the injuries of time.

2. That none of these Brontie have been described before, but the 12 and 13 of Tab. 2. which indeed are somewhat like the 8 and 10 of Aldrovandus; and

3. That though some Authors have thought them the petrified shells of the Echinus Spatagus, or Brissus of Aristotle, I have reason to think (as shall appear in a fitter place) that they will prove nothing less.

38. Beside the Brontie of the Forreign Naturalists, we have others, which here in England we call likewise Thunder-bolts, in the form of arrows heads, and thought by the vulgar to be indeed the darts of Heaven: which only in conformity to my own Country (though for as much reason as the foregoing Brontie) I have placed amongst the stones related to the Heavens.

39. From their form, by all Naturalists they are called Belemnites, from the Greek word Bélemon telum, which indeed there are some of them represent pretty well. We have of them in Oxford-shire of divers sorts, yet all of them I find agreeing in this, that their texture is of small striae, or threads radiating from the center, or rather axis of the Stone, to the outermost superficies; and that burn'd, or rub'd against one another, or
scraped with a knife, they yield an odour like rasped Horn.

40. In magnitude and colour they differ much, the biggest I have met with yet, being that express in Tab. 3. Fig. 3. in length somewhat above four inches, and in thickness much about an inch and ½. This was found in the Quarries in the Parish of Heddington, hollow at the top about an inch deep; and filled with a kind of gravelly earth; and has the rima or chink, which Aldrovandus and Boetius say all of them have; but I find it otherwise, as shall be shewn anon. Of colour it is cinereous, inclining to yellow, and if vehemently rubb'd, is the only one amongst all that I have, that like Amber takes up straws, and some other light bodies.

41. There are of them also of a bluish colour, found at Great Rolwright in a bluish clay, of about a fingers length, hollow at the top, and have some of them, instead of one, three clefts or rima, but neither so plain or long as the former, they ascending from the cuffis scarce half up the stone: two whereof are shewn Fig. 4. and the third hidden behind the Sculpture; which may make some amends for that of Fig. 5. which is of colour cinereous and hollow at the top, but has no chink at all; whereof there was a bed found in digging the Sulphur Well at Mr. Lanes of Deddington, as was mentioned before in the Chapter of Waters.

42. To which add a fourth sort, found in great plenty in the Gravel-pits without St. Clements, in the suburbs of Oxford, very few of them hollow at the top like the former, but radiated like a star from a closer center, as in Fig. 6*, which made Gesner think it to be the Astrapias of Pliny, though expressly he says, 'tis of a white or azure, whereas this is always of an amber colour: yet draws not straws, is somewhat transparent, and may therefore pass for a sort of Lapis Lyncurius; not that it has original from the urine of that Beast, for we have plenty of the stones here and none of the animals, but from the unpleasant smell it has when burn'd or brayed; like the urine of Cats, or such like ramish creatures, whereof the Lynx perhaps may be one. These, most of them, are made tapering to a point like the former; yet sometimes having a blunter ending; and the chink on both fides, I thought fit rather to shew it in that form than the other, as in

* These not being hollow at the top, nor containing any other stone, gravel, or earth, some call the male Belemnites: the three former being of the female kind. u De Figuris Lapidum, cap. 5. w Nat. Hist. lib. 37. cap. 11.
Of Oxfordshire.

Fig. 6. where the cleft runs not only the whole length of the stone, but quite under the end, and half way up the other side.

43. Many are the medicinal uses of this stone, mentioned by Boetius, Aldrovandus, and Gesner: Whereof the chief are, 1. For the stone, for which (instead of the Eurhbeus) is used in Spain and Saxony. 2. For exsiccation of wounds in Prussia and Pomerania. And 3. for ocular distempers in Horses, in all parts of England.

44. Thus having run through the supposititious stones from Heaven, I next descend to the Atmosphere, or inferior Air, immediately encompassing the terraqueous Globe; which though incapable of itself to be represented in stone, yet having met with some related to its Inhabitants, I mean the feathered Kingdom, I thought fit to give them place before those of the Waters.

45. Whereof the first and only one, represented in Sculpture Tab. 3, Fig. 7. has perfectly the shape of an Owls head; which because not mention'd by any Author that I know of, I thought good to exhibit, and call Lapis Bubonius; it is a black flint within, and cinereous without, and was found near to Hardwick in the Parish of Whitchurch.

46. To which I might have annex'd the stone Hieracites, found frequently in the Quarries in the Parish of Heddington, but is not the Hieracites mention'd by Pliny w, which he says alternately changes its colour; but of Gesner x, to whose figure of it, ours is exactly like: but neither his nor ours resembling any thing of a Hawks, or other Birds feathers, so much as to deserve a cut, or the Readers view; I have saved my self the expence, and him the trouble.

47. Next the Air, the stones that concern the Watery Kingdom, fall in order of Nature under consideration, whereof there are some that seem to be nothing else but meerly concreted drops of water, found plentifully in the Fields about Kircklington and Northbrook, which I touched on before under petrifications, and promised to treat of more largely here. By Authors they are called Stalagmites, and seem either to be generated of pearls of dew, fated on the stones as they lie in the Fields, which first being coated over with the small terrene atoms that are flying in the Air, and by that means kept in their own form for some considerable

w Lib. 37. cap. 10. x De Figuris Lapidum, cap. 13.

[Note: The text contains various references and mentions, including authors like Pliny and Gesner, and various natural phenomena like stones and air.]
time, are thus at length fix'd into a friable kind of stone, by the petrifying steam that comes from the earth; or else they are exsudations out of the stones themselves, whence are formed those excrescencies like warts in Animals: neither of which seem unagreeable to their description in Tab. 3; Fig. 8.

48. But beside the Stalagmites, there are other concretions made of much the same materials, viz. of a cold sort of water, thickened with terrene and petrifying particles; which yet because of their different mode of generation, have obtained a different, and more suitable name: And such are the stones made of nothing but such water, as it drops from the roofs and caverns of the Rocks, and therefore called Stalactites, or Lapides fissillatii; which, if the drops descend by the sides of the Rocks, and comply with the usual raggedness of them, are then indeed of various and the rudest forms, and by the work-men called Craume. But if the drops descend from the top of a vault, or any more prominent part of a Rock, in a direct line and free from the sides, they are commonly then of a pyramidal form, as in Tab. 3; Fig. 9, which is the representation of a stone of about nine inches long, of a yellowish colour, as it hung from the Rock in Hed-dington Quarry, where without doubt it was produced much after the same manner, as Icicles at the ends of Spouts in Winter, by a gradual descent and congelation of the drops.

49. Hither also must be referred all sorts of Spars, by the Miners called Cawke, and the Latins, Fluores; which (say they) yet retain so much of a fluid, that with the heat of fire, like ice in the Sun, they melt and flow: an effect, which though I could not find it had upon ours without the help of Salts; yet not doubting at all, that once they had been fluids, I could not but accordingly give them place here.

50. Whereof, there is scarce any Rock whatever, whether metalline or vulgar, which has not some kind or other of them, shot in its seams or other hollows, which according to their different subjects or matrixes, are sometimys of different colours, and frequently of divers figures.

51. As for colours, I have not observed above two sorts in Oxford-shire, a light yellow, and a Pearl-colour'd white, where-

---

7 Of this there is a Quarry between Heathrop and Enston, called Broad-stone Quarry, that has great plenty.
of there are some in the Quarries near Shotover, so clear and hard, that they come not much behind the Bristol-Stones, and are in figure (though had from the same Quarry) as various as Diamants; some of them being comprised in seven, others in nine, others in eleven, and some in thirteen planes, as may easily be computed from their trigonal, tetragonal, pentagonal, and hexagonal pyramids, represented in Tab. 3. Fig. 10. to which, adding the planes of their columns, and the planes of their bases, whereby they are fixed to their subjects, those numbers of Hedrae must needs be concluded.

52. As to the origin and texture of Spars, I take them to be much of the same with Chrysfals (though we seldom find them of their hexagonal figure, or their columns ever interceding two pyramids) and that they differ in luster and hardnesse according to the more close or loose texture of the stones whereon they sit, and out of which they have sweated, as through a strainer or colander. Though it must not be denied, but what is asserted by the ingenious and observing Steno concerning Chrysfals, may have place also in the increase and growth of these, which he says (whatever may be the manner of their first delineation) is by external apposition of new Chrysfalline matter to the external planes of the already delineated Chrystal; which he also observes, not to be joined to all its planes, but for the most part to the planes of the top only; nor to these all at a time, nor in the same quantity. Whence it is, that the extream or top planes of Spars as well as Chrysfals, are seldom or never equal, and not always triangular, but rising with unequal sides and angles from the planes of their columns, as in that separate piece of Spar or Chrystal near Fig. 10. which I take to be arguments sufficiently concluding the similitude of their growth and texture of parts, notwithstanding the planes of the columns of Spars are not streaked, nor so plainly shew the places of apposition, as they do on Chrystal; which streaks, for the Readers more ready apprehension, are therefore cut on the separate column near Fig. 10. though otherwise indifferently to be understood either for Spar or Chrysfall.

53. Some of these Spars fall so little short, either of Chrysfals or Bristol Diamants, either in luster or hardnesse, that we may very well admit what is said of them by Aldrovandus; that they are gemme incoboatae, & non perfectae. And that Boetius in all likely-

---

The Natural History

hood may have hit the mark, who doubts not but they are made of the same matter with Gems, and therefore gives them place between Gems and Stones, Inter Gemmas & lapides medium locum obtinent fluores, says he: to whom in this matter I readily subscribe, finding many of them to participate with Gems in luster, but with other Stones in softness and brittleness; whence it comes to pass, that they will not polish like other stones, and are only fit to be mix'd with other metals, which they render much more quick in fusion; than otherwise they are inclined to be of themselves.

54. After Stones so purely made out of Waters, that they readily return into fluids again, or have only such figures, into which that Element seems most naturally to compose it self, as the Stalagmites and Lapides siliatitii; come we next to such as represent its Inhabitants, the Fishes of the Sea and fresh Waters too: of which there are some of so great variety of texture, that in case they were not heretofore the spoils of real Fishes indeed, and now petrified require a much higher principle for their formation; concerning which before we attempt any thing, let us first consider some of their particular shapes, with the places and postures they are now found in.

55. Of such as resemble any of the fresh water kind, I have met with only one in this County, which did we but know where else to put it, should not be placed here neither; for it was taken out of a block of coal (whereof there is none dug in Oxford-shire) by the ingenious and observing Sir Thomas Pennysfon, at his House at Cornwall; and seems to represent a Carp or Barbel, the best of any Fish I have yet compared it with, and rather indeed the latter of the two, because of the short and thick scale: It was broken, in taking it out of the Coal, into several pieces, whereof that is one exactly engraven Tab. 3. Fig. 11. kindly bestowed on me by that worthy Gentleman, and by whom the rest are carefully preserved; which were it not for want of the variety of colours, I should take (for the scales fake) to be the Lepidotes of Pliny c.

56. The Stones that we find in this In-land Country, having the shapes of Sea fish, are many, but chiefly of the testaceous kind; whereof there are some that lie in a mass of stone together, and

*Nat. Hist. lib. 37. c. 10.*
others found in the Fields or Quarries apart. Of the first sort of these we have a curious instance in the possession of the Right Honorable Henry Earl of Clarendon, at Langley in the confines of Whichwood-forest, where there is a Quarry of very hard stone, wholly composed of a close union of Cockles, scarce any of them exceeding a Pea in bigness, and streaked circularly to the hinges of the valves, as in Tab. 3, Fig. 12. they are none of them hollow, but firmer within, than they are to the bed of stone where they lye; and yet even to that they are so closely knit, that the mass receives a very good polish, insomuch that his Lordship intends to pave the new Chappel now building at Cornbury with it.

57. This sort of Marble is mention'd by Steno, and called (as he says) by the Italians, Nephiri; whereof there is also a very good sort at Charleton Towns end, upon the edge of Otmoor, differing from that of Langley only in this, that the gros of the stone is somewhat whiter, the Cockles larger, and not so thick set. However, of so firm and close a texture, that of it they make Tomb-stones, Tables, &c., so curiously spotted and set with rings, that it very much pleases the eye of the beholder, and has already gotten (though but lately found) a reputation at Oxford and the parts adjacent.

58. Of this sort of stone most certainly it was, though somewhat of a softer kind, and different colour, that Pausanias informs us (as quoted by Agricola) the Monument of Phrotoe, and many other works, were made at Megara. Megaræ in saxo valde albo, & reliquis lapidibus molliore, undique insunt conchæ marinae, ex quo &c. are the words of Agricola; for which very reason this sort of stone is there called Conchites, and since by Johnston and Fred. Lachmund (from the place where found) Lapis Megaricus.

59. There is another sort of it in the Quarries near Adderbury, thick set with Cockles in their full proportion, as in Tab. 3, Fig. 13. Some of them are wonderfully Chrystallized, and beautiful to the eye, but not being so finely cemented together, but that a knock will loosen or make them leap from their beds; and many of them being hollow, or filled with brittle Spar; the stone by no means will receive a polish, and upon that account fit for no other work.
than to mend the high-ways, or some other mean uses. Nor can I inform the owners of these Quarries of any better that it may have, except they shall think fit to burn it for Lime, for which I dare promise it must needs be excellent.

60. And so is the stone Ostracomorphos, made of heaps of Oyster cemented together, and found plentifully enough on Shotover hill, not far from the way to Sir Timothy Tyrills; of which I have forborne to give any draught, it being easily conceived from the manner of the Cockles thus heaped together in the two former cuts.

61. To these succeed the stones resembling Sea-fish of the testaceous kind, not found in clusters after the manner of the former, but in a separate state: of these there are some curiously lineated, and others plain, with but few or no such ornaments, which yet I must treat of promiscuously together, because there are of both sorts in several species.

62. Of these again some are of a turbinated form, and others bivalvular, resembling the double shell'd kind, joyned together with a hinge, and yet these fomtimes found all with their shells apart, and somtimes again none of them so.

63. Amongst these the turbinated or wreathed kind of stones, by the Greeks called Strombites, from σπειρω τορκω, to wreath (which is always helically, and for the most part from the right hand to the left, and spirally from a greater to a smaller ending) are but seldom found: However, I have met with both the sorts of Agricola, the greater, which he says is somtimes nine inches long; but ours indeed not much exceeding five, of a plain superficies, as in Tab. 4. Fig. 1 *; and the lesser wanting of half an inch in length, but curiously striated, as Fig. 2, both found in the Quarries in the Parish of Heddington, of a cinereous colour, somwhat inclining to yellow, and of a harder consistence than the stone wherein they lye.

64. But as for such as represent the bivalvular Conchæ, such as Cockles, Escallops, Oysters, &c. we have very great plenty, as well of kinds as individuals. The Conchites or Cockle-stones found in this County, may also be divided into the greater and lesser; whereof the greater are some of them striated with large striae,
and larger furrows, descending as it were from a center at the top, and expanding themselves to the rim of the stone; having also six or seven transverse simple lines, bent circularly to the hinge or commissure of the valves, as in Tab. 4. Fig. 3. which is a stone without, of a dark cinereous colour, but within, a black flint; found somewhere in the Chiltern about Henly upon Thames, and kindly bestowed on me by the ingenious Mr. Munday, Physitian there.

65. Some there are again, whose friæ also descend from the hinge or commissure, but not in straight lines, but bent and undulated, and much broader than the former, as in Tab. 4. Fig. 4. which though in magnitude it fall short of the Concha Tridacna of Aldrovandus (so called it seems because they made three mouthfuls a piece) yet in form it shews to be so very like, as may be seen also in Jonston, Tab. 13. that were it not a stone, I must pronounce it the same. This I found at Great Rolwright in a bluish clay, whereof, and of nothing else, it seems to be concreted; for it do's not much exceed it in hardness, and still participates most of that colour, though covered with a bright and shining substance, by the Naturalists called Hoplites, or Armatura: of which more anon when I come to Cornu Ammonius, a stone, the most of any adorned with that substance.

66. Another sort there is found at Heddington Quarries, whose lines or friæ are not drawn like the two former, from the commissure of the valves to the rim, but transversely and circularly from one side of the stone to the other; the lesser circles having place next the commissure, and the greater next to the rim of the stone, as in Tab. 4. Fig. 5. which seems much to resemble the Concha rugata of Rondoletius¹, with valves swelling very high; of colour it is cinereous, inclining to yellow, not hollow within, but a solid stone, and of much the same texture with the rubble of the Quarry.

67. Of the smaller Conchites there are also several sorts, differing in colour, lineation and valves; for at Teynton and about Burford, where they are found in the Fields, they are most of them yellow, with their valves rising high and approaching to a round; but at Glympton, where they are only found in a spring that rises

¹ Vid. Concham imbricatae minimam Aldrovandi, de Test. lib. 3. cap. 43. Rondoletius de teflaris, lib. 2. cap. 35.
² These made red hot and put into drink, are accounted in this Country a present remedy for a ditch.
in a Wood about a mile Southward from the Church, they are much more depressed and of a cinereous colour; but both having their lineations from the commissure to the rim, they are both therefore represented under one draught, Tab. 4. Fig. 6.

68. How it should come about that these Cockle-stones of Glympton should only be found at the Fountain-head, and no where lower in the stream, nor that I could hear of, in the Fields about, I must acknowledg to be a knot not easily loosed. Some have thought them brought out from amongst the Rocks, at the bottom of the hill where the Spring rises; others that they are formed by a peculiar virtue of the water, as it runs over the rubble stones that lye near its exit: for, say they, if you pick them never so clean away, in few months time you shall have as many more. And indeed it must be confessed, that I met with several that were only striated on one fide, and rubble stone on the other; and some of them but just begun to be a little lineated: However it be, I shall determine nothing yet, having employed a careful and ingenious person to watch the increase and lineations of these stones, which when throughly understood, shall be faithfully communicated.

69. Beside those of glympton, there are others at Cornwall, in the Park of the Right Worshipful Sir Thomas Pennyfton, found in a bank of yellowish clay, of a much different form, and transversely striated, as in Tab. 4. Fig. 7. which though indeed for the most part are hard stones, yet I was shewed several by the Ingenious Owner of the place, that were nothing but clay, not differing at all from that in the bed wherein they lye, and out of which they seem to be formed, but in figure only; which is also different from all the bivalvular Conchæ that I find in Books, or have seen in collections of that sort of Shell-fish.

70. And so is the figure of the Conchites found in Hornton Quarry, near approaching to an oval, and scarce striated at all; which inclines me at leaft to doubt, if not certainly to conclude, that these Cockle-like stones were never heretofore any real Cockle-shells, thus transmuted by the penetrating force of petrifying juices, but that most of them (as the ingenious Mr. Lister* thinks) ever were, as they now are, Lapides sui generis, differing not only from one another, but many of them from anything in Nature

* Philosoph. Transact. Numb. 76.
beside, that the fresh or salt-water can any where afford us. But before I engage in this great controversy, let us first consider a few more of these stones resembling shell-shell.

71. And first, the above-mention'd Conchites found in Horton quarry, and represented in Tab. 4. Fig. 8, which is not a solid stone within (as all the Cockle-stones hitherto described have been) but hollow, and filled with spar; sometimes shot into irregular figures, but for the most part forked, as in Fig. 9, the basis, or place where the branches of the fork are conjoin'd, being rooted (in all that I have yet seen) at the commissure or hinge of the valves, and the branches extending themselves in the broader parts of the Conchites; of which operation of Nature I can give no other account, but that it was first observed, by the Reverend and Ingenious Mr. Clark, Rector of Dreyton near Banbury, from whom, beside other favors, I received many of them.

72. After the bivalvular Cockles found always with their valves closed together, come we next to consider the other Bivalves found never so, but their valves always apart. And such are the stones resembling Escallop, and some other striated Conchylia: whereof that represented Fig. 10, is the most curious in its kind I ever yet saw, found in Heddington quarries by Mr. Richard Stapley, an ingenious young Man, and learned in these matters, to whom I am beholding not only for this, but for some other choice stones hereafter to be mention'd. Which amongst all the Pectines or Escallop-shells I could find in the Ichthyographers, best resembles the Pecten after of Aldrovandus. Of colour it is yellowish, ear'd on both sides, the lineations from the commissure to the rim of the stone very prominent, and yet having some other transverse lines (not bending to, but from the commissure) standing upon them, and not passing through the deep furrows so as to join with each other.

73. As the transverse lines do in the next following Pectinites, Fig. 11, where they are both of equal depth, and very small, thick and fine; the transverse lines all of them bent to the commissure, but the other striae not meeting together in it, as in the former and following Escallop: This stone is of a light reddish colour, ear'd on both sides, and found in the quarries in the parish of Heddington.
The Natural History

74. And so was the next stone in form of a Peclunculus, or little Escallop, Fig. 12. of a whitish yellow colour, the strie large and broad, but the transverse lines small, eared like the former on both sides: Which also argues, that this stone was never heretofore the shell of a Fish, and thus cast into stone by an Animal mold. For the Peclulci, says Rondeletius, are a distinct species from the Peclines or larger Escallops, and never have ears but on one side, which indifferently are either on the right or left; except that we shall say that this was once the shell of a young Peclin, not yet come to its full growth.

75. To this also may be refer’d another of the same texture, only somewhat bigger, and wanting the ears of a Peclunculites, or little Escallop-stone, Fig. 13. which because it shews no signs of its ears being broken off, I suppose may either represent the Chama striata Pecliniformis of Aldrovandus, or else the Peclunculus of Bellonius, which (as quoted by the Zoographer Gesner) he not only says has no ears, but has exhibited it in Sculpture.

76. And so perhaps may the next stone, Fig. 14. except we shall rather make it the first of the Conchites striati, or streaked Cockle stones, which indeed I cannot chuse but assent too, because of its bearing too much on one side, which I find the Peclidean of Escallop stones do not: and because it cannot be a Tellinutes, which shell-fish (if at all) is never streaked that way. Let it therefore pass only for a streaked Cockle stone, which are plentifully found not only at Heddington, and about Shot-over, but in the Quarries near Stunsfield, North Leigh, and Little Milton; and are placed here, because found like the Escallop stones, always with their shells apart.

77. Whereof there are some larger, and as it were heaped upon one another, as in Tab. 4. Fig. 15; and others single, as in Fig. 17. The real shell-fish of which kind, called Conchylia striata, though thus lineated without, are always, says Aldrovandus, plain and smooth within, contrary to what we find in these Conchites striati, as is shewn by Fig. 16. which shews the in-side of one of those stones, not only lineated from the commissure to the rim, but adorned also with four or five transverse fillets, not made of one, but several conjoined lines, which seems also to conclude
it to be *Lapis sili generis*, and not to have been molded by a stria-
ted *Cockel*-shell.

78. Beside *Cockle* and *Escallop*-stones, there are others that
seem to be of the *Oyster* kind, found plentifully in the Gravel-
pits without St. Clements, in Cowley-common, and in a wood near
Wood-eaton: amongst them there are some of an oblong figure, ve-
ry thick, and of a bluish colour, such as that depicted Fig. 18,
which I guess may be the same with the petrified *Concha oblonga*
rifsa, mentioned by Dr. Merret 9, found in Worcester-shire, and
there called *Crow*-stones, *Crow-cups*, or *Egg*-stones; or else the
more protuberant part of the *Mytulus niger* of Aldrovandus 5, or
the *Mytulus* of *Rondeletius*.

79. But others are again of the true *Oyster* shape, called *Ostra-
cites*, or *L. Scapharca*, represented Fig. 19. Some whereof are blue,
and others reddish, of the colour of the Gravel out of which
they are taken: These are generally greater, thicker and weight-
tier, than the true *Oyster*-shell, yet like them seem to be resolved,
according to the opinion of *Steno* 5, into many little shells, the
innermost being always the greatest, and the outermost the least:
Upon which very account I could easily have assented, that these,
and the former, might once indeed have been *shell fisb*; but that
we only find (just as in the *Escallop*) the protuberant parts of the
shells, and never any of the flat ones; which had they been once
shells, we have little reason to think, could have been thus absent
from them.

80. We find also in Oxfordshire a sort of *Mytuloides*; or
*Muscle*-stones, of an odd kind of figure, and not easie perhaps to
be parallel'd, though the *testaceous Kingdom* be of large extent:
They are not hollow, but within a terra *lapiida* of a yellowish
colour, and cover'd without with a white shining kind of *Arm-
ture*, with an oblong lineations agreeable to the figure of the stone, as
in Tab. 5. Fig. 1. found in digging a Well in the Parish of Cley-
don. To which we may add another sort remarkably small, found
in Heddington Quarries, Fig. 2. which finish my discourse con-
cerning such stones as resemble the *Ophiolepis*, or *testaceous* *shell-
fish*. Whence I proceed.

81. To stones representing the *Mucroniperus*, or the *shell-fish of

---

Predromi vers. Angl. p. 75, 76.
the softer crustaceous kind, such as that Tab. 5. Fig. 3. in substance and hardness much like a Pebble, and of colour yellowish: divided first by five pretty straight lines, adorned on each side with double sets of points, ascending from a protuberant umbilicus in the basis of the stone, to another of like form at the top, but foliated round in manner of a Rose: And after again subdivided by five other indent ed lines, terminated before they reach the umbilici; by which means the spaces between these lines are all pentagons, like the outer scales of some sort of Tortoise. Much such another stone as this I find in Aldrovandus, in his Book De Testaceis; which because he thought resembled the sea Urchin deprived of its outward prickly coat, he calls Echinus lapsis foliatis suis spinis: But it seeming to me to be much more like the Estrice marino, & ritrava nelli mari profondi, of Ferrante Imperato, I chuse rather to call it Histricites, or Porcupine-stone without bristles. This was found in the Chiltern Country, near Stonor-house, and sent me by the Worshipful Tho. Stonor Esq; the Proprietor of the place, and one of the Noblest Encouragers of this Design.

82. And so was the following curiously embroider’d stone, Fig. 4. much resembling the petrified Riccio marino, or sea Urchin of Imperatus, found in the same place also without prickles, but much differing from the former in colour and substance, as also from the stone of that Learned Author: For whereas he confesses that was but of the consistence of the Lime-stone; ours, though without of a whitish cinereous colour, within is a hard black flint, covered over with thin glittering plates, set edg-ways to the ball of the flint, out of which those uniform eminencies and depressures, those waved and transverse lineations are all framed.

83. These are found in great plenty in the Isle of Malta, and by the Country men there, says the Ingenious Boccone, called Mamelles de Saint Paul, because of the lenticular eminencies and small roundures, that fill the whole surface of the stone; or rather because they are somtimes found coupled two and two, as may be seen in the sculptures of the same Author. By Boetius and Gesner, and all the old Authors, they are called Ova anguina, Serpents eggs; perchance because from the basis there issue as it


Recherches & observations Naturelles. Lettre vingt sixième.}
were five tails of serpents, waved and attenuated toward the upper part of the stones. They tell us also a story of its being engendered from the salivaition and slime of shakes, and cast into the Air by the force of their sibilations, where if taken, has effects as wonderful as its generation, and therefore of great esteem amongst the French Druids. But I care not to spend my time in Romance, and therefore proceed.

84. To another Echinites, resembling the inner shell of the Echinus ovarius or Esculentus, so called from a sort of quinquepartite or stellated eggs, that this kind of Echinus has within it good to eat. Their outermost coat is full of sharp prickles, upon which account they are sometimr cured, that kind of Echinus is called Chastaignes de Mer, or sea Chefsnuts, because of their likeness to rough prickles that encompas Chefsnuts whilst they are on the Tree; for which very reason they are also called Heriffons de Mer, sea Hedg-hogs, and Cardui Marini, sea Thistles: which rough coat of theirs, when the Fish is dead, coming off from them, they then discover their inward shell of that curious workmanship, that is lively represented by our stone, Fig. 5. made up of so many compartements and eminencies, and so regularly disposed, that says Monfsieur de Rochefort 2 (who calls them also Pommes de Mer, or sea Apples) the most ingenious Embroiderer would be much troubled to imitate them. This Echinites ovarius was found in the Parish of Teynton, and sent me by my worthy and ingenious Friend Mr. Robert Veysey, to whom also I am beholding for many other matters mentioned in this Essay.

85. From Teynton also was sent me another of this kind, but much smaller, not exceeding the Rounceval pea, or French Haliset in bigness; and yet with lines of compartement, and other eminencies as large as the former, but much fewer in number: to which, whether there be any Animal in Nature whose shell will exactly, or for the most part correspond, I much question; wherefore that it may be examined both at home and abroad, I have caused it to be engraven, Fig. 6.

86. To which add a fourth sort with its prickles still on, found plentifully in the Quarries near Shotover-hill, very like to the fifth sort of Echinus of Aristotle, as depicted by Rondeletius 3, whose inward shell it seems is very small, but its prickles long and stub-

---

* History of the Isles Antilles, or Caribby Islands, chap. 19, art. 13. 2 De Fijefibus, lib. 18, cap. 33.
The Natural History

born, found always in the deepest waters, and sticking to Rocks, much after the same manner as here represented in stone, Fig. 7. which in conformity to Aristotle may be called Echinites minutus. And this had ended my Discourse of Stones resembling Shell-fish of the crustaceous kind, but that I am admonish’d by the Learned, and deservedly Famous Virtuosi, Mr. Hook b and Mr. Ray c, and since them by the Ingenious Sicilian Gentleman Monsieur Boccone d.

87. That the stone commonly stiled Cornu Ammonis, also belongs to this place, as being nothing else but the petrified shell of the Nautilus, or Coquille de Porcellain; or as Rondeletius e calls it, the testaceous Polyopus. Of these we find plenty in the County of Oxford, of different colours, figures, cizes, but all so curled up within themselves, that the place of the head is always in the circumference and the tail in the center of the stone, and therefore by the Ancients called Cornua Ammonis; for that they resembled the curled horns of the Ram, worshipp’d by the name of Jupiter Ammon in the desarts of Africa f; to whom Alexander the Great having declared himself Son, that he might be the more like to inhuman a Father, he assumed the horns of the Ram Deity, as may be seen on the Impresses of some of his Mony. And so did Lysinachus that succeeded him in Thrace g, Attila the Hun, and some other proud Princes.

88. The places in this County most remarkable for this stone, are 1. The City of Oxford it self, where, in digging cellars, foundations, &c. chiefly in the eastern parts of it, they are commonly met with; whereof some are small, the parts protuberant, and swelling to a round, as in Tab. 5. Fig. 8. others broader and more depressed, as in Fig. 9. but the lineations of both waved, and extended from toward the center, to a single edged ridge in the back of the stone; and therein different from a third sort found also at Oxford, whose lineations are larger, not so thick nor waved, and terminated at great protuberances on each side of the stone, between which, on the broad back of it, there intercede other lineations, the whole body of the stone being also divided by Sutures, in form much resembling the leaves of Oak, as in Fig. 10. The two latter of these are both perforated at the center, and there-

fore called by Bauhinus, Cornua Ammonis pertusa: And all three adorned with a shining brazen Armature, in luster equaling that metal itself, yet of which in substance it has nothing less, though Agricola have affirmed it to be naturæ rudimentum id metallum face-re discentis.

89. Boetius de Boot, in his Book de Lapidibus & Gemmis, thinks the stone itself naturally of a ferrugineous colour, which lying in an Earth sated with an aluminous juice, is changed thereby into this brazen colour. To which de Laet in his Supplement, adds, atramentum sutorium; both which, he says, joined, give that colour to Iron. For my part, I rather think it may be performed by Nature, much after the same manner they guild money at our English Baths; if so, there will be requisite something urinous, which they always add there to superinduce such a colour, whereof more at large when I come into Somerfet-shire.

90. The second place eminent for production of these stones, is the Parish of Cleydon, where they find them of many more turns than those at Oxford, though not much bigger; without Armature, of a yellowish colour (like the Afteria before mention'd found at the same place) and differently striated, as in Fig. xi. in which the striæ from the innermost part of the stone are all single, but many of them divided before they reach the rim of it, where they are terminated with a back much more protuberant than the rest of the stone, but alike striated.

91. Near Thame, in the Fields Eastward from the Church, they somtimes meet also with the Cornu Ammonis, striated singly like the former, near the inner part of the stone, and presently dividing, but without termination either at any ridge, or other protuberances in the back; the division being continued to the other side of the stone, where 'tis made again into one common lineation, as in Fig. 12. Of which sort I had some arches or parts sent me also from Chiselhampton, by the Right Worshipful Sir John D'Oyly Baronet, in whom flourish all the Virtues of that ancient House. But these (not like the former) a hard stone, but some of them a kind of Terra lapidosa, or hardened yellow clay, one degree perhaps above that of the bed wherein they lay; which (beside Sir Thomas Pennystones clay Cockles) seem to overthrow...
Steno's first conjecture concerning these matters: That they are always found in the same place, of the same conistence; and that there are no signs amongst them of sooner or later production.

92. And so do the Opbiomorphit's found in a bluish clay in the Parish of Great Rolwright, Eastward from the Church, whereof some are so soft, that 'tis easie to press them asunder with ones fingers; and others a hard bluish stone. But though they agree with the former in the manner of production, they differ as much in the manner of their lineations, for whereas their strie were divided near the rim; some of the lineations of these come together there, and are united in pretty large protuberant knobs on each side the back of the stone, which in these being broad and somwhat rising, is crossed by other arched lines that intercede the eminencies, as in Fig. 13.

93. Other Opbiomorphit's there are, that have only straight single ribs, which terminate also in straight ridges that run along on each side the back of the stone; between which two ridges, there rises a third more prominent one, just in place as it were of the Spina dorsalis, as in Tab. 5. Fig. 14. which though not wreath-ed, but plain like the other lower ridges on each hand it, I take to be the Cornu Ammonis cristatum of Johannes Baubinus. One of these, of about four inches over, and made up of as many turns, was given me by the Reverend and Learned Dr. John Wallis; and there is another amongst the Καβαλία of the Medicin School, of above eight inches diameter, taken up as they say somewhere about Corpus Christi College.

94. There are also Opbiomorphit's found somtimes about Adderbury, about two miles from Banbury, but so very seldom, that though I were there often, I could meet with none of them; so that I cannot inform the Reader whether they are of any peculiar kind, different from what have been already describ'd, or no: However, that the Town has not its name from these stones (as Mr. Ray thinks) I dare confidently avouch, Adderbury being only the vulgar name: for in the Court Rolls of New College, (and other Instruments) to which the Lordship of the Town belongs, it is written Eabberbury, perhaps from St. Ebba the tutelar Saint of the Church.

95. The biggest of the kind that I have yet met with, was at
Clifton near Dorchester, but found as I was told at Sandford near Oxford, about eleven inches over, and seventeen pounds in weight; having single ribs only, without knobs or ridges at the back, which is plain and even, as in Fig. 15. which though little more than half so big as that mention'd by Dr. Merret of 21 inches diameter *, that he saw in the Garden of one Mr. Rawdon, yet I guess it must needs so extravagantly exceed the biggest Nautilus or Porcellane-shell, both in latitude and number of turns, that we must be forced to seek out another origin for it.

96. Beside, its being in-laid with a small sort of Conchites, so placed in its sides, that they have segments (if I may so call them) within the very bulk or body of the Ophiomorphite, seems flatly to deny its original from the Nautilus, for had this fallen out by compression of their shells together, their uniform figures must needs have been spoiled, contrary to what appears as well in the stone as its draught. Which brings me to consider the great Question now so much controverted in the World.

Whether the stones we find in the forms of Shell-fish, be Lapides fui generis, naturally produced by some extraordinary plastic virtue latent in the Earth or Quarries where they are found? Or whether they rather owe their form and figuration to the shells of the Fishes they represent, brought to the places where they are now found by a Deluge, Earth-quake, or some other such means, and there being filled with mud, clay, and petrifying juices, have in tract of time been turned into stones, as we now find them, still retaining the same shape in the whole, with the same lineations, futures, eminencies, cavities, orifices, points, that they had while they were shells?

97. In the handling whereof, though I intend not any peremptory decision, but a friendly debate; yet having according to the wishes and advice of those Eminent Virtuosi, Mr. Hook and Mr. Ray, made some considerable collections of these kind of things, and observed many particulars and circumstances concerning them: Upon mature deliberation, I must confess I am inclined rather to the opinion of Mr. Lister, that they are Lapides
The Natural History

sui generis; than to theirs, That they are thus formed in an Animal mold. The latter opinion appearing at present to be presed with far more, and more insuperable difficulties than the former.

98. For they that hold these stones were thus formed in the shells of fishes, must suppose either with Steno, that they were brought hither by the Deluge in the days of Noah; or by some other more particular, and perhaps National Flood, such as the Ogygean, or Deucalionian in Greece, than either of which there is nothing more improbable.

99. First, not by the Flood in the days of Noah, because that (and for very good reasons too) seems not to have been universal, and at most to have covered only the continent of Asia, and not to have extended itself to this then uninhabited Western part of the World. But suppose it were universal, yet it proceeded from Rain, which (as Mr. Ray well observes) would more likely have carried shells down into the sea, than brought any upwards from it. And if it be further urged, That the fountains of the great deep were broken up, and that the Deluge proceeded partly from a breaking forth and over-flowing of the sea, which consequently might bring in the shells: It may be answered, that the over-flowing, either gradually increased upon the Earth, or was violent: if gradually, as it is most likely (for God caused not any wind to pass over the Earth till the Waters began to affwage; and besides, the Waters that descended in Rain, in all probability at first ran down to the Sea, and gave some check to its floods) why should we think that any shell-fish, especially of the testaceous kind, whereof there are some that always stick to rocks, and others that have no locomotion, as Oysters, Muscles, &c. but what is given them by the Waters violence, should leave their beds in the Sea at all, and be carried aloft to the tops of Mountains. And if violent, then such a Flood would have indifferently scattered all sorts of shells over the whole face of the Earth, especially in all valleys; whereas we find the stones that resemble them many times at the tops of hills, and but in few valleys; and those not scattered neither indifferently one amongst another, but for the most part those of a kind together; and of the same kind too, those of different lineations together. Thus at Cornwall
and Hornton we find only Conchites or Cockle-stones; and those striated (if at all) from side to side transversely, as in Tab. 4. Fig. 7, 8. And so at Glynpton only Cockle-stones, but lineated the contrary way from the commissure to the rim, as in Fig. 6. of the same Tab. On Cowley-common we find nothing but Ostracites, such as in Tab. 4. Fig. 19. And in the Gravel-pits of St. Clement a mixture of such Oyster-stones, and (to which I believe it will be hard to adapt a shell-fish) the stone Belemnites. The Nephriti or Lapis Megaricus at Langley, is a bed of nothing but Cockles as small as peafe; and that at Charlton the same, only the Cockles are somewhat bigger. So that these beds of Cockle-stones (if they must needs have been shell-fish) seem rather to have been their breeding places, where they had aboad for some considerable time (especially where we find them of several cizes) than brought hither in the flood in the time of Noah, which remained on the Earth forty natural days, too small a time for so many shell-fish, so dispersed, as they must be presumed to be by so violent a motion, to get together and sequester themselves from all other company, and set them down, each fort, in a convenient station.

100. And secondly, that they should be brought by any other flood is altogether as unlikely; since we have no other floods deliver’d down to us, but the Ogygian and Deucalionian, which were restrained within Greece. But suppose all that can be defired by the adverse party, that there was sometime or other a National flood here in England, that did for some hundreds of years cover the face of the Land, of which there is no Record deliver’d to posterity; yet that it should cover the highest Hills, or if it did, that it should force the shells to their tops, which are weighty and rather affect the lowest places, is a concession as hard to be granted, as that the Mountains (where such stones as resemble them are now found) were heretofore low places and since raised by Earth-quakes: a thing by no means to be believed of our Northern parts, where the Earth-quakes we have at any time are so inconsiderable, that they scarce somtimes are perceived, much less affrighten us; unless we shall groundlessly grant, that in the infancy of the World the Earth suffered more concussions, and consequently more mutations in its superfcies, than it has done ever since the Records of time.
101. Yet granting too that in the Primitive Times there were such strange Earthquakes, or else that there was some time or other such a Flood, that did cover our highest hills, and which might be so violent, as to bring shells out of the great deep, and place them on the tops of Mountains; yet that our formed stones, at least the most of them, were not fashion'd in such molds, but are Lapides sui generis, may be strongly suspected from the following reasons.

102. First, because I have found some of them that resemble shell-fish that always stick to rocks, and cannot well be presumed to have come away with the greatest Flood, unless so violent as to have brought the Rocks too: and such is that engraven Tab. 5. Fig. 7. which whether it best represent the Echinus quintus of Aristotle, or some sort of Lepas or Patella, equally makes for my purpose, neither of them leaving the rock they stick too, being Univalves, and having the rock it self instead of the other.

103. Secondly, because there are many shells, and other testaceous and bony substances belonging to Fish, that must also have been left behind upon the ebb of such a Flood as well as the rest, of which we have no stones that resemble them at all. Such are the bones of Whales, Sea-horses, and the bones of all the squammeous kind; the great shells of the Buccina, Murices, Conchæ Veneris, and Solenes; the sword of the Xiphias, or Sword-shells, and almost all the crustaceous kind, such as Crabs, Congers, Lobsters, &c. which last having locomotion, I should much rather expected to have found petrified on the tops of Mountains, than any of the testaceous kind, and yet of these we meet the fewest of any.

104. Thirdly, because there are many Stones formed indeed in the manner of Bivalves, &c. which yet resemble no species of shell-fish now to be found, whereof several are above-mention'd. And this is ingeniously confess'd by Fabius Columna, though one of the Adversaries of this my present opinion: Addemus (says he) Pectunculorum imagines, quarum quasdam non nisi lapideas vi- dimus, of which that he calls his Mytulo-pectunculus rior Berbe- roides, is one. If it be said, that possibly these Species may be now lost, I shall leave it to the Reader to judge, whether it be likely that Providence which took so much care to secure the works of the Creation in Noah's Flood, should either then, or
since, have been so unmindful of some shell-fish (and of no other Animals) as to suffer any one species to be lost.

105. Fourthly, because there are several formed stones, that no body pretends to know whether to refer, as representing neither Animals or Plants, either in the whole or parts; such as the Selenites, Astroides, and Belemnites, which if thus tacitly confess to be Lapides sui generis, and formed by some latent plastick power of the Earth, why might it not as well produce all the rest? especially since scarce any of them are reduced to Animals or Plants without great inconvenience. Thus they that think the Asteric to be nothing but the Spina dorsales, or tail-bones of fis fis petrified (they confitting, 'tis true, for the most part of pieces sticking together like Vertebrae) neither can tell us of what sort of Fis fis, nor give us any reasonable account why the tail-bones of such a particular fis fis (for the Asteric of all places are striated alike, and seem to have had original from the same Species) should be thus petrified, and not the tail-bones as well of some others?

106. And they that fancy the several Species of Brontia to be nothing else but the petrified shells of Echinus Spatagi, or Bristle, would be hard put to it to reconcile the different conditions of that shell-fish and these stones: for first, the Fis fis itself is but rarely found, πελαγιτικ διαφανεια, says Aristotle, which is also confirmed by Rondeletius, whereas the Stones are plentiful enough. Again, the Echinus Spatagus has but few bristles, aculeis parvis & rarissimis, says the fame Rondeletius, and those, if we may believe the Cuts of Authors, but disorderly set; which how agreeable to our Brontia, Tab. 2. and 3. let any man judge. The first of them indeed in the gros Figure, is like the Heriffon Spatagi of Boccone, which he saw in Holland, flat like a small cake; but he tells us nothing of such numberless small annules as there are in our Stones, which if heretofore the places of so many bristles, but ill agree with the description of Rondeletius. Beside these of Oxford-shire, there are several other sorts that I have seen in other Counties (hereafter to be represented, in case this Essay prove acceptable) which I could heartily with the Ingenious Steno and Boccone, or any other Curiofo's, for the better clearing of this great Controversie, would undertake to parallel (and so

---

1 Hilli Animalium, lib. 4. cap. 5. 2 De Piscibus, lib. 18. cap. 31. 3 Laco citato. 4 Recherches & observations Naturelles Lettre 26.
of other formed stones) with shells in all parts answerable.

107. They that think the Cornua Ammonis, or Ophiomorphites, to have been formerly nothing but Porcellane-shells, seem also to be pressed with the like difficulties: for either there are several sorts of them not known to (I am sure not described by) Authors; or else our stones must have their formation from a different mould than their shells: For first, the shells seem to be extravagantly broad at the mouth, as described by Rondeletius and Jonston, and not to have more than two other small turns at most; whereas the turns of the Ophiomorphit's are proportional to one another, and in number many times four or five, and sometimessix, if we may believe Aldrovandius: Of which difference Chioccius seems to have been so well aware in his description of the latter part of the Museum Calceolarium, that he makes the Corna Ammonis and Nautilus lapidem to be quite different things, and describes the latter very broad at the end, and with but one turn, somewhat like indeed to the Porcellane-shell.

108. Beside, so far are some of our English Ophiomorphit's from ever having been formed by the shell of the Nautilus, that at Huntley-Nab, in the North-riding of York-shire, they are found always included in other great round stones; not unlike, says Mr. Camden, to Cannon bullets. And at Whitby, says Mr. Ray, in stones of a lenticular figure, which if formerly they had been the shells of Nautili, how they should become thus included in stones also of a determinate figure, is a difficulty more insuperable than any of the former. Add hereunto that Mr. Camden, and since him Dr. Childrey plainly avouch, that the Ophiomorphit's of Caimesham, have some of them heads, and that in this they differ from those of York-shire: Vidimus enim lapidem hinc delatum serpentis in fiam revoluti effigie, cujus capitis in circumserentia prominuit, extrema cauda centum occupante; are the very words of Mr. Camden. Which if I find true when I come into Somerset-shire, will give me, and I doubt not, others satisfaction beyond all exception; for that the shells of the Nautili have any such matter, no body yet has, nor will dare to pretend.

109. To which also add the greatness of some of these stones, whereof there are some it seems near two foot in diameter, far

---

exceeding, says Mr. Ray "the bulk of any shell-fish now living in our seas. To which it be said that most petrifications are made either by aggregation, or by intrusion or protrusion of parts, which always increase the bulk of the subject: It may be answered, that though such augmentation must be allowed, indeed in many cases, yet sure it did not so fall out in the petrification of the Nephri or Cockle-stone at Langley, where the stones are much less than most Natural shells.

110. Fifthly, because that even those stones, which so exactly represent some sort of shell-fish, as Oysters, Cockles, &c. that there can be no exception upon the account of figure, but that they might formerly have been shells indeed; at some places are found with only one shell, and not the other. Thus in Cowley-common we meet only with the gibbous, and not the flat shell of the petrified Oyster, and so of the Escallop-stones in the Quarries near Shot-over; which had they been once the shells of Oysters and Escallop, in all probability had scarce been thus parted.

111. Sixthly, because I can by no means satisfy my self, how it should come to pass, that in case these stones had once been molded in shells, some of the same kind should be found in beds, as the Conchites at Langley, Charleton, Adderbury, and others, scatter'd as at Glympton and Teynton; and so the Ostracites at Shot-over and Cowley. Nor how it should fall out, that some of these Bivalvulars should always be found with their shells apart, as the Ostracites and Pectines: and others always closed together, as the Conchites in all places I have yet seen.

112. Lastly, because many of these formed stones seem now to be in sferi, as the Selenites at Shot-over and Hampton-Gay, the Conchites at Glympton and Cornwell, where within one of the clay Cockles above-mentioned, I found a little one of stone, not exceeding a vetch in bigness; which had they been formed heretofore by Cockle-shells, in all likelihood would both either have been Stone or Clay. Nor can it be said they were brought hither by different Floods, because they were both found in the same bed, one included in the other. Which is all I have to urge for this part of the Question, but that in the Bishoprick of Hildesheim, between Alfeld and Einbeck, there is a sort of Ochre that forms it self in this manner into the shape of Oysters; And that Mr. Ray

was informed by a person of good credit, of a stone of this nature resembling a Cockle-shell, found in the belly of a Beef, where in all likelihood it bred, and got into that figure: Which if true, says he, there can be no reason to doubt, but that those in the Quarries and other places are so generated.

113. But against this opinion there are several considerable objections brought by the ingenious Mr. Hook, Steno and Boccone, which I shall next faithfully propound to the best advantage, and then see whether they may not more easily be solved, than the arguments on the other side perhaps are like to be.

114. First, That amongst those stones, there are some with the perfect shell, in figure, colour and substance, sticking to their surface; especially, says Mr. Hook, (discoursing of these matters) those Serpentine or Helical stones were covered with, or retained the shining or pearl-colour'd substance of the inside of a shell, which substance on some parts of them was exceeding thin, and might be easily rubb'd off; on other parts it was pretty thick, and retained a white coat, or flaky substance on the top, just like the outsides of such shells; some of them had very large pieces of the shell, very plainly sticking on to them, which were easily broken or flaked off by degrees. Add hereunto some particulars mention'd by Steno. 1. That there was found a Pearl-bearing shell in Tuscany, a Pearl yet sticking to the shell. 2. A piece of the great Sea-nacre [pinna marina] in which the silk-like substance within the shell being consumed, the colour of that substance did remain in the earthy matter which had filled the shell. 3. That about the City of Volaterra, there are many beds of earth, not Stony, which do abound with true Cockle-shells, that have suffer'd no change at all, and yet they must needs have lain there above 3000 years; whence it is evident, that that part of Tuscany was of old time cover'd with the Sea: And why then might not as well all those other places where these petrified shells are found? 4. To which also let me add, that at some places here in England, particularly at Cats-grove near Reading, a place sufficiently remote from the Sea (of which more at large when I come into Berkshire) they meet with a bed of Oyster-shells both flat and gibbous, about 12 or 14 foot under ground, not at all petrified, all of them opened, except some very few, that I suppose have ca-

Micrograph. Obscrv. 17. b In Prodrimo.
fully fallen together; which how they should come there without a Deluge, seems a difficulty to most men not easily avoided.

115. To all which it may be answered, first in general with Mr. Lister 1, that we will easily believe that along the shores of most Countries, such as are particularly the shores of the British and Mediterranean Seas, there may all manner of Sea-shells be found promiscuously included in Rocks or Earth, and at good distances from the Sea, where the grounds are no higher than the Volaterran hillock, which meeting with suitable petrifying juices, may either be wholly petrified, or where the juices are not competent, be only metamorphosed in part, some of the shell substance still remaining; or not changed at all, as in the instances of Steno, and perhaps of Mr. Hook, for he tells us not where he found those semipetrified stones.

116. But secondly, Suppose he found them in the highest and most In-land Counties, since he tells us not that he found them in any great plenty, we can easily also admit that some small quantities of shells thrown away after the Inhabitants had eaten the fish, may even there be filled with mud and petrifying juices, and so turned either in the whole or part into stone.

117. And thirdly, provided it be near a great Town or City, either now flourishing, or that did so heretofore, and hath formerly been the seat of much action; it may be allowed also that some quantities of shells may be found, either perfectly or but imperfectly petrified, or that have suffer’d no change at all: which helps me to a salvo for my own Objection taken from the bed of true Oyster-shells found near Reading, it having been a Town of very great action during the Invasions of the Danes, who cutting a deep trench across between the Kennet and Thames, and enclosing themselves as it were in an Island, held it against King Ethelred, and Alfred his Brother 2 a considerable time; from whence, in all probability, the Saxons having removed their Cattle and other provisions before the Danes arrival, ’tis likely that they might be supplied from their Navy with Oysters, which during the time of the abode of the Army on Land, might be a very suitable employment for it: Which conjecture, if allowed, there is nothing more

required to make out the possibility of the bed of Oysters coming thither without a Deluge, but that Cats-grove was the place appointed for the Armies repaft.

118. Secondly, That these formed stones are many of them in all respects like the living shell-fish; thus says Boccone, the Herifons Spatagi of stone, the Cornua Ammonis or Nautili lapides, have the very marks, characters, eminencies, cavities, and all other parts alike, with the true living Nautili, and Herifons spatagi, and Brifii of Imperato, and Rondelet, which proves, says he, the body changed to have been the very same thing, with that which is living. But I must tell him, it do's it but very weakly, all arguments drawn a similitudine being the most inefficacious of all others, such rather illustrating than proving, rather persuading than compelling. If adversaries assent: For how many hundred things are there in the World, that have some resemblance of one another, which no body will offer to think were ever the same, and particularly amongst some other formed stones hereafter to be mentionned. Such are the stones Otites, or Auriculares, several sorts of Cardites, Lapides Mammillares, Hysterolithos, &c. which though they as exactly resemble those parts of Men from whence they have their names, as any Conchites or Echinities do those shell-fish; yet no Man that I ever heard of, so much as dreamed that thefe were ever the real parts of Men, in process of time thus turned into stone. As well might we say, that our Kettering-stone in Northampton-shire here in England, was once nothing else but the spawn of Lobsters; than which, that I know of, there is nothing more like.

119. But should it be granted that these stone Herifons spatagi were sometime real shell-fish, as reasonably enough perhaps we may, they being found at Malta, as you come into the Port overagainst St. Erme, yet this by no means would conclude that all others of the form must needs be so, that are attended with much different, and indeed (in respect of having once been shells) inexplicable circumstances.

120. Thirdly and lastly, That it seems quite contrary to the infinite prudence of Nature, which is observable in all its works and productions, to design every thing to a determinate end, and for the attaining that end, makes use of such ways as are (as far as the know-

---

Of OXFORD-SHIRE.

ledge of man has yet been able to reach) altogether consonant and agreeable to man's reason, and of no way or means that doth contradict, or is contrary to human ratiocination: Whence it has been a general observation and Maxim, that Nature doth nothing in vain. It seems I say contrary to that great wisdom of Nature, that these prettily shaped bodies should have all those curious figures and contrivances (which many of them are adorned and contrived with) generated or wrought by a plastic virtue, for no higher end than only to exhibit a form.

121. To which I answer, that Nature herein acts neither contrary to her own prudence, human ratiocination, or in vain; it being the wisdom and goodness of the Supreme Nature, by the School-men called Naturans, that governs and directs the Nature naturata here below, to beautifie the World with these varieties; which I take to be the end of such productions as well as of most Flowers, such as Tulips, Anemones, etc. of which we know as little use as of formed stones. Nay, perhaps there may proportionably, number for number, be as many of them of Medicinal or other use, such as Selenites, Belemmites, Conchites, Lapis Judaicus, etc. as there are of Plants: So that unless we may say also (which I guess no body will) that these are produced contrary to the great widom of Nature, we must not of stones.

122. And thus I have given the grounds of my present opinion, which has not been taken up out of humor or contradiction, with intent only to affront other worthy Authors modest conjectures, but rather friendly to excite them, or any others, to endeavor collections of shell-fish, and parts of other Animals, that may answer such formed stones as are here already, or may hereafter be produced: Which when ever I find done, and the reasons alleged solidly answered, I shall be ready with acknowledgment to retract my opinion, which I am not so in love with, but for the sake of Truth I can cheerfully cast off without the least reluctance.

123. However, in the mean time since no doubt it will be expected, upon so deliberate rejection of Animal molds, that some further and more particular account should be given of the Plastic virtue, or whatever else it is, that effects these shapes: I shall briefly set down also my present thoughts concerning it, which yet I intend not my self (much less desir the Reader) to em-

* Mr. Hooke Micrographia. Observ. 17.
brace, any further then I shall find them agreeable to future experience.

124. That Salts are the principal Ingredients of stones, I think has so sufficiently been noted already, that to endeavor any further evidence of the thing, would be adum agere in me, and lost of time to the Reader: And if of stones in general, much rather sure of formed ones, it being the undoubted prerogative of the Saline Principle to give Bodies their figure, as well as solidity and duration: No other principle, that we yet know of naturally shooting into figures, each peculiar to their own kind, but salts; thus Nitre always shoots into Pyramids, Salt Marine into Cubes; Alum into Oslo, and, Sal Armoniac into Hexaedrums, and other mixt salts into as mixt figures.

125. Of these spontaneous inclinations of salts, each peculiar to its kind, we have further evidence in the Chymical Anatomy of Animals, particularly in the volatile salt of Harts-horn, which in the beginning of its ascent is always seen branched in the head of the Cucurbit like the natural Horn. And we were told the last Term by our very Ingenious and Learned Sidleyan Professor* here in Oxon, That the salt of Vipers ascends in like manner, and shoots into shapes somewhat like those Animals, placed orderly in the glass. Thus in congelations which are all wrought by adventitious salts, we frequently find curious ramifications, as on Glass-windows in winter, and the figur'd flakes of snow; of which Mr. Hook observed above an hundred several forts, yet all of them branched as we paint stars, with six principal Radii of equal length, shape, and make, issuing from a center where they are all joined in angles of 60 degrees.

126. What salt it should be that gives this figure, though it be hard to determine, yet certainly it must not be a much different one from that which gives form to our Astroites and Asfcrie, whereof, though the latter have but five points, and therefore making angles where they are joyned at the center of 72 degrees; yet the Astroites both in mezzo Rilievo and Intagli, as in Tab. 2. have many more. Perhaps there may be somthing of an Antimonal salt that may determin Bodies to this Starry figure, as no question it do's in the Regulus, and the Caput mortuum of the Cinnabar of Antimony. To such a salt may also be referr'd our Brontic or Om-

brie, and all the Echinites, some whereof are plainly, all in some measure stellated at the top.

127. The Belemnites which are all striated from a center, yet in the whole affect a pyramidal form; seem to have somewhat also of an Antimonial, but a more prevalent quantity of a nitrous salt.

128. The Conchites, Pectinates, and Ostracites, whether transversely striated, or from the commissures to the rim, seem to own their origin to urinous sals, which shoot likewise from a center (as suppose from the hinges of these stones) but generally are most extended to one side, as may be seen in the branched figure formed on the surface of urine by freezing, in Mr. Hook's Micrography; whose striae not obtaining much above the quadrant of a circle, whatever other difference there may be, in this respect at least is agreeable to our stones.

129. To which add the Ophiomorphits, or Cornua Ammonis, most probably formed either by two sals shooting different ways, which by thwarting one another make a helical figure, just as two opposite winds or waters make a Turbo; or else by some simple, yet unknown salt, that affects such a figure: perhaps the items and branchings bended in a most excellent and regular order, like the ribs of some of our Ophiomorphit's, observed by Mr. Hook in Regulus Martis stellatus, might not a little conduce to the clearing this matter.

130. How near I am to the mark in these former Conjectures, I dare not too temerarioufly resolve. But as to the formation of the Rhomboideal Selenites, Tab. 2. Fig. 1. with a little more confidence I shall venture to pronounce it, to come from a Tartarous salt in the Earth; having observed in the Honorable Mr. Boyle's way of preparing Tartarized Spirit of Wine, that the Calx of Tartar being lathed with the phlegmarick part of the Spirit, and dissolved by the heat; set to cool, sometimes shoots (I dare not say always) exactly into such Rhomboideal figures made up of plates, and the whole Rhomboids sometimes issuing out of one another, just as we find the Selenites often do.

131. More might have been added concerning some other formed stones hereafter to be mention'd; but I have now only time to hint my Hypothesis, which I suppose may be sufficiently done

in the afore-going instances; not intending to prosecute it further till I have had more experience, which this my present attempt serves to shew the World is yet but small. And therefore I hasten on to the residue of the formed stones, which according to my method laid down in the beginning of this Chapter (having done with all such as relate to the waters) are those that resemble any terrestrial bodies; and amongst them, first of such as belong to the vegetable Kingdom.

132. Whereof there are some that represent whole Plants, and such is the Fungites or Tuberoides, found somewhere in the Chiltern about Stoken-Church-hill, and engraven Tab. 6. Fig. 1. of a cinereous colour without, but a black Flint within, and lively representing one of the fungi lethales non esculentis.

133. Others there are that resemble only the parts of Plants, and such is that depicted Tab. 6. Fig. 2. like a Bryony-root broken off transversely, and shewing the fibrille from the center to the circumference, with the other striae descending down the sides, and the annulary divisions; and all these in a stone so exactly of the colour of a Bryony-root, that it would be hard to distinguish if were it not for the weight. This was found in the Quarry-pits of rubble stone near Shot-over hill.

134. And others there are again like the Fruits of Trees, as in Tab. 6. Fig. 3, and 4. which in general may be called Lapides pyriformes, whereof the first is a black Flint found somewhere near Bix brand, above eleven inches round, and in bigness and form resembling the Bell or King-pear: The other a sort of Pebble, whitish without, and yellow within (as manifestly appears at the place of the strig) in the shape of a Warden-pear, found in the Parish of Watersstock, by the Learned and Ingenious Sir George Croke, somewhere near his house.

135. In the Parish of Whitechurch not far from Hardwick-house, I found a hard stone in the form of an Apricock, with the Rimula or cleft from the pedicle to the apex, just as in the true plum, and as depicted Tab. 6. Fig. 5. And in the Quarries of rubble stone near Shotover-hill, I met with a kind of spar, shot exactly into protuberances (and in the whole bulk) like a Mulberry, as in Fig. 6.

136. On the Chiltern-hills near to Sherbourne, I found a white Flint, with another set in it, in the form of a Luca Olive, as in Fig. 7.
of Oxfordshire.

Fig. 7. To which may be added, the Lapides Judaici of Oxfordshire, which though of a much more slender and longer figure than any sort of Olive, yet because in other Countries they are found in that shape, and for that very reason called sometimes Pyrenees, and treated on by Authors amongst stones relating to the fruits of Trees, I shall not change their place. We find them here of different sizes, from about two inches in length and an inch and half in circuit, downwards to an inch and less in length, and not much above half an inch round: Most of them have a kind of pedicle, from which they seem to have had their growth, and are ridged and channelled the whole length of the stone, the ridges being purled with small knots, set in the Quincunx order, as in Tab. 6. Fig. 8. As to their texture, I find it to be very curious, made up of Lamelle or little thin plates, not unlike the stone Selenites; only these are opaque, and the whole bulk of the stone indeed much different. The Plates, as in the Selenites, seem to be made up of strings, which in most of them run three, but in some but two ways; according to the running of these strings the stones will easily cleave, but generally some one way rather than any other, which most commonly is agreeable to the helical running of the ridges of knots or furrows between them; yet all ways obliquely to the Axis of the stone, as is perfectly shewn, Tab. 6. Fig. 9. which represents the stone broken the three several ways.

137. By Authors they are said to be of different Sexes, the lesser and rounder of the feminine, and the greater and longer of the masculine gender; whereof the former is good against the stone in the bladder, and the latter against it in the kidneys, for which reasons they are sometimies by Authors called Eurrhei, and Tecolithi. The greater and longer, says Gesner & are rarely found, but that must be restrained to his own Country; for here in Oxfordshire, and particularly in the Quarries of rubble stone near Shotover-hill, we have plenty of them.

138. There is another sort of them also at the same place, much more slender than the rest, plain and smooth, without either ridges or channels, mention'd by Cæsalpinus & which (and not the Lapis Judaicus) by him is said to be the true Tecolithus of

---

1 Gesner de Figuris Lapidum, cap. 9. 2 Ideo loco citato. 3 Andreas Cæsalpinus de Metallicita, lib. 2: cap. 44.
Pliny *, that breaks and expels the stone; if the Patient do but lick it. Of colour without, it is a whitish yellow, and breaks into shining white plates obliquely to the axis of the stone, like the former, but whether made up of threads running differing ways, I could not afford to try, having but one of the kind; which was found and given me, beside several other matters of the same nature, by my very good Friend Edward Tyton A. M. an ingenious and industrious searcher into the works of Nature and Arts.

139. Hither also must be referred the fresh water Adarce made at the Cascade at Sommerron, which though but a meer incrustation, and formed not of itself, but ad formam alterius, viz. of the grass about which it gathers, and therefore none of the Lithophyta; yet it having some form, though but accidental, I have thought rather fit to misplace it here, than omit to shew the Reader how prettily the grass is sheathed with stone, which is accurately expressed by Fig. 10.

140. Thus having done with the Lapides quoads, I proceed to the stones resembling Animals, either in the whole or parts; amongst which, some there are that seem to have been reptiles petrifled, which possibly enough coming to the places where they are now found in stone without the difficulties of a flood, may be true enough too: though I know some places in other Counties, where there are Cochleomorphis or snail-stones so thick, that they seem unlikely to have ever been the spoils of that Animal. In Oxfordshire indeed I have met with but two, one at Teynton, and another in the rubble Quarries near Shotover-hill, both which being of the same shape, colour and bigness, are represented together under Fig. 11.

141. At the same rubble Quarries we find also the Lapides vermiculares, or worm-stones of two sorts, whereof one is of a whitish yellow colour, not hollow within, and as far as I could perceive of the same texture with the rubble stone itself; some of them are of the bigness of a small quill, and lie in the rock in mezzo rilievò irregularly contorted, much after the manner of the Vermicchiara; or Alexio Milesio of Ferrante Imperato *, as in Tab. 6. Fig. 13, whereas the other sort lies in the very body of the stone, of a white colour, and regularly curled up like the

spring of a Watch, as in Fig. 12; and which is especially the case of the stones that resemble the parts of four-footed beasts, whereof we meet with one sort in the Quarries at Heddington, set in the body of the stone, the most like to the head of a Horse of any thing I can think of; having the ears, and crest of the mane appearing between them, the places of the eyes suitably prominent; and the rest of the face entire, only the mouth and nostrils are absent in them all, as in Tab. 7. Fig. 1. These are plentifully enough found, and of divers cizes, yet not mention’d that I know of by any Author, wherefore I have taken the boldness to fit them with a name, and in imitation of other Authors (in the like case) shall call them Hippoccephaloides.

143. At Heddington in the same Quarry there are plenty of Cardites, or stones in the forms of hearts, but by Authors, because of their bigness, generally called Bucardites, or stones like Bulls hearts. These at Heddington are all of them of a whitish yellow colour, smooth and plain, as in Tab. 7. Fig. 2; but there are others found about Brife-Norton and Witney, that seem to be ribbed on each side, as in Fig. 3. Of these I had one sent me by my worthy Friend Robert Peirrot Esq. from North-Leigh, ten inches round, and near two pounds in weight, which is the biggest of the kind that I ever yet saw, except one that I found at Shetford, going up a little hill east-ward of the town, about 20 pounds in weight, though broken half away, curiously reticulated with a white-spar-colour’d stone, as in Tab. 7. Fig. 4. which being much too heavy for my Horse-portage, was afterward upon my direction, fetch’d away by that miracle of Ingenuity Sir Anthony Cope, since whose decease it is come I suppose into the hands of his equally ingenious Brother Sir John Cope, the Heir of his Virtues as well as Estate.

144. To these add the Orchites, or Lapides reticulatus, that lie at the foot of Shotover-hill, which though indeed they extravagantly exceed those parts as well of beasts as men, yet of the two I rather thought fit to place them here: Most of them lie in pairs coupled together, as in Tab. 7. Fig. 6, and are called Diorchites; but sometimes (as it also falls out in monstrous Animals) there are three of them found together, and then we call them Triorchites; whereof there are two or three on the foot of the same Hill of so vast
I am sure that which lies highest on the Hill, and is here represented Fig. 5., is so much at the least. Of these all that Western side of the Hill seems to be composed, if one may guess by their appearance above the ground on each hand the way; but how they should come there, or with what Animal-mold formed (if not by some peculiar plastic power in the earth) I leave to the favorers of that opinion to find.

145. Hither also I must refer for the very same reason, a sort of stone found in the Quarries of rubble stone near Shotover, composed as it were of filaments like hair, which yet must not be the Polythrix of Pliny* because not greenish, nor the Bofirychites of Zoroaftres, or the Corsoides of the same Pliny†, because neither gray nor long. However, let it be a Thrichites (though the word be differently used by Dioscorides*) and the rather placed here, because most like the short hair of beasts: Of colour it is yellowish, and each hair (as they appear in the Microscope) seems to be striated and channelled its whole length; but to the naked eye they shew themselves only in columns, which at certain distances are all jointed, as in Fig. 7.

146. Befide the stones representing the parts of the Viviparous, I have met with one that seems to belong to the oviparous Quadrupedes, and that is a Buzonites or Toad-Stone, which perhaps may better deserve its name, than any yet mention'd by other Authors. For by my Buzonites or Toad-stone, I intend not that thinning polish'd stone, first demonstrated by the Ingenious and Learned Dr. Merret, in His Majesties presence, to be nothing else but the jaw-tooth or grinder of the Lupus marinus; and so confess to be by the Gold-smiths that fold' them. But a certain reddish liver-colour'd real stone, indeed of the form of those of the Shark-fish, i.e. like the segment of a sphere, convex at the top, and concave underneath, as in Tab. 7. Fig. 8. but found amongst the Gravel in Magdalen Coll. Walks: and may be so called (as I presume the others are) from some resemblance they have to the figure of a Toads skull, not that there comes any such thing out of a vexed toads head, as is commonly and no less fabulously reported.

147. The stones that resemble the parts of Men being next to be consider'd, I shall begin with those that have relation to the

---

* Nat. Hist. lib. 37. cap. 10.  † Idem loco sitato.  ‡ Lib. 5 cap. 114.
Of OXFORD-SHIRE.

bead, and so descend in order to the lower parts: According to which method, the first that presents itself is one of the Brontia, whose upper part was described before, sect. 33. of this Chapter, where I had also shewn its basis, but that it somewhat resembles part of the irixēx孝or, or basis of a Mans brain, yet included within its dura Meninx, with the several pairs of nerves cut asunder as they come through it, according as the brain is prepared and inverted in Dr. Willis's new way of dissecting it: Befide the exit of the processus Mammillares, and several pairs of nerves, it has a fair resemblance of the Cerebellum at a a, and of the Medulla oblongata at b b, as is plainly represented in Tab. 7. Fig. 9. This was found, as above-said, in the Chiltern Country, and much better deserves the name of Encephaloides, than any described by Aldrovandus, or others.

148. Add hereunto another sort of stone, found in the rubble Quarry near Shotover-hill, lively representing the Olfactory nerves or par primum, entire and whole, and not cut off. Of these there are many to be found in these pits of a yellowish colour, smooth without, and I think all of them (for I have broke several) hollow within, as in Tab. 7. Fig. 10.

149. I have also a stone (not unlike a pebble) found somewhere in the gravel near the City of Oxford, of an oval figure, and for the greatest part of a reddish colour; but at one end distinguish'd, first with a circle of white, within which is a Zone of the proper colour of the stone, and then a round pupilla of white, in the whole resembling the figure of an Eye obscured by a Cataract, as in Tab. 7. Fig. 11. This I should have taken for the stone called Beli Oculus, but that Boetius expressly makes the body of that to be of a white colour: The nearest it comes to any yet described, is the Leucophthalmus of Pliny, which he plainly says is of a reddish colour, in which yet it carryeth the form of an Eye both for white and black: And so do's ours, only it wants the black Pupilla, which we must suppose to be covered by a Cataract. However, it may pass for an Ophthalmites, or some sort of Eye-Stone: whence I proceed to some others, in shape also of another of our sense Organs.

150. Which by reason they so well resemble the Ears of a Man, though much less, as in Tab. 7. Fig. 12. I have made bold to call them Otites, or Auriculares: Of which we have plenty in the rubble Quarries near Shotover, in the banks of the High-ways North of Fulbrook Church; but the most I saw any where yet, are in a bank near a spring rising at Somerton Towns end, Eastward from the Church, in the Lordship of the Worshipful Richard Forward Esq; whose many ingenious Contrivances about his House, beside other affistanthes he readily afforded me, have eminently contributed to this History, as will more abundantly appear in the Chapter of Arts.

151. From the Upper, I descend next to such formed stones as resemble any of the parts of the middle Ventricle, or Thorax: whereof I met with some on Stoken-Church Hill, of a Flinty substance, strangely like to human Paps, or Duggs; having not only the Mamma, but Papilla too, surrounded by an Areola, and studded with small protuberances, as in Tab. 7, Fig. ult. and therefore well deserving the name of Mammillares: than which yet I had once a much better pattern, unhappily lost in the portage, between my Chamber and the Gravers.

152. And if we look further into the inner parts, I have a stone that so exquisitely represents the Heart of a Man, as in Tab. 8. Fig. 1. that at, and near the basis, there remains the trunk of the descending part of the Vena Cava at a, the ascending portion of the Vena Cava at b; and from the left Ventricle the trunk of the Arteria magna, tending upwards at c, and a portion of the same Artery tending downwards at d. This was also found on the Hills near Stoken-Church, being a whitish kind of Flint, and perhaps may merit the name of Anthropocardites. Whereunto add another found in the Gravel near Oxford, by my ingenious Friend John Banister M. A. of Magdalen College, which though not so exactly of the shape of a Heart as the former, yet because stellated all over from the basis to the micro, as in Fig. 2. I thought its admittance would not be ungrateful to the Reader.

153. Other stones there are also in likenes of some parts of the Abdomen or lowest Ventricle; such are the stones, Didymoides, found in the Quarries of rubble stone near Shotover-hill, having upon it both the rugosity, and future of the Scrotum, And Phalloides, which I met with near the Wind-mill at Nettlebed, perfectly representing.
Of OxfordsHire. 131
preseenting the glans and praeputium penis humani; but without any franum fastened to the urethra; Of which out of modesty I have given no sculptures.

154. To these add another stone which we may call Lapis Nephriticus, not from any likenes either in colour or effect to the whitish green stone used in distempers of the Kidneys (though the signature it carries might perswade a tryal) but from the colour and figure it has of the Kidney of an Animal, with a trunk of one of the Ureters descending from the hollow of it, as in Tab. 8, Fig. 3. This stone was lent me by the Reverend and universally Learned Dr. Ralph Bathurst, Vice-Chancellor of Oxford, and Dean of Wells, one of the most cordial Encouragers of this design; who found it hanging to an Oyster by that part which represents the Ureter, which was then so soft that he easily cut it away with his knife; but within les than an houe (like the Gorgonia of Pliny.*) it grew as hard as the rest of the stone, which I guess may be equal to that of a Pebble: preserving, I suppose, its native softness whilst it enjoyed the salt streams in the heap of Oysters, and not hardening till exposed to the puter Air, which evidently shews (though the opinion be exploded of Coral) that there are indeed some other Sea things, soft under water; or whilst they enjoy the streams of it, that as soon as exposed to the frether Air, become presently stones.

155. Next the stones that relate to either of the three Ventricles, come we next to such as concern the Artus; or other members of the body: Amongst which, I have one dug out of a Quarry in the Parish of Cornwall, and given me by the ingenious Sir Thomas Penniston, that has exactly the figure of the lowermost part of the thigh-bone of a Man, or at least of some other Animal, with the capita femoris inferiora, between which are the posterior (hid behind the sculpture) and the larger posterior sinus, the seat of the strong ligament that rises out of the thigh, and that gives safe passage to the vessels descending into the leg: And a little above the sinus, where it seems to have been broken off, shewing the narrow within of a shining spar-like substance, of its true colour and figure, in the hollow of the bone, as in Tab. 8, Fig. 4. In compass near the capita femoris just two foot, and at the top above the sinus (where the thigh-bone is as small as any

* Nat. Hist. lib. 37. cap. 10.
where) about 15 inches; in weight, though representing so short a part of the thigh-bone, almost 20 pounds.

156. Which are dimensions, and a weight, so much exceeding the ordinary course of nature, that by Agricola, Casalpinus, and Kircher, such stones have been rather thought to be formed either in hollows of Rocks casually of this figure, and filled with materials fit for petrification: or by some other sportive plastic power of the Earth, than ever to have been real bones, now petrified.

157: And that indeed there are stones thus naturally fashioned, must by no means be doubted, since no question the stony teeth of which there are Cart-loads to be had in a Cave near Palermo, beside others in the shape of leg and thigh-bones, and of the Vertebrae of the back, are no others than such. None of them, as the judicious Charles Marquess of Ventimiglia well observed, having any signs of hollowness for the place of the marrow, much less of the marrow itself.

158. Which has fully convinced me that this stone of ours was not so produced, it having those signs exquisitely expressed; but must have been a real bone, now petrified, and therefore indeed not properly belonging to this place. However, it being now a stone, and not coming to my hands whilst I was treating of petrifications, I have rather thought fit to throw my self upon the Readers candour, and misplace it here, as I did the Adarce, than altogether to omit so considerable an instance.

159. But against this opinion of its having been once a real bone, there lies a considerable objection, viz., that it will be hard to find an Animal proportionable to it, both Horses and Oxen falling much short of it. To which if it be answer'd, that it may be much increased in the petrification; it may again be replyed, that though indeed there be an augment in some petrifications, yet that it is not so in all: for though in all petrifications there be an ingress of steams and particles that were not there before, and therefore either a cession of some other body required, or a necessary augmentation; yet that those petrifying steams are sometimes so thin and fine, that they require only the cession of some Airy or Ethereal atoms contained before in the porous parts of

c De Natura Fossilium, lib. 7. t De Metallicis, lib. 2. cap. 43. g Kircheri Mundus subterraneus. lib. 8. sect. 2. cap. 4. dig. 2. h Idem loco citato, dig. 3.
the body to be changed, as indeed it appears to have been in this instance of our petrified bone: for with it was found a tooth, depicted Fig. 5. in its exact bigness, weighing two ounces and ¼, not at all petrified but perfect bone still, rather exceeding than anything short of it in proportion; whence it must necessarily be concluded, that there could be but little if any augmentation at all.

160. And if it be asked how it should come to pass that the thigh-bone should be petrified, and not the tooth, it may be answered, and that experimentally too, that teeth admit not so easily of any change or petrification, because they are much more closely compacted substances than any other bones; whence 'tis, that we so often find them found and good, when all other bones are consumed. Thus at Bathendown, or Bannerdown (the Mons Badonicus of Nennius) not far from Bath in Somersetshire, there have been Cap fulls of teeth picked up by such as followed the Plough, but we are told of no other bones found there. And we are informed by Fazellus, in his History of Sicily, that of two Giants Sceletons, one found by Johannes à brachis fortibus, in the Field Gibilo, a mile South of the Town Mazarenum, now Mazara; and the other by Paulus Leontinus, not far from Palermo, that when they came to be touched, all fell into dust but the dentes molares, or the greater teeth called the Grinders, sufficient Arguments (I had almost said) of their unalterable state.

161. Since then it seems to be manifest, that the size of the bone has been scarce alter'd in its petrification: It remains, that it must have belong'd to some greater Animal than either an Ox or Horse; and if so (say almost all other Authors in the like case) in probability it must have been the bone of some Elephant brought hither during the Government of the Romans in Britain: But this opinion too lies under so great difficulties, that it can hardly be admitted; which are briefly these.

162. First, That we do not find that any of the Roman Authors, who elsewhere are large enough in describing the Elephants behavior in fight, and how terrible they were to some of the Trans-Alpine Nations, mention any such matter in any of their Expeditions into Britain. Dion, 'tis true, says, That Clau-

The Natural History

dius Cæsar, when he was called to the assistance of the Prætor Aulus Plautius, sore pressed by the Britans, then revenging the death of their slain Prince Togodumnus, amongst other preparations, gathered together his Elephants, ἐλέφαντας, are his very words. But Suetonius in his life, where he is very particular concerning this Expedition into Britan, mentions no such matter; nor indeed doth Dion say, that he brought them hither with him, only that he gather'd them together in order to it. But they both agree in this, that he met with such storms in his intended passage by Sea thither, that he was forced to put in at Marseilles, and march by Land quite through France to Gefforiaecum, now supposed to be Boulogne, from whence 'tis true he pass'd over to Britan. But so swift was his motion in this Expedition, that they also both agree, that he was returned to Rome again within six months, a time scarce agreeable with the motion of so unwildly Creatures as Elephants; which in all likelyhood were therefore left behind at Marseilles, because hindered by the weather of their Sea portage, and never transported into Britan at all. Nor find I in other Authors, that it was ever after attempted. One there was, 'tis true, sent hither as a present by St. Lewis the 9th, King of France, to King Henry the Third, Anno 1255. which, says Matthew Paris *, was the first seen on this Side the Alps; and perhaps there may have been two or three brought for thew brought hither since: but whether it be likely any of these should be bury'd at Cornwell, let the Reader judge.

163. Beside, had this thigh-bone and tooth, and the several others that have been found in England, such as the two teeth taken up at Edulsnes in the County of Essex, in the Reign of King Richard the First, that might have been cut into two hundred of an ordinary cize; and divers other bones and teeth found at Chartham near Canterbury, and Farley near Maidstone in Kent, whereof I have one now by me, dug up and given me, by the truly Noble and Ingenious Jacob Lord Ashly, near seven inches round, and five ounces and ½ in weight, of which more when I come into Kent. Had, I say, these bones and teeth been ever the spoils of Elephants, we should certainly at some time or

other have met also with those greater Tusks with which they are armed, of which I have not heard there have been any yet found in England, nor any thing like them.

164. Add hereunto what prevails with me much, that since the great conflagration of London, Anno 1666. upon the pulling down of St. Mary Wool-Church, and making the site of it into a Mercat-place, there was found a thigh-bone (supposed to be of a Woman) now to be seen at the Kings-head Tavern at Greenwich in Kent, much bigger and longer than ours of Stone could in proportion be, had it been entire. We have also here at Oxford *, a thigh-bone that came from London, three foot and two inches long, which I guess may be of an agreeable proportion with ours. And the same day I brought the tooth from Cornwell, there were two others happily procured for me by my worthy Friend Samuel Fowler A. M. dug up in the Parish Church of Morton Valence, about seven miles from Glocester, in the way thence to Bri-istol, in all points so exactly like the other from Cornwell, in ridges, cavities, &c. that had they not differ'd somewhat in colour, they could scarce have any way been distinguish'd. Now how Elephants should come to be buried in Churches, is a question not easily answered, except we will run to so groundless a shift, as to say, that possibly the Elephants might be there buried before Christianity florish'd in Britan, and that these Churches were afterward casually built over them.

165. If it be urged out of Ponticus Virunnius, and some others, that the Emperor Claudius was at Glocester, and that he built that City after his own name, in memory of the Marriage of his fair Daughter Gennissa, with Arviragus then King of Britan; where possibly he might have some of his Elephants with him, which might dye and be buried thereabout. It must be answer'd, that notwithstanding the name of Claudii Castrum, now Glocester, seems so much to favor the story in hand, that yet in all likelihood there was never any such matter: For neither Suetonius P, who numbers up all the Daughters that he had, and shews how given in Marriage. Nor Dion q, who do's the fame (who lived in his time, and had born the Office of Consul) remember any such Daughter, or so disposed of to Arviragus.

* In the Medicine School.
* Dio.
166. Beside, how was it possible that Claudius, who came hither, and was returned again to Rome within six months, should find so much time, as to come up so far in the Country as Gloucester, much less to celebrate such a Marriage, and build that City, since the same Dion expressly says, that of those six months time, he was here in Britain but sixteen days, δ' ὄν, ἐναδύομεν οὕτως καὶ τῇ Βρετανίᾳ ἑαυτοῖς τριήμερον, are his own words; and those sixteen days in all probability, were spent in ordering his Army, and joyning them with the Forces of Plautius that lay then at the mouth of Thames ready to receive him, and in taking of Camulodunum, which the same Author affirms he did that Expedition, and so immediately returned.

167. But what is instar omnium in this difficult point, there happily came to Oxford while I was writing of this, a living Elephant to be shewn publickly at the Act, An. 1676. with whose bones and teeth I compared ours; and found those of the Elephant not only of a different shape, but also incomparably bigger than ours, though the Beast were very young and not half grown. If then they are neither the bones of Horses, Oxen, nor Elephants, as I am strongly perswaded they are not, upon comparison, and from their like found in Churches: It remains, that (notwithstanding their extravagant magnitude) they must have been the bones of Men or Women: Nor doth any thing hinder but they may have been so, provided it be clearly made out that there have been Men and Women of proportionable stature in all ages of the World, down even to our own days.

P68. The Sons of Anak, no question, were very great men, and Goliath for certain was nine foot nine inches high. We read also of the Sons of the Titans, and of high Giants, and of Giants famous from the beginning, that were of great stature and expert in War. And (to omit the Fables of the Giants of Mount Erice near Drepanum in Sicily, 200 cubits high, of Tanger in Mauritania 60 cubits; and of the Giant found standing in a Rock, cleft by an Earth-quake in the Isle of Candy, 46 cubits, supposed to be Orion, or Otus, and several others mentioned by Phlegon.) Amongst the Romans, Theutobochus King of the Teutones or Germans, vanquished'd by Marius, is reported by Florus to be insigne

* 1 Sam. c. 17. v.4.  2 Judith 16. v.7.  3 Baruch 3. v.26.  4 Vid. Athan. Kircheri Mundum subterr. lib. 8 fiat. 2. cap. 4.  5 Phil. Nat. Hist. lib. 7. cap. 16.  6 Phlegon Trallianus de rebus mirabilibus, cap. 11, 12, 17, 18, 19.  

triumphi
Of OXFORD-SHIRE.

phi'staculum, so very tall, that he was seen above all the Trophies, which were the spoils of the Enemies, usually carried aloft upon the tops of spears. *Nerius Pollio, says Pliny*, was so great a Giant (having no account of his dimensions) that it was taken for a wonderful strange thing, that when a great press of people came running upon him, he had like to have been killed.

169. But to come closer to the business, and more determinate statures, the same Pliny tells of two others living in the time of Augustus, nick-named Pusio and Secundilla, whose bodies were preferred for a wonder in the Salustian Gardens, that were ten foot high: and that in his time there was one Gabbara, brought out of Arabia, in the days of Prince Claudius the Emperor, exactly of the height of Goliath, viz. nine foot nine inches high; which being a cize very proportionable to our bone found at Cornwall, I am rather inclined to believe, that Claudius brought this Gabbara into Brittan with him, who possibly might dye and lay his bones here, than that ever they belonged to any Elephant; except we shall rather say, that here also Cornneus, coffin to Brute, might kill one of Gogmagog's race, and that from him the place doth take his name, as well as the County of Cornwall.

170. Moreover, that there were men heretofore of such vast statures, we have the testimony of Josephus, in his Antiquities of the Jews, where he tells us of one Eleazar, a Jew born, sent amongst the Presents to Tiberius, when Darius the Son of Artabanus King of Persia, after a Peace made, went as a Hostage to Rome, that was full seven Cubits in height. And there is a Skeleton now to be seen in the Town-hall at Lucern, found under an old Oak in the County of Willisau, near a Village called Reyden, within the jurisdiction of that City, that gives further confirmation, it having all, or most of the bones wherein a Man differs from other Animals, and being above seventeen foot high.

171. And if we consult the latter ages of the World, we shall still find that there were always some few persons vastly exceeding the ordinary stature of Men: Job. Cassanio, though no fa-
vorer of the stories of Giants, yet tells us of one that lived about 150 years since at Burdeaux in Aquitan, commonly called the Giant of Burdeaux, whom Francis the first, King of France, passing that way, beheld with admiration, and gave especial command that he should be of his Guard: but he being a Peasant of a narrow soul, and not pleased with a Courtiers life, quitted his Halbard, and got away by stealth to the place whence he came: Of whom the said Caßanio was assur'd by an Honorable Person, who had seen him Archer of the Guard, that he was of so great a height, that a Man of an ordinary stature might go upright between his legs when he did stride. And Thuanus treating of an Invasion made by the Tartars upon the Polanders, in the Year 1575, tells us of a Tartar Ilain by one Jacobus Niezabilovius a Polander, whose fore-head was 24 inches broad, and his body of so prodigious a bulk, that as he lay dead on the ground, his carcases reached to the navel of a person standing by him.

172. Geropius Becanus, Physitian to the Lady Mary, sister to the Emperor Charles the Fifth, Queen of Hungary and Regent of the Netherlands, assures us, That there dwelt a person within five miles of him ten foot high, and that himself saw a Woman of the same height. The tallest that I have yet seen in our days, was also a Woman of a Dutch extraction, known publicly here at Oxford, seven foot and a half high, with all her Limbs proportionable: when she stretch'd forth her arm, Men of ordinary stature might walk under it; and her hand, from the carpus or wrist where it is joined to the radius of the arm, to the end of the middle finger, was full ten inches long. A stature, 'tis true, much short of any of the afore-mentioned, and indeed I believe it will be hard to meet with their fellows in these parts of the World, where Luxury has crept in, together with Civility: Yet if we look abroad amongst the present barbarous Nations of both Indies, where they live still according to Nature, and do not debauch her with the sensual Delights of the more civilized World, we shall find (if the Relations either of English or Hollanders be of any credit) that there are now men and women adequate to them in stature; several having been seen, especially about the Straights of Magellan, of ten: and one near the River of Plate by Tho. Turner, 12 foot high.

The Natural History

173. whence
Of OXFORD-SHIRE.

173. Whence 'tis plain, that whether we respect the more ancient or modern Times, 'tis possible enough these bones from Cornwall might be the bones of a man or woman, there being no decay apparent in the constitutions of Mankind from the beginning to this day, but what is adventitious and accidental: having in the longevity of the antediluvian Patriarchs.

174. Befide this Gigantick thigh-bone, there is another Stone at the foot of Shotover-hill, amongst the Orchites before-mentioned, Septr. 144. that also represents one of the Artus; viz. the Leg and Foot of a Man cut off above the Ankle, as in Tab. 8. Fig. 6. which from the toe to the heel is about a yard long, and perhaps in the whole may weigh 50 or 60 pounds: But I take not this for a petrification as the former, but a Stone formed in this shape purely by Nature, which may therefore be termed ANDRAPPODITES, as might all those of the kind mentioned by Wormius h. To which also may be added the Lapis acetabulums referens, whereof there is plenty on the Chiltern-hills. And a sort of Osteocolla found in Hedington Rubble Quarries, which scraped, has the smell of burnt bone, and may I suppose be the same mentioned by Gesner *, that was sent him by Peter Coldeberg, Apothecary of Antwerp.

175. After the Stones that relate to the parts of Animals, come we lastly to those that resemble things of Art, such as that in the form of a button-mold, Fig. 7. whereof there were several found in the very same Quarry with the thigh-bone and tooth, in the Parish of Cornwall, and no doubt did belong to the owner of those bones: And the other in the shape of the heel of an old foor, with the Lifts plainly to be distinguished, as in Fig. 8. which was found somewhere near Oxford, and given me by the Right Reverend and profoudly Learned, Thomas Lord Bishop of Lincoln, one of the first Promoters of this Design. But both these I take to be but petrifications, and therefore misplaced here like the A DARCE and thigh-bone.

176. But I have another sort of button-Stone, sent me from Teynton, which I take to be a meer production of Nature, finely striated from the top as I have seen some hair buttons, as in Fig. 9. and may therefore be called Porpites: Except we should rather take it for a new sort of Echinites, not yet discover'd, which

h Müfta W o r m i u s , cap. 13. Integrum pedem hominis in lapidem versum, Spectandum habet Museum Calceolarium, 10th. Bapt. Olivus, p. 63. * Gesner de Fig. Lapid. cap. 12.
is wholly left to the Readers choice.

177. In the Quarry of rubble stone near Shotover-hill, I met with a Spar-like stone, made I suppose of the dropings of petrifying water, not unlike to the bags called Manice Hippocratis, used in filtrations by the Chymists, three one above another as they usually place them, as in Fig. 10. And in the very same Quarry I found a single Trochites of a cinereous colour, so called from its likeness to a wheel, having rays coming forth of its center, like the spokes of a Cart-wheel from its stock, hub, or nave: These are said to have affinity with the Lapis Judaicus in their texture, and with the Asterix in the property of moving in Vinegar, neither of which I could well try, having but one, and that too set in a rubble stone of the Quarry. They are found plentifully Northward in Holy-Island, and in the bottom of the Chanel of the River Tees, at Bravoughton and Stock in Yorkshire, at Beresford in Staffordshire, and are commonly there called St. Cubbert's Beads, whereof I intend Cuts, and shall treat more at large when I come to those places.

178. At the Parish of Heath I met with a reddish sort of stone, in the usual form of a Whet-Stone, as in Tab. 8. Fig. 11. about four inches long, very hard, and for both those reasons not fit for use: it was given me by Mr. Evans, Rector of the place, and said by him to be taken out of a block of stone dug in the Quarries thereabout, naturally having grown in that form. And at Stonor there was given me a crisp'd white stone, taken up not far thence, resembling a sort of Sweet-meat, not like the Confecti de Tivoli, but rather of Viterbo mentioned by Aldrovandus, or a sort of Sweet-meat we have from Portugal.

179. Amongst the stones, like things of Art, I think I must also number a sort of globular iron-colour'd balls, taken up about Cornwall; whereof I have two given me by Sir Thomas Penniston; the one plain and smooth, the other granulated on the out-side, not unlike to an Orange, very weighty, and made up within of a golden striated substance from the center to the circumference, shewn in the Hemisphere of one of them, Fig. 12. Of these there are some so equally round, as if done by Art; and so they are says Cambden at Huntley Nab, where under the craggy Rocks

---

*Boet. de Lapid. & Gem. cap. 227.*  
*Geo. Agricola de Natura Fossilium, cap. 5.*  
*Mr. Ray's Topograph. observat. p. 116.*  
*Philosoph. Transact. Num. 100.*  
*Museum Metallicum, lib. 4. p. 518.*  
*Cambr. in the North-Riding of York-shire.*
they lye scatter'd here and there of divers bignesses, so artificially by Nature shaped round in manner of a Globe, that one would take them to be great bullets, cast for foot, to be discharged out of great Ordnance. Such as these are also mention'd by Job. Kentmannus, found inter lapides aerarios, which if broken (says he) are like the silver or cinereous Marchafile, out of which somtimes brass or silver are smelted, than which ours are somewhat of a better colour, but whether possess'd with those or a better metal, I must confess I have not tried, and therefore cannot inform the Reader.

180. Hither also must be referred a round stone before mention'd, chap. 3 sect. 30. containing within it a white sort of earth, and therefore called Geodes, or the pregnant stone; differing from the Estites in this, that whereas that has within it a movable stone, by the Naturalists called Callimus; this contains only earth or sand, that moves not at all: The outward crust of these is somtimes only an indurated chalk, under which are some other folds like the coats of an Oxyon; and when found thus, by the Inhabitants of the Chiltern (where they are most plentiful) they are called chalk Eggs. Others there are of them, whose outermost coats are hard black Flints, some very thin, and others thicker, according I suppose to the seniority of their generation: For I have some of them by me whose coats are not much thicker than the shell of a Wall-nut, others stone half way, and others so almost to the very center; and these Flint coats black without fide, and gradually whiter and whiter, as they approach nearer to the whitish earth contained within: whence I am almost perswaded, that however it may be in irregular Flints, that in these the chalky matter does turn into stone, and is the chief principle of their generation.

181. Upon the Chiltern-hills, near to Sherbourn and Lewkner, I found many of the Flints inclining to a Conical Figure. And in the gravel about Oxford, I have seen faciated Pebbles, having as it were Zones or girdles round them, of different colours from those of the stones. About Fawler and Stunsfield, the Pebbles before mentioned, cap. 4. sect. 18. are most of them streaked with iron-colour'd lines, somtimes inclining towards one another like the ramifications of a Dendrites; which though not so curious as

* Catalog. Fossilium; Tit. 16. de Lapid. aerarii à natura efficiatis.
the Pietra di figure de boschi of Ferrante Imperato, yet fit me well enough with a transition to the Chapter of Vegetables, which immediately follows.

182. Only I must beg leave first to advertise the Reader, that what I have ascribed to Dr. Merret concerning the Toad-stone, sect. 146. I have found since the Printing of that sheet, seemingly also given to the Learned Sir George Ent, by the less Learned Sir Thomas Brown, in the last Edition of his Pseudodoxia Epidemica, to whether more rightly, let them contend. And that since the Printing the beginning of this Chapter, I received from the Right worshipful Sir Philip Harcourt of Stanton Harcourt, two kinds of Selenites, though of the same texture, yet much differently formed from any there mention'd; both of them being Vodeca'drums, but the Hedrae too as much different from one another, as from any of the former: The first sort of them being made up of two Rhomboideal sides, four oblong, and as many shorter pentagons; and two small Trapeziums, one half whereof are represented Tab. 8. Fig. 13. And the second, of two oblong Hexagons, four oblong Trapeziums, four oblong parallelograms, and two large pentagons, one half whereof are also represented Fig. 14. In both which it is to be understood, that the Hedrae at the ends of each stone, are opposed by two others like them, not according to the breadth, but length of the stone. The two pentagons at the top of the stone, Fig. 13. being oppos'd by two others like them, behind the small Trapezium at the bottom of it; and the small Trapezium at the bottom, by another like it behind the two short pentagons at the top: and so the oblong parallelograms, and large pentagons at the ends of the stone, Fig. 14.

CHAP.

CHAP. VI.

Of Plants.

Next Inanimate things, I proceed to such as have Life, amongst which, first of those that hold the lowest place, that exercise the most universal, and therefore inferior Faculties, such as Herbs, Shrubs, Trees, all which are contained under the general name of Plants: But of these I intend not a compleat Catalogue (that being a subject of it self large enough for a Volume) but only a short account,

1. Of the Indigenous Plants of the County, which yet either

1. Are not described by any Author that we know of, or
2. Have not been noted by the ingenious Mr. Ray, in his excellent Catalogue, to be of English natural growth; or
3. Have indeed been noted, which yet remaining dubious, either as to the certainty of their description, or specifical difference, are cleared in this County.

2. Of the extraordinary accidents of well known Plants.

3. Of the unusual Plants now cultivated in the Fields, under which head somewhat of the Husbandry of the Country.

according to which method I shall treat of all the three forementioned Species of Plants; viz. Herbs, Shrubs, Trees, so far forth as each of them will come up to it. And first, of those stiled herbaceous Plants.

2. By which I understand all and only those that are made up of a succulent and carnous substance, that never in any part will become lignous, (or hardly any of them retain it all winter) as Shrubs and Trees do: of which those that are indigenous, and not described by any Author that we know of, are these that follow.
3. *Viola Martia bifsutu major inodora.* Which large *Violet* from a fibrous root sends forth many leaves, each upon his own foot-stalk, neither creeping as the common *March*, nor branched as the common *Dog-violet*; its leaves and stalks are all hairy especially on the back-side; they are also broader, larger, and more pointed than the ordinary *March Violets*, which occasioned (as some think) the ingenious Dr. Merret to note it by the name of *Viola Trachelii folio*; but that certainly must be some different kind, the leaves of ours being all invecked, as in Tab. 9. Fig. 1. whereas the *Trachelia* are all indented: Amongst the leaves grow large flowers, upon foot-stalks (as other *Violets*) of a pale blue colour, with white lines or rays issuing from the middle of them, but wholly without scent. They flower in *March* and *April,* and are commonly but abundantly sold to the shops amongst other *Violets*; they not being so good for any of those uses the *Apothecaries* put them to, as other *Violets* are. They grow plentifully in Magdalen College Cops, on Shotover hill, Stow-wood, and many other places.

4. *Viola palustris rotundifolia.* From the root of this Plant, which is white, and at equal distances knotted (whence only it sends forth its fibers not downward, but horizontally) arise 3 or 4 (sometimes more) feeble small stalks, each bearing at its top only a round leaf, as in Tab. 9. Fig. 2. Among which, about *April* come up the stalks of the flowers, slender, like those of the leaves; the whole Plant being weak, and beholding to the neighboring ones for its support. The flowers are all small and blue, which being past, a long *Prismatical seed-vessel* succeeds, opening its self when ripe into three parts, and shewing a rank of brown seeds, appended to each angle by white *Nerves:* This is easily distinguish'd from all other *Violets* by its native place, wherein it is supposed they will not grow; and by the smallness of its flowers, which are considerably less than any of the rest; whereunto add the remarkable roundness of its leaves, which are so far from drawing to points, that the longest way of them is from side to side. *Clusius* indeed seems to describe a Plant like this, by the name of *Viola Alpina altera*; but makes its flower as much greater, as ours is less than the common one; adding, beside, that it flowers about the latter end of *June,* a month be-

---

fore which time the Seed of ours is ripe; which are differences so irreconcilable, that we cannot but pronounce ours as distinct from bis, as from any other. Violets before described by Authors, whereof we have consulted most, if not all the best. It grows sparingly in the Boggs about Stow-wood, and on the Banks of Cherwell between Oxford and Water-eaton; but most plentifully at Chilswell in Berkshire, amongst the moistest Boggs.

5. Juncellus omnium minimus capitulis Equiseti. This least club-rush from small hairy roots, riseth no bigger than horse-hair, and not above three inches high, bearing at the top a little club, as in the other club-rushes, but proportionally lesser, as in Tab. 9. Fig. 3. where also it may be observed, that the rush rises singly from the root, and not branched, like the Fluitans mentioned by Mr. Ray", who had he seen this, would certainly have owned different species of club-rushes, which he seems so much to doubt. It grows in Binsey-Common, in the moist ditches next the River Isis.

6. Geranium columbinum maximum foliis dissectis. Or the great jagged Doves-foot Cranes-bill, differs from the jagged ones of other writers, in that it is jagged at the first coming up; whereas all others are whole then; its leaves are also standing on long foot-stalks, and much greater than those of any other Doves-feet; from the middle of which there rise up great jointed stalks, near the bigness of a man's finger, branched, and almost standing upright a yard in height: At the joint, which are largely knotted, are also large jagged leaves, which at the top grow very thick, amongst which stand the flowers upon short foot-stalks, as in Tab. 9. Fig. 4. of a bright and red colour, whereas the others are of a bluish purple; the seeds being like those of other Doves-feet. This grows in hedges about Marston, and on that part of Botley-Causey next Oxford, in great plenty.

7. Pentaphyllum reptans alatum foliis profundius serratis. This creeping Plant in all respects grows like the common Cinque-foil, but that at the bottom some leaves are found round and undivided like Alchemilla, and others dividing themselves into five, are jagged but half way: As it increases in growth, the number of leaves oftentimes decrease, bearing four, three, two, and at the top, one; all which, have two little leaves or ears at the bottom.

*a in Catalog. Plantar. Angl.*
of the foot-stalk, like *Tomentill*: The flowers are of the big-
ness and colour of common *Cinque-foil*, but generally made up
of four leaves, as in Tab. 9. Fig. 5. and but very rarely to be
found with five. It grows in the edges of the *Corn-fields* between
Hockley and the Woods under Shotover-hill.

8. *Orobanche Verbasculi odor*. The root of this *Plant* is *skaly*
and obtuse, to which are appended a bundle of complicated *Fi-
bers*, like those of *Nidus avis*, whence it rifeth up with a soft
round very brittle stalk, seldom eight inches high, set with thin,
small, short skaly leaves like *skins*, growing close to it: At, or
very near the top of which stalk, grow somtimes eight or ten
small flowers, altogether different from those of the common *O-
robanche*, each confitting of four pretty large leaves, within which
are contained as many leffer, as in Tab. 9. Fig. 6. About the
seed vessele (which is round at the bottom, with a narrow neck,
and a hole at the top somwhat resembling a *child* fucking-bottle,
as in Fig. 6. a) stand small chives with purplifh tops, as in Fig. 6.
b. The whole herb, flowers, stalks and leaves, are at the first flow-
ering, of a whitifh yellow, or straw colour, and being broken
or bruised, smell like the root of a *Primrofe*. It grows at the bot-
toms of Trees in the woods near *Stoken-Church*, and we find it
mention'd in some MS. notes of the famous Mr. *Goodyer*.

9. *Saxifraga Anglica annua Altnefolio*. This small annual Sa-
xifragae from a small fibrous root, spreadeth its trailing jointed
stalks about an inch or two from it, at each joint come forth
small narrow leaves as in the other *Chickweed-break stone*,
and from the upper joynts toward the end of the stalks, come
small herbaceous flowers made up of four leaves, which prove
the case for the small included seed vessele; as in Tab. 9. Fig. 7.
This *Plant* differs from the common one, which is of a light fresh
green, perennial, and somtimes roots again at its joynts; in that
its stalks and leaves are of a brownish green colour, the *Plant an-
nual* and never reptant: it grows plentifully in the walks of *Ba-
liol College* gardens, and on the fallow Fields about *Heddington*
and *Cowley*, and many other places.

10. To which perhaps I might add two different *Lychnis's*
from the *Sylvestris flore albo Gerardi*, observed this Year by Mr.
*Richard Stapley*; one whereof bears a white flower somwhat lefs
than the common, yet at the center having another little flower
circle,
circle, in the middle of which appear several fine stamina, with yellow longish apices, whereas the reclining stamina of the common Campion have no apices at all; the other also bears a white flower without that flowery circle, but has stamina crowned with roundish purple apices, with the dust whereof the flower itself is commonly soiled. But in the first of these the seed vell not appearing at all, and in the second withering away with the flower: We are not so bold as to make them distinct species, not knowing as yet whence they should be propagated. These were found near Holy-Well in the Suburbs of Oxford, and grow also in the Corn-fields about New-parks, and as we suppose in most parts of England. Sed de hoc quære.

11. Befide these, there is also another, of which Authors write so obscurely, that we cannot positively say whether described or no: However, we have ventured to call it Artiplex vulgaris sinuata bicara, it not being like the Pes inferinus alter five ramofer of John Bauhin, mentioned by Mr. Ray w, in that it bears its seeds in buttons close to the stalks, like the Fragifera. This grows equally common on Dung-hills with the sinuata major, amongst which we suppose it has hitherto lay hid.

12. As for the Plants described by other Authors, but not noted by Mr. Ray to be of English growth, we find only these in the County of Oxford. 1. Clematis Daphnoides five pervinca major, in the High-ways between Woolvercot and Tarnton, and in several hedges thereabout. 2. Lagopus major vulgaris Parkinsoni, in Stow-wood plentifully, and several other places. 3. Oenanthe aquatica minor Park. five juncus odoratus Cordi, in the ditches about Medley and Binsey-Common, and almost every where about Oxford.

13. Whereunto add some others indeed noted by Mr. Ray, but left in doubt whether described, or different from one another. Such are the Helleborine flore albo, mentioned in his Appendix * to grow in the woods near Stoken-Church, not far from the road leading from London to Oxford, which because he had not seen either flowering, or green, modestly refused to determin whether described or no: But we having had time and curiosity of viewing it often in flower, find it to be the Helleborine flore albo of Gerard and Tabernamontanus: Epipactis angustifolia of Besler.

The Natural History

in his *Hortus Eystettensis* [2]: *Alisma quorundam Cordi* [a], and *Alisma Cymbaleanthemón Thali* [b]. Which Authors, and others, we have diligently searched, and, by comparing them together, find the Plant to agree with each Figure, as well as they could do one with another, had they (as indeed they commonly are) been Printed from one Plate.

14. The Plants which he doubts whether specifically distinct, yet found so in Oxford-shire, are also Helleborine's; the one his Helleborine *flore atro-rubente*, and the other Helleborine *latifolia montana* [c], both plentifully growing on Stoken-Church hills: Whereof the former has small narrow leaves, somewhat like the *Palastris*, and growing thicker on the stalk; whereas those of the latter are broad and much thinner, the one also flowering a full month after the other, which we take to be distinguishing Characters enough, though not so signally differing in the flowers as Mr. Ray owns his to do; our *latifolia montana* coming nearer to that of Gerard, then of him or Dodonaeus, having purple flowers, but as deep or deeper than those of the Helleborine *flore atro-rubente*.

15. Of Accidents that are incident to herbaceous Plants, beside what I have seen amongst foreigners in Gardens, I have met also with some amongst the natives of Oxford-shire; which I guess may happen to them (as likewise to all others) most times through excess, or defect in their nourishment. Thus have I seen the stalks of Dyers-weed and Succory, from a round near the root, spread themselves upward into a broad flat stalk, as if there were several of them *fasciated* together, occasioned I suppose by reason of the ascent of too much nourishment for one stalk, and yet not enough for two. The *fasciation* (if I may be allowed to coin such a word) being as it were an attempt for two stalks, which upon the ascent of sufficient sap, is sometimes accomplish’d, the flat stalk then dividing into two, as I observed it this Summer in a *Draba lutea silquiu striéfissimis*, and several other Plants in the Gardens.

16. Which accident of Plants the German Virtuosi think only to happen after hard and late Winters [d], by reason whereof indeed the sap being restrained; somewhat longer than ordinary, up-

---

[a] *Valer. Cordi Hist. de Plant. lib. 2. cap. 107.*
on sudden thaws, may probably be sent up more forcibly and together, and so produce these fasiated stalks; whereas the natural and graduated ascent would have produced them but single. Yet experience has taught us this present year 1676, that such productions must by no means be thus restrained; the Winter preceding, in Anno 1675, being one of the mildest ever known in England, and yet fasiated Plants as frequent as ever.

17. Befide those, we have observed some others here curiously striped; some of them yellow, as Dens Leonis, Caryophyllata, Urtica urens, &c. others white, as Papaver Spumeum, Plantago quinque nervia, Crucia, Calamintha aquatica, &c. Others again differing from the rest of their kind, not in leaves, but colour of their flowers; such are Lamium rubrum, Lychnachis siliquosa magnoflore, Trachelium minus, Gentianella fugax minor, Anagallis terrestris, &c. aquatica &c. Becabunga, cum multis alios, all with white flowers; and Hyacinths, we have somtimes found with red, and white flowers: All which, I guess accidentally, accrew to these Plants (their species's having flowers of different colours) through defect, or some interception of their nourishment, which occasion diseases, and such discolorations both in their leaves and flowers.

18. That this is true of all striped Plants, is manifest, in that such discolorations may be procured by artificial subtraction of the nourishment, viz: by applying Lime, or other hot dry matter to their roots; which drying up, or otherwise rendering the nourishment unfit, will thus make the Plants striped; as our very Learned Botanic Professor, Dr. Morison, informs us he observed it in Dulcamara creeping through Lime and other rubbish of Buildings, at the Duke of Orleans his House at Blois, whence not only ours, but most other Gardens of Europe have since been supplied with the white striped Dulcamara.

19. Moreover, that such striplings are nothing but disease, appears plainly in that most, if not all striped Plants, are somewhat deformed and imperfect in their leaves; and though striped very lively in the beginning of the Spring, will many of them recover in some measure, at least before Autumn, and some of them have their leaves at length as green, as the rest of the healthy Plants of their kind: Which I take to be manifest arguments of their sickness, and such striplings to be only discolorations, and no ornaments of perfection, though ornaments of our Gardens.
20. To which if it be objected that 'tis otherwise in the Flowers of all the Plants above-mentioned, which though of different colours from the rest of their species, continue so still from year to year, not altering in the Autumn from what they were in the Spring: It must be answer'd, that notwithstanding what is urged be true, yet such constancy will not warrant them of a different species, since no seed they produce will bring more of their kind, but only such whose flowers will be of the ordinary colour; which is so great an imperfection, that we cannot but suspect these also to be diseased, and to have their variations only from thence.

21. Though it must be confess'd, that it's worthy notice too, that many of these Plants seem as strong, and flourish as well as any others, and produce perhaps their Seed as perfect as any: Why then they should be numbered amongst diseased plants, any more than a red hair'd man should be accounted so in England; or a black hair'd one in Denmark (where I am informed there are so few, that they commonly paint Judas with black hair as we do with red) is a difficulty, I guess, not easily avoided; especially since the difference of colours in flowers may be occasioned by the different textures of the stalks of some certain plants, as it is in the hair and feathers of Animals, also of different colours from the rest of their species, as shall be fully made out in the following Chapter. It may therefore perhaps be more safely concluded, that the different colorations at least of some of these flowers, may indeed be accidents, but no accidents of disease or imperfection.

22. Which is all I have met with concerning wild herbaceous Plants, and the accidents attending them remarkable in this County; in the relation whereof I have been all along so careful of not imposing on the World, that I have mention'd nothing, except in the Philoſophical part, wherein I have not consulted, and had the approbation of some of the most knowing in the Faculty, such as the Reverend William Brown B. D. and Fellow of Magdalen College Oxon, Edward Tyfon M. A. John Banifler M. A. Richard Stapley B. A. and Mr. Jacob Bobart junior, all eminent Botanists.

23. Of unusual Plants now cultivated in the Fields, to pass by the ordinary red and white Lammas Wheats, black and white Ryes, the
Of OXFORD-SHIRE.

the common Barley, Peas, Beans, and Oats, there are several worthy notice now sown in this County, that have been scarce ever heard of, much less used in some others: Whereby the way let it be noted, that the word [unusual] is not so much to be applied to this, as other Counties, and that in these matters of Husbandry, I rather write for the information of Strangers, than the inhabitants of Oxfordshire, as I must hereafter in other Counties for the information of this: There being many things in each County thought common there and unworthy notice, that perhaps in some others will appear so strange, that they will scarcely be believed. And such are

24. *Triticum sibiricum rubrum, caule item rubro*; red stalk'd wheat (mistaken by many for red Lammas) so commonly called from the redness of its straw, especially near the joints when the Corn begins to turn; which redness yet will vanish for the most part away, when it is full ripe. This Corn, as I was inform'd, was first propagated from some few ears of it pickt out of many Acres, by one Pepart near Dunstable, about fifty years ago, which sow'd by itself till it amounted to a quantity, and then proving Mercatable, is now become one of the commonest grains of this County, especially about Oxford; which yet because not known in many other places, I thought it at least to mention it; and the rather because of its feldom or never smutting, a conveniency that pleases the Baker and Husbandman both; and yet it seems 'tis not now sown about Thame and Watlington so much as formerly, because it brings not so certain, nor so good a burthen as

25. *Triticum sibiricum albicante, granis rufescentibus*, white eared red wheat, white Corn, or mixt Lammas, which latter name I take to be as agreeable as any, because of its participating both of the white and red Lammas, having a white ear and red grain; whereas the white Lammas has both ears and grain white, and the red Lammas both red: Nor has this, as I was told, been long in Oxfordshire, it being first advanced like the former from some few ears, and at last being found to yield considerably better than most other wheat, viz. somtimes twenty for one, it is now become the most eligible Corn, all along the Vale under the Chiltern Hills, and in far better esteem than the red stalk'd wheat, or,
26. *Triticum spicà aristatà glumis birtutis*, the long *Cone* Wheat, which yet is the best of any, to be sown in *rank clay* Land, its stalks being reedy and not subject to lodging; and by hedges sides, because the Birds cannot eat it; for which reason also it must be good in *Inclosures*, besides its being the least subject of any *Corn* yet known, to the inconvenience of *Mildews*: This sort also yields extremely well, but its *Flower* being course and not pleasing the *Bakers*, it is seldom sown but under the mentioned circumstances, except sometimes mixt amongst the other wheats.

27. *Triticum multiplex*, *five spicà multiplici*, double ear’d *wheat*, so named for that it has divers *small ears* issuing out of the sides of the *greater*, and is sown about *Bifletter* and *Wesmon on the Green*, but it not proving agreeable to the *soils* thereabout, nor advantageous to the *Husbandman*, it is almost quite diffused; though I hear it succeeds better about *Fritwell* and *Souldern*. They sow also a Wheat about *Wesmon on the Green*, which from the hanging of its ear they call *Pendule* wheat, but suspecting that it differs in nothing from *Cone*, it being *arisitum munitum*, and *glumis birtutis*, I forbear as yet to pronounce it any other, though I am told that the *Pendule* has a redder and more slender, and *Cone* a whiter and fuller ear; and that *Cone* endures longer, and *Pendule* but a very short time here, it yielding for the first year sometimes *twenty for one*, and within two years after dwindling away, so as not to be worth sowing; which time expiring, they supply themselves again out of *Berks-shire*, at *Abington Mercat*, whereof more (if I find it to be a different *kind*) when I come into that *County*.

28. All which, 'tis true, in *Oxford-shire* are so commonly sown, that they cannot indeed in this respect be stiled *unusual*: but because scarce ever heard of in the *South-east* parts of *England*, I thought it convenient at least to hint them. And so likewise our

29. *Hordeum diflichum præcox*, or rathe ripe *Barly*, deservedly so called from its early ripening, it having been somtimes sown and returned to the *Barn* again in two *months* time, and often in nine or ten *weeks*. This *Barly*, 'tis true, is no native of *Oxfordshire*, only much sown here, it being all had either immediatly or mediately from *Patney* in *Wiltshire*, whence by some 'tis also called *Patney Barley*: Where the soil (as I am told) is of so peculiar
culiar a quality, that what-ever other Barly is sown there, it is
turned forthwith into this we call rathe-ripe; a feat, which they
say, no other Land will perform. But we are told by Dr. Chil-
drey, that in the western parts of Cornwall, they sow a fort of
Barly near the Sea-fide, which they carry to Mill in eight or
nine weeks time after they have sowed it. However, what we
have here comes all from Patney, but is not so agreeable to our
Oxford-shire soil immediatly from thence, as when it has been
sown elsewhere twice or thrice; after which, it endures not a-
bove three or four years, but degenerates again into common
Barly. Its convenience notwithstanding is very considerable in
wet and backward Springs, and moist Autumns, when many o-
ther Countrys lose their seasons, and some of the more Northern
ones perhaps their crop, the common Barly there never coming
to be ripe, whereas this may be sown at the latter end of May, and
will come to be ripe in the worst of Summers. This I heard
of first at Gaunt-house, (the Paternal Estate of the Right Reverend
Father in God, John Lord Bishop of Oxon, one of the Noblest En-
couragers of this Design) but met with it after all over the County,
it being generally approved of by all sorts of Husbandmen. And
this is the only Barly sown in this County unknown in some
others.

30. But of Peas there are many sorts little thought of South-
ward, that possibly were they known, might prove as agreeable
to the soils there, as here, and as advantagious to the Husband-
man. Such are the Peas called Henly-gray, and another sort
called Red-fanks, for fresh new broken Land; the Vale-gray for
strong; and Hampshire-Kids for new chalky Land; the small Rathe-
ripes, for poor and gravelly; and the Cofwold Pea for sour ground.
And of Vetches; in deep clay Lands they sow the Gore and pebble-
Vetch; in cold moist grounds the rathe-ripe Vetch; and Dill; or
Lentills, in poor stone-brafs land, which are a good podware for
cattle, and sown in many parts of the County.

31. As for Beans and Oats, they sow only the common that
are every where else; but for Graffes, the usual name for any Her-
bage sown for Cattle, especially if perennial (to pass by the tri-
folium purpureum majus five sativum, Clover-grafs; and Onobrychis
spicata flore purpureo, femin eebinato, commonly called Sainft-foin,

* Britannia Baconica in Cornwall.
or *Everlasting-grafts*; but according to Dr. Morison, the true *Lucern*, now every where known, and therefore nothing concerning the qualities and advantages of *it*.) They have lately sown *Ray-grafts*, or the Gramen Lolium, by which they improve any cold, four, clay-weeping ground, for which it is best, but good also for dryer up-land grounds, especially light stony, or sandy Land, which is unfit for *Saind'-foin.

32. It was first sown (as I was told) in the Chiltern parts of Oxfordshire, and since brought nearer Oxford by one Mr Euftace, an ingenious Husband-man of *Iffip*, who though at first laught at, has been since followed even by those very persons that scorn’d his *Experiment*, it having precedence of all other graffes, in that it takes almost in all sorts of *poor* Land, endures the *drought* of *Summer* best, and in the *Spring* is the earlyest grasse of any, and cannot at that time be over-stock’d; its being kept down making it sweeter, and better beloved by *Cattle* than any other graffs: Nay, sometimes they have been known to leave *Meddow bay* to feed on; but of all other *Cattle* it is best for *Horses*, it being hard *Hay*; and for *Sheep*, if unsound, it having been known by experience to have work’d good *cures* on them, and in other respects the best *Winter* graffs that grows.

33. As to the *manure* of it, some sow but two *bushels* on the *Statute* Acre, but ’tis best to sow three, mixt with the *trifolium agrarium Dodonaei*, called *Melilot-trefoil*, and sometimes *Non-such*, because of it self it is but a thin spiry graff, and will not be of any bulk the first year, unless thickened by the *Trefoil*, which failing by degrees, the *Ray* or *bennet-grafts* (so some also call it) thickens upon it, and laft’s for ever. Of *Ray-grafts* and *Trefoil* thus mix’d together, one at *Iffip* but lately had so advantagious a *crop*, that from four *Statute* Acres, worth not above *forty shillings* per *annum*; beside the keeping six or eight *cattle* till holy *Thursday*, and the feeding all the *Winter* following, had twenty *Quarters* of Seed worth *twenty pounds*, and fourteen loads of *fodder*; enough to winter five or six *cattle*.

34. The *fenum Burgundiacum caeruleum L’Obelii*, or *Medica legitima Clusii & Dodonaei*, commonly called *Lucern*, but by the Learned Dr. Morison said to be the true *Saind'-foin*, is also sown here, and found to agree well enough with a *rich moist* ground, but better by much in a *warm* and *dry* soil. This stands recommended for
for an excellent fodder both by Men and Beasts, especially Horses, which are purged, and made fat with it in the Spring time in 8 or 10 days. But no more of this, or any other grasses, they having all (but Ray-grasses) been already described.

35. But besides Grasses, there have some other Plants been cultivated here of no mean use, such as Cnicus, five Carthamus sativus, manured bastard Saffron, sometimes called Saffrole, for dying of scarlets; and therefore by some called also the scarlet Flower, whereof there was once a considerable quantity sown at North-Aston by Colonel Vernon, the Seeds being planted in rows about a foot distant, for the more convenient howing and keeping it clean from weeds: In these rows it rises with a strong round stalk three or four foot high, branching it self to the top, where it bears a great open falky head, out of which it thrufs forth many gold yellow threads of a most orient and thining colour, which they gather every day as fast as they ripen, and dry them well; which done, it is fit for sale, and dying of scarlet.

36. And about Hampton and Clanfield, they make some profit of sowing Carum, sive Carum, or the Carui of the Shops, commonly called Caruwaies, which they sow in March or April; as they do Parsley; the first year (it seems) it bears no Seed, but the next it seeds and shatters, and so will hold six or seven years without new sowing, or any other care or trouble; besides keeping it from weeds: the encouragement they have to sow it, is the value put on it; one pound of this being esteemed by the Grocers, worth almost two of that which they have from London.

37. And this is all I have met with concerning cultivated plants worthy taking notice of in this County; but that like the wild Indigenous ones, these have somtimes accidents that attend them too: for such, and no other, were the two ears of Wheat branched from one stalk, and six ears of barley from another, found at Fulbrook near Burford, and given me by Mr. Jourden, since deceased. Nor have I more to add concerning them, but that I find few that I have mentioned to be noted by Mr. Ray.

38. Next Herbaceous plants, I proceed to the Shrubs; amongst which I met with but little extraordinary, only the Haw-thorn at Bampton, in the bowling-green hedge, bearing white berries or haws, which indeed I take to be a great curiosity; for though in Flowers
and Animals, white be esteemed by some a penurious colour, and
a certain indication of a scarcity of nourishment: Whence 'tis, 
says my Lord Verulam, that blue Violets and other Flowers, if 
they be starved, turn pale and white; Birds and Horfes by age 
turn white; and the hoary hairs of men come by the same reafon. 
And though among Fruits the white for the most part argues but a 
mean concollion, they being generally of a flaky over-watery taff, 
as Pear-plums, the white harvest plum, white Bulles; and 
divers sorts of pears and apples of that colour. Yet in Berries the 
case seems to be quite different, as we see in Gooseberries, Grapes, 
Straw-berries, Raffis, whereof the white are by much the more 
delicate, and have the better flavor; which if true, in the whole 
Species of berry-bearing Plants (as in probability it may) we have 
reafon to conclude that the berries of this Thorn are not acciden-
tally white, through defect or disease as in some other Plants, but 
that they are an argument of its perfection; and that the Thorn 
itself is of a quite different species from all known before, and 
may juftly challenge the name of Oxycanthus baccis albis. These 
Berries 'tis true, I saw not myfelf, not being there in time of 
year for them, but being certified of the truth of it by the com-
mon voice of the Parifh, and particularly by the Worshipful 
Thomas Hoard Esq; who first told me of it, and the Reverend 
Mr. Philips Arch-Deacon of Salop; and one of the three Vicars 
there; (men of great ingenuity and undoubted veracity,) I had 
no reafon to queftion the certainty of the thing.

39. And hither I think may be referred the Glaftenbury Thorn, 
in the Park and Gardens of the Right Honorable the Lord Nor-
reys; that constantly buds, and fomtimes blossoms at or near 
Christmas: Whether this be a Plant originally of Oxfordshire, or 
brought hither from beyond Seas, or a graft of the old stock of 
Glaftenbury, is not eafie to determin. But thus much may be faid 
in behalf of Oxfordshire, that there is one of them here fo old, 
that it is now dying, and that if ever it were transplanted hither, 
it is far beyond the memory of men.

40. As for the excellent and peculiar quality that it hath, some 
take it as a miraculous remembrance of the Birth of CHRIST, first 
planted by Joseph of Arimathea; Others only eftem it as an ear-
lier fort of Thorn peculiar to England: And others again are of

1 Nat. Fift. Cent. 93. 2 Here except the Parfegrows and white Damafus.
opinion, that it is originally a foreigner of some of the southern Countries, and so hardy a Plant, that it still keeps its time of blossoming (which in its own Country might be about the end of December) though removed hither into a much colder Clima. Whether of these is most probable, I shall not determin, but leave every Reader best to please himself; and whatever more can be said of it, I shall reserve till I come into somerset-shire, where it is in greatest reputation, and has been most observed.

41. Whereunto perhaps may be added a kind of Rosa Canina, which we have ventured to style, humilior fructu rotundiori, for that it wants much of the height and strength of the common one, and has round leaves, and the hips compressed at the top, and branches thick set with small prickles between the great ones; whereas the common one has both leaves and hips long and pointed, and only a larger sort of prickles set at some distance. But whether this be not the rosa sylvestris folio glabro, flore plane albo, of John Bauhin, to which we find it most agreeable of any described *, we dare not pronounce; and therefore have not ventured to give it any draught, but have left it to further enquiry, which that all men may readily make, they may find it growing plentifully in Magdalene College water-walks; in the way up Heddington-hill; and in many other places near about Oxford. And if judged at length to be that of John Bauhin: however, we find it not noted by Mr. Ray, and therefore cannot be guilty of misplacing it here.

42. Befide this, I met with no others either dubious or omitted, but several of them diseased, discoloured or striped; such as Peridichenum sylvester (with the more accurate Botanists, rather a subfrutex than a shrub) found at Shotover-hill; Cornus femina at Waterstock; Rubus major vulgaris, in the Lane between Finstock and Cowley; and Sambucus vulgaris, in the hedges at Cowley, and near to Oxford; all which are striped yellow, but the leaf somewhat more remarkably than any of the former, the veins only being yellow, and all the parenchymous part of the leaf remaining green, so that the striping represents as it were a Network: but this also growing out after some time like the rest, must be reputed of the same kind, and to proceed from the same cause. Which is all I have found observable under the species of shrubs, except it be worthy notice, that in the Chiltem part of Oxford-

shire the Rubus Idaeus, Framboife, or Rasp-berry bush, grows plentifully enough among the woods and hills: and the Oxyacanthia, or Barberry-bush, between Upper and Nether Kiddington.

43. Thus having dispatch'd both Herbs and Shrubs, I come at length to the Trees, whereof I have met with but one undescribed, and that a narrow leaved Elm, which also being smooth, justly deserves the name of Ulmus folio angusto glabro, wherein it differs not only from the Ulmus minor of Parkinson and Gerard, but also from their Ulmus foliolabro, whose Leaves they say are nothing so large as the Wych Hafel, but nearest in bigness, and exactly in the figure of the common Elm; whereas ours are much less, and of a quite different figure; being narrow, and having a peculiar kind of pointed ending, as exactly expressed in Tab. 10. Fig. 1. Of these there are plenty in the Avenues to the House of the Honorable the Lady Cope, the Relic of the most Ingenious Sir Anthony Cope of Hanwell, where there is a whole Walk of them planted in order, beside others that grow wild in the Coppices of the Park.

44. As for Trees either not noted, or any way doubted, I have met with none here: but of Trees remarkable for some unusual accident attending them, there are several worthy notice. For of Oaks, though I found none so prodigious as some mention'd by the Learned and Ingenious John Evelyn Esq; in his discourse of Forrest Trees; yet there is one between Nuneham-Courtney and Clifton, that spreads from boughs end to boughs end, 81 foot, in circumference supposing the boughs to spread uniformly 243, shading 560 square yards of ground; under which allowing three square yards for a horse or other beast, and two square feet for a man; 186 of the former, and 2420 of the latter, may be shelter'd from the injuries either of sun or rain.

45. Yet there is a somewhat bigger Oak than that, at Magdalen College, near the Gate of the Water-walks, whose boughs shoot from the boal fifteen or sixteen yards, supposing they did spread of equal length from the trunk, like the rays of a circle; the content of ground on which it would drop, would be no less than 768 square yards, whereof allowing as before, three square yards of ground for a horse to stand on (three yards long, and one yard broad, seeming a competent proportion) there might

---

\[ S_{158} \text{ The Natural History} \]

---
256 horses stand under that Tree; or allowing as before 2 square feet for a man, 3456 men.

46. Yet at Ricot, in the Park of the Right Honorable the Lord Norrey, there is an Oak yet somewhat bigger then either of the former, by the Author of Dodona's Grove, called his Robur Britannicum, which extendeth its branches from the trunk of the Tree about 18 yards, so that the diameter of its circumference being 36 yards, it takes within its Area 972 square yards; under the umbrage of which Tree, upon the afore-mentioned proportions, no less than 324 horses, or 4374 men, may sufficiently be shelter'd.

47. And these are the Trees most capacious without; some others there are that have given shelter within the hollow of their trunks: Mr. Evelyn tells us of one, somewhere in Glocefsfer-shire, that contains within its bowels a pretty wainscoted Room, enlighten'd with windows, and furnish'd with seats, &c. which I suppose may have given reception to many an honest Gentleman. Now though 'tis true we have none put to so Honorable a use, yet the hollow Oak on Kidlington-green, for the necessary and publick service it has done, ought perhaps to have preference, though neither so great nor gaudy; it being frequently used before the death of Judge Morton (before whose House it stood) for the Imprisoning Vagabonds and other inferior Malefactors, for the space of a night or so, till they conveniently might be had to the Goal at Oxford: Of whom, the hollow is so large within, that it would receive eight or ten commodiously enough, the Tree without being 25 foot round above the Spurs.

48. Just such another Prison as this, as we are informed by Johan. Ferdinand Hertoda, was made in Moravia, in the trunk of a Willow 27 foot round, in the Village of Moravan, by a certain Judge of that Country: The extravagant growth of which Tree, he attributes to the fertility of the whole Marquisate; whereas I rather think (not but that the Country may be fertile enough) the extreme rank growth of that, and of all other Plants so exceeding the ordinary course of Nature, ought rather to be imputed to some more peculiar agreeableness of the respective soils and Plants, than is ordinarily met with in any other places of the same Country where-ever it be.

1 Tartaro-mafijus Moravie, part. 1. cap. 17.
49. On Blechington-green, near the Angel and Crown Inn, there is also an Elm of so capacious a hollow trunk, that it once gave reception to a poor great bellyed woman (excluded all the houses in the Parish, to prevent her bringing a charge on it) who was brought to bed in it of a Son, now a lusty young man, and living, as they told me, at or near Harwich. And yet neither this Elm, nor the afore-mentioned Oak, are either of them so big, but that they may be match'd in many other places, in so much that I should scarce have thought them worthy my notice, had it not been for the strange uses they were heretofore put to.

50. And thus I had immediatly passed on to Elms, but that I am detained by a parcel of subterraneous Oaks, found some years since at the bottom of a Pond on Binfield-beath in the Parish of Shiplake, very firm and sound, but quite through to the heart as black as Ebony; caused I suppose by a Vitriolic humor in the Earth, which joining with Oak the parent of a sort of Galls, might reasonably enough produce such an effect, as we see they do always in the making of Ink: And that I am not mistaken in this conjecture, the Ditches by the Woods side between this and Caversham will bear me witness, the Waters whereof, where they stand under Oaks, and receive their dropings and fall of their leaves, being turned blacker than any Vitriolic ones I have any where seen, except those of Mr. Tyrrell of Oakley in Buckinghamshire.

51. And these also no question performed the same feat to some Tuns of Oak found also under a Pond, belonging to the Worshipful Thomas Stonor Esq; of Watlington-Park, near Blund's Court, in the Parish of Rotherfield Pypard, which for the benefit of the soil, and other conveniences, being cleansed in July, Anno 1675. the Work-men finkin' it a convenient depth, came at last, as it proved, to the top Branches of an Oak: relation whereof being made to the owner the worthy Mr. Stoner, a person not only curious, but equally generous; he prefently gave order for a further inquisition, and accordingly employed an equal number of men to the greatness of the work, who finkin' a pit about twenty yards over, and about fifty or sixty foot deep, found many whole Oaks; whereof one stood upright perpendicular to the Horizon, the others lay obliquely, only one was inverted, the forked
forked end downward: All of them dyed through of a black hiew like Ebony, yet much of the Timber found enough, and fit for many uses, several of the Trees being a foot or fourteen inches; and particularly one above three foot diameter, and all receiving a very good polish; and therefore fitter for Joiners in-laid works, than pales to set about closes, to which use that was put, which was found at Binfield.

52. Befide the Trees, all along as they dug, they met with plenty of Hazel-nuts from within a yard of the surface to the bottom of the pit, which Times iron teeth had not yet crack'd; and that which amazed me most of all, I think they lay thicker than ever they grew: Some of which, as well as the Oaks were at some places cover'd with a bluish substance, much of the con- fidence of the flower of Sulphur, and not much unlike to the finest blue starch; which is the Caeruleum nativum before mention- ed in this History, Cap. 3. Sect. 18. The Oaks had none of them any roots, but plainly cut off at the kerf, as is used in felling Timber: The shells of the Nuts very firm without, but nothing re- mained within of the Kerne, but a chew of the dry outer rind. And the blue substance not found only upon the Nuts and Oaks, but in any other small cavities of the Earth, dispersedly here and there all over the pit.

53. Moreover, there was found a sort of white stone dispersed in like manner, in pieces fomtimes as big as ones silt, in colour fomwhat like to white Marble or Alabaster, but of a much diffe- rent texture. And near the bottom of the pit a large Stags head, with the Brow-antlers, as found as the Beam it self, with two Roman Urns, both which were broken by the incurious Work- men.

54. How the Timber should be thus dyed as black as Ebony, I hope I have made no improbable conjecture, nor is it liable that I know of to any exception, unless to a Quere: Why the Nuts and Stags head were not dyed so too? To which it may be an- swered, That the pores of the shells being closer than the wood, and neither the nus nor the horn having any thing gallish, the Vitriol of the Earth could have no power on them, whether it be wrought by repugnancy or combination, to work that ef- fect.

55. But how the Timber should become thus buryed both X at
at Binfield and Blunds Court? and at the latter how joyned in so strange a mixture, as Hafel-nuts, a Stags head, and Urns; and at some places only, with an Alabafrine kind of substance? remains yet a knot not so easily loosed. However, since attempts have sometimes pleased, and it has always been acceptable in magnis voluisce, I shall adventure to propound my present thoughts; still reserving the liberty to my self, as well as Reader, of thinking otherwise when sufficient grounds of change shall offer themselves at any time hereafter.

56. First then, as for the timber dug at Binfield-heath, 'tis likely that might be fell'd and buried there when Societies of men (which I guess was not common till the days of King Alfred) under some Mean, or Lord Paramount, first chose to themselves certain places of aboad, and promoted Agriculture: which that they might the better do, they fell'd and buried the timber which they could not well burn with the under-wood. Thus, as I have been informed by a very worthy Person, who had it from his aged Father, did our Grand-fathers serve their timber in the inland parts of Kent to make room for tillage, digging a trench by each tree after it was fell'd, and so tumbling it in, its sale not being worth the portage, even there, so few years ago. Much rather therefore might the first Planters of Binfield-heath throw it into Ponds, or other hollow places ready at hand, to make room as well for habitation as tillage, in ancienter times: which I guess might be done in the Reign of King Alfred, 1. because he divided the Kingdom into Shires and Hundreds; and 2. because Binfield gives name to the Hundred (however inconsiderable it be now) in this woody part of the County.

57. Moreover, that this Timber must be buried by design, and not casually over-thrown, either by their roots being loosen'd by to much wet, occaftioned by the obstruction of Rivers, as Camden apprehends those Trees were, found in Chatmofs in Lancashire: Nor by the over-flowing of any Rivers, nor fall of any Torrent, as Steno would have it 1: Nor undermined by subterraneous streams, or dissolution of matter underneath them, as Dr. Jackson 2 thinks it happened about 18 years since at Bilkely in Herefordshire, is plain and evident; for that all the Country here-

---

1 Camden in Lancashire. 2 Steno in Prodrom, concerning the matter of beds. 3 Philosop. Trans.
about lies very high, and is as stony a fast ground, as almost any where to be found.

58. It remains therefore, that it must needs be designedly buried, and if in any other places of the beath, as well as in the pond, may possibly be discover'd either by the herbage over them, which will wither much sooner than any of the rest; as near Teo-
vil in Somerset-shire, where, as we are informed by the Reverend and Learned Dr. Beal, the parched part just over them, will bear the very length and shape in gros of the trees, whence they have been instructed to find and take up hundreds of Oaks: Or by the direction of the dew in Summer; it being observed in Cumberland, that the dew never stands on any of the ground under which such trees lie; though possibly too, on the other side we may have no such indications here in firm grounds, they being hitherto observed only in moors and mosses.

59. But as for the timber at Blunds Court, as it was found, so it requires a deeper research, it being very unlikely they should dig so low, upon the same score as at Binfield, since timber might have been buryed on far easier terms, as formerly in Kent. Much less can it be admitted it should be swallowed by an Earth-quake, or as the vulgar will needs have it, thus cover'd with Earth by the violence of a Flood, and particularly by that in the days of Noah. For in either of those cases, we should have found each tree with roots as well as branches, whereas these were plainly hewn off at the Kerf, as is used in felling Timber, the marks of the Ax still remaining upon them.

60. Beside, the several other things found in company of these trees, seem to give testimony of some other matters. The first and chiefest whereof, is that blewifh kind of substance; which I am strongly perswaded is Caeruleum nativum, and the rather, because found in an Ash-colour'd Earth. The true Cyprian Caeruleum, or Ultramarine, as is testified by Rulandus, being found in terracineâ; and the Caeruleum Patavinum, in glebis subcinereis; with whom agrees Kentmannus, as cited above, Chap. 3. §. 18. And if true Caeruleum, we have reason to suspect a Mine underneath; for then, says Aldrovandus, is Caeruleum produced, when some saline acid humor (such as the Vitriol that dies the Trees

---

black) corrodes some metallic matter or other; which sometimes is Copper, and sometimes Gold, as Encelius witnesseth it is at Lauterberg and Goldeberg in Silesia, in his Book De re Metallica; where he also further adds, that Gold is smelted out of Cærulenum itself.

61. Dr. Brown also tells us, in the account of his Journey from Comara to the Mine-Towns in Hungary, that at Schemnitz, where the silver Ore holds some gold, and at the silver Mines in Peru, there are Rocks cover'd over with a fair shining blue. Rulandus also joins it with a silver Ore at Gießelbelia, and so does Pliny: What then should hinder but it may be so here? since I do not doubt it to be the steam of a mineral; for when I was at the bottom of the pit (above 50 foot deep) notwithstanding the openness of the pit, and coolness of the day, no Sun appearing, I found it so hot, that the drops followed one another on my face, whence I judged the Mine-chamber not to be far off.

62. Which I rather guess to be of silver than of any other metal, because of the Alabastrine or spar-like substance found mix'd with it; which, says Mr. Webster, was in some places intermixed also in the best Silver-mine ever yet found in England, the Ore whereof held about sixty six pounds per Tun. From all which it may be concluded, that 'tis probable at least that here may have been formerly such a mine, stop'd up as I first thought by the Aboriginal Britans, upon the arrival and conquests of the Romans or Saxons, who not being able to recover their Country within the memory of man, it might be left like the Gold-mine of Gläs-Hitten in Hungary, when Bethlem Gabor over-ran that Country; or the Gold-mine of Cunobeline in Essex, discover'd again temp. Hen. 4. as appears by the Kings Letters of Mandamus, bearing date 11 May, An. 2. Rot. 34. directed to Walter Fitz-Walter concerning it; and since that lost again.

63. Till at length they found the Urns, and then 'twas plain and evident that it must have been formerly some Roman Work, and probably still remains some old Roman Mine, in all likelyhood stoppt up, when Gallio of Ravenna sent hither with a Legion (the last that ever was in Britan) to repel the Picts and Scots, was fi-

nally recalled by Valentinian the third; to assistÆtius in Gallia against the In-roads of the Franks under Clodion, and to support his then tottering, and quickly after ruin'd Western Empire: At what time, says Mr. Speed 2 (but he quotes not his Author) they buried-also their Treasures, whereof we have found parcels in all Ages ever since.

64. And this 'tis likely they might do, first by throwing in Trees, which not lying close enough immediately to support the Earth, were after cover'd with Hafels. (when the Nuts were fully ripe, which has occasion'd their endurance to this very day,) on which they heaped Earth; which after some time sinking below the surface of the other ground might occasion this Pond, never thought to have been any other till the time above-mention'd.

65. After the accidents of Oaks, come we next to those of Elms, whereof there stands one on Binsey-Common, at the shores next the ground at least 6 yards diameter, occasion'd here, as (I suppose) at many other places, by erecting a Turf seat round the bottom of the Tree, it being elsewhere but of ordinary dimensions. But this is not so extravagant in the excess of the growth of its trunk near the ground, but there is another more strange for a defect in that place, viz., a great old Elm growing near the North-east corner of the Bowling-green in Magdalene College Grove, undisbarked quite round, at most places two foot, at some at least a yard, or four foot from the ground; which yet for these many years past has flourish'd as well as any Tree in the Grove.

66. Now how this should come to pass (all Trees being believed to receive their nourishment between the wood and bark, and presently to die upon their separation) many have admired, but few attempted to explain, being further discouraged by the absence of the pith, the Tree being within as hollow as a Drum, and its outmost surface, where unbark'd, dead and dry beside. All which I think had not startled me much, but that I found it in our Transactions 6 positively asserted, that if any circle be drawn round any common English tree (only Ash excepted) as Oak, Elm, Poplar, &c. by incision to the timber (how thin soever the knife be) so that no part of the rind or bark to the very solid timber be uncut, the Tree will die from that part upwards.

1 History of Brit. lib. 6. cap. 54. 2 Philos. Transact. Numbr. 45.
67. For the better clearing of which point, and avoidance of the attending difficulties, it will be but requisite, though two principal parts of our tree be wanting, to represent in Sculpture, at least a sextant of the body of an Elm cut transversely, together with the bark and pith, as well as the wood, as they all appear in a Microscope: Which without further trouble, or suspicion of falsehood, I have carefully taken out of the Anatomy of Trunks lately published by the accurate and ingenious Dr. Grew, as in Tab. 10. Fig. 2. only with some alteration of the Letters of direction. Wherein

AB, CD. represent the whole bark of the tree.
AB. the skin of the bark.
CD. one kind of sap vessels.
EF. another kind of sap vessels.
GH. the parenchyma of the bark wherein the Vesiculae are so exceeding small, as difficulty to be perceived by the Microscope.
IK, LM, NO, PQ. the great air vessels postured chiefly in rings on the inner verge of every annual growth of wood.
rs, rs, rs. the small air vessels postured in cross bars.
TVW the pith.
XY. the diametral portions, or insertions running through the several annual rings from the pith to the bark.
zzzz. the true wood, having been originally the sap vessels of the bark.

now the sap vessels in this diagram being only to be found in the Bark, and those passages intercepted at so great distances, as above-mention'd in our Elm, the great question still returns as difficult as before, and as far from solution.

68. In the clearing whereof, it must first for certain be answer'd, that its a great mistake (though it have obtained so long) that a tree only lives by the ascent of its nourishment in or between the Bark and the Wood, and that trees must needs die when once they are bark'd round, here being matter of fact to confute those opinions. And secondly, That it is as certain a truth as the other is a mistake, that an Elm as well as an Ash, or any...
any other tree, whatever Experiments may have been made, may and do sometimes live after ’tis disbarked; and that therefore there must be other vessels, besides the sap vessels of the Bark, capable of the office of conveying sap, sufficient not only for the life, but flourishing condition of a tree.

69. And such perhaps are a sort of small vessels in the very schematism of the wood at zzzz, not perceptible by a Microscope, it being on all hands agreed on, that the whole wood of trees, was all heretofore the sap vessels of the Bark: The Bark every year, as Dr. Grew well observes, dividing into two parts, and distributing itself two contrary ways; the outer part falling off toward the skin at A B, and becoming at length the skin itself; and the inner part adding itself to the wood, the parenchymous part thereof making a new addition to the Inserions at X Y, and the sap vessels, a new addition to the lignous parts at zzzz standing between the Inserions: So that a Ring of sap vessels in the Bark this year, becomes a Ring of wood in the tree the next; all which may be perfectly seen in the great Oak afore-mentioned, (§. 45. of this Chapter, and belonging to the same College) at several places where the rind is bruised off.

70. And if so, not unlikely they may so far retain their ancient office of conveying sap, as to keep a tree alive, though not augment it, which perhaps may be one different use of these sap vessels in the wood from those in the bark, these being sufficient for the continuation of a tree, and the others serving only for its augmentation: Which if true, and our tree past its increase, as no doubt it has been many years since; what need has there been of any such thing as the sap vessels of the bark? or indeed of the bark itself?

71. Now that this indeed is certainly so, seems agreed on and confirmed by the learned and ingenious Mr. Willughby and Mr. Ray; who have made it appear by irresistible experience, that the sap not only ascends between the bark and the tree, but also through the very substance of the wood: And by the accurate Dr. Grew, who allows to the wood, as well sap vessels as air vessels, it being proper to the bark to have sap vessels only. All which put together, seem abundantly to dispel all appearing dif-

ficulties, and no question will satisfie all unprejudiced Readers how our tree comes to flourish, though disbark'd all round.

72. But if there shall be any found so froward, as not to allow (against all experience) those minute sap vessels in the substance of the wood, yet the visible prick'd circles between the annual coats of the wood, observed also by Mr. Willughby, Mr. Ray, and Dr. Tong, which I suppose may be the large air vessels of Dr. Grew, may be sufficient for this purpose; especially in Elm, where they are numerous and of two sorts, as in tab. ro. Fig. 2. IK, &c. r.s, &c. It being the office of air vessels, for about a month in March and April, before the new sap vessels of the bark are fit for use, to convey the sap necessary for the vegetation of all Plants. And if so, in old trees that have done growing, and have no need of the annual new production of a bark, why may it not continually ascend by them still?

73. To which if it be objected, that a tree lives as well by vegetable air as sap, and that if the air vessels be continually fill'd with sap, the tree must dye on the other side for want of air: It may easily be replied, that the use of the Insertions or Diametral portions, Fig. 2. X Y, interceding the pith at T V W, and the parenchyma of the bark at G H, all made of small kind of bladders cluster'd together, is for conveyance of air, as well as the air vessels themselves. But if it be further urged, that the Diametral portions only serve to convey it by the breadth, and not the length of the tree, which makes them insufficient for this purpose; we have latitude enough, and can allow the lesser sap vessels that lye in crosb bars at r s to supply that defect, and still retain all the ranges of the great air vessels at IK, LM, NO, PQ, for conveyance of the sap, in such like Trees as our old Elm.

74. And if it be further enquired, how it comes to pass that some trees do dye upon the loss of their bark, and all are not preserved by the help of the sap, or air vessels of the wood: It may be answer'd, and probably rightly enough, that such trees as are young, a growing, have a plentiful issue of thin sap between the bark and the wood, and that readily bleed when they are wounded or bored, do most commonly (if not always) certainly dye: whereas some of the same trees when older, fast growing, especially if they have a more gummy juice, such as Ash, Elm, Lime-

tree, &c. may live and flourish many years after their disembarking, by the sap's ascent through the sap or airs vessels of the wood. OI 1915

75. Moreover, amongst the accidents that have happen'd to Elms, I must not forget a very pleasant one, that fell out at Middle-Aston, where cleaving of Elm blocks at one Mr. Langston's, there came out a piece so exactly representing a shoulder of Veal, that it was thought worth while to preserve it from the fire by the owner of it, by whom it was kindly bestowed on me, as an addition to the rest of my Curiosities of Nature.

76. But the most remarkable accidents that ever befel trees, perhaps here, or in any other County, were the foundations of two eminent Religious houses both occasion'd by trees. The first, Dfeney Abbey founded in that place by Robert D'Oly by the second, by reason of a certain tree that stood in the meadows where after he builded the Abbey, to which it seems repaired a company of Pyes; as often as Editha the wife of Robert came to walk that way, which in company with her maid she often used to do (as Leland expresseth it) to solace herself, at whose arrival the Pyes were always so clamorous, that she took notice of it, and consults with one Radulphus Canon of St. Frideswic's, what this might signify: who cunningly advises, that the must build some Church or Monastery where the tree stood, which she instantly procures her Husband to do, and this Radulphus (her Confolor) to be made the first Prior.

77. What tree this was, Leland acquaints us, but that which occasioned the second Foundation in the place where it is, was a triple Elm, having three trunks issuing from one root. Near such a Tree as this Sir Thomas White, Lord-Major of London (as we have it by Tradition) was warned, in a Dream, he should build a Collidge, for the education of Youth in Religion and Learning: whereupon he repaireth to Oxford, and first met with something near Glocester-Hall that seem'd to answer his Dream, where accordingly he erected a great deal of Building. But afterward finding another Elm near St. Bernard's College, suppress't not long before by King Hen. 8. more exactly to answer all the circumstances of his Dream, he left off at Glocester-Hall, and builded St. John Bapt. College, which, with the very Tree beside it, that occasion'd its Foundation, flourisheth to this day, under thePresidence of the Reverend and Learned Dr. Levinz, a cordial promoter of this Design.


Y 78. Be
78. Beside the Elms at St. Johns knit together at the root, there are two Beeches in the way from Oxford to Reading, near a place called Cain-end, more strangely joined together a great height from the ground: for the bodies of these Trees come from different roots, and ascend parallel to the top, but are joined together a little before they come to bough, by a transverse piece of timber entering at each end into the bodies of the Trees, and growing jointly with them, for which reason 'tis commonly called the Gallow-tree, though the piece that intercedes them lies somewhat obliquely: How this should come to pass many have wondered, but the problem I guess may be easily solved, only by allowing the transverse piece of timber to be one of the boughs of the Tree to which its lowermost end still joins, which whilst young and tender, might bear so hard against the body of the neighboring Tree, that with the continual motion of the wind, it might not only fret it self asunder, but gall off the bark too of the other Tree; which closing up again in calm weather at the rising of the sap, might well include so near a neighbor, first within its bark, and after some time within the wood it self: which I have observed to have been done but very lately in New College Gardens, where the boughs of two different Sycomores are thus grown together, only by bearing hard on one another, and interchangably fretting away each others bark, and then closing up again at the rising of the sap.

79. There have also some accidents befallen the Ash and Willow, not commonly met with; the former whereof in a Close of one Mr. Coker, of the Town of Bisheter, grows frequently out of the boal of the other, yet not as 'tis usual amongst other Trees, but so that the roots of the Ashes have some of them grown down through the whole length of the trunks of the Willows, and at last fastening into the earth it self, have so extended themselves that they have burst the Willows in sunder, whose sides falling away from them and perishing by degrees, what before were but the roots, are now become the bodies of the Ashes themselves. But this happens only to Willows that have been lopt at fix or seven foot high; the willows at Enston, in the walks near the Rock, whereof there are several about 50 foot high, being incapable I suppose of any such accident.

80. Beside this unusual growth of the Ash, I have met with other
other accidents that frequently attend it, which because so much commended by Pliny in Maple; in which they are common, I think ought much more to be noted in this: And such are the Nodofities called Brusium and Molluscum, to be found in Asb too well as Maple, which when cut, faw a curled and twining grain in the Brusium thick and intricate, the Molluscum being streaked in a more direct course. With the Molluscum of Asb there is a whole Closet wainscoted, at the much Honored Mr. Stonor's of Walsington Park, the grain of the panes being curiously wavelike the Gamache's of Achats. And at the Worshipful Mr. Read's, of the Parish of Iysden, the Brusium of an old Asb is so wonderfully figured, that in a Dining-table made of it (without the help of fansie) you have exactly represented the figure of the Fish, we commonly call a Jack, though endeavoring to mend, they have somewhat marr'd it by Art: and in some other Tablets the figures of a Unicorn, and an old Man from the navel upwards, but neither of these so plain as the former.

81. Jacobus Gaffarellus, amongst his unheard of Curiosities, tells us of a Tree found in Holland, which being cut to pieces by a wood-cleaver, had in one part of it the figure of a Chalice, in another that of a Priest's Albe, in another that of a Stole; and in a word, there were represented very near all the ornaments belonging to a Priest: which relation if true, says he, it must needs be confessed, that these figures could not be there casually or by chance; and indeed 'tis very hard to think, how so many things pertinent to the same office, should thus meet together without some design of Nature. However, till I am better satisfied of the truth of the thing, or convinced by the sight of some other such Curiosity, I cannot afford to think ours (being altogether independent) more than mere accidents.

82. Beside these unusual accidents of whole Trees, or their Trunks, there are some also that have happened to their upper branches and leaves, whereof the former are sometimes faciated, and the latter striped. In willows, and some other of the softer woods, the uppermost boughs are commonly faciated, but the best of the kind I ever yet saw, was the top-branch of an Asb, which I met with at Bifletor, not only faciated, but most uniformly wreathed two or three times round. And there is a good example of this

---

\[ \text{Nat. Hist. lib. 36. cap. 16.} \]

1 Unheard of Curiosities, chap. 5.
nature, in a top branch of Holly hanging up in the Gate-house of
the Physick-garden, whence 'tis plain, that this happens also to
the hardest woods; and in both, by the ascent of too much
nourishment, though in branches of Trees, especially such as are
not only flat but helically curled, I guess there concurs some blast,
or some such like matter, that contracts the fibers and so turns
them round, beside the excess in the ascent of their nourish-
ment.

83. As for the striped leaves of Trees, as well as those of Shrubs,
and herbaceous Plants, I suppose they may be met with almost in
every kind. The greater Maple, miscalled the Sycomore, was found
striped white not many years since in Magdalen College Grove,
and translated thence into the Physick-garden, where it flourisheth
still and retains its stripings; and I hear of a striped Elm somewhere in Dorset-shire. Dr. Childrey, and out of him the inge-
nious Mr. Evelyn, inform us of an Oak in Lanhadron Park in the
County of Cornwall (to omit the painted Oak in the Hundred of
East) which constantly bears leaves speckled with white. And
there was another of these found this instant year, 1676. by my
worthy Friend Dr. Thomas Tayler, in a place called Frid-wood, in
the Parish of Borden near Sittingbourn in Kent. But of these more
hereafter, when I come into those Counties.

84. Of Unusual trees now cultivated in Oxford-shire, there
are some remarkable; such is the Abele-tree, advantagiously pro-
pagated by Sir George Croke of Waterstock, which he does, by
cutting slates out of the more substantial part of the wood, which
put into moist ground grow more freely than willows, coming in
three or four years time to an incredible height. And such are
the Fir-tree, and the leffer mountain Pine, whereof there are se-
veral Nurseries planted in the Quincunx order, at Cornbury, in the
Park of the Right Honorable the Earl of Clarendon, which they
propagate by slips twisted, as well as by Kernels, to that advantage
that there is great hopes of beautiful and slately Groves of them;
such as I met with at the Right Worshipful Sir Peter Wentworths at
Lillingston Lovel, where there are three Walks of Firs, most of
them 20 yards high.

85. Which Parish, if the Reader look for in the Map of Ox-
fordshire he must not expect to find, though it belong to the County,
Of Oxford-shire.

it lying five miles within Buckingham-shire: as on the other side several Parishes of Berkshire, Buckingham-shire, and Worcestershire, are placed within Oxfordshire. How these things come to pass we have little of certainty, but in all probability this Lillingston was accounted in Oxfordshire for the sake of the Lords Lovels, whose Inheritance, from the addition, we may conclude it once was; who being powerful men in these parts, and not unlikely most times the Kings Lieutenants, might have permission to reckon this their own Estate, within their own Jurisdiction as part of Oxfordshire; as I suppose all other Parishes thus placed out of the body of their Counties, may also have been.

86. From this necessary, and therefore I hope pardonable digression, I proceed to some Fruit-trees not ordinary elsewhere, such as the double-bearing Pear-trees: whereof I met with one in the Parish of Haseley, at a place called Latchford, in the Hortyard of Mr. Gooding, called the Pear of Paradice, whose first Crop is ripe about Midsummer, and the second at Michaelmas. There is also another of these, but of a different kind, in the Parish of Stanlake at the Chequer-Inn, called the Hundred-pound Pear, which Blossoms at two distinct times, and bears two Crops, whereof it has both sorts (much like the Fig) upon the Tree at a time, some ripe, and others green. But in both these trees, the Pears in the second Crops are somewhat less than of the first, and grow both after a peculiar manner, most of them, if not all, coming forth at the ends of the twigs, which are all the pedicles they seem to have; and therefore on the tree they do not hang downwards, like those of the first Crop, but point up in the air, or any other way the shoots direct them.

87. At Corpus Christi College they have a sort of Pear-tree, that bears Fruit in hardness little inferior to the younger shoots of the very tree that bears them; and therefore not undeservedly by some called the wooden-pear, though in wet years I have known them pretty soft: but generally they are so found, and of so unalterable a constitution, that I have now some by me that were seasonably gather’d, above ten years old, as hard and firm as ever they were at first, only somewhat less than when first gather’d; for which very reason, in some parts of Worcestershire where they have plenty of them, they are called Long-lasters, being not subject to rot like other Pears.

88. And
88. And thus I had finish'd the Chapter of Plants, but that I think fit to acquaint the Reader of a further design I have concerning them, viz. Of enquiring hereafter into some other accidents of Plants of an inferior quality to any before mentioned; which yet perhaps are more abstruse in their consideration than the more noted ones are. And such are the blebs or blisters we find on the leaves of many Trees and Shrubs, which sometimes happen to them after heat and droughts, and sometimes too upon cold nipping weather: but whether thus infected from the air from without, or by juices within, or by both; and when by one, or the other, or both together? is a Question requires a great deal of time, and more sedulity than has yet been afforded, to be but probably solved.

89. And this I the rather design, because all that I find certain concerning them yet, is only that the weak, and free growing fappy Trees are most subject to them, and the stout Ever-greens but little, if at all: that the infection for the most part is under, and the blister above the leaf, but sometimes otherwise: that the blisters sometimes have Insects in them, sometimes bear fungus's on their tops¹, and sometimes have neither: But what kind of Insects or fungus's they are, that belong to each Plant that have them? or whether the same Plants have not sometimes different Insects and fungus's, especially in dry, and wet years? are also Questions that require indefatigable industry, to be in any measure satisfied.

90. And yet even in these, if God give me life, and I find encouragement to proceed in my undertaking, I intend to attempt something. As also to find out how it comes to pass, that of the seeds of many Plants, such as Oak, Ash, Elm, Beech, Yew, Juniper, Hemp, &c. there come some Plants again that will never bear seeds, if not timely prevented by our Learned Professor of Natural Philosophy, the Ingenious Dr. Millington; the Learned Dr. Morison our Botanic Professor; or the Learned and accurate Dr. Grew, now reading, writing, and practicing the Anatomy, of Vegetables.

¹ See Mr. Hook's Micrograph. Observat. 19.
HAVING done with the Vegetative, I proceed to the Animal Kingdom, wherein I shall consider first, that part of it that indeed has apprehension of external Objects, of Pleasures and Pains, and Locomotion to make address to the one, and fly the other, but is void of reason; within which may be comprehended all manner of Brutes, such as Birds, Insects, Fishes, Reptils, and four-footed Beasts, which I presume may be a subject sufficient for this Chapter, though as in the former of Plants, I intend only to mention such, as either have not been noted before, are very unusual, or have something extraordinary attending them; leaving what concerns Men for a Chapter by itself.

2. And herein, as before in the Chapter of Formed stones (and as I intend for the future in all other Chapters so far forth as they will bear it) I shall observe the method of the whole Essay, and first treat of such Animals as are Inhabitants of the Heavens, then of those that belong to the Waters, and lastly of such as inhabit the dry Land; of which in their order.

3. But amongst the inhabitants of the Air or lowermost Heaven, it cannot be expected in so small a County, I should produce many not already noted, since the feathered Kingdom has been so lately and so carefully surveyed, by the Learned and industrious Francis Willughby Esq; Nor indeed could I meet with any omitted by him, except perchance a little Bird, somtimes seen, but oftner heard in the Park at Woodstock, from the noise that it makes, commonly called the Wood-cracker: Described to me (for I had not the happiness to see it) to be about the bigness of a Sparrow, with a blue back, and a reddish breast, a wide mouth and a long bill, which it puts into a crack or splinter of a rotten bough of a Tree, and makes a noise as if it were rending asunder, with that violence, that the noise may be heard at least twelve score yards, some have ventured to say a mile from the place.

4. Which is all I could find in the County of Oxford omitted by that careful and ingenious Author, except I may have leave to number
number the *Diabolus marinus*, or Sea Devils-bird mention'd by Johnston, and others, and to be seen in the Repository of the Bodleian Library: Which though it has so ill a name, contracted from its exquisite blackness, and the ill it bodes to Seamen whenever they see it; yet is a very beautiful Bird, and has therefore by some been numbered amongst the Manucodiara's, and called the black Bird of Paradise. But of this no more, because no inhabitant of the Land, much less of this County.

5. Which yet I think I had not forborn to describe, had our Bird been perfect, it not being to be found in Sculpture in any Author that I know of: For though I did it not in Foreign undescribed Plants growing in our Gardens, well knowing the much abler Dr. Morison to be about it: Yet I think I may take the liberty to do it in Animals, not hearing of any body else now designing such a work.

6. And therefore shall not omit the Hen from the Isle of St. Helen, now living, and in the possession of the Right Honorable the Lord Norris, a great lover of Curiosities in all sorts of Animals: which for her kind I think may be accounted one of the Rapacious, carnivorous sort; having her beak near its end, crook'd after the manner of a Vultur, and striking with her pounces like a Hawk, though her talons indeed are not much more turned than those of a common house Hen.

7. In her head 'tis true she is somwhat like the second sort of Gypaetos of Aldrovandus, or the Perconopteros of Johnston, being bald and wrinkled, but not quite to the hinder part of the head, as they are said to be; having from the crown of her head down to the beginning of her neck, and so behind her ears to her throat, a sort of flender plume, like bristles, which the erects or lets fall at pleasure: in her gorge also and pounces she is very unlike them, for though she be carnivorous, yet her gorge is flender, and though she strike with her pounces, they scarce exceed in bigness those of a common house Hen, whereas the gorge and pounces of the Gypaetos, and Perconopteros, are protuberman and very long; nor has she like them any part of her plume so disposed at the top of her back, as to represent a Monks hood, thrown backward from his head.

---

8. How-
8. However, for her near resemblance of them in her head, and some other parts, we cannot but allow her to be a Bird of that genus, though undescribed; and accordingly advise, she may be placed amongst them by future Ornithologists, to which purpose let them take the following description.

9. Her beak is straight, only at its extremity, where it is turned like the Vultures, in length 2 inches, and her Nares long and narrow, as in Tab. 10. Fig. 3. The pupillæ of her eyes are full and black, encompassed with Iridæ of a dark brown colour, bald and wrinkled to the top of the head, and so round by the ears (which are of an irregular oval form) next which stand the penæ setiformes as aforesaid; her gorgæ not at all protuberant, but slender; her wings complicated or folded to her body, reach almost to the end of her train, and extended at full stretch, have their extremities distant about five foot, being somewhat larger than those of a Lanar, and containing in each of them 34 Remiges, i.e. besides the five feathers, 29 at least or 30 flags: her thighs and pounces are much like those of a common House Hen, having the outermost talon knit to the rest by a membran. In the whole, she is bigger than a Moscowy Goshawk, from the point of her beak to the extremity of her train, above two foot long, her plumes for the most part being of an Ash-colour, mixt with some white feathers, and growing whiter upon mewing, as those of Hawks do.

10. Other Birds there are here that are but rarely seen, yet breed in this Country, and are continually with us, and therefore to be numbered amongst those we call perennial. Such are the U-pupa the Hoopoe, or Hooping-bird; whereof I saw one alive on Otmoor, and another was given me for the Repository of the Bodleian Library (killed somewhere about Caffenton) by one Mr. Painter Alderman of Woodstock. A Bird it is to admiration beautiful, being curiously deck'd with feathers of divers colours, and with a large crest on its head, as it is exquisitely engraven both by Dr. Charleton* and Mr. Willughby; but like the Diabolus marinus, never appearing or being heard (as the vulgar will have it) till immediately before some approaching calamity.

11. As for Birds that have casually flown hither, or come but at some certain seasons of the year, by Naturalists stiled Aves mi-
The Natural History

gratoriae, beside Swallows, and some well known winter Fowl: The Cormorant has been observed to come hither about Harvest time, whereof there was one killed from St. Maries steeple (tired with a long flight) An. 1675: and another young one taken up in Armcot-field fallen down in the Corn, and brought me to Oxford.

12. But what is somewhat stranger, in the year 1644, the Pica Brasiliensis, or Toucan, whose beak is near as big as its whole body, was found within two miles of Oxford, and given to the Repository in the Medicine-School, where it is still to be seen; which argues it a Bird of a very rank wing, there being a necessity of its flying from America hither, except we shall rather say it might be brought into England by Ship, and afterwards getting away might fly hither.

13. Of Birds well known of unusual colours, I have met with two remarkable examples: the one a white Linnet, given me by Mr. Lane of Deddington; and the other a sort of white, and pied Pheasants, kept by the Right Honorable James Lord Norreys of Ricote: Whereof how some happen to be of different colours from the rest of their species, especially when they have deviated from their kind by whiteness, hath been a question thought worthy of severe examination. In the prosecution whereof, it hath been observed (as before in the Chapter of Plants, §. 38.) that whiteness often proceeds from a defect of moisture or nourishment; and it hath been a received opinion concerning Birds, that they may become white by plucking off their first feathers, which will cause their new ones to come forth of that colour. But beside these ways of art and privation, it is manifest that Nature herself sometimes positively designs such a colour, even in species too that seldom are of it, many other Animals as well as Birds, having been produced of that colour unusual to the species, as brisk and well liking as any others whatever, such as white Moles, Rats, Mice, and sometimes white Fawns, where there has been neither Buck nor Doe of that colour in the Park.

14. And this I guess the does by giving some certain Individuals of each species a skin of finer and more contrasted pores than others, which will cause whiteness in feathers, hair, &c. by not permitting of the sulphureous particles to expire, which give variety of colours; thus we see in the cicatrization of wounds where

4 Vid. Willisium de Ferment. cap. 2.
the skin is drawn together like a purse, and the pores closed up; the hair comes constantly white: thus the subtle Veterinarians procure white stars, or other desired marks in the fore-heads of their horses; and I have seen the skins of black Grey-hounds powdered with white, or made Ermyness, by applying wood-ticks to their skins when young, both which are performed also by cicatization, and closing the pores of the skin, thereby hindering the exhalation of the Sulphur in those parts.

15. Which will further appear from an observation of my Lord Verulam's concerning Flowers, whereof the whites for the most part are more inodorate than other colours: And this he makes out in many Flowers, as single white Violets, the white Rose, white July-flowers, &c. We find also, says he, that blossoms of Trees that are white are commonly inodorate; as of Cherry, Pear, and Plum-trees: whereas those of Apple, Crab, Almond, and Peach-trees, are blushy, and smell sweet. The cause whereof is, that the texture of these Plants producing white Flowers (excepting such as produce white Flowers only, as Lillies; or are extravagantly succulent, as the white Satyrion) is so very close and fine, that it will not permit any sulphureous particles, which are also the cause of smells as well as colours, in any measure to exhale. Which possibly may be found true, if duly examined, in all sorts of Animals; and if so, we hereby may be profitably instructed what Beasts of each kind are least offensive, and fittest for the conversation of men or women, especially Ladies, who commonly have great sagacity in smelling, may hereby be directed in the choice of their Melitei or Lap-dogs.

16. As for pyed Birds that are generally of another colour, such as pyed Pheasants, &c. the case is easiier, for such are produced either by common colour'd Hens troden by a white Cock-pheasant, or vice versa; which possibly may have happened also by our white Linnet whether male or female, or in any other Birds of any other species, as we see it falls out in Dogs and Horses, and most other Animals.

17. And this had been all concerning Birds, but that at Witney, Anno 1674. I met with an Egg about the bigness of a Pigeon, containing another imperfect one in it, given me by Mr. Hinton the then Minister there, which seems to have been in the way toward such an Ovum in Ovo as is mentioned by the Learn-
ed Dr. Harvey, and shewn by him to that incomparable Prince, Charles the Martyr, and many others; Vidi inquit Ovum perexiguum (Fabricius Centenimum vocat, & Nosfrates mulieres Gallo scribunt) crusia tellium, intra aliud Galline ovum majus, perfectum et cortice circuncirtca obtebtum, contineriz. Just such an Egg as this, pregnant with another, is preserved in the Repository of the King of Denmark, which was shewn by his Majesty to Tho. Bartholine, as he testifies in his Epistles; who also saw another in the year 1669. And Geo. Sebastian Jungius met with another of these the nineteenth of June, 1671, which are Authorities enough (though more might be brought) to justify my mentioning the thing, though by some thought inconsiderable.

18. Yet before we take leave of the inhabitants of the Air, we have something worth notice concerning winged Insects, and particularly of the feminine monarchy of Bees, not only the Prognosticators, but Concomitants of Eloquence: of their Prophetical prelages of future Eloquence, we have instances in Plato, Pindar, Lucan, and that eloquent Father of the Church St. Chrysostom, about whole mouths, whilst Infants, the Bees gathered, and dropt their bony, thereby fore-telling those Rhetorical Endowments they should hereafter be possess'd of, which accordingly came to pass.

19. But none of those, says the industrious Butler, are more memorable than the Bees of Ludovicus Vives, who being sent in the year 1520, by Cardinal Wolsey to Oxford, to be publick Professor of Rhetorick there, and placed in the College of Bees (Corpus Christi being so called by the Founder in his Statutes) was welcomed thither by a swarm of Bees, which to signifie the incomparable sweetness of his Eloquence, setled themselves over his head under the leads of his Study (at the west-end of the Cloyster) where they continued about 120 years.

20. The truth of this story appears as well by the general voice of the House, who have received it by tradition, as by the special testimony of a worthy Antiquary [Mr. Brian Twine] who affirmed [to Mr. Butler] that he had often heard his master, Dr. Benefield (one of the publick Professors of Divinity) who then had L. Vives's chamber and study; and Dr. Cole (then President, and in Q. Maries
Of OXFORD-SHIRE.

days Scholar of this House) to say as much, calling these Bees, Vives his Bees.

21. In the year 1630, the leads over Vives his study being pluckt up, [it then being the study of Mr. Gabriel Bridges] their Stall was taken, and with it an incredible mass of honey: but the Bees, as presaging their intended and imminent destruction (whereas they were never known to have swarmed before) did that Spring (to preserve their famous kind) send down a fair swarm into the Presidents garden, which in the year 1633, yielded two swarms; one whereof pitched in the garden for the President; the other they sent up as a new Colony to preserve the memory of this mellifluous Doctor, as the University stiled him in a Letter to the Cardinal. Thus far Mr. Butler.

22. And there they continued, as I am informed by several ancient Members of that Society that knew them, till by the Parliament Visitation, in Anno 1648. for their Loyalty to the King, they were all, but two, turned out of their places, at what time with the rest of the inhabitants of the College, they removed themselves, but no further than the East end of the same Cloyster, where as if the feminine sympathized with the masculine Monarchy, they instantly declined, and came shortly to nothing. After the expiration of which ancient Race, there came, 'tis true, another Colony to the East corner of the Cloyster, where they continued till after the return of his most Sacred Majesty that now is: but it not being certain that they were any of the remains of the ancient Stock (though 'tis said they removed thence to the first place) nor any of them continuing long there, I have chose rather to fix their period in the year 1648. than to give too much credit to uncertainties.

23. And thus unhappily, after above six score years continuance, ended the famous Stock of Vives his Bees, where 'tis pity they had not remained, as Virgil calls them, an Immortale Genus. However, since they are now irrecoverably lost, it would not I think be amiss, if the College provided them another Colony; not that I think that Learned Society wants any such monitor of Industry, but that it seems but congruous, they should always have by them the Thing, whereof their whole House is but the metaphor, the Founder calling it Aueearium, and the Students,
The Natural History

Ingeniosas apes, dies noctesque Ceram ad Dei honorem, & dulcisflua mella conscientes, ad suam & universorum Christianorum commoditatem. And this I the rather perswade, because by the new discovery of that excellent method of Bee-houres and Colonies, they are freed from most, if not all the hazards, charge, and trouble that heretofore attended them: Not to mention the advantage and profit accruing by them, which has always been judged so considerable, that there have been several Tracts written and publish'd full of experiments, directions, and methods to be used in the menage of these Insects.

24. But none yet extant that I know of comparable to what are practised by John Lad of Over-Worton, and William Tayler of Warkworth, who though a Northampton-shire Man, has Apifaclories in this County, who profess (as I am informed by the Reverend Mr. Clark Rector of Dreyton near Banbury) 1. That they can take swarms out of any stock that is able, and neglects to swarm, without any prejudice to the stock. 2. That they can take hony out of a stock without that hazard to the Bees, which (they say) the way proposed by the Author of the Colonies is subject too. 3. That they can secure any stock from the invasion of Robbers. 4. That they can so order an old stock, that the Bees shall gather pure Virgin honey. 5. If a stock be in low condition, they can preserve and recruit it, so as it shall do well. 6. They can take away a Queen where there is more than one in a hive, and place her in a stock where the Queen is dead, or otherwise wanting, and by that means keep the subjects together, which would else disperse. 7. If a Queen wants subjects, they can draw out of several stocks supplies in what number they please, that shall settle under her government. And these operations they commonly practice, which because profitable to them, they are unwilling should be made too common, which yet they are so ingenious as not to deny to communicate to fit persons upon reasonable terms.

25. Of other flying Insects, I have minded only the Musca aquaticæ, such as are generated in the waters, and come of Caddis-worms, and therefore called by Johnston, Phryganides, quod est Phryganio Monfeti (the Caddis of the English) ortum habeant:


Nor
Nor shall I venture to describe above one of these, neither (and that only as a specimen of what I intend of the rest, as fast as I can compass the method of their productions) which I think I may call Mufca & Phryganio saxatili, there being a stone, as well as a stick Caddis, or Cad-worm; in the generation of which, Nature seems to observe the following method. First, there appears on the stone to which many of them stick, as in Tab. 10. Fig. 4. only little bubbles of a glutinous nature, like the spawn of frogs, which by the descent of gravel and sand that stick to them, are formed into stone Caddis houses, including the Animal therefore called the stone Caddis; which after it has continued in its rough cast stone house its due time, gets off the stone either to the bank of the River, or climbs up some reed, where also leaving its house, it becomes a fly, somwhat like, in shape to the Mufce arbores, or bipiles Mufeti, that come of the stick Caddis, only it is shorter, and wants both the Antenne and forked bristly tail; but most of all like the Breife, only the Breife is all gray, and this has a black head, and dark brown wings. See its form, Tab. 10. Fig. 5.

26. Other water Elys there are that come of such worms, called Cock-fly's, Rough-coats, Pipers, &c. of which no more at present till further observation; but that though at last they come to be flying Insects, yet at first they are all of them water Animals, which puts me in mind of proceeding next.

27. To the Fishes, whereof we have a sort in the River Isis, that we call here a Pride, of the long cartilaginous smooth kind, concerning which Authors seem to obscure, that I know not whether it be described at all; or if it be, it is done so imperfectly, that perhaps it may be acceptable if I contrive another. The Fish the most like it of any I can find, is the Lampeta parva fluviiatis, rendered by Dr. Charlton and Dr. Merret, the Stone-grig: it having a mouth cut neither perpendicularly downward, nor transversely, but hollowed as it were between two cheeks, without an under jaw, after the manner of Leeches: on the top of its head it has one, and on each side seven holes that supply the place of gills; and under the belly a small line, reaching from the mouth to the exit of its excrement; it moves

---

by a winding impulse of its body, without the help of any other fins but the pinnule at the tail, by which it steers its course; and thus far it agrees with the Lampetra fluviatilis.

28. But though they agree in some particulars, they differ in as many, our Pride being streaked from the top of its back down to the afore-mentioned line at the bottom of its belly, with lines of a distinct colour from the rest of its body, like the Pricka marina of Aldrovandus, whereof the Lampetra is not said to have any. Beside the two pinnule of the Lampetra, whereof one stands on the top of its tail, and the other a little higher on the back, some space interceding; the Pride has another underneath its tail, joyning with the other from above at the tip, making the whole tail to end like the head of a spear. Moreover, the eyes of the Pride are very obscure, and not such plain round ones as are given the Lampetra, not only in the description but Cut of Rondeletius: And though it have a hole in its head, yet it stands not as Rondeletius describes it in the Lampetra, just in the middle between the eyes, but more forward in the extremity of the head, near the upper lip; all which may plainly be seen Tab. 18. Fig. 6, and 7. Whence 'tis easy to conclude, that either this Fish has not been described at all, or so very meanly, that there was almost a necessity of giving another, either of which I suppose will excuse this attempt.

29. Beside the Pride which we think undescribed, we have another sort of Fish plentiful in the Cherwell (scarce ever found in its but below the place where the Rivers join) that is more certainly so; and that a Fish of the squamous kind, which they call a Finscale, somewhat like a Roach, only the belly fins, and the single one at the exit of the excrement, and those at the tail are much redder than those of a Roach; it has also a full black eye, encompassed with a yellow iris, whereas that of a Roach is red; it is also a much deeper and thinner Fish, but yet neither so deep or thin as a Bream; from which also it differs not only in the redness of its fins, but in that the single fin placed next the exit of its excrement, is not continued to the tail as it is in the Bream: Its fins at the gills are much whiter than the rest, and that upon the back of a dirty bluish colour; its scales, especially near the back, are of a greenish yellow colour, on which from the gills to the tail

Aldrovand. de Piscibus, lib. 4. cap. 13.
Of OXFORD-SHIRE.

there runs a crooked line of points, one on each scale, as in Tab. 10. Fig. 8. The Fishes most like it of any described, are the Bol-leurus or Bordeliere, and the Phoxini, Rose or Rosiere of Rondele-tius; but that they cannot be the same is plain from hence, in that the Bordeliere is confest to have no teeth, whereas the Finscale has teeth as large as a Roach; and the Phoxini never to be found without spawn, or to exceed half a foot in length, whereas I have seen Fincales, even in time of year when one might well have expected it, without any spawn; and some of them (particularly the described one, Fig. 8.) from the mouth to the fork of the tail a foot long, and four inches and a half in depth, beside many other differences that might also be brought.

30. Which is all I have met with extraordinary amongst the squamous kind of Fish, but that there is a sort of Chub peculiar to the Evenlode, some say exceeding, all equalling the Pearch or Tench in goodness. And that at Lillington-Lovell, about six years since were taken two Salmons, one somewhat above, the other somewhat under a yard in length, in a small brook (a branch of the Ouse) that a man may step over, little less (as the river runs) than two hundred miles from the Sea. How these Salmons should come up so high, has been much wondered at by some, since so many Mills and Locks stand in the way on this Rivulet to hinder them: but to such as have either seen, or but read of the Salmon-leap at Kilgarran in Pembroke-shire, or at Wasserfal in the Rhine, which I suppose is much greater, and that they run up that river above five hundred miles to the Lake of Zugh, in Switzerland, perhaps it may not appear so strange; especially if it be also considered, that our Mills and Locks have most of them back streams and launders to carry off the water when it is too plentiful, over which the leap is but very inconsiderable.

31. I have met with also somewhat remarkable of our fresh wa- ter Bell-fish, and particularly of a sort of Gammarus, or Crey-fish, found in Salford stream, that do's not boil to a brisk red colour, but at best of a dirty yellowish red, which I suppose must be attributed to the badness of the water, infected with ill qualities perhaps by the Moor through which it passeth, which is very agreeable to one, of Cardans signs of good water: Ubi aqua bona (says he)

---

* Rond. de Pisibus lacustribus, cap. 8. & de fluviatilibus, cap. 28. 

** Camden in Pemb. & Cardigan. 

Mr. Ray's Observat. Topograph. &c. p. 430.
The Natural History

afi aci debent esse valde rubri, cum coquantur*: whence 'tis easy to conclude (if the Symbol be truly put) that where they boil of a different colour, the water must needs be naught.

32. I found also in Ponds at Bradwell, Hanwell, and Shotover Forest, as well as in Rivers, the Mytilus flaminum maximus subviridis, whereof I examined several in hopes of the Pearls to be found in them; mention'd by Sir Hugh Plaist in the Appendix to his Jewel-house of Art and Nature; but I could not meet with any with craggy rough out-sides, in which it seems they are only found (ours being all of them smooth) and so lost my labor; but I hear they are to be met with in Buckingham-shire, Montgomery-shire, and Shropshire, as Sir Hugh also informs us, where more fully concerning them, if this design be encouraged, and I live to travel and examine the productions of these Counties.

33. We have also in great plenty all the Cochlea fluviales, or fresh-water Snails mention'd by Mr. Lifter, concerning which I can add nothing, but that his Cochlea fasciata ore ad amnem rotundus (which is somewhat strange) seem to be all viviparous, containing their young within their bodies, cover'd over with shell before their exclusion, as I found it upon examination in great numbers of them; and that I found most of them this Summer swimming above water, dead and stinking, which whether to be ascribed to the drought, or any other cause, I am yet uncertain.

34. Amongst the Cochlea marinae, and fluviales, I find all the Naturalists to treat of the Cochlea testis*; though I think they should rather be put under the title of Reptils; whereof we have one sort met with in Cornbury Park by Mr. Jacob Boarab junior, that I find not described in any of our Zoographers: in shape (though not so big) like the Turben magnus of Rondel, or the twelfth Turbo of Aldrovanus, having a long Turbinated shell rough and unequal, by reason of many protuberant ribs thwarting the bical turns of the shell, as in Tab. 10. Fig. 9. which was found alive and creeping on the grass, but what it should be I cannot divine, unless the same with the Cagaries of Spain and Montpellier, mentioned by Aldrovanus, which he seems to describe to be a


Cochlea
Cochlea terrestris of this figure, but gives no cut of it.

35. Of other Reptils we have little to say, but that in the Lordship of Blechington, and all the more Northern parts of Oxfordshire, no Snakes have been ever or very rarely seen, in so much that I met with several ancient people about Deddington and Banbury, that scarce ever saw a Snake in their lives, at least not in that Country. And at Blechington 'twas confidently believed, that a Snake brought from any other place, and put down there, would instantly die, till I made the experiment and found no such matter: Whereupon I got leave (in the absence of the Family) to inclose my Snake in the Court, before the Right Honorable the Lord Anglesey's house, to see what time would produce, leaving the Gardiner in trust to observe it strictly, who found it indeed, after three weeks time dead, without any sensible external hurt.

36. How this should come to pass, is a question indeed not easy to determin, but certainly it must not be ascribed to the Taf-"finamical figure of the Stone Ophiomorphites to be found about Alderbury, and in most blue clays, whereof there are plenty in this Country. Since these are to be met with about Oxford too, and many other places, where there are Snakes enough. Befide, we are informed by Cardan, that Albertus Magnus had a Stone, that being naturally marked with the figure of a Serpent, had this no less admirable than contrary virtue, that if it were put into a place that was haunted with Serpents, it would draw them all to it: Much rather may we subscribe to the cause assigned by Pliny, who seems confidently to assert, that the earth that is brackish, and standeth much upon Salt-peter, is freer from vermin than any other. To which we may add (if need be) Sulphur and Vitriol, whereof there is plenty in these parts of the Country; but whether by one, two, or all these, though we dare not pronounce, yet that it is caus'd by some such mineral steam disagreeable to the Animal, I think we may be confident.

37. Amongst the inhabitants of the Earth, come we next to the Quadrupeda, whereof some are Magnoliorum, whole-hoofst, such as Asses, Mules, Horses, of which last kind I met with three remarkable for their age; one at Souldern, another at Sherbourn, and a third at Afton Rowant, each reported to be about forty years old.
apiece. And amongst the Quadrupeda signa, or cloven-hoofed Beasts, there was a Hog at Upper-Tadmerton, of as strange a stature as they were of age; being fed by one Pargiter to so extravagant a greatness, that he came at last to be near 13 hands high, as it was testified to me by the Reverend Mr. Whateley, Rector of the place, and several others who had carefully measured him.

38. Of four footed Beasts that chew the cud, they have a sort of sheep esteemed in this Country for their constantly bearing two lambs at a time, whence they have justly obtained the name, though somewhat an improper one, of double Ewes. They are said to have been first brought into this Country by the Worshipful James Uxley of Darnford Esq.; where I hear they are still preserved by the Right Worshipful Sir Nicholas Pelham Knight, who with one of his daughters (a coxeirest) enjoys that Estate. I heard of them also about Newington and Dorchester, and some other places here and there in the County.

39. But there are much stranger sheep, though perhaps not so profitable, as Ricot in the Park of the Right Honorable the Lord Norreys, brought hither from some other parts of England or Wales, but now breeding here: Of which, some of them at first had six or eight horns apiece, but the number upon mixture of their generation with other sheep is since diminish'd. However, there remain still two of them with very strange heads, having each four horns; one of them with two larger ones issuing from the top of its head, bending forward, and two side ones coming out from under its ears, and bending round towards its mouth, as in Tab. 10. Fig. 10. And the other having two large horns standing pretty upright on its head, and two side ones proceeding from under the ears like the former, and bending round to the cheeks, into which they would grow (and so in the whole kind) were they not prevented by being timely cut off, as in Tab. 10. Fig. 11.

40. And as these are remarkable for their many horns, there was another sheep once there, that excelled all the rest, in its being a Unicorn, having a single horn growing almost in the middle of its fore-head, 21 inches long, with annular protuberances round it, and a little twifited about the middle, as in Tab. 10. Fig. 12. There was, 'tis true, another little horn grew on the fame
41. To which may be added a Cow of Mris. Dunche, of Newington near Dorchester, more strangely prolific, than the Sheep are strange in form, that whil'st a Calf, before it was eleven months old produced another: which Animals carrying their burthen no less than nine months, we must either admit that she took Bull at about ten or eleven weeks old, or that the Cow her self was at first brought forth pregnant of another, as Aristotle reports a Fort of Mice commonly are in a certain place in Persia, 17. 3 Περιπτ, 18. έν pie τόποις αναπρόμιλον ἐμβολον, τά Σίληια τι κωντα φαινεν, i. e. that in female Mice dissected, the female off-spring was found pregnant with others 1. The same again is reported by Claudius Aelian of the very same Animals, near the Caffian Sea 2. And Aristotle further acquaints us, that the Fish Phoxini have spawn when they are very little, μικρινοὶ φίτων κωντα έχουν αἰχμαίοι are his very words 3, in fo much that Rondelet adds, ut periti Piscatores cun ovis nasi affirment 4.

42. We are informed also, that the same sometimes happens in more perfect Animals, by Joan. Baptista Nierembergins, who tells us of a certain mare in Spain that brought forth a mule, great of another 5. And the learned and observing Bartholin 6, yet further acquaints us, that in the Parish of Uleslovia near Neoburg in Fonia, Joan the wife of Nocholas Peter, a Husbandman of that Country, was deliver'd of a female still-born child, pregnant with another female, duly placed in the womb about a span in length, with all its parts so perfect, that the Grand-mother (who dissected the pregnant infant) believed it had been living.

43. But what yet comes nearer to the business, we are informed by David Spilinbergerus, Physitian of Leutschovia, that in the year 1663. there was a Cow in Hungary that brought forth a Calf with a great belly, wherein there was found another Calf with all its limbs perfect 7. How these things should come to pass, the learned Bartholin gives us his conjecture, viz. that in such productions as these three last, Nature at first intended only twins,

---

and that by some error in her procedure, one, of each of these, might be thrust into the belly of the other (as I suppose it happened in some measure in the case of Lazarus Colleredo and his Brother Baptist) over which we may easily allow a skin to be superinduced. But that ever any such second fetus was brought into the world, living after the first, we have no instance, except this calf of Newington may pass for one, which is wholly left to the reader's judgment. For my part, I am rather inclined to believe that the Cow might take Bull at ten or eleven weeks old, that being the lesser-wonder of the two, especially having lately received news out of the Country from an intelligent Lady, that the thing is not so strange, but possible enough.

44. Hither also must be referred the three calves brought forth by a cow at one time, that I met with at Hardwick, not far from Bisphier, which though a production not frequent, yet is as much remarkable in that they became all grown cattle, and so strangely alike, that their very owner himself scarce knew them asunder, much less could I, though I observed them strictly: whence I was firmly convinced, that similitude was a concomitant as well of Tergemini as Twins, and held as well in Brutes as rational Animals.

45. Nor can I pass by without admiration, the Deer of Cornbury Park, which before His Majesties wonderful restoration, being (in part at least) turned into a Cony-warren, the Deer upon it had all dwarf heads, the most of them irregular, as in Tab. 10. Fig. 13. but if any of them were uniform, as in Tab. 10. Fig. 14. yet they were still far short of growth, seldom exceeding 8 or 10 inches long, though the Deer themselves were well enough grown, and warrantable; the two that bore those engravèn heads, being both of them two years a Buck at least, and in all other respects well enough liking: which yet as soon as the Warren was destroyed by the present Proprietor, the Right Honorable the Earl of Clarendon came again, to have as fair branched-heads as any Deer whatever in the adjoining Forreft: Which strange alterations I cannot guess to proceed from any other cause than the infection of the grass by the urin and crostizing of the Conies, which being hot and dry must needs abate the moisture of the Deer, which supplied matter for the fair heads wherewith before and since

they have been as well adorned, as any of their kind.

46. Amongst the Quadrupeda πολυάκτωλα, or claw-footed Animals, I met with nothing so strange as the rib of a Dog, or some such like Beast, set in a bone interceding two other ribs, that the intercostal parts were filled with it, as in Tab. 10. Fig. 15. in so much that if all the ribs were thus qualified, the whole chest of that Animal must needs be one bone. This was found about Oxford, and given me by the Right Reverend Father in God, Thomas Lord Bishop of Lincoln. And there are two other ribs joyned in like manner, to be seen in the Repository in the Medicin School. But I find this has happened not only to Beasts, but sometimes to Men, who have been always remarkable for their prodigious strength; whereof in their respective places as I meet them hereafter.
The Natural History

CHAP. VIII.

Of Men and Women.

The subject matter of this Chapter being very narrow, extending it self only to Man, whom God created Male and Female, and them only in his own Image, little lower than the Angels: It cannot be expected, that the methods of the other Chapters can be observed here, there being no new species of Men to be produced, or not sufficiently noted already. All therefore that remains concerning them to be handled here, will be only the unusual Accidents that have attended them, where-of, though I have not met with over many in this County, yet they are enough to be distributed into such as have attended them,

either {at or before their birth.

either in their course of life.

in their death or grave.

2. Before the birth of Man, the Vagitus uterinus, or crying of the child in the mothers womb, is not ordinarily to be met with, though we find many examples of the thing in Authors, to which may be added one more that lately happened at Heyford Purcel, where there was a child cryed very audibly in its mothers womb sometime before the birth. For the performance of which action, whether there be a necessity of the Infants having respiration whil"ft included in the Amnion; or whether it may not be done without it? let the Physicians dispute: The matter of fact sufficeth me at present that there was such a thing, the people being frighted with it, and expecting some calamity should soon attend such a Prodigie, pernicious (forsooth) not only to the place where heard, but to the State it self. Whereas the learned Bartholin more rightly notes, that the ruin of Kingdoms depends rather on the wickedness of the people, living in contempt of God and his Laws, than any such vagitus; which portends nothing but happiness to the Infant, the Mother, and State

it self: To the Infant, in that it is an Index of its strength, and perfection of Organs; To the Mother, in the certainty that her child is living, and likely to promote its own exit; To the State, which is likely to be blest with an able subject: the Vagitus being nothing but such an Jo Triumpe, as Livy reports was made by the infant in the mothers womb in Marrucinis, Q. Fabius Maximus being the fourth time, and M. Marcellus the third time COSS. So that if any thing amiss fall out after such Vagitus, it must be imputed rather to chance than design of nature: Let us but mend our lives, and no such matters can hurt us.

3. In the birth of man it is equally strange, that the pangs of the woman in the exclusion of the child have fomtimes affected the Abdomen of the husband, which yet to such as have experiment ed the secrecy of sympathies, and understand the subtilty and power of effluviums, perhaps may not seem difficult: But that the man should fomtimes suffer such pains, whilst the woman is well, and before she is in labor, is a problem I fear beyond all hopes of solution. And yet that this has happen’d to some persons in Oxford is very certain, and that to knowing ones too, very unlikely to be deceived, and of unquestionable veracity: where of one of them told me (whom I enquired of more particularly concerning them) that they came upon him when he little thought of his wife, and that the pangs were very odd ones, such as he never felt in his life; not like any griping in the guts, but lying in the muscles of the Abdomen, which yet he should never have thought to have had relation to his wife, had they not suddenly, and beyond expectation ceased, as soon as his wife began to be in labor. Which makes much for the credit of a relation of the German Virtuofe, concerning one Faber of Buxovil in Alsatia, who constantly acted the part of his pregnant wife, being taken with vomitings, and suffering those inordinate longings that usually attend women in that condition, his wife all the while suffering no such inconveniences.

4. That such symptoms should be thus translated from the woman to the man, the woman remaining well and undisturbed, Dr. Primirofe thought so irrational (upon account that natural Agents first work on the nearest objects, and then on the remotest, and

that therefore a woman must needs be first affected with her own noxious humors) that he lookt upon it as no better than a ridiculous error, as indeed I think I should have done myself, but that I am otherwise persuaded by sober men, who well know how to distinguish the manner of the pangs, and the circumstances of them: Nor should I have ventured to have made this relation, but that the persons are living, and ready to justify what I have written to any person fit to be discours'd with about such matters: but how they should come to pass, is so hard to determine, that I dare not yet attempt it, it being difficult not to err concerning such mysteries of Nature.

5. That women may bring forth three at a birth appears evidently by the example of the Horatii, and Curiatii; to whom may be added, though of unequal rank, the three children of a Tayler here in Oxford, which he had all at a birth. But to go above that number says Pliny⁵, is reputed and commonly spoken off as monstrous, and to portend some mis-hap: for confirmation whereof, he instances in a Commoners wife of Ofsia, who was delivered at one birth of two boys and two girls; but this, says he, was a most prodigious token, and portended no doubt the famine that ensued soon after: i. e. It pleased God to visit those parts with famine about that time, there being no more dependence between the famine and the preceding birth, than there is between the Wars, Plagues, and Famins, that somtimes follow Comets; there having been (no question) as many of them, to which nothing extraordinary has been subsequent, as to which there has; and so of Births.

6. Witness the four children brought all at a time by Elenor the wife of Henry Deven of Watlington, An. 1675. Since which time we have yet lived (thanks be to God) in as great health, peace and plenty, under our good and gracious King, as ever People did, which God of his mercy continue to us; whom if we serve in sincerity, performing unto Him an honest, faithful, and uniform obedience (though 'tis true our best performances will be mixed with much of weaknesses, ignorance, frailties, and recidivations) we need never to fear the influence of any such accidents, though they much exceed the ordinary course of nature.

7. The same Pliny⁶ informs us, that many men indeed have

---

begotten children at fixty or eighty years old: for which he instances in Volusius Saturninus, who on Dame Cornelia, of the lineage of the Scipio's, begat Volusius Saturninus (who afterward was Conful) at fixty two years old and upwards. Cato Censorinus, says the same Pliny (ancestor to Cato who flew himself at Utica) begat a son on the daughter of Salonius his Vassal, after he was past 80 years of age; and King Massinissa, another, whom he called Methymathnus, when he was eighty. But as to women, he is positive that they are past child-bearing at fifty, and that for the most part their customary purgations stop at forty.

8. But I met with an instance at Shetford near Banbury, that proves him plainly mistaken, where I saw and spoke with one Catharine Tayler, that had a son then living and lusty, in the sixtieth year of her age, which was testified also to me by many there about. And I have since heard of one Goodwife Harvey of Smithen-green, in the Parish of Leigh, within three miles of Worcester, that is now with child in her sixty-third year, which are instances wonderful rare, and scarce heard of in other Countries; though we are informed indeed by Dr. Boat, that amongst the women in Ireland, there are several found who do not only retain their Catamenia, but even their fruitfulness, above the age of fifty, and some till that of sixty years; whereof he tells us, his brother knew some, who being above three-score years old, did not only conceive and bring forth children, but nursed them, and brought them up with their own milk: which also as we are acquainted by Gul. Pifo, is very common in Brasil.

9. As in the child-bearing of women, and the accidents attending it, I have met with also somewhat extraordinary in their growth, which must be ranked among the accidents that have befallen the sex during their course of life; and such is the growth of one Philippa French, born at Milcomb in this County, now fix or seven and thirty years of age, and a married woman, having all her parts proportionable, and of good symmetry, yet wanting half an inch of a yard in height: which is somewhat lower than Manius Maximus, or M. Tullius, who as Varro reports, were each but two cubits high, and yet they were Gentlemen and Knights of Rome; but higher then Conopas the Dwarf of Julia, Neece to Augustus.

who as *Pliny* tells us, was but two foot high and a hand breadth; but he tells us not whether *Conopas* were at his full growth, or had good symmetry of parts like our *Philippa*, it being common enough for persons to be very low of stature, when either their Bodies are awry, or some of their parts disproportionate to the rest.

10. And amongst such accidents as these, we may reckon a strange disease that befel Mary the daughter of John Collier of Burford, who out of the corners of her eyes excluded a sort of congealed matter, which after some time turned into a sony kind of substance, not unlike the stones, as they were described to me, that sometimes come forth of the tumor called *Atheroma*: which I therefore guess to have been only a more exalted kind of *Ægilops*, or *fistula lachrymalis*, and not to have been caused by fascination, as Lachmund¹ thinks the stones were that came forth of the left eye of Margaret the daughter of Conrad Brandis of Banteln, she being cured of the disease by that eminent *Oculist* Dr. *Turbervill* of Sarum.

11. Yet a much stranger accident than that befel one Rebeckab Smith, the Servant-maid of one Thomas White of Minster Lovel, who being of a robust constitution, though she seldom eat flesh (it scarce agreeing with her) and above 50 years of age; after she came from the Communion on Palm-sunday, April 16. Anno 1671. was taken with such a dryness in her throat, that she could not swallow her sbitte, nor any thing else to supply the decays of nature: and in this case she continued without eating or drinking, to the amazement of all, for about ten weeks, viz: to the 29 of June, being both St. Peters, and Witney-fair day: by which time being brought very low, her master enquired and found out a person who gave him an Amulet (for it was supposed she was bewitch'd) against this evil; after the application whereof, within two or three days time (though I dare not suppose there was any dependence between the medicin and disease) the first drank a little water, then warm broaths in small quantities at a time, and nothing else till Palm-sunday again twelve months after, when she began to eat bread and other food again as formerly she had done, and is now about the age of sixty, and still living at the same place ready to testify the truth of the thing, as well as *Tho. White* and

---

¹ *Fried. Lachmundi, Οφυντικαφ. σηθ. 3. cap. 22.*
his wife, who were all that lived in the house with her, and will confidently assert (for they carefully observed) that they do not believe she ever took anything in those ten weeks time, nor anything more all the year following but what was above-mentioned: wherein I think they may the rather be credited, because there was never any advantage made of this wonder, which argues it clear of all juggle or design.

12. Concerning the death of women, we have two as remarkable examples, as any perhaps to be met with in History, both of them being confirmations of what Pliny says of them, that they much more frequently revive after they have been reputed dead, than males do*, whence doubtless also the Proverb, mulierin nec describas, ne mortuæ quidem. Of which recoveries of the female Sex rather than the male, the same Pliny offers us a natural reason, but I think fit to waive it, especially since the reviviscence of Anne Green, innocently condemned to dye, and executed at Oxford for the murther of an abortive Infant, is rather ascribed to the Justice of Heaven, than to the strength or other conveniencies of nature for such purpose in women rather than men, though it must also be allowed, that God Himself makes use many times of natural means in production of the most wonderful, most amazing effects. The History whereof, as it is taken out of a Chronicle of the late Civil Wars, by James Heath Gentleman*, and the continuation of the History of the World, by Dionysius Petavius*, with some few additions and alterations, take as followeth.

13. In the year 1650, this Anne Green, being a Servant-maid of the Right Worshipful Sir Thomas Read of Duns Tew in Oxfordshire, was gotten with child by some servant, or other of the family (as she constantly affirmed when she had little reason to lyce) and through over-working her self in turning of mault, fell in travel about the fourth month of her time: But being but a young wench, and not knowing what the matter might be, repairs to the house of easiment, where after some straining, the child (scarce above a span long, of what sex not to be distinguished) fell from her unawares. Now presently after, there appearing signs of some such matter in the linnen where she lay, and she before having confest, that she had been guilty of what might occasion

---

her being with child, a search instantly was made, and the Infant found on the top of the ordure.

14. Whereupon, within three days after her delivery, she was conveyed to the Castle at Oxford, where forthwith (an Assize being purchased on purpose) she was arraigned before Serjeant Umpton Croke, then living but at Marston, who sat as Judge by a Commission of Oyer and Terminer, and by him sentenced to be hanged; which was accordingly executed on the fourteenth of December in the said Castle-yard, where she hung about half an hour, being pulled by the legs, and struck on the breast (as she herself desired) by divers of her friends; and after all, had several strokes given her on the stomach with the but-end of a Soldiers Musket. Being cut down, she was put into a coffin, and brought away to a house to be dissected, where when they opened it, notwithstanding the rope still remained unloosed, and straight about her neck, they perceived her breast to rise; whereupon one Mason a Tayler, intending only an act of charity, set his foot upon her breast and belly; and as some say, one Orum a Soldier struck her again with the but-end of his musket.

15. Notwithstanding all which, when the learned and ingenious, Sir William Petty, then Anatomy Professor of the University, Dr. Willis, and Dr. Clark now President of Magdalen College, and Vice-Chancellor of the University, came to prepare the body for dissection, they perceived some small rattling in her throat; hereupon desisting from their former purpose, they presently used means for her recovery, by opening a vein, laying her in a warm bed, and causing another to go into bed to her; also using divers remedies respecting her senseleßness, Head, Throat, and Breast, in so much that within 14 hours, she began to speak; and the next day talked and prayed very heartily.

16. During the time of this her recovering, the officers concerned in her execution, would needs have had her away again to have completed it on her; but by the mediation of the worthy Doctors, and some other Friends, with the then Governor of the City, Colonel Kelsey, there was a guard set upon her to hinder all further disturbance, till he had sued out her pardon from the Powers then in being; thousands of people in the mean time coming to see her, and magnifying the just Providence of God in thus asserting her innocency of murder.

17. After
17. After some time Dr. Petty hearing she had discoursed with those about her, and suspecting that the women might suggest unto her to relate something of strange visions and apparitions she had seen, during the time she seemed to be dead (which they already had begun to do, telling about that she said, she had been in a fine green meadow, having a River running round it, and that all things there glittered like silver and gold) he caused all to depart the room but the Gentlemen of the Faculty, who were to have been at the dissection, and asked her concerning her sense and apprehensions during the time she was hanged.

18. To which she answered at first somewhat impertinently, talking as if she had been then to suffer. And when they spake unto her concerning her miraculous deliverance, she answered, that she hoped God would give her patience, and the like: Afterward, when she was better recovered, she affirmed, that she neither remembered how the fetters were knocked off, how she went out of the Prison; when she was turned off the ladder, whether any Psalm was sung or not, nor was she sensible of any pains that she could remember: what is most observable is, that she came to her self as if she had awakened out of a sleep, not recovering the use of her speech by slow degrees, but in a manner all together, beginning to speak just where she left off on the gallows.

19. Being thus at length perfectly recovered, after thanks given to God, and the persons instrumental in it, she retired into the Country to her friends at Steeple-Barton, where she was afterwards married, and lived in good repute amongst her Neighbors, having three Children afterwards, and not dying as I am informed till the year 1659. Which occurrence being thought worthy of remembrance by the Author of the continuation of the History of the World, by Dionysius Petavius, who esteemed it no less than the finger of God pointing out the Maids innocency; and by Mr. Heath, who thought fit to transmit it to posterity for God's glory, and man's caution in judging and punishing. It would have been a great omission in me to have passed it by untouched.

20. Not long after, viz. in the year 1658. Elizabeth the servant of one Mrs. Cope of Magdalen Parish Oxon, was indicted at the City Sessions for killing her bastard child, and putting it in the house of office; of which being convicted, she was condemned to dye, and accordingly was hanged at green-ditch, the place ap-
appointed for the execution of the City malefactors, where she hung so long, that one of the by-standers scrupled not to say, that if she were not dead, he would be hanged for her: hereupon being cut down (the gallows being very high) she fell with such violence on the ground, that it would have been enough to have been the death of many another person, only to have had such a fall. Being thus cut down, she was put into a coffin and brought to the George Inn in Magdalen Parisb aforesaid, which when opened, they found perfect life in her, as in the former: whereupon breathing a vein, and putting her to bed with another young wench by her, she came quickly to her self, and might no question have lived also many years after; but having no friends to appear for her, she was barbarously dragg'd the night following by the order of one Mallory then one of the Bayliffs of the City, to Gloucester-green, and there drawn up over one of the arms of the Trees, and hang'd a second time till she was dead.

21. After what concerns women solitarily consider'd, who according to the courtfie of England, have always the first place, come we next to treat of things unusual that concern women and men joyntly together; amongst which I think we may reckon many ancient Customs still retained here, abolish'd and quite loft in most other Counties: such as that of Running at the Quinten, Quintain, or Quintel, so called from the Latin [Quintus] because says Minfbru, it was one of the Ancient Sports used every fifth year amongst the Olympian games, rather perhaps because it was the last of the nemertes, or the quinque certamina gymnastica, used on the fifth or last day of the Olympicks. How the manner of it was then I do not find, but now it is thus.

22. They first set a Post perpendicularly into the ground, and then place a flender piece of Timber on the top of it on a spindle, with a board nailed to it on one end, and a bag of sand hanging at the other; against this board they anciently rod with spears; now as I saw it at Deddington in this County, only with strong slaves, which violently bringing about the bag of sand, if they make not good speed away it strikes them in the neck or shoulders, and sometimes perhaps knocks them from their horses; the great design of the sport being to try the agility both of horse and man, and to break the board, which whoever do's, is for that time accounted Princeps Juventutis.
23. For whom heretofore there was some reward always appointed, *Ex tempore* (says Matthew Paris) *Juvenes Londinosii*, *statuto Pavone pro bravo*, *ad Stadium quod Quintena vulgariter dicitur*, *vires proprias*, & *Equorum cursus*, *funt experti*: Wherein it seems the *Kings servants* opposing them were sorely beaten; for which; upon complaint, the King fined the City. Whence one may gather that it was once a tryal of *Manhood* between two parties; since that, a contest amongst friends who should wear the *gay garland*, but now only in request at *Marriages*, and set up in the way for young men to ride at as they carry home the Bride, he that breaks the board being counted the *best man*.

24. To which may be added the observation of *Hoc-day*, *Hock-day*, *Hoke-day*, *Hoke-tide*, *Hoke-Monday* and *Hoke-Tuesday*: by all agreed to be a *Festival* celebrated in memory of the great slaughter of the *Danes* in the time of *King Ethelred*, they being all slain throughout *England* in one day, and in great part by *women*; whence it came to pass, that the *women* to this day bear the chief rule in this *Feast*, stopping all passages with *ropes* and *chains*, and laying hold on *passengers*, and exacting some small matter of them, with part whereof they make *merry*, and part they dispose of to *pious uses*, such as reparation of their *Church*, *&c.*

25. For which very reason some have thought it to be called *Hoke-Tide*, from the German or *High-Dutch*, *Hoge zeit*, *i.e.* *Tem°pus Convivii*, a time of *Feasting*; or the *Saxon* *boege*, which signifies a *Solemn Feast*; or perhaps rather from the *Anglo-Saxon*, *beage wiv*, *i.e.* a *high Time*, or *high Day*: *Others* that thought the name respected the contempt that the *Danes* now lay under, amongst whom is Mr. *Lambard*, thought it so called, *quasi* *Duex工地ls*, *i.e.* *Dies Martis irrisorius*, perhaps rather from *Hochan temmere*: And *others*, that respected the manner of the celebration of the *Feast*, chose rather to derive it from the *German Hochen*, which signifies *obside*, *cingere*, *incubare*, to compass about, lay hold off, *&c.* as the *women* do on the *men* upon this day.

26. And as about the name, so about the *time* *Authors* differ much, some making *Hoke-day* to be the *Tuesday*, and others the *Monday* fourteenth night after *Easter*, and none of them on the

---

*Vid. Watsii Glossarium in Mat. Paris.*
*Perambulation of Kent, in Sandwich.*
*Vid. Spelman. Glossarium in verbo.*

---

*C c*  
*Danæs*
Danes massacre, which Henry Arch-Deacon of Huntingdon expressly saies was on the Feast of St. Brice, i.e. the 13 of November. That it was formerly observed on Tuesday, not only Mr. Lambard, ut supra, but Matthew Paris also gives us testimony, Et post Diem Martis quæ vulgariter Hoke-day appellatur, fætum est Parliamentum Londini, &c. And yet the fame Matthew Paris in another place makes it to fall on the Quinsieme of Easter, in Quindecima Paschæ quæ vulgariter Hoke-day appellatur convenerunt Londoni, &c. which must needs be Munday; and the very same day it is observed here at Oxford in our times.

27. In so much that I once thought they might anciently, as well as now, observe two Hock-days, one for the women, and another for the men, but that I find the same Matthew Paris to mention the Monday before Hoke-Tuesday, and not calling it a Hock-day at all; viz. Anno 1252, where mentioning King Henry the thirds taking on him the Crusado, he saies, he did it die Lune, quæ ipsius diem proxime præcedit quem Hoke-day appellamus. However it were then, it is most certain that now we observe two of them here, on Monday for the women, which is much the more solemn, and Tuesday for the men which is very inconsiderable; and yet neither of these perhaps was the dies Martis ligatoria, whatever Sir Henry Spelman may think, wherein men and women use to bind one another, that being now celebrated in some parts of England on Shrove Tuesday: Much less the same with the Feast of St. Blafe, as Minsheu thinks, when Country women went about and made good cheer, and if they found any of their Neighbor-women a Spinning, set their disaff on fire; that Feast being celebrated on the third of February, and in all probability upon some other grounds.

28. Amongst things of this nature, I think we may also reckon an ancient Custom of the Royalty of Esham, where it was formerly allowed to the Towns-people on Whit-Monday, to cut down and bring away, where-ever the Church-wardens pleased to mark it out, by giving the first chop, as much Timber as could be drawn by Mens hands into the Abbey-yard, whence if they could draw it out again, notwithstanding all the impediments could be given the Cart by the servants of the Abbey (and since that by the family

---

of the Lord, it was then their own, and went in part at least to the reparation of their Church; and by this, as some will have it, they hold both their Lammas and Michaelmas Common. But this Custom, now the Timber is almost destroyed thereabout, begins to be so inconvenient, that if it be not reasonably laid aside, it will discourage all people from planting it again, even about their very houses: for to what purpose should they do it, when it would still be in the power of a malicious Church-warden to give it a chop, and destroy it when he pleases. To prevent which great evil, I hear the chiefeft of the Parish have lately combined, where- in I think they have done well enough, provided always that the Rights of the Church. (whatever they be) be fully compensated some other way.

29. In the Northern part of Oxfordshire, about Banbury and Bloxham, it has always been the Custom at set times of year, for young people to meet to be hired as servants; which meeting, at Banbury they call the Mop; at Bloxham the Statute, where they all fort themselves, and carry their badges according as they are qualified; the Carters standing in one place with their whips, and the Shepherds in another with their crooks; but the maids, as far as I could observe, stood promiscuously: which Custom I had scarce I think noted, but that it seems to be as old as our Saviour, and to illustrate his Parable in St. Matthew's Gospel, where the laborers are said to stand in the market to be hired.

30. And now I have run myself into Divinity, I cannot but note an odd Custom at Stanlake, where the Parson in the Procession about holy Thursday, reads a Gospel at a Barrels head in the Cellar of the Chequer Inn, where some say there was formerly a Hermitage; others, that there was ancientsly a Cross, at which they read a Gospel in former times, over which now the house, and particularly the cellar being built, they are forced to perform it in manner as above.

31. But in matters of Religion there is nothing so worthy memory as the Christian unanimity of the Parish of Brightwell, where, through the exemplary Piety, and prudent conduct of that worthy Gentleman, the Worshipful John Stone Esq; Lord of the Town, and the Reverend Mr. Fiddes, Rector of the place, and their Predecessors, and the good disposition of the people them-

selves, all matters both of Spiritual and Temporal concern, have been so effectually press'd, and prudently managed, that there has not been known any such thing as an Ale-house, a Sectary, or Suit of Law commenced within the whole parish (which is of a large extent) in the memory of man: which being more for ought I know than any Parish in England can lay beside, and so well worthy the imitation of all other places, I thought fit (for the eternal honor of its Inhabitants) to recommend it accordingly.

32. Yet but few miles off, at the Town of Watlington, I was told of a sort of Sectaries, perhaps never heard of in the world before; which if so, is as strange as the thing it self, for one would have thought there could have nothing been so absurd in Religion, but what must have needs been embraced already. These by the rest of the people are called Anointers, from the ceremony they use of anointing all persons before they admit them into their Church, for which they allege the fifth of St. James, v. the 14 and 15. Is there any sick among you (which it seems they account all people to be but themselves) let him call for the Elders of the Church, and let them pray over him, anointing him with oil in the name of the Lord; and the prayer of faith shall save the sick, and the Lord shall raise him up, and if he have committed sins they shall be forgiven him: which Elders amongst them are some poor Tradesmen of the Town, and the oil they use, that commonly sold in the shops, with which the Profelyte being smeared over, and fired with zeal, he presently becomes a new Light of this Church; which I could not but note, these people being as remarkably mad, as those of Brightwell are good. Though perhaps some may think one Richard Hastings, then of Broughton, and yet living near Banbury, more religiously mad than any of those; who with Origen understanding the twelfth verse of the nineteenth Chapter of St. Matthew's Gospel literally, hath castrated, and so made himself an Eunuch for the Kingdom of Heavens fake.

33. And thus much of men and women jointly together in their lives; as to what concerns their deaths, I must add also a Relation, as strange as 'tis true, of the Family of one Captain Wood late of Bampton, now Brife-Norton, Captain in the late Wars for the King; Some whereof before their deaths have had signal warning given them by a certain knocking, either at the door without, or on the table or shelves within; the number of stroaks,
and distance between them, and the place where, for the most part respecting the circumstances of the persons to dye, or their deaths themselves, as will easily be collected from the following relation.

34. The first knocking that was heard, or at least observed, was about a year after the restoration of the King, in the afternoon a little before night, at or upon the door it being then open, as it was apprehended by Mrs. Elenor Wood, mother to Captain Basil Wood, who only heard it, none being then by or about the house but her self; at which she was very much disturbed, thinking it boded some ill to her or hers, and within fourteen nights after, she had news of the death of her Son in law Mr. George Smith, who dyed in London.

35. About three years after that, there were three great knocks given very audibly to all that were then in the house, viz. to the aforesaid Mrs. Elenor Wood, Mr. Basil Wood, and his wife Mrs. Heister, and some servants: which knocks were so remarkable, that one of the maids came from the well, which was about twenty yards from the place, to see what was the matter; and Mrs. Elenor Wood, and another maid that was within the house, saw three great pans of Lard shake and totter so upon a shelf in the milk-house, that they were like to fall down. Upon this violent knocking, Mr. Basil Wood and his wife being then in the hall, came presently into the milk-house to their mother, where finding her somewhat disturbed, and enquiring the reason, she replied, God Almighty only knew the matter, she could tell nothing but she heard the knocking; which being within doors, Mr. Basil Wood concluded must be for some of the Family at home, that upon the door being for a friend abroad: which accordingly fell out, three of the family, according to the number of the knocks, dying within little more than half a year after; viz. Mrs. Heister Wood wife to Mr. Basil Wood, a child of Mr. Woods sister, and Mrs. Elenor Wood his mother.

36. About August, 1674. Mr. Basil Wood junior, son of Basil aforesaid, living at Exeter in Devon-shire, heard the same kind of knocking, at which being disturbed, he wrote word of it to his Father here at Bampton in Oxfordshire; viz. That one Sunday, he and his wife, and her sister, and his brother, did distinctly hear upon a Table in their Chamber as they stood by it, two several
veral knocks struck as it were with a cudgel, one of them before, and the other after Morning-prayer, a little before dinner: which Letter was shewn by Mr. Wood senior (as the other knockings before the deaths of any that dyed, were before-hand told) to several neighboring Gentlemen. After which, within about fourteen days, Mrs. Hester Wood a second wife of Mr. Basil Wood senior, and about a quarter of a year after, her Father Mr. Richard Liffet, dyed both at Bampton; since which time they have heard nothing more as yet.

37. Amongst such unaccountable things as these, we may reckon the strange passages that happened at Woodstock in Anno 1649. in the Manor-house there, when the Commissioners for surveying the Manor-house, Park, Deer, Woods; and other the Demeasnes belonging to that Manor, fat and lodged there: whereof having several relations put into my hands; and one of them written by a learned and faithful person then living upon the place, which being confirmed to me by several eye-witnesses of many of the particulars, and all of them by one of the Commissioners themselves, who ingeniously contest to me, that he could not deny but what was written by that person above-mention'd was all true; I was prevailed on at last to make the relation publick (though I must confess I have no esteem for such kind of stories, many of them no question being performed by combination) which I have taken care to do as fully, yet as briefly as may be.

38. October the 13. 1649. the Commissioners with their servants being come to the Manor-house, they took up their Lodging in the Kings own rooms, the Bed-chamber and with-drawing Room; the former whereof they also made their Kitchin; the Council-hall, their brew-house; the Chamber of Presence, their place of sitting to dispatch businesfs; and a wood-house of the Dining-room, where they laid the wood of that ancient Standard in the high-Park, known of all by the name of the Kings Oak, which (that nothing might remain that had the name of Kings affixed to it) they digged up by the roots. October the 14. and 15 they had little disturbance, but on the 16 there came as they thought, somwhat into the Bed-chamber where two of the Commissioners and their servants lay, in the shape of a dog, which going under their beds, did as it were gnaw the bed-cords; but on the morrow finding
finding them whole, and a quarter of Beef which lay on the
ground untouched, they began to entertain other thoughts.

39. October 17. Somthing to their thinking removed all the
wood of the Kings Oak out of the dining-room into the Presence
Chamber, and hurled the chairs and stools up and down that room:
From whence it came into the two Chambers where the Commission-
ers and their servants lay, and hoisted up their beds feet so much
higher than the heads, that they thought they should have been
turned over and over, and then let them fall down with such a
force, that their bodies rebounded from the bed a good distance,
and then shook the bed-foots so violently, that themselves con-
septed their bodies were fore with it. October 18. Somthing came
into the Bed-chamber and walkt up and down, and fetching the
warming-pan out of the with-drawing room, made so much noise
that they thought five bells could not have made more. And
October 19. Trenchers were thrown up and down the dining-room
and at them that lodg'd there, whereas of one of them being shaken
by the shoulder and awakened, put forth his head to see what
was the matter, but had trenchers thrown at it. October 20. the
curtains of the bed in the with-drawing room were drawn to
and fro, and the bed-foots much shaken, and eight great pewter
dishes and three dozen of trenchers, thrown about the bed-chamber
again, whereas of some fell upon the beds: this night they also
thought whole arm-fulls of the wood of the Kings Oak had been
thrown down in their chambers; but of that, in the morning they
found nothing had been moved.

40. October 21. The keeper of their Ordinary and his bitch, lay
in one of the rooms with them, which night they were not dis-
turbed at all. But October 22. though the bitch kennel'd there
again (to whom they ascribed their former nights rest) both they
and the bitch were in a pitiful taking; the bitch opening but once,
and that with a whining, fearful yelp. October 23. they had all
their cloaths pluckt off them in the with-drawing room, and the
bricks fell out of the chimney into the room; and the 24th they
thought in the dining-room that all the wood of the Kings Oak had
been brought thither, and thrown down close by their bed-side,
which noise being heard by those of the with-drawing room, one
of them rose to see what was done, fearing indeed that his fel-
low Commissioners had been killed, but found no such matter;
whereupon returning to his bed again, he found two dozen of trenchers thrown into it, and handsomely covered with the bed-cloaths.

41. October 25. The curtains of the bed in the with-drawing room were drawn to and fro, and the bedstead shaken as before: and in the bed-chamber glass flew about so thick (and yet not a pane of the chamber windows broken) that they thought it had rained money; whereupon they lighted candles, but to their grief they found nothing but glass, which they took up in the morning and laid together. October 27. Somthing walked in the with-drawing room about an hour, and going to the window opened and shut it; then going into the bed-chamber, it threw great stones for about half an hours time, some whereof lighted on the high-bed, and others on the truckle-bed, to the number in all of about four-score. This night there was also a very great noise, as though forty pieces of Ordnance had been shot off together; at two several knocks it astonished all the neighboring dwellers, which 'tis thought might have been heard a great way off. During these noises which were heard in both rooms together, both Commissioners and servants were struck with so great horror, that they cried out to one another for help, whereof one of them recovering himself out of a strange agony he had been in, snatch'd up a sword, and had like to have killed one of his Brethren coming out of his bed in his shirt, whom he took for the Spirit that did the mischief: However, at length they got all together, yet the noise continued so great and terrible, and shook the walls so much, that they thought the whole Manor would have fell on their heads. At its departure it took all the glass away with it.

42. November 1. Somthing as they thought walk'd up and down the with-drawing room, and then made a noise in the dining-room: The stones that were left before and laid up in the with-drawing-room, were all fetch'd away this night, and a great deal of glass (not like the former) thrown about again. November 2. came somthing into the with-drawing room treading (as they conceived) much like a Bear, which first only walking about a quarter of an hour, at length it made a noise about the Table, and threw the warming-pan so violently, that it quite spoiled it: It threw also glass and great stones at them again, and the bones of horses, and all so violently, that the bedstead and walls were bruised
by them. This night they set candles all about the rooms, and made fires up to the mantle-trees of the chimneys; but all were put out no body knew how, the fire, and billets that made it, being thrown up and down the rooms; the curtains torn with the rods from their beds, and the bed-posts pull'd away, that the tester fell down upon them, and the feet of the bedsted cloven in two: And upon the servants in the truckle-bed, who lay all this time sweating for fear, there was first a little, which made them begin to stir; but before they could get out, there came a whole coule, as it were, of stinking ditch-water down upon them, so green, that it made their skirts and sheets of that colour too.

43. The same night the windows were all broke by throwing of stones, and there was most terrible noises in three several places together, to the extraordinary wonder of all that lodged near them; nay, the very Cony-sealers that were abroad that night, were so affrighted with the dismal thundering, that for haft they left their Ferret in the Cony-boroughs behind them, beyond Rosamonds well. Notwithstanding all this, one of them had the boldness to ask in the Name of God, what it was? what it would have? and what they had done, that they should be disturbed in this manner? to which no answer was given, but the noise ceased for awhile. At length it came again, and (as all of them said) brought seven Devils worse than it self. Whereupon one of them lighted a candle again, and set it between the two chambers in the door-way, on which another of them fixing his eyes, saw the similitude of a hoof striking the candle and candle-flick into the middle of the bed-chamber, and afterwards making three scrapes on the snuff to put it out. Upon this the same person was so bold as to draw his sword, but he had scarce got it out, but there was another invisible hand had hold of it too, and tug'd with him for it, and prevailing, struck him so violently with the pummel, that he was stun'd with the blow.

44. Then began grievous noises again, in so much that they called to one another, got together and went into the Presence-chamber, where they said Prayers and sang Psalms; notwithstanding all which, the thundring noise still continued in other rooms. After this, November 3: they removed their Lodgings over the gate; and next day being Sunday, went to Ewelme, where how they escaped, the Authors of the Relations knew not;
but returning on Monday, the Devil (for that was the name they gave their nightly guest) left them not unvisited; nor on the Tuesday following, which was the last day they staid. Where ends the History (for so he was stiled by the people) of the just devil of Woodstock; the Commissioners and all their dependants going quite away on Wednesday; since which time, says the Author that lived on the place, there have honest persons of good Quality lodged in the Bed-chamber and withdrawing room, that never were disturb'd in the least like the Commissioners.

45. Most part of these Transactions, during the stay of these Commissioners, 'tis true, might be easily performed by combination, but some there are of them scarce reconcilable to Jugling: Such as 1. The extraordinary noises, beyond the power of man to make, without such instruments as were not there. 2. The roaring down and splitting the bed-posts, and putting out so many candles and so great fires nobody knew how. 3. A visible shape seen of a horse's hoof treading out the candle. And 4. A tugging with one of them for his sword by an invisible hand. All which being put together, perhaps may easily perswade some man otherwise inclined, to believe, that immaterial beings might be concern'd in this business; which if it do, it abundantly will satisfy for the trouble of the Relation, still provided the speculative Theist, be not after all, a practical Atheist.

46. And thus, before I am aware, being fallen amongst the unusual accidents that have happened to men only, the next unaccountable thing that presents itself, is a remarkable Dream of Thomas Wotton Esq; of Bolton Malherb in the County of Kent, Father to the famous Sir Henry Wotton Provost of Eaton, whose dreams did usually prove true, both in fore-telling things to come, and discovering things past. The dream, 'tis true, of which I am now writing, was had at Bolton in Kent, but the most important concern of it relating to Oxford, I thought fit rather of the two to place it here; the particulars whereof, as taken verbatim out of Sir Henry Wotton's life, are briefly these.

47. This Thomas Wotton, a little before his death dreamed, that the University Treasury was robbed by Towns-men and poor Scholars, and that the number was five. And being that day to write to his Son Henry (then a Scholar of Queens College) at Oxford,
be thought it worth so much pains, as by a Postscript in his Letter, to make a slight enquiry of it. The Letter (which was writ out of Kent, and dated three days before) came to his Sons hands the very morning after the night in which the robbery was committed; and when the University and City were both in a perplexed inquest of the Thieves, then did Mr. Wotton shew his Fathers Letter, by which such light was given of this work of darkness, that the five guilty persons were presently discovered, and apprehended.

48. Amongst the unusual accidents attending men in their Lives, we must also reckon all unusual diseases, such as that of Mr. Evans Rector of Heath, who had a Ranula under his tongue; wherein there bred a Stone, I suppose e sanguine crasso et terrestri; or as they call it, a Tartareous humor got together in the veins under the tongue, so hard and great that it almost quite deprived him of his speech; which he drew away with his own hand, and as he told me sent it to the Medicin School at Oxford; but upon search I could not find it, nor had the School-keeper ever heard of any such matter: So that whoever he were that he sent it by, proved false both to him and the University; which I the rather note, that people hereafter may take more care by whom they send such matters. Of just such another stone as this Mr. Lister gives us an account in a Letter to his Grace the Arch-Bishop of York, cut from under the tongue of a man, and now preserved in the Repository of the Royal Society, which he chuses to call Lapis Atheromatus, though the place of its birth made him allow the distemper to be a Ranula: but for my part, though the Ranula be always a tumor, and Tomtimes perhaps of that sort they call Atheromata; yet the place giving the disease a peculiar name, I think I ought rather to call it Lapis Ranulae, from the place of its birth, and those only Lapides Atheromatis found in that tumor in other places of the body.

49. To this may be added a large stone taken out of the bladder of one Skingley of Oxford, weighing above a pound, and being ten inches round one way fere, and full eleven the other; preserved, and now to be seen in the Medicin School. As also a Corn that grew on the Toe of one Sarney a Wheel-wright, of St. Aldates Parish in the City of Oxford, Anno 1655. two inches long, which for the unusual figure and bigness of it, I have caused to

be ingraven of its just magnitude, Tab. 10. Fig. 16. which is also to be seen in the Medicin School.

50. Amongst which also I think we may number the descending trunk of the Arteria magna, taken out of the body of an ancient person, by the skilful Mr. Pointer Chirurgion of Oxford, in the presence of Dr. Millington our Sidleyan Professor of Natural Philosophy, whose innermost coat from above the Emulgens down to the Iliac branches, is by parcels only (and not continued throughout) turned into bone, the outer coat remaining soft and tender in its ordinary state; which Artery remains to be seen in the custody of Mr. Pointer. Just such another Artery as this, I find observed by Fallopius; and Dr. Willis took another of them out of a man much used to wine and stale drinks; who also informs us, that in the dissection of one that dyed of an ulcerated Schirrus in the Mefentery, he found one of the Carotides turned into bone in the same manner: Beside, above the Emulgens nearer the heart; there was a portion of this Artery turned into an annulare bone, perhaps such another as was observed by Dr. Harvey; and Veslingius, in the great Artery of an old man; but this I have not seen, it being in the possession of our afore-mentioned Professor residing in London.

54. Amongst other the fore-runners of death and the grave, we must not forget extream old age, such as those above-mentioned, §. 3. of the second Chapter; and of one Joias Pierce late of Witney, better known by much by the name of George Fuss, who lived to the age of an hundred and twelve. Where also in the Tithing of Curbridge there is one William Carter now living, at least a hundred years old, who yet it seems has not lived more abstemiously than others of his rank, nor do's he now at this age take so much care, as other people of his health: he commonly lying naked amongst the blankets of the Mill where he lives, which many times are not over dry; out of which he will go naked in the midst of winter, and drink cold water at the Rivers side.

52. Of accidents in the very point of death, I have met with none observble amongst the Men of this County, nor of any attending them in the Grave, except we may reckon that one, of preservation from corruption many years after death; such as that

of the body of one that had been Reitor of Wendlebury, taken up in the Church there near forty years after he had been buryed, whose flesh yet look'd as red (as I was informed by the Incumbent, since also dead) as raw beef: which whether it might not be caused by the petrifying qualities of the earths and waters about that Town, would be an experiment worthy the trial of the Ingenious thereabout; or about Somerton or North Aston, where it would be easie to try whether flesh were so inclinable to corrupt in petrifying waters as others. But if this prove the cause, all bodies must equally be preserved there, as well as that. De quibus quoare.

53. And thus I had finish'd this eighth Chapter; but that I must beg leave to acquaint the Reader, that since the Printing the 21 §. of it, I have found the Quintan amongst the Roman exercices (which yet perhaps they might borrow from the Greeks) by the name of Quintana; so called, by reason the Romans in their Tents made first four ways in manner of a Cross, to which adding a fifth on one side, it was called Quintana *. In this way they set up a great Post about six foot high, suitable to the stature of a man, and this the Roman Soldiers were wont to affail, with all Instruments of war, as if it were indeed a real enemy; learning upon this, by the assistance of the Campidoctors, how to place their blows aright. And this they otherwise called exercitium ad Palum; and sometimes Palaria, the form whereof may be seen in Vulturius*: which practice being in use during their Government here, in all likelyhood has been retained among us ever since, being only translated in times of Peace, from a military, to a sportive marriage exercice.

CHAP. IX.

Of Arts.

Thus having run through all the Natural Bodies I have met with in Oxford-shire, such as either Dame Nature has always retained the same from the beginning, as Waters, Earths, Stones, &c. or freely produces in her ordinary course, as Plants, Animals, with all her extravagancies and defects, or other accidents attending: I am come at length, according to my proposed method, to treat of Arts, and things artificial, that have either been invented or improved in this County; whereof first, of such as have tended to the discovery of the magnitudes, or determination of the motions of the Heavenly Bodies, whither also must be referred the contrivance of new Periods, of new hypotheses and their demonstrations. Secondly, I shall consider Air, Fire, and water-works, and thence go on to such Arts as have any relation to Earths, Stones, or Plants. In short, I shall here also follow the method of the whole Essay as in some other Chapters, by the way taking in all Inventions, and improvements that I have met with in this County, whether in the Mechanick or Liberal Arts; which I intend the whole scope of the following Chapter.

2. The first Celestial Observations in order of time, made here, that were any thing artificial, I presume might be done by Robert Grossthead Bishop of Lincoln, crasst quidem capitis, sed subtilis ingenii, says Pitatus of him; who amongst other his Learned works, left us Treatises of the Sphere and the Astrolabe, with which no question he found out many things that were new to that age: But because we can instance in no particulars, let it suffice as an evidence of the great probability, that he is highly commended for his knowledge in Astronomy and Perspetive by Roger Bacon a Friar minor of Oxon: and sometime Fellow of Merton College, a Man of such affrighting skill in Mathematicks, especially Perspetive, that he justly deserved the title of Dr. Mirabilis. Nor indeed was he out of the way who gave him so much, since had he
us

ofOXFO%T>~SHI1{E.
lived in our days

we could have

given no

to one

lefs,

who

in all

probability was a great Improver at leaft, if not the Inventor of
that ufeful Mathematical Inftrument, fince by GaliUtK and others

of which admirable Invention perhaps Oxboaft, and for it expecl: to be celebrated to all po-

called the Telefcope

may

ford

juftly

;

made good with all perfpicuity and
clearnefs, without wrefting any words or begging favorable conftrucYion, I think I need not to doubt but on all hands 'twill be
granted, that the obfervations here made as they were new and freWhicii affertion

fterity.

quent, foto the vulgar

if

and ignorant, they muft needs be

and amazing.
3. That this Learned Frier underftood

them to fuch

to order and adapt

all

forts

terrible

of glaffes, and

purpofes (not to cite other
places that might eafily be brought) I think I may with truth as
well as confidence affirm from the unconftrained fenfe of his own

Book of

in his

words,

if the glaffes

he,

but

fpberical

of the glafs

eft

is

;

ver(ws oculum, vel convexitas

But, fays

'.

be not plain (having treated of them before)

the cafe

;

Si vero corpora nonfunt plana
tunc eft magna diverfitoi, nam vel

Perfyeclive.

per qu< vifm videt, (edffhdtrica
cdncavitoi corporis

like

much

is

next the

eye,

otherwife, for either the concavity
or the convexity, (src. Now that he u-

fed thekglaffes in Celeftial Obfervations, is altogether as evident

from the fame

Book.-,

frafta, majcra funt,

&

ma,

converfo

e
:

contra
fie

;

where he proceeds

nam de

(sr

facili patet,

in thefe

words. De vifwne

maxima poffe apparere mini-

longt difiantia videbuntur propinquiffime,

etiam facer emws Solem,

fecundum apparentiam hie
formed if the vifion be

is"

inferiwt, (yc

refratled,

Lunam, (p

k
.

for

(sr e

Stellas defcendere

Greater things are per-

[by

refraclion']

'tis

eafily

made appear

that the great eft things may be reprefented lefs, and
little things as the
greateft ; and that things afar off'may be reprefented near : Thus we can make the Sun, and Moon, and Stars, to
all

appearance, to come
4.

Again

down to
ad

in his Epiftlc

works of Art and Nature.
gifiimepofita,

us here below, (ye.

concerning the fecret

Parifienfem,

Poffunt enim fie figurari perfyicua, ut lon-

appareant propinquiffima, <&

e

contrario

;

incredibili diftantia legertmu* literat minutiffimab, ($

it a

quod ex

numeraremus

quantumcunque parvas, ($ Jlella* facer emm apparere quo vellemus '.
Clajfes may be fo figured, that things the moil remote may appear
res

1

PerfpetKv. part.

3. difi. 2.

k
.

cap 3.

Uid.

dl(t.

ultima.

l

In Ep!fi. adVarijiens, cap.

5.

near',


near; so that at an incredible distance we may read the smallest character, and number things though never so small; and lastly, make stars appear as near as we please. And these things, he says at another place, were to the illiterate so formidable and amazing, ut animus mortalis ignorans veritatem non posse aliqualiter sustinere: that no mortal, ignorant of the means, could possibly bear it.

5. Wherein this Learned Franciscan did so far excel the ancient Magicians, that whereas they represented the moons approach by their magical charms, he brought her lower with a greater innocence, and with his glasses did that in truth, which the ancient poets always put in a fable: thus Petronius brings in his witch, boasting the power of her charms.

—Luna descendit imago
Carminibus deducit meis.

And martial in the epitaph of Philænis enquires,

Quæ nunc Thebas aco Lunam deducere Rhombo
Quæ sciet?

All which put together, it must necessarily be confest, that he had some such instrument, though not so trimly made, 'tis like, as our telescopes are now. In favor of which truth, much more might be alleged, did I not think this sufficient to evince it with unprejudiced readers, for whose benefit I have laid down his words thus at large, and translated them (as I also intend in some other matters) that such as have not the opportunity of seeing his books, or understand not his language, might give their verdict, as well as those that have, or do.

6. Upon the account of these, and many other excellent experiments, exceeding ('tis true) the capacity, but not the malice of those times, he was accused of magick in its worst sense, to have performed them by the concurrent help of the devil, persecuted as such by those of his own fraternity, and thrown into prison by Hieronymus de esculo, general of his order, afterward pope by the name of nicholas the fourth, where they so barbarously treated him, that he was forced to seek redress of clement
the Fourth, to whom he made complaint not only of his hard
usage, and sequestration of his Books, but charge of his Exper-
iments, some whereof he tells him, especially concerning burning
things at any distance, would amount at least to a thousand marks;
Et certe combustio in omni distantia constaret plus quam mille marcar.
antequam specula sufficientia fierent ad boe⁹, are his very words. And
at another place speaking of Mathematical Instruments, Instrumenta
hæc non sunt fæcla apud Latinos, nec fierent pro ducentis nec trecentis
libris⁴, that they would not be made for two or three hundred
pounds: great sums indeed in Bacon's time, yet scarce bearing pro-
portion with his greater attempts.

7. Which made them at last so jealous of him, that notwith-
standing he wrote a whole Treatise against the use of Magick⁵;
you would suffer none to come near him, nor his Books to have
place in their Libraries, insomuch that it almost repented him of
his Inventions⁵, which in all probability (not to mention the
humor of the Age, very careful of breaking the Heavenly Seal (as
they called it) which obscured their mysteries from the unworthy
multitude) was the cause why he left us no particular Phenomena
of the motions of the Planets, nor any thing of new stars; the
discovering such secrets producing many inconveniencies. Which
also was the reason (as guess'd by Dr. Dee⁶) why he never re-
vealed his secret of Gun-powder; not but he esteemed it a con-
siderable Invention, but because he fore-saw the many evils attend-
ing it, which these latter ages have severely felt; since brought
into practice by Bertholdus Swartz⁷ of which more fully in its pro-
per place.

8. So far then was John Lipperfein of Zeland, Metius of Alck-
mar, or Galileus himself from being the Inventor of the Telescope,
or first applier of it to the Heavens; that perhaps had not Bacon
left his Books to posterity, with such pregnant Indications how
much might be done that way; he had been as little able to make
those advancements he did, as Paulus Middleburgenfis, or Coper-
nicus had been, to give occasion for the correction of the Julian
Calendar, or Tropical Year, confisting of 365 days and 6 hours
(first contrived, as Bacon informs us, by one Felix⁸, and only

---

⁹ In Operis Min. part. 3. cap. 15. MS. in Bib. Bod. ¹ In eadem Op. Min. part. 3. cap 11. ¹ Contro Necro-
Coll. Universitatis Oxon.
The Natural History

performed by Cæsar) which though not performed till the time of Gregory the 13th, Anno 1582. yet the first motion of its being done, was certainly made by this Learned Friar to Pope Clement the 4th, as appears from a fair MS Copy of the fourth part of his Opus minus in the Bodleian Library: Where after he has passionately lamented its errors awhile, he gives this succinct account of it, viz., that its being greater than the true Solar year, was the cause of the going back of the Equinoxes and Solstices, and then how all was to be amended.

9. Quod autem hic intendo (fays he) est de correctione Calendarii quo utitur Ecclesia. Julius quidem Cæsar in Astronomia edoctus complevit ordinem Calendarii secundum quod potuit in tempore suo; & sicut Historiæ narrant contra Achorium Astronomum, & Eudoxum ejus Doctorem disputavit in Egypto de quantitate Anni Solaris, super quam fundatum est Calendarium nostrum, unde sicut Lucanus refert, ipse dixit.

Non mens Eudoxi vincetur saelibus Annuis.

Sed non pervenit Julius ad veram anni quantitatem quam posuit esse in Calendario nostro 365 dies, & quartam diei integram, qua quarta colligitur per quatuor annos; ut in anno Bifextili computetur unus dies plus quam in aliis annis communibus: Manifestum autem est per omnes computatius, antiquos & novos, sed sicut certificatum est per vias Astronomiæ, quod quantitas anni Solaris non est tanta, imo minor; & istud minus estimatur à sapientibus esse quasi 130 pars unius diei, unde tanquam in 130 annis superfue computatur unus dies, qui si auferretur, esset Calendarium correctum quoad hoc peccatum, i.e.

10. That which I intend here (fays he) is the correction of the Calendar now in use in the Church. Julius Cæsar indeed being learned in Astronomy, compleated the Calendar very well for his time, and as Histories tell us, disputed in Egypt against Achorius, and his Master Eudoxus, concerning the quantity of the Solar year, on which our Calendar is founded, which made Lucan bring him in speaking to this effect,

The Julian, shall ne’er be prov’d amiss,
By the Eudoxian Ephemeris.

But Julius never came to the knowledge of the true quantity of

* 4o MS. in Bib. Bod. in Museo Protobibliothecarii p. 327.
the year, which he made to consist of 365 days, and a whole fourth part of a day, which fourth part collected at four years end, made, that in the Bifexu: there was one day more than in any other year: But 'tis manifest (says he) to all Astronomers both old and new, and 'tis plain from the rules of Astronomy, that the quantity of the Solar year is not so much, but less, and that as 'tis judged by wise men, by the 130th part of a day; whence it comes to pafs, that in 130 years we have one superfluous day, which were it but taken away, the Calendar would be corrected as to this error.

11. And then he proceeds to shew, that upon this account it is that the Equinoxes and Solstices are not fixt, but continually ascend in the Calendar, that in the beginning of the Church they were not, where they are now in his time; and in the conclusion of the Discourse, Debet autem nunc temporis remedium apponi propter iros errores manifestos, &c. But that now some remedy must be found for those palpable errors, and that to take off scandal from the Church; for (says he) all the learned in Astronomy know this, and laugh at the ignorance of the Prelates that suffer it. Nay, the Infidel Arabians, Hebrews, and Greeks, abhor the folly they see in the Christians in ordering the time they set aside for their greater Solemnities: But now Christians have so much skill in Astronomy, that they can amend all these things. Therefore your Holy Father (meaning Pope Clement) may command, & invenietis homines qui praeclara remedia apponent in hac parte.

12. Thus earnestly wrote he for the reformation of the Calendar, not only in this but in several other Books; in one whereof he makes also this complaint, Non tamen aliquis presumit tradere Calendarium correctum, propter hoc quod Concilium generale prohibet ne quis mutet Calendarium, sine licentia sedis Apostolicae generali, i.e. Yet no body presumes to correct this Calendar, because it is forbid by a general Council that no man should offer to alter it, without special license first obtained of the Apostolick See. Which license I gather at length was given him, for I find him in the end of the aforesaid Chapter, mentioning a more correct Copy of a Calendar sent to the aforesaid Pope by his Boy John, than any he had sent him before. Cum propter festaniantiam, & propter

---

1 Loco citato sub finem Paragraphi. 2 In Opus Minor. part. 3. 45. MS. in Bibliotheca Bodleiana. cap. 67.
occupationes in alis magnas & varias, vestrum Exemplar non fuit
usque quaquerum correctum, hic iterum feci transcribi, & correci; & hoc
ideo facio, ut certitudinaliter considerare & conferre possis de hac ma-
teria cum quocunque velitis, i.e. because upon the account of hast
and various other busineses intervening, your Copy was not suffi-
ciently correct, I have corrected and transcribed it again, that
you might consider and confer about it more certainly with whom
you please. A perfect and fair MS. Copy of which Calendar, I hear
yet remains in the hands of one Mr. Theyer, a Gentleman of Glo-
cesier-shire.

13. From which, or some other Calendar of his, Paulus Mid-
dleburgensis Bishop of Fosombrone, in the Dukedom of Urbin,
stole half of his great Volum, which he calls his Paulina, con-
cerning the true time of keeping Easter, and day of the Passion
of our Lord JESUS; directed to Pope Leo the Tenth, in order to
the reformation of the Roman Calendar and Ecclesiastical Cycles,
written just in the same order and method generally and particu-
larly as Roger Bacon long before had done to Clement the Fourth;
and yet full slender mention (says Dr. Dee *) doth this Bishop
make of him, though his chief Instrutor in the best part of the
matter contained in his Book: In which design, though the Pla-
giary were unsuccessful, his endeavors being frustrated for a
time; yet 'twas he that stirred up Nicholas Copernicus (as the
fame Nicholas honestly confesses in an Epistle of his to Paul the
Third Ambassador) more accurately to observe the motions of the Sun and
Moon, and thence to define the quantities of years and months
more truly than they were before in the Julian Calendar; upon
whose foundations Aloysius, and the rest of the sumptuous Col-
lege of Mathematicians at Rome having built their Reformation, it
is easily deducible that whatever has been done in this matter
from the time of Frier Bacon, to that of Pope Gregory the Thir-
teenth, must in great measure be ascribed to him, their whole Re-
formation scarce differing from his.

14. Only in this (which is well worth the observation) that
whereas the Gregorian Reformers reduced the Equinoxes and Sol-
fices to the places they supposed they held in the time of the Ni-
cene Council, Bacon seems inclinable to have brought them (and:

* Dr. Dee proposa to Queen Elizabeth and her Council concerning the reformation of the vulgar Ca-

that most rationally) to their places, in a much more eminent E-
poche, viz. the Winter Solstice to the tenth of the Calends of Janu-
ary, and the Vernal Equinox to the tenth of the Calends of April,
their true places at the time of Christ's birth: which he proves
by a very cogent Argument drawn from the observations of Pro-
longy, who lived but 140 years after Christ; in whose time the
Vernal Equinox was found to be on the eleventh of the Calends of
April: now allowing, as before, that it ascends in the Calendar a
whole natural day in 130 years; if in Ptolomy's time it fell on the
eleventh of the Calends of April, it must needs at Christ's birth
have been at least on the tenth; and so of the Solstice *. According
to which computation they have now gone back in our Calen-
dar since Christ's time almost 13 days, the number 130 days be-
ing so often to be found in 1676, wanting but 14. Now the έEra
of Christ's birth being a time of much higher value, and more to
be respected by Christians than the Nicene Council, in what ever
else they have exceeded him, I am sure in this they have fallen
short of his reformation.

15. And so much for the invention of the Telescope, and oth-
er Instruments, by the assistance whereof he so nearly defined the
true quantities of the Solar and Lunar years, that he first gave oc-
casion to the reformation of the Julian Calendar: wherein if the
Reader (with me) be convinced, let him hither refer those in-
ordinate Encomiums by Kepler, Fabricius, and Caesar la Galla,
heaped on Galileus for the one; and whatever else of that na-
ture he shall meet with, given to Paulus Middleburgensis, Copernicus,
or Aloysius for the other.

16. Thus was the Christian World first informed in matters of
Astronomy by Roger Bacon, and with so much success here in En-
gland, that in the next Century we meet with Richard Wallingford
Abbot of St. Albans, and Simon Breton, both Oxford men, the
most eminent for their time in the whole World: who for their
subtlety, and yet clearness of demonstration, we find yoked
with no less than the great Albategnus, by Lewis Caerlyon also an
where also he treats of the oblique ascensions of the Signs calcula-
ted to the Meridian of Oxford. And quickly after we meet with

* * in Operis Min. part. 3. cap. 69. MS. in Bibliotheta Coll. Univers. * * 14* MS 79. inter Codices MS. Selden.
William Rede (after Bishop of Chichester) and John Eschenden jointly to carry on this study, as appears from their Treatises of the central Eclips of the Moon, and conjunction of the three superior Planets that happen'd An. 1345, and the great conjunction of Jupiter and Saturn, An. 1365. both which were calculated by William Rede, and the Prognostications added by John Eschenden: From which Eclips, and the first conjunction, he foretold the Epidemical Pestilence that followed in the year 1349. which beginning in Turky, spread all over Syria and Greece; whence it came into Italy, Spain and France, and at length into England. To these add John Somer and William Wyrester, also most eminent Astronomers; the former whereof corrected the Calendar perhaps yet more accurately than Bacon; and the latter wrote a verification of all the fix'd stars, as to their longitude and latitude, for the year 1440. with some other Astronomical matters, at the instance of his Patron Sir John Falstaff.

17. Great we see was the increase of this sort of Learning, even in those days, yet that former Ages may not carry away the whole honor; let us also make an estimate of its modern advancements; such as it received from Thomas Lydiat, formerly Fellow of New College, and Rector of Alkerton in this County, who defining a yet truer period than any of the former, of the Sun and Moons motion (without which, there could be no accurate System or Calendar of years, months and days) most happily first contrived the Octodesexcentenary Period: ipse primus, absit diio invidia; nostro seculo observavi, are his own words: Which Period, though till now not so certainly known, by Learned Antiquity was called the great year, as is manifest from Josephus his History of the Jews, where speaking of the great advantages our Forefathers had in Astronomy, he says, Πλέον ήμ Θεον αυτους έρικην; ἀπ' αυτους έρεπται, με έπιτ έρρος œιαντις, έντώσα ποντικόν έϊ μεγας œιαντις πληρήτα. i.e. that 'tis probable God gave them a longer life, that they might fully understand the Theorems of Astronomy, which they could not well do, unlefs they lived fix hundred years; for the great year, says he, is accomplish'd in that number of years.

18. Which Lydiat found to come so near the truth, that there
needed but the abatement of eight in six hundred, his true period consisting of 592 years, and that (according to Geminus) of whole years, whole months, and whole days, as a period ought to do; viz., of 592 intire solar years, 7322 entire months (whereof 218 are intercalary) 216223 entire days, and 30889 entire weeks; defining every Lunar month to consist of 29 days, \(12^h\), \(44^\circ\), \(3^\circ\), \(12''\). And the solar year of 365 days, \(5^h\), 47', 50", 16", &c. \(37^\circ\); or \(5^h\) and \(72^\circ\); or 365 days and \(\frac{1}{15}\) part of a day. So that the whole period, or 592 Lydiatian years, do anticipate so many Julian ones by five days.

19. According to this period found out in An. 1605. exceeding the Dionysian but 60 years, he calculated the middle motions of the seven Planets for the nine first periods entirely, and the tenth so far forth as it had gon in his time; (some MS. fragments of which calculations I had lately in my possession, but now disposed of to the Worshipful Dr. Lanphire, Principal of Hart-hall, carefully to be preferred amongst the rest of his writings.) And in An. 1620. viz. in the last year of the first half of his tenth period, he put it forth, with his Menologium, or reformation of the Calendar, which he opposed to the new, but confused, absurd, and false Pontifical Gregorian year, contrived by the sumptuous College of Mathematicians at Rome; and defended it against the obtractions of Joseph Scaliger, a man, 'tis true, of great Learning, but withal so confident and imperious, so abusive and assuming, that whenever he wanted Arguments for the support of his cause, he always sought revenge upon the person of his Adversary.

20. Which was manifestly the case of modest Lydiat, whom in an Epistle to Richard Thomson (his correspondent in England) he calls, the greatest monster that ever England produced; and in another to the same Thomson, the veryest fool in the whole world, and that 'twas below his dignity, nor had he leisure to write against such a Beetle. But herein (as the Reverend Dr. Heylin very well notes in another place) we must pardon Joseph; for had not scorn and contempt been part of his Essence, he had neither been a Scaliger, nor the son of Julius, who scrupled not to pass this rash cenure on the whole English Nation; that we are, Perfidii, inflati, feri, con-
The Natural History

temptores, solidi, amentes, inertes, inhospitales, immanes. In which very act yet I think he proves nothing, but that most of those Epithets rather belong to himself.

21. If it be objected that Joseph did not so far patrizare, but that he spake Honorably of some of the English, such as Wotton, Savil, Camden, Reynolds: it must be answered, That these touched not the apple of his eye, nor endeavored the ruin of his great Diana, the Julian Period, of which he conceited himself the Inventor: which yet since by an indifferent, and that a competent judge, is given to Robert Lorringer an English Bishop of Hereford, who lived 500 years before Scaligers invention. 'Tis true, he fitted it to Chronological uses; but whilst in the midst of his glorious attempts, behold him shaken by meek, and modest Lydiat, the happy Inventor of a more accurat period, whereby he so disturbed and confounded all his supputations, that (if we may believe the most Learned of the Age) he laid his angry Rival flat upon his back.

22. And so much concerning the Lydiatean Period, of which, because so much already in Print, I shall not add more, only in what years of as many of them, as have already been (which possibly may not be unacceptable to the Reader) the most considerable Era's of the world have happen'd.

Tears of the World. Tears of the Lydiatean Periods.

The Flood. 1657. 473. (3)
Birth of Isaac. 2109. 333. (4)
Exodus. 2509. 141. (5)
The Temple. 2988. 28. (6)
Empire of Nebuchadn. 3401. 441. (6)
Empire of Cyrus. 3471. 511. (6)
Empire of Alexander, the Great. 3675. 123. (7)
Empire of Jul. Cæsar. 3956. 404. (7)
Baptism of Christ. 4033. 481. (7)
The Dionyfian year of our Lord, 1620. 5624. 296. (10)
The year of our Lord, 1676. 5680. 352. (10)

23. If I descend yet lower to persons now living, we shall daily find Astronomy receiving new advancements, particularly from the Right Reverend Father in God, Seth Lord Bishop of Sarum, one of the most cordial Promoters of this undertaking; who rather embracing the opinions of Diogenes, Apollonius Myndius, of the Chaldees, and at length of Seneca; That Comets are perpetual stars, and carried about in a continued motion; than of Kepler, who thought them still produced de Novo, quickly perishing again; or of Gassendus, who held indeed they might be corpora aeterna, but yet that they always moved in straight lines; he first proposed this new Theory of them, viz. that it was much more probable they might rather be carried round in Circles or Ellipses (either including or excluding the Globe of the earth) so great, that the Comets are never visible to us, but when they come to the Perigee's of those Circles or Ellipses, and ever after invisible till they have absolved their periods in those vast Orbs, which by reason of their standing in an oblique, or perpendicular posture to the eye, he demonstrated might well seem to carry them in straight lines; all circles or ellipses so posited, projecting themselves naturally into such lines, which Theory was first proposed in a Lecture here at Oxford, and afterward set forth in the year 1653. The Right Reverend Father in God, Seth Lord Bishop of Sarum, and my very good Lord, being then Professor of Astronomy in this University.

24. In the same year, the same Right Reverend, and most accomplish'd Bishop first Geometrically demonstrated, the Copernico-Elliptical Hypothesis to be the most genuine, simple and uniform, the most easie and intelligible, answering all Phænomena without complication of motions, by Excentricies, Epicycles, or Epicyc-Epicycles. That the Excentricities of the Planets and their Apogee's according to the Ptolomaic Hypothesis, and the Aphilions according to the Copernican, might all be solved by a simple Elliptical line, was first indeed noted by Kepler, but how their proper and primary Inequalities, or Anomaliae Coaequatae, should thence be demonstrated geometrically, he profefed he knew not, and utterly despaired it would ever be done: which stirred up the Learned Israel Bullialdus to attempt the removal of this disgrace to Astronomy, which accordingly he thought he had done, finding the method of the Aphelions, and demonstrating (at least as he thought) the first Inequalities.
lities geometrically, and making Tables; calling his work Astronomiam Philolaicam.

25. But how far he came short of what he pretended, was so plainly and modestly made appear by the Reverend Bishop, in a Book which he entituled, Inquisitio in Ismaelis Bullialdi Astronomiae Philolaicae fundamenta. Edit. Oxonii, 1653. that the ingenious Bullialdus himself, sent him a Letter of thanks, and recognition of his errors. Where also he further shews, that although Bullialdus had not, and Kepler thought no man could, rightly calculate the first inequalities according to the rules of Geometry, i.e. out of the known middle motions of the Planets (or true places of the Aphelions) accurately find a priori, their true or appearing motions: That yet there were methods by which it might be done, whereof he propounded two in the same Book; and demonstrated them, which afterwards applying to all the primary Planets, he set forth both Elliptical and Circular Astronomy, shewing how the Phenomena, according to both Hypotheses, might be geometrically made out, which he called his Astronomia Geometrica, Edit. Londini, An. 1656.

26. The Elliptical Hypothesis has received yet further advancement from Mr. Edmund Hall of Queens College Oxon. a young man, for his years of prodigious skill in Astronomical matters, who, amongst many other excellent performances in that Science to be met with in our English Philosophical Transactions¹, has shewed us a direct and geometrical method for finding the Aphelions, Excentricities, and proportions of the Orbs of the primary Planets, without supposing the equality of the angle of motion at the other Focus of the Planets Ellipsis, which has been hitherto always done amongst Astronomers²: From whom I dare promise yet further improvements, he being lately gone to the Isle of St. Helen, for the more advantageous prosecution of his Astronomical studies; from whose solitary observations there, and comparative ones with Mr. Flamsted's here, Astronomy no question will receive considerable advancements.

27. To which may be added several other improvements this Science has received from that incomparable person Sir Christopher Wren, late Professor here: who before any thing of Hugenius appeared on that subject, from his constant observations of Saturn, stated

stated a Theory of that Planet; and of the Moon's Libration: He has attempted also (and perhaps by this time performed) a Selenography by measure, what we have yet of that kind being rather pictures, than accurate surveys or maps of the Moon: To this purpose he contrived a Lunar globe, representing not only the Mountains and Valleys in solid work, but the several degrees of whiteness and blackness on the surface, which if turned to the light, shews all the menstrual phases of the Moon, with the several appearances that arise from the shadows of the Hills and Vales.

28. He has made Maps of the Pleiades, and other Telescopical stars, and proposed ways to solve the great Question concerning the earths rest or motion by some small stars about the North pole; to be seen only in large and well made Telescopes: To which Instrument he has added many sorts of Rete's, Screws, and Apertures, to take in more or less light, by opening and shutting like the pupil of the eye, according as the Observer thinks fit; and has improved the manufacture of grinding good glasses. He has also made two Telescopes to open with a joint after the manner of a sector, whereby distances may be taken to half minutes, and no differences found in the same observation often repeated, the Instrument not being liable to any prejudice by warping or luxation. He has contrived and hung Quadrants, Sextants, and Radii, much better than heretofore, by which Astronomical Observations may be made more accurate and ease. Of all which ingenious and useful Inventions, there are much more full and elegant relations, in the most accurate History of the Royal Society: However, they being most, if not all of them found out here, or at least whilst their Author was Astronomy Professor in this University, I could not but mention them with relation to this place, as I shall some other matters which ow their invention to the name worthy Person.

29. And these are all the modern advancements in Astronomical matters I can at present think of, onely a late invention of one R. Holland, a teacher of Mathematicks in this City for many years, who has shewed us a way to get the Angle of Parallax of a Comet or other Phenomenon at two observations to be taken in any one station or place of the earth, and thereby the distance from the earth: whereof no more, there being a short account of the whole contrivance set forth by himself, and printed at Oxford.
30. Having done with the *Inventions* and *Improvements* that concern the *Heavens*, come we next to those belonging to the *sub-lunar World*, whereof the same Ingenious Sir Christopher Wren has furnish'd us with several; as of exquisite subtility, so of excellent use: Such as his contrivance to make *Diaries of wind* and *weather*, and of the various qualifications of the *air*, as to *beats*, *colds*, *drought*, *moiture*, and *weight*, through the whole *year*; and this in order to the *History of Seafons*: with observation, which are the most healthful or contagious to *men* or *beasts*; which, the Harbingers of *blights*, *melmews*, *sinut*, or any other accidents attending *men*, *cattle*, or *grain*; so that at length being instructed in the *causes* of these *evils*, we may the easier *prevent*, or find *remedies* for them.

31. Now that a constant observation of these qualities of the *air*, both by night and day might not be insuperable; he contrived a *Thermometer* to be its own *Register*, and a *Clock* to be annexed to a *weather-cock*, which moves a *Rundle* covered with white Paper; upon which the *Clock*, moving a black-lead *pencil*, the *observer*, by the traces of the *pencil* on the paper, may certainly know what *winds* have blown, during his *sleep* or *absence*, for 12 hours together. He has also discover'd many subtle ways for easier finding the degrees of *drought*, and *moisture*, and the gravity of the *Atmosphere*; and amongst other *Instruments*, has *Balances* (also useful for other purposes) that shew the pressure of the *air*, by their easie (I had almost said *spontaneous*) *inclinations*.

32. He has made *Instruments* whereby he has shewn the Mechanical reason of *sailing* to all *winds*; and others of *Respiration*, for straining the *breath* from thick vapors, in order to *tryal* whether the same *breath* thus purified will serve turn again. Which *Experiments*, however nice they may seem, yet being concerned about a subject so nearly related to *man*, that he always lives in it, and cannot long without it, and is well or ill according to its alterations, the minutest discoveries of its *nature* or *qualifications* ought to be valuable to us.

33. Wherein yet we have been assist'd by nothing more, than the *Pneumatick Engine*, invented here at *Oxon*: by that miracle of *Ingenuity*, the Honorable *Robert Boyle* Esq; with the concurrent help
help of that exquisite contriver, Mr. Robert Hook, commonly called the Air Pump; so different a thing from the Instrumentum Magdeburgicum, devised by Otto Gericke, an ingenious Consul of that Republick, that it can scarce be reckoned an improvement of that, but a new Engine; although it must not be denied but the Magdeburg Experiment gave occasion to its Invention. By the assistance whereof, that Noble Philosopher hath accurately examined the Elastic power, pressure, and weight; expansion and weakness thereupon, of this element; and thereby found out so many things new, relating to the height and gravity of the Atmosphere, nature of a Vacuum; Flame, and Excandescence of coals, match, firing of gun-powder; propagation of sounds, fluidity, light, freezing, respiration, &c. that to give an account of them all according to the merits of the Experiments, would be to transcribe the whole Treatise of that Honorable Author. Set forth on this subject; whither I refer the Reader for further satisfaction, and so to the rest of his Works upon several other subjects; many of his numerous inventions and improvements, wherewith he has so highly obliged the World, having been made in this place.

34. Whereof I shall mention no more (it being indeed uncertain as to most of them, which were made here, which at London, and which at other places) only the Barometer, a well known Instrument, also invented here by the same Noble Person, whereby, the gravity of the Atmosphere has been daily observed by the Reverend and Learned Dr. John Wallis, for about six years together: in all which time he found the Quick-silver in the Tube, never to ascend much above 30 inches, and never to descend much below 28, which he takes to be the whole latitude of its variation. He also observed, for most of that time, the temper of the air by a Thermometer, whereof he has still the Notes by him, which are very particular for every day.

35. Which latter instrument, though of very ancient invention, there having been one of them found by Robert de Fluctibus graphically delineated, in a MS. of 500 years antiquity at least; yet it has still received other useful advancements (beside that above mention'd) from that curious Artist Sir Christopher Wren, who finding the usual Thermometers not to give so exact a measure of the airs extension, by reason the gravity of the liquor as it

* Geof. Scoboti Magia Univers. part. 5. lib. 7. cap. 6. 1 Metaphysical Philosophy, lib. 1. cap. 2.
stands higher or lower in the Glass, weighs unequally on the air, and gives it a contraction and extension, beside what is produced by heat and cold; he therefore invented a Circular Thermometer, in which the liquor can occasion no such fallacy, it remaining continually of one height, and moving the whole instrument like a wheel on its axel 2.

36. Amongst other Aerotechnicks, here is a Clock lately contrived by the ingenious John Jones LL. B. and Fellow of Jesus College Oxon: which moves by the air, equally expressed out of bellows of a cylindrical form, falling into folds in its descent, much after the manner of Paper Lanterns: These, in place of drawing up the weights of other Clocks, are only filled with air, admitted into them at a large orifice at the top, which is stop'd up again as soon as they are full with a hollow screw, in the head whereof there is set a small brass plate, about the bigness of a silver half penny, with a hole perforated scarce so big as the smallest pins head: through this little hole the air is equally expressed by weights laid on the top of the bellows, which descending very flowly, draw a Clock-line, having a counterpoise at the other end; that turns a pulley-wheel, fastened to the arbor or axis of the hand that points to the hour: which device, though not brought to the intended perfection of the Inventor, that perhaps it may be by the help of a tumbrel or fusee, yet highly deserves mentioning, there being nothing of this nature that I can find amongst the writers of Mechanicks.

37. To which may be added, a hopeful improvement of that uncommon Hygrooscope, made of two Deal, or rather Poplar boards, mention'd in our English Philosophical Transactions 3, contrived by my ingenious Friend John Young M. A. of Magdalen Hall, who rationally concluding, that the teeth of the thin piece of brass placed across the juncture of the two boards, must needs in its passage from bearing on one side of the teeth of the pinion, to the other, upon change of weather, make a stand as it were in respect of the motion of the axel of the hand; thinks a pretty stiff firing cut on the under side, after the manner of a fine file, placed flat and not edge-ways, and bearing pretty hard upon an axel of Copper, may turn the hand upon change of weather in the punctum of reversion, without any more than a negative rest: which be-

of OXFORD-SHIRE.

ing an opinion to very rational and unlikely to fail; when brought to the text, I thought fit to propound it to the Ingenious, though the Preb would not give us leave first to experiment it ourselves. Whence I proceed,

38. To such Arts as relate to the Fire, which I have placed next, in regard we have knowledge of no other but what is Culinary, that in the concave of the Moon being only a dream of the Ancients. Amongst which, we must not forget the perpetual, at least long-lived Lamps, invented by the Right Worshipful Sir Christopher Wren; nor his Registers of Chymical Furnaces for keeping a constant heat in order to divers uses; such as imitation of Nature in the production of Fossiles, Plants, Insects; batching of Eggs, keeping the motions of Watches equal, in reference to Longitudes and Astronomical uses, and several other advantages.

39. But amongst all the Fire-works ever yet produced by the Art of Man, there is none so wonderful as that of Frier Bacon, mention’d in his Epistle ad Parisienem, where speaking of the secret works of Nature and Arts, he has these words, In omnem distantiam quam volumus possimus artificialiter, componere ignem, com-burentem ex sale Petra, & aliis; which alia, as the Reverend and Learned Dr. John Wallis saw it in a MS. Copy of the same Roger Bacon, in the hands of the Learned Dr. Ger. Langbain, late Provost of Queens College, were Sulphur, and Carbonum pulvis: concerning which, after a while he further adds: Praeter hecit (i.e. combustionem) sunt alia stupenda naturae, nam fioni velut Tonitrus, & coruscationes possunt fieri in aere, imo majore horrore, quam illa quae sunt per naturam: Nam modica materia adatta, sc. ad quantitatem unius pollicis, sonum facit horribilem & coruscationem offendit violentem, & hoc fit multis modis quibus Civitas aut Exercitus desfuatur. ---Igne exsiliante cum fragore inestimabili---Mira hecit sunt si quid secret uti adplenum in debitâ quantitate & materiâ. 

40. That is, that of Salt-peter, and other matters, viz. Sulphur, and the dust of coal, he could make fire that should burn at what distance he pleased; and further, that with the same matter he could make sounds like Thunder, and coruscations in the air more dreadful than those made by Nature: For, says he, a little of this matter rightly fitted, though not bigger than ones Thumb, makes a horrible noise, and shews a violent coruscation,

---History of the Royal Society, Part. 2. sub tum. -- In Epist. ad Parisienem, cap. 6. which
which may be ordered many ways; whereby a City or Army may be destroyed—the Fire breaking forth with an unspokeable noise—which are wonderful things, if a man knew exactly how to use them in due quantity and matter.

41. Whence 'tis plain, he either invented or knew Gun-powder, though I think we cannot allow him less than the first, till we find out an ancienter Author for it *, which if no body ever do's (as 'tis manifold odds they never will) in all probability it was invented here at Oxford, where he made the rest of his affrightening Experiments. And that out of his works, Constantinus Ancklitzzen of Friburgh, or Bertholdus Swartz, and the rest of the Improvers, in all likelihood might have their pretended Inventions, though we allow him not quite so explicit as in the Copy of the Reverend and Learned Dr. Langbain, but that as 'tis conjectured by Dr. Dee †, he somewhat concealed his Invention in the word [alius] well knowing it might be dangerously destructive to man-kind.

42. As for Water-works invented or improved in this County, some concern profit, and others only pleaure. Of the first sort, is an Instrument of Sir Christopher Wren's, that measures the quantity of Rain that falls, which as soon, as 'tis full, empties it self, so that at the years end 'tis easie to compute how much has fallen on such a quantity of ground for all that time; and this he contrived in order to the discovery of the Theory of Springs, exhalations, &c. And secondly, other Instruments whereby he has shewn the Geometrical Mechanic of Rowing, viz. that the Oar moves upon its Thoulie, as a vellis on a yielding fulcrum, and found out what degree of impediment the expansion of a body to be moved in a liquid medium ordinarily produces in all proportions, with several other matters in order for laying down the Geometry of failing, swimming, rowing, and the fabric of Ships.

43. Hither also belong the Locks and Turn-pikes made upon the River Isis, the 21 of King James, when it was made navigable from Oxford to Bercot, which are absolutely necessary for that purpose, on shallow rivers that have also great falls, to keep up the water, and give the vessels an easie descent. For the first where-

* Baconus facis concepis, Anno 1292, near 100 years before any of the other pretended Inventions.
† Vid. Guid. Fusciorii rer. memorab. recens Invenc. part. 2. tit. 18.
‡ Vid. Steph. Forcastulini I.C. de Gallo-rum Imperia & Philooph. lib. 4. sub fuen. 
§ Dr. Dee's Annotations in Epist. ad Parisiiensem.
© History of the Royal Society, Part. 2. sub fuen.
of Oxfordshire.

of, provided the fall of water be not great, a Lock will suffice; which is made up only of bars of wood called Rimers, set perpendicularly to the bottom of the passage (which are more or less according to its breadth) and Lock-gates put down between every two of them, or boards put athwart them, which will keep a head of water as well as the Turn-pike for the passage of a Barge, but must be all pulled up at its arrival, and the water let go till there is an abatement of the fall, before the boat may pass either down or upwards; which, with the stream, is not without violent precipitation; and against it, at many places, nor without the help of a Captain at Land; and sometimes neither of them without imminent danger.

44. But where the declivity of the Channel, and fall of water is so great, that few barges could live in the passage of them; there we have Turn-pikes, whereof there are three between Oxford and Bercot; one at Iffley, another at Sanford, and a third at Culham in the Swift-ditch, which was cut at that time when the River was made navigable; and are all thus contrived. First, there are placed a great pair of Folding doors, or Flood-gates of Timber cross the river, that open against the stream and shut with it, not so as to come even in a straight line, but in an obtuse angle; the better to resist and bear the weight of the water, which by how much the greater it is, by so much the closer are the gates pressed; in each of which Flood-gates there is a sluice to let the water through at pleasure, without opening the gates themselves. Within these, there is a large square taken out of the river, built up at each side with Free-stone, big enough to receive the largest barge afloat; and at the other end another pair of Flood-gates, opening, and shutting, and having sluices like the former. Which is the whole Fabrick of a Turn-pike.

45. At the uppermost pair of these gates the water is stop'd, which raises it in the river above, and gives the Vessels passage over the shallows, which when come to the Turn-pikes, the Sluces are first opened, and the water let in to the square or inclosed space between the two pair of gates, where it must necessarily rise (the lower gates being shut) till at length it comes to be level with the surface of the river above: when this is done, the upper stream then making no such pressure on the gates as before, they are easily opened by two or three men, and the Vessels let in

Gg one
one at a time; which done, they shut those upper gates and flues as before: Then they open the flues of the gates at the other end of the Turn-pike, and let the water by degrees out of the inclosed square till it is sunk down, and the Vessel with it, level with the river below, and then open the gates themselves, and let the Vessel out; the upper gates all the while being drove too, and kept so fast by the water above, that little of it can follow. And thus the boats go down stream.

46. But when they return, they are first let into the inclosed space (where the water stands constantly level with that of the lower channel) at the lower gates, which as soon as shut again, the flues are opened at the uppermost gates, and the water let in, till it rises with the boat upon it, to be equal with that of the river above: this done, the upper gates are easily opened as before, there being no pressure upon them, and the boat let out. So that notwithstanding the Channel has much steeper descents where these Turn-pikes are set, than at any of the Locks, yet the boats pass at these with much more ease and safety. Notwithstanding these provisions, the River Thames is not made so perfectly Navigable to Oxford, but that in dry times, barges do sometimes lie aground three weeks, or a month, or more, as we have had sad experience this last Summer; which in great measure no doubt might be prevented, were there a convenient number of Locks, or Holds for water, made in the River Cherwell above Oxford, to let down flaves as occasion should serve; and so again out of the River Kennet near Reading, the Loddon, &c.

47. Not impertinent hereunto is a contrivance for Fish-ponds, that I met with at the Right Worshipful Sir Philip Harcourt's at Stanton Harcourt, where the stews not only feed one another, as the Ponds of the Right Honorable the Earl of Clarendon at Cumn- bury, Sir Timothy Tyrrells at Shot-over-Forrest, and the worshipful Brome Whorwoods at Holton, &c. and may be sewed by letting the water of the upper Ponds out into the lower; but by a side Ditch cut along by them, and Slues out of each, may be any of them emptied, without letting the water into, or giving the least disturbance to any of the rest: which being a convenience that I never met with before, and perhaps unknown to many, I thought good to mention.

48. Amongst
48. Amongst the Water-works of Pleasure, we must not forget an Engine contrived by the Right Reverend Father in God, John Wilkins, late Lord Bishop of Chester, when he was Warden of Wadham College, though long since taken thence; whereby, of but few gallons of water forced through a narrow Fissure, he could raise a mist in his Garden, wherein a person placed at a due distance between the Sun and the mist, might see an exquisite Rainbow in all its proper colours: which distance I conceive was the fame with that assigned by Des Cartes, viz. where the Eye of the Beholder is placed in an angle of 42 degrees, made by the decussation of the line of Vision, and the rays of the Sun; and the Fissure such another as in his Diagram. But what kind of Instrument it was that forced the water, I dare not venture to relate, the description given of it being but lame and imperfect.

49. Nor can I pass by unmentioned, a Clock that I met with at Hanwell, at the House of the Right worshipful Sir Anthony Cope, that moves by water, and shews the hours, by the rise of a new guided Sun for every hour, moving in a small Hemisphere of wood, each carrying in their Centres the number of some hour depicted black; as suppose of one a clock, which ascending half way to the Zenith of the arch, shews it a quarter past one, at the Zenith half hour; whence descending again half way towards the Horizon, three quarters past one; and at last abscending under it, there presently arises another guided Sun above the Horizon at the other side of the arch, carrying in its center the figure two: and so of the rest. Which ingenious device, though taken out of Bettinus, who calls it, aquarii Automati ingeniosissimi horariam operationem: yet being since improved by that ingenious Person, and applied to other uses, particularly of a Pseudo-perpetual motion made by the descent of several guilt bullets upon an indented declivity, successively delivered by a wheel much of the same fabric with the Tymanum of the Water-clock, so that they seem still the same: I could not but in justice take notice of it.

50. There are some other Water-works at the same Sir Anthony Copes, in a House of diversion built in a small Island in one of the Fish-ponds, Eastward of his house, where a ball is toss'd by a column of water, and artificial flowers descend at pleasure; within which they can yet so place a candle, that though one would think it must...
needs be overwhelmed with water, it shall not be extinguisht, &c. But the Water-works that surpass all others of the County, are those of Enston, at the Rock, first discovered by Tho. Buftell Esq; about 4 or 5 and forty years since, who cleansing the Spring then called Goldwell, though quite over-grown with bryars and bushes, to place a Cifern for his own drinking, met with a Rock so wonderfully contrived by Nature her self, that he thought it worthy of all imaginable advancement by Art.

51. Whereupon he made Ciferns, and laid divers Pipes between the Rocks, and built a house over them, containing one fair room for banqueting, and several other small Clofets for divers uses, beside the rooms above; which when finifh'd in the year 1636. together with the Rock, Grove, Walks, and all other the appurtenances, were all on the 23d of August, by the said Tho. Buftel Esq; presented to the then Queens most excellent Majesty, who in company with the King himself, was graciously pleased to honor the Rock not only with her Royal Prefence, but commanded the fame to be called after her own Princeely Name, HENRIETTA: At which time as they were entring it, there arose a Hermite out of the ground, and entertain'd them with a Speech; returning again in the clofe down to his peaceful Urn. Then was the Rock presented in a Song answer'd by an Echo, and after that a banquet presented also in a Sonnet, within the Pillar of the Table; with some other Songs, all set by Symon Iue.

52. Which structure, with all the Ingenious Contrivances about it, continued in a flourishing condition for some few years, till the late unhappy Wars coming on, it became wholly neglect-ed, and so sensibly decayed, till at last it lapsed (being next door to ruine) into the Hands of the Right Honorable and truly Noble Lord, Edward Henry Earl of Lichfield, Lord of the foi; who in the year 1674. not only repaired the broken Ciferns and Pipes, but made a fair addition to it, in a small Island situate in the pas-sage of a Rivulet, just before the building set over the Rock; which though the laft in erection, is yet the first thing that presents itself in the exterior Prospect of the whole work, Tab. 11. where-in the Figures,

1. 1. Shew the water of the Rivulet.
2. 2. The Island in the middle of it,
3. 3. the
3. The Pales round it standing on a stone wall.
4. An artificial Rock erected in the middle of the Island, covered with living aqueous Plants.
5. The Keeper of the Water-works that turns the Cocks.
6. A Canopy of water cast over the Rock, by
7. an Instrument of Brass for that purpose.
8. A Column of water rising about 14 foot, designed to toss a Ball.

The streams of water from about 30 Pipes set round the Rock, that water the whole Island, and progressively wet any persons within it; which most people striving to avoid, get behind the Man that turns the Cocks, whom he wets with

9. a spout of water that he lets fly over his head; or else if they endeavor to run out of the Island over the bridge, with

10. 11. 12. which are two other Spouts, whereof that represented at a 11, strikes the legs, and that at 12 the reins of the back.

13. The Bridge over the water lying on two trestles.
14. The steps leading into the Grove, and toward the House, where you pass by

15. a Table of black Marble.
16. A Cistern of stone, with five spouts of water issuing out of a ball of brasses, in which a small Spaniel hunts a Duck, both diving after one another, and having their motion from the water.

17. The way up into the banqueting-room over the Rock, and other Closets, &c.
18. The passage between the Cistern and Building.
19. The iron grate that gives light to the Grot within.
20. The passage down to the Grot.
21. The windows of the Banqueting-room.
22. The Grove and Walks behind and on each end of the Building.

53. Being now come down into the Grot by the passage 18, Tab. 11, and landing at the bottom of the Stairs, Tab. 12. a, on a large half pace before it bb. The Rock presents it self made up of large craggy stones with great cavities between them, ccc &c. out of which flows water perpetually night and day, dashing against the Rocks below, and that in great plenty in the dryest Seafons, though
though fed only with a single spring rising in a piece of ground call'd Ramfall, between Enston and Ludston. The natural Rock is about 10 foot high, and so many in bredth; some few shelves of lead d d, and the top stones only having been added (easily to be distinguished by their dryness) which have advanced it in all about 14 foot high.

54. In the half pace just before the Compartment e e e, upon turning one of the rocks f h, rises a chequer hedge of water, as they call it, g g g g; and upon turning another, the two side columns of water h h, which rise not above the height of the natural rock; and of a third, the middle column i, which ascending into the turn of the Arch, and returning not again, is received into hidden pipes provided for that purpose: Into one whereof, terminated in a very small Cistern of water behind a stone of the rock, and having a mouth and Languet just above its surface, the air being forced into it by the approaches of the water, a noise is made near resembling the notes of a Nightingale: But when that pipe is filled there is then no more singing, till the water has past away by another pipe in the lower part of the rock, which when almost done, there is heard a noise somwhat like the sound of a drum, performed by the rushing in of air into the hollow of the pipe, which is large, and of copper, to supply the place of the water now almost gone out; which done, the Nightingale may be made to sing again.

55. From the turned roof of the rock, by help of the brass instrument k, and turn of a cock in one of the Closets above, they can let down a canopy of water l l; from the top also they can throw arched spouts of water crossing one another, and dashing against the walls, opposite to those of their rise; as at m n and o p; and others that rise out, and enter in again to the roof, at some distance, never falling down at all at q r and s t. Which falls of water may be also delicately seen, turning the back upon them as well as looking forward, by help of a Looking-glass placed in the wall opposite to them, which could not be possibly represented in the Cut. And some of these waters (I must not say which) being often used by way of spout to wet the Visitants of the Grot, that they might not avoid it by running up the Stairs, and so out into the Grove, by turning a cock in another of the Closets, they can let fall water so plentifully in the door u u, that most people rather
other chuse to stay where they are, than pass through it; which is all concerning the inner Prospect of the Rock; what remains being only a representation of the Arch of stone w w built over it, with two Niches x y one of each side, and the grate z at the top, through which they look down out of the Banqueting-room into the Grot. Of which no more, but that behind the Rock there is a Cellar for keeping Liquors cool, or placing Musick, to surprise the Auditors; and behind that the Receivers of water to supply the Pipes, &c.

56. To these succeed the Arts relating to Earths, which either respect the Tillage, or Formation of them. How many sorts of Soils I met with in Oxfordshire, viz. Clay, Chalk, and others from their different mixtures called Maum, Red-land, Sour-ground, Stone-brash, Stony, Sandy, and Gravelly, were enumerated amongst Earths, Chap. 3. It remains that we here give a particular account, by what Arts they are tilled to the best advantage. And first of Clay,

57. Which if kind for Wheat, as most of it is, hath its first tillage about the beginning of May; or as soon as Barly Season is over, and is called the Fallow, which they sometimes make by a casting tillth, i.e. beginning, at the out sides of the Lands, and laying the Earths from the ridge at the top. After this, some short time before the second tillth, which they call stirring, which is usually performed about the latter end of June, or beginning of July, they give this Land its manure; which if Horse-dung or Sheeps-dung, or any other from the Home-fall, or from the Mixen in the Field, is brought and spread on the Land just before this second ploughing: But if it be folded (which is an excellent manure for this Land, and seldom fails sending a Crop accordingly if the Land be in tillage) they do it either in Winter before the fallow, or in Summer after it is fallowed. And these are the manures of Clay Land in the greatest part of Oxfordshire, only in and near the Chiltern; where beside these, it is much enriched by a soft mellow Chalk that they dig from underneath it: when it is stirred it lies again till the time of sowing Wheat, except in a moist dripping year, when running to thistles and other weeds, they sometimes give it a second stirring, before the last for sowing.

58. All which tillages they are very careful to give it as dry as may be, ridging it up twice or thrice for every casting tillth (i.e. in their stirring, and for sowing, beginning at the top of the Land and
and laying the Earth (still upwards to the ridge) by which means both Land and Corn lie dryer, warmer, and healthier, and the succeeding Crop becomes more free from weeds. After it is thus prepared, they sow it with Wheat, which is its proper grain; and if it be a strong stiff Clay, with that they call Cone-wheat: and the next year after (it being accounted advantageous in all tillage to change the grain) with Beans; and then ploughing in the bean-brush at All-Saints, the next year with Barly; and amongst the several sorts of that grain, if the Land be rank, with that they call sprat-Barly; and then the fourth year it lies fallow, when they give it Summer tith again, and sow it with Winter Corn as before. But at most places where their Land is cast into three Fields, it lies fallow in course every third year, and is sown but two: the first with Wheat, if the Land be good, but if mean with Miscellan, and the other with Barly and Pulfe promiscuously. And at some places where it lies out of their hitching, i.e. their Land for Pulfe, they sow it but every second year, and there usually two Crops Wheat, and the third Barly, always being careful to lay it up by ridging against winter; Clay Lands requiring to be kept high, and to lie warm and dry; still allowing for Wheat and Barly three plowings, and sometimes four, but for other grains seldom more than one. When at any time they sow Peas on this Land, the best Husbandmen will chuse the Vale-gray as most proper for it; and if Vetches, the Gore or Pebble-vetch: But if so cold a weeping Clay that unfit for these, then they improve it with Ray-grafs.

59. As for the Chalk-lands of the Chiltern-hills, though it requires not to be laid in ridges in respect of dryness, yet of warmth it doth: when designed for Wheat, which is but seldom, they give it the same tillage with Clay, only laying it in four or six furrow’d Lands, and foiling it with the best mould, or dung but half rotten, to keep it from binding, which are its most proper manures; and so for common Barly and winter Vetches, with which it is much more frequently sown, these being found the more suitable grains. But if it be of that poorest sort they call white-land, nothing is so proper as ray-grafs mixt with Non-fuch, or Melilot Trefoil, according as prescribed in Chap. 6. § 33.

60. If the Land be of that sort they call Maumy, consisting of a mixture of White-clay and Chalk, and somewhat of Sand, which causes it to work so short if any thing dry, it is commonly sown with
with all sorts of Wheat, Miscellan, Barly, &c. having the same tillage, and requiring to be kept high, and to lie dry and warm as the Clay doth, only its most proper manure is the rottenest dung, and as they sow Beans next after Wheat in clay grounds, in this they judge Peas a more agreeable grain, and take care in their seed-time that the weather be fair, and setled; for if there happen but a smart shower presently after they have sown, it will bind so fast, that the seed in great part will be utterly lost; whereas if they have but one or two dry nights, all succeeds well enough.

61. If Red-land, whereof there are some quantities in the North and West of Oxford-shire, it must have its tillage as soon in the year as possibly may be, before the clay, where they are in competition, because it will not endure the scorching tillage that clay will do, and therefore must have it before the Sun get to near the Crab: if it be moist when fallowed, so it be not too wet, it is the better. This never requires a double stirring, nor must be made too fine and light, for then it runs to May-weed, or Mathern, as they call it; yet the manure for clay does very well with it, but the mixt manure of Horse-dung and Cow-dung together, they say does best of any: Nor is the Sheep-fold amiss either Winter or Summer, which must all be applied before stirring, and ploughed in; if for wheat, about the latter end of July, or beginning of August; if for barley, later in the year, as the time and season gives leave. This Land, like clay, bears wheat, miscellan, barley, and peas, in their order very well, and lies fallow every other year, where it falls out of their hitching.

62. There is another sort of ground in this County which they call Sour-land, which must have its tilth according to its state and condition when they set about it; if it have a strong swarth on it, then they cast to give it a fallow, when the Sun is pretty well enter'd Cancer; and this they call a scalding-fallow, which kills the grass roots, and makes the Land fine: But if it be light, and as they term it, hath little skin on the back, they either leave it for cooler tillage, or plough it early in the year as soon as their clay is fallowed, and then there will spring some stirring-grass that will keep it from scorching in the Summer: for if they suffer it to be scorched when it is light before, all their Art and Manure will never procure a good Crop of it.
63. The Sheep-fold is good for this Land winter and summer, they manure it also with the Dung-cart, if near home, before the stirring; but Pigeons dung is the most proper for this sort of soil, because it is for the most part very cold Land, and so is Mault-dust in a larger quantity, both sown with the winter-corn and ploughed in with it, for then it lies warm at the roots of the Corn all winter, and corrects the crudities of the rains and frosts, makes the Corn cover the ground sooner than ordinary, and holds the moisture of the Spring longer with it; and in short (if thus ordered) brings a certain Crop. It must not be stirred or sown very wet, for then it proves uneasie both for Man and Beast, nor will it be kind for Corn, it being then very hard to cover it with the barrows. It is a good Land for wheat or miscellan, when it is fine, especially if in condition for a scalding fallow, and accordingly is sown with that and barley by turns to change the grain; and when it falls in a Peas quarter, seldom fails of a good burden, though sometimes it doth not kid very well, which yet possibly may be prevented by sowing the Cotswold Pea, which I guess the most agreeable to this sort of ground. But if too wet for these, the rath-ripe Vetch is fittest for it.

64. In some parts of the County they have another sort of Land they call Stone-brafs, consisting of a light lean Earth and a small Rubble-stone, or else of that and four ground mixt together, which are also tilled according to their present condition; for if they be grasie, which they otherwise call swardy, they fallow them pretty late, but not so hot and scorching as four ground, because they will not bear such tillage: But if they be scary, as they word it, i.e. have no skin or sward upon them, they either fold them in winter, and the sheeps dung with addition of some hay seeds, will help them to get grasie; or else they lay upon them in the beginning of the spring, old thatch or straw, or the most strawy part of the dung-hill, earth out of ditches, the shovellings of a dirty Court, or the like, which spread thin will affist the gras in its growth; which must necessarily be had, for they hold it (in some parts of the County at least) for a general Rule, that if these sorts of Land have not sward on them before they are fallowed, they will by no means bring a kind Crop, but great store of Mony-wort, May-weed, &c.

65. This done in September, October, November, and sometimes in
in December, they fallow them as their swards direct, and if in either of the two last months, are called Winter-fallows, and are never stirred at all, but sowed with Barly upon the second earth in the beginning of sowing, because then they work most kindly, and will bear cold weather better than when more finely tilled. These Lands will also bear Wheat and Miscellan indifferently well in a kind year, but not so well as clay, four-ground, or red-land; but they bear a fine round barly and thin skin’d, especially if they be kept in heart: They lie every other year fallow (as other Lands) except where they fall among the Peas quarter, and there after Peas they are sown with Barly, and lie but once in four years. These are sown also many times with Dills or Lentils, and when quite worn out, or so poor that they will bear nothing else to advantage, they are yet fit for Ray-grasses mixt with Trefoil, as prescribed above in the Chapter of Plants.

66. There is a sort of tillage they somtimes use on these Lands in the spring time, which they call streak-fallowing; the manner is, to plough one furrow and leave one, so that the Land is but half of it ploughed, each ploughed furrow lying on that which is not so: when it is stirred it is then clean ploughed, and laid so smooth, that it will come at sowing time to be as plain as before. This is done when these Lands are not swardy enough to bear clean tillage, nor callow or light enough to lie to get sward, the intent is to keep the Sun from scorching them too much: But in most places they think this way of tillage wears their Land too frail, and therefore seldom use it.

67. As for stony Land, whereof there is but little can be properly so called but in the Chiltern Country, they give it for Wheat, Peas, and Barly, much the same tillage and manure, they do Clay in other places, adding the advantage of chalking it, which they have not elsewhere for their clay grounds, by which they much enrich it for some years, so that it bears excellent wheat, barley, peas; of which last those they call Hampshire-kids, if the Land be new chalkt, are counted most agreeable; where by the way let it be noted, that I said but for some years, for when once the manure by chalk is worn out, the Land is scarce recoverable by any other, whence ’tis Proverbial here, as well as some other parts of England, That chalkt Land makes a rich Father but a poor Son, thereby intimating the ruin of the Land in the end, it becoming
at last only fit for Ray-grass, mixt with Trefoil as above.

68. Lastly, their sandy and gravelly light ground, has also much the same tillage for wheat and barley, as clay, etc. only they require many times but two ploughings, especially if for wheat, except the fallow be run much to weeds, and then indeed they sometimes afford it a stirring, else none at all. Its most agreeable grains are, white, red, and mixt Lammas wheats, and miscellan, i.e. wheat and rye together, and then after a years fallow, common or rathe-ripe barley: so that it generally lies still every other year, it being unfit for birching; i.e. Beans and Peas, though they sometimes sow it with winter Vetches; and if ever with Peas, the small rathe-ripes are accounted the best: Its most agreeable manure is of straw, from the Close or Mixen half rotten, which keeps it open, and suffers it not to bind too much, where subject to it; but if otherwise, the rottenest dung is the best.

69. Whereof, as upon all other Lands before mention'd, they lay about 12 loads upon a common Field acre, i.e. about 20 upon a Statute acre; but I find the business of manuring Land to have a great latitude. Men doing it here many times not according to their judgment, but according to the quantities they have, so that where the quantities of manure are but small and the tillage is great, the case is much otherwise, than where both tillage and manure are in a contrary condition. But however the case stand, I find this a general Rule amongst them, that they always soil that Land first and best, which is to bear three Crops; one on the tillage, another of beans and peas, and a third of barley, on the beans or peas brush; all which depend upon the single manure given it when it lay fallow for wheat: though I have known this order frequently inverted by the best Husbandmen on their richest Lands, sowing barley first, then peas or beans, and their wheat last, for which they allege this very good reason, That wheat following the dung Cart on their best Land, is the more liable to smut.

70. And so much for the ordinary Manures of this County, there being two others yet behind, viz. Chippings of Stone, and woolen rags, nor altogether so common, which I have therefore thought fit to consider apart; the first whereof I met with at Hornton near Banbury, where the chippings of the stone they hew at their Quarry, proves a very good manure for their Ground thereabout, and is accordingly made use of, by reason no doubt of a salt that stone holds
holds, which being dissolved by the weather, is imbied by the Earth, as hinted before in Chap. 4. of this Essay.

71. The 2d fort I first observ'd about Watlington, and the two Britwels, where they strew'd them on their Land with good success; & I have heard since of several other places where they do the same. To this purpose they purchase Taylers shreds, which yet retaining something of the salt of the Fulling-earth with which they were dreft, do well enough; but I judge them not so good as other old rags first worn by men and women, which must needs beside be very well fated with urinous salts, contracted from the sweat and continual perspiration attending their Bodies. And in this Opinion I am confirmed by Sandi. Sanctorius, who is positive, that our insensible evacuations, transcend all our sensible ones put together, to that excess, that of eight pounds weight of meat and drink, be taken by a man in one day, has insensible transpirations use to amount to five. Now if so, our clothes must needs be so filled with a well rectified salt, left behind in the percolation of the steams of our bodies, that there can be nothing more rational, if well considered, then that they should be a very fit manure for Land, when unfit for other uses.

72. As to the quantities of Corn sown on the statute Acre, they differ much in proportion to the richness or meanness of the land; about two bushels of wheat and vetches, two bushels and a quarter of barley, oats, and peas, and a quarter of beans suflicing the poorer; whereas the richer Land will take up three bushels or more of wheat or vetches, three bushels and a quarter of barley, oats, peas, and sometimes six bushels of beans. Yet I have known some able Husbandmen afford more Seed to their poor than rich Land, giving this reason, that the Seed in the rich does tillar, i.e. sprout into several blades and spread on the ground, whereas on the poor Land its sprouts come all single, which therefore, say they, requires the more seed.

73. In the choice of their seed they have a double respect, first to the grain it self, and secondly to the land it grew on. As to the first, they take care that it be clear of all manner of seeds; that it be hand- or round Corn, of an equal size, which some of them call Even shooting Corn, or well breasted; such Corn being for the most part full of kernel; and the likeliest to give strong roots.

And in respect of the soil, they constantly choose Corn that grew on land of a quite different nature from that it is to be sown on; but in general, they desire it from land that is well in heart, and rich in its kind. If they are to sow wheat upon tillage, they choose wheat sown before upon bean stubs, and when they sow upon peas or bean stubs, wheat sown before on tillage; for Clay ground they have their seed from Red-land or Chalk, & vice verfa; for the other soils, that from Clay is esteemed the best, though that from Red-land is little inferior; for barley they count that best which comes of new broken land; and for the rest, none so good as those that come from the richest soils.

74. Before they sow, if the place be subject to the annoyances of Smutting, Meldews, Birds, &c. they take care to prevent them either in the preparing or choice of their grain. Against smutting they both brine and lime their Corn, some making their brine of urin and salt; or else sow red-straw'd wheat, which is the least subject to it of any. To prevent meldews, some sow pretty early, judging Corn most subject to that annoyance when sown late; or else make choice of the long bearded Corn, that being the least subject of any wheat yet known to the inconveniences of meldews; and of being eaten by Birds, and therefore also fittest to be sown in small inclosures, as noted before in the sixth chapter.

75. In Sowing they have their several methods, viz. the single Cast, the double Cast; and as they call it about Burford, the Hackney bridle, or riding Cast. The single Cast sows a Land at one bout; the double Cast is twice in a place, at two different bouts, viz. once from furrow to ridge, and afterwards from ridge to furrow. The Hackney bridle is two casts on a Land at one time, and but once about, though I find these two latter somtimes confounded, their names being interchangably applied in different parts of the County. The first way is seldom used amongst them, only by the ancientest Seeds-men; the second is their usual and most certain way; the last, though the newest fashion, is but seldom used yet, though some have tryed it with good success, and perhaps may hereafter bring it more in practice, it having more speed than the double Cast to recommend it to use. They have also a way of sowing in the Chiltern Country, which is called sowing Hentings, which is done before the Plough, the Corn being cast in a straight line just
just where the plough must come, and is presently ploughed in. By this way of sowing they think they save much seed and other charge, a dexterous Boy being as capable of sowing this way out of his hat, as the most judicious Seeds-man. But of this way more hereafter, when I come into Buckingham-shire.

76. Thus having run through, the Tillage, Manures, Quantities and choice of Seed, and the several ways of sowing the Soils of this County, I proceed to the Instruments used in their tillage: Amongst which, the Plough being the best, because the most useful Engine in the World, deserves the first place; of which there are two sorts used in Oxford-shire, the Foot, and Wheel-plough; whereof the first is used in deep and Clay Lands, being accordingly fitted with a broad fin share, and the Horses going always in a string and keeping the furrow, to avoid poaching the Land; and the second in the lighter and stony Land, the Horses either going in a string, or two a breast, according as thought most suitable to the tillage in hand: This Plough when used in stony Land, is armed with a round pointed share, having also near the chep of the Plough a small fin to cut the roots of the grass, for in this Land the broad fin jumps out of the ground. The foot plough does best at the benting, i.e. ending of a Land, it going close up to a hedge, and not being subject to over-throw; whereas the wheel plough, if care and discretion do not meet in the holder, is apt to over-throw there, the Land being ridged; but goes much more light-som and easie for the Horses than the foot plough doth, which is the sum of the Conveniencies and Inconveniencies of both.

77. After Ploughing and Sowing, they cover their Corn with Harrows, whereof some have 4, 5, or 6 bulls, or shares apiece, each of them armed with five tines, and of a square form as at most other places. But at Whitfield, near Sir Thomas Tippings, I saw a great weighty triangular Harrow, whose tines stood not in rows after the manner of others, its use being in ground much subject to Quitch-grafs, whose roots it seems continually passing between the tines of other Harrows, are not so easily dragged forth by them, as this, whose tines stand not in rows, and is drawn with one of the Angles fore-most, after the manner of a Wedge: Yet I could not find it answer'd expectation so well as to obtain in other places, most thinking the great square Bull harrow, drawn by the second

---

*On light Land some count the treading of double Cattle advantageous to it.*
bull on the near side of the harrow, to take the Grass much better than that.

78. But the worst ground to harrow of all others is new broken Land, the parts of its furrows being commonly so fast knit together by the roots of the grass, that though great charge and trouble be afforded in the harrowing, yet after all it will not so disperse the Corn, but that it will come up as it fell, thick and in ranks between the furrows, and scarce any where else. To prevent these inconveniencies, the Ingenious Mr. Sacheverel, late of Bolfcot, deceafed, contrived a way of bowing the earth from the turf as soon as a little dried, thereby first laying his ground even and then sowing it; by which means his seed not only fell and came up equally disperse in all parts alike, but he found that a quantity considerably less, did this way serve the turn. Which Experiment he often made with good approbation, the charge of bowing not exceeding that of harrowing, which without it must be great, whereas after it, one cross tine covers the Corn well enough.

79. After harrowing, if it hath been so dry a time, that the ground has risen in clods that cannot be broken with harrows, they commonly do it with a beetle, or big stick: But a much quicker way is that I met with about Bisseter by a weighty Roll, not cut round, but octangular, the edges whereof meeting with the clods, would break them effectually, and with great expedition. I was shewed also at Bolfcot another uncommon Roll, invented by the same Mr. Sacheverel above-mentioned, cut neither smooth nor to angles, but notched deep and pretty broad, after the manner of a Teffella or Lattice, so that the protuberant parts remained almost as big as the foot of a Horse, by which being large and weighty, he could so firmly press his light Land subject to Quich-grafs and other weeds, and so settle the roots of the Corn, that it would come up even and well; whereas if it had been left hollow it would certainly have been choked, and came to little; He asserted, that it also excelled a smooth Roll, especially if the Season proved dry and windy, in that, when a Field is rolled smooth, the wind is apt to blow the Earth from the Corn, whereas by this the ground is laid so uneven and full of holes, like Chequer-work, that what the wind blows from the ridges, still falls into the hollows between them, and on the contrary gives the Corn the better root.

80. I have
80. I have heard of another sort of Roll, of a large diameter, and weighty, yet the whole length with edged plates of steel, prominent from the body of the Roll about an inch and half; thus contrived for the quicker cutting of turf, which drawn first one way, and cross again at right angles, cuts the turf into squares, in bigness proportional to the distance of the edged plates on the Roll, requiring no farther trouble afterward, then to be pared off the ground with a turfing Spade, which seems to promise well for the cutting out of Trenches, Drains, &c. But this I have not seen, nor has it that I know of, been yet experimented by the ingenious Inventor: However, I thought fit to offer it to the consideration of Improvers, and the rather because it affords me a smooth transition from the consideration of the Arable, to the Meddow and Pasture Lands.

81. For the Meddow grounds of this County, as they are numerous, so they are fertile beyond all preference, for they need no other compost to be laid on them, than what the Floods spontaneously give them, and therefore the Reader must not expect any methods or rules concerning that affair here: Nor concerning the remedies of annoyances, such as Sour-grasses, Mosses, Rushes, Sedges, &c. for I find none of our meddows much troubled with them. As for their Up-lands, when they prepare them for grass, they make them as rich as they can with their most suitable soils, and lay them also dry to keep them from Rushes and Sedges; if any thing boggy, they usually trench them; but that proves not sufficient, for the trenches of boggy grounds will swell, and fill up of themselves.

82. To prevent which inconvenience, I know an ingenious Husbandman, that having dug his trenches about a yard deep and two foot over, first laid at the bottom green Black-thorn bushes, and on them a stratum of large round stones, or at least such as would not lie close; and over them again, another stratum of Black-thorn, and upon them straw, to keep the dirt from falling in between, and filling them up: by which means he kept his trench open, and procured so constant and durable a drain, that the land is since sunk a foot or 18 inches, and become firm enough to support carriages.

83. As for the Grasses sown in this County, I have little more to add concerning them, but what was said before in the Chapter
of Plants, only that it has been found most agreeable that Sanét-join, Ray-grafs, &c. be not sown presently after the Barley, Oats, or whatever other Grain it be sowed with, but rather after the Corn is come pretty high, so that it may shelter the seed from the heat of the Sun, which, as is apprehended at least, is sometimes prejudicial. And that in the Chiltern Country, after they have eaten off their Ray-grafs or Sanét-join, they find it advantageous to fold it with Sheep, as other Corn-lands: which I thought good to note, it being, as I am informed, but lately practised.

84. Amongst Arts that concern formation of Earths, I shall not mention the making of Pots at Marsh-Balden, and Nunhem-Courtney; nor of Tobacco-pipes of the White-earth of Shot-over, since those places are now deserted. Nor indeed was there, that I ever heard of, any thing extraordinary performed during the working those Earths, nor is there now of a very good Tobacco-pipe Clay found in the Parish of Horsham, since the Printing of the third Chapter of this History. Let it suffice for things of this nature, that the ingenious John Dwight, M. A. of Christ Church College, Oxon, hath discovered the mystery of the stone or Cologne Wares (such as D’Alva Bottles, Jugs, Noggins) heretofore made only in Germany, and by the Dutch brought over into England in great quantities, and hath set up a manufacture of the same, which (by methods and contrivances of his own, altogether unlike those used by the Germans) in three or four years time he hath brought it to a greater perfection than it has attained where it hath been used for many Ages, insomuch that the Company of Glass-sellers, London, who are the dealers for that commodity, have contrasted with the Inventor to buy only of his English manufacture, and refuse the foreign.

85. He hath discovered also the mystery of the Hessian wares; and makes Vessels for reteining the penetrating Salts and Spirits of the Chymists, more serviceable than were ever made in England, or imported from Germany itself.

86. And hath found out ways to make an Earth white and transparent as Porcellane, and not distinguishable from it by the Eye, or by Experiments that have been purposely made to try wherein they disagree. To this Earth he hath added the colours that are usual in the colour'd China-ware, and divers others not seen before. The skill that hath been wanting to set up a manufacture
Of OXFORD-SHIRE.

Sure of this transparent Earthen-ware in England, like that of China, is the glazing of the white Earth, which hath much puzzle'd the Projector, but now that difficulty also is in great measure overcome.

87. He hath also caus'd to be modelled Statues or Figures of the said transparent Earth (a thing not done elsewhere, for China affords us only imperfect mouldings) which he hath diversified with great variety of colours, making them of the colours of Iron, Copper, Brass, and party-colour'd, as some Achat-stones. The considerations that induced him to this attempt, were the Duration of this hard burnt Earth much above brass, or marble, against all Air and Weather; and the softness of the matter to be modelled, which makes it capable of more curious work, than stones that are wrought with chisels, or metals that are cast. In short, he has so far advanced the Art Plastick, that 'tis dubious whether any man since Prometheus have excelled him, not excepting the famous Damophilus, and Gorgafus of Pliny".

88. And these Arts he employs about materials of English growth, and not much applied to other uses; for instance, He makes the stone Bottles of a Clay in appearance like to Tobacco-pipe clay, which will not make Tobacco-pipes, though the Tobacco-pipe clay will make Bottles; so that, that which hath lain buryed and useless to the Owners, may become beneficial to them by reason of this manufacture, and many working hands get good livelihoods; not to speak of the very considerable sums of English Coyn annually kept at home by it.

89. About Nettle-bed they make a sort of brick so very strong, that whereas at most other places they are unloaded by hand, I have seen these shot out of the Cart after the manner of stones to mend the High-ways, and yet none of them broken; but this I suppose must be rather ascribed to the nature of the Clay, than to the skill of the Artificer in making or burning them, and should therefore have been mention'd in the Chapter of Earths.

90. At Caversham, near the Right Worshipful Sir Anthony Cravens (and at some other places) they make a sort of brick 22 inches long, and above six inches broad, which some call Lath-bricks, by reason they are put in the place of the Laubs or Spars (supported by Pillars) in Oasts for drying malt, which is

the only use of them, and in truth I think a very good one too; for beside that they are no way liable to fire, as the wooden Laths are, they hold the heat so much better, that being once heated, a small matter of fire will keep them so, which are valuable advantages in the Profession of Maulting.

And which brings me to the Arts relating to Stone, they have lately also about Burford, made their Mault kills of stone; the first of them being contrived after an accident by fire, by Valentine Strong, an ingenious Mason of Teynton, much after the manner of those of brick, which for the benefit of other Counties where they are not known, I have caused to be delineated so far forth at least, as may be direction enough to an ingenious Workman, in Tab. 13. Fig. 1, 2. whereof the first Figure shews the front of such a Kill, and the Letters

a. The Kill hole.
b. The Pillars that support the principal Joists.
c. The sloping away of the inside of the Oaft.
d. The ends of the Joists.
e. The spaces between the Joists for the Laths.

And the second Figure, the square above, immediately supporting the Oaft-hair and the Mault, wherein the Letters

ff. show the Flame-stone.
gg. The Pillars on which the principal Joists lie.
hh. The principal Joists.
ii. The shorter Joists.
kk. The Laths between the Joists.
ll. The spaces between the Laths.

Which first Kill of Valentine Strong, built after this manner in stone, succeeded so well, that it hath since obtained in many other places; nor do I wonder at it, for beside the great security from fire, to which the old Kills were very subject, these also dry the mault with much less fuel, and in a shorter time, than the old ones would do; insomuch that I was told by one Mr. Trindar, an ingenious Gentleman of West-well, who shewed me a fine one of his own at Holwell, that whereas he could formerly dry with the ordinary Kill but two Quarters in a day, he can now dry six, and with as little fuel. Now if Mault-kills or Oafts made with ordi-
nary Stone prove so advantageous, what would one of them do, if the Joists and Laths at least were made of the Cornish warming-Stone, that will hold heat well eight or ten hours? or of Spanish Ruggiola's, which are broad plates like tiles, cut out of a Mountain of red salt near Cardona, which being well heated on both sides, will keep warm 24 hours? *92. To which may be added the Invention of making Glases of Stones, and some other materials, at Henly upon Thames, lately brought into England by Seignior de Costa a Monferratees, and carried on by one Mr. Ravencrock, who has a Patent for the sole making them; and lately by one Mr. Bishop. The materials they used formerly were the blackest Flints calcined, and a white Chriftalline sand, adding to each pound of these, as it was found by solution of their whole mixture, by the ingenious Dr. Ludwell Fellow of Wadham College, about two ounces of Niter, Tartar, and Borax.

93. But the Glases made of these being subject to that unpardonable fault called Crizelling, caused by the two great quantities of the Salts in the mixture, which either by the adventitious Niter of the Air from without, or warm liquors put in them, would be either increased or dissolved; and thereby induce a Scabrities or dull roughness, irrecoverably clouding the transparency of the glas; they have chosen rather since to make their glases of a great sort of white Pebbles, which as I am informed they have from the River Po in Italy; to which adding the aforementioned salts, but abating in the proportions, they now make a sort of Pebble glas, which are hard, durable, and whiter than any from Venice, and will not Crizel, but endure the severest trials whatever, to be known from the former by a Seal set purposely on them.

94. And yet I guess that the difference, in respect of Crizeling, between the present Glas and the former, lies not so much in the Calx, the Pebbles being Pyrites (none but such I presume being fit for Vitrification) as well as the Flints; but rather wholly in the abatement of the salts, for there are some of the Flint glases strictly so called (whereof I have one by me) that has endured all trials as well as these last. But if it be found otherwise, that white Pebbles are really fitter for their turns than black Flints, I think

* See Mr. Willoughby's Voyage through Spain. p. 471.
they have little need to fetch them from Italy, there being enough in England of the same kind, not only to supply this, but perhaps Foreign Nations. Which is all concerning Arts relating to stone and gla$; except it be also worth notice, that Venerable Bede of this University, first brought Building with stone, and Glaßwindows into England.

95. Whence according to my proposed method, I proceed to the Arts relating to Plants; amongst which, the first that present themselves, are those that concern the Herbaceous kind. Of this sort we may reckon that ingenious Experiment made in June, 1669. by my worthy Friend John Wills M. A. and Fellow of Trin. Coll. Oxon. in order to find in what measure Herbs might perfpire, where in he made use of the following method. He took two gla$s Vials with narrow necks, each holding one pound 8 ounces, and 2 drachms of water, Avoir de pois weight: into one of these gla$ses filled with water, he put a sprig of florishing Mint (which before had grown in the water) weighing one ounce; the other gla$s he also fill'd with water, and exposed them both in a window to the Sun. After ten days time, he found in the bottle where the mint was, only five ounces and four drachms of water remaining, and no more, so that there was one pound two ounces and six drachms spent, the mint weighing scarce two drachms more than at first.

96. From the other Glafs, where water was put of the same weight, and no mint, he found the Sun had exhaled near one ounce of water, and therefore concluded it drew but so much out of the first gla$s, at least not more. So that allowing one ounce for what the Sun had exhaled, there was in those ten days spent by the mint, one pound one ounce six drachms of water; and the mint being increased in weight only two drachms, 'twas plain the mint had purely expired in those ten days, one pound one ounce and four drachms, that is, each day above an ounce and half, which is more than the weight of the whole mint. Whence he concluded, that what Malpigbius so wonders at in his Book De Bombye, viz. that those Animals will sometimes eat in one day, more than the weight of their bodies, is out-done by every sprig of mint, and most other Herbs in the Field, which every summers day attract more nourishment than their own weight amounts too.

* Vid. Comment. in Carmen Phalaeum Johan. Selden; before Hopson Concordance of years.

97. Which
97. Which the same ingenious person at least questions not (and therefore wishes trials may be made) of the Tithymali, Esule, and especially of Pinguicula and Ros Solis, which last sucks up moisture faster than the Sun can exhale it, and is bedewed all over at Noon-day, notwithstanding its power: Nor doubts he but that Wormwood, and all other Plants: that are very hot, and of strong smells, expire as much, if not more than Mint.

98. There are also several Arts, used about the Corn in this County, whilst in the blade, and straw, that belong to this place, such as eating it off with Sheep, if too rank, to make it grow strong and prevent lodging: whilst the Corn is young they also weed it, cutting the thistles with a hook; but rattles they hand-weed as soon as in flower, and so they do cockles when they intend the Corn for seed. If the Crows toward Harvest are any thing mischievous, as they many times are, destroying the Corn in the outer limits of the Fields, they dig a hole narrow at the bottom, and broad at the top, in the greensward near the Corn, wherein they put dust, and cinders from the Smiths forge, mixt with a little Gun-powder, and in and about the holes stick feathers (Crow-feathers if they can get them) which they find about Burford to have good success.

99. They cut their Wheat here rather a little before, than let it stand till it be over-ripe; for if it be cut but a little too soon, the flock will ripen it, and the Corn will be beautiful, whereas if it stand too long, much will shatter out of the head in reaping, especially if the wind blow hard, and that the best Corn too; the worst only remaining, which will be pale in the hand, an unpardonable fault where the Baker is the Chapman. In reaping Wheat and Rye they use not the sickle, but a smooth edged hook, laying their Corn in small hand-fulls all over the Field; I suppose that is may the sooner dry, in case wet come before they bind it, which they do in very small sheaves, and very loose in comparison of some other Counties: They sheak it rather-wise, ten sheaves in a shock, which if set wide in the but-end, will be very copped and sharp at the top, and will bear out rain beyond hope, or almost credit.

100. They count their Barly ripe (as they do their Wheat) when it hangs the head and the Straw has lost its verdure, which they mow with a fithe without a cradle, never binding but raking it
it together, and cocking it with a fork, which is usually a trident, whose teeth stand not in a row, but meet pyramidally in a center at the staff: They let it lie in the swath a day or two, which both ripens the Corn and withers the weeds. Oats, and all mixed Corns called Horse-meat, are Harvested sometimes with two reaping books, whereof the manner is thus: The Work-man taking a book in each hand, cuts them with that in his right hand, and rolls them up the while with that in his left, which they call bagging of Peas: Others they cut with a reaping book set in a staff about a yard long, and then they cut and turn the Peas before them with both hands till they have a wad, which they lay by, and begin again; and this they call cutting with the staff-book: But the first they say is much the speedieſt way, which if used with care, cuts them as well and clean, as either of the other.

101. After the first they wad both Beans and Peas, and so turn them till they are thoroughly withered and dry, and then cock and fit them for carriage, only with this difference, that Beans while they are cocked and carried, have the loose stalks pickt up by hand, the rake being apt to beat the Beans out of the pods, as they are drawn up against the leg. All sorts of Cocks are best made of a middleſing cize, and well top'd; the advantages are, that these are apprehended at leaſt to take lefs wet with the fame rain than greater, and will dry again without breaking; whereas the great cocks, after rain, must be pulled to pieces, which cannot be done without great losſs, for in the opening and turning much Corn will be beaten out, and that certainly the best too.

102. If their Corn be brought home a little moifter, or greener than ordinary, or the weeds be not let lie to be thoroughly shrunk or wither'd, that they ſuſpe& it may beat in the Barn more than ordinary (for it is kind for Corn and fodder to beat a little) then they draw a Cubb or Beer-lip (which others call the Seed-cord) up the middle of the mow or stack; and through the hole that this leaves, the beat will ascend and so prevent mow-burning; Or if it beat in the Barn beyond expectation, and be like to do amifs, they then pull a hole in the middle from the top to the bottom, which will also help it much. They draw an old Axel-tree of a Cart up a Hay-rick to the same purpose, if they think their Hay of the greenef, or over moift when stacked.

103. But
103. But the best contrivance I ever yet saw to prevent the firing of Ricks of Hay, or Sainfoin, I met with at Tusmore, at the Worshipful Richard Fermors Esq; where they let in square pipes made of boards of a foot diagonal, to the middle of their stacks, to give them Air perpetually; the number of pipes bearing proportion to the bigness of the Ricks, which no question may also be as rationally applied to stacks of Corn, whenever thought subject to the same danger.

104. To preserve their Ricks of Corn liable to rats and mice, they commonly place them in this Country, on Stuarts and caps of stone; the Stuarts being four Obelisks about two foot high, and the caps as many Hemispherical stones placed upon them, with the flat sides downwards, on which having laid four strong pieces of Timber, and other Joists to bear up the Corn, they place their Ricks, which then are not annoyed by mice or rats (at least not so much) as stacks on the ground, by reason the Hemispherical stones being planums at the bottom, though they may possibly ascend the Stuarts well enough, yet can scarce get up the caps, whose broad bottoms hang so over them in plano Horizontis, that they must needs fall in the attempt.

105. The Cart they most use to bring home their Corn, is the two-wheeled long Cart, having Shambles over the shafts or thills, a Cart Ladder at the breech, and hoops over the wheels, on which they will lay great and very broad loads, though it go not so secure and steady as a Wagon, which notwithstanding that advantage is of but little use here, only amongst Carriers, &c. They use also a sort of Cart they call a Whip-lade, or Whip-cart, whose hinder part is made up with boards after the manner of a Dung-cart, having also a head of boards, and Shambles over the thills; which head being made so as to be taken out or left in, the Cart may be indifferently used to carry dung or other matters; dung, when the head is in, and Corn, &c. when taken out.

106. About Banbury most of their Carts have Axel-trees of Iron, made square at one end and round at the other; at the square end they are made fast into one of the wheels, and move round together with it; and at the other end they move within the box of the wheel, and the wheel round them too: With this sort of Axel some are of opinion that the Cart moves much lighter for the Cattle, than with a wooden one, to whom I should much rather assent,
affent, did the round end of the Axel move in a box of brass, and were the places where the Cart rests on it, lined with brass plates, for then a small matter of oil (as 'tis in the oiling of bells) would cause the heaviest weight to be moved with great ease: however as they are, much less grease serves the turn; and one of them made of good tough iron, will last a man's age, and sometimes two, whereas the wooden ones are frequently at reparations: nor does there any inconvenience attend them that I could hear of, but that the wheels have not so much room to play to and fro on these, as on the others of wood, and therefore not so good where either the ways or Cart-routs are deep.

107. Their way in this Country to bring the corn from the straw, is for the most part by the flail, only in some places when their wheat is very smutty, they have a way of whipping it first, and then threshing it afterwards: their manner of whipping is striking the corn by a handful at a time, against a door set on its edge; and when a sheaf is thus whipt, they bind it up again for the flail: which way indeed is troublesome and tedious, but by this means the smut bags or balls are preserved unbroken, and by the strength of a good wind, and care in the razing, most part of them may be gotten forth, and the wheat left clear.

108. But before they thresh Rye, they sometimes take care to preserve some of the straw whole or unbroken, to serve for straw-works: which I should not have thought worth mentioning, but that we have an Artift here in Oxford, the ingenious Robert Wise-man, excellent for such matters, beyond all comparison; and yet be modestly owns, that be saw work in Italy that gave him a hint for his Invention, but knows not whether that Artift (but believes rather the contrary) uses the same procedure that he does or no: However, if it must not be allowed his Invention, yet because he has improved it to so great an excellency, I cannot but let the World know, that though he professes nothing extraordinary in the dying of his colours, yet by certain method, of first scraping the straw, and cutting it into small square pieces, none longer than the 20th or 30th part of an inch, he can lay them on wood, copper or silver (first prepared for the purpose) in such order and manner, and that with great expedition, that thereby he represents the ruins of Buildings, Prospects of Cities, Churches, &c. upon dressing or writing Boxes, or Boxes for any other use.
of OXFORD-SHIRE.

109. He also represents in a most exquisite manner, both the Irish and Bredth stitch in Carpets and Screens, which he makes of this Straw work for the more curious Ladies; and with these he covers Tobacco boxes, or of any other kind, whether of wood or metal, putting the Arms of the Nobility and Gentry, if desired, upon the tops or elsewhere: And all these with the colours so neatly shaded off, from one another, that at due distance they show nothing inferior to colours laid with a Pen in. When these Prosefses, &c. are made, he can and does frequently wash his work with common water, letting it continue at least an hour underneath it; then drys it with a fringe, and beats it with a wooden mallet as thin as may be, and then lays it on his boxes, giving it lastly so curious a polifh, that no varnifhing excels it: which work, though made of such minute squares of straw, will endure portage, and any other as severe usage, as most other materials; none of them being to be gotten off by eafe means, but will admit of washing and polishing again, when at any time foul, as well as at the first.

110. Which is all concerning Corn, whil'st in the blade or straw, what remains relates to the separating the seed from the chaff, and preserving it in the stores. As to the first, they either do it in a good wind abroad, or with the fan at home, I mean the leaved fan; for the knee fan, and casting the corn the length of the Barn, are not in use amongst them. They that have but small quantities, when no wind is stirring, will do it with a sheet; the manner thus: Two persons take a sheet, and double it at the seam, then rolling in each end a little, and holding one hand at the top, and the other a foot or 18 inches lower, they strike together and make a good wind, and some speed. But the wheel fan saves a man's labor, makes a better wind, and does it with much more expedition.

111. They preserve it in their stores, as well as ricks, from mice and rats by many ordinary means used in other places: but I met with one way somewhat extraordinary, performed by a peculiar fort of Rats-bane, that kills no creatures but those for which it is designed, except poultry; so that it is an excellent remedy, especially within doors, where Fowls seldom come, or any other place where they may be kept from it; all Cats, Dogs, &c. tasting it without hurt. To secure their Corn from musing, I have heard of some that have laid it in Chambers mixt with Pebble-stones of the larger
larger cize stratum super stratum, viz. after every six inches thick-
ness of Corn, a stratum of Pebbles, placed about a yard distance
from each other, then Corn again to the same thickness, and so
S S S to ten lains a piece: by which method, as I was told, Corn
had been preserved sweet and free from must, ten years together,
only removing it once a year, and laying it again as before; and
in the Summer time when the weather was dry, setting open the
windows in the day time and shutting them at night.

112. To recover it from mustiness, to its pristin sweetness, some
have laid it out all night, thin spred on cloaths, to receive the Even-
ing and Morning dews, with so good success, that being dryed a-
again next day in the Sun, the ill smell has been quite removed.
And thus I have done with the most uncommon Arts I have met
with concerning Plants related to Husbandry, and the whole Her-
baceous kind: where by the way let it be noted, as in Chap. 6, §. 23.
that these Arts are called uncommon, not so much in respect of
this, as of other Counties, where indeed they will seem so: and
that I have written of them rather for the information of Strangers,
than the Inhabitants of Oxford-shire, as I must hereafter in other
Counties, for information of this. Wherein if through my own
ignorance, or fromardness of some Husbandmen (I dare not say all)
I have failed of that accuracy, that might otherwise have been
expected, I beg the Readers pardon, and promise amendment in
the following Counties, provided I have encouragement to go on
in my design.

113. After the Herbaceous Plants, come we next to consider
the Shrubs and Subfrutices, amongst which I met with one, per-
haps I may say scarce heard of curiosity, though it have been an
Experiment frequently performed many years since, not only by
those excellent Gardeners and Botanists, the two Bobarts, Father
and Son; but as I have heard also by the Reverend and Ingenious
Robert Sharrock LL.D, and Fellow of New College, who after
many unsuccessful tryals of grafting one Fruit upon another,
made at last a very pleasant one, and to good advantage too, upon
different Vines, which in so great measure answer'd their hopes,
that they have now signal proof in the Physick Garden of the
white Frontiniac grafted upon the Parsly Vine, growing and bear-
ing very well; and to this advantage, that they think the early
ripening stock of the Parsly Vine, to conduce somewhat to the
earlyer
early ripening of the white Frontiniac, naturally late.

114. They have also grafted the early red-cluster or Currian grape, upon that large, luxuriantly growing Vine, called the Fox-grape, which seems to produce much fairer and stronger Fruit, than that grape is usually upon its own stock. And divers other Experiments of this nature they say may easily be made, as well to have white and black, or other varieties, as they have already broad leav’d and narrow leav’d, early grapes and late ones, on the same stock: But this is not to be done by present amputation, as in other Fruits, the wood being not sufficiently solid to bear it.

115. As to the Arts relating to Trees, the chiefest are those of the Planter and Gardener making curious Walks, and Topiary works of them; such is the Dial cut in Box in New College Garden, the Kings arms, and the College coat of arms there, and at Exeter College; beside the other Garden knots of Box in both those Colleges, and in Brasen-nose College Quadrangle; to which add the Guards at the Physick garden gate of Gigantick stature, and several other Topia in the same Garden, all formed of the Yew tree. Of Walks, the most curious I have met with in this County, are those elegant ones of Trees of various kinds in Cornbury Park; and (to omit the numerous Walks in and about the University) those of Firs at Sir Peter Wentworths at Lillington Lovel, and the pleasent Vista at Sir Timothy Tyrriils, from a short walk of Trees toward the Chiltern hills; and for a close Walk, there is a fine one lately designed in Grimes-ditch, near Ditchley, a seat of the Right Honorable Edward Henry Earl of Lichfield’s, about half a mile in length.

116. For garden walks, I think one of the longest I met with, was at the Worshipful Mr. Clerks at Aston Rowant. And for a descent, there are none like the Walks at Rousham, in the Garden of the Worshipful Robert Dormer Esq; where there are no less than five one under another, leading from the garden above, down to the riverside, having steps at each end, and parted with hedges of Codlings, &c. But of all that I ever met with, there is a Walk at the Worshipful Mr. Fermors of Tufmores, the most wonderfully pleasant, not only in that it is placed in the middle of a Fish-pond, but so contrived, that standing in the middle no Eye can perceive but it is perfectly strange, whereas when removed to either end, it appears on the contrary so strangely crooked, that the Eye does not reach much above half the way,

117. Which
117. Which deception of sight most certainly arises from a bow in the middle, which seems only an ornament, and the incapacity of the beholder of seeing both parts of the walk at one time; which that it may be the better apprehended, see the manner of it, Tab. 13. Fig. 3. where the letter a shews the walk from the garden tending toward that in the Fish-pond, b the place of the beholder, c the semicircle or bow opposite to him, d e the two ends of the walk: Now the beholder being placed in b, and having the bow before him, is not commonly so wary as to find, that if the lines f g h i were continued, they would decussate and not fall into straight lines, nor that the walks themselves would do the same, because he sees but one straight part of the walk b d at one time, and the other b e at another time, which when seen together at either end, plainly meet in an angle, and by reason of the side hedges terminate the fight at little more than half way, at k l.

118. Hither also belong the methods whereby they order their Woods in this County, which if Under-woods in or near the Forrest of Whichwood, they commonly fell not till twenty years growth; but in the Chase near by it, somtimes at seven or eight: dividing them into Acres and Braids (or breaths) every Acre containing forty braids, a braid being one pole long and four broad, into which they thus divide their Woods for the better sale of them to the meaner sort of people, some buying ten, others twenty, and some thirty braids or more.

119. In the Chiltern Country they fell their Under-wood Copies commonly at eight or nine years growth, but their tall wood, or Copies of which they make tall fbid, billet, &c. at no certain time; nor fell they these Woods all together, but draw them as they call it, almost every year some, according as their wood comes to be of a fit scantling for tall fbid or billet, cutting every fbid of tall wood four foot long beside the kerf, and the billet three foot four inches, according to the Statutes of the 7 of Edw. 6. 7. and the 43 of Q. Eliz. 14. which ought also according to the same Statutes, whether round bodied, half round, or quarter cleft, to be of a certain number of inches about, according as named or marked of so many Cast, as may be seen particularly in the Statutes at large. Which is all concerning Arts relating to Plants, except it shall be thought worthy notice, that they use ropes in this Coun-
try, made of the bark of the Tilia femina folio minore, small leav’d Lime or Linden tree, in some Countries called Baff; whence the ropes are also called Baffen ropes; but of these no more, the Tree neither growing, nor the ropes being made in this County, but only used here.

120. Of Arts relating to Brutes, I have met with none extraordinary concerning the winged Kingdom, but the new sort of boxes, or Colony hives for Bees, first invented, I suppose, by the Right Reverend Father in God John Wilkins, late Lord Bishop of Chester; notwithstanding the pretensions of John Gedde Gent, and his seven years experience: for I find one of them set up in Wadham College Garden (where it still remains) when the said accomplish’d Bishop was Warden there above twenty years since. For Fisb, I was shewed the model of a Net contrived by the ingenious Sir Anthony Cope, that seemed likely to catch all found within such a compass.

121. Relating to four footed Beasts, the ingenious Richard Fermor of Tusmore Esq; shewed me a pretty contrivance to avoid the incumbrance of Oat tubs in Stables, especially where they are any thing streightned in their room, by letting the Oats down from a loft above, out of a vessel like the Hopper of a Mill, whence they fall into a square pipe let into the wall, of about four inches diagonal, which comes down into a Cup-board also set into the wall, but with its end so near the bottom, that there shall never be above a gallon, or other desirable quantity in the Cup-board at a time, which being taken away and given to the Horses, another gallon presently succeeds; so that in the lower part of the Stable where the Horses stand, there is not one inch of room taken up for the whole provision of Oats: which contrivance has also this further convenience, that by this motion the Oats are kept constantly sweet (the taking away one gallon moving the whole mass above) which laid up any otherwise in great quantities grow frequently musty.

122. The same ingenious Gentleman has also applied the same contrivance, with some little alteration, to the feeding of his Swine, which have constantly their meat from such a vessel like the hopper of a Mill placed over the sty, into which having put a certain quantity of beans, enough to eat so many Hogs, they continually descend to about half way down the sty in a large square pipe, which then divides it self into six smaller ones, which terminate each
each of them in a small trough, no bigger than just to admit the
nose of a Hog, and come all of them with their ends so near the
bottom, that there is never above a handful of beans or so, in each
trough at a time, which taken away by the Hogs, there follow so
many handfulls again, but never more: so that having also drawn
a small Rivulet of water through the fly, the daily trouble of ser-
vants waiting on them is not only saved (for they need never come
near them till they know they are fat) but the Hogs themselves are
also made hereby incapable of spoiling a bean, by trampling or
pissing amongst them as in most other flies, they never having a-
bove a handful at a time, and those in a trough too small to admit
any such means of waft.

123. He has thoughts also of applying the same contrivance
to the feeding of his Hounds; and has made stalls for Oxen, by
flars of wood descending perpendicularly from the utmost rim
of the rack, and nailing boards on them half way up before the
Oxen, that they cannot spoil by trampling, or any other means,
the least straw or grass, all that go beside their mouths falling still
within the boards nailed upon the flars, which when come to any
quantity, is returned into the rack as sweet and good, as when
put there at first. Which being matters of Architecture relating to
Beasts, bring me next to treat.

124. Of Arts that respect Mankind, and first of Architecture,
wherein we have many remarkable Curiosities, as well in the Coun-
try as University; some whereof are of an inferior, others of a
more Honorable rank and quality. Of the first sort are several Mills
that I have met with in this County, scarce perhaps to be found el-
where in England; such is that at the same ingenious Mr. Fermors
at Tufmore, which with one borse and man (who is carried round
as it were, in a Coach-box behind the borse) performs at pleasure
these very many offices. First, it grinds Apples the common way
for Cider. And secondly Wheat, which it fits at the same time in
to four different finenesses. Thirdly Oats, which it cuts from the
husk, and winnows from the shaff, making very good Oat-meal.
And lastly makes Mustard, which indeed is a mere curiosity. And
all these it performs severally, or together, according as desired.

125. At Hanwell, in the Park, there is also a Mill erected by
the ingenious Sir Anthony Cope, of wonderful contrivance, where-
with that great Virtuoso did not only grind the Corn for his Houfe,
but with the same motion turned a very large Engine for cutting the hardest stone, after the manner of Lapidaries; and another for boring of Guns: and these, as in the Mill at Tufmore, either severally or all together, at pleasure.

126. To these add the Mills for making French Barly, erected some years since upon the river near Caversham, by one Mr. Bur- naby, but are now carried on by one Mr. Nelthrop of London, Merchant: They are four in number, and differ from other Corn mills chiefly in the following particulars. 1. In that they have always double tackling. 2. The stones not being the Cologne, but ordinary white stones; which thirdly, are both of them cut the sending way: and fourthly, the upper stone or runner, hung about a hands breadth distant from the lower or bed stone, also called the Legier. They put in the Corn, about half a bushel at a time, not at the eye, but round the hoops at the sides of the stones; they stop the spout or tunnel, and let the Mill run just an hour, for if the Corn stay longer the beat will turn it yellow: then they let it out, and fever the bran and flower from the Corn, and put it up again into another mill of the same kind, and let it run in the same manner another hour, and the work is finished.

127. Hither also must be referred the Mault Kills of Henly, so thrifitly contrived, that the Kill holes are placed in the backs of their Kitchin Chimneys, so that drying their mault with wood, the same fire serves for that, and all the other ufe of their Kitchins besides. To this place also belongs a sort of Oaff made about thirty years since by one Philips a Baker of Magdalen Parifh Oxon, who having a very great Oven, made it plain at the top and plaifter'd it over, whereon laying mault, he dried it with the fame fire that heated his Oven for the bread, and thus made the beft mault that Oxford afforded, and of neceffity the cheapeft, for the fire cost him nothing. I have heard also of the fame method used at Henly on the Thames; and these, as some have ventured to affert, gave the first hints to the Invention of that sort of Kills whereby they dry mault with coal; but herein I dare not be too confident, not knowing of what standing those Kills are, otherwise the thing seems to be likely enough.

128. Thus having run through those of inferior rank, I come next to the remarkable curiosities of Architecture in our most ftately buildings, and that have a more immediate relation to mankind.
than any before mentioned, whereof some are \textit{private}, others \textit{public}; and may both be considered either in the \textit{whole} or \textit{parts}.

Of \textit{private buildings,} the most eminent in this \textit{County,} are the \textit{Seats} of the Right Honorable the Earl of \textit{Anglesey,} Lord Privy Seal, at \textit{Blechington,} the Earl of \textit{Clarendon} at \textit{Cornbury,} the Earl of \textit{Lichfield} at \textit{Ditchley,} the Earl of \textit{Rochefer} at \textit{Adderbury,} the Countess of \textit{Down} at \textit{Wroxton,} the Lord Viscount \textit{Say} and \textit{Seal} at \textit{Broughton,} the Lord Viscount \textit{Falkland} at \textit{Great Tew,} the Lady \textit{Abergavenny} at \textit{Sherbourn,} the Lord \textit{Norreys} (His Majesty's Lord Lieutenant of \textit{Oxfordshire}) at \textit{Ricot,} the Lord \textit{Carrington} at \textit{Ledwell,} and of the Honorable \textit{James Herbert} Esq; at \textit{Tythorpe} in \textit{Oxfordshire,} though of \textit{Kingsey Parish} in the \textit{County of Buckingham.}

129. Whereunto might be added several \textit{structures} of the \textit{minor Nobility,} that shew a great deal either of past or present \textit{magnificence,} such as that of the Right Worshipful Sir \textit{Anthony Cope} late of \textit{Hanwell,} of Sir \textit{John Cope} at \textit{Bruern Abbey,} Sir \textit{Tho. Spencer} at \textit{Tannton,} Sir \textit{Tho. Chamberleyne} at \textit{Northbrook,} Sir \textit{Francis Wemman} at \textit{Thame-Park} and \textit{Caswell,} Sir \textit{Tho. Cobb} at \textit{Adderbury,} Sir \textit{Anthony Craven} at \textit{Caversham,} Sir \textit{William Glyn} at \textit{Amersden,} Sir \textit{Robert Jenkinson} at \textit{Walcot,} Sir \textit{William Walter} at \textit{Sarefden,} Sir \textit{Thomas Penyson} at \textit{Cornwel,} Sir \textit{Compton Read} at \textit{Shipton} under \textit{Whichwood,} Sir \textit{John D'Oyly} at \textit{Chislehampton,} Sir \textit{Edward Norreys} at \textit{Weston on the green,} Sir \textit{George Croke} at \textit{Watersloke,} Sir \textit{Philip Harcourt} at \textit{Stanton Harcourt.} And of the worshipful \textit{Tho. Stonor} at \textit{Wallington Park and Stonor, Esq; Robert Dormer} at \textit{Rousham, Esq; Richard Ferrnor} at \textit{Tufinore and Sommerton, Esq; John Stone} at \textit{Brightwel, Esq; John Clerk} at \textit{Aston Rowant, Esq; \textit{Tho. Hoard}} at \textit{Coat, Esq; Arthur Jones} at \textit{Chaferton, Esq; Basil Brook} at \textit{North-Aston, Esq; and the seats of the Families of Knolles at Rotherfield.} Grays, and \textit{Blount} at \textit{Maple-Durham, Esqs; To which add the Parsonage House of the Rectory of \textit{Chinner,} little inferior to some of the aforementioned, either in \textit{greatness, commodiousness,} or \textit{elegancy of Building.}

130. And yet amongst all these eminent private \textit{structures,} could I find nothing extraordinary in the \textit{whole:} But in the \textit{parts,} the \textit{Kitchin} of the Right Worshipful Sir \textit{Philip Harcourt Knight,} of \textit{Stanton Harcourt,} is so strangely unusual, that by way of \textit{Riddle} one may truly call it, either a \textit{Kitchin} within a \textit{Chimney,} or a \textit{Kitchin without one;} for below it is nothing but a large \textit{square,}
and octagonal above ascending like a Tower, the fires being made against the walls, and the smoke climbing up them, without any tunnels or disturbance to the Cooks; which being stopped by a large conical roof at the top, goes out at loop-holes on every side according as the wind fits; the loop-holes at the side next the wind being flint with falling doors, and the adverse side opened.

131. The spacious Stair-case at Blechington-house is also remarkable, not only for that it stands on an Area of 30 foot square, but for its rarity too, it being not perhaps at all, at least not easy to be met with amongst the writers of Architecture: wherefore, though I cannot approve of its contrivance in all particulars, yet for the sake of its magnificence, and variety from most, if not all others, I cannot in justice but afford it a short description.

132. It being placed therefore backward, opposite to the most honorable entrance of the House, between two wings that extend themselves beyond it, and the goss of the Pile, you enter upon it having past by the hall, and other offices usually placed by it, at the door-way A, Tab. 13. Fig. 4. and land upon the half pace 1, which together with the rest marked 2 3 4, &c. are 6 foot square: The figures in their natural order shew how you ascend from one half pace to another, by ascents of 7 steps, each about 5 inches deep, and near 10 inches broad: The half paces marked with the same figure lye on the same level, and therefore as 4 is the highest half pace in this first Scheme of it, so it is the lowest in the second, Tab. 13. Fig. 5.

133. In which also the order of the figures shews the manner of ascent just as in the former, only it must be observed, that as the ascent to the half pace 4 in the first Scheme, was suppose from East and West, so the ascent higher from it in the second, is to North and South: Of which two Schemes placed alternatly over one another, the whole Stair-case is framed from bottom to top, which is easily apprehended, if you but imagine the half pace 4 in the second Scheme, to be placed over 4 in the first, and such another frame as is delineated in the first Scheme to be placed on the second: The Letters V V shew the vacancies that open a Prospect from the top to the bottom of the whole Stair-case, and a b c d shew the places of the doors into the rooms at each corner of it.
134. In short, this stair-case seems to be a composition of 4 half-pace-open-newel’d stair-cases, as may easily be perceived by the figures, 123, 123, 123, 123, and 567, 567, 567, 567, only communicating in the middle; which indeed shews very magnificently, but has this inconvenience, that there is no passage from one room into another though on the same floor, without going up and down many steps; as in Scheme the second, if from a to b, and so of the rooms of any of the other sides, you have no passage but from 6 to 7, and so down again to 6, i.e. 14 steps. But if you are to go from corner to corner, as suppose from a to c, or b to d, & vice versa, whether you pass round the sides, or over the middle half pace, you cannot do it, without ascending and descending in all twenty eight steps.

135. Of publick Buildings, the most eminent in the County are certainly those of the Colleges and Halls, the Publick Schools, Library and Theater in the University of Oxford; of which yet in the whole I shall give no account; their magnificence and outward Architecture being already sufficiently shewn, by the exquisite hand of Mr. David Loggan, Chalcographer to the University, in his Cuts of them all lately set forth. It shall suffice me therefore to give a succinct account of some particular parts of them, whether in the stone or Timber-work, scarce to be met with elsewhere, or known to few.

136. Of the first sort is the flat floor of stone over the passage between the Right Reverend the Provost’s Lodgings, and the Chapel at Queens College, born up only by the side walls without any pillar, though consisting of divers stones not reaching the walls, which yet indeed may very well be, since as I am informed by the same Right Reverend Provost, and Bishop of Lincoln, who pulled up the boards of the room above to view the curiosity; the stones are all cuneiform, and laid like that they call straight Arch-work.

137. The Roof of Merton College Treasury is also an odd piece of stone-work, being all made of Ashler, yet sloping to an angle (only more acute than usual) like roofs made of Timber: It has tis true within, three inequidistant arched ribs of stone that seem to support the Fabrick, which is about 20 foot long, but the stones not reaching from rib to rib, and seeming to be laid like common pavement both within and without, make many to wonder that it does not fall in: but the stones being pretty thick, and cut as they call
call it, with an arching joint, must necessarily lye as firm (and for the very same reason) as those at Queens College do, and so most certainly they would, were the arches quite removed. There is also much such another roof over a little Oratory or Chappel in the Church of North Leigh in this County.

138. As for arched roofs of stone, that of the Divinity School is a fine piece of Architecture; and so is that of the stately staircase leading into Christ-Church Great Hall. The Physick garden gate is a curious piece of rustic rock-work; and the Porich at St. Marys; the University Church, is a well contrived thing. And were it not improper amongst these to mention a structure of so inferior a quality, as New College house of Easement; commonly called the long-house, I could not but note it as a stupendous piece of building, it being so large and deep, that it has never been emptied since the foundation of the College, which was above 300 years since, nor is it ever like to want it.

139. The Porich's on the East and West sides of the New Quadrangle at St. Johns College, built by the most Reverend Father in God, William Laud Arch-Bishop of Canterbury, supported with pillars of Blechington Marble, are well worthy notice; and so is the Cloyster at Magdalen College, the Butteresses without being curiously adorned with Hieroglyphical Imagery.

140. The erect Southern declining Dial over All Souls College Chappel, is a neat piece of work, so curiously contrived by Sir Christopher Wren, that though it stand high, yet by the help of two half rays, and one whole one for every hour, one may see to a minute what it is a clock, the minutes being depicted on the sides of the rays, viz. 15 on each side, and divided into fives by a different character from the rest.

141. The Cylindrical Dial in Corpus Christi College Quadrangle, set at right angles with the Horizon (the common sections whereof, with the bour circles, except the Meridian circle which divides it by the axis) as also the Equinoctial, are all Ellipses) is a fine old piece of Gnomonicks; of which no more, because its Contriver Mr. Robert Heggs, Fellow of the College, has already written of it.

And the Dials made upon a pile of Books on New College Mount, with Time on the top, exactly pointing out from what Quarter the wind blows, upon the 32 Points of the Compass, depicted on

* Traif. de Horologii, Lib. 4. cap. 4. MS. in Biblioth. C.C.C.
a Cylinder of stone, is an ingenious contrivance.

142. There are many lofty spires about the Country as well as City, built all of Free-stone, and of exquisite workmanship, such as those of Bampton, Witney, Burford, Bloxham, Spelsbury, Kidlington, etc. but that which excels all the rest is the spire of St. Mary’s in Oxford, the University Church, the Battlements whereof were repaired, and thus thick set with Pinnacles as it now stands, by Dr. King Dean of Christ Church, then Vice-Chancellor of the University, afterwards Bishop of London.

143. For Towers, that of Merton College is a large well built thing; and so is that of the Schools, but more remarkable, for that it is adorned on the inner side next the Quadrangle, with all the orders of Pillars. But for a neat plain piece of work, that of Magdalen College excells all I have yet seen, adorned on the top with well proportion’d Pinnacles, and within with a most tunable sweet ring of bells.

144. Amongst curiosities in Timber-work, we may reckon several screens in College Chappels; such as that of Magdalen College, that of Cedar at Lincoln College, and another at Corpus Christi now erecting. There is an Altar rail at All Souls College of curious workmanship, and to this place belongs the Tomb of St. Fridewide, still remaining at Christ Church, the top whereof is wood, and a fine old piece of work: But not comparable to the Tomb of fair Rosamund at Godstow, in the Chapter-house of the Nuns there, which according to the description of Ranulph Higden seems to have been also of wood, and of wonderful contrivance, cysta ejusdem puellae (fays he, having spoken before of her death and Epitaph, and of the Amour’s between her and K. Henry the second) vix bipedalis mensura, sed mirabilis architetura ibidem cernitur, i.e. That her chest coffin or tomb was there to be seen, not above two foot long, or perhaps rather square, but a stupendous piece of workmanship, in qua (fays the same Author at the same place) conflitilus Pugillum, gestus animalium, volatus avium, saltus piscium absque hominis impulso consticiuntur, i.e. where in might be seen the conflicts of champions, the gestures of animals, the flights of birds, with fishes leaping, and all done without the assistance of man.

1 Ranulphi Higden Polychron. Lib. 7. in Hen. 2. MS. fol. in Bib. Bod. 145. By
145. By what means this was effected, we are not informed by the afore-cited Author, but the Learned Thomas Allen M. A. of Glocefter-ball, thought it might be done by a sort of Looking-glafs, whose structure he found mentioned in an ancient MS, De Arcanis & Secretis, with this Title, Speculum in quo uno visu apparebunt multæ imagines movientes. To be made thus, accipe pixidem bene profundam, & pone in fundo ejus speculum commune, fc. convexum, pöftea, &c. Take, says the Author, a deep box, and place in the bottom of it a common convex glafs, then take 6 or 7 other convex glases of the fame bignefs, and scrape off the lead [plumbum is the word] in the concave part with a knife; where by the way the Author advises, that since it is very hard to get the lead clean off without breaking the glafs, that Quick-filver be made use of, to anoint the lead to get it off.

146. These glases when made clean, he orders to be put into the box, so as they may stand obliquely in divers poftitions, in this manner: When the firft glafs is put in the bottom, the second must be so put, that one side of it muft touch the firft glafs, and the opposite side be distant from it an inch, &c (says he) oblique pones in pixide. In the top there must be put one cleaned glafs as the firft, plain and not obliquely, so that nothing must be seen but the uppermoft gläs, into which if you look, you fhall fee as many Images as glases; and if turned round, how one Image always stands still in the middle, and the reft run round it, as if they went about to dance. Of which contrivance, though I understand not some particulars, yet I thought fit to mention them, because they may possibly meet with a Reader that may, and tranflate them too as well as I could, for the benefit of them all. As for those that have opportunity, and are defirous of feeing the Latin Copy, they may find it in a Miscellaneous MS. in Mr. Seldens Library. For my part, all that I can add concerning it, is, that I have seen a sort of Cabinets of this nature, that by the help of glases placed obliquely have fhewn such pretty prospects.

147. The great bivalve wooden windows in the upper Gallery of the Theater, are fo ingeniously contrived, that notwithstanding their great weight, yet can never flink fo as to be brought out of square, as 'tis usual in fuch windows, for the Iron bars croflying them from fide to fide, not being fet at right angles, but diagonally like
The Natural History

fruits or braces, as in Tab. 13, Fig. 6. must necessarily bend or break before the window can sink. Nor are the round windows below unworthy consideration, being contrived to admit air in foul weather, yet not one drop of rain; for being opened and set obliquely, as in Tab. 18, Fig. 7. it receives the rain within at a, and casts it out again at b; much less will it admit rain any ways when shut, it closing within its frame at the top, and without it at the bottom.

148. It was an excellent device, who ever first contrived it, of making flat floors or roofs of short pieces of Timber, continued to a great breadth without either Arch-work or Pillar to support them, being sustained only by the side walls and their own texture; for by this means many times the defect of long timber, or mistakes of Workmen, are supplied and rectified without any prejudice to the Building. Of this sort of work we have an example in the Schools, in the floor of the uppermost room of the Tower, but to be seen only in the room underneath where the Records of the University lye. There is also a diagram of such work in the Architecture set forth by Sebastian Serly, for which reason I think I should scarce have mention'd it, but that the Reverend and Learned Dr. John Wallis, Savilian Professor of Geometry here, was the first that demonstrated the reason of this work, and has given divers forms of it beside the fore-mentioned, in his Book De Motu, whence I have taken the diagrams, Tab. 13, Fig. 8, 9, 10, 11, 12. to make them more publick; upon the two first whereof depend the three last, and all others of the kind what ever, whether made up of quadrats or oblong parallelograms, of which there are some other forms in the fore-cited Book De Motu, beside that engraved Fig. 10. consisting of great and small Quadrats; or Triangles alone, as Fig. 11. or mixt with Hexagons, as Fig. 12. to which Book I recommend the Reader for further satisfaction concerning them.

149. But of all the flat floors having no Pillars to support it, and whose main beams are made of divers pieces of Timber, the most admirable is that of the Theater in Oxford, from side wall to side wall 80 foot over one way, and 70 the other, whose Lockages being to quite different from any before mentioned, and in many other particulars perhaps not to be parallel'd in the World, I have taken care to represent an exact draught of it, Tab. 14, Fig. 1.

150. Where-
150. Wherein a a and b b shew the walls of the Theater that support this frame of timber, and the places of the pilasters of the rail and balustr ard round it; c c c and d d d the leads and pipes let down into the wall for conveyance of water; e e e and f f f the wall plate or lintel, and places of its joints; g g g the girders of the semi circle, each supported by a King piece or Crown post cut off at b b b, and screwed into the binding beam i i i; which is somewhat different from the rest of the binding beams k k k, l l l, m m m, n n n, having several prick-pots let into it at o o o o, beside the King-posts that support this and the rest at p p p p, &c. The Letters q q q shew the purlines between the binding beams, not set right against one another because of room to turn the screws whereby they are fastened, and r r r r two dragon (perhaps rather Trigon) beams or braces lying under the joists s s s s, &c. the true lengths and distances whereof, and of all other pieces of timber and places whatever, are all shewn by the scale Fig. 2.

151. And so are the lengths and distances of the several pieces of timber set over this flat floor, such as the principal rafters t t t t, the Crown posts or King pieces u u u u, the prick posts w w w, braces or punchons x x x x, by all which together the binding beams, girders, joists, &c. are all held up as it were by an Arch above, as in Tab. 14. Fig. 3, which is the whole band of Timber that stands next the semi circle, having prick posts and different lockages from the rest of the four bands, as is sufficiently represented by one half of one of them, Tab. 14. Fig. 4.

152. Which is all I think need be said concerning this fine piece of Timber-work, only that there are cross braces between the middle Crown posts as they stand in a line from the front to the semicircle, as is represented Tab. 14. Fig. 5. mark'd with the letters y y y y y y both here, and as they stand Fig. 1. And that it was contrived by our English Vitruvius, the Right Worshipful and Learned Sir Christopher Wren, and worked by Richard Frogley an able Carpenter; and both this, and the Stone-work too, at the sole charge of the most Reverend Father in God Gilbert, by Divine Providence, Lord Arch-Bishop of Canterbury, Primat of all England, and Metropolitan, who finishing, and having endowed it with a competent Estate for its reparations for ever, It is like to stand a most magnificent and lasting monument of his Graces Munificence, and favor of good Learning to all posterity.
153. There are several other roofs in this University also well worth the noting, whereof some are flat or under-pitched, as the roof of the great Hall at Christ Church College, and the roofs of the Chappels and Halls at Magdalen College and New College; others due proportion'd, or over-pitched, such as at Jesus, Wadham, Corpus Christi, Exeter, and Oriel Colleges; which yet having nothing extraordinary either in their contrivance or workmanship, I pass them by, and proceed next.

154. To some remarkable pieces of Painting that we have here at Oxon; amongst which (to omit the deformation of a Cæsar's head to be seen in the Schools, brought into shape by a metalline Cylinder, and several others of the kind at Sir Anthony Copes; and that Painting itself was first brought into England by Venerable Bede of this University *) I take the Painting of the Theater to be well worth examination: for in imitation of the Theaters of the ancient Greeks and Romans, which were too large to be covered with lead or tile, so this by the Painting of the flat roof within, is represented open: and as they stretched a cordage from Pilaster to Pilaster, upon which they strained a covering of cloth, to protect the people from the injuries of the weather, so here is a cord-molding guilded, that reaches cross and cross the house both in length and breadth, which supporteth a great reddish Drapery, supposed to have covered the roof, but now surl'd by the Genii round about the House toward the walls, which discovereth the open Air, and maketh way for the descent of the Arts and Sciences, that are congregated in a circle of clouds, to whose assembly Truth descends, as being solicited, and imploted by them all.

155. For joy of this Festival some other Genii sport about the Clouds, with their Festoons of Flowers and Laurels, and prepare their garlands of Laurels and Roses, viz. Honor and Pleasure for the great lovers and Students of those Arts: and that this assembly might be perfectly happy, their great enemies and disturbers, Envy, Rapi, and Brutality, are by the Genii of their opposite Virtues, viz. Prudence, Fortitude, and Eloquence, driven from the Society, and thrown down head-long from the Clouds: The report of the assembly of the one, and the expulsion of the other, being proclaimed through the open and serene Air, by some other of the Genii, who blowing their antick Trumpets, divide themselves into the several Quarters of the World. Hitherto in grofs.

156. More particularly the circle of Figures consists first of Theology, with her Book with seven seals, imploring the assistance of Truth for the unfolding of it. On her left hand is the Mosaical Law vailed, with the Tables of Stone, to which the points with her Iron rod. On her right hand is the Gospel, with the Cross in one hand, and a Chalice in the other. In the same division over the Mosaical Law is History, holding up her Pen as dedicating it to Truth, and an attending Genius with several fragments of old Writing, from which she collects her History into her Book: On the other side, near the Gospel, is Divine Poetry with her Harp of David's fashion.

157. In the triangle on the right hand of the Gospel, is also Logick in a posture of arguing; and in another on the left hand of the Mosaical Law, is Music with her antick Lyre, having a Pen in her hand, and paper of music notes on her knee, with a Genius on her right hand (a little within the partition of Theology) playing on a flute, being the emblem of the most ancient music; and on the left (but within the partition for Physick) Dramatick Poetry, with a vizard representing Comedy; a bloody dagger for Tragedy, and the reed pipe for Pastoral.

158. In the square on the right side of the Circle, is Law, with her ruling scepter, accompanied with Records, Patents, and Evidences on the one side; and on the other with Rhetorick: by these is an attending Genius with the scales of Justice; and a figure with a Palm branch, the emblem of reward for virtuous actions; and the Roman Fasces, the marks of Power and Punishment. Printing, with a Cafe of Letters in one hand, and a Form ready set in the other, and by her several sheets hanging as a drying.

159. On the left side the Circle opposite to Law is Physick, holding the knotty staff of Esculapius, with a serpent winding about it: The Botanist imploring the assistance of Truth in the right understanding of the nature of her Plants: Chymistry with a Retort in her hands: and Chyrurgery preparing her self to finish the dissecting of a head, which hath the brain already opened, and held before her by one of the Genii.

160. On the other side of the circle opposite to Theology, in three squares are the Mathematical sciences (depending on demonstration, as the other on Faith) in the first of which is Astronomy with the Celestial globe, Geography with the terrestrial, together with
three attending Genii; having Arithmetick in the square on one hand, with a paper of figures; Optick with the Perspective-glasses; Geometry with a pair of compasses in her left, and a Table with Geometrical figures in it, in her right hand: And in the square on the other hand, Architecture embracing the capitol of a column, with compasses, and the norma or square lying by her; and a workman holding another square in one hand and a plumb-line in the other.

161. In the midst of these squares and triangles (as descending from above) is the figure of Truth seated on a cloud, in one hand holding a Palm-branch (the emblem of Victory) in the other the Sun, whose brightness enlightens the whole circle of figures, and is so bright, that it seems to hide the face of herself to the spectators below.

162. Over the entrance of the front of the Theater are three figures tumbling down; first Envy with her snaky hairs, squint eyes, bags breasts, pale venomous complexion, strong but ugly limbs, and revell'd skin, frighted from above by the light of the shield of Pallas, with the Gorgon's head in it, against which she opposes her snaky tresses, but her fall is so precipitous, that she has no command of her arms.

163. Then Rapine with her fiery eyes, grinning teeth, sharp twangs, her hands imbrowed in blood, holding a bloody dagger in one hand, in the other a burning Flambeau, with these Instruments threatening the destruction of Learning, and all its habitations, but is overcome and so prevented by a Herculean Genius, or Power. Next that is represented brutish scoffing Ignorance, endeavoring to vilifie and contemn what the understandst not, which is charmed by a Mercurial Genius with his Caduceus. Which is the sum of what is designed by the painting of the Theater, for the most part thus described by William Soper M. A. of Wadham College, after of Hart Hall, only with some few additions and necessary alterations.

164. Beside the painting of the Theater, there are other fine pieces perhaps as well worthy notice, such are the Resurrections at Magdalen and All-souls Colleges, both of Fullers work; though the latter indeed be somewhat defaced. The written Picture of his Majesty King Charles the first, in St. Johns College Library, taking up the whole Book of Psalms in the English tongue; and the written Picture of King James, and the Arms of England (as now born) taking up the whole Book of Psalms in the Latin, in the
hands of Mr. Moorhead Rector of Bucknel, are pretty curiosities, and much admired.

165. And so is the Cat painted over one of the compartments including the Arms of the University, in the South side of the gallery at the Schools, for her looking directly upon all her Beholders, on what side ever they place themselves; which common, yet surprizing effect of the Painters Art, is caused, says the ingenious Honoratus Faber *, in all Pictures whatever of this nature, by their turning the nofe to one side and the eyes to the other; whence it comes to pass that such Pictures seem to look to the right side, because indeed the eyes are turned that way; and to the left in like manner, because the point of the nofe is turned to the left: where by the way he also notes, that 'tis necessary that all such pictures be drawn on flat tables, so that the Beholder perceive not that the eyes of the picture are turned contrary to the nofe; which he must needs do if the eyes of the portrait were convex, concluding, that no figure can be made in Rilieue thus to look every way.

166. To this place also belongs the Invention of drawing Pictures by Microscopical glasses by Sir Christopher Wren 1, and the Invention of Mr. Bird Stone-Cutter or Carver of Oxford, of sinking a colour a considerable depth into the body of pulifh'd white marble, by application of it to the out-side only, so that the same Figures delineated without, shall be as perfectly represented within, deeper or shallower, according as he continues his application to the surface a longer or shorter while 2. And if we may take in Etching, which is painting in Copper, there is a very curious and speedy way also invented, by the so often mentioned Sir Christopher Wren 3. And which borders still on these, in the Statuaries Trade, we can shew two excellent pieces of Art, in the Statues of Bras of King Charles the first, and his Queen Henrietta, placed in the Niches over the gates of the new Quadrangle in Saint John Baptist College Oxon.

167. In some other Trades yet inferior to these, there have been made also considerable Inventions and Improvements, such as that of weaving silk stockings, first invented by one Mr. William Lee M.A. of this University, who being married and poor, and observing how much pains his Wife took in knitting a pair of Stock-
ings, put himself on thinking of a nearer way: whereupon having observed the contrivance of the stitches by unravelling a stocking, he designed a Loom accordingly, which succeeded so well, that (with but small alteration) it remains the same to this very day.

168. And 'tis confidently vouched, that the Engine for cutting of handles of Knives, we commonly buy cut into those various figures, was first invented and practiced here in Oxford by Thomas Pierce a Cutler, whose Apprentice now practices the same Art in London: But not with so much accuracy, as Robert Alder another Cutler of Oxford, who only by observance of the others work, and long study, at last found it out also, and hath improved it much: which two last, as I am informed, are the only two persons that can do this in England, perhaps I may say in 'World. Nor can I pass by the Invention in the Coopers Trade, of making barrels without hoops, whereof I found a specimen in St. Ebbs Parish Oxon. though I know the Invention belongs to another place, of which more when I come thither.

169. For Improvements, 'tis certain that the Blanketing trade of Witney is advanced to that height, that no place comes near it; some I know attribute a great part of the excellency of these Blankets to the absefsive nitrous water of the River Windrush whereby they are scoured, as was mentioned before, cap. 2. §. 12, but others there are again that rather think they owe it to a peculiar way of loose spinning the people have hereabout, perhaps they may both concur to it: However it be, 'tis plain they are esteemed so far beyond all others, that this place has engrossed the whole trade of the Nation for this Commodity; in so much that the wool fit for their use, which is chiefly fell wool (off from Sheep-skins) centers here from some of the furthermost parts of the Kingdom, viz. from Rumney-marsh, Canterbury, Colchester, Norwich, Exeter, Leicester, Northampton, Coventry, Huntington, &c. of which the Blanketers, whereof there are at least three-score in this Town, that amongst them have at least 150 Looms, employing near 3000 poor people, from children of eight years old, to decrepit old age, do work out above a hundred packs of wool per week.

170. This Fell wool they separate into five or six sorts, viz.: long fell wool, head wool, bay wool, ordinary, middle, and tail wool: Long fell wool they send to Wells, Taunton, Tiverton, &c. for making
king worsted stockings; of head wool and bay wool, they make the blankets of 12, 11, and 10 quarters broad, and sometimes send it, if it bear a good price, to Kidderminster for making their stuffs, and to Evesham, Parsloere, &c. for making yarn stockings; or into Essex for making Bays, whence one sort of them I suppose is called bay wool: of the ordinary and middle they make blankets of 8 and 7 quarters broad; and of these mixt with the courser locks of fleece wool, a sort of stuff they call Duffields (which if finer than ordinary, they make too of fleece wool) of which Duffields and blankets consists the chief Trade of Witney.

171. These Duffields, so called from a Town in Brabant, where the trade of them first began (whence it came to Colchester, Braintry, &c. and so to Witney) otherwise called bags, and by the Merchants, trucking cloth; they make in pieces of about 30 yards long, and one yard 3/4 broad, and dye them red or blue, which are the colours best please the Indians of Virginia and New England, with whom the Merchants truck them for Bever, and other Furs of several Beasts, &c. the use they have for them is to apparel themselves with them, their manner being to tear them into gowns of about two yards long, thrusting their arms through two holes made for that purpose, and so wrapping the rest about them as we our loose coats. Our Merchants have abused them for many years with false colours, that they will not hold their gloss above a month's wear; but there is an ingenious person of Witney that has improved them much of late, by fixing upon them a true blue dye, having an eye of red, whereof as soon as the Indians shall be made sensible, and the disturbances now amongst them over, no doubt the trade in those will be much advanced again.

172. Of their best tail wool they make the blankets of 6 quarters broad, commonly called cuts; which serve Sea-men for their Hammocks, and of their worst they make Wednel for Collar-makers, wrappers to pack their blankets in, and tilt-cloths for Barge-men. They send all the sorts of Duffields and Blankets weekly in wagons up to London, which return laden with fell wool from Leaden-hall, and Barnaby-street in Southwark, whether 'tis brought for this purpose from most places above-mention'd; Oxfordshire and the adjacent Counties being not able to supply them.

173. There are also in this Town a great many Fell-mongers, out of whom at the neighboring Town of Bampton, there arises an-
another considerable trade, the Fell-mongers' sheep-skins, after
dressed and strained, being here made into wares, viz. Jackets,
Breeches, Leather linings, &c. which they chiefly vent into Berks- 
shire, Wiltshire, and Dorsetshire, no Town in England having a 
trade like it in that sort of ware.

174. Which two trades of the Towns of Witney and Bampton, 
are the most eminent, that are too, the most peculiar of this Coun-
ty. The Moulding trade of Oxford and Henly on Thames, 'tis true 
are considerable, and Burford has been famous time out of mind 
for the making of Saddles; and so has Oxford had the reputation 
of the best Gloves and Knives, of any place in England; but these 
trades being not peculiar to the places where they are practised, I 
therefore pass them by without further notice.

175. But the Starch trade of Oxford, though indeed it be not 
great, yet being practiced in few places, and the method known 
to fewer how it is made, its discovery perhaps may be acceptable 
to some, I shall not therefore stick to give a short account of it. 
Let them know therefore, that the substance we commonly call 
Starch, notwithstanding its pure whiteness, is made of the shortefl 
and worst bran that they make in the Meal shops, worse than that 
they sell to Carriers to feed their Horses; This they steep in a water 
prepared for that purpose (by a solution at first of Roch-Alum, a-
bout a pound to a Hogshead, which will last for ever after) for ten 
or fourteen days in great tubs; then 'tis taken and washed through 
a large Oifer basket over three other tubs, the lower water of the se-
cond tub washing it into the first; and the lower water of the third, 
into the second; and clear water from the Pump washing it into 
the third.

176. Where by the way it must be noted, that only Pump wa-
ter will serve the turn to give it this last washing, and continue 
the waters sowerness for ever after, by reason I suppose of the in-
cisive particles of salt to be found in most Pump waters (which are 
plain from their not taking soap) that are apt to work upon and 
separate the finest flower yet sticking to the bran (notwithstanding 
the mill and sieve) which at last becomes Starch.

177. What remains in the basket at last after the three washings, 
is thrown upon the dung-hill, which, as they have found of late, 
becomes a very good manure for meadow land, and should there-
fore have been mentioned in the 70 §. of this Chapter, amongst 
the
the uncommon manures. And the fine flower thus washed from the bran, is let stand again in its own water for about a week, then being all settled at the bottom, it is stirred up again and fresh Pump water added, and strained from its smallest bran through a Lawn sieve; which done, they permitt it to settle again, which it does in one day, and then they draw off the water from it all to a small matter: then standing two days more, it at last becomes so fixed, that with a burchen broom they sweep the water left at the top, (which is a sliny kind of matter) up and down upon it to cleanse it from filth, and then pouring it off, they wash its surface yet cleaner, by dashing upon it a bucket of fair Pump water.

178. Which done, they then cut it out of the tubs in great pieces with sharp trowels, and box it up in troughs, having holes in the bottom to drain the water from it, always putting wet cloths between the wood and it, for the more commodious taking it out of the troughs again to dry, which they do within a day; laying it first on cold bricks for about two days, which suck away a great deal of moisture from it, and after over a Bakers oven four or five days together, which will dry it sufficiently, if intended only to be ground to powder for hair, as it is chiefly here; but if intended to be sold as starch, they then use a stove to give it the starch grain, which the oven will not do.

179. From the inferior, I proceed to the superior Arts and Sciences, and others instrumental to them, for in these too, there have been many Inventions and Improvements made in this University. In enumeration whereof, if we begin so low as the very Elements of Speech, we shall find that the Reverend and Learned Dr. Wallis, Savilian Professor of Geometry here, first observed and discovered the Physical or Mechanical formation of all sounds in Speech, as plainly appears from his Treatise de Loguela, prefix'd to his Grammar for the English Tongue, first publish'd in the Year 1653.

180. In pursuance whereof, he also found out a way whereby he hath taught dumb persons (who were therefore dumb because deaf) not only to understand what they read, and by writing to express their minds, but also to speak and read intelligibly, according to directions for the artificial position and motion of the Organs of Speech, and thereby also assist'd others who have spoken very imperfectly. Of which no more, there being a particular account
account given by himself in our English Philosophical Transactions, of July 18. 1670 b.

181. I know that the Right Reverend Father in God John Wilkins, late Lord Bishop of Chester, hath also laid down the distinct manner of forming all sounds in Speech, and shewed in Sculpture which letters are Labial, Lingual, Nasal, &c. and how the Epiglottis, Larynx, Aetera Arteria, and Oesophagus, conduce to them. Since him, in the Year 1669. the Reverend and Ingenious William Holder D.D. publish'd an Essay of Inquiry into the Natural Production of Letters, together with an Appendix to instruct persons deaf and dumb c. Yet whether either of these, with advantage of what Dr. Wallis did before, have with more accuracy of judgment performed the same, I dare not by any means take upon me to determine.

182. The same Dr. Wallis hath also, with great sagacity, deciphered many things written in Cyphers, of very intricate and perplexed contrivance, beyond what hath been known to have been done by any other, whereof there be Examples of many in a MS. Book of his, reserved in the Archives of the Bodleian Library.

183. Add hereunto the ingenious Invention of a Universal Character, or Philosophical Language, first contrived here at Oxford by Mr. George Dalgarno M. A, who in the Year 1656. endeavoring to improve the Art of Short-hand beyond what others had done, by expressing the auxiliary Particles of the English Language, by distinct points and places about the radical or integral words, after the manner that 'tis done by prefixes and suffixes in the Hebrew; found at last that there was no way to distinguish the affixed points which he intended to be used really, from those used before in the common way of Short-hand (where not only the Capital Character, but points about it were Alphabetical) but by making the principal Character itself, to which they were to be accessory, not Alphabetical but real.

184. Thus having formed Tables both of Integrals and Particles, to be expressed by single Characters, he perceived at length, that he was gone unawares further than ever he intended, having not only improved the Art of Short-hand, but also discovered a real Character equally applicable to all Languages: And after he

---

had pursued the design of a *dumb* Character a considerable time, at last he perceived that it would naturally resolve itself into a Language, having this advantage over any Character, that we may use our known Alphabet to express it, whereas in a Character the figures must be new. At length having digested his whole contrivance into a *Synopsis,* he communicated it to several Learned Men, whose approbation and certificates procured him good encouragement; but he met with no Man that took so much pains to understand the Novelty, or so zealous to have it finished and come abroad, as the Reverend and Learned Dr. John Wilkins late Lord Bishop of Chester, then the worthy Warden of Wadham College.

185. The last thing he attempted in his Tables, was the reducing the *species* of Natural Bodies to the rules of Art, the reason of which delay, was because he perceived that they occurred but seldom in common discourse, and that there was but little Grammatical difficulty about them, though in number they much excelled all the other *simple notions,* which make the body of a Language: His judgment then being, and as far as I can perceive, still remaining unshaken, notwithstanding what has been done since, that from a few *general* words allowed to be *radical,* the names of the inferior *species* should be made off by composition, adding to the *general* and *radical* word, one, or sometimes more such words taken from the Table of *Accidents* as might describe the intended *species,* and difference it from all *others,* and sometimes also to allow *Periphrases.*

186. And this *Institution,* as he takes it to be grounded upon nature and necessity, as appears more or less in all Languages, so he thinks it approved by the highest *Examples* that ever *Art* was: For God Himself named the first *Man,* though a single *Individual,* not by a word of a *first,* but *second* *institution,* and *Adam* as a perfect *Philosopher* imitating his *Maker,* named all living *Creatures* not by words of a *first* *institution,* antecedently insignificant, but by such as by an *antecedent* *institution,* might be apt to express something of their nature, for otherwise the common opinion of *Divines* that *Adam* gave names to the *Creatures* according to their natures, would be absurd.

187. Which *Institution* he takes also to have this further *advantage,* that the name of any single *species* may be known with-
out obliging the Learner to carry in his memory all the Predicamental Series of its fellow Species; so that names of common use may be known, passing by others that are not so, which to Learners is as great an encouragement, as the obtruding things not necessary is a discouragement to them. According to this Institution, he published a Specimen called Ars Signorum, in the Year 1660. containing but 500 Radicals, all the Particles being brought from the Radicals by which they are resolved; every Radical, except the genera intermedia being Monosyllables, and all things else being made off from these by composition, which is allowed here in its fullest latitude. *Quidlibet cum quolibet pro re nata*, provided the simple terms loose nor change nothing of signification, by composition.

188. But the Reverend and Learned Dr. John Wilkins, who thoroughly understood and commended his labors in the former part of the work, thinking perhaps that this way of composition would produce too long words, or that the various conceptions of Men, must needs cause different compositions and descriptions of the same things, and thence unavoidably bring misunderstandings (which yet Mr. Dalgarno thought might be avoided by stating of notions and a collection of Formula's) did not approve of this Institution; declaring his judgment to be, that all the Species of Natural Bodies (according as he owns, was suggested to him by that most learned and excellent person Dr. Seth Ward, the present Bishop of Salisbury *) ought to be provided for as Radicals, by a regular enumeration of them according to the Theories of the Schools.

189. Nor did he approve of his rejection of a Character, since a graceful one might be contrived more proper for Brachygraphy, and equally convenient for many Nations, with the common Alphabet: Nor of his bringing the Particles from the Radicals by which they are resolved; judging perhaps their composition, beside the reducing some of them handsomely, more troublesome than that, of learning a small, yet sufficient number of them disposed regularly in schemes, and noted with smaller Characters than those of Integrals. All which may be collected from the learned Essay towards a real Character, or Philosophical Language, put forth by that highly ingenious person then Dean of Rippon, An. 1668.

*Essay towards a Real Character, in the Epistle to the Reader.*
Of OXFORD-SHIRE.

190. In which, though 'tis true the number of Radicals are near 3000, yet are they so ordered by the help of a natural method, that they may be more easily learned and remembred than 1000 words otherwise disposed of, upon which account they may be reckoned but as 1000. For the Signa (they are so methodically contrived) they may be all learned in less than an hour, were they twice as many; the difficulty therefore must be in the signata, but these being drawn up in schemes, so that one notion will clearly depend upon another, they seem to be a perfect artificial memory, rather than require any help to be remembred. Notwithstanding it leaves a large scope, enough for derivation and composition, as may be seen by the Tables, where several words, though no Synonoma's to it, may be made off from a Primitive, as Queen, Crown, Scepter, Throne, from the Radical [King]; and so from the Primitive, [sheep] are made off, ram, ewe, lamb, weather, mutton, bleat, fold, flock, shepherd, &c. which compositions are clear, though the greatest difficulty of the Language consists in these.

191. Yet I shall not offer to determine which of these is to be preferr'd, leaving that wholly to the Readers judgment, who may consult both Treatises: It being sufficient for me, that a Universal Character and Philosophical Language can be no more reckoned amongst the Desiderata of Learning, and that the defect was first supplied here at Oxford; the Contrivances of both being first founded here, and both grounded upon rational and solid principles, with greater advantages of facility, than can be believed possible to any that have not made tryal. And this is all concerning Letters and Language, but that John Basinstoke also an Oxford man, Figuras Graecorum numerales in Angliam portavit, & earum notitiam suis familiaribus significavit, de quibus figuris hoc maxime admirandum, quod unica figurâ quilibet numerus significatur, quod non est in Latino vel in Algorismo.

192. In Logick the subtile Johannes Duns Scotus, Fellow of Merton College, was the Father of the Seft of the Reals; and his Scholar Gutilius Occham, somtimes falsely printed Holran, of the same House, Father of the Seft of the Nominals, betwixt whom as the story goes, there falling out a hot Dispute (Scotus being then Dean of the College, and Occham a Bachelor Fellow) where-

---

in though the latter is said to have obtained the better, yet being but an inferior, at parting submitted himself with the rest of the Bachelors to the Dean in this form, Domine quid faciemus, as it were begging punishment for their boldness in arguing; to whom Scotus returning this answer, Ite, & facite quid vultis. They forthwith brake open the Buttery and Kitchin doors, taking all they could meet with, making merry with it all night: Which, 'tis said, gave occasion to their observing the same diversion to this very day, whenever the Dean keeps the Bachelors at Difputation till twelve at night, which they now commonly call a Black night.

193. Rogerus Swifset, alias Swinshead, of the same College, was the first Contriver of the Art Calculatory in disputation, wherein says the Learned Selden, Multiplicatis particulis negativis & trajeatis per esse, & non esse, Calculo (which was Beans and Peas) opus erat, quoties erat disputandum *. But others who have consulted more of his Works than I suppose Mr. Selden ever did, rather think this Art Calculatory, to be some way he had to determine the proportions of matters capable of proportion or degrees, such as action, motion, reaction, intention, remission, &c. whereof the Reader, if he think it worth while, may further satisfy himself from his Printed Works; such as his Introductorium in Calculationem, his Calculationes cum Questi. de Reactione, his Treatises de intensione & remissione, maximo & minimo; to which add, M. Baffani Politi, Introductorium in Calculationes Swifset, most of which, if not all, are in Merton College Library.

194. The same Roger Swifset found out many things in Mathematicks, which no body found before him, & perpauci posse eum jam Inventa comprehendere valuerunt, says Pitseus of him f. And the Honorable Robert Dudley of Chris. Church College Oxon (made Duke by the Emperor g, with the Title of Northumberland here in England, whereof he sanied himself wrongfully deprived) contrived many Engines and Mathematical Instruments not known before, now in the possession of the Great Duke of Tuscany, to whose Ancestors he applied himself in his discontent, by whom he was succor'd and highly valued for his great Learning, and with whom his Children now remain to this day in Wealth and Honor, retaining

ing the Titles of Dukes of Northumberland and Earls of Warwick and Leicester; which Titles others say, and perhaps more rightly too, were conferred on them by the Pope, in whose Quarter they were pretended at least to have been lost.

195. Of later years the highly ingenious Sir Christopher Wren, in the year 1668, first found out a straight line equal to a Cycloid and the parts thereof, as is clearly made appear in his behalf by the Right Honorable and Learned, the Lord Viscount Brouncker, Chancellor to Her Majesty, and President of the Royal Society; and the Reverend and Learned Dr. John Wallis. The same Right Worshipful and very learned Person Sir Christopher Wren, found out also several new Geometrical Bodies, that arise by the application of two Cylinders and one Lenticular Body, fit for grinding one another; by whose mutual attrition will necessarily be produced a Conoides Hyperbolicum, and two Cylindroides Hyperbolica: The Engine whereby this may be done being represented in Sculpture in our Philosophical Transactions, and designed for grinding Hyperbolic glasses. He also first observed that a plain straight edged Chisel, set any way obliquely to a Cylinder of wood, did necessarily torn it into a Cylindroides Hyperbolicum Convexo-concavum, the several sections whereof are accurately demonstrated by the Reverend and Learned Dr. John Wallis our English Archimedes.

196. The same Dr. John Wallis, Savilian Professor of Geometry in this University, in the year 1656, published his new method called his Arithmetick of Infinites, for the more expedite and effectual enquiry into the Quadrature of Curvilinear figures, or other difficult Problems in Geometry; and therein, amongst other things (at the Scholium of his 38 Proposition) shewd the way of comparing straight and crooked lines, which gave occasion to Mr. William Neil (in pursuance thereof) in the year 1657, to find out (the first of any Man) a straight line equal to a Curve, of which we have an account in the Philosophical Transactions of Novemb. 17. 1673.

197. The same Reverend and Learned Dr. John Wallis, amongst his other numerous and new Performances in Arithmetick and Geometry, first demonstrated the impossibility of Squaring the Circle; Arithmetically, according to any way of notation yet ge-

---

eraly received, and what kind of new notation must be introduced to express it, with divers methods of squaring the Circle, Ellipsis, and Hyperbole, so far as the nature of Numbers will bear, having apply'd his method of Infinites in order thereunto; as also for rectifying of Curve-lines, planing of Curve-surfaces, squaring of innumerable sorts of Curve-lined figures, plain and solid (amongst which are a multitude of figures of infinite length, and finite content) determining their Centers of Gravity, and other accidents.

198. He has also adjusted the strength of percussions and reflexions (or repercussions) and other motions to Geometrical measures, deduced from principles of Elasticity; and has estimated the artificial force acquired in all sorts of Mechanick Engins, deduced from our common principle of the Reciprocation of strength and time; with many other improvements of Arithmetick, Algebra, Geometry, Mechanicks, and other parts of Mathematicks, in his Arithmetick of Infinites, his Treatise of the Cycloid, with that joined of the rectification of Curves; his Treatise of Motion, and other his Printed Works.

199. In Musick (which is Arithmetick adorned with sounds) to pass by a Harpsichord that I met with at Sir Tho. Penyslons with Cats-gut strings. It hath been lately observed here at Oxford, that though Viol or Lute strings rightly tuned do affect one another, yet most of them do it not in all places alike, as has till now been supposed: for if the leffer of two Octaves be touched with the hand or bow, each half of the greater will answer it, but will stand still in the middle; and if the greater of the two Octaves be touched on either of its halves, all the leffer will answer it, but if touched on the middle, the leffer will not stir any where at all. So if the leffer string of two fifths be touched on either of its halves, each third part of the greater will answer it, but if on the middle they will not stir; and if the greater of two fifths be touched on either of its thirds, each half of the leffer will answer it, but if in the divisions they will not stir: and so of twelfths, fifteenths, &c.

200. Which Phenomena I shall always gratefully acknowledge were first discovered to me by the ingenious Thomas Pigot B. A. and Fellow of Wadham College, which have also been observed for about these two years, by the no less ingenious William Noble M. A.

* Vid. Arithmetickam Infinitorum, Prop. 197. cum Scholio sequ.
of Merton College: The solution whereof in all their Cases, as received from the learned and accurate hand of the Reverend Narcissus Marhs D. D. and Principal of St. Alban Hall, one of the most cordial Encouragers of this Design, take as followeth: which though so exquisitely done, that it seems not capable of much addition or amendment, yet he modestly will have called but a short Essay touching the (esteemed) Sympathy between Lute or Viol strings.

201. Wherein be first lays it down as a Postulatum, that if two Lute or Viol strings be rightly tuned, the one being touched with the hand or bow, the other will answer, or tremble at its motion, which holds also in some measure in Wire strings; and between Organ pipes and Viol strings, but not between Wire and Viol strings. For the clearer solution of which Phenomenon in all its cases, he has laid down these two following Principles.

Princip. i. That strings which are Unisons are of the same, or a proportionable length, bigness, and tension; so that by how much any string is longer than other, ceteris paribus, by so much smaller, or more tended; and by how much bigger, by so much shorter or more tended must it be, to render them Unisons, which will appear in the following Cases. Whereunto be premiseth,

That in strings moved by an equal force, through a like medium, the difference of motion does arise from the difference of magnitude and tension, wherefore (the force and medium being alike) be premiseth i. That strings of the same size move equally fast, because they cut the Air with the same facility. Hence

2. That the greater any string is in diameter (or circumference) the flower it moves (and on the contrary) because it finds the greater resitance in the Air.

3. That strings of the same length and tension move to the same distance, because they have the same compass to play. Hence

4. That the longer, or less tended, any string is, the farther it moves (and on the contrary) because of the greater compass it can fetch.

Whence he infers this Conclusion, That (in strings moved through the same medium) the swiftness of motion does arise from the greater force, and less size or bigness; the compass of vibration, from the greater length (or force) and...
290

The Natural History

less tension; and the quickness or frequency of vibration, from the greater or swifter motion, and less compass.

202. This premised, he proceeds to his first Hypothesis, and shews, that if AB and CD, Tab. 15. Fig. 1. be equal in length, as in Viol string, what sounds and vibrations they will produce according to their different bigness and tension in the following Cases.

Cas. 1. Let $AB = (i. e. \text{ be equal to}) CD$, Tab. 15. Fig. 1. have the same cize and tension, and be touched with an equal force, they will vibrate to equal distances $EG=IK$ (per præmissam 3) in the same time (per præm. 1.) whereby striking the Air into alike arches, or arches of equal circles, with the same briskness, and alike quick or frequent returns of their vibrations, they will produce the same sound, and so be unisons, 1 to 1 vibration.

Cas. 2. Let $AB=CD$, Fig. 1. have the same cize and a greater tension, 'twill with the same force, vibrate proportionally to a less distance (per præmis. 4.) in a shorter time (per præm. 1.) as, if double the tension, to half the distance $EF=\frac{1}{2}EG$ or $IK$, in half the time; striking the air into an arch of a greater circle (and that so much the greater, as $AB$ is a chord of fewer degrees to $AGB$, the less) which doing brisk and smartly with a quick return, because of the little compass it fetches, 'twill beget a sound so much the more acute, as its vibrations (are shorter, and thereby) come thicker and oftener; i.e. of double the acuteness, or an upper octave to $CD$ 2 to 1 vibration.

Cas. 3. Let $AB=CD$, Tab. 15. Fig. 2. have a greater cize and the same tension, it will with the same force, vibrate to the same distance $EG=IK$ (per præm. 3.) but in a longer time proportionally (per præm. 2.) as, if it be double in diameter (and so in circumference, i.e. quadruple in bulk) in twice the time; striking a Note so much the more grave, as its vibrations return flower and seldomer, and are thereby fewer, i.e. twice as grave, or an under octave to $CD$, 1 to 2 vibrations.

Cas. 4. Let $AB=CD$ Fig. 2. have as much greater a cize as tension, it will, with an equal force, vibrate to a less distance pro-
proportionally; as if double the cize and tension, to half the distance \(EF = \frac{1}{2} EG\) or \(IK\) in the same time (per Cæs. 2. & 3.) and so keeping touch in their vibrations, they will strike unisons to 1 vibration.

Cæs. 5. Let \(AB = CD\) Fig. 2. have as much greater cize as less tension, 'twill with the same force vibrate to a greater distance proportionably, in a time greater in a duplicat proportion; as if double the cize, and but half the tension, to double the distance \(EH = 2 EG\) or \(IK\), in quadruple the time (per Cæs. 2. & 3.) and so will strike an under diatessaron or 15\(^{th}\) to \(CD\), 1 to 4 vibrations; as on the contrary \(CD\) to \(AB\) an upper, 4 to 1 vibration.

Whereby the way be gives notice, that when be speaks of strings (of a different cize) being moved by the same or an equal force (which is also to be understood in all the following cases where not express) that he means it that way their gravity does propend, viz. downward in those that are Horizontally streined, left their proper gravity might be thought to cause a difference.

203. Thus having absolved his first Hypothefis concerning strings of equal length, he proceeds to his second, and shews that if \(AB\) and \(CD\), Fig. 3. be unequal in length, as in most Lute-stringes, what vibrations and sounds they will produce, according to their different cizes and tension also in the following Cæs.

Cæs. 1. Let \(AB > \) (i.e. be longer than) \(CD\), Tab. 15. Fig. 3. have the same cize and tension, it will with an equal force, vibrate proportionably to a greater distance (per præm. 4.) in a greater time (per præm. 1.) as if twice as long to double the distance, \(LN = 2 LM\); For \(AL, LN, CL, LM\) (per AN. CM, NL, ML) (per 4. 6. Euc.) ergo Arch. \(AN = \) Arc. CMD and that in twice the time; striking the air into an arch of a circle of double the Radius; by which double flower return of its vibrations, 'twill produce a sound twice as grave, or an under octave to \(CD\), 1 to 2 vibrations.

Cæs. 2. Let \(AB > CD\) Fig. 3. have the same cize, and a tension as much greater as 'tis longer, 'twill with an equal force, vibrate to the same distance \(LM\) (per præm. 4. vel per Cæs. 1. Hyp. 2. & Cæs. 2. Hyp. 1.) in the same time (per præm. 1.) striking the air (with alike briskness) into an arch of a circle, so
much greater proportionably, as \( CD \) is the chord of fewer degrees, and so will produce alike sounds or unisons. 1 to 1 vibration.

Cas. 3. Let \( AB > CD \), Fig. 3. have the same cize and a tension as much less, as 'tis longer; 'twill vibrate to a distance, and in a time greater in a duplicate proportion (per præm. 4. vel per Cas. 1. Hyp. 2. & Cas. 2. Hyp. 1.) as, if being double, it has but half the tension to quadruple the distance \( LO=4LM \) in quadruple the time, and so will produce 2 found 4 times as grave, or an under disdiapason to \( CD \) 1 to 4 vibr.

Cas. 4. Let \( AB > CD \), Tab. 15. Fig. 4. have a cize as much greater as 'tis longer, and the same tension. 'twill vibrate to a greater distance proportionably (per præm. 4. vel per Cas. 1. Hyp. 2.) in a time greater in a duplicate proportion (per præm. 2. vel per Cas. 3. Hyp. 1.) as if double in length and cize, to double the distance \( PR=2PQ \) in quadruple the time; and so will strike an under disdiapason or 15th to \( CD \) 1 to 4 vibr.

Cas. 5. Let \( AB > CD \), Tab. 15. Fig. 5. have a cize as much less as 'tis longer, and the same tension; 'twill with the same force, vibrate to a greater distance proportionably (per præm. 4. vel Cas. 1. Hyp. 2.) as if twice as long to double the distance \( TX=2TV \), in the same time (per præm. 2.) and so keeping pace in their vibrations will strike unisons, 1 to 1. vibr.

Cas. 6. Let \( AB > CD \), Fig. 4. have both cize and tension as much greater as 'tis longer, 'twill vibrate to the same distance \( PQ \) (per præm. 4. vel Cas. 2. Hyp. 2.) in a longer time proportionably (per præm. 2.) as if double the cize, in twice the time, and so will strike an under octave, 1 to 2 vibrations.

Cas. 7. Let \( AB > CD \), Fig. 5. have both cize and tension as much less, as 'tis longer; 'twill vibrate to a distance greater in a duplicate proportion (per. Cas. 3. Hyp. 2.) in a time proportionally greater (per præm. 2.) as if double the length, it has but half the cize and tension, to quadruple the distance \( TT=4TV \) in twice the time, and so will strike an under octave 1 to 2 vibr.

Cas. 8. Let \( AB > CD \), Fig. 4. have a cize as much greater, and a tension as much less as 'tis longer; 'twill vibrate to a distance greater in a duplicate proportion (per Cas. 3. Hyp. 2.) in a time greater in a triplicate proportion (per præm. 2.) as if double
ble in length and cize, and but half so much tended, to qua-
druple the distance $PS = 4PQ$ in octuple the time; and so
will strike an under trisdiapason, or a $22^a$, i to $8$. vibr.

Cas. 9 Let $AB > CD$, Fig. 5. have a cize as much less, and a ten-
sion as much greater as 'tis longer; 'twill vibrate to the fame
distance $TY$ (per Cas. 2. Hyp. 2.) in a time proportionably less
(per præm. 2. vel Cas. 3. Hyp. 1.) as if half the cize in half
the time; and thereby will strike an upper octave, $2$ to $1$
vibr.

All which Cases, may be thus briefly expressed (putting $T$ for Ten-
sion, $D$ for the Cize or Diameter, and $L$ for the length of the String:) supposing $\frac{T}{2LD} = 1$ to be the acutenefs of the sound proposed (to
which you compare the rest) the acutenefs in the other cases com-
pared to it, will be in the proportions following respectively.

$$\begin{align*}
\text{Hypoth. 1.} & \quad \{ \text{Case 1.} \} \\
& \quad \left\{ \begin{array}{l}
T \\
Lx2D
\end{array} \right. = 1; \quad \frac{2T}{Lx2D} = 1; \quad \frac{T}{Lx2D} = 1; \quad \frac{4T}{Lx2D} = 1.
\end{align*}$$

$$\begin{align*}
\text{Hypoth. 2.} & \quad \{ \text{Case 1.} \} \\
& \quad \left\{ \begin{array}{l}
T \\
2Lx2D
\end{array} \right. = 1; \quad \frac{2T}{2Lx2D} = 1; \quad \frac{T}{2Lx2D} = 1; \quad \frac{4T}{2Lx2D} = 1.
\end{align*}$$

The reason of which manner of expression, depends on this;
that (in Proportions expressed after the manner of Fractions)
increasing that above the line, doth increase the value (and so doth
the increase of Tension, increase the acuteness.) But increasing
that under the line, doth diminish the value (and so doth the increase
of the length, and the increase of the cize, diminish the acuteness) in
the fame proportion. Which may serve for a brief demonstration of the
whole.

By which may be judged of, all other more mixt or compound
Cases, which are infinite, according to the divers unequal pro-
portions, of length, bignefs, and tension; but being all made out
of, or founded on these, they will all hold true in Analogy to
them.

204. From many of which Cases 'tis plain and eafe, that the
sympathy and consent of strings lies not wholly in their like tension
and
and formation of pores, as was supposed §. 24. of the first Chapter of this Book. Whence also 'tis equally easy to make these three following Illations.

1. That strings agreeing in either length, bigness, or tension, can be made unisons but four ways. 1. If they be of the same length, bigness, and tension (per Cas. 1. Hyp. 1.) 2. Of the same length, and one a cize and tension equally greater than the other (per Cas. 4. Hyp. 1.) 3. Of the same cize, and one a length and tension equally greater (per Cas. 2. Hyp. 2.) 4. Of the same tension, and one as much longer as 'tis less (per Cas. 5. Hyp. 2.) and after the same manner when they disagree in all three, as will be obvious to the considering: Wherefore unisons are always strings of the same, or a proportionable length, bigness, and tension.

2. That unisons may be moved by the same force, in the same time; or being moved by the same or an equal force, will vibrate in the same time; as is manifest in the fore-mentioned Cases, to which all others bear Analogy.

3. That octaves being moved by the same or an equal force, the upper will vibrate in half the time, that the under does, or twice to its once (per Cas. 2 & 3. Hyp. 1. & Cas. 1, 6, 7, & 9. Hyp. 2.) wherefore they can by no force be made to vibrate together; for as much as the same string (being of the same length and tension) always vibrates in the same time; a greater force only making it fly out to a greater distance, or fetch a greater compass in its vibrations, and thereby move (but not vibrate) faster, per Conclus. post Præmissas. And the same is verified concerning all other Notes.

205. Having done with his first Principle, with the Hypotheses, and several Cases attending it, the same Reverend and Learned Dr. N. M. proceeds to his second Principle, viz. That all tuned strings either are or consist of unisons, which will plainly appear from the division of the Monochord; where,

1. Unisons are as AB to BC, Fig. 6. 1 to 1 part, or vibration, per Illationem 1. & 2.

2. A Diapason or Octaves, as BC to CD, Fig. 7. 1 to 2 Unisons, or 2 to 1 Vibrat. per Illat. 3.

3. A Diapente, or perfect fifths, as CD to DE, Fig. 8. 2 to 3 Unisons, or 3 to 2 vibrat. 4. A
4. A Diatesseron, or fourths, as DE to EF, Fig. 9. 3 to 4 Unisons, or 4 to 3 vibrat.

5. A Ditone, or greater thirds, as EF to FG, Fig. 10. 4 to 5 Unisons, or 5 to 4 vibrat.

6. A Semiditone, or lesser thirds, as FG to GH, Fig. 11. 5 to 6 Unisons, or 6 to 5 vibrat.

7. A Diapason with a Diapente, or twelfths, as IK to KL, Fig. 12. 1 to 3 Unisons, or 3 to 1 vibrat.

8. A Diapason or fifteenths, as MN to NO, Fig. 13. 1 to 4 Unisons, or 4 to 1 vibrat.

And so for the rest, whereof the chief may be expressed on one line, Fig. 14.

\[
\begin{align*}
&AB, AC, or AC, CG, \quad 8. \\
&\text{or AD, AG, are} \\
&AC, AD, or AE, AG, \quad 5. \\
&AD, AE, \quad 4. \\
&AE, AF, \quad 3^{\text{mi}}. \\
&AF, AG, \quad 3^{\text{ma}}. \\
&\text{Where} \\
&AD, AF, \quad 6. \\
&AC, AF, \quad 10. \\
&AB, AD, or AB, BE, \quad 12. \\
&\text{or AC, AG,} \\
&AB, AE, or AB, BF, \quad 15. \\
&\text{or AB, CG,} \\
&AB, AF, or AB, BG, 17. \\
&AB, AG, 19.
\end{align*}
\]

206. And thus much for his Principles, whence he goes on to some special or particular Propositions, in order to demonstrate the late observed Phenomena, which immediately follow.

Prop. 1. If two strings be tuned Unisons AB, BC, Fig. 6, and either be touched with the hand or bow, the other will answer it, by trembling at its motion.

For the Air being put into an arched figure and motion by the string that is touched, rolls away to the other, which finding of a length, bigness, and tension, that are the same, or proportionable (per illat. 1.) it easily (by the force it received from the touched string) imprints
imprints both figure and motion into it, in the first Case (per Cas. 1, Hyp. 1, Princ. 1.) or else communicates its motion only, in the second, (per Illat. 2.) whereby the next undulation of Air, from the touched string, taking it just at its return, and in like manner the consequent ones, and moving it as before, they continue their vibrations together, passibus aquis, Q. E. D.

Prop. 2. If the lefser of two Oflaves BC, be touched Fig. 7, each half of the greater C2, 2D will answer it, the middle 2 standing still; which he thus demonstrates.

About CD wrap loofly 3 narrow strips of paper, one in the middle 2, the other betwixt C2 and 2D (exemp. gr. in p and q) then with the finger or bow strike BC, or any part of it, and you will see the papers in p q, dance and play up and down and about the string, 'twixt C2 and 2D, but that in 2 stand still. Whence it is evident, that CD moves in its two halves, by two distinct motions. Which he thinks occasioned by the arched Airs, rushing with the force of BC against all CD, and moving it some what forward out of its place; but finding it of a disproportionate length, bigness, and tension, to be excited by so quick vibrations, as may correspond with those of BC, and the undulations whereinto they strike the Air (by which alone it causes any string to vibrate) per Illat. 3. the second undulation of the Air from BC meets CD just at its return (CD's vibrations to BC's, and the Airs undulations caused thereby, being as 1 to 2) whereby it is beat back, and rebounds from 2 towards BC, when the third undulation from BC occurring, forces it forward again; whereupon (not being able to move backward nor forward) the undulations break and roll away to each side, towards C and D. Which parts C2, 2 D being Unifons to BC, per Princip. 2. it easily moves them per Prop. 1. and so, (though Des Cartes denies it o) they apparently vibrate in p q (vid. Fig. 15.) by two distinct motions, Q. E. D.

Prop. 3. If the greater of two Oflaves CD be touched on either of its halves C2, 2D. all the lesser will answer it, but if on the middle 2 it will stir nowhere. Which is thus demonstratred.

About BC, Fig. 7. wrap loofly one strip of paper, then with the finger or bow, strike CD on either half, C2 or 2 D, and you will see the

---

*Des Cartes Mul. Comp. p. 5.*
the paper dance and play as before, and that in all parts of BC alike; but if you strike it on the middle 2, the paper will not stir. The reason whereof seems to be, that C2. 2D being Unisons to BC, per Princip. 2. if either be touched, BC will answer it, per Prop. 1. But CD having a disproportionate length, bigness and tension to BC: if touched in 2 (whereby the whole String is equally moved) it cannot affect it, by reason of their different Vibrations; as in the former Proposition, Q. E. D.

Note that this, and (especially) the following Experiments, must be tried curiously by a gentle touch of the string (only so hard as to make the papers move) and that with a bow rather than the finger: For if CD be touched boldly in 2 (with the finger he means, not the bow) by reason of the strong motion communicated to its parts (and happily divided there, which perhaps may be the cause too, why, if you strike it with the bow in 2, it sends forth a screaming broken sound) BC will tremble, but with a motion nothing so brisk, as when touched with but half the force any where else.

Prop. 4. If the lesser of two Fifths, CD Fig. 8. be touched on either of its halves C2. 2D, each third part of the greater D X, XZ, ZE, will answer it, but if in the middle 2 they will not stir. Which will plainly appear,

By laying papers as before, on t, x, 3, z, v, if then you strike CD on C2 or 2D, you’ll see the papers on t, 3, v, frisk and daunce, while those on x and z stand still, but if you strike it on 2 none will move. Demonstratio eadem est cum superioribus; for C2. 2D are Unisons, and CD an Octave, to DX, XZ, ZE, per Princip. 2.

If it be demanded, wherefore DZ or XE (which are Unisons to CD per Princip. 2.) do not vibrate when it is touched in 2. He answers, if DZ, then by the same reason XE also, and so XZ would at the same time be moved by contrary motions, as in Fig. 16. Q. E. A.

Prop. 5. If the greater of two Fifths DE be touched, Fig. 8. on either of its thirds DX, XZ, ZE, each half of the lesser C2. 2D, will answer it: but if in the divisions XZ, they will not stir.

Experimentum et demonstratio instituuntur ut supra, DX, XZ, ZE, being Unisons to C2. 2D, and Octaves to CD, per Princip. 2.
If it be askt, why, when $DE$ is toucht on $X$ or $Z$, whereby the conterminous parts seem principally to be moved, $CD$ does not vibrate, which is Unifon to it. He anwers, that if all $CD$ could tremble, then beating the Air back again on $DE$, it would at once shake $DZ$ and $XE$ (Unifons to $CD$) as in the former Propos. Q.E.A.

Prop. 6. If the leffer of two twelfths $IK$, Fig. 12. be touched, each third part of the greater, $K_a$, $a b$, $b L$, will move; but in the divisions, $a b$ stand still. On the contrary, if the greater be touched on its parts, $K_a$, $a b$, $b L$, all the lefs will tremble; but if on the divisions $a b$, it will not sir.

Experimentum & Demonstratio ut ante, $IK$ being a Unifon to $K_a$, $a b$, $b L$, per Princip. 2.

Prop. 7. If the leffer of two fifteenths, $MN$ Fig. 13. be touched, the greater will move in all its quarters $N_c$, $c 4$, $4 d$, $d O$, but not in their divisions, $c 4 d$. On the contrary, if the greater be touched on either of its quarters $N_c$, $c 4$, $4 d$, $d O$, all the lefs will move; but if on the divisions $c 4 d$, it will stand still.

Experimentum & demonstratio instituuntur ut supra. $MN$ being Unifon to $N_c$, $c 4$, $4 d$, $d O$, per Princip. 2.

207. Thus having cleared the late observed Phenomena mentioned above in §. 199. he inferst the following Corollaries:

1. That all Consonancy (or Sympathetick motion of strings) is made by Unifons, that is, it moves 1, and not 1, 2, or 2, 3, &c. as appears from the fore-going Propositions. Hence

2. That each string at the due touch of another, will tremble in as many places as it contains Unifons thereunto, whether to the whole or its parts. So a lower octave in 2, each half being Unifon to the higher; a lower fifth in three, and the higher in two, they being as 3 Unifons to 2, &c. Hence

3. That all tuned strings whatever (whether thirds, fourths, fifths, sixths, &c.) will anwer each other more or lefs, at the due touch of their Correspondents: But the tremor or vibration in some of them being made in many places at the same time (according to the number of the Unifons, per Corol. 2.) and therefore not great, where the part moved is but short (per Cas. 1. Hyp. 2. Principi.) it cannot always be discerned by the
of OXFORD-SHIRE.

by the sense, but follows by a parity of reason; contrary to what Des Cartes afferts, that such vibrations are found only in upper thirds and fifths.

208. From the same Principles may be shewn how a Man may strike any two Notes with his mouth at the same time. For if a Man open his mouth in two places at once, as AB to BC, Fig. 17, or as 1 to 2 both in length and breadth, and then force out the breath strongly against them (thus opened) so that the sound be all begotten there (as in whistling) you will hear distinct and perfect octaves, per Princip. 2. And so secondly, if a Man can open his lips as BC to CD, Fig. 18, or as 2 to 3 in length & breadth, and do as before, he will strike fifths, per Princip. 2. And after the same manner for the rest of the Notes, according to the division of the Monochord.

209. According to which Hypothesis one Hooper here of Oxford could so close his lips, as to sing an octave at the same time. And I know two other persons now living here, that can do it though their lips seem not to be set in that posture, yet they flout them so close that they can by no means pronounce any thing articulate. But he that excels them all, and indeed to a miracle, is one Mr. Jofhua Dring, a young Gentleman of Hart-ball, who sings a Song articulately, and the young, and all in octaves so very strongly, & yet without much straining, that he equals if not excels the loudest Organ.

210. By what means he performs this, is hard to guess, unless the Epiglottis and Uvula be both concerned in it, one founding the upper, and the other the lower octave; or either of them apart, opening unequally as 1 to 2 in Fig. 17, or which is most likely of the three, by an unequal application of the Uvula to the Epiglottis. For his own part he can give but little account of it himself, only that he performs it in the lower part of his throat, and that it came casually on him at first, upon straining his voice; yet must it not be reckoned a meer casually neither, for he sings these octaves, or otherwise (and both very strongly) according to pleasure. And this is all I know of new, concerning the Mathematicks, except there be anything of Choreography in the Map of Oxford-shire prefixed to this Essay, that may be thought worthy the name of a new Contrivance.

211. In Natural Philosophy, Medicine and Anatomy, there have also been many new Inventions and Improvements, made of later years in this University, which as they promiscuously fell out in order

*Musica Compand. p. 9.*
of time, immediately follow. The Honorable and Ingenious Robert Dudley Esq; formerly of Christ Church asfoementioned, titular Duke of Northumberland, was the first Inventor of the Pulvis Cornacbinus, being a mixture of Diagridium, Tartar, and Diaphoretic Antimony, with cream of Tartar, the proportions varying pro re natâ 9; a Medicine of such general and excellent use, that Marcus Cornacbinus (from whom it has its name) wrote a whole Treatise concerning it, commending it to the World as highly useful in all Diseases whatever, requiring Purgation. 10

212. Nor doubt I in the least, notwithstanding the pretensions of the famous Thomas Bartholin, and Olavs Rudbeck, but that the ingenious Mr. Jolliff of this University, first of Wadham, and after of Pembroke College, was the first Inventor of that fourth sort of Vessels, plainly differing from the Veins, Arteries, and Nerves, now commonly called the Lymphedtts: That he knew them about the beginning of June, An. 1652. we have the testimony of the learned and famous Dr. Glisson, to whom he discovered them, coming to Cambridge to take his Doctors degree; at what time, says the Learned Dr. Walter Charleton, 'tis plain from Bartholins own Book set forth in May, 1653. that he scarce ever dreamt of them.

213. Yet I know the Learned Bartholin, amongst his Anatomical Histories, tells us he first found them the 15th of Decemb. 1651. and again, the 9th of January, and 28 of Febr. 1652. and that the Learned Olavs Rudbeck says, He first discovered them in October and November, 1650. both anticipating the date of Dr. Glisson. But I have been frequently told by my worthy and learned Friend, Dr. Robert Stapely, an eminent Phyfitian, and one of unquestionable fidelity, Contemporary with Mr. Jolliff at Pembroke College till Oxford was made a Garrison for the King, about the Year 1642. that they were often shewn to him by the same Mr. Jolliff while they were Students there. To which add the Testimony of the fore-cited Dr. Charleton, that these Vessels were known & commonly talked of amongst the Fellows and Candidats of the Famous College of Phyfitians in London, many years before they heard any news of them from beyond Sea. 11. Not to mention that Dr. Highmore seems to have noted somthing of them, though veiled under a different name and description.

214. The same Learned Dr, Highmore, formerly of Trinity College Oxon. was the first that we know of that treated of the structure of Man's body, adapting it to the then new received Doctrine of the circulation of the Blood; for the proof whereof he seems chiefly to have intended his piece of Anatomy, dedicating it to the Author of the Invention, the famous Dr. Harvey: Wherein he has several new Cuts of the Spleen, Pancreas, Testes, &c. of which, though most have since received considerable Improvements from others, yet it must be acknowledged that he deserved very well for his diligent and laborious search into them all, but more particularly for his first discovery of the new ductus for the carriage of the seed from the Testes to the Paraestate, and for his new descriptions of the Veins and Fibres of the Spleen, by the ancient Anatomists held to be Veins, and of the intricate plexus of the Paraestate, &c.

215. In Natural Philosophy, the famous Dr. Willis of Christ Church College Oxon. and Sidleyan Professor of Natural Philosophy in this University, first taught us, that the Generations, Perfections, and Corruptions of Natural Bodies, whether Mineral, Vegetable, or Animal; and so likewise of Bodies Artificial, do depend upon fermentations, raised from the different proportions and motions of Spirit, Sulphur, Salt, Water, and Earth, which he has constituted the ultimate sensible principles of mixed bodies. According to which, in his Book de Febrisbus, he has given us the Anatomy of Blood, and declared the true causes and nature of fermentations in the Juices, and upon them built his most rational Doctrine of Fevers, intermittent, putrid and malignant, with particular instances and observations concerning them, much different from the ways of the Ancients: to which he has superadded the Spagyrical Anatomy of Urin.

216. In Anatomy (wherein he had the assistance of the deservedly famous, Sir Christopher Wren, Dr. Millington, Dr. Edmund King, Dr. Masters, but chiefly of Dr. Lower) his method of dissecting the Brain is new, and most natural; and so exact, that there is scarce any one part in it, but what has received considerable advancements from him. To mention all would be endless, let it therefore suffice, that after his description of the Palace in...
general, he has allotted the several appertments to the faculties of the sensitive Soul: His placing the Spirits to serve to voluntary actions in the Cerebrum, and those that serve Involuntary in the Cerebellum, is a noble and useful discovery.

217. His assigning the cortical part for generating Spirits, and the seat of Memory; the Medullary, or Corpus callosum, for the operations of the Phantaisie; the Corpus striatum for the common sense; the Medulla oblongata, a promptuary for the Spirits, for performing the office of Sensation, and spontaneous motion; and the Prominentia orbitalia, and their Epiphyses, for conveying the impresses of the passions, and natural instinct, between the Cerebrum and the Cerebellum, are highly ingenious and his own; and so is his, and Dr. Lowes joint discovery of the curious plexus, of the Vertebral and spinal Veins and Arteries; their Neurologia is also most elaborate and no less admirable, tracing the Nerves from their very source, and following them through all the Meanders of the Body, and thence shewing us the reason of the secret sympathies of the parts.

218. And although Dr. Willis was not the first that mention'd two Souls in a Man, viz. the Sensitive and Rational; yet there is no body has proved it so well as himself; as likewise that the sensitive is igneous; and that there are two parts of it, the flammea and lucida: Where he discourses of the manner how the Soul performs its operations in us; he does it, as indeed he has done all, with the greatest Improvements within the compass of Wit and Reason: And having fully discovered the Hypostasis of the sensitive Soul, its affections and senses; he further obliges Mankind with a most rational account of the diseases seated in it, and the Nervous Juice, according to the different parts of the Brain, and the Systema nervosum; placing Cephalalgies in the Meninges; Lethargies, somnolentia continua, Coma, Carus, Pervigilium, and Coma vigil, in the Anfractus and Cortical part of the Brain; the Incubus in the Cerebellum: Then descending to the Corpus callosum, he finds the Spirits there sometimes hurled round into Vertigo's, sometimes exploded in Spasms, Convulsions, Epilepsies, sometimes eclypset in Apoplexies.

219. In the Corpora striata, and Medulla oblongata, if the spirits that serve to motion be disturbed, thence he fieves come likewise Spasms and Convulsions; if those that serve to sensation, dolor; if either, or both, are impeded or destroyed, the Palpse:
Of OXFORDSHIRE.

And as the sensitive Soul is the seat and organ of the Rational, so the ill constitution of that (he observes) proves oftentimes the disorder of the other: For the Animal Spirit being spiritu-saline, if they are inflamed, they produce a Phrensy; if acid, Melancholy; if acrous, like Aqua stygia, Madness; if rapid, Stupidity. In discourse of which distempers, his Etologies of the various symptoms, his methods of cure, and forms of prescriptions, are founded upon far more rational principles, than ever Greece taught us. And how far Antiquity, and later Ages too, were mistaken in their notions of divers other diseases; his evincing Hysterical and Hypochondriacal affections, the Colic, Gout, Scorpy, some sort of Asthma's, the Tympanites, with others; either wholly, or in part to be Nervous, does plainly demonstrate.

220. Nor has the Pathological part of Physick been only happy in his labors; but the Pharmaceutical part likewise highly improved in the Inventions of his Spiritus Salis Armoniaci succinatus; Syrup of Sulphur, preparation of Steel without Acids, and from thence of his artificial Acidulae: In general, this part of Physick has been so far advanced by him, that what was formerly Empirical, and but lucky hits, is now become most rational, by his making the operations of Chalybatic, Emetic, Diaphoretic, Cardiac, and Opia Medicines, intelligible by Mechanical Explications; having subjoined to each most near and artificial Formula's, as well Chemical as others; a Province but meanly adorned by the Ancients, though of infinite use. And where Nature is exorbitant in any of these Evacuations, he has likewise taught us how to check and reduce her; adding for the better illustration of the whole, a new Anatomy of the Stomach, Intestines, Guta, Veins, and Arteries.

221. Which he has seconded with a further discovery and rational account of Thoracic and Epatic Medicines, and of the Diseases belonging to those parts; discoursing also of Venusition, stopping of Hemorrhagies, of Issues and cutaneous Distempers: In all which it may be observed, what is most peculiar to him, that there is nothing trivial, most new, and most ingenious. To which add, that the organs of Respiration, which have been the subject of so many Learned Pens of late, are best understood, from his most elegant descriptions, and beautiful Cuts. But it is too difficult a task to give a just account how far Physick, Anatomy, Chemistry, and Philosophy, stand indebted to him for their Improvements.
cular Repositories or Bags, near the exit of the Intestinum rectum, wherein they keep those humors or liquors, that are the Vehicles of their respective scents.

229. This he first observed in a male Pol-cat he dissected here at Oxford, Febr. 4. 1674. and was further confirmed therein the second of March in the year following, 1675. in a female Pol-cat, at the opening whereof I was present myself; since which times, he has found the same in a Fox dissected in the presence of Dr. Grew; and since again in Weasels, Cats, &c., the vesicles or little bags being found by pairs, one on each side the gut; and according to the bigness of the Animals, largest in the Fox, and least in the Weasel.

230. Those of the Pol-cat were about the bigness of Peas, of a somewhat oblong figure, and a yellowish colour, and seemed to consist of a double substance, glandulous and membranous; the membranous toward the necks of the bags being cover'd with glandules, but toward the fundus wholly membranous, representing upon being emptied, orbicular muscular Fibres, which he supposes by contraction force the contained humor out into the gut.

231. The use of the Glandules he doubts not to be, to separate the humor from the mass of blood (all secretions in the Body being performed by the help of Glandules) and the necks of the bags immediately emptying themselves into the gut, without any continued ductus; and being placed near the Sphincter Ani, made him think the contained humor in respect of the Animal, to be excrementitious. In this Pol-cat it was of somewhat a thick consistence, for the most part white, but in some places of a greenish yellow colour, and upon pressing out, of so strong a scent, that I could scarce (I well remember) endure the room; which, once removed from the body, we could not perceive any considerable ill smell in any of the other parts.

232. In a Cat that he dissected (which was but a young one, and a female) the bags when blown up were not above the size of ordinary Peas, seated like the former on both sides the intestinum rectum, just under the Sphincter Ani, which covering them, he supposes might both occasion their not being noted before, and help in the expression of the humor out, which (he observed in the Cat) was not into the gut, but in the limb or margo Ani, the orifices of the bags terminating there, so that he plainly perceived them before
before he began to dissect her: The Glandules that separate the humor from the mafs of Blood, and transmitted it into the bags, afforded a pleafant sight, there being feven small round ones placed in a circle about the vesicles, the humor within not being confiderable but for the fætor.

233. Such Glandules (which he thinks hold the nature of E-mundories) he has likewise observed in Rabbits, but with no con­iderable cavity, the liquor whereof he rationally guefhes may give the rauch taft we find about thofe parts after they are roafted: He thinks alfo fuch like Glandules are found in Mice and Rats, and observes that in fome Animals they are found more glandulous, in others with a more signal bag or cavity. And analogous to thofe fcent-bags in Quadrupeds, he believes thofe Glandules feated on the rumps of Fowls, whose excretory vessels may be thofe little protuberances or pipes we obferve on them; whence 'tis alfo (as in Rab­bits) that we find the rumps of Fowls ftrongeft tafted, and to partake moft of the natural fcent of the Fowl.

234. That all Animals conferve their peculiar fcents in fuch like parts, though he dares not af­sert; yet if the analogy that Na­ture observes in forming moft of the parts, of moft Animals alike, be fufficient Logick to warrant an inference, he thinks it highly probable that 'tis fo in moft; and that fhould they be found in Man (which he has not yet had opportunity to Experiment) it might be worthy enquiry how far Fiftula’s, Tenefine’s, &c. might be concern’d in them. Which is all I have met with new relating to this County, in Medicine, Anatomy, or Natural Philosophy. For to mention the many and new Experiments of the Famous Mr. Boyle (did we distinctly know which were made here) would be endlefs, and to recapitulate the New Discoveries (if there be any in this Essay) but a vain repetition.
A ND thus having finish'd the Natural History of Oxfordshire, I had accordingly here put a period to my Essay, but meeting in my Travels with many considerable Antiquities, also relating to Arts, either wholly past by both by Leland and Camden, or but imperfectly mention'd; and finding that I may as well also note them in other Counties hereafter, as let them alone: I have been perswaded to add (because perhaps a digression that may be acceptable to some) what I have met with in this kind, whether found under ground, or whereof there yet remain any foot-steps above it; such as ancient Mony, Ways, Barrows, Pavements, Urns, ancient Monuments of stone, Fortifications, &c. whether of the ancient Britans, Romans, Saxons, Danes, Normans. Of which in their order,

2. Leaving the Antiquities and Foundations of Churches and Religious Houses, their Dedications, Patronages, and foundation Charters; with the pedigrees and descents of Families and Lands, &c. as sufficient matter for another Historian, and as too great a task, and too much beside my design, for me to attempt. However, I have taken care in the Map prefix'd to this Essay, to put a mark for the site of all Religious houses, as well as ancient ways and Fortifications, except Brockley and Saucomb, both mention'd in the Catalogues of Harpsfield & Speed, which I could not find out, though I sought them diligently.

3. Of British Antiquities that are certainly such, I have met with none here but some pieces of their Mony; whereof, as much as I find not described before, I have caufed to be delineated, Tab. 15. Fig. 19, 20, 21. Of which the first no doubt is a Coin of King Cunobelin, a King here in Britan at the time of the birth of our Saviour CHRIST; it shewing a Horse, and his Inscription on one side, and an Ear of Corn and CAMV on the reverse; intimating the place of its coinage to be Camulodunum, the Royal City and seat of Cunobelin.

---

* Catalogus /Ediam Religiar. in fine Hist. Angl. Ecclesiat.*  
* History of Great Britan. lib. 9. cap. 21. sub finem.*
4. Camden, 'tis true, has described a Coin of the same King, not differing in the reverse at all from this; but the Inscription of ours varies from his, in that the final Letter O, is not plac'd in a line with the rest of the preceding Letters under the Horses feet, but just before his breast; the Horse having also a f[i]ca or ear of Corn (or some such like thing) placed over his back, Fig. 19, which is not to be found in any of bis. This was dug up at Wood-Eaton this present Year 1676, near the House of the Worshipful John Nourse Esq; amongst old Foundations, and kindly bestowed on me by the same worthy Person.

5. At the same time and place, the small one next engraven, Fig. 20. was also dug up, but whether of the same King or no, does no where appear, it having nothing upon it but somewhat like a Chalice, and a crooked lineation, under which there is also a forked kind of Figure, and a small Crescent; unless the affirmative may be collected from the last of these, the Crescent being to be met with on Cunobelins mony, as is plain from Mr. Camden, and so on the mony which he thinks carries the name of the City Callena, alias Gallena, now Wallingford: Whereof though I can give no better account, I however thought fit to give a draught of it, because possibly it may meet with a Reader that can.

6. But for the third, that seems adorned with two faces on the obverse, and an ill shapen Horse and a wheel underneath him on the reverse, Fig. 21. dug up at Little Milton, now in the possession of my Reverend and Learned Friend, Mr. Obadiah Walker the worthy Master of University College; I take, notwithstanding the want of an Inscription, to be a coin of Praefutagus, King of the Iceni, mention'd by Tacitus, who out of hopes of preserving his Kingdom and House quiet after his death, made the Emperor Nero, and his two daughters, Co-heirs of his Fortunes.
And that the two faces are of him and his valiant Queen Boodica, otherwise called by the same Tacitus, Boudicca, and Voadica, who in revenge of her own daughters ill usage by the Romans, after the decease of her husband, raised an Army against them, utterly vanquish'd the ninth Legion, sack'd Camulodunum and Verulam, and flew no less then seventy thousand of them.

7. And the ground of this conjecture, I take from the reverse

---

with the horse and wheel under him, most times found on the coins of the same Boudicea, where her name is stamp’d on them, as may be seen both in Mr. Camden and Mr. Speed’s Histories: by the horse and wheel intimating perhaps their great strength to lie in their Effeda, a sort of Chariot much used by the Britans in War, as is testified by Cæsar ⁰, and particularly by Tacitus of this very Boudicea, viz. that she was drawn in a Chariot, with her daughters placed before her, when she came to fight Suetonius then Prætor of Britain. Or else perhaps by this time having learned of the Romans the necessity and convenience of making military ways, and other passages for Carriages through the Woods and marshy grounds; in memory of the fact, after the manner of the Romans, as may be seen on the mony of Trajan, Hadrian, &c. they might put these horses and wheels on their Coin.

8. Which is all I know remarkable in these British pieces, but that they are all hollowed to a concave on one side, and convex on the other (a concomitant of most, if not all British coin) and that they are all gold, or at least Elecrum, as most of the British money we now find is, which is a sort of metal compounded of gold and silver, and this done either by nature, or proportioned by the Artift. That there is such a metal as natural Elecrum, we have not only the testimony of Pliny ¹, who says, ‘tis found commonly in trenches and pits. But of Servius ⁴, and St. Isidore Bishop of Sevil, the latter whereof afferts, that the natural Elecrum is of great value, Quod naturaliter invenitur in pretio habetur, are his very words, for that it is more pure then any other metal, and that if poison be put into a vessel made of it, it makes a hissing sparkling noise (as Pliny also witnesses) and calls it self into semicircles, resembling Rain-bows, as well in colours as figure ⁵.

9. To which add the testimony of Peter Martyr, a person of unquestionable credit and veracity, who himself saw a great piece of pure natural Elecrum, so heavy, that he was unable to move it one way or other, much less to lift it with both hands from the ground: they affirmed (faies he) that it weighed above 300 pounds, at eight ounces to the pound, and that it was found in

the House of a certain Prince, and left him by his Ancestors. And albeit, that in the days of the Inhabitants then living, it was no where digged, yet knew they where the Mine of it was, but were very unwilling to discover the place: yet at length they did, it being ruined and stopt with stones and rubbish: being much easier to dig then Iron mine, and might be restored again, if Miners, and others skilful therein, were appointed to work it.

10. Some such natural Elecrum seems also to be hinted in the Civil Law, and to have been mixed with Silver. Neratius reporting that Proclus gave sentence, that it was no matter in a Legacy of Elecrine vessels, how much Silver or Elecrum was in them, but whether the Silver or Elecrum exceeded which might easily be perceived by ocular inspection; or if to equally mix't that it could not be done, that then recourse was to be had to the Estimau of the Testator, amongst which sort of vessels he usually accounted them. Whence 'tis eafe to collect, that the Elecrum here spoke of, can be no artificial mixture of silver and gold, again mixed with silver; but a natural metal before it mixture with silver.

11. Moreover, that there is also an artificial Elecrum, is as evident from the Institutes of the Emperor Justinian, and Q. Flor. Tertullian: made by intermingling gold and silver, according to the natural mixture; which according to Servius and St. Isidore, was of gold in a triple, but according to Pliny and Monseur Savot, in a quadruple proportion, to one of silver; viz. 19 Carats of gold, and 4 Carats and 3 of silver, which as the same Savot testifies, were the proportions observed by the Emperor Severus Alexander, and Lewis the Twelfth of France, by an Ordinance made at Blois, of Nov. 19. 1506, for the French gold.

12. Which very proportions I should be willing to think our British coins to have; only I guess the Britans had, and made use of, as little Art as might be: Wherefore I am inclined to believe them rather native Elecrum, dug and coined: thus according as they found it, either richer or poorer; for I have seen some pieces of this sort of mony, much richer in gold then some others are. That gold and silver Mines were worked here in Britain in those

ancienter
ancienter days, is plain out of *Tacitus: Fert Britannia* (says he) *Aurum & Argentum, & alia metalla, pretium victorie*. And Prince Galgacus chief Captain of the Britans, now beat Back as far as Mount Grampius in Scotland, in his speech (before the fight with the *Propriœtor Agricola*) exciting them to indignation against the Romans; amongst other things tells them, that these were the men that had taken from them their fertile Soil, their Mines, and trading Towns: *Neque enim Arva nobis, aut metalla, aut Portus sunt, quibus exercendis reservemur*. Now all gold whatever containing some silver more or less, and the Britans not being able to refine it then, as in after Ages, were necessitated to coin *Electrum* after this manner.

13. That they had and coined *silver* in these early times, is also plain from Mr. Camden, Mr. Speed, &c. who have given us draughts of *silver* Coins of Cunobelin, Venutius King of the *Britantes*, and Carataucus King of the Silures, both which make not a little for the reputation of my conjecture § 62 and 63 of the sixth Chapter of this *Essay*, the Mines there mention'd, in all probability, being some of those spoken of by *Tacitus*, and perhaps first belonging to the aboriginal Britans, and after to the Romans.

14. To this if it be objected out of *Caesar's Commentaries*, that the Britans then used only Copper (and that imported) and *Iron rings* instead of *mony*; and that this gold might either be also imported, or the Mines discover'd after the conquests of the Romans. It may rationally be answer'd, that *Caesar* account of the State of Britan (as has been shewn also before in another case, *Chap. 3. § 2. of this Essay*) is as imperfect as his *Victories* or *Travels* in it were. For we find in Mr. Speed a *gold* coin of King *Cassivellaun*, who was King here in Britan at *Caesar's* arrival; beside the Romans came then not to enrich, but to spoil Britan, how unlikely it is therefore they should supply them with *gold*, or find them Mines so early, let the Reader judge.

15. Whereunto it may be added (as *Tacitus* informs us) that *Caesar* rather discovered than conquered *Britan*; that he rather frightened the *Inhabitants* on the shoars, than got footing there: *Quanquam profer à pugna terruerit Incolas, ac littore potitus sit, potest*
videri ofsendisse posteris, non tradidisse et, are his very words of him: And that whatever he pretended at Rome, he got little here but dry blows, and the honor of having led an Army hither, *moder mure ox tiv Brestianis, xoxte eantui, mute ox polei &eocinopampou, pule ivi espatonain in aw to dize, says Dion Cassius of his first Expedition. And Tacitus rather more than less of his second, who brings in Caractacus encouraging his British Army to recover their Liberty; and in order thereunto, calling upon the names of their Ancestors, Qui Diatatom Cæsarem pepulissent, that had driven the Dictator Cæsar out of the Land.

16. Add further hereunto what Strabo delivers concerning his Expeditions into Britan, *oudiw µéga Νεκραζηµηθαι, othi &eselzou the poliv tiv visu, that he did nothing great, nor went far up into the Island. And that Tacitus further confesses him beaten hence: for speaking concerning the arguments the Britans used amongst themselves to perswade the Revolt under Voadica, he says they brought this as a main one, that could they shew but the courage of their Ancestors, Recessuros (i. e. Romanos) ut Divus Julius recessisset: intimating, that his sudden departure hence was little better than a flight. Not to mention what Quintilian says of one M. Aper, that he met with an ancient Britan, that avowed to him, that he was in the British Camp when they beat Cæsar from the shore; and that Lucan says of him expressly,

Territa quasitis ofsendit terga Britannia.

17. After whose departure, the Britans, says Tacitus, enjoyed a long Peace, lying forgotten by the Romans all the days of Augustus, Tiberius, and Caligula; so unlikely were the Romans to help Cæsarellum or Cunobelin to this Gold or Electrim: Nor indeed is it probable they would do it after, in the time of Claudius, when they had footing here; not only for that mony and riches are the incentives to rebellion, and the very finews of war, but because had they thought it fit either then or before, we should certainly have heard on't in some of their writings.

18. Of Roman Antiquities yet remaining in this County, (to wave the stories of Molmutius and Beline) the most considerable of any, are their publick ways, whereof though there are several,

* Tacitus in vita Julii Agricolæ, cap. 12. k Dionis Cæsarii, Rom. Hist, lib. 39. 1 Taciti Annalium, lib. 12. cap. 34. l Strabon, Geograph. lib. 4. 1 Tacitus in vita Agricolæ, cap. 15. m Fab. Quinctiliani de Oratoribus Dialog. cap. 17. n An. Lucani de Belo Civili, lib. 2. v. 572. o Tacitus in vita Agricolæ, cap. 13:
and of different forms and materials, and those too broken down, and discontinued by ploughing and other accidents; yet by their pointing, and after a diligent scrutiny, I hope I shall render at least a probable account of them.

19. But before I descend to particulars, it will be necessary I think to acquaint the Reader, that of these amongst the Romans some were called publick, and others Vicinal. And that the first sort of these were otherwise called (as reckon’d up by Taboetius) by these other different names, Regia (by the Greeks βασιλικά) Praetoria, Consulares, Militares, Privilegiatae, Illustres, frequentatae, Celebres, Eximiae, &c. and after by the Conqueror William, in the Laws he confirmed of St. Edwards, Chemini majores, from the French Chemin, as may be seen by the Laws of the same King Edward: of which sort we had in all but four in England; Watling-street, the Fos, Ikenild-street, and Erming-street; whereof two stretched themselves from Sea to Sea the length of the Land, and the two other the breadth; all misdemeanors committed in these, falling under the cognizance of the King himself. Pax autem quatuor Cheminorum (intellige majorum) sub majori judicio continetur?

20. Beside these, there were many others of like erection, though of less extent, by the ancient Romans called Vicinales, quod in vicos ducebant, i.e. from Colony to Colony, from Station to Station; which were also publick, if compared with the more private Agrarian ways. And these were after by King William called Chemini minores, and were the ways (as expressely described in the Laws of St. Edward the Confessor) de Civitate ad Civitatem, de Burgis ad Burgos, ducentes, per quos Mercata vehuntur, & cetera negotia fiunt, &c. all misdemeanors committed in these, falling under the cognizance of the Earl, or chief military Governor of the County, or of his Vice-Comes or Sheriff.

21. It will also be expedient to inform the Reader, that both the Majores and Minores were sometimes railed, and sometmes level with the ground, and sometimes trenched; and the raised ones sometimes only of earth, and sometimes paved; especially in moist and boggy grounds; though it must also be acknowledged that...
we sometimes find them paved, where there was little need: which I guess might be done to exercise the Soldiers and common people of the Country, lest by lying idle they should have grown mutinous, and affected alterations in the State. But where they were indeed laid through meers and low places, and necessity compelled them to raise and pave them, we have the exact method of making them; laid us down by Statius.

Hic primus labor inchoare Sulcos,
Et rescindere limites, & alto
Egeslu penitus cavare terras:
Mox baustas aliter replere fossas
Et summo gremium parare dorfo,
Ne nutent Sola, ne maligna sedes
Et pressis dubium Cubile faxis.

i.e. that they first laid out the bounds, then dug trenches, removing the false earth: then filled them with sound earth, and paved them with stone, that they might not sink or otherwise fail.

22. Of the four Basilical, Consular, or Praetorian ways, or Chemini majores, I have met with but one that passeth through this County; the discovery whereof yet I hope may prove acceptable, because not described before, or its footsteps any where noted by Sir H. Spelman, Mr. Camden, or any other Author that I have read or could hear of: whereat indeed I cannot but very much wonder, since it is called by its old name at very many places [Ikenildway] to this very day. Some indeed call it Icknill, some Acknill, others Hackney, and some again Hackington, but all intend the very same way, that stretches itself in this County from North-east to South-west; coming into it (out of Bucks) at the Parish of Chinner, and going out again over the Thames (into Berks) at the Parish of Goreing, lying within the County in manner and form, and bearing to the Parishes and Villages placed on each hand, as described in the Map prefixed to this Essay, by two shaded parallel lines made up of points, which I have chose, to shew that this way is not cast up in a ridged bank, or laid out by a deep trench, as some others are; described also in the Map by two continued parallel lines, that the Reader, or such as please to view them hereafter, may know where to expect a bank or trench, and where no such matter.


Rr 2

23. The
23. The reason, I suppose, why this way was not raised, is, because it lies along under the Chiltern hills on a firm fast ground, having the Hills themselves as a sufficient direction: Which is all worth notice of it, but that it passeth through no Town or Village in the County, but only Goreing; nor does it (as I hear) scarce any where else, for which reason 'tis much used by stealers of Cattle: and secondly, that it seems by its pointing to come from Norfolk and Suffolk, formerly the Kingdom of the Iceni, from whom most agree (and perhaps rightly enough) it received its name Icenild, or Ikenild; and to tend the other way West-ward, perhaps into Devonshire and Cornwall, to the Lands end. So much mistaken is Mr. Holinshed in his description of this way, who fancied it began somewhere in the South, and so held on toward Cirnecester, and thence to Worcester, Wicomb, Brimicham, Lichfield, Darby, Chesterfield, and crossing Watling-street somewhere in Yorkshire, stretched forth in the end to the mouth of the Tine at the main Sea. Yet the Learned Mr. Dugdale seeming to favor this opinion in his description of Ickle-street that passeth through Warwickshire, I suspend my judgement till I have seen more of both.

24. Amongst the many Vicinal ways, or Chemini minores, we have but one neither here, of all those mentioned by Antoninus in his Itinerary, and that is part of the Gual-Hen, which signifies in Brittish antiquum Vallum, that went between Pontes, now Colebrook, and the old City Caleva, or rather as it was written in the ancientest Books, Gallena; to which our Fore-fathers adding the word, Ford, by reason of the shallowness of the River there, and changing the letter G into W (a thing frequently done by the Saxons) it was at length called pallengarpe, now more contractedly Wallengford.

25. Which 'tis plain stood not formerly where it now doth, this old Vallum, or high ridged way, pointing down from between Mungewell and Nuneham-Warren on Oxfordshire side the River, as described in the Map, near a mile below the Town as it is now seated; whereabout, in all likelyhood, on the other side the River stood that part of the City containing the 12 Parishes, laid desolate by a great Plague that reigned there, temp. Edw. 3. Which

---

A. Holinshed's description of Britain, bk. 1, cap. 19. 2 Antonies of Warwickshire in Barlaston Hundred, pag. 563. 3 See Burton's Commentary on Antoninus his Itinerary. Itiner. 7. de Regno Londinium. 4 See Rich. Versteegh's Antiquities of the English Nation, cap. 5. sub finem.
great blow it could never recover (though much endeavored by Rich. 2.) the Bridges of Abington and Dorchester being also about that time built, which diverted the Trade another way, whereas before there was no passage over the Thames but here at Wallengford.

26. This Vallum or ridged Bank, now called Grimes-dike, as it runs towards Pontes, yet remains very high, but is but single till it comes to the Woods near Tuffield, alias Nuffield, where it appears double with a deep trench between, like the ways near Piperno and at Porto in Italy, which induces me to believe, that that part next Wallengford was once so too, and therefore still called Grimes-ditch, the trench in all likelihood being filled up with one of the banks thrown into it upon the increase of Agriculture, perhaps at first designed only to carry off the water, and the two banks on each side for the carriages 'twixt the stations; those from Wallengford to Pontes going upon one Bank, and those from Pontes to Wallengford upon the other, so that there could be no disturbance by meeting on the way. From Tuffield, I was told, it held on its course through the thick Woods, and passed the River below Henly into Berkshire again, but the Woods scarce admitting a foot passage, much less for a Horse, I could not conveniently trace it any further.

27. There seems also to have been cast up another Roman way, between the old City of Alcester in the Parish of Wendlebury (of which more anon in its proper place) and the City of Calleva, whereof there is part to be seen to this day running quite cross Otmoor, as described in the Map, and coming out of the Moor under Beckley Park-wall; which 'tis plain, has been paved (as indeed it had need) by the stones yet found upon, and about the ridge, and no where else on the Moor. From Beckley it passes on to, and may plainly be seen in the Wood near Stockers, where cutting the London road to Worcester, it goes plainly through the fields to Stafford-Grove, and thence over Bayards watering-place, toward Heddington Quarry pits, leaving Shotover-hill on the left, and the Pits on the right hand.

28. At the foot of Shotover-hill it enters Magdalen College Coppices, and thence through Brafen-nose College Coppices, over the

---

* Vid. Lelandi Comment. in Cygnem Cantionem in cerbo Calleva.  
Eastern part of Bullington-green, as I gather by its pointing, for it is not to be seen there, it having been ploughed down as well in the green, as fields thereabout, as may be seen by the marks of the ridge and furrow yet remaining upon it; whence I guess it passes on towards the two Baldens, and so for Wallingford; going over the River at Benyon, alias Bennington, where it may be seen again running West of the Church, and is there called by the name of Medlers-bank.

29. If it be asked why this way 'twixt Wallingford and Alcester was laid so crooked? it is plain, 'twas for the convenience of taking Oxford in the way as occasion should serve. For though I could not discover the diverticulum tending toward Oxford in the way from Wallingford, yet in the way from Alcester it remains at some places yet plain and evident, coming out of the main road about the Parish of Beckley, and passing more Westward through Stow-wood, and more particularly through the grounds still called Principal (for that they were formerly the Principal Coppices before the def-foresting that Wood) where the way is to be seen entire and perfect, having formerly been paved, as appears by a ditch cut through the bank in a division of these grounds, where the stones lie arch-wise in form of the bank, there being none neither like them in the fields thereabouts.

30. Coming almost as far as Elsfield, where it is now deeply trenchcd between two banks, like some part of Grimes-dike mentioned above, it is broken down and discontinued, I suppose by ploughing, but points just upon Heddington, whereof the hollow lane ascending into the Town, near Mr. Pawlings new Buildings, perhaps may be a part; and the deep way between two green banks a little on this side Heddington, another; and the hollow way on the brow of Heddington-hill, another piece of it. Out of which there seems also another way to have branched about the top of the hill, which passing through the grounds 'twixt that and Marston-lane, where it is plain to be seen, by its pointing shews as if it once passed the River above Holy-well Church, straight upon St. Giles's, or the old Bellostum, now Beaumont; where about Thomas Rudburn in his Chronicon Hydense, says, anciently before its restoration by Ælfrēd, the Universitv was seated: Quæ Universitas Oxoniæ quondam (says he, having before discoursed of its restoration by Ælfrēd) erat extra Portam Borealem ejusdem Urbis.
Of OXFORD-SHIRE.

of principalis Ecclesis totius Cleri, Ecclesia Saneti Egidii extra eandem portam *. Which two put together, perhaps may make as much for the Antiquity of this place, as need be brought for it.

31. Beside, this branch out of the way twixt Alcester and Wallengford pointing toward Oxford, I must not forget there is another that seems designedly made for a passage hither immediately from Alcester, whereof there is a part still remaining about Noke, whence it passes through the fields to the purflue grounds, where it cuts the Worcester road, and so into Drunfbiil, formerly a part of the Forrest of Stow-wood, where about fourteen years since there were several Roman Urns and Coins dug up; beyond which place I could not trace it, it being ploughed down in the following grounds, which yet is the best conjecture I can make of it, unless we shall rather say it was only laid this way to avoid Otmoor in the winter season, when it is usually under water; and that it turned about again (as indeed it seems to point) and joyned with the forementioned to Wallengford and Oxford.

32. Nor must it be omitted, that the people hereabout call that part of this way that lies through Otmoor, by the name of Akerman-street, supposing it to have come from Wallengford, and to have passed on by Alcester to Banbury; to which name of theirs, and course of the way, Mr. Camden seems to afford his tacit consent*: wherein I wonder they, but more that he, should be so much or e-seen, since he could not but know, that neither end of such a way could tend toward Banke, the old Aces-manner-eastern, or Urbs Agrotorum regionum; nor they, that the true Aces-manner-western, comes near indeed to Alcester, but passing through the County quite another way, both the City and way leading to it, having their names from the sick persons, or men with aches, travelling on it thither.

33. The true Akermanstreet then, or as some call it Akehamstreet, and others Akermanstreet, coming out of Buckinghamshire, enters this County at a Village called Black-thorn, whence it passes on without any raised bank, close by Alcester as far as Chesterton, as described by the shaded or pointed lines in the Map: whence it goes to Kirklington Towns end, and so over the River Cherwell near Tackley, and thence in a straight line to Woodstock-Park, which it enters near Wootton-gate, and passes out again at Mapleton-well near

near Stunsfield, whence it holds on again as far as Stunsfield; and all this way on a raised bank, as described in the Map by two parallel lines; where breaking off (but still keeping its name) it goes on over the Evenlode to Wilcot, and so to Ramfden; a little beyond which Village, at a place called Witty-green, it may be seen again for a little way; but from thence to Allsala, over Allsallbridge, and so through the fields till it comes to Brodwell-grove, it is scarce visible, but there ’tis as plain again as any where else, holding a straight course into Gloucest-shire, and so towards Bath the old Akemancester.

34. And out of this Akemanstreet, as most other such ways, there are several branches; viz. two near Kirklington; one at the Towns end, which though presently discontinued, yet points just upon the Port way running East of Northbrook, the two Heyfords, Somerton, and Souldern, for six miles together; and another, that by its pointing seems to have come out of Akemanstreet; nearer the place where it passes the River Cherwel, crossing the Port way, and running at the broadest place, scarce a mile distant from it, as far as Fritwell, where on the North side of the Town it inclines toward the Port way, as if it joined with it again somewhere about Souldern, both of them pointing upon the Fortifications called Rainsborough (perhaps a corruption of Romansborough) near Charleton in Northamptonshire; whence in all probability it went to Vennonis, alias Bennonis, an old Roman station, by the Saxons after called Claycester, in the confines of Warwick and Leicester-shires; and so on to the Ratae of Antoninus, or Ratae of Ptolomy, now Leicester 6.

35. This second branch of Akemanstreet, about Fritwell they call Wattle-bank; but in an old Terrier of Sir Thomas Chamberleyns, it is called Avefdich, perhaps a corruption of Offa’s-ditch, the great King of the Mercians, whose Kingdom might at first be terminated here, though I find he extended it at length as far as Benson, as thinking it for his honor and profit both, that the West Saxons should have nothing North or West of the Thames. Or if ancieneter than Offa, it might perhaps be a pretentura, or forefence of the Romans, raised against the Britans (or vice versa) who might possibly be poffeft of the Port way before.

36. Yet I rather believe they might be both of them ancient

ways; though so near together, for we read that the Romans, where the way was not well laid out, or was longer than needed, did commonly (to keep the people from idleness, and the Soldiers from mutinies) lay them straighter and better; as Galen witnesses that Trajan did in Italy: ἡ δ' ἐν τῇ μέσῳ καὶ ἐνκοὐταίρῳ ὑπάρχουσι δομοί, εὐφυνο&ν εἰς τὸν νόμον αὐτοῦ,) i. e. that where the way was longer than needed, he cut out another shorter, which possibly might also be done here, the Portway being much shorter and more direct then Aveildich, to the place whither they both seem to hold on their course: which may also be the reason of the two Ikenild ways under Stoken Church hills; there being about Lewkner and Aston Rowant, an upper and lower Ikenild way.

37. Befide these, there are yet two other branches coming out of Akemanstreet; one in Woodstock Park near Col: Cooks Lodge, whence it runs toward the trees called Oak and Ash, not far from Glympton, where it is discontinued; and where to be met with again I could no where find; so that all I can say of it is, that towards the end it points North-west towards Enston and Chipping-norton, and seems to have cut another such like way near Upper Riddington, which has its period there, as far as I could learn, but runs as far as Ditchley the other way, where the ridge turns to a ditch by the name of; Grimes-dike (as that near Wallengford) and gives name I suppose to Ditchley that stands upon it, a Seat of the Right Honorable Edward Henry Earl of Lichfield's, whence it runs in that manner fair and visible for about half a mile: but before it comes to Charlbury, turns again to a ridge, very high and lofty at a place called Baywell, where it enters into Cornbury Park but scarce visible there; yet as I was told, to be found again in the woods beyond it, and that it pointed toward Ramsden, where at first (as I guess) it branched out of Akemanstreet.

38. But whether this, and the other before-mentioned tended, is hard to guess, no Roman station lying near this place, unless I may be allowed to conjecture by their pointing, at a great distance, which must needs be very uncertain. However, because a guess perhaps may better please than to say nothing, I conjecture the way by Ditchley may tend either toward Vennonis, and Rate, as the Portway and Aveildich afo-mention'd were thought to do, or else toward Tripontium, now Worcester in Northampton-shire.
and that from Woodstock toward Manduesfedum, now Manchester in
Warwickshire, or rather the old Etocetum, now the Wall in Staffordshire.

39. Which are all the raised banks or deep trenches that I met
with in Oxfordshire, except the two banks with a trench between
them (therefore called dikes, hills) South and by West of Dorchester,
which I cannot imagine part of any Roman way, because ex-
tended only as a string to a great bow of the River Isis, as described
in the Map; but rather a Fortification, such as P. Ostorius Propræ-
tor here in Britain under Claudius, is said by Tacitus to have made
on the Rivers Antonia and Sabrina: or else some of the Out-
works of the Fortifications on Long-Wittenham hill on the other
side the water, which perhaps was the Sinnodunum of the an-
cient Britons.

40. Night to the raised ways thus cast up by the Romans, they
placed the Tumuli, or Sepultures of their Generals, or such oth-
er valiant persons as dyed in the wars; it being forbid by the
Law of the 12 Tables to bury within their Cities or Stations. Ho-
minem mortuum in Urbe ne sepelito neque urito: And by a penal
Rescript of the Emperor Hadrian. Now the reason why they
placed them on the military ways, rather then elsewhere, is given
us by Camden, viz. that Passengers might be put in mind, that as
these here buried were somtimes mortal men, that they them-
soever are no better now: whence perhaps the formula still used
on Tombs, Siste Viator, and monumentum a monendo.

41. But I guess that there could not but be somewhat more in't,
for as it was accounted the greatest dishonor imaginable to lie un-
buryed, so it was a great reputation to the person deceased to be co-
ver'd with a large Tumulus, which is like might in part at least
be the reason of their placing them so near the public ways, that
Passengers might continually add to the heap, it being look'd up-
on as pretty in them so to do; nor sufficed it to throw on a single
handful of earth, but (as may be collected from Horace) usually
three. For in Archytas's request to the Mariner, that he would not
suffer his Body any longer to lie on the shoar unburyed, he makes
it part of his plea, that notwithstanding the swift motion of Sea-
men, yet he might find time enough to throw 3 handfuls of dust.

* Taciti Annal. lib. 12. cap. 51. 1 Vid. Leland. Comment. in Cygnetam Cant. in verbo Sinnodumn.
* Ex Leginis 12. Tab. de Jure Sacrorum. Vid. etiam Cicero, de L. L. lib. 2. 1 Ex Legibus 12. Tab. de Jure
Sacrorum. Vid. etiam Cicero, de L. L. lib. 2. 1 Ex De Sepulcro violato. L. 
Prætor ait, S. Deius Hadriannus. 2 Vid. Camden Britan. in Com. Wilts.
Quanquam festinas, non est mora longa, licebit
Injecio ter pulvere curras n.

42. Which way of burial under Conical hillocks, whether naturally compos- ing themselves into that Figure by the fall of the Earth, or designedly so made by the Soldiers, was sure very an-
cient; for from their being placed without Cities, I find them
called by the Greeks, κεφαλαίοι λόφοι, and upon High-ways, Ἐρυμέως,
for that the God Mercury had the charge of ways; as his other
name Ἐνδός-likewise imports.

We find also Achilles in Homer, complaining how small a Tumulus
he had made for his beloved Patroclus,

τούμενον οὐ μᾶλα πολλαν ἐφ᾽ ουνείοις ἀνοχα
Αχ' ὀδηγεία ζητον, Π ἐκ.

and intreating those should come after to raise it higher, which
desire of his was piously performed by the succeeding Greeks,
who raised it to so great a height, that they designed it for a Sea-
mark to those that should fail the Hellespont.

μίλησεν ὃ δ' αμικονα τούμενον
Χόλας Ἀργεῖων ἑγώς σπανίς ἐκ τού

and this I find here, and at all other places, they always perform-
ed χόλας ἔδω οἷς ἐκείνα; and so again in the erection of the Tumulus
over HECTOR, by pouring on earth or stones; the word χόλα
as Euflathius informs us, being somtimes used absolutely, πρὸς ὑμῖν
ὁ πόρος τῆς τετευετοίς: i. e. (in the most critical sense) for humare.

43. It was also very ancient amongst the Romans; not only for
Princes, as Virgil witnesses,

fuit ingens monte sub alto
Regis Dercenni terreno ex aggere buśum.
Antiqui Laurentis, opacaque Illic teśtum.

with whom agrees Lucan,

Et regnum cineres exstruēto monte quiescunt.
The Natural History

but also for meaner persons; for thus we find Aeneas burying his Nurse Cajeta,

At pius exequis Aeneas rite solutis.
Aggere composito tumuli, &c.

Nay so very ancient was it, that Pliny says expressly, it was long in use amongst them before Burning, Ipsum cremare apud Romanos non fuit veteris instituti; terra condebatur, i.e. that they always interred them, till they began to understand that the bodies of their men flain in the wars afar off, were sometimes taken from under their Tumuli, and barbarously abused, as Florus acquaints us the Germans served the body of the Consul Varus, amongst other indignities offer'd the Romans: Ipsum quoque Consulis Corpus, quod militum pietas abiderat, effusum.

44. To prevent which barbarity for the future, they ordained burning before tumulation, as was used always amongst the Greeks; for we find in Homer, that the body of Hector (as well as Patroclus) was first burned, and his calcined white bones then gathered by his Friends and put in an Urn.

and then follows their raising a tumulus over him, which it seems was of stones,

and yet expressed as where made of Earth, by pouring them on, by 'insettes' & to forma.

45. It was a usual custom also amongst the Northern Nations, in their second Age, which they called Hoigold or Hoelttid, Tumulorum Eetas; thus to bury their dead under earthen hillocks, Arenam & terram exaggerando usque dum in justam monticuli exsurgerent altitudinem, says Wormius of the Danes; and of these he says they had two forts, the Rudiores, which, ex sola terrâ in rotunditatem & Conum congesta constabanit, i.e. that were made only of Earth, cast up in a round conical figure, which were set up in memory of any stout Champions that had deserved well of their

Country.
Of OXFORD-SHIRE.

Country. And the Ornati, which were encompassed with a circle of stones, set up only for their Generals, or some other great Persons.

46. And these they set over the Bodies without burning them (as they had formerly done in their first age, which they called Noisold, or Brende tijd, &etas ignea) the manner being as Mr. Camden informs us, for every Soldier remaining alive after a field fought, to carry his head-piece full of earth, towards making the tombs of their fellows that were slain, fundentes tumulum, after the manner of the Greeks.

47. But the Romans here in Britain, having little reason to expect more favor then they found in Germany; whenever any Consul, or eminent Warrior dyed in such an Expedition, first burned them on the level near the via strata, or militaris; by which means having deprived their exasperated Enemies of all hope of being able to abuse the dead bodies; they more-over endeavored to prevent the very scattering their ashes in haste, the whole Army casting on them pure grassy turfs, cut from the surface of the ground, which probably indeed may be the very reason (as the learned and ingenious Mr. Dugdale guesses) why there appears not any hollowness whence the earth was taken that raised these Tumuli.

48. Whereof here in Oxford-shire I have met with two kinds; one placed, as above, on the Praetorian ways; and the other fort not so, yet both commonly called Burrows, alias Barrows, from the Saxon Beongs, collis, acervus, whence our word to bury. Hence also the raised banks, made for Conies to hide themselves, says Sir Henry Spelman, were also called Berries. Of the first fort is the hillock in the Parish of Fritwell, called Ploughly-hill, standing just within Oxford-shire on the Port way, and (which is somewhat more than ordinary) giving name to the Hundred wherein it stands.

49. And there is another on the West side of that branch of Akemansstreet that comes out of Woodlock Park, close by the Rivulet over which that way passes; but the most eminent on Akemansstreet, is that they call Aflall Barrow, standing high and lofty, which I conceive might be the Sepulcher of some considerable pers-
son, at least of great repute amongst the common people that past that way; there being another, not far off upon the same way, on the edge of Oxford-shire, incomparably less.

50. Upon these their High-ways it was also usual amongst them to place pillars of stone, whereon they inscribed the distances from the regal Cities, Stations, and Mutations, whence the phrase, ad tertium, quartum, vel quintum, ab Urbe lapidem, i.e. so many miles from the City. And of these I think the stone, that yet lies on a bank close by Akemanstreet way, not far from Ashall Barrow, to have been a remnant, and most likely of any the pedestal of such a Pillar: unless we shall rather think it to have been a pedestal to a Statue of Mercury, made with four sides and without arms, from thence called ἐπταιμος, ἐπταιμα, or Cyllenius 1, and in old time Hermæ, which were also used every where to be set up near high-ways; and if in cross roads, with as many heads as there were ways, ut interdum etiam quattuor pedes conspiceretur 2.

51. Whatever it were, no doubt this, and the fore-mention'd Barrows, were of Roman erection; but as for Kenners Barrow near Shipton under Which-wood, the large Barrow at Stanton-Harcourt, and that other (if it be one) called Adwel Cop; I think rather erected by the Britons or Danes, for that near no high-ways, but in the open fields, as Saxo-Grammaticus 3, and Wormius say they made them: Non solum in campis & pratis occurrent Tumuli, sed & in Silvis & Lucis, &c. 4 i.e. that they have them not only in the fields and meddows, but in the woods and groves too.

52. More particularly, as for Kenners barrow and Adwel cop, I think them erected but for inferior Captains, though perhaps eminent Soldiers, because they are of the rudiores, ex sola terra: But for that at Stanton Harcourt, if a Danish Monument, it was certainly a memorial of some greater Person, because of the stones set near it, of which more anon in another place: though it be possible too that these may be Roman, it being customary for them to set up such Trophees, at the utmost bounds of their Victories, or where they could not conveniently advance them further, as Dion testifies, the Roman General Drusus did at the River Albus, ἐποιημεν ἀπὸ της ὑπολογιας, i.e. that he set Trophees and returned: which Trophies of his, Florus says expressly, were only a Tumulus: Nam Mar-

---

1 Lavini Torrentii Comment, in Horat. Flac. lib. 1. Ode 10. 2 Ibidem. 3 Saxo-Grammatici Historiae Danicae, lib. 3. 4 Olai Wormii Monumentorum Danicorum, lib. 1. cap. 6. 5 Dionis Caesari Romano Historiae, lib. 55. sub initianum.
Of OXFORD-SHIRE.

I. Of Oxford Antiquities. 52.

53. However it were, 'tis certain the two former of these, are much different from those erected on the via militares, for I found them trenched round, and particularly that of Adwel cop, with two or three circumvallations, part whereof are still visible on the South-east side of it, insomuch that I question whether there were not some Camp, with this Trophie perhaps of Victory erected within it, of which more anon when I come to speak professedly, of the ancient Fortifications yet remaining in this County.

54. Of other Roman Antiquities that I can certainly call such, the most eminent I met with is a part of their pavement made of small bricks or tiles, not much bigger than dice; whereof the Roman Generals, amongst their other baggage, were used to carry a quantity sufficient to pave the place, where they set the Prebri-um or Generals Tent, or at least some part of it, which is particularly witnessed of Julius Caesar, In expeditionibus tessella, & se-

55. These if made of small square Marbles, of divers natural colours, were called Lithostrota; but if of small bricks or tiles, artificially tinged with colours, annealed and polished, Pavimenta tessellata, or opus Musivum; and both Asarota, for their not being to be swept, but wiped with a sponge. As for ours ploughed up somewhere about great Tew, and engraved Tab. 13. Fig. 22. I take it for certain to be of the second sort, it consisting of a matter much softer than Marble, cut into squares of what bigger then dice, of four different colours, viz. blue, white, yellow, and red, all polished, and orderly disposed into works; the colours of the squares being represented in the Cut, as to the of the Arms in the Map.

56. There was much such another Pavement ploughed up at Steeple Ashton, consisting likewise of squares of divers colours, and set in curious figures, but as described to me by the Reverend Mr. Greenwood, Rector of the place, not cubic like the former, but oblong squares set perpendicular to the Horizon. That these Pavements were Roman, I think there's no doubt, notwithstanding,

9 L. An. Flori Rer. Roman. lib. 4, cap. 12. 1 Suetonius in vita Julia Cesaris. 2 Sarmati Ann. 16 Sut-

* ing

30x779] comannorum spoliis insignibus quendam edition tumulum in Trophi modum excoluit, are his very words 4 concerning the same Expedition of Drusus.

53. However it were, 'tis certain the two former of these, are much different from those erected on the via militares, for I found them trenched round, and particularly that of Adwel cop, with two or three circumvallations, part whereof are still visible on the South-east side of it, insomuch that I question whether there were not some Camp, with this Trophie perhaps of Victory erected within it, of which more anon when I come to speak professedly, of the ancient Fortifications yet remaining in this County.

54. Of other Roman Antiquities that I can certainly call such, the most eminent I met with is a part of their pavement made of small bricks or tiles, not much bigger than dice; whereof the Roman Generals, amongst their other baggage, were used to carry a quantity sufficient to pave the place, where they set the Prebri-um or Generals Tent, or at least some part of it, which is particularly witnessed of Julius Caesar, In expeditionibus tessella, & se-

55. These if made of small square Marbles, of divers natural colours, were called Lithostrota; but if of small bricks or tiles, artificially tinged with colours, annealed and polished, Pavimenta tessellata, or opus Musivum; and both Asarota, for their not being to be swept, but wiped with a sponge. As for ours ploughed up somewhere about great Tew, and engraved Tab. 13. Fig. 22. I take it for certain to be of the second sort, it consisting of a matter much softer than Marble, cut into squares of what bigger then dice, of four different colours, viz. blue, white, yellow, and red, all polished, and orderly disposed into works; the colours of the squares being represented in the Cut, as to the of the Arms in the Map.

56. There was much such another Pavement ploughed up at Steeple Ashton, consisting likewise of squares of divers colours, and set in curious figures, but as described to me by the Reverend Mr. Greenwood, Rector of the place, not cubic like the former, but oblong squares set perpendicular to the Horizon. That these Pavements were Roman, I think there's no doubt, notwithstanding,
ing found near no Roman station, and far enough removed from any Roman high-way; (except the branches of Akiemansstreet from Ramsden and Woodstock, might happily pass these places:) but I guess not set here till they wholly possest themselves of this Southern part of Britian, and might securely enough pass their Armies any where; and therefore cannot afford them any higher antiquity than the time of Agricola, the Lieutenant of Vespassian, who compleated the Roman Conquests; or at most of Paulinus, that defeated Boadicea.

57. Under the Sepulchral monuments, or tumuli afore-mentioned, raised by the Romans over their dead in memory of them, they placed the more immediate receptacles of their ashes, or at least some part of them, as much as could be saved in the Vaturnum; for they were not so curious as some have imagined, to scrape together all the bones and ashes of the Corps, as may be easily collected from the smallness of all Urns, but Family ones. Yet over all their Urns they raised not such a tumulus; for we find them many times in level ground, though containing the remains of noble Persons, as may be guesstled by the Lamps, Lachrymatories, and Vessels of Oyls, or Aromatical Liquors sometimmes found with them.

58. Of which sort of Vessels, I presume that odd fashioned glases, depicted Tab. 15. Fig. 23. must needs be one, found in a place called busby Leas, betwixt Brightwel and Chalgrave, being part of the posseffions of that right worthy Gentleman, John Stone of Brightwel Esq; surrounded with no less than twelve of those Urns, Tab. 15. Fig. 24. both which, amongst many other signal favors, were kindly bestowed on me by the same worthy person. That the Earthen pot, Fig. 24, is a Roman Urn, I take to be so plain, that it would not need proof, though one of the four Regal high-ways were much farther removed than Ikenild way is, which comes up almost to Ewelme, not far from this place. But whether this glass contained a lamp, were a Lachrymatorie, or a vessel containing water, or some Aromatical liquor, is the great question next to be determined.

59. That the Bodies of great Persons were usually accompanied with Lamps after death, is plain from the Civil Law, and to inter Lamps with them, was heretofore so frequent, that Fortunius Licetus has written a whole Book, De reconditis Antiquorum
To the Worthy and much Honored
Gentlemen TOON and CROPLETON, ESQ.
This XV Table,
Consisting partly of Antiquities referred to the 22d and 23d, were found in the grounds near their seat at
Brightwell, in memory of their ancestors, to grutfully
Indicated by
[Signature]
Lucernis, amongst which he mentions one out of Baptista Porta, called Lucerna Nesidea (from the Island where found in Craterè Neapolitano sita) which was included within a glasβ, and placed in a Marble Tomb*, upon the same account (I suppose) that indeed all others were; both as a Symbol of the quality of the per-
son there interrèd, and for the sake of the soul, which they thought did not so quite desert the body, but that it rested with it in the grave.

60. But that ours was such a glas including a lamp, I dare not conclude, more than that it is barely possible it might be so, it seeming much rather likely to have been a phiala Lachrymatoria, or tear-bottle, wherein the surviving Friends of the deceased, collected those passionate expressions of their grief, and usually buried with them, as is sometimes signified in old Inscriptions, by some such expression as, Cum lachrymis posuere; only it is of a much different figure from any of those described in Job. Bapt. Casalius, and Paulus Aringhus.

61. And therefore I rather believe it to have been one of those vessels containing some Aromatical liquor, such as they usually interred with the Urns of Noble Families, and perhaps a glas of the same kind with those three found in a Roman Urn, preferred by Cardinal Farnese, and mentioned by Vigeneri. Except we shall rather think it the vessel for the Aqua lustralis sprinkled by the Priest on the Urns, to expiate for the smaller faults of the deceased, which possibly they might after bury with them, which waters were otherwise called arseriae aquae, and by the Greeks, ἀρσηρία λυχνεία, or θυσία ἑδίνα ἐκ τοῦ ὑπέρτος σανδιδομένου. But I rather incline to the former of the two, because there seems a kind of white substance yet remaining between the two coats of the glasβ (it being a vessel of a peculiar make, one glasβ as it were including another) which possibly might be the sediment of some such Aromatical liquor when dried away.

62. Also in the Parish of Wendlebury I saw a great square bone, hollowed round in the middle, dug up in or near the old City of Aldchester, in which there was set a glas bottle fitted to it, containing nothing but somewhat like ashes, and cover'd over above.
with another broad flat stone: This Urn I saw at a house in the Town, where it is used for a Hog-trough, but the glass had been broken long before, nor could I get any certain description of it; however, I guess it some such like vessel with that described above, and placed there upon the same or like accounts. There have been several other Urns also taken up at divers other places, particularly in the old Mine at Blund's Court above-mentioned, Chap. 6. §. 63. at a place called Dunshill not far from Wood-Eaton, but belonging, as I was told, to the Parish of Marston, near the ridged way that comes from Noke, and in one in Mr. Finches house at the Mercat-place in Henly, and one in the high-way that leads towards the North at the Towns end, not far from Ancastle, which argues those places some of the first Roman habitations, though no recorded garisons.

63. Nor indeed is there any such to be found in this County, though it cannot but be acknowledged that Oxford itself must be a noted place, before the departure of the Romans at least, if the Roman way thither described in the Map, prove so good an argument to the Reader as my self. Where by the way perhaps it may not be unworthy notice, that Oxford is mentioned by the Arabian Geographer, Sharif ol' Edris, or Adrisi (of whose works the Geographia Nabien$ is translated by Gab. Sionita, and Job. Henly, is too short an Epitome) by the name of Oxfarti *, withal adding, that it stands on the same river with London (which river he calls Retandab ¹) 40 miles above it, which shews that Oxford was always a Town of good repute, in the remotest places, as well as times.

64. As for the antiquity of the University, beside what was alleged §. 30. of this Chapter, I think it very considerable what remains upon record in Magdalen College Library, in an ancient MS of Walter Burley's Fellow of Merton College, (Tutor to the Famous King Edw. 3. and deferently stiled Dr. Profundus) upon the Problem [Complexio rara quare Sanior] he has these words (which should indeed have been mentioned before, Chap. 2. §. 3.

of this Essay) concerning the healthy situation of Oxford, and its
selecion by Students, for the seat of the Muses: Notanda, inquit,
sunt tria, quod Civitas sana est in Borea & in Oriente si plantata est
aperta, & in Austro & Occidente si montosa; propter puritatem Bo-
rex, & Orientis, & putrefactionem Austri & Occidentis: sic ut
Oxonia, quae per industriam Philosphorum de Graecia fuerat ordina-
ta t, i.e. that a healthy City must be open to the North and East,
and mountaneous to the South and West; by reason of the purity
of the two former quarters, in respect of the latter: just as Oxford
is seated, which was selected by the Philosophers that came from
Greece.

65. And that according to the rules of their great Master Hip-
pocrates, who requires no other, but the very same situation for
a healthy City b. But about what time it was these Philosophers
arrived, though I dare not be too confident, yet in all probabili-
ty they might be some of those Grecians brought over by Theodo-
rus the Greek Arch-bishop of Canterbury, about the year 668 1,
whom 'tis like he placed here to instruct the Saxon youth; for we
find Venerable Bede, and St. John de Beverlaco (always reputed of
this University) to have been his Scholars; and to Tobias Bishop of
Rochester, and Albinus Abbot of St. Augustin's Cant. who are said
to have understood the Greek Tongue as well as their native one k.

66. Not to mention that Britain was known to the Greeks be-
fore the arrival of the Romans; for otherwise Polybius could never
have hoped to have described Britain, or the method there used
in ordering Tim, as we find he designed, having promised to
write, 

Which Book though loft, yet Strabo * bears us witnifies, that therein he
refuted the Errors of Dicæarchus, Pythias and Eratophenes, con-
cerning the magnitude of Britain, who were also Greek Authors
(though he seems had written somthing concerning this Island) and
much ancienter than himself. Nor to note secondly, that the
French Druids (who had their Learning out of Britain) in things
of common concern, used the Greek Character m, which how

---

they should come by without the learning of the Greeks (which possibly might be brought over by some of their Philosophers who accompanied the Merchants trading for Tin, and seated themselves here) let the Reader judge.

67. But for the Bishoprick of Oxon, it is but of late erection, taken out of that of Lincoln by King Hen. 8, and of no longer standing than his days, notwithstanding what we meet with in the Decretals of Pope Gregory; where we find two Rescripts of Pope Alexander the Third, about the year 1158. directed to the Bishop of Oxon, and others, it being but a mistake (though to be found in all the Copies, I could meet with) of Oxonien½, as plainly appears in the fourth Book of the same Decretals, compared with the places afore-cited.

68. Yet the ancientest Town of the whole County I take to be Henley, so called from the Britifh Hen, which signifies old, and Eley a place, and perhaps might be the head Town of the people called Ancalites, that revolted to Cæsar: it was also called Hannelurg and Hanneburg, as appears by an Inscriptimus of Q. Elizabeth, granted this Corporation. And there is a place near it, still called Ancastle (west of the Town where the Wind-mill now stands) which is but the Norman name, importing the same with the Saxon Hanneburg. If it be objected, that Aldbury near Ricot in this County (according to vulgar tradition) is the mother of Henley, and consequentially older; it may be answer'd, that its probable indeed that Christian Henley may be younger than Aldbury, in respect of a Church first built there; but upon no other account.

69. And the Town of Watlington seems of no small antiquity, provided its age do but answer its Etymologie; for by its name it seems also to have been an old Britifh City, which according to Strabo, were nothing else but groves fenced about with trees cut down, and laid cross, one another, within which they built them sheds both for themselves and Cattle. * Πλαύνη οι ζωνερείαι ποις δρυμοί, χαλανθάκης τοιαύτας ευρήκησαν δι' άυτος κατασκευήνας καταφυγίας, κατασκευάζουσιν, κατασκευάζουσιν, εύνυχως, δι' άυτος κατασκευάζουσιν, κατασκευάζουσιν, Κατασκευάζουσιν, κατασκευάζουσιν, εύνυχως, δι' αυτος κατασκευάζουσιν, κατασκευάζουσιν, εύνυχως, δι' αυτος κατασκευάζουσιν, κατασκευάζουσιν, εύνυχως. His very words: which manner of fence the Saxons after called pecetar Crates, hurdles or walleis, within which mound building them tents or co- verings,
verings, by the Saxons also called \textit{raetal}; from one of these, or both, I guess this Town took its name.

70. As also the Praetorian or Consular way, called Watlingstreet, and Wattle-bank here in Oxfordshire, these in all probability being made the same way, that Hadrian is said to have made boundaries (where Rivers were wanting) between barbarous people; Stipitibus magnis in modum muralis, sepis funditus jactis arque connexis, i.e. with great stakes set fast in the ground, and knit together 'tis like with smaller wood woven between, which if happily made use of in these ways to keep up the earth at first, might well invite the Saxons to name them Wattleing-street, Wattle-bank, &c.

71. Just upon the meeting of Akemanstreet way, and the Port way from Wallengford, there are also some foot-steps of that decayed ancient station, by Camden called Alcester, still remaining, which he guesses so called, as one would say an old Town. But I have met with some notes in a MS. now by me, that says it was the Seat of Allectus the Emperor, who having treacherously slain his Friend and Master, the Emperor Carausius, basely usurped Briton for himself, calling this his new Seat after his own name; Alcide Castrum, since Alcester or Aldecester: but it seems by the story that it flourished not long, for Constantius Chlorus being sent against him by the Emperors Dioclesian and Maximian, and by the benefit of a mist, landing privately somewhere on the South shoar, near the Isle of Wight (whether Allectus came to prevent it) gave him battle, defeated, and put him to flight towards this his chief Fortres, but was over-taken and slain by Aelopiodorus, one of Constantius's Captains (as this Author will have it) here at Elsfield near Oxon; (which he also would have a corruption of Allectus-field) before he could reach it.

72. For the credit of this relation, it having no foundation in the Roman story, I shall wholly leave it to the Reader's judgment; yet shall add thus much for its reputation, that the Roman military ways lye very agreeable to it; for on supposition, this conflict happened about Regnum, now Ring-wood; or Clausentum, now Southampton; the Roman ways lye directly thence to Venta Belgarum, now Winchester; and so to Callena, now Wallengford,
according to the Itinerary of Antoninus*; and thence close by Elsfield to Alcefsier, as described in the Map, and in §§. 27. and 28. of this Chapter.

73. Which is all I find remaining of the Romans here, but some parcels of their Mony found at many other places, particularly near Dorchester not far from Dike-hills, near the Fortification at Idbury, and Madmarston-hill in the Parfh of Swalciff, inclosed with a double vallum; which I therefore judge to have been Roman works. There is also a small circumvallation in a Wood South and by West of Harpsden Church, near which place there has also been Roman mony dug up (whereof there is some in the possession of the Worshipful ... Hall Esq.) and so likewise about Horley, Swerford, Chippingnorton, Teynton, and a Village called Sinet near Burford, Stratton-Audley, Fringford and Tufmore, and most of them, of the Emperors between Cocceius Neron, and Theodosius the second, exclusively.

74. After the departure of the Romans came the Saxons into Britan, and after them the Danes, who also made them Works so indistinguishable from the Romans (otherwise than by the Roman mony found near them, as in the former Paragraph) that they can scarce be known asunder: So that whatever of these Fortifications (at most places in this County abusively called Barrows) have no Roman mony found at or near them, I think we must conclude either Saxon or Danisb; Saxon if square, and if round Danisb; for so I find them distinguish'd in a MS. History of Ireland by E. S. whereof the first fort he calls Falkmotes, i.e. places for the meeting of the folk or people, upon the approach of the enemy; and the latter Danerathes, i.e. hills of the Danes made for the same purpose*, though I firmly doubt whether I shall find these forms strictly observed in all places hereafter.

75. Yet I find Tadmorton-Castle, and Hooknorton Barrow not far from it, agreeable to this rule; the former being large and round, and the other smaller and rather a quinquangle than a square; both of them cast up (the great round one by the Danes, and the less square one by the Saxons) about the year 914, when the Danes in the time of Edward Senior being grown strong and numerous, came forth of Northampton and Leicesters, and made great slaughter of the English-Saxons at Poitmercume, says Job. Brom-

* See Burton's Map of Antoninus his Itinerary. * History of Ireland, MS. pines Authorum.
ton, An. 10. of Edw. Sen 1 at Hokenurtune, says Florentius Wigornienfis, which he calls Villam Regiam 2, now Hoke-norton.

76. As for Chasleton barrow, by the above-mention’d rule, it should be a Fortification of the Danes, perhaps caft up about the year 1016. at what time Edmund Ironside met Canutus the Danish King hereabout, and defeated him after a long and bloody Battle, fought at a place called Searstan by Job. Bromton 3, Sternesfon and Scearslan by Matth. Westmonfter 4, Scearslan by Florentius Wigornienfis 5 and Simon of Durban 6, and Scearstan by Wormius, from fejer victoria, and fтан лаpis; whereof all the rest seem but corruptions, there being several fuch in Denmark and Norway called by that name to this day *: which though they all fay expressly was in Hwinfia or Huiccia; i.e. Worcester-shire, yet I verily believe it with Camden, to be that Stone not far off, called Four feire Stone (or else that other near it) parting four Counties, whereof Worcester-shire is one.

77. And as for the Entrenchments in Merton Woods, I guefs them caft up by King Efthelred, or the Danes in the year 871. at what time says Floren. Wigornienfis, King Efthelred and his Brother Efthred, cum paganis pugnantes apud Meretune 7, fighting with the Danes at Mereton (as I find this town was anciently written in the Leigier Book of Esfham 8) overcame them, and put their whole Army to flight. That the Danes had somewhat to do hereabout, is further evinced, from one of their fyers in the hands (if I misremember not) of George Sherman, of the Town of Bifeter not far from this place, which I took no care to get engraven, because already done by Olaus Wormius 9, where the Reader may see the exact figure of it: All which put together, and that this place is near the meeting of two military ways, I am pretty well satisfied that this Battle between Efthelred, his Brother Efthred, and the Danes, was much rather here, than at Merdon in Wilt-shire, as some have thought it.

78. And if Adwell Cop may pass for a Fortification, as the Entrenchments about it on the South-caft-fide seem to promise, I guefs it made about the year 1010. when the Danes, as Simeon of Dur- tum testifies, came forth of their Ships in the month of January,

---

and passing through the Chiltern Woods, came to Oxford and burnt it, ereasting perhaps this fortified Barrow in the way, where 'tis like they might meet with some opposition, and loose some principal Captain. As also upon Shotover-hill, where there seems to have been two other little Barrows, on the left hand of the road from Oxford to London, that I confess have been mention'd before in §. 51. of this Chapter.

79. But as for the large square Entrenchments on Callow-hills in the Parish of Stunsfield (which yet 'tis possible too may have been an old British town, such as described by Caesar, Oppidum vocant cum sylvas impeditas vallo atque fossâ munierunt, it being much larger than any of the rest, and having deep holes within, I suppose, to preserve water) the small Fortification under Cornbury Park-wall, and the large one called Beaumont, near Mixbury-Church, encompassed with a ditch 170 paces one way, and 128 the other; I can give no account of them, but that in general 'tis like they were works of the Saxons, these being all square, though the last by its name should indeed be Norman.

80. And so again for the Fortification commonly called Round-castle, west of Begbrook Church, but in the Parish of Bladen, and Linebam Barrow (between which and Pudlycot, a Seat of the ancient Family of the Lacy's, there is a passage under ground down to the river) I can say little of them, but that in general 'tis most probable they were made by the Danes (they being both round) but upon what particular occasion, I could no where find.

81. Befide the circles of Earth cast up by the Danes, there are others of stone in many places of this Nation, and particularly one here in the very bounds of Oxfordshire, near Chipping-norton, in the Parish of Little Rollwright, the stones being placed in manner and form, and now remain as exactly engraven Tab. 16. Fig. 2222, in a round of 'twixt 30 and 40 paces over; the tallest of them all (which may be a scale for the rest) being about seven foot high. North of these, about a Bolts-fhoot off, on the other side the hedge, in the County of Warwick, stands one singly alone, upwards of nine foot high, in form as described Fig. 1. and Eastward five others, as in Fig. 3. about two furlongs off,
the highest of them all about nine foot also; meeting formerly at the top (as drawn by Mr. Camden) with their tapering ends, almost in shape of a wedge; since whose time there are two of them fallen down from the rest. Of which ancient Monument (or whatever else it be) he gives us in brief this following account.

82. Not far from Burford (he should have said Chipping-norton, for Burford cannot be left then 7 or 8 miles from it) upon the very border of Oxfordshire, is an ancient Monument, to wit, certain huge stones placed in a circle: the common people call them Rollich-stones, and dream they were sometimes men, by a miraculous Metamorphosis turned into hard stones. The highest of them all, which without the circle looketh into the Earth, they call the King, because he should have been King of England (forsooth) if he had once seen Long-Compton, a little Town lying beneath, and which one may see if he go some few paces forward.

83. Other five standing on the other side, touching as it were one another, they imagin to have been Knights mounted on horseback, and the rest the Army. These would I verily think, says he, to have been the Monument of some Victory, and happily erected by Rollo the Dane, who afterward conquer'd Normandy; for what time he with his Danes troubled England with depredations, we read that the Danes joyned Battle with the English at Hoch-norton, a place for no one thing more famous in old time, than for the woful slaughter of the English in that foughten Field under the Raign of King Edward the elder.

84. That this Monument might be erected by Rollo the Dane, or rather Norwegian, perhaps may be true, but by no means about the time of Edward the elder; for though it be true enough that he troubled England with depredations, yet that he made them in the days of King Alfred, I think all the ancient Historians agree, An. 897, according to Florilegus, but according to Abbot Bromton a much better Author, in the year 875, near 40 years before that slaughter of the English in King Edward's days, as will plainly appear, upon comparison of this with the 75. §. of the same Chapter.

85. Therefore much rather than so, should I think he erected them, upon a second Expedition he made into England, when he

---

was called in by King Esthelfian to assist him (as Thomas of Walsingham witnesses) against some potent rebels that had taken arms against him; whom having vanquished, and reduced into obedience to their Prince, and perhaps too slain the designed King of them (who possibly might be persuaded to this rebellion, upon a conditional Prophecy of coming to that honor when he should see Long-Compton) might erect this Monument in memory of the Fact; the great single Stone for the intended King, the five stones by themselves for his principal Captains, and the round for the mixt multitude slain in the Battle, which is somewhat agreeable to the tradition concerning them.

86. But if I may give my opinion what I really think of them, (though I do not doubt much but they must be a Danish or Norwegian monument) I can by no means allow the round or other stones to be Sepulchral monuments: For had the Cirque of stones been any such memorial, it would certainly have had either a tumulus in the middle, like the monument near the way to Birch in Seland, and of Langbein Hiler not far from it, and another near Roeschild; or a Stone Altar, as in the notable monument of Harald Hyldetand near Leire in Seland, placed there, says Wormius (in another part of his Book) eo fine ut ibidem in memoriam defuncti quotannis facra paraganur, that they might yearly offer Sacrifices in memory of the defunct, at the place of his inhumation. But neither of these are within Rollright Cirque, nor could that curious and learned Antiquary the Worshipful Ralph Sheldon of Beoly Esq; (one of the noblest Promoters of this design) who industriously dug in the middle of it (to see whether he could meet any symbols or marks, either who might erect it, or for what end or purpose) find any such matter.

87. For the very same reason, it is also as certain that it cannot have been any place of Judicature, such as was used in old time in the Northern Nations, whereof there is one so great in Seland, as described by Wormius, that it takes up no less than fix and forty great stones of stupendous magnitude within its circumference, and so does Rollright and more too; but then it has no Stone (nor I suppose ever had) erected in the middle for the Judge to sit on, as those always had. Beside these Fora, or

---

places of Judicature, (by the Danes called Tings) seem always to have had their muniments of stone, either of a Quadrangular or Oval Figure, and not to be entered but at two sides, as that at Dieting mention’d by Wormius, whereas ours is circular, and shews no signs of such gates.

88. Which perhaps might occasion the Learned Dr. Charleton, to judge it rather a Trophie, or Triumphant pile, set up as a Monument of some great Victories, to whom though I cannot but somewhat incline, yet am verily perswaded, that at the same time it might serve also for the Election and Inauguration of a King; and much rather than the great and famous Monument of Stone-Heng on Sælesbury Plain; the very disparities betwixt it and those in Denmark, brought by himself, being not to be found here.

89. For beside that it is placed (as all such Courts of the Danes were) i. Upon a rising ground, for the advantage of profect (that the common people assembled to confirm the suffrages or votes of the Electors by their universal applause, and congratulatory acclamations, might see and witness the solemn manner of Election:) 2. Made of huge stones of no regular Figure. And thirdly, Having no Epigraph or Inscription cut or trenched in the stones, as carrying a sufficient evidence of its designment and use, in the figure of its platform. It is but a single Cirque of stones without Epistles or Architraves, few of them very high on which the Electors might easily get up to give their suffrages, as was usually done in the Northern Nations; whereas Stone-Heng is made up of three circles at least (some say four) and the stones of each circle joined with Architraves, whereof there is no example to be found in those Countries.

90. Now that the Northern Nations usually erected such Cirques of rude stones for the election of their Kings, is fully testified by Olaus Wormius, Repertiuntur inquit in his oris loca quedam in quibus Reges olim solenni creabantur pompâ, que cinâ adhuc grandibus faxis, ut plurimum duodecim, conspicuntur, in medio grandiore quodam prominent e, cui omnium suffragiis Elefectum Regem imponebant, magnoque applaufo excipiebant. Hic & Comitia celebrabant, & de Regni negotiis consultabant. Regem vero designaturi Electors Saxis insitiebant forum cingentibus, decreti firmitudinem pronuntiantes; i.e. as Engliified by Dr. Charleton.

91. In this County are beheld certain Courts of Parliament, in which Kings heretofore were solemnly elected, which are surrounded with great stones, for the most part twelve in number, and one other stone exceeding the rest in eminency, set in the middle; upon which (as upon a Regal Throne) they seated the new elected King, by the general suffrage of the Assembly, and inaugurated him with great applause and loud acclamations. Here they held their great Councils, and consulted about affairs of the Kingdom: But when they met together to nominate their Kings, the Electors stood upright on the stones environing the Court, and giving their voices, thereby confirmed their choice.

92. The very same practice of the Northern Nations, with the Ceremonies of it, are also briefly set down by Saxo Grammaticus, Leiburi Regem vereèes affixis humo Saxis insiliere suffragiaque promere confueverunt, subjiciturum lapidum firmitate, fasti constantiam ominatur, i.e. that the Ancients being about to choose their King, used to stand upon stones fixed in the ground, and thence give their votes, by the firmness of the stones on which they stood, tacitly declaring the firmness of their Aff. Which manner of election is also proved of them, by Crantzius, Meursius, and Bernardus Malincort de Archicancellariis.

93. Which places of election it seems were held so sacred, as further testified by Wormius, and out of him by Dr. Charleton, that in times of peace the Candidate King, was obliged de fure there to receive his Inauguration, the place and ceremonies being accounted essential parts of his right to Soveraignty, and the votes of his Electors much more valid and authentick for being pronounced in the usual Forum.

94. But if it happened the King fell in a Foreign expedition by the hand of the enemy, the Army presently got together a parcel of great stones, and set them in such a round, as well somtimes perhaps for the interment of the corps of the deceased King, as election of his successor. And this, 'tis like, they did, 1. Because they esteemed an election in such a Forum, a good addition of Title: And second, with all expedition, because by the delay of such election too long, irreparable damages many times accrewed to the Republick thereupon; which practice of the Danes they

---

both confirm, by the authorities of Stephanus Stephanius, in his Commentaries on the first Book of Saxo Grammaticus's History of Denmark, and Suanningius a grave and faithful Writer of that Nation, though what they cite of the latter (if that be all he says) scarce proves quite so much.

95. Beside the erection of Stones in Foreign Nations upon the loss of one King, and election of another, what if I should add that its also very likely that the same might be done at the Investiture of a Conqueror into a new acquired Principality: Thus why might not Rollo, either being compelled as a younger brother, to leave Denmark, or Norway, as was appointed by the Law of the former Kingdom, and to seek him a new seat; or forced from the latter for Piracy by King Harold Harfager, as in the Chronicle of Norway; I say, why might not Rollo after good success against those he invaded (as Walfingham says expressly he was, though in another place) be elected King by his followers, and be inaugurated here, as well as there, within such a circle of stones, which bearing his name to this very day, and he being acknowledged both by Bromton and Florilegus to have beaten the Saxons, and to have tarried in this Nation a whole Winter, it is highly probable he might be.

96. For if we enquire into the origin of the name of this Cirque of stones, we shall find that Reich or Ritch signifies a Kingdom, and sometimes a King, as Ein reich fram, the Queen, or King's woman: Whence 'tis plain, that these stones seem still to be called the stones of King Rollo, or perhaps rather of Rollo's Kingdom, for it was customary for them to have so many Cirques of stones as Kingdoms, though in the same Country. Thus, as Wormius testifies, there are three at this day in the Kingdom of Denmark; one in Seland, another in Schoneland, and a third in the Cimbrick Territory, because these were ancienly three distinct Principalities, and under the dominion of as many Kings, as 'tis certain England was also about this time.

97. And if this conjecture may be allowed to take place, we are supplied also with a reason why we have no tumulus in or near this monument, there being no King or eminent Commander lain, but only a conquest of the enemy in or near this place, intimated

---

*a* Tho. Walfingham's Topiguma Neustria in principi.  
*b* Vid. Chronicum, Norvegicum.  
*c* Tho. Walfingham's Topiguma Neustria in principi.  
*e* Matt. Welfman. in An. 897.  
*g* Ol. Wurmi Mon. Dan. lib. 3. cap. 12.
by the five stones meeting in a point at the top; which perhaps
may be the disposition intended by Saxo Grammaticus, and out of
him by Wormius, Cuneatordine, which he says expressly signified,
Equestrium acies ibidem, vel prope, fortunatius triumphasse \textit{i.e.}
that Knights or Horse-men there, or near the place, obtained a glori-
ous Victory.

98. Yet against this conjecture I fore-see there lye two objections
worth removal. 1. That in these Cirques of stones designed for
the election of Kings, there was always a \textit{hongstolen} most times
bigger than the rest placed in the middle of it, as intimated above,
§. 90. And secondly, that had this place been at first designed
for the Inauguration of a Danish or Norwegian King, and such
places been so essential to a good title, as pretended above, §.93.
certainly all the Kings of the Danish race that reigned after here
in England, would have been either crowned here, or at some
other such Forum; whereas we have no such \textit{hongstolen} in the
middle of the Cirque; and beside, find Canutus with great sole-
mnity Crowned at London, Harold Harefoot here at Oxford (not
far from this Cirque) and Hardi-Canute likewise at London.

99. To which it may be replyed, that though not placed in
the Cirque, yet here is a \textit{hongstolen} not far off, which 'tis like
was not necessary should be set within it; for I find the place
where the new elected King stood and shewed himself to the peo-
ple, at the Forum for this purpose at Leire in Seland, to have been
without the Area, as our \textit{hongstolen} is. \textit{Area saxis undique circum-
Coronationi Regum deputata vicinum habet Collem, cui Coronatus jam
insitebat jura populo daturus, & omnibus conspiciendum se prefenturus},
\textit{i.e.} that the Area encompassed with stones designed for the Coro-
nation of their Kings, had a Hill near it, whence the new Crown-
ed King gave Laws, and shewed himself to the people; it seeming
indifferent from hence, and another such like hillock called
\textit{Croliecarolihoy}, whereon the King also stood, at the place of
such election near Lundie in Scania \textit{m}, whether he ascended a stone
or mount of earth; within, or without the Area, so he thence
might be seen and heard by the people.

100. And to the second Objection it may be reasonably an-
swered, that the Danes by this time having gotten the whole
Kingdom, and such capital Cities as London and Oxford were,
might well change the places of their Coronations: Befide, Canutus
and the rest were much greater persons, and more civilized than
Rollo and his crew, can be presumed to have been; for bfeide that
he lived above a hundred years before them, we find him (though
the son of a Norwegian Knolf, or Earl) a great Pyrate at Sea, and
little better then a Robber by Land; well might he therefore be
contented with this Inauguration, after the old barbarous fashion,
having gained no City wherein it might be done with greater fo-
lemnity:

But as for the stones near the Barrow at Stanton-Harcourt,
called the Devils Coirs, I should take them to be appendices to
that Sepulchral Monument, but that they seem a little too far re-
moved from it; perhaps therefore the Barrow might be cast up
for some Saxon, and the stones for some Britans plain hereabout
(cut vice versa) at what time the Town of Eynesham, about a mile
off, as Camden informs us, was taken from the Britans by Cuth-
wolf the Saxon. Which is all I can find worthy notice con-
cerning them, but that they are about eight foot high, and near
the bafe seven broad; and that they seem not natural, but made
by art, of a small kind of stones cemented together, whereof
there are great numbers in the Fields hereabout; which makes
thus much for the conjecture concerning those at Stone-Heng,
that they may be artificial, it being plain from these, that they
could, and did do such things in the ancienier times.

There stands also a stone about half a mile South-west of
Enston Church, on a Bank by the way-side between Neat-Enston
and Fulwell, somewhat flat, and tapering upward from a broad
bottom, with other small ones lying by it; and another near the
road between Burford and Chipping-norton, which I guess might
be erected for the same purpose with the two former, as above-
mentioned: Unlesa we shall rather think, both these and them
to have been some of the Gods of the ancient Britans, as the Re-
verend and Learned Dr. Stillingsflee thinks it not improbable those
Pyramidal stones, mention'd by Camden in Yorkshire, called the
Devils bolts, sometimnes were. And so likewise Stone-Heng in
Wiltsire, which he judges neither to be a Roman Temple, nor Da-
nish Monument, but rather somewhat belonging to the Idol Marko-

The Natural History

344

lis, which Buxtorf faith the Rabbins called סְדּא נָב domum Kolis; of which more hereafter when I come into that County; and into Kent, where of Kits-coty-house, which I take to be an Antiquity of the same kind.

103. That the Britans long before the arrival of the Romans, were acquainted with the Greeks, has sufficiently I guess been made appear already, §. 66. of this Chapter; and that long before that they were known to the Phcenicians, and all the Eastern Countries, is plain out of Strabo, and Bochartus, and by comparison of the Learning and Religion of the Druids, with those of the Indian Brachmans: Now that it was the ancient custom of all the Greeks to set up unpoli'd stones instead of Images, to the honor of their Gods, we have the testimony of Paulyanius in these words, παραπελτης εις τους αυτους, ημοι θεοι αυτι εαυτα δραμοι λιθοι. i.e. that unbewn stones amongst all the Grecians, had the honor of Gods instead of Images; more particularly the same Author afferts, that near the Statue of Mercury there were 30 square stones, τετραγωνοι λιθοι τετραγωνοι, which the Pharri worshipt, and gave to every one of them the name of a God.

104. That the Arabians and Paphians also worshipt such like Gods, is likewise witnessed by Maximus Tyrius. Αειςιοι εθιτον μην, οντις δε σων οίδως οι δε αυταλμεο ει αιδων, λιθον τετραγωνον. Paphians μεν Αρβιον τοις μιχει ιαχε, ει τετραγωνοι ακαλω και κεινας ελαυν ση έν πυραμιδικη, i.e. that the Arabians worshipt he scarce knew what God, but that he saw amongst them was only a square stone; and that the Paphians worshipt Venus: under the representation of a white Pyramid.

105. And Herodian describing the Worship of Helægabalus at Emesa in Phænicia, faith, that he had no kind of Image after the modern Greek or Roman fashion made by mens hands, λιθον δε πετ γεγονερ, χειραποιημενον αυτερια, λιθον εις ουτελα, κανονεις αυτα κατα, i.e. but a great stone round at the bottom, and lessening by degrees toward the top, after the manner of a Cone. To which add, that Peter della Valle, in his late Travels into the Indies, faith, that at Ahmedabad there was a famous Temple of Mahadeu, wherein there was no other Image but a little column of stone af-
ter a Pyramidal form; which Mahadeu, he faith, in their Language signifies the great God. And after this fashion, he faith, 'tis the custom of the Brachmans to repreffent Mahadeu.

106. All which being put together, especially as recommended by so Learned a Perfon as the Reverend Dr. Stillingfleet, have prevailed with me much: However, the Reader is free to use his judgment, whether they are memorials of the dead, as commonly thought, or representations of the Deities of the ancient Britins, given them by some Companions of the Eastern Merchants; trading hither for Tin, to the Caffiterides.

107. Other Antiquities contemporary with the stones above-mentioned, I meet with none here in Oxford-shire, but those three Rings lincked one within another, and engraved by mistake a little out of their place, Tab. 16. Fig. 4. for that they are not like to be Britifh or Roman, I think is pretty certain. The Britins, 'tis true, used Rings instead of Mony, yet as Cesar testifies, they were only of Iron. And though the Romans, amongst their other dona militaria, did usually give Calbeos, five armillas, bracelets, yet they were constantly I find, either of gold or silver; whereas ours, as in number, are of three different materials; the largest copper, the second iron, and the least green glafs, or some stone of that colour.

108. It remains they must therefore be either Saxon or Danifh, but whether of the two, we must not hope to determin, since we find such rings used by both Nations. That the Saxons had such bracelets, is plain from King Ælfred, who notwithstanding he came to the Kingdom, long habituated as it were to rapines and murders, yet brought it before his death into so good a posture, (as is learnedly made out, and by what degrees he did it, in that excellent History of his Life, now in the Pref) that he could, and did hang up such bracelets of gold in the high-ways, which no Traveller dared touch. Ælfredus per publicos aggeres, ubi semine suspensus in quadrum, Armillas jubebat aureas appendi, ut Viantium aviditatem irritaret, cur non effet qui eas acciperet, says Florilegus of him. Where, by the way, perhaps it may not be amifs to note, that these Rings were drawn out of the River Cherwel with a Fishing-net, near Hampton Gay, not far from the meeting of

such ways at Kirklington, and kindly bestowed on me by my worthy Friend Mr. Barry, amongst some other matters of like nature, though not so fit to be mentioned here.

109. And that the Danes also made the same Experiment of the innocency of their people, and of universal peace & freedom from rapine, is as manifest out of Saxo Grammaticus, who says expressly of Frotho the Great, Ut unus cujusque rem familiaris in jurum incurratur tam prestaret, Armillam unam in Rupe, &c. i.e. that he might preserve every man's Goods from the spoils of thieves and robbers, hung up a bracelet of gold on the rock called after his own name, Frotonis petram; and another in the Province of Wig, threatening great severity to the Presidents of those Countries, if they should be taken away. They used them also (like the Romans) as rewards of valour, as appears from the proffer of King Roricus, of his six bracelets to any man that would undertake the Champion of the Selavi (his Enemies) challenging any man in his Army; and sometimess too as rewards of Wit, as the same Author informs us, Wiggo being honor'd with a great Armilla by Rolvo Krage, for a Jest; and Refo, by Goto King of Norway, ideo tantum quod eum cultius & familiaris habuisset.

110. These Armille, the Danes and other Northern Nations accounted so sacred, that as Bartholin informs us out-of Armgrimus, the Islanders usually swore upon them, Cujus religionis fuit ritus, ut juramentum praestituri, adhibitis testibus Annulum in Ara Deorum affervari solutum, & in foro Judiciali a Judice supremo in braccia gestatum, hosiamque sanguine illinitum, attestarent, i.e. that the manner of people to be sworn was, that before witnessed they should lay their hands on a certain Ring, usually kept upon the altar of their gods, worn upon the arm of the Chief Justice (whence 'tis plain it was an Armilla) and smeared over with the blood of their Sacrifices. And Ethelwerus and Afferin both acquaint us, that King Ælfred having gotten considerable advantage over the Danes, made them swear (beside on his own Reliques) in eorum Armillâ sacra, quod ceterarum Regionum Regibus secerre nunquam, i.e. upon their holy bracelet, which they had never done before to the Kings of any other Nation.

---

111. Which Armilla, it seems were somtimes single, and somtimes curiously link'd together. Thus the six bracelets of King Roricus above-mentioned, are said to have been, *ita mutuis nexitibus involutas ut ab invicem sequestrari nequirent, nodorum inextricabiliter serie coherente*; *i.e.* to inextricably involved one within another, that there was no parting them. The Learned Bartholin also informs us, that somtimes the Armilla had a Ring hung to it. *Est tamens Armilla fans quandoque circulus*; And that when rings are thus hung to bracelets, there is always some mystery in it, *quod annuli Armilis fere jungantur non caret mysterio.* Where by Armilla he means *Armilia,* or *Armilarum,* ornaments for the wrists, and by *annuli and circuli,* ornaments for the fingers. *Armilla id brachio præstant, quod digitis annuli,* *i.e.* that bracelets have the same use on the wrist, that rings have on the finger.

112. Now that ours was an Armilla, is plain enough, for that the great Copper ring is of somewhat above three inches diameter, and big enough to encompass any ordinary man's wrist; the lesser iron one, and green ring of glass, being additional ornaments, especially the latter, which questionless was put on to represent an Emerald; that sort of stone, as Pignorius and Bartholin both testify, being much used in bracelets: which makes me think it the bracelet but of some ordinary person, the Armilla itself being copper, with which, faith Bartholin, only the vulgar adorned themselves, *Armille æree, plebeæ cenfende sunt,* and the appendent glass but a counterfeit Jewel.

113. For eminent places in this County, during the Government of the Saxons and Danes in Britan, we may reckon first Banbury, then called Banerbyng, where Henric, the second West-Saxon King, about the year 540, put to flight the Britans, fighting for their lives, eftates, and all they had. After the Conquest, about the year 1125, it was strengthened with a Castle by Alexander the then great Bishop of Lincoln; and since that, Jan. 26. 1° Marie, made a Burg or Burrough consisting of a Bayliff, 12 Aldermen, and 12 Burgess, in recompence of their faithful service done to the said Queen Mary (as 'tis express in their Charter) in manfully resisting John Duke of Northumberland that rebelled against her; whence 'tis plain this Town was ever zealous in matters of

---

\[ {^2} \text{Tho. Bartholin. Schedion de Arm. Vet. § 4 p. 41.} \]
\[ {^3} \text{Idem § 5 pr incip.} \]
\[ {^4} \text{Ibidem.} \]
\[ {^5} \text{Vid. Laurentium Pignorium de Secvii. Et Bartholin. Schedion de Armill. § 3 p. 37.} \]
\[ {^6} \text{Idem § 5. de Armilarum materiæ. p. 32.} \]
\[ {^7} \text{Canad. Britan. in Ox.} \]
Religion, of what persuasion soever they were; heretofore as well as now. Since again on the 8 of June, Jac. 6, it was made a Major Town, consisting of a Major, 12 Aldermen, and 6 Capital Burgesses.

114. And secondly, Benson, alias Benefingtune *, which Marian (says Camden) calls villam Regiam, the Kings Town, and reporteth that Ceaulin, the third King of the West-Saxons, about the year 572, took it from the Britans, which his successors kept 200 years after, till they were dispossessed again by Offa the great King of the Mercians. And thirdly, though Dorchester has its name from the British Dour, which signifies water, and therefore called by Leland, Hydropolis; and seems to have been known to the Romans by the mony found thereabout, and the Latin termination Cester, which, says Leland, the Saxons applied to Cities as well as Fortifications; yet it never came to its height till Birinus, an. 614, was seated there as Bishop of the West-Saxons, by Cynigelse their King, whom he had newly Baptized, and Oswald King of Northumberland, God-father to Cynigelse.

115. About this time the Town of Berencesfer, alias Berencesfer, in Saxon Bepnaceferen, and Bepnaceferen, which I take to have been its primitive names, seems also to have been raised, and to have taken its name, as some have thought, from the same Bishop Birinus, quas Birini castrum: But I much rather believe it so called from Bern-wood, or Forrest, mention'd by Bede, Florilegus, and Wigorniensis, upon the edge whereof it was then seated, nor is now far off it; after which perhaps from St. Eadbub, to whom the Priory there was, and Parish Church is now dedicated, it changed its name to Burcefter, and since that to Burcefter, now Biffer.

116. The Town of Burford, in Saxon Beoppons, seems also to have been a place of good Antiquity, but most remarkable for a battle fought near it, about the year 750 *, perhaps on the place still called Battle-edge, West of the Town betwixt it and Upton; between Cuthred or Guthbert, a tributary King of the West-Saxons, and Ethelbald the Mercian, whose insupportable exactions the former King not being able to endure, be came into the Field against

him, met, and overthrew him here about Burford, winning his Banner wherein there was depicted a golden Dragon; in memory of which Victory, perhaps the custom (yet within memory) of making a Dragon yearly, and carrying it up and down the Town in great jollity on Midsummer Eve, to which (I know not for what reason) they added a Gnant, might likely enough be first instituted.

117. After the Conquest, I find it the Town of Robert, Earl of Gloucester, base Son to King Henry the First, to whose Son William I have seen an Original Charter granted him by King Henr. 2. giving to this his Town of Bureford, Gildam & omnes confuetudines quas babent liberi Burgenses de Oxeneford; most of which it has since loft, and chiefly by the over-ruling power of Sir Lawrence Tanfield, Lord chief Baron in Queen Elizabeths time: Yet it still retains the face of a Corporation, having a common Seal, &c. the very fame with Henley, as described in the Map, if they differ not in colours, which I could not learn.

118. As for Wuduteke, or Wudstoc, Sax. juvetece (i.e. locus sylvæbris) now Woodstock, it seems to have been a seat Royal ever since the days of King Ælfred, it appearing by a MS. in Sir John Cotton’s Library, that he translated Boetius de Consolatione Philosophiae, there. Nay, so considerable was it in the time of King Ætheldred, that he called a Parliament there, and Enacted Laws, to be seen amongst that collection of ancient Laws set forth by Mr. Lambard. Whence it may almost be certainly concluded, that here must have been a house of the Kings of England, long before the days of King Henry the First; yet 'tis so indeed was the first that inclosed the Park with a wall, though not for Deer, but all foreign wild Beasts, such as Lyons, Leopards, Camels, Linx’s, which he procured abroad of other Princes; amongst which more particularly, says William of Malmesbury, he kept a Porcupine, bispidis setis coopertam, quas in Canes infeclantes naturæ liter emittunt, i.e. cover’d over with sharp pointed Quills, which they naturally shoot at the dogs that hunt them.

119. Of the Town of Thame, anciently Tamera, I could find little, till about the time of Edward Senior, An. 921, when the Danisb Army out of Huntingdon came hither and erected some
The Natural History

kind of Fortification; but at this time it seems it was so considerable, that it had the reputation of a Burg; for King Edward coming against it the same year, his Army is said to have besieged the Burg and taken it, and to have slain the Danish King, Earl Teglor, and Earl Wannan his Son, his brother, and all others whatever within the Town. And again, An. 1010, when the Danes over-ran most of this part of England, we find this Town amongst others to have suffered much by them.

120. Chipping Norton, anciently Ceapan-neptunc, was also most certainly a Town of note in the Saxons' days, as one may gather from its name, it being so called from Ceapan Emere, to buy or cheapen, so that it implies as much as Mercat Norton, or Norton where the people usually cheapened Wares. And Whitney, now Witney, seems to have been a Town of good repute before the Conquest, it being given about the year 1040, to the Church of St. Swithin's, Winton: with eight other Manors, by Alwinus then Bishop of that See, who for his over-familiarity with Emma Mother to K. Edward the Confessor, was causelie suspected of Adultery with her; Of which suspicion Queen Emma purging herself and him by the Fire Ordeal, of walking bare-foot over nine red-hot plough-shares without hurt; in thankfulness (tis said) they each gave nine Manors to the Church of Winchester, which are all named by Mr. Dugdale, Witney being one of those given by Alwinus.

121. And the neighboring Town of Bampton, anciently Bemcune, seems to be of much about the same antiquity, yet neither can I find any higher Record of it, than of Leosric Chaplain to King Edward the Confessor, who An. 1046, upon the union of the Bishopricks of Criditon and Cornwall, and both of them translated to Exeter, whereof he was made the first Bishop, quickly after gave to this his new Church his Land at Bemcune, to which it belongs to this very day.

122. Which is all I could meet with of the Towns of Oxfordshire before the Conquest (for after long search I could find nothing of Deddington, till about the Reign of King Edw. 2. whereof when I come to speak of the Castle there) concerning which I could have added much more, and brought their History down

---

to these times, as above in Banbury; only that, and whatever else is worthy notice of them, may be found in some other modern Histories.

123. Yet before we come to the times since the Conquest, let us first remember that the Town of Islip, Sax. Gibeylepe, or Gibeylepe; must needs be of good repute in those days, for Camden says expressly, and so do several other Authors, that King Edward the Confessor was born there, which they prove from his original Charter of Restoration of the Abbey of Westminster, wherein he gives to this his new Church the Town of Islip, with the additional Clause of [the place where he was born] which though, 'tis true, I could not find in Mr. Dugdale, yet here remaining some foot-steps of the ancient Palace, and a Chapell now put to profane use, called the Kings Chapel, and the Town still belonging to the Church of Westminster, there is no great doubt to be made of the thing, tradition it self being not like to be erroneous in a matter of this nature, though there were no such Charter to prove the thing alleged, which yet we have reason to believe there is, or was, though not produced by Mr. Dugdale.

124. In the Chapell above-mentioned, not many years since, there stood (as was constantly deliver'd down to posterity) the very Font, wherein that Religious Prince, St. Edward the Confessor, received the Sacrament of Baptism: which, together with the Chapell, in these latter days being put to some indecent at least, if not profane use, was carefully and piously rescued from it, by some of the Right Worshipful Family of the Browns of Nether Kiddington, where it now remains in the garden of that worthy Gentleman Sir Henry Brown Baronet, set handsomely on a pedestal as exactly represented Tab. 16. Fig. 6. and adorned with a Poem rather pious than learned, which yet I think I had put down, but that it is imperfect.

125. Which holy King Edward was the first to whom was granted the gift of Sanation, only with the touch of his hand, of the Disease called the Struma, or Scrofula, and in English upon this account, the Kings Evil; which as a mark of Gods most especial favor to this Kingdom, has been transmitted with it, as an hereditary gift to all his Successors: Every sacred hand in all Ages ever since, that has held the Scepter of this most happy and now flourishing...
rishing Kingdom, having been signally blest by divers and undoubted Experiments of healing that Disease.

126. Before they touch for this distemper, they have always Prayers read suitable to the occasion, both which when performed, the King forthwith bestows on every Patient, a piece of Angel-gold purposely coined, and put upon a white ribbon to be hung about the neck; which as long as worn preserves the virtue of the touch, though Dr. Tooker will have it only, Sanitatis symbolum inchoatae, & Eleemosyne sacræ monumentum i, i.e. a mark that the Cure is already begun, and a lasting memorial of the Kings charity and piety to the poor patients.

127. However it be, that this was the custom ab initio, I take to be plain from that piece of Gold of King Edward the Confessor, Tab.16. Fig. 5. found in St. Giles’s field in the Suburbs of Oxon. having the initial letters of his name over the hinder part of the head, and two small holes through it, as if designed to be hung on a ribbon for the purpose above-mention’d, the holes being strengthened with Gold Wire fastened round them, and to the piece it self, much after the fashion of the eye of a mans doublet, as exactly described in the Figure, ut supra; which piece was lent me by that courteous Gentleman Sir John Holeman Baronet, in whose possession it now remains at his House near Northampton.

128. From King Edward the Confessor being born at Ipswich, ‘tis easy to collect, that his Father King Æthelred must necessarily have had a Royal Seat there, as in all probability likewise at Hedington near Oxford; for though Tradition now goes, that it was but the Nursery of the Kings Children, whereof there remains yet upon the place some signs of foundations in a Field near the Town, called Court-close; yet it is plain, that King Æthelred did somtimes at least reside there himself, for he concludes a Charter, or some such like Instrument, wherein he grants Privileges to the Monastery of St. Frideswide here in Oxon. of his own Restoration, in English thus, This privilege was id in that Hedinton, and after in Latin, Scripta fuit hac Cedula jussu prefati Regis in villa Regia qua . . . . . appellatur, die octavorum beati Andreae Apostoli, bis consencientibus p . . . . . quisubtus notati videntur. Ego Æthelredus Rex hoc privilegiiu, &c k.

1 Gul. Tooker i Charifmsin five domum Sanationis, Reg. Ang. colitis concessum. i Monasticon Anglican. Vol. 1 inter addenda, &c. 84.
129. Beside these, the Kings of England had several other seats within this County (not to mention again that Woodstock was one, or that old Alcester was the seat of Alcestus) such as Beaumont, just without the suburbs of Oxford, the Birth-place of the valiant King Richard the First: Langley, upon the edge of the Forest of Whichwood, a seat, as Tradition has deliver'd it down to us, of the unhappy King John, who perhaps during the time of his Residence here, might indeed build the Castle of Bampton, which also Tradition informs us was of his foundation. And Ewelme, built indeed by William De la Pool Duke of Suffolk, who marrying Alice the daughter and heir of Thomas Chaucer, had a fair Estate hereabout; but after, upon the attainder of John Earl of Lincoln, and Edmund his brother, Grand-children to the Duke, it came to the Crown in the days of King Henr. 7. and was afterward made an Honor, by laying unto it the Manor of Wallengford, and several others, by King Hen. 8. All which houses are mark'd out in the Map, by the addition of a small Imperial Crown placed somewhere near them.

130. As all places that gave title to ancient Barons, most of whose Families long since have been extinguish'd, are mark'd with a Coronet; such are, 1. The Barony by ancient Tenure, which were certain Territories held of the King, who still reserved the Tenure in chief to himself: whereof the ancientest in this County were those of Oxford and St. Valeric, the head of the latter being the Town of Hoke-Norton, both given by the Conqueror to Robert D'Oily who accompanied him out of Normandy. 2. The Barony of Arsc, belonging to Monaster Arsc, who flourisht An. 1103. 3 Henr. 1. the head of which Barony was Coggs near Witney, Summerton and Hardwick in this County, being other members of it. 3. The Barony of Hedindon, now Hedington, given the 25 of Henr. 2. to Thomas Bafst in Fee-farm, whose Son Gilbert the Founder of Biffeter Priory, in the first year of Richard the First, was one of the Barons that attended at the Coronation. And these are all the Baronies of ancient Tenure that were heretofore in Oxfordshire.

131. In the beginning of the Reign of King Edward the First, there were several other able men summon'd as Barons to Parliament, that had not such Lands of ancient Tenure, as those above
had, which were therefore filed Barons by Writs of Summons to Parliament. The first of these in Oxfordshire was William de Huntercomb (whose seat still remains by the same name in the Parish of Tuffield) who was summoned to Parliament by the Kings Writ, bearing date the 23 of Edw. 1. The second, I find, was Job. Gray of Rotherfield, whose Ancestors being of a younger House of Walter Grey Arch-Bishop of York, had Rotherfield given them, beside many other possessions by the said Arch-Bishop: He was summoned first to Parliament the 25 of Edw. 1.

132. And so was thirdly, his next Neighbor Ralph Pipard of the other Rotherfield, in the same year of the same King; their seats having now almost quite changed their names, for those of their owners; one of them seldom being called otherwise than Pipard or Pepper, and the other Grays. Also fourthly, John Baron Lovel, of Minster-Lovel, whose ancestors though Barons by tenure many years before; as seised of the Barony of Castile-Cary in Somersetshire, yet dispossessed of that I know not by what means, received summons to Parliament whilst seated here at Minster, 25 of Edw. 1.

133. The fifth of these Barons was Hen. le Tyes, who having a grant of Sherbourn here in Oxfordshire from Richard Earl of Cornwall, temp. Henr. 3. which Sherbourn had formerly been a part of the Barony of Robert de Drus, was summoned to Parliament the 28 of Edw. 1. And so was sixthly, John de la Mare of Garfington, the very same year. To which should be added, the Barons by Letters Patents of Creation, so first made about the 11 of Rich. 2. But of these, whose Barony is now vacant, there is only, seventhly, the Lord Williams, solemnly created Lord Williams of Thame the first of April, 1 Marie, who had also summons the same time to the Parliament then sitting, but his Patent it seems was never enrolled.

134. For this account of these Baronies, I acknowledge my self beholding to that Learned Antiquary, William Dugdale Esq; Norroy King at Arms, in whose elaborate Volumes of the Baronage of England, the Reader may receive more satisfaction concerning them. Yet beside these, as the people will have it, the Manor of Wilcot was the head of a Barony, one of the Barons whereof, as tradition tells them, lies buried under a fair Monument in North-Leigh Church; But the Writings of the present Proprietor, my worthy
worthy Friend Mr. Cary of Woodstock (whom yet I found inclined to believe some such thing) being at London, whereby otherwise it possibly might have been proved, and the testimony of the people being too weak an evidence to build upon, I have rather chosen to forbear, then add a Coronet to the place.

135. Beside the Saxon and Danish Fortifications above-mentioned, there are others here in Oxfordshire of a later date; either quite raised, or in a manner useless, and some of them too, known but to few; wherefore I have thought fit to give this short account of them. To pass by therefore the Castle of Oxford, so well known to be built by Robert d'Oyly who came in with the Conqueror, and the Castles of Bampton and Banbury spoken of before: the first that presents itself to my consideration, is the old Castle of Deddington, formerly Dathington, which I take to be ancient, and the very place no question to which Aymer de Valence, Earl of Pembroke, brought Piers de Gaveston the great Favorite of King Edward the Second, and there left him to the fury of the Earls of Lancaster, Warwick, and Hereford, who carrying him to Warwick, after some time, caused him to be beheaded in a place called Blakelaw, in their own presence.

136. Secondly, the Castle of Ardley, the Foundations whereof are yet to be seen in a little Wood west of the Town, which if any heed may be given to the tradition of the place, florish'd about the time of King Stephen: and so perhaps thirdly, might Chipping-norton Castle; free leave being given at the beginning of his Reign, to all his Subjects to build them Castles, to defend him and them against Maud the Empress, which at last, finding used sometimes against himself, he caused no less than eleven hundred of these new built Castles to be raised again, which no doubt is the cause we find no more of them, but their bare Foundations and Trenches.

137. But fourthly, the Castle of Middleton, now Middleton-stony, was none of these, for I find Richard de Camvil had Library given him of Middleton Castle in Oxfordshire (which must needs be this) the tenth of King John, as part of his own Inheritance by defect from his Father. And fifthly, as for the ruins of old Fortifications at Croamerfs, or Croamish Giffard near

---

Wallengford, I take them either for the foundations of that wooden Tower erected by King Stephen, in the year 1139, when he besieged Maud the Empress, and her Brother Robert Earl of Gloucester in Wallengford Castle, or else of the Castle of Graumerfe, or Croamish it self, built by the same King Stephen at another siege of Wallengford, An. 1153. which Henry Fitz-Empress endeavoring to raise, and bringing King Stephen to great Straits, they came at last to an accord concerning the Kingdom of England.

138. There are some other Antiquities of yet later date, that I have met with in Oxford-shire also perhaps worthy notice, such as that odd bearded Dart, Tab. 16. Fig. 7. having the beards issuing from it, not as usually one against another, but one lower and the other higher, perhaps thus contrived for its easier passage in, and as great or greater difficulty to get it out of a body; which were it not for the too long distance of time, I should be willing to take for the Materis, Mataris, or Matara, the British long Dart, which were usually thrown by those that fought in Efedis: But the stem of it being wood, and not very hard neither, I cannot afford it to be above 200 years standing, or thereabout: Nor can I add more concerning it, but that it was found somewhere about Steeple Barton, and given me by the Worshipful Edward Sheldon Esq;

139. Yet the stone engraven Tab. 16. Fig. 8. dug up in the garden; and now in the possession of the Right Worshipful Sir Thomas Spencer Baronet, a most cordial Encourager of this undertaking, can scarce be allowed so ancient as that, the Character upon it in Rilieue work being certainly China: For unless we may imagin it brought thence in the days of King Alfred, by Swithelin Bishop of Sherborne, Qui detulit ad Santum Thomam in India Eleemofynae Regis Aluredi, & incolamis redivi, i.e. who carried the offerings of King Alfred to the Church of St. Thomas in India, and returned safe, we can by no means allow it to have been here, 186 years; that Country having been quite lost again to this Western part of the world, till Vasquez Gama was sent by Emanuel King of Portugal to make new discoveries, in the year 1497. In which year, though he recovered the way again to the East Indies, yet Fernandus Andradius discover'd not China till 1517. So that

---

provided this stone (which is very unlikely) were brought thence by some of Andradius his company the very first voyage, yet it can be (with us) but 160 years standing.

140. As for the Stone itself it is of an odd kind of texture, and colour too, not unlike to fight to some sort of cheese, exactly of the figure and bigness as engraven in the Table; and most likely of any thing to have been one of their Togrâ's, or Stamps, wherein the chief persons of the Eastern Countries usually had their names cut in a larger sort of Character, to put them to any Instruments at once, without further trouble. That they have such kind of Stamps, is clearly testified by Alvares Semedo, in his History of China: They Print, says he, likewise with Tables of Stone, but this manner of Printing serves only for Epitaphs, Trees, Mountains, &c. of which kind they have very many Prints; the stones which serve for this use being also of a proper and peculiar sort — as ours seems to be: So that in all probability the letters on this stone contain only the name, and perhaps the office, or other title of some person of Quality, and therefore hard to be found out; and that it was brought hither by some Traveller of the Honorable Family of the Spencers, and either casually lost, or carelessly thrown out as a thing of no value.

141. And thus with no small toil and charge, yet not without the assistance of many Honorable Persons, whose names in due time shall be all gratefully mention'd, I have made shift to finish this specimen of Oxford-Shire; which I am so far from taking for a perfect History, that I doubt not but time and severe observation (to which I hope this Essay will both encourage and direct) may produce an Appendix as large as this Book: For that new matter will daily present it self, to be added to some one or other of these Chapters, I am so sensibly convinc'd. that even since the Printing the first Chapter of this Treatise, I have found here at home just such another Echo, as at Mr. Pawlings at Heddington, in the Portico's of the new Quadrangle at St. John Baptist's College. And since my writing the second, my worthy Friend Dr. Tho. Taylor has found so strong a Chalybeat Spring in Fulling-mill-ham-stream near Ofeney Bridge, that notwithstanding last hard Winter (when the greatest Rivers were frozen) this continued open and smoaking all the time, tingling all the stones by reason of its not running, nor

F. Alvares Semedo, Hist. Chin. part. 1. cap. 6. sub finem.
mixing with other water, with a deep rusty colour. And thirdly, since the Printing the 48 §. of Chap. 8. I have seen a Lapis Ranule taken out from under the Tongue of one Johnson a Shoo-maker (by the skilful Mr. Pointer Chirurgion) here in Oxford.

142. Which is all I have at present to offer the Reader, but that he would take notice, 1. That in Chap. 2. §. 69. where I mention a Well so eminent heretofore for curing distempers, in the Parish of St. Crosses, that it has given it the more lasting name of Holy-well; that I intend not that Well of late erection (though perhaps the water of that is as good) and now most used, but an other ancienfer Holy-well behind the Church, in Mr. Nevil's Court before his house. And that secondly, notwithstanding the authority of the Learned Dr. Hammond (with whom a man need not much be ashamed to err) some will have, that he calls the Well of St. Edward in the Parish of St. Clements, rather the Well of St. Edmund, for which I find the very same authority alleged, that Dr. Hammond brings 9. And lastly to beg of him, that though in general he find me unequal to my design, and many particulars of this Essay perhaps ill placed, and worse expressed, that yet in consideration that this is my first attempt (wherein many Inconveniencies could not be fore-seen, which may hereafter be avoided) he would candidly accept of the sincerity of my intention, with all imaginable endeavor of amendment for the future, in lieu and excuse of my present Inabilities.


FINIS
ERRATA.

IN the Map, the Crown belonging to Ewelm, is mis-placed at Benson; and the mark for Banbury Castle wanting. In Tab. 7. Fig. 9. for bb read aa; and for ee read bb. In the Book, p. 34. line 4. for nearest, r. nearest. p. 56. l. 14. for parts, r. parts. p. 98. l. 8. r. with metals. p. 155. l. 29. r. white Cone. p. 155. l. 18. for Hampton, r. Bampton. p. 231. l. 27. r. adaptata. p. 253. l. 21. r. indices. p. 280. l. 2. r. stained. p. 323. l. 32. r. regnum. p. 344. l. 31. r. 32. r. 33. r. 34.
THE INDEX.

Wherein the first Figure signifieth the Chapter, the rest that follow, the Paragraph.

A

Belote Tree in Oxford-shire, cap. 6, Paragraph 84.
Adwell Cap, an ancient Fortification. c. 10, par. 51, 52, 53, 78.
Air-pump, invented at Oxford. c. 9, par. 15.
Air of Oxfordshire healthy, proved from the nature of the soil, waters, manners, and long life of its Inhabitants. c. 2, par. 1, 2, 3.
Air of Oxford (see Oxford) healthy, proved from its curing Confumptions. c. 2, par. 3.
Frequency of the Small-pox, no argument to the contrary, par. 9.
Not the Black Assize, par. 10.
Not so healthy formerly. par. 11.
Akemanstreet-way. c. 10, par. 27, &c.
Aldeste, the feat of the Emperor Augustus. par. 71.
Anatomy improved at Oxford. c. 9, par. 214, &c.
Antiquities, British. c. 10, par. 2, &c. see Coins.
Roman, par. 18, &c. see Barrows, Buryals, Coins, Pavements, Ways.
Saxon and Danis, par. 74, &c.
Architecture, see Buildings.
Ardb Cattle, when built, c. 10, par. 136.
Amphias, Rings or Bracelets, the ancient use of them, par. 107, &c.
Asis, an ancient Barony, par. 130.
Arteria magna descendens, turned partly into bone, c. 8, par. 50.
Asses growing in Willows, c. 6, par. 79.
Black Assize at Oxford, c. 2, par. 10.
Ashall barrow, a Funeral Monument, c. 10, par. 49.
Asfotie, Star-stones, c. 5, par. 16, &c.
Move in Vinegar, and why, par. 26, &c.

Astroites lapis, Starry-stones, par. 22.
Astronomy advanced at Oxford, by Lord Bishof of Sarum, c. 9, par. 23.
By Sir Christopher Wren, par. 27.
Mr. Hally of Queens Coll. par. 26.
Mr. Holland, par. 29.
Artelemus vulgaris, &c. not yet described, c. 6, par. 11.
Aves ditch, an ancient High-way, c. 10, par. 35, 36.
Axle-trees for Carts made of Iron, c. 9, par. 106.

B.

Roger (Frier) Bacon his excellent Discoveries, c. 9, par. 2, &c.
Why accused of Magick, par. 6.
Bampton given to the See of Exeter before the Conquest, c. 10, par. 121.
The Castle there built, by King John, par. 125.
Banbury, a short History of it, c. 10, par. 113.
Barley with six ears on one stalk, c. 6, par. 37.
Ratho-ripe Barley, par. 29.
Barometer, invented at Oxford, c. 9, par. 34.
Barons, by Writs of Summons to Parliament, c. 10, par. 131, &c.
Ancient Baronies in Oxfordshire, par. 130.
Barrels without hoops, c. 9, par. 168.
Barrows, or Barrow-hills, c. 10, par. 48, &c. item par. 78, &c.
Beaumon, the Birth-place of King Richard the First, c. 10, par. 129.
Bees, an emblem of Eloquence, c. 7, par. 18.
The History of those over Lud. Vivis his Study in Corpus Christi Coll. par. 19, &c.
The improvement and management of them in Oxfordshire, par. 24.
A new fort of Hives for them, c. 9, par. 120.

Z.Z.

Belemnites
The INDEX.

Belemmites lapid, Thunderbolts, cap. 5. Paragraph 38, &c.

Their use in Medicine, par. 43.

Benson, an account of it before the Conquest, c. 10. par. 114.

Birds, see Diabolo marinus, Hooping-bird, Toucan, Wood-cracker.

Bissier, an account of it before the Conquest, c. 10. par. 115.

Blanketing-trade at Witney, c. 9. par. 169, &c.

Native Blue in Oxford-shire, c. 3. par. 18. see Caruleum nat.

Boggy grounds, how drained, c. 9. par. 81, 82.

Thigh-bone of a prodigious bigness petrified c. 5. par. 158.

Bracelets, the ancient use of them, c. 10. par. 107, &c.

Brass lumps, cap. 3. par. 53. item c. 4. par. 11.

Bricks made to supply Laths in Malt-kills, c. 9. par. 90.

Strong Bricks made at Nettlebed, par. 89.

The Parish of Brightwell has had no Ale-house, Sceatary, or suit at Law, within memory of man, c. 8. par. 95.

Britain known to the Greeks, long before the Romans came, cap. 10. par. 66.

Brontia, Thunder-stones, c. 5. par. 29, &c.

Called also Polar-stones, par. 32.

Bubonis lapidi, c. 5. par. 45.

Busonites lapidi, par. 146.

Buildings eminent in Oxford-shire, c. 9. par. 128, &c.

Burford, the reason why they carry a Dragon about the Town on Midsummer-eve, c. 10. par. 116.

Privileges granted them, par. 117.

The ancient and Roman way of Burial, c. 10. par. 40, &c.

Button-molds petrified, c. 5. par. 175.

C.

Stone Cadworms (see Musca à Phryganio saxatili) c. 7. par. 25.

Caruleum nativum, c. 3. par. 18. item c. 6. par. 52.

A sign of Silver Ore, par. 60, &c.

Cæsar never entred Britain so far as Oxford-shire, cap. 3. paragraph 2.

Beaten out by the Britains, c. 10. par. 14, &c.

Art Calculatoria Rogeri Swiflet, c. 9. par. 193.

Calendar reformed by Tho. Lydlat, c. 9. par. 19.

Gregorian reformation of the Calendar, taken from Roger Bacon, c. 9. par. 8, &c.

A Calendar or register of weather, its use, c. 1. par. 12.

Calcours now Wallengford, c. 10. par. 24, 25.

A Calf of 1r months old that brought forth another, c. 7. par. 41.

How it is possible to be so, par. 42, 43.

Three Calves cast at once, all three living to be of full growth, par. 44.

Caravans, an improvement of Land, c. 6. par. 36.

Carditae lapid, c. 5. par. 143, 151.

Cartis, of what fashion used in Oxford-shire, c. 9. par. 105.

With Iron Axle-trees, par. 106.

Castes, when and by whom built in Oxford-shire, c. 10. par. 135, &c.

Chaff, how separated from the Corn in Oxford-shire, c. 9. par. 110.

Chalk eggs, c. 5. par. 180.

Black Chalk, c. 3. par. 16, 17.

Chalfeleton Barrow, a Danifh Fortification, c. 10. par. 76.

A Child born with another in its womb, c. 7. par. 42.

Heard to cry in the Mothers womb, c. 8. par. 2.

Portends no misfortune, ibid.

Four Children at a birth, c. 8. par. 5, 6.

Child-birth, the pangs affecting the Husband, par. 3, 4.

China ware, the way to make it found out at Oxford, c. 9. par. 86.

Chipping-norton, its antiquity, c. 10. par. 120.

The Castle when built, par. 136.

Chubs in the River Evenlode equalling Pearch in goodness, c. 7. par. 30.

Clematis daphnoides, &c. of English growth, c. 9. par. 10.

A Clock that moves by the Air, c. 9. par. 19.

By water, par. 49.

Coals,
The INDEX.

Coals, where likely to be found in Oxfordshire, c. 3, par. 34.

Cochineal, viviparous, cap. 7, paragraph 33.

Conchites, c. 5, par. 140.

Conchites lapis, c. 5, par. 56, &c.

Good for Tables, &c. ibid.

A Cormorant killed at Oxford, c. 9, par. 11.

Pulvis Cornubinunus invented by R. Dudley titular Duke of Northumberland, c. 9, par. 211.

A Corn two inches long, c. 8, par. 49.

Corn, how managed in Oxfordshire when green, c. 9, par. 98.

How in Harvest, par. 99, &c.

How preferred in the Barn from heating, par. 102.

How from Mice in the Rick, par. 104.

How threshed when smutty, par. 107.

How preferred from Mice and multinefs after threshing, par. 111.

Cornbury Park, see Deer.

Cornu ammonis, c. 5, par. 87, &c.

 Bodies why not Corrupted when buryed, c. 8, par. 52.

Cosmetics, or Medicines beautifying the skin, c. 3, par. 20.

Councils held at Oxford, c. 2, par. 4.

At Kirtlington, par. 7.

British Coyns, c. 10, par. 3, 4, &c.

Roman Coins, par. 73.

A Cor of King Edward the Confessor, such as gave him when he touched for the King's Evil, c. 10, par. 127.

Craume, c. 5, par. 43.

Crey-fish at Salford, c. 7, par. 31.

Their different colours, when boiled, shew the different goodness of waters, ibid.

Crow, how frightened from mischiefing Corn, c. 9, par. 98.

Crow-iron, c. 4, par. 12.

Customs used in Oxfordshire. See Burford, Enham, Hoke-tide, Quinten, Stanlake.

D.

A bearded Dart found at Steeple-Barton, c. 10, par. 138.

Damps at North Leigh, with an account of several men killed by them, cap. 3. Paragraph 315, &c.

Are a sign of Coals thereabouts, par. 34.

Ate remedied by casting in Quick-lime, par. 36.

Death, some odd prefigurations of it, c. 8, par. 33, &c.

Dedington Castle, c. 13, par. 135.

A Deer of Cornbury Park, defective in their horns, when made a Warren, c. 7, par. 45.

Devils Coits, a Funeral Monument, c. 10, par. 101.

Made of artificial tone, ibid.

The just Devil of Woodstock, c. 8, par. 37, &c.

Diaboli marinus, Sea Devils-bird, c. 7, par. 4.

Dial at All Souls College, c. 9, par. 140.

Corpus Christi Coll. par. 141.

Dorchester, an account of it before the Conquest, c. 10, par. 114.

Robbery Discovered by a Dream: c. 8, par. 46.

Dudley: Dukes of Northumberland, Earls of Warwick and Leicester, in Italy, c. 9, par. 149.

Dumb & deaf Persons taught to speak, c. 9, par. 180.

Dye hills, a Roman Fortification, c. 10, par. 39.

E.

Earths (see Soils) fit for Husbandry, c. 3, par. 8, &c. see Marles.

Medical, c. 3, par. 27, &c.

Serving for Statuaries, Tobacco pipes, Porters, polishing silver, &c. par. 43, 44.

Earths serving for Earthen floors, Ceilings, side-walls, whitening and pointing walls, par. 46, &c.

Earths fit for painting. See native Blue, Lac Lune, Ochre, Pignitis, Ruddle, Umber.

Sending forth poisonous steams. See Damps.

Yet undescribed, c. 3, par. 49, &c.

A green sort of Earth at Shotover-hill, par. 12.

Earthen wares, as Juggs, Bottles, Porcellane, the way how to make them discovered at Oxford, c. 9, par. 84, &c.

Zz 2 An.
An Earth-quake at Stanton St. Johns, c. 3. par. 54.
Echimites lapis, c. 5. par. 82, &c.
Echo's, their several forts, c. 1. par. 14.
Returning twenty Syllables at Woodstock, par. 15. at Magd. Coll. par. 22.
How to find the place of the speaker, and the place returning the voice, par. 16, &c.
Tonical, or returning a certain Musical Note, c. 1. par. 23.
Tautological, or returning the same word several times, par. 25.
Returning often the same inarticulate sound, at Hedington, par. 25. at New Coll. par. 39. at All-souls Coll. par. 31. at S. Job. Bap't Coll. c. 1. par. 144.
An Egg with another within it, c. 7. par. 17.
King Edw. the Conf. born at I'mp, c. 10. par. 123.
His Font still remains at Sir H. Browns Bar. par. 124.
First cured the Kings Evil, par. 125.
Eletrum, a mixt metal of Gold, and Silver found in England, cap. 10. par. 8, &c.
Elliptical hypothesis of the Planets motions, first demonstrated at Oxford, c. 9. par. 84, &c.
An Elm whose trunk is six yards diameter, c. 6. par. 65.
An Elm flourishing without Bark or pith, ibid.
How it's possible to live so, par. 66, &c.
An Elm having three trunks out of one root, c. 6. par. 77.
A narrow leaved Elm not yet described, par. 43.
Encephaloides lapis, c. 5. par. 147.
Enquiries to be made by the Author about Plants, c. 6. par. 58, &c.
Ensham, the custom of that Royalty, c. 8. par. 23.
Ewelm a Royal Seat, c. 10. par. 129.
The Echo there, c. 1. par. 25.
Double Ews, or Ews that always year two Lambs at once, c. 7. par. 38.
Fasting, Rebecca Smith fasted ten weeks, c. 8. par. 11.
Began to eat after the application of an Amulet, ibid.
Fellmongers, a pretty considerable Trade at Witney, c. 9. par. 173.
Fewel, some unufual forts of it in Oxford-shire, c. 3. par. 41, 42.
Finscale, a Fift not yet described, c. 7. par. 29.
Fir-tree, planted in Oxford-shire, c. 6. par. 84.
Fishes, See Finscale, Mytilus, Pride.
Fish-ponds, a new contrivance to few them, c. 9. par. 47.
Flints, transparent like Agate, c. 4. par. 15.
Black, their use, ibid.
A great Flood in the River Cherwell, c. 2. par. 17.
Fortifications in Oxford-shire, c. 10. par. 73, &c.
At Croamish, Giffard, par. 137.
In Merton Woods, where King Ethelred beat the Danes, par. 77.
Free stone, the several forts, c. 4. par. 24, 25.
Rivers Freeze first at the bottom, c. 2. par. 15.
Fungites lapis, c. 5. par. 132.

G.
Garstington, an ancient Barony, c. 10. par. 133.
Geodes lapis, c. 5. par. 130.
New Geometrical Bodies invented by Sir Christopher Wren, c. 9. par. 195.
Geranium columninum, &c. not yet described, c. 6. par. 6.
Giants, a Discourse of them, c. 5. par. 168, &c.
Glasses made of Flints, c. 9. par. 92, &c.
Found together with Urns, their use, c. 10. par. 57, &c.
Glaffenburg thorn, c. 6. par. 39, 40.
Grapes, meliorated by grafting, c. 9. par. 113, 114.
Grimes-ditch, a Roman way, c. 10. par. 26.
Robert Grosfield Bishop of Lincoln, a great
great Astronomer, c. 9, par. 2.
Gnal Hen, a Roman way, c. 10, par. 24.
Gunpowder, an Invention of Friar Bacon, cap. 9. Paragraph 7, 39, 40.
Gur, c. 3, par. 50.

H.

Harrow, a new sort of them, c. 9, par. 77.
Harvesting, the manner of it in Oxfordshire, c. 9, par. 99, &c.
A Hawthorn with white berries, c. 6, par. 38.
Hay, how preserved from heating, c. 9, par. 103.
Hedington, a Seat of King Edward the Confessor, c. 10, par. 128.
An ancient Barony, par. 130.
The Echo there, c. 1, par. 25.
Helleborine flore albo, c. 6, par. 13.
A new sort of Hives for Bees, c. 9, par. 120.
Hogg, an ingenious way of giving them meat, c. 9, par. 122.
A Hog near 13 hands high, c. 7, par. 73.
Hoke-norton barrow, an ancient Fortification, c. 10, par. 75.
Hoke-norton an ancient Barony, par. 131.
Hoke-tide, or Hoke-Munday, c. 8, par. 24, &c.
Hooing-bird, c. 7, par. 10.
Horeum disticum praecox, c. 6, par. 9.
Horse forty years old, c. 7, par. 37.
Ancient Houses of the Kings, in Oxfordshire, c. 10, par. 128.
Husbandry of Arable Land in Oxfordshire, c. 9, par. 56, &c.
Of Pature Land, par. 81, &c.
Of Corn when green, par. 98, when ripe, par. 99.
Huntercomb, an ancient Barony, c. 10, par. 131.
The Hypsoscope improved, c. 9, par. 37.

I.

Ice-meads, cap. 2. Paragraph 15.
Ikenildstreet-way, c. 10, par. 22, 23.
Several Improvements by Sir Christopher Wren, c. 9, par. 30, 31, 32, 33, 35, 38, 42, 166, 195.
By Dr. Wallis, c. 9, par. 196, &c.
By Mr. Dwight in Earthen wares, par. 84, &c.
Injection of Liquors into the veins of Animals, c. 9, par. 222.
St. John Bept. Coll. how it came to be built, c. 6, par. 77.
Iris Lunaris seen at Oxford, c. 1, par. 7.
Iron moulds, c. 3, par. 51.
Iron-stone, c. 4, par. 35, 36.
Flip the Birth-place of King Edward the Confessore, c. 10, par. 123.
A Royal Seat, par. 128.
Lapis Judaeus, c. 5, par. 136, &c.
Funicular omnium, &c. not yet described, c. 6, par. 5.

K.

Kemnys barrow, a Funeral Monument, c. 10, par. 51, 52.
Northern Kings, how anciently elected and inaugurated, c. 10, par. 88, 90, &c.
Kirtlington, anciently part of the possessions of the Kings of England, c. 2, par. 7.
Its ancient Privileges, ibid.
A Kitchin without a Chimney, c. 9, par. 130.
Knives, their carved hafts first made at Oxford, c. 9, par. 168.

L.

Lace found in Oxfordsh. c. 3, par. 20, &c.
A sign of Silver Ore, par. 22, 23.
Its use in Medicine, par. 26.
Lagopus major vulgaris Parkinsonii, c. 6, par. 12.
Langley, anciently a Royal seat, c. 10, par. 129.
Philosophical Language. See Universal Character.
Lightning, strange effects of it, c. 1, par. 11.

Aaa

Lignum
The INDEX.

Lignum fossilis, c. 3, par. 42.
Lilingstone Lovel, why in Oxfordshire, c. 6, par. 85.
Lime, the fittest stones to make it, c. 4, par. 32.
Quicklime, rectifies the malignancy of Damps, c. 3, par. 36.
White Linnet, c. 7, par. 13.
The reason of its whiteness, par. 14, 15.
Locks to keep up waters, See Turnpikes.
Lucern, See Sainfoin.
Lychnis, a sort of them not yet described, c. 6, par. 10.
Lynham, first discovered at Oxon, c. 9, par. 212.

M.

Malt-kills of stone very advantageous, c. 9, par. 92.
New contrivances of them, par. 127.
Mamillaris lapis, c. 5, par. 151.
Marble at Blechington, c. 4, par. 33.
A new way of painting it, c. 9, par. 166.
Marchaise, (See Byrites) c. 4, par. 12.
Marl, the several sorts of it, c. 3, par. 8, &c.
Mathematicks improved at Oxon, c. 9, par. 194, &c.
Mauve, a good foil, c. 4, par. 3, 4, 5.
Men apt for generation till eighty, c. 8, par. 7.
Of a great Age, par. 54.
Merton Coll. the reason of black night there, c. 9, par. 192.
Meff-fats, very good ones made of Burford stone, c. 4, par. 27.
Middleton-stone, the Castle there, c. 10, par. 17.
Mills of a rare contrivance, c. 9, par. 124, &c.
Minster Lovel, an ancient Barony, c. 10, par. 133.
Artificial Mifks, c. 9, par. 24.
Money, See Coyns.
Moon-stone, See Selentites.
Moor-Evil, how cured, c. 2, par. 66.
Mufca i Phryganio saxatili, c. 7, par. 25.
Mufick, new discoveries in it, with their demonstrations, cap. 9, par. 199.

Mytilus alburnus maximus subviridis, not found to have Pearl in them, c. 7, par. 32.

N.

Nephriticus lapis, cap. 5. Paragraph 154.
Hafel-Nuts found fifty foot underground, c. 2, par. 52.

O.

Oats, See Malt-kills.
Oats, a way to dispose them conveniently in stables, c. 9, par. 121.
Yellow Ochre at Shotover-hill, c. 3, par. 13, &c.
A sign of Silver Ore, par. 24.
Onastrum minor aquatica, Park, c. 6, par. 12.
Opbionorities lapis, c. 5, par. 92, &c.
Ophthalmitis lapis, par. 149.
Ophelites lapis, c. 5, par. 144.
Orhabane verbascufl oil, not yet described, c. 6, par. 8.
Ofeney Abbey how it came to be built, c. 6, par. 76.
Ofiorcola, c. 5, par. 174.
Ostracites lapis, par. 79.
Ostracomorphos Lapis, par. 60.
Orites lapis, c. 5, par. 150.
Ova anguria, c. 5, par. 83.
Oxen, a pretty contrivance to feed them, c. 9, par. 123.
Oxford, how situated at present, c. 2, par. 4.

How anciently, c. 10, par. 30.
Its present situation healthy, c. 10, par. 64.
Parliaments and Councils held there, c. 2, par. 4.
When made a University, c. 10, par. 65.
When the Bishoprick was founded, par. 67.
Oxfordshire has more Pasture than arable Land, c. 3, par. 1.

P.

Painting, an account of that at the Theater at Oxon, c. 9, par. 154, &c.
Some that is remarkable elsewhere, par. 164, 165.

Parhelias,
The INDEX.

Parhelia, or Mock-suns, seen at En-
Their signification, par. 6.
Parliaments held at Oxford, c. 2 par. 4.
The first in England held at
Shiford, par. 5, 6.
Pasture-land, how manured in Oxford-
shire, c. 9. par. 81, &c.
Roman Pavements in Oxford-shire,
c. 10. par. 54, &c.
Pear-trees, an unusual sort of them
bearing twice a year, c. 6. par. 86.
Bearing a Pear hard and dura-
ble like wood, par. 87.
Pease, the sorts of them in Oxford-
shire, c. 6. par. 30.
Pear found in Oxford-shire, c. 3. par. 41.
their way of managing it, ibid.
Pebbles transparent, c. 4. par. 16.
their use, par. 17, 18.
Cemented with Flints make excellent Chimney pieces,
Tables, &c. par. 19, 20.
Phelinites lapio, c. 5. par. 72, &c.
Pentaphyllum reptans alatum foliis pro-
fandens ferratis, c. 6. par. 7.
Period of years, a more accurate one
found out by Tho. Lydias, c. 9. par.
17, 18.
Perspiration of Plants discovered at
Oxford, c. 9. par. 95.
Petifications, whence they proceed,
c. 2. par. 23, &c.
Their several sorts, par. 25, &c.
item, c. 5. par. 47, &c.
Petrified bone, c. 5. par. 158.
Petrified wood, cap. 3. par. 38, 39.
item c. 5. par. 175.
Phaloides lapio, c. 5. par. 153.
Phafants, with white and pyed feathers,
c. 7. par. 13.
Pictures, drawn by Microscopical
glases, c. 9. par. 166.
Remarkable ones of K. James
and K. Charles, c. 164.
Another of a Cat looking seve-
rals ways, par. 165.
Plants, not yet described, c. 6 par. 3, &c.
Not yet noted whether of En-
lish growth, par. 12.
Doubt whether yet described, par. 13, 14.
Plants fasciated, c. 6. par. 15.
Not only after hard Winters,
par. 16.
Plants striped, c. 6. par. 17, 42.
How procured, Paragraph 18.
Is their disease rather then per-
fection, par. 19, &c.
River Plants grow sensibly after rain,
and why, c. 2. par. 16.
Plants cultivated in Oxford-shire, that
are not in some other Countnies. See
Barley, Caraways, Lucern, Pear-
trees, Peas, Ray-grafs, Rosa canina,
&c. balfard Saffron, Saltfoun, Wheat.
Plants, enquiries to be made by the
Author about them, c. 6. par. 88, &c.
Ploughly-bill, a Funeral Monument,
c. 10. par. 48.
Ploughs, theSeveral sorts of them used
in Oxford-shire, c. 9. par. 76.
Pnigitis, or black chalk, c. 3. par. 16, 17.
Porcellane ware, the way to make it in-
vented at Oxford, c. 9. par. 86.
Portway, c. 10. par. 35, 36.
Pride, a Fish doubted whether yet de-
scribed, c. 7. par. 27, 28.
Prosped at Teynton, c. 3. par. 54.
Pyrites aureus, c. 4. par. 11, 12.
Argenteus, par. 13.
Pyromous exhalations how remedied,
c. 3. par. 36.

Q.
Quarries at Buxford, c. 4. par. 26.
At Hedington, par. 24.
Elffield, par. 29, 30.
Quinten, a Sport used in Oxford-shire
at Weddings, as they carry home the
Bride, c. 8. par. 21, &c. 53.

R.
Rainsborough, an ancient Fortificati-
on, c. 10. par. 34.
Lapis Ramule, c. 10. par. 141.
Felsherry bush grows commonly in the
Chiltern part of Oxford-shire, c. 6.
par. 42.
Ray-grafs, an improvement of Land,
c. 6. par. 31, &c.
When the best time to sow it,
c. 9. par. 83.
Rib of a Dog of an unusual make, c. 7.
par. 46.
Rings, the ancient use of them in the
Northern Countries, c. 10 par. 107, &c.
The INDEX.

Rivers running into the ground, c. 2. par. 19.
Robber, c. 4. par. 11.
Robbery discovered by a Dream, c. 8. par. 46.
Rolls, of an unusual make for tilling
Land, c. 9. par. 79, 80.
Roll-rich tones, c. 10. par. 81.

Nota Funeral Monument, par. 86.

Nor a Court of Judicature, par. 87.
Built by Rolls the Norman, par. 83. at his inauguration, par. 95, &c.

Roofs of Stone of rare contrivance, c. 9. par. 136, &c.
Ropes made of the barks of Trees, c. 9. par. 119.
Rofamond's Tomb, c. 9. par. 144, &c.
Rotherfield Gray's, an ancient Barony, c. 10. par. 131.
Rotherfield Pipard an ancient Barony, par. 132.
Rubrick, or ruddle, c. 3. par. 16.

S.

Baffard Saffron, c. 6. par. 35.
Sainfoin, par. 31, 34.

How managed, c. 9. par. 83.

Salmons at Lillingstone Lovel, how they come thither, c. 7. par. 30.
Sand, its use, c. 4. par. 22, 23.
Saxifrages Anglica, &c. not yet described, c. 6. par. 9.
Sent-bags, discovered in moss strong
fented Animals, at Oxon, c. 9. par. 228, &c.

Sectaries, a new sort of them at Watlingdon, c. 8. par. 32.
Selenites lapic, the several sorts, c. 5. par. 3, 8, 11, 182.

Its use, par. 14, 15.

Servants, how hired, c. 8. par. 29.
A Sleep with only one horn, c. 7. par. 40.

Sheep with 8 or 10 horns apiece, par. 39.
Sherbourn an ancient Barony, c. 10. par. 133.

Silk stockings, the way of weaving
them discovered at Oxford, c. 9. par. 167.

Silver Ore, where likely to be found
See Carnlevum naturum.

Singing, two octaves, or fifths, sung
by the same person at the same
time, c. 9. par. 208, &c.

Slat-flones serving for covering houses,
c. 4. par. 31.

Good for grinding colours, ib.

Smiris its use, c. 4. par. 21.

Snails, a sort of them not yet described,
c. 7. par. 34.

Snakes, none to be found in the Northern parts of Oxfordshire, c. 7. par. 35, 36.

Soils (See Earths) of a small depth,
why some fertile, others not, c. 3. par. 3, &c.

Sparis, c. 9. par. 49, 50, 51.

Their original, par. 52.

Their use, par. 53.

Speech, improved by Dr. Wallis, c. 9. par. 179.

By Dr. Wilkins, par. 181.

Spire steeples, c. 9. par. 142.

Springs, their original, c. 2. par. 17.

A Chalybeat Spring beside Oxford, c. 10. par. 141.

Land Springs, c. 2. par. 18.

Sweating out of the Earth, and
for the most part imbibed again, par. 20.

A Stags head found 50 foot under
ground, c. 6. par. 53.

Stein-cave at Blechington described, c. 9. par. 131, &c.

Stalactites lapic, c. 5. par. 48.

Stalagmites lapic, par. 47.

Stanlake, the Parson reads a Gospel
every Holy Thursday, on a Barrels
head in the Cellar of the Chequer
Inn, c. 8. par. 30.

Starch-trade at Oxford, an account of
it, c. 9. par. 172, &c.

Star stone. See Asteria.

Excellent Statues in Brasses of King
Charles I. and his Queen, c. 9. par. 166.

Stones an improvement of Land, c. 4. par. 7, 8, item c. 9. par. 70.

Stones resembling Fishes, as a Barbel,
c. 5. par. 55.

Cockles singly, par. 64, &c. 76.

Cockles in clusters, par. 56, &c.

Their use, ibidem.

Ecallops, c. 5. par. 72.

Mufcles,
Muscles, par. 80.
Oysters, par. 60, 78, 79.
A Porcupine, par. 81.
A Rams horn, par. 87, &c.
Snakes, par. 92.
A Sea Urchin, par. 82, &c.
How Stones resembling Shell-fishes acquire that form, c. 5, par. 96, &c.
Stones resembling Plants, as, an Apricot, c. 5, par. 135.
A Briony root, par. 133.
A Mulberry, par. 135.
Luca-Olives, par. 136.
Pears, par. 134.
Toad-stools, par. 132.
Stones resembling living Creatures, or some parts of them, as a Bullocks heart, c. 5, par. 143.
A Horse head, par. 142.
An Owls head, par. 45.
Snails, par. 140.
The Tefficiles, par. 144.
A Toads head, par. 146.
Worms, par. 141.
Stones resembling some part of man, as his Brain, c. 5, par. 147.
Breath, par. 151.
Ear, par. 150.
Eye, par. 149.
Foot, par. 174.
Glans penis humani, par. 153.
Heart, par. 152.
Kidneys, par. 154.
Olfactory nerves, par. 148.
Scrotum, par. 153.
Stones representing Buttons, c. 5, par. 175.
The heel of a foot, par. 176.
A wheel, par. 177.
Stones naturally globular; some smooth, some granulated, c. 5, par. 179.
Stones voided out of the Eyes, c. 8.
par. 10.
Bred under the Tongue, par. 48. item c. 10, par. 141.
Taken out of a mans bladder that weighed above a pound, c. 8, par. 49.
Made by art, c. 10, par. 101.
Worshipped by the ancient Britains, par. 102, &c.
Set up in the high-way, to shew the number of miles, par. 50.
A Stone with Chinese Characters found at Tarnton, c. 10, Paragraph 139.
Straw-work, of a new contrivance, c. 9, par. 108.
Strombites, or wreathed stones, c. 5, par. 63.

T.

Tadmerton Castle a Danish Fortificatio

Teeth of a prodigious bigness, c. 5, par. 159, 163, 164.

Telescope, known to Frier Bacon, c. 5, par. 2, &c.

Thame an ancient Barony, c. 10, par. 133.

Its antiquity, par. 119.
The Well-waters, when brewed, &c.

Theater at Oxford, its contrivance, c. 9, par. 147, &c.

An account of the Painting,

The Thermometer invented 500 years ago, c. 9, par. 35.

Thigh-bones of a prodigious bigness, c. 5, par. 155, 164.

Whether really the bones of a man, par. 157.

Thunder. See Lightning.

Thunder-bolts. See Bellemnites.

Thunder-stones. See Brontias.

Tillage. See Husbandry.

Tobacco-pipe-clay at Shotover-hill, c. 3, par. 43.

Toucan, an American Bird found beside Oxford, c. 7, par. 12.

Towers at Oxford, c. 9, par. 143.

British Towns how built, c. 10, par. 75.

Transfusion of Blood invented at Oxford, c. 9, par. 223.

Trees of a vast bigness, c. 6, par. 44, &c.

That have been put to odd uses, par. 47, &c.

Buryed under the ground at Binfield-beath, par. 70.

Where dyed black, and why, ibid.

Found fifty foot under ground at Riverfield-Pipard, par. 51.

How, and on what account buryed under ground, par. 55, &c.

Two Trees joyned together after an odd way, c. 6, par. 78.
The INDEX.

Trichites lapis, c. 5, Paragraph 145.
Tripoli-stone, c. 4, par. 34.
Trochites lapis, c. 5, par. 177.

Turf laid on houfes instead of ridgel-tiles, c. 3, par. 40.
Serving for fewel, par. 41.
Turn-pikes to keep water up, c. 9, par. 43, &c.

V.

VagitusUterinus, c. 8, par. 3.
No ill omen, ibid.
Vermicularis lapis, c. 5, par. 141.
Vines meliorated by grafting, c. 9, par. 113,114.
Viola Martia, &c. not yet described, c. 6, par. 3,4.
Ludovicus Vines his Bees, c. 7, par. 19.
Umber, c. 3, par. 19.

Universal Character invented at Oxford, c. 9, par. 183, &c.
Improved there, par. 188, &c.

W.

Walks, and other curiosities in Trees, c. 9, par. 115, &c.

Waters in Oxfordshire healthy, proved from the abundance of Fift, c. 2, par. 14.

From their impregnations with Salts and Sulphurs, par. 12, 13,15.

Waters petrifving. See Petrifications.

Why some will not bear Soap, c. 2, par. 32.
How remedied at Henly, par. 24.

Strongly impregnated with Salts at Church-hill Mill, par. 35.
At Chadlington, par. 39.
At Clifton, par. 40.

What use they may be put to, par. 43, &c.

Waters Medicinal at Deddington, c. 2, par. 49.

At Banbury, par. 57.
At Eton, par. 58.
Curing Eyes and Ulcers, par. 67, &c. item c. 10, par. 142.
Chalybeat, c. 10, par. 141.

Vitriolate, c. 2, par. 60, &c.

Taf ting like Milk, par. 64.

White like Milk, par. 65.

Waters, a note of their goodness, c. 7, par. 31.

Water-works, c. 9, par. 42, &c.

At Eton described, par. 50, &c.

Watling-street, why so called, c. 10.

Wattle-bank, § par. 70.

Wallington an ancient Town, with the reason of its name, par. 69.

Roman ways, their several forts, c. 10, par. 18, &c. See Akeman-street, Ave-ditch, Grimes-ditch, Ikenild-street, Port-way.

Wheat with two ears on one stalk, c. 6, par. 37.

The several forts of it cultivated in Oxfordshire, not so in some other Countries, par. 23, &c.

Dr. Willis, an account of his discoveries in Anatomy and Physick, c. 9, par. 215, &c.

A great Wind at Oxford, c. 1, par. 9.

Winch given to St. Swithin's Winton before the Conquest, c. 10, par. 120.

Woollen rags an improvement of Land, c. 9, par. 70,71.

Women bearing Children till 63. c. 8, par. 8.

Revive of them then men, two examples in Oxfordshire, par. 12, &c.

A Woman of extream little growth, not a yard high, yet all parts proportionable, c. 8, par. 9.
Wood petrifved, c. 3, par. 38,39.

Sold by weight, par. 2.

How ordered in Oxfordshire, c. 9, par. 118, 119.

Woodcracker, a Bird not yet described, c. 7, par. 3.

Woodlock, the Echo there, c. 1, par. 15.

When made a Seat Royal, c. 10, par. 118.

FINIS.
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>16 i</td>
<td>Of Air, Oxen, &amp; Air Table.</td>
</tr>
<tr>
<td>II</td>
<td>18</td>
<td>Of Water.</td>
</tr>
<tr>
<td>III</td>
<td>51</td>
<td>Of Earth.</td>
</tr>
<tr>
<td>IV</td>
<td>69</td>
<td>Of Stones.</td>
</tr>
<tr>
<td>V</td>
<td>80</td>
<td>Of Formed Stones.</td>
</tr>
<tr>
<td>VI</td>
<td>143</td>
<td>Of Plants.</td>
</tr>
<tr>
<td>VII</td>
<td>178</td>
<td>Of Brutes.</td>
</tr>
<tr>
<td>VIII</td>
<td>192</td>
<td>Of Men &amp; Women.</td>
</tr>
<tr>
<td>IX</td>
<td>214</td>
<td>Of Arts.</td>
</tr>
<tr>
<td>X</td>
<td>308</td>
<td>Of Antiquities.</td>
</tr>
<tr>
<td>XI</td>
<td>328</td>
<td>Of Art.</td>
</tr>
<tr>
<td>XII</td>
<td>356</td>
<td>Of Art.</td>
</tr>
</tbody>
</table>