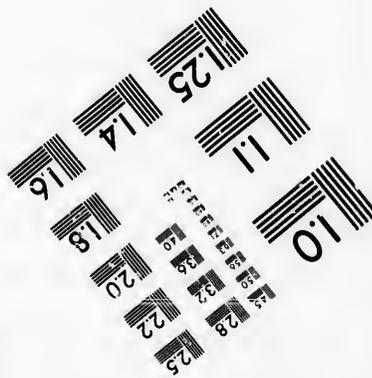
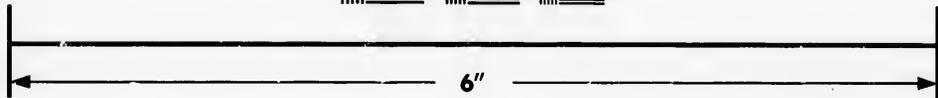
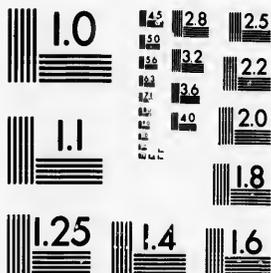


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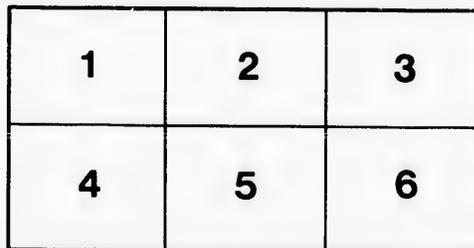
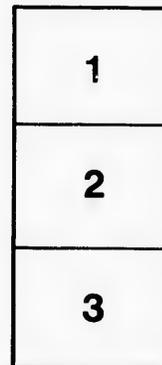
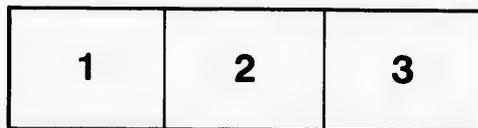
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DAINES BARRINGTON,

One of his Majesty's Justices of the
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S I R,

I Presume to prefix YOUR name to a performance which will in some measure display to the *British* nation, the circumstances of a country which is so happy as to be under its protection.

EVERY lover of knowledge, especially of natural history, must be sensible of YOUR zealous endeavours to promote every branch of it. It was my great happiness to fall within YOUR notice, and to receive very substantial and seasonable favours from YOUR patronage
and

iv DEDICATION.

and recommendations. I shall ever remain mindful of YOUR generosity and humanity towards me; but must lament that I have no other means of expressing my gratitude than by this publick acknowledgment.

ACCEPT then, SIR, my earnest wishes for YOUR prosperity, and think me with the truest esteem,

Your most obliged,

and obedient

humble Servant,

JULY 25th, 1770.

John Reinhold Forster.

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P R E F A C E.

PROFESSOR *Kalm's* Travels through *North America*, were originally written in the *Swedish* language, but soon after translated into *German* by the two *Murray's*, both of whom are *Swedes*, and one a pupil of Dr. *Linnaeus*, from which we may conclude that this translation corresponds exactly with the original.

BARON *Sten Charles Bielke*, Vice-president of the Court of Justice in *Finland*, was the first who made a proposal to the Royal Academy of Sciences at *Stockholm*, to send an able man to the northern parts of *Siberia* and *Iceland*, as places which are partly under the same latitude with *Sweden*, and to make there such observations and collections of seeds and plants, as would improve the *Swedish* husbandry, gardening, manufactures, arts and sciences. Dr. *Linnaeus* found the proposal just, but he thought that a journey through *North America* would be yet of a more extensive utility, than that through the before-mentioned countries; for the plants of *America* were then little known, and not scientifically described; and by several trials, it seemed probable that the greatest part of the *North American* plants, would bear very well the *Swedish* winters; and what was more important, a great many

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many *American* plants promised to be very useful in husbandry and physic.

THUS far this journey was a mere scheme; but as Captain *Triewald*, a man well known for his abilities in *England*, gave his *Observations on the Cultivation of Silk* in a series of Memoirs to the Royal Academy of Sciences, and mentioned therein a kind of mulberry-tree, which was discovered by Dr. *Linnaeus*, and which bore the rigours of the *Swedish* climate as well as a fir or pine tree; this circumstance revived the proposal of such a journey in the year 1745. Count *Tessin*, a nobleman of established merit both in the political and learned world, becoming president of the Royal Academy, it was unanimously agreed upon to send Professor *Kalm* to *North America*. The expences were at first a great obstacle; but the Royal Academy wrote to the three universities to assist them in this great and useful undertaking. *Aobo* sent first her small contribution, *Lund* had nothing to spare, but *Upsala* made up this deficiency by a liberal contribution.

COUNT *Piper* was intreated to give a family exhibition to Mr. *Kalm*, which he readily promised; but as the Academy had obtained from the convocation of the university of *Upsala* and the magistrates of *Stockholm*, another exhibition of the family of *Helmsfield* for Mr. *Kalm*, Count *Piper* refused to grant his exhibition, as being contrary to the statutes of the university and without any precedent, that one person should enjoy two exhibitions. The present king of *Sweden* being then prince royal, successor to the throne,

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throne, and chancellor of the university, wrote to the convocation, and expressed his wishes to have from the treasury of the University for so useful a purpose, about 1000 plates, or about 150l. sterling. The university complied generously with the desire of her chancellor, and gave orders that the money should be paid to the Royal Academy. The board for promoting manufactures gave 300 plates, or about 45l. Mr. *Kalm* spent in this journey his salary, and besides very near 130l. of his own fortune; so that at his return he found himself obliged to live upon a very small pittance. The rest of the expences the Academy made up from her own fund.

WE on purpose have given this detail from Mr. *Kalm's* long preface, to shew the reader with what public spirit this journey has been supported in a country where money is so scarce, and what a patriotic and laudable ardor for the promotion of sciences in general, and especially of natural history and husbandry, animates the universities, the public boards, and even the private persons, in this cold climate, which goes so far, that they chuse rather to spend their own private fortunes, than to give up so beneficial and useful a scheme. We have the same instance in Dr. *Hasselquist*, who with a sickly and consumptive constitution, went to *Asia Minor*, *Egypt*, and *Palestine*, and collected such great riches in new plants and animals, that Dr. *Linnaeus's* system would never have contained so many species, had he not made use of these treasures, which the queen of *Sweden* generously bought, by paying the debts of Dr. *Hasselquist*, who died in his attempt

to promote natural history. The Reverend Mr. *Osbeck*, in his voyage to *China*, made an infinite number of useful and interesting observations at the expence of his whole salary, and published them by the contributions of his parish. The Reverend Mr. *Toreen* died by the fatigues of the same voyage, and left his letters published along with *Osbeck*, as a monument of his fine genius, and spirit for promoting natural history. We here look upon the expences as trifling, but they are not so in *Sweden*, and therefore are certainly the best monuments to the honour of the nation and the great *Linnaeus*, who in respect to natural history is the *primum mobile* of that country.

PROFESSOR *Kalm* having obtained leave of his Majesty to be absent from his post as professor, and having got a passport, and recommendations to the several *Swedish* ministers at the courts of *London*, *Paris*, *Madrid*, and at the *Hague*, in order to obtain passports for him in their respective states, set out from *Upsala*, the 16th of *October* 1747, accompanied by *Lars Yungstræm*, a gardener well skilled in the knowledge of plants and mechanics, and who had at the same time a good hand for drawing, whom he took into his service. He then set sail from *Gottenburgh*, the 11th of *December*, but a violent hurricane obliged the ship he was in to take shelter in the harbour of *Græmsfad* in *Norway*, from which place he made excursions to *Arendal* and *Christiansand*. He went again to sea *February* the 8th, 1748, and arrived at *London* the 17th of the same month. He staid in Eng-

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land till August 15th, in which interval of time he made excursions to *Woodford* in *Essex*, to *Little Gaddesden* in *Hertfordshire*, where *William Ellis*, a man known by his publications in husbandry lived, but whose practical husbandry Mr. *Kalm* found not to be equal to the theory laid down in his writings; he likewise saw *Ivinghoe* in *Buckinghamshire*, *Etcn*, and several other places, and all the curiosities and gardens in and about *London*: at last he went on board a ship, and traversed the ocean to *Philadelphia* in *Pennsylvania*, which was formerly called *New Sweden*, where he arrived *September* the 26th. The rest of that year he employed in collecting seeds of trees and plants, and sending them up to *Sweden*; and in several excursions in the environs of *Philadelphia*. The winter he passed among his countrymen at *Raccoon* in *New Jersey*. The next year, 1749, Mr. *Kalm* went through *New Jersey* and *New York*, along the river *Hudson*, to *Albany*, and from thence, after having crossed the lakes of *St. George* and *Champlain*, to *Montreal* and *Quebec*, he returned that very year, against winter, to *Philadelphia*, and sent a new cargo of seeds, plants, and curiosities to *Sweden*. In the year 1750, Mr. *Kalm* saw the western parts of *Pennsylvania* and the coast of *New Jersey*; *Yungstræm* staid in the former province all the summer for the collection of seeds; and Prof. *Kalm* in the mean time passed *New York* and the *Blue Mountains*, went to *Albany*, then along the river *Mohawk* to the *Iroquois* nations, where he got acquainted with the *Mohawk's*, *Oneida's*, *Tuskarora's*, *Onandaga's*, and *Kayugaw's*. He then

viewed and navigated the great lake *Ontario*, and saw the celebrated fall at *Niagara*. In his return from his summer expedition, he crossed the *Blue mountains* in a different place, and in a *October* again reached *Philadelphia*.

In 1751, he went at *Newcastle* on board a ship for *England*, and after a passage, subject to many dangers in the most dreadful hurricanes, he arrived, *March* the 27th, in the *Thames*, and two days after in *London*. He took passage for *Gothenburgh* *May* the 5th, and was the 16th of the same month at the place of his destination, and the 13th of *June* he again arrived at *Stockholm*, after having been on this useful expedition three years and eight months. He has since assumed the professorship at *Aobo*, where, in a small garden of his own, he cultivates many hundreds of *American* plants, as there is not yet a public botanical garden for the use of the university, and he with great expectation wishes to see what plants will bear the climate, and bear good and ripe seeds so far north. He published the account of his journey by intervals, for want of encouragement, and fearing the expences of publishing at once, in a country where few booksellers are found, and where the author does very often embrace the business of bookseller, in order to reimburse himself for the expences of his publication. A passage cross the *Atlantic* ocean is a new thing to the *Swedes*, who are little used to it, unless they go in the few *East India* ships of their country. Every thing therefore was new to Mr. *Kalm*, and he omitted no circumstance unobserved which are repeated in all the navigators from

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from the earlier times down to our own age. It would be a kind of injustice to the public, to give all this at large to the reader. All that part describing *England* and its curiosities and husbandry we omitted. The particulars of the passage from *England* to *Pensylvania* we abridged: no circumstance interesting to natural history or to any other part of literature has been omitted. From his arrival at *Philadelphia*, we give the original at large, except where we omitted some trifling circumstances, viz. the way of eating oysters, the art of making apple-dumplings, and some more of the same nature, which struck that *Swedish* gentleman with their novelty.

MR. *Kalm* makes use of the *Swedish* measure; its foot is to the *English* foot, as 1134 to 1350. For his meteorological observations he employed the thermometer of Prof. *Celsius*, generally made use of in *Sweden*, and his was of *Celsius's* own making; the interval from the point of freezing to the point of boiling water, is equally divided in this thermometer into 100 parts. In the names of plants, we have chiefly employed after his directions the *Linnæan* names, in the last edition of his *Spec. Plantarum*, and *Systema Naturæ*, Vol. 2. But as his descriptions of animals, plants, and minerals are very short, he promises to give them at large some time hence in a Latin work.

HE gives you his observations as they occurred day after day, which makes him a faithful reporter, notwithstanding it takes away all elegance of style, and often occasions him to make very sudden

sudden transitions from subjects very foreign to one another,

AT last he arms himself with a very noble indifference against the criticism of several people, founded on the great aim he had in view by his performance, which was no less than *public utility*. This he looks upon as the true reward of his pains and expences.

THE Map, and drawings of the *American* birds and animals, were not in the original, but copied from original drawings, and real birds and animals from *North America*.

WE find it necessary here to mention, that as many articles in Mr. *Kalm's* travels required illustrations, the publisher has taken the liberty to join here and there some notes, which are marked at the end with F. The other notes not thus marked were kindly communicated by the publisher's friends.

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VOL. I.

P E T E R K A L M 's
T R A V E L S.

August the 5th, 1748.

I WITH my servant *Lars Yungstræm* (who joined to his abilities as gardener, a tolerable skill in mechanics and drawing) went at *Gravesend* on board the *Mary Gally*, Captain *Lawson*, bound for *Philadelphia*; and though it was so late as six o'clock in the afternoon, we weighed anchor and sailed a good way down the *Thames* before we again came to anchor.

Aug. 6th. VERY early in the morning we resumed our voyage, and after a few hours sailing we came to the mouth of the *Thames*, where we turned into the channel and sailed along the *Kentish* coast, which consists of steep and almost perpendicular chalk hills, covered at the top with some soil and a fine verdure, and including strata of flints, as it frequently is found in this kind of chalk-hills in the rest of *England*. And we were delighted in viewing on them excellent corn-fields, covered for the greatest part with wheat, then ripening.

AT six o'clock at night, we arrived at *Deal*, a little well known town, situate at the entrance of a bay exposed to the southern and easterly winds.

August 1748.

winds. Here commonly the outward bound ships provide themselves with greens, fresh victuals, brandy, and many more articles. This trade, a fishery, and in the last war the equipping of privateers, has enriched the inhabitants.

Aug. 7th. WHEN the tide was out, I saw numbers of fishermen resorting to the sandy shallow places, where they find round small eminences caused by the excrements of the *log worms*, or *sea worms*, (*Lumbrici marini* Linn.) who live in the holes leading to these hillocks, sometimes eighteen inches deep, and they are then dug out with a small three-tacked iron fork and used as baits.

Aug. 8th. AT three o'clock we tided down the channel, passed *Dover*, and saw plainly the opinion of the celebrated *Camden* in his *Britannia* confirmed, that here *England* had been formerly joined to *France* and *Flanders* by an isthmus. Both shores form here two opposite points; and both are formed of the same chalk hills, which have the same configuration, so that a person acquainted with the *English* coasts and approaching those of *Picardy* afterwards, without knowing them to be such, would certainly take them to be the *English* ones.*

Aug. 9th—12th. WE tided and alternately sailed down the channel, and passed *Dungness*, *Fairlight*, *the Isle of Wight*, *Portsmouth*, *the Peninsula of Portland* and *Bolthead*, a point behind which *Plymouth* lies; during all which time we had very little wind.

* The same opinion has been confirmed by Mr. *Buffon* in his *Hist. Naturelle*.

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Aug. 13th. TOWARDS night we got out of the *English* channel into the *Bay of Biscay*.

Aug. 14th. WE had contrary wind, and this increased the rolling of the ship, for it is generally remarked that the *Bay of Biscay* has the greatest and broadest waves, which are of equal size of those between *America* and *Europe*; they are commonly half an *English* mile in length, and have a height proportionable to it. The *Baltic* and the *German* ocean has on the contrary short and broken waves.

WHENEVER an animal is killed on board the ship, the sailors commonly hang some fresh pieces of meat for a while into the sea, and it is said, it then keeps better.

Aug. 15th. THE same swell of the sea still continued, but the waves began to smooth, and a foam swimming on them was said to forebode in calm weather, a continuance of the same for some days.

ABOUT noon a north-easterly breeze sprung up, and in the afternoon it blew more, and this gave us a fine spectacle; for the great waves rolled the water in great sheets, in one direction, and the north-easterly wind curled the surface of these waves quite in another. By the beating and dashing of the waves against one another, with a more than ordinary violence, we could see that we passed a current, whose direction the captain could not determine.

Aug. 16th—21st. THE same favourable breeze continued to our great comfort and amazement, for the captain observed that it was very uncommon to meet with an easterly or north-easterly

wind between *Europe* and the *Azores* (which the sailors call the *Western Islands*) for more than two days together; for the more common wind is here a westerly one: but beyond the *Azores* they find a great variety of winds, especially about this time of the year; nor do the westerly winds continue long beyond these isles; and to this it is owing, that when navigators have passed the *Azores*, they think they have performed one half of the voyage, although in reality it be but one third part. These isles come seldom in sight; for the navigators keep off them, on account of the dangerous rocks under water surrounding them. Upon observation and comparison of the journal, we found that we were in forty-three deg. twenty-four min. north lat. and thirty and a half degrees west long. from *London*.

Aug. 22d. ABOUT noon the captain assured us, that in twenty-four hours we should have a south-west wind: and upon my enquiring into the reasons of his foretelling this with certainty, he pointed at some clouds in the south-west, whose points turned towards north-east, and said they were occasioned by a wind from the opposite quarter. At this time I was told we were about half way to *Pensylvania*.

Aug. 23d. ABOUT seven o'clock in the morning the expected south-west wind sprung up, and soon accelerated our course so much, that we went at the rate of eight knots an hour.

Aug. 24th. THE wind shifted and was in our teeth. We were told by some of the crew to expect a little storm, the higher clouds being very thin and striped and scattered about the sky
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like parcels of combed wool, or so many skains of yarn, which they said forebode a storm. These striped clouds ran north-west and south-east, in the direction of the wind we then had. Towards night the wind abated and we had a perfect calm, which is a sign of a change of wind.

Aug. 25th and 26th. A WEST wind sprung up and grew stronger and stronger, so that at last the waves washed our deck.

Aug. 27th. IN the morning we got a better wind, which went through various points of the compass and brought on a storm from north-east, towards night.

OUR captain told me an observation founded on long experience, *viz.* that though the winds changed frequently in the *Atlantic* ocean, especially in summer time, the most frequent however was the western; and this accounts for the passage from *America* to *Europe* commonly being shorter, than that from *Europe* to *America*. Besides this, the winds in the *Atlantic* during summer are frequently partial, so that a storm may rage on one part of it, and within a few miles of the place little or no storm at all may be felt. In winter the winds are more constant, extensive and violent; so that the same wind reigns on the greater part of the ocean for a good while, and causes greater waves than in summer.

Aug. 30th. As I had observed the night before some strong flashes of lightening without any subsequent clap of thunder, I enquired of our captain, whether he could assign any reasons for it. He told me these phœnomena were

pretty common, and the consequence of a preceding heat in the atmosphere; but that when lightnings were observed in winter, prudent navigators were used to reef their sails, as they are by this sign certain of an impendent storm; and so likewise in that season, a cloud rising from the north-west, is an infallible forerunner of a great tempest.

Sept. 7th. As we had the first day of the month contrary wind, on the second it shifted to the north, was again contrary the third, and fair the fourth and following days. The fifth we were in forty deg. three min. north lat. and between fifty-three and fifty-four deg. west long. from *London*.

BESIDES the common waves rolling with the wind, we met on the 4th and 5th inst. with waves coming from south-west, which the captain gave as a mark of a former storm from that quarter in this neighbourhood.

Sept. 8th. WE crossed by a moderate wind, a sea with the highest waves we met on the whole passage, attributed by the captain to the division between the great ocean and the inner *American* gulf; and soon after we met with waves greatly inferior to those we observed before.

Sept. 9th. IN the afternoon we remarked that in some places the colour of the sea (which had been hitherto of a deep blue) was changed into a paler hue; some of these spots were narrow stripes of twelve or fourteen fathoms breadth, of a pale green colour, which is supposed to be caused by the sand, or, as some say, by the weeds under water.

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Sept. 12th. WE were becalmed that day, and as we in this situation observed a ship, which we suspected to be a *Spanish* privateer, our fear was very great ; but we saw some days after our arrival at *Philadelphia* the same ship arrive, and heard that they seeing us had been under the same apprehensions with ourselves.

Sept. 13th. CAPTAIN *Lawson*, who kept his bed for the greater part of the voyage, on account of an indisposition, assured us yesterday we were in all appearance very near *America*: but as the mate was of a different opinion, and as the sailors could see no land from the head of the mast, nor find ground by the lead, we steered on directly towards the land. About three o'clock in the morning the captain gave orders to heave the lead, and we found but ten fathom ; the second mate himself took the lead and called out ten and fourteen fathoms, but a moment after the ship struck on the sand, and this shock was followed by four other very violent ones. The consternation was incredible ; and very justly might it be so ; for there were above eighty persons on board, and the ship had but one boat : but happily our ship got off again, after having been turned. At day-break, which followed soon after (for the accident happened half an hour past four) we saw the continent of *America* within a *Swedish* mile before us : the coast was whitish, low, and higher up covered with firs. We found out, that the sand we struck on, lay opposite *Arcadia* in *Maryland*, in thirty-seven deg. fifty min. north lat.

WE coasted the shores of *Maryland* all the day,
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but not being able to reach cape *Hinlopen*, where we intended to take a pilot on board, we cruized all night before the bay of *Delaware*. The darkness of the night made us expect a rain, but we found that only a copious fall of dew ensued, which made our coats quite wet, and the pages of a book, accidentally left open on the deck, were in half an hour's time after sun-setting likewise wet, and we were told by the captain and the sailors that both in *England* and *America* a copious dew was commonly followed by a hot and sultry day.

Sept. 14th. WE saw land on our larboard in the west, which appeared to be low, white, sandy, and higher up the country covered with firs. Cape *Hinlopen* is a head of land running into the sea from the western shore, and has a village on it. The eastern shore belongs here to *New Jersey*, and the western to *Pensylvania*. The bay of *Delaware* has many sands, and from four to eleven fathom water.

THE fine woods of oak, hiccory and firs covering both shores made a fine appearance, and were partly employed in ship-building at *Philadelphia*; for which purpose every year some *English* captains take a passage in autumn to this town, and superintend the building of new ships during winter, with which they go to sea next spring: and at this time it was more usual than common, as the *French* and *Spanish* privateers had taken many *English* merchant ships.

A LITTLE after noon we reached the mouth of *Delaware* river, which is here about three *English* miles broad, but decreases gradually so much,

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much, that it is scarcely a mile broad at *Philadelphia*.

HERE we were delighted in seeing now and then between the woods some farm-houses surrounded with corn-fields, pastures well stocked with cattle, and meadows covered with fine hay; and more than one sense was agreeably affected, when the wind brought to us the finest effluvia of odoriferous plants and flowers, or that of the fresh made hay: these agreeable sensations and the fine scenery of nature on this continent, so new to us, continued till it grew quite dark.

HERE I will return to sea, and give the reader a short view of the various occurrences belonging to Natural - History, during our crossing the Ocean.

OF sea-weeds (*Fucus Linn.*) we saw, *August* the 16th and 17th, a kind which had a similitude to a bunch of onions tied together; these bunches were of the size of the fist, and of a white colour. Near the coast of *America* within the *American* gulf, *September* the 11th, we met likewise with several sea-weeds, one species of which was called by the sailors *rock-weed*; another kind looked like a string of pearls, and another was white, about a foot long, narrow, every where equally wide and quite strait. From *August* the 24th to *September* the 11th we saw no other weeds, but those commonly going under the name of *Gulfweed*, because they are supposed to come from the gulf of *Florida*; others call it *Sargazo*, and Dr. *Linnaeus*, *Fucus natans*. Its stalk is very slender, rotundato-angulated, and of a dark green; it has many branches, and each of them

them has numerous *leaves* disposed in a row; they are extremely thin, are serrated, and are a line or a line and a half wide, so that they bear a great resemblance to the leaves of *Iceland-moss*; their colour is a yellowish green. Its *fruit* in a great measure resembles unripe juniper berries, is round, greenish yellow, almost smooth on the outside, and grows under the leaves on short footstalks, of two or three lines length; under each leaf are from one to three berries, but I never have seen them exceed that number. Some berries were small, and when cut were quite hollow and consisted of a thin peel only, which is calculated to communicate their buoyancy to the whole plant. The leaves grow in proportion narrower, as they approach the extremities of the branches; their upper sides are smooth, the ribs are on the under sides, and there likewise appear small roots of two, three, or four lines length. I was told by our mate that gulf-weed, dried and pounded, was given in *America* to women in childbed, and besides this it is also used there in fevers. The whole ocean is as if it were covered with this weed, and it must also be in immense quantities in the gulf of *Florida*, from whence all this driving on the ocean is said to come. Several little *shells* pointed like horns, and *Escharæ* or *Horn wracks* are frequently found on it: and seldom is there one bundle of this plant to be met with, which does not contain either a minute *shrimp*, or a small *crab*, the latter of which is the *Cancer minutus* of Dr. *Linnaeus*. Of these I collected eight, and of the former three, all which I put in a glass with water;

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the little shrimp moved as swift as an arrow round the glass, but sometimes its motion was slow, and sometimes it stood still on one side, or at the bottom of the glass. If one of the little crabs approached, it was seized by its forepaws, killed and sucked; for which reason they were careful to avoid their fate. It was quite of the shape of a shrimp; in swimming it moved always on one side, the sides and the tail moving alternately. It was capable of putting its forepaws entirely into its mouth: its antennæ were in continual motion. Having left these little shrimps together with the crabs during night, I found on the morning all the crabs killed and eaten by the shrimps. The former moved when alive with incredible swiftness in the water. Sometimes when they were quite at the bottom of the glass, with a motion something like to that of a *Puceron* or *Podura* of *Linnaeus*; they came in a moment to the surface of the water. In swimming they moved all their feet very close, sometimes they held them down as other crabs do, sometimes they lay on their backs, but as soon as the motion of their feet ceased, they always sunk to the bottom. The remaining shrimps I preserved in spirits, and the loss of my little crabs was soon repaired by other specimens which are so plentiful in each of the floating bundles of gulf-weed. For a more minute description of which I must refer the reader to another work I intend to publish. In some places we saw a *crab* of the size of the fist, swimming by the continual motion of its feet, which being at rest, the animal began immediately to sink.

sink. And one time I met with a great red *crawfish*, or *lobster*, floating on the surface of the sea.

BLUBBERS, or *Medusæ Linn.* we found of three kinds: the first is the *Medusa aurita Linn.* it is round, purple-coloured, opens like a bag, and in it are as if it were four white rings; their size varies from one inch diameter to six inches; they have not that nettling and burning quality which other blubbers have, such for instance as are on the coast of *Norway*, and in the ocean. These we met chiefly in the channel, and in the *Bay of Biscay*.

AFTER having crossed more than half of the ocean between *Europe* and *America*, we met with a kind of blubber, which is known to sailors by the name of the *Spanish* or *Portuguese Man of War*, it looks like a great bladder, or the lungs of a quadruped, compressed on both sides, about six inches in diameter, of a fine purple-red colour, and when touched by the naked skin of the human body, it causes a greater burning than any other kind of blubber. They are often overturned by the rolling of the waves, but they are again standing up in an instant, and keep the sharp or narrow side uppermost.

WITHIN the *American* gulf we saw not only these *Spanish Men of War*, but another kind too, for which the sailors had no other name but that of a blubber. It was of the size of a pewter plate, brown in the middle, with a pale margin, which was in continual motion.

OF the *Lepas anatifera Linn.* I saw on the 30th of *August* a log of wood, which floated on the

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the ocean, quite covered. Of *insects* I saw in the channel, when we were in sight of the *Isle of Wight* several white butterflies, very like to the *Papilio Brassicæ* Linn. They never settled, and by their venturing at so great a distance from land they caused us just astonishment.

SOME common *flies* were in our cabin alive during the whole voyage, and it cannot therefore be determined whether they were originally in *America*, or whether they came over with the *Europeans*.

OF *Cetaceous fish* we met with *Porpesses*, or as some sailors call them *Sea-hogs* * (*Delphinus Phocæna* Linn.) first in the channel, and then they continued every where on this side the *Azores*, where they are the only fish navigators meet with; but beyond these isles they are seldom seen, till again in the neighbourhood of *America* we saw them equally frequent to the very mouth of *Delaware* river. They always appeared in shoals, some of which consisted of upwards of an hundred individuals; their swimming was very swift, and though they often swam along side of our ship, being taken as it were with the noise caused by the ship cutting the waves, they

* The name of *Porpesse* is certainly derived from the name *Porcofesse*, given to this genus by the *Italians*; and it is remarkable that almost all the *European* nations conspired in calling them *Sea-hogs*, their name being in *German* Meer Schwein; the *Danish*, *Swedish*, and *Norwegian*, Marsuin, from whence the *French* borrowed their *Marsouin*. The natives of *Iceland* call them *Suinbual*, i. e. a *Swine-whale*, and so likewise the *Slavonian* nations have their *Swinia Morskaya*. Whether this consent arises from their rooting the sand at the bottom of the sea in quest of Sand-eels and Sea-worms like swine, or from the vast quantity of lard surrounding their bodies, is uncertain. F.

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however soon outwent her, when they were tired with staring at her. They are from four to eight feet long, have a bill like in shape to that of a goose, a white belly, and leap up into the air frequently four feet high, and from four to eight feet in length; though their snoring indicates the effort which a leap of that nature costs them. Our sailors made many vain attempts to strike one of them with the harp iron from the fore-castle, when they came within reach, but their velocity always eluded their skill.

ANOTHER cetaceous fish, of the *Dolphin* kind, * with which we met, is called by the sailors *Bottle-nose*; it swims in great shoals, has a head like a bottle, and is killed by a harpoon, and is sometimes eaten. These fish are very large, and some fully twelve feet long; their shape, and manner of tumbling and swimming, make them nearly related to Porpoisses. They are to be met with every where in the ocean from the channel to the very neighbourhood of *America*.

ONE *Whale* we saw at a distance, and knew it by the water which it spouted up.

A *Dog-fish* of a considerable size followed the ship for a little while, but it was soon out of sight, without our being able to determine to which species it belonged: this was the only *cartilaginous* fish we saw on the whole passage.

* Mr. *Kalm* is certainly mistaken in reckoning the *Bottle-nose* amongst the *Dolphin* kind; it has no teeth in its mouth as all the fish of that class have, and therefore belongs to the first order of the *Whales*, or those that are without teeth. See Mr. *Pennant's* *British Zoology*, Vol. 3. p. 43. where it is called the *beaked Whale*, and very well described; a drawing is seen in the explanatory table, n. I. Perhaps it would not be improper to call it *Balæna ampullata*. F.

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OF the *bony* fish, we saw several beyond the *Azores*, but never one on this side of those isles; one of them was of a large size, and we saw it at a distance; the sailors called it an *Albecor*, and it is Dr. *Linnæus's* *Scomber Thynnus*.

THE *Dolphin* of the *English* is the *Dorado* of the *Portuguese*, and Dr. *Linnæus* calls it *Coryphæna Hippuris*; it is about two feet and a half long, near the head six inches deep, and three inches broad; from the head the *Dolphin* decreases on all sides towards the tail, where its perpendicular depth is one inch and a half, and its breadth hardly one inch. The colour of the back near the head is a fine green on a silver ground, but near the tail of a deep blue; the belly is white, and sometimes mixed with a deep yellow, on the sides it has some round pale brown spots. It has six and not seven fins as was imagined; two of them are on the breast, two on the belly, one at the tail extending to the anus, and one along the whole back, which is of a fine blue: when the fish is just taken the extremities of the most outward rays in the tail were eight inches one from another. Their motion when they swam behind, or along side of the ship, was very slow, and gave a fair opportunity to hit them with the harpoon, though some are taken with a hook and line, and a bait of chicken bowels, small fish, or pieces of his own species, or the flying fish, which latter are their chief food: and it is by their chasing them, that the flying fish leave their element to find shelter in one to which they are strangers. The *Dolphins* sometimes leap a fathom out of the water,

water, and love to swim about casks and logs of wood, that sometimes drive in the sea. They are eaten with thick butter, when boiled, and sometimes fried, and afford a palatable food, but rather somewhat dry. In the bellies of the fish of this species which we caught, several animals were found, viz. an *Ostracion*; a little fish with blue eyes, which was yet alive, being just the moment before swallowed, and measuring two inches in length; another little fish; a curious marine insect, and a flying fish, all which not yet being damaged by digestion, I preserved in spirits.

THE *Flying Fish* (*Exocoetus volitans* Linn.) are always seen in great shoals, sometimes of an hundred or more getting at once out of the water, being pursued by greater fish, and chiefly by Dolphins; they rise about a yard, and even a fathom above the water in their flight, but this latter height they only are at, when they take their flight from the top of a wave; and sometimes it is said they fall on the deck of ships. The greatest distance they fly, is a good musket-shot, and this they perform in less than half a minute's time; their motion is somewhat like that of the *yellow-hammer*, (*Emberiza Citrinella* Linn.) It is very remarkable that I found the course they took always to be against the wind, and though I was contradicted by the sailors, who affirmed that they went at any direction, I nevertheless was confirmed in my opinion by a careful observation during the whole voyage, according to which they fly constantly either

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directly against the wind, or somewhat in an oblique direction*.

WE saw likewise the fish called *Bonetos*, (*Scomber Pelamys Linn.*) they were likewise in shoals, hunting some smaller fish, which chase caused a noise like to that of a cascade, because they were all swimming close in a body; but they always kept out of the reach of our harpoons.

OF *amphibious animals*, or *reptiles*; we met twice with a *Turtle*, one of which was sleeping, the other swam without taking notice of our ship; both were of two feet diameter.

BIRDS are pretty frequently seen on the ocean, though *Aquatic Birds* are more common than *Land Birds*.

THE *Petrel* (*Procellaria Pelagica Linn.*) was our companion from the channel to the shores of *America*. Flocks of this bird were always about our ship, chiefly in that part of the sea, which being cut by the ship, forms a smooth surface, where they frequently seem to settle, though always on the wing. They pick up or examine every thing that falls accidentally from the ship, or is thrown over board: little fish seem to be their chief food; in day-time they are silent, in the dark clamorous; they are reputed to forebode a storm, for which reason the sailors disliking their company, complimented them with the name of *witches*; but they are as fre-

* IN Mr. Pennant's *British Zoology*, vol. 3. p. 232. is the best account of this fish to be met with; and in his *British Zoology*, illustrated by *Plates and brief explanations*, is plate xlv. a good and exact drawing of the fish, the upper figure representing it in front, the lower sideways. F.

quent in fair weather, without a storm following their appearance. To me it appeared as if they stayed sometimes half an hour and longer under the waves, and the sailors assured me they did. They look like swallows, and like them they skim sometimes on the water.

THE *Shearwater* (*Procellaria Puffinus Linn.*) is another sea-bird, which we saw every where on our voyage, from the channel to the *American* coasts; it has much the appearance and size of the dark grey *Sea-gull*, or of a *Duck*; it has a brown back, and commonly a white ring round its neck, and a peculiar flow way of flying. We plainly saw some of these birds feed on fish.

THE *Tropic bird* (*Phaëton æthereus Linn.*) has very much the shape of a gull, but two very long feathers, which it has in its tail, distinguish it enough from any other bird; its flight is often exceedingly high: the first of this kind we met was at about forty deg. north lat. and forty-nine or fifty deg. west long. from *London*.

COMMON *Gulls* (*Larus canus Linn.*) we saw, when we were opposite the *Land's End*, the most westerly cape of *England*, and when, according to our reckoning, we were opposite *Ireland*.

TERNs (*Sterna hirundo Linn.*) though of a somewhat darker colour than the common ones, we found after the forty-first deg. of north lat. and forty-seventh deg. west long. from *London*, very plentifully, and sometimes in flocks of some hundreds; sometimes they settled, as if tired, on our ship.

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WITHIN the *American gulph* we discovered a sea-bird at a little distance from the ship, which the sailors called a *Sea-ben*.

LAND-BIRDS are now and then seen at sea, and sometimes at a good distance from any land, so that it is often difficult to account for their appearance in so uncommon a place. *August* the 18th, we saw a bird which settled on our ship, and was perfectly like the *great Titmouse*, (*Parus major* Linn.) upon an attempt to catch it, it got behind the sails, and could never be caught.

Sept. 1st. WE observed some Land-birds flying about our ship, which we took for *Sand Martins* (*Hirundo riparia* Linn.) sometimes they settled on our ship, or on the sails; they were of a greyish brown colour on their back, their breast white, and the tail somewhat furcated; a heavy shower of rain drove them afterwards away. *September* the 2d a *Swallow* fluttered about the ship, and sometimes it settled on the mast; it seemed to be very tired; several times it approached our cabin windows, as if it was willing to take shelter there. These cases happened about forty deg. north lat. and between forty-seven and forty-nine deg. west long. from *London*, and also about twenty deg. long. or more than nine hundred and twenty sea miles from any land whatsoever.

Sept. 10th. WITHIN the *American gulph* a large bird, which we took for an *Owl*, and likewise a little bird, settled on our sails.

Sept. 12th. A *Wood-pecker* settled on our rigging: its back was of a speckled grey, and it seemed extremely fatigued. And another land-bird

bird of the *passerine class*, endeavoured to take shelter and rest on our ship.

BEFORE I entirely take leave of the sea, I will communicate my observations on two curious phenomena.

IN the channel and in the ocean we saw, at night-time, *sparks of fire*, as if flowing on the water, especially where it was agitated, sometimes one single spark swam for the space of more than one minute on the ocean before it vanished. The sailors observed them commonly to appear during, and after a storm from the north, and that often the sea is as if it were full of fire, and that some such shining sparks would likewise stick to the masts and sails.

SOMETIMES this light had not the appearance of sparks, but looked rather like the phosphorescence of putrid wood.

THE *Thames* water which made our provision of fresh water, is reputed to be the best of any. It not only settled in the oak casks it is kept in, but becomes in a little time stinking, when stopped up; however, this nauseous smell it soon loses, after being filled into large stone jugs, and exposed to the open fresh air for two or three hours together. Often the vapours arising from a cask which has been kept close and stopped up for a great while take fire, if a candle is held near them when the cask is opened; and the *Thames* water is thought to have more of this quality than any other; though I was told that this even happened with any other water in the same circumstances.

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fore observe, that we afterwards sailed on the river with a fair wind, pretty late at night. In the dawn of the evening we passed by *Newcastle*, a little town on the western shore of the river *Delaware*. It was already so dark, that we could hardly know it, but by the light which appeared through some of the windows. The *Dutch* are said to have been the first founders of this place, which is therefore reckoned the most ancient in the country, even more ancient than *Philadelphia*. But its trade can by no means be compared with the *Philadelphia* trade, though its situation has more advantages in several respects; one of which is, that the river seldom freezes before it, and consequently ships can come in and go out at any time. But near *Philadelphia* it is almost every winter covered with ice, so that navigation is interrupted for some weeks together. But the country about *Philadelphia* and farther up, being highly cultivated, and the people bringing all their goods to that place, *Newcastle* must always be inferior to it.

I MENTIONED, that the *Dutch* laid the foundations of this town. This happened at the time when this country was as yet subject to *Sweden*. But the *Dutch* crept in, and intended by degrees to dispossess the *Swedes*, as a people who had taken possession of their property. They succeeded in their attempt; for the *Swedes* not being able to bear with this encroachment, came to a war, in which the *Dutch* got the better. But they did not enjoy the fruits of their victory long: for a few years after, the *English* came and deprived them of their acquisition, and

have ever since continued in the undisturbed possession of the country. Somewhat later at night we cast anchor, the pilot not venturing to carry the ship up the river in the dark, several sands being in the way.

Sept. 15th. IN the dawn of the morning we weighed anchor, and continued our voyage up the river. The country was inhabited almost every where on both sides. The farm-houses were however pretty far asunder. About eight o'clock in the morning we sailed by the little town of *Chester*, on the western side of the river. In this town, our mate, who was born in *Philadelphia*, shewed me the places, which the *Swedes* still inhabit.

AT last we arrived in *Philadelphia* about ten o'clock in the morning. We had not been more than six weeks, or (to speak more accurately) not quite forty-one days on our voyage from *Gravesend* to this place, including the time we spent at *Deal*, in supplying ourselves with the necessary fresh provisions, &c. our voyage was therefore reckoned one of the shortest. For it is common in winter-time to be fourteen, or more weeks in coming from *Gravesend* to *Philadelphia*. Hardly any body ever had a more pleasant voyage over this great ocean than we had. Captain *Lawson* affirmed this several times. Nay he assured us he had never seen such calm weather in this ocean, though he had crossed it very often. The wind was generally so favourable, that a boat of a middling size might have sailed in perfect safety. The sea never went over our cabin, and but once over the deck, and that was only
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in a swell. The weather indeed was so clear, that a great number of the *Germans* on board slept on the deck. The cabin windows needed not the shutters. All these are circumstances which show the uncommon goodness of the weather.

CAPTAIN *Lawson's* civility increased the pleasure of the voyage.

As soon as we were come to the town, and had cast anchor, many of the inhabitants came on board, to enquire for Letters. They took all those which they could carry, either for themselves or for their friends. Those, which remained, the captain ordered to be carried on shore, and left at a coffee-house; by this means he was rid of the trouble of delivering them himself. I afterwards went on shore with him. But before he went, he strictly charged the second mate, to let no one of the *German* refugees out of the ship, unless he paid for his passage, or some body else paid for him, or bought him.

ON my leaving *London* I received letters of recommendation from Mr. *Abraham Spalding*, Mr. *Peter Collinson*, Dr. *Mitchel*, and others, to their friends here. It was easy for me therefore to get acquaintance. Mr. *Benjamin Franklin*, to whom *Pensylvania* is indebted for its welfare, and the learned world for many new discoveries in Electricity, was the first who took notice of me, and introduced me to many of his friends. He gave me all necessary instructions, and shewed me his kindness on many occasions.

I WENT to-day accompanied by Mr. *Jacob Bengston*,

Bengston, a member of the *Swedish* consistory, and the sculptor *Gustavus Hesselius*, to see the town and the fields which lay before it. (The former is brother of the rev. Messrs. *Andrew* and *Samuel Hesselius*, both ministers at *Christiana* in *New Sweden*, and of the late Dr. *John Hesselius* in the provinces of *Nerik* and *Wermeland*). My new friend had followed his brother *Andrew* in 1711 to this country, and had since lived in it. I found that I was now come into a new world. Whenever I looked to the ground, I every where found such plants as I had never seen before. When I saw a tree, I was forced to stop, and ask those who accompanied me, how it was called. The first plant which struck my eyes was an *Andropogon*, or a kind of grass, and grass is a part of Botany I always delighted in. I was seized with terror at the thought of ranging so many new and unknown parts of natural history. At first I only considered the plants, without venturing on a more accurate examination.

At night I took up my lodging with a grocer who was a quaker, and I met with very good honest people in this house, such as most people of this profession appeared to me. I and my *Yungstræm*, the companion of my voyage, had a room, candles, beds, attendance, and three meals a day, if we chose to have so many, for twenty shillings per week in *Pensylvania* currency. But wood, washing and wine, if required, were to be paid for besides.

Sept. the 16th. BEFORE I proceed I must give a short description of *Philadelpbia*, which I shall frequently mention in the sequel of my travels.

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I here put down several particulars which I marked during my stay at that place, as a help to my memory.

PHILADELPHIA, the capital of *Pensylvania*, a province which makes part of what formerly was called *New Sweden*, is one of the principal towns in *North-America*; and next to *Boston* the greatest. It is situated almost in the center of the *English* colonies, and its lat. is thirty-nine deg. and fifty min. but its west long. from *London* near seventy-five deg.

THIS town was built in the year 1683, or as others say in 1682, by the well known quaker *William Pen*, who got this whole province by a grant from *Charles the second*, king of *England*; after *Sweden* had given up its claims to it. According to *Pen's* plan the town was to have been built upon a piece of land which is formed by the union of the rivers *Delaware* and *Skullkill*, in a quadrangular form, two *English* miles long and one broad. The eastern side would therefore have been bounded by the *Delaware*, and the western by the *Skullkill*. They had actually begun to build houses on both these rivers; for eight capital streets, each two *English* miles long, and sixteen lesser streets (or lanes) across them, each one mile in length, were marked out, with a considerable breadth, and in strait lines. The place was at that time almost an entire wilderness covered with thick forests, and belonged to three *Swedish* brothers called *Sven's-Sæner* (Sons of *Sven*) who had settled in it. They with difficulty left the place, the situation of which was very advantageous. But at last they were persuaded

to

to it by *Pen*, who gave them, a few *English* miles from that place, twice the space of country they inhabited. However *Pen* himself, and his descendants after him, have considerably lessened the ground belonging to them, by repeated mensurations, under pretence that they had taken more than they ought.

BUT the inhabitants could not be got in sufficient number to fill a place of such extent. The plan therefore about the river *Skulkill* was laid aside till more favourable circumstances should occur, and the houses were only built along the *Delaware*. This river flows along the eastern side of the town, is of great advantage to its trade, and gives a fine prospect. The houses which had already been built upon the *Skulkill* were transplanted hitherto by degrees. This town accordingly lies in a very pleasant country, from north to south along the river. It measures somewhat more than an *English* mile in length; and its breadth, in some places is half a mile or more. The ground is flat and consists of sand mixed with a little clay. Experience has shewn that the air of this place is very healthy.

THE streets are regular, fine, and most of them are fifty foot, *English* measure, broad; *Arch-street* measures sixty-six feet in breadth, and *Market-street* or the principal street, where the market is kept, near a hundred. Those which run longitudinally, or from north to south are seven, exclusive of a little one, which runs along the river, to the south of the market, and is called *Water-street*. The lanes which go across, and were intended to reach from the *Delaware* to the

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Skulkill, are eight in number. They do not go quite from east to west, but deviate a little from that direction. All the streets except two which are nearest to the river, run in a straight line, and make right angles at the interfections. Some are paved, others are not; and it seems less necessary, since the ground is sandy, and therefore soon absorbs the wet. But in most of the streets is a pavement of flags, a fathom or more broad, laid before the houses, and posts put on the outside three or four fathom asunder. Under the roofs are gutters which are carefully connected with pipes, and by this means, those who walk under them, when it rains, or when the snow melts, need not fear being wet by the dropping from the roofs.

THE houses make a good appearance, are frequently several stories high, and built either of bricks or of stone; but the former are more commonly used, since bricks are made before the town, and are well burnt. The stone which has been employed in the building of other houses, is a mixture of black or grey *glimmer*, running in undulated veins, and of a loose, and quite small grained *limestone*, which run scattered between the bendings of the other veins, and are of a grey colour, excepting here and there some single grains of sand, of a paler hue. The *glimmer* makes the greatest part of the stone; but the mixture is sometimes of another kind, as I shall relate hereafter under the article, eleventh of *October*. This stone is now got in great quantities in the country, is easily cut, and has the good quality of not attracting the moisture in a wet season.

season. Very good lime is burnt every where hereabouts, for masonry.

THE houses are covered with shingles. The wood for this purpose is taken from the *Cupressus thyoides* Linn. or a tree which Swedes here call *the white juniper-tree*, and the English, *the white cedar*. Swamps and morasses formerly were full of them, but at present these trees are for the greatest part cut down, and no attempt has as yet been made to plant new ones. The wood is very light, rots less than any other in this country, and for that reason is exceeding good for roofs. For it is not too heavy for the walls, and will serve for forty or fifty years together. But many people already begin to fear, that these roofs will in time be looked upon as having been very detrimental to the city. For being so very light, most people who have built their houses of stone, or bricks, have been led to make their walls extremely thin. But at present this kind of wood is almost entirely destroyed. Whenever therefore in process of time these roofs decay, the people will be obliged to have recourse to the heavier materials of tiles, or the like, which the walls will not be strong enough to bear. The roof will therefore require supports, or the people be obliged to pull down the walls and to build new ones, or to take other steps for securing them. Several people have already in late years begun to make roofs of tiles.

AMONG the public buildings I will first mention churches, of which there are several, for God is served in various ways in this country.

1. THE *English established church* stands in the

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the northern part of the town, at some distance from the market, and is the finest of all. It has a little, inconsiderable steeple, in which is a bell to be rung when it is time to go to church, and on burials. It has likewise a clock which strikes the hours. This building which is called Christ church, was founded towards the end of the last century, but has lately been rebuilt and more adorned. It has two Ministers who get the greatest part of their salary from *England*. In the beginning of this century, the *Swedish* minister the rev. Mr. *Rudmann*, performed the functions of a clergyman to the *English* congregation for near two years, during the absence of their own clergyman.

2. The *Swedish church*, which is otherwise called the church of *Weekacko*, is on the southern part of the town, and almost without it, on the river's side, and its situation is therefore more agreeable than that of any other. I shall have an opportunity of describing it more exactly, when I shall speak of the *Swedes* in particular, who live in this place.

3. THE *German Lutheran church*, is on the north-west side of the town. On my arrival in *America* it had a little steeple, but that being put up by an ignorant architect, before the walls of the church were quite dry, they leaned forwards by its weight, and therefore they were forced to pull it down again in the autumn of the year 1750. About that time the congregation received a fine organ from *Germany*. They have only one minister, who likewise preaches at another Lutheran church in *Germantown*. He preaches alternately

alternately one Sunday in that church, and another in this. The first clergyman which the Lutherans had in this town, was the rev. Mr. *Mublenberg*, who laid the foundations of this church in 1743, and being called to another place afterwards, the rev. Mr. *Brunholz* from *Sleswick* was his successor, and is yet here. Both these Gentlemen were sent to this place from *Hall* in *Saxony*, and have been a great advantage to it by their peculiar talent of preaching in an edifying manner. A little while before this church was built, the *Lutheran Germans* had no clergyman for themselves, so that the every-where beloved *Swedish*, minister at *Weekacko*, Mr. *Dylander*, preached likewise to them. He therefore preached three sermons every Sunday; the first early in the morning to the *Germans*; the second to the *Swedes*; and the third in the afternoon to the *English*; and besides this he went all the week into the country and instructed the *Germans* who lived separately there. He therefore frequently preached sixteen sermons a week. And after his death, which happened in *November* 1741, the *Germans* first wrote to *Germany* for a clergyman for themselves. This congregation is at present very numerous, so that every Sunday the church is very much crowded. It has two galleries, but no vestry. They do not sing the collects, but read them before the altar.

4. THE *old Presbyterian church*, is not far from the market, and on the south-side of *Market-street*. It is of a middling size, and built in the year 1704, as the inscription on the northern pediment shews. The roof is built almost hemi-
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spherical, or at least forms a hexagon. The whole building stands from north to south, for the presbyterians do not regard, as other people do, whether their churches look towards a certain point of the heavens or not.

5. THE *new Presbyterian church* was built in the year 1750, by the *New-lights* in the north-western part of the town. By the name of *New-lights*, are understood the people who have, from different religions, become proselytes to the well known *Whitefield*, who in the years 1739, 1740, and likewise in 1744 and 1745, travelled through almost all the *English* colonies. His delivery, his extraordinary zeal, and other talents so well adapted to the intellects of his hearers, made him so popular that he frequently, especially in the two first years, got from eight thousand to twenty thousand hearers in the fields. His intention in these travels, was to collect money for an orphan hospital which had been erected in *Georgia*. He here frequently collected seventy pounds sterling at one sermon; nay, at two sermons which he preached in the year 1740, both on one Sunday, at *Philadelphia*, he got an hundred and fifty pounds. The proselytes of this man, or the above mentioned *new-lights*, are at present merely a sect of presbyterians. For though *Whitefield* was originally a clergyman of the *English* church, yet he deviated by little and little from her doctrines; and on arriving in the year 1744 at *Boston* in *New-England*, he disputed with the presbyterians about their doctrines, so much that he almost entirely embraced them. For *Whitefield* was no great disputant, and could therefore easily be led by

by these cunning people, whithersoever they would have him. This likewise during his latter stay in *America* caused his audience to be less numerous than during the first. The *new-lights* built first, in the year 1741, a great house in the western part of the town, to hold divine service in. But a division arising amongst them after the departure of *Whitefield*, and besides on other accounts, the building was sold to the town in the beginning of the year 1750, and destined for a school. The *new-lights* then built a church which I call the new *Presbyterian* one. On its eastern pediment is the following inscription, in golden letters: *Templum Presbyterianum, annuente Numine, erectum, Anno Dom. MDCCL.*

6 THE old *German reformed church* is built in the west-north-west part of the town, and looks like the church in the *Ladugoordsfeld* near *Stockholm*. It is not yet finished, though for several years together, the congregation has kept up divine service in it. These *Germans* attended the *German* service at the *Swedish* church, whilst the *Swedish* minister, Mr. *Dylander*, lived.—But as the *Lutherans* got a clergyman for themselves on the death of the last, those of the reformed church made likewise preparations to get one from *Dordrecht*; and the first who was sent to them, was the rev. Mr. *Slaughter*, whom I found on my arrival. But in the year 1750, another clergyman of the reformed church arrived from *Holland*, and by his artful behaviour, so insinuated himself into the favour of the rev. Mr. *Slaughter's* congregation, that the latter lost almost half his audience. The two clergymen then disputed for
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several Sundays together, about the pulpit; nay, people relate that the new comer mounted the pulpit on a Saturday, and stayed in it all night. The other being thus excluded, the two parties in the audience, made themselves the subject both of the laughter and of the scorn of the whole town, by beating and bruising each other, and committing other excesses. The affair was inquired into by the magistrates, and decided in favour of the rev. Mr. *Slaughter*, the person who had been abused.

7. THE *new reformed church*, was built at a little distance from the old one by the party of the clergyman, who had lost his cause. This man however had influence enough to bring over to his party almost the whole audience of his antagonist, at the end of the year 1750, and therefore this new church will soon be useless.

8. 9. THE *Quakers* have two meetings, one in the market, and the other in the northern part of the town. In them are, according to the custom of this people, neither altars, nor pulpits, nor any other ornaments usual in churches, but only seats and some benches. They meet thrice every Sunday in them, and besides that at certain times every week or every month. I shall mention more about them hereafter.

10. THE *Baptists* have their service, in the northern part of the town.

11. THE *Roman Catholics* have in the southwest part of the town a great house, which is well adorned within, and has an organ.

12. THE *Moravian Brethren* have hired a great house, in the northern part of the town, in

which they performed the service both in *German* and in *English*; not only twice or three times every Sunday; but likewise every night after it is grown dark. But in the winter of the year 1750, they were obliged to drop their evening meetings; some wanton young fellows having several times disturbed the congregation, by an instrument sounding like the note of a cuckoo; for this noise they made in a dark corner, not only at the end of every stanza, but likewise at that of every line, whilst they were singing a hymn.

THOSE of the *English* church, the New-lights, the Quakers, and the *Germans* of the reformed religion, have each of them their burying places on one side out of town, and not near their churches, though the first of these sometimes make an exception. All the others bury their dead in their church-yards, and the *Moravian brethren* bury where they can. The *Negroes* are buried in a particular place out of town.

I NOW proceed to mention the other publick buildings in *Philadelphia*.

THE *Town-hall*, or the place where the assemblies are held, is situated in the western part of the town; it is a fine large building, having a tower with a bell in the middle, and is the greatest ornament to the town. The deputies of each province meet in it commonly every *October*, or even more frequently if circumstances require it, in order to consider of the welfare of the country, and to hold their parliaments or diets in miniature. There they revise the old laws, and make new ones.

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brary, which was first begun in the year 1742, on a publick-spirited plan, formed and put in execution by the learned Mr. *Franklin*. For he persuaded first the most substantial people in town to pay forty shillings at the outset, and afterwards annually ten shillings, all in *Pensylvania* currency, towards purchasing all kinds of useful books. The subscribers are intitled to make use of the books. Other people are likewise at liberty to borrow them for a certain time, but must leave a pledge, and pay eight-pence a week for a folio volume, six-pence for a quarto, and four-pence for all others of a smaller size. As soon as the time, allowed a person for the perusal of the volume, is elapsed, it must be returned, or he is fined. The money arising in this manner is employed for the salary of the librarian, and for purchasing new books. There is already a fine collection of excellent works, most of them *English*, many *French* and *Latin*, but few in any other language. The subscribers were so kind to me, as to order the librarian, during my stay here, to lend me every book, which I should want, without requiring any payment. The library was open every Saturday from four to eight o'clock in the afternoon. Besides the books, several mathematical and physical instruments, and a large collection of natural curiosities, were to be seen in it. Several little libraries were founded in the town on the same footing or nearly with this.

The *Court House* stands in the middle of *Market-street*, to the west of the market; it is a fine building, with a little tower in which there is a bell. Below and round about this building the market is properly kept every week.

THE *building of the Academy* is in the western part of the town. It was formerly, as I have before mentioned, a meeting-house of the followers of *Whitefield*, but they sold it in the year 1750, and it was destined to be the seat of an university, or to express myself in more exact terms, to be a college; it was therefore fitted up to this purpose. The youths are here only taught those things which they learn in our common schools; but in time, such lectures are intended to be read here as are usual in real universities.

AT the close of the last war, a *redoubt* was erected here, on the south side of the town, near the river, to prevent the *French* and *Spanish* privateers from landing. But this was done after a very strong debate. For the quakers opposed all fortifications, as contrary to the tenets of their religion, which allow not christians to make war either offensive or defensive, but direct them to place their trust in the Almighty alone. Several papers were then handed about for and against the opinion. But the enemy's privateers having taken several vessels belonging to the town, in the river, many of the quakers, if not all of them, found it reasonable to forward the building of the fortification as much as possible, at least by a supply of money.

OF all the natural advantages of the town, its temperate *climate* is the most considerable, the winter not being over severe, and its duration but short, and the summer not too hot; the country roundabout bringing forth those fruits in the greatest plenty, which are raised by husbandry. Their *September* and *October* are like the beginning of the

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the *Swedish August*. And the first days in their *February* are frequently as pleasant, as the end of *April* and the beginning of *May* in *Sweden*. Even their coldest days in some winters have been no severer, than the days at the end of autumn are in the middlemost parts of *Sweden*, and the southern ones of *Finland*.

THE *good and clear water* in *Philadelphia* is likewise one of its advantages. For though there are no fountains in the town, yet there is a *well* in every house, and several in the streets, all which afford excellent water for boiling, drinking, washing, and other uses. The water is commonly met with at the depth of forty feet. The water of the river *Delaware* is likewise good. But in making the wells, a fault is frequently committed, which in several places of the town spoils the water, which is naturally good; I shall in the sequel take an opportunity of speaking further about it.

The *Delaware* is exceeding convenient for trade. It is one of the greatest rivers in the world: is three *English* miles broad at its mouth, two miles at the town of *Wilmington*, and three quarters of a mile at *Philadelphia*. This city lies within ninety or an hundred *English* miles from the sea, or from the place where the river *Delaware* discharges itself into the bay of that name. Yet its depth is hardly ever less than five or six fathom. The greatest ships therefore can sail quite up to the town and anchor in good ground in five fathoms of water, on the side of the bridge. The water here has no longer a saltish taste, and therefore all destructive worms, which

have fastened themselves to the ships in the sea, and have pierced holes into them, either die, or drop off, after the ship has been here for a while.

THE only disadvantage which trade labours under here, is the freezing of the river almost every winter for a month or more. For during that time the navigation is entirely stopped. But this does not happen at *Boston*, *New York*, and other towns which are nearer the sea.

THE tide comes up to *Philadelphia*, and even goes thirty miles higher, to *Trenton*. The difference between high and low water is eight feet at *Philadelphia*.

THE cataracts of the *Delaware*, near *Trenton*, and of the *Skullkill*, at some distance from *Philadelphia*, make these rivers useless further up the country, in regard to the conveyance of goods either from or to *Philadelphia*. Both must therefore be carried on waggons or carts. It has therefore already been thought of to make these two rivers navigable in time, at least for large boats and small vessels.

SEVERAL ships are annually built of *American* oak, in the docks which are made in different parts of the town and about it, yet they can by no means be put in comparison with those built of *European* oak, in point of goodness and duration.

THE town carries on a great trade, both with the inhabitants of the country, and to other parts of the world, especially to the *West Indies*, *South America*, and the *Antilles*; to *England*, *Ireland*, *Portugal*, and to several *English* colonies in

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North America. Yet none but *English* ships are allowed to come into this port.

PHILADELPHIA reaps the greatest profits from its trade to the *West Indies*. For thither the inhabitants ship almost every day a quantity of flour, butter, flesh and other victuals; timber, plank, and the like. In return they receive either sugar, molasses, rum, indigo, mahogany, and other goods, or ready money. The true mahogany, which grows in *Jamaica*, is at present almost all cut down.

THEY send both *West India* goods, and their own productions to *England*; the latter are all sorts of woods, especially black walnut, and oak planks for ships; ships ready built, iron, hides, and tar. Yet this latter is properly bought in *New Jersey*, the forests of which province are consequently more ruined than any others. Ready money is likewise sent over to *England*; from whence in return they get all sorts of goods there manufactured, viz. fine and coarse cloth, linen, iron ware, and other wrought metals, and *East India* goods. For it is to be observed, that *England* supplies *Philadelphia* with almost all stuffs and manufactured goods which are wanted here.

A GREAT quantity of linseed goes annually to *Ireland*, together with many of the ships which are built here. *Portugal* gets wheat, corn, flour, and maize which is not ground. *Spain* sometimes takes some corn. But all the money, which is got in these several countries, must immediately be sent to *England*, in payment for the goods which are got from thence, and yet those sums are not sufficient to pay all the debts.

BUT to shew more exactly, what the town and province have imported from *England*, in different years, I shall here insert an extract from the *English* custom-house books, which I got from the engineer *Lewis Evans*, at *Philadelphia*. This gentleman had desired one of his friends in *London* to send him a complete account of all the goods shipped from *England* to *Pensylvania* in several years. He got this account, and though the goods are not enumerated in it, yet their value in money is calculated. Such extracts from the custom-house books have been made for every *North-American* province, in order to convince the *English* Parliament, that those provinces have taken greater quantities of the goods in that kingdom ever since they have turned their money into bills.

I HAVE taken the copy from the original itself; and it is to be observed that it begins with the Christmas of the year 1722, and ends about the same time of the year 1747. In the first column is the value of the foreign goods, the duty for which has already been paid in *England*. The second column shews the value of the goods manufactured in *England* and exported to *Pensylvania*. And in the last column these two sums are added together, but at the bottom each of the columns is cast up.

BUT this table does not include the goods which are annually shipped in great quantities to *Pensylvania* from *Scotland* and *Ireland*, among which is a great quantity of linen.

The Value	
The Year, from one Christmas to another.	Foreign which already & wh only receipts
	l.
1723	5199
1724	9373
1725	10301
1726	9371
1727	10243
1728	14073
1729	12948
1730	15660
1731	11838
1732	15240
1733	13187
1734	19648
1735	18078
1736	23456
1737	14517
1738	20320
1739	9041
1740	10280
1741	12977
1742	14458
1743	19220
1744	14681
1745	13043
1746	18103
1747	8585
Total.	343789

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The Value of the Goods annually shipped from England to Pensylvania.

The Year, from one Christmas to another.	Foreign Goods for which the duty has already been paid, & which therefore only require receipts.			English manufac-tured Goods.			The Sums of these two preceding columns added together.		
	l.	s.	d.	l.	s.	d.	l.	s.	d.
1723	5199	13	5	10793	5	1	15992	19	4
1724	9373	15	8	20951	0	5	30324	16	1
1725	10301	12	6	31508	1	8	42209	14	2
1726	9371	11	6	28263	6	2	37634	17	8
1727	10243	0	7	21736	10	0	31979	10	7
1728	14073	13	3	23405	6	2	37478	19	11
1729	12948	8	5	16851	2	5	29799	10	10
1730	15660	10	11	32931	16	6	48592	7	5
1731	11838	17	4	32421	18	9	44260	16	1
1732	15240	14	4	26457	19	3	41698	13	7
1733	13187	0	8	27378	7	5	40585	8	1
1734	19648	15	9	34743	12	1	54392	7	10
1735	18078	4	3	30726	7	1	48804	11	4
1736	23456	15	11	38057	2	5	61513	18	4
1737	14517	4	3	42173	2	4	56690	6	7
1738	20320	19	3	41129	5	0	61450	4	3
1739	9041	4	5	45411	7	6	54452	11	11
1740	10280	2	0	40471	12	9	56751	14	9
1741	12977	18	10	78032	13	1	91010	11	11
1742	14458	6	3	60836	17	1	75295	3	4
1743	19220	1	6	60120	4	10	79340	6	4
1744	14681	8	4	47595	18	2	62214	6	6
1745	13043	8	8	41237	2	3	54280	10	11
1746	18103	12	7	55595	19	7	73699	12	2
1747	8585	14	11	73819	2	8	82404	17	7
Total.	343789	16	0	969049	1	6	1312838	17	6

THE whole extent of the Philadelphia trade may be comprehended from the number of ships, which annually arrive at and sail from this town. I intend to insert here a table of a few years, which I have taken from the gazettes of the town. The ships coming and going in one year, are to be reckoned

reckoned from the twenty-fifth of *March* of that year, to the twenty-fifth of *March* of the next.

The Year.	Ships arrived.	Ships failed.
1735	199	212.
1740	307	208.
1741	292	309.
1744	229	271.
1745	280	301.
1746	273	293.

BUT it is much to be feared that the trade of *Philadelphia*, and of all the *English* colonies, will rather decrease than encrease, in case no provision is made to prevent it. I shall hereafter plainly shew upon what foundation this decrease of trade is likely to take place.

The town not only furnishes most of the inhabitants of *Pensylvania* with the goods which they want, but numbers of the inhabitants of *New Jersey* come every day and carry on a great trade.

THE town has two great fairs every year; one in *May*, and the other in *November*, both on the sixteenth days of those two months. But besides these fairs, there are every week two market days, viz. *Wednesday* and *Saturday*. On those days the country people in *Pensylvania* and *New Jersey* bring to town a quantity of victuals, and other productions of the country, and this is a great advantage to the town. It is therefore to be wished that the like regulation might be made in our *Swedish* towns. You are sure to meet with every produce of the season, which the country affords,

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on the market-days. But on other days, they are in vain sought for.

PROVISIONS are always to be got fresh here, and for that reason most of the inhabitants never buy more at a time, than what will be sufficient till the next market-day. In summer there is a market almost every day; for the victuals do not keep well in the great heat. There are two places in the town where these markets are kept; but that near the court-house is the principal. It begins about four or five o'clock in the morning, and ends about nine o'clock in the forenoon.

THE town is not enclosed, and has no other custom-house than the great one for the ships.

THE governor of the whole province lives here; and though he is nominated by the heirs of *Pen*, yet he cannot take that office without being confirmed by the king of *England*.

The quakers of almost all parts of *North-America*, have their great assembly here once a year.

IN 1743, a society for the advancement of the sciences was erected here. Its objects would have been the curiosities of the three kingdoms of nature, mathematics, physick, chemistry, œconomy, and manufactures. But the war, which ensued immediately, stopped all designs of this nature, and since that time, nothing has been done towards establishing any thing of this kind.

THE declination of the needle was here observed on the thirtieth of *October* 1750, old style, to be five deg. and forty-five min. west. It was examined by the new meridian, which was drawn at *Philadelphia* in the autumn of the same

year,

year, and extended a mile in length. By experience it appears, that this declination lessens about a degree in twenty years time.

THE greatest difference in the rising and falling of the barometer, is, according to the observations made for several years together by Mr. *James Logan*, found at 28" 59 and 30" 78.

HERE are three printers, and every week two *English*, and one *German* news-paper is printed.

IN 1732, on the fifth of *September*, old style, a little earthquake was felt here about noon, and at the same time at *Boston* in *New England*, and at *Montreal* in *Canada*, which places are above sixty *Swedish* miles asunder.

IN *November* 1737, the well known prince from mount *Lebanon*, *Sheich Sidi*, came to *Philadelphia*, on his travels through most of the *English American* colonies. And in the same year a second earthquake was felt about eleven o'clock at night, on the seventh of *December*. But it did not continue above half a minute, and yet it was felt, according to the accounts of the gazettes, at the same hour in *Newcastle*, *New York*, *New London*, *Boston*, and other towns of *New England*. It had therefore likewise reached several miles.

THE count *Sinzendorf** arrived here in the *December* of the year 1741, and continued till the next spring. His uncommon behaviour persuaded many *Englishmen* of rank, that he was disordered in his head.

I HAVE not been able to find the exact number of the inhabitants of *Philadelphia*. In the year 1746, they were reckoned above ten thou-

* Head of the Moravian Brethren. F.

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and, and since that time their number is incredibly encreased. Neither can it be made out from the Bills of mortality, since they are not kept regularly in all the churches. I shall, however, mention some of those which appeared either in the gazettes, or in bills printed on purpose.

Year.	Dead.	Year.	Dead.	Year.	Dead.
1730	227	1741	345	1745	420
1738	250	1742	409	1748	672
1739	350	1743	425	1749	758
1740	290	1744	410	1750	716

FROM these bills of mortality it also appears, that the diseases which are the most fatal, are consumptions, fevers, convulsions, pleurifies, hæmorrhages, and dropsies.

THE number of those that are born cannot be determined, since in many churches no order is observed with regard to this affair. The quakers, who are the most numerous in this town, never baptize their children, though they take a pretty exact account of all who are born among them.

It is likewise impossible to guess at the number of inhabitants from the dead, because the town gets such great supplies annually from other countries. In the summer of the year 1749, near twelve thousand *Germans* came over to *Philadelphia*, many of whom staid in that town. In the same year the houses in *Philadelphia* were counted, and found to be two thousand and seventy-six in number.

THE town is now quite filled with inhabitants, which in regard to their country, religion, and trade, are very different from each other. You meet

meet with excellent masters in all trades, and many things are made here full as well as in *England*. Yet no manufactures, especially for making fine cloth, are established. Perhaps the reason is, that it can be got with so little difficulty from *England*, and that the breed of sheep which is brought over, degenerates in process of time, and affords but a coarse wool.

HERE is great plenty of provisions, and their prices are very moderate. There are no examples of an extraordinary dearth.

EVERY one who acknowledges God to be the Creator, preserver, and ruler of all things, and teaches or undertakes nothing against the state, or against the common peace, is at liberty to settle, stay, and carry on his trade here, be his religious principles ever so strange. No one is here molested on account of the erroneous principles of the doctrine which he follows, if he does not exceed the above-mentioned bounds. And he is so well secured by the laws in his person and property, and enjoys such liberties, that a citizen of *Philadelphia* may in a manner be said to live in his house like a king.

ON a careful consideration of what I have already said, it will be easy to conceive how this city should rise so suddenly from nothing, into such grandeur and perfection, without supposing any powerful monarch's contributing to it, either by punishing the wicked, or by giving great supplies in money. And yet its fine appearance, good regulations, agreeable situation, natural advantages, trade, riches and power, are by no means inferior to those of any, even of the most ancient towns in *Europe*. It has not been necessary

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force people to come and settle here ; on the contrary, foreigners of different languages have left their country, houses, property, and relations, and ventured over wide and stormy seas, in order to come hither. Other countries, which have been peopled for a long space of time, complain of the small number of their inhabitants. But *Pensylvania*, which was no better than a desert in the year 1681, and hardly contained five hundred people, now vies with several kingdoms in *Europe* in number of inhabitants. It has received numbers of people, which other countries, to their infinite loss, have either neglected, or expelled,

A WRETCHED old wooden building, on a hill near the river somewhat north of the *Wickako church*, belonging to one of the *Sons of Sven*, of whom; as before mentioned, the ground was bought for building *Philadelphia* upon, is preserved on purpose, as a memorial of the poor state of that place before the town was built on it. Its antiquity gives it a kind of superiority over all the other buildings in town, though in itself the worst of all. This hut was inhabited, whilst as yet stags, deers, elks, and beavers, at broad day-light, lived in the future streets, church-yards, and market-places of *Philadelphia*. The noise of a spinning wheel was heard in this house, before the manufactures now established were thought of, or *Philadelphia* built. But with all these advantages, this house is ready to fall down, and, in a few years to come, it will be as difficult to find the place where it stood, as it was unlikely at the-time of its erection, that one of the

the greatest towns in *America* should in a short time stand close up to it.

Sept. 7th. Mr. *Peter Cock*, a merchant of this town, assured me that he had last week himself been a spectator of a snake's swallowing a little bird. This bird, which from its cry has the name of *Cat bird*, (*Muscicapa Carolinenfis Linn.*) flew from one branch of a tree to another, and was making a doleful tune. At the bottom of the tree, but at a fathom's distance from the stem, lay one of the great black snakes, with its head continually upright, pointing towards the bird, which was always fluttering about, and now and then settling on the branches. At first it only kept in the topmost branches, but by degrees it came lower down, and even flew upon the ground, and hopped to the place where the snake lay, which immediately opened its mouth, caught the bird, and swallowed it; but it had scarce finished its repast before Mr. *Cock* came up and killed it. I was afterwards told that this kind of snakes was frequently observed to pursue little birds in this manner. It is already well known that the rattle-snake does the same.

As I walked out into the fields I found several *European* and even *Swedish* plants growing there. But those which are peculiar to *America*, are much more numerous.

THE *Virginian maple* grows in plenty on the shores of the *Delaware*. The *English* in this country call it either *Buttonwood*, or *Waterbeech*, which latter name is most usual. The *Swedes* call it *Wattenbok*, or *Wasbok*. It is *Linnæus's* *Platanus occidentalis*. See *Catesby's Nat. Hist. of Carolina*,

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Carolina, vol. 1. p. 56. t. 56. It grows for the greatest part in low places, but especially on the edge of rivers and brooks. But these trees are easily transplanted to more dry places, if they be only filled with good soil; and as their leaves are large, and their foliage thick, they are planted about the houses and in gardens, to afford a pleasant shade in the hot season. Some of the *Swedes* had boxes, pails, and the like, made of the bark of this tree by the native *Americans*. They say that those people, whilst they were yet settled here, made little dishes of this bark for gathering whortleberries. This tree likewise grows in marshes, or in swampy fields, where ash and red maple commonly grow. They are frequently as tall and thick as the best of our fir trees. The seed stays on them till spring, but in the middle of *April* the pods open and shed the seeds. Query, Whether they are not ripe before that time, and consequently sooner fit for sowing? This *American* maple is remarkable for its quick growth, in which it exceeds all other trees. There are such numbers of them on the low meadows between *Philadelphia* and the ferry at *Gloucester*, on both sides of the road, that in summer-time you go as it were through a shady walk. In that part of *Philadelphia* which is near the *Swedish* church, some great trees of this kind stand on the banks of the river. In the year 1750, on the 15th of *May*, I saw the buds still on them; and in the year 1749 they began to flower on the eighth of that month. Several trees of this sort are planted at *Chelsea*, near *London*,

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and

and they now, in point of height, vie with the tallest oak.

Sept. 18th. In the morning I went with the Swedish painter, Mr. *Hesselius*, to the country seat of Mr. *Bartram*, which is about four English miles to the south of *Philadelphia*, at some distance from the high road to *Maryland*, *Virginia*, and *Carolina*. I had therefore the first opportunity here, of getting an exact knowledge of the state of the country, which was a plain covered with all kinds of trees with deciduous leaves. The ground was sandy, mixed with clay: but the sand seemed to be in greater quantity. In some parts the wood was cut down, and we saw the habitations of some country people, whose corn-fields and plantations were round their farm-houses. The wood was full of mulberry-trees, walnut-trees of several kinds, chesnut-trees, sassafras, and the like. Several sorts of wild vines clasped their tendrils round, and climbed up to the summits of the highest trees; and in other places they twined round the enclosures, so thick, that the latter almost sunk down under their weight. The *Perfimon*, or *Diospyros Virginiana* Linn. sp. pl. p. 1510, grew in the marshy fields, and about springs. Its little apples looked very well already, but are not fit for eating, before the frost has affected them, and then they have a very fine taste. *Hesselius* gathered some of them, and desired my servant to taste of the fruits of the land; but this poor credulous fellow had hardly bit into them, when he felt the qualities they have before the frost

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frost has penetrated them. For they contracted his mouth so that he could hardly speak, and had a very disagreeable taste. This disgusted him so much that he was with difficulty persuaded to taste of it during the whole of our stay in *America*, notwithstanding it loses all its acidity, and acquires an agreeable flavour in autumn and towards the beginning of winter. For the fellow always imagined, that though he should eat them ever so late in the year, they would still retain the same disagreeable taste.

To satisfy the curiosity of those who are willing to know how the woods look in this country, and whether or no the trees in them are the same with those found in our forests, I here insert a small catalogue of those which grow spontaneously in the woods which are nearest to *Philadelphia*. But I exclude such shrubs as do not attain any considerable height. I shall put that tree first in order, which is most plentiful, and so on with the rest, and therefore trees which I have found but single, though near the town, will be last.

1. *Quercus alba*, the white oak, in good ground.
2. *Quercus rubra*, or the black oak.
3. *Quercus Hispanica*, the *Spanish* oak, a variety of the preceding.
4. *Juglans alba*, hiccory, a kind of walnut-tree, of which three or four varieties are to be met with.
5. *Rubus occidentalis*, or *American* blackberry shrub.

6. *Acer rubrum*, the maple tree with red flowers, in swamps.
7. *Rhus glabra*, the smooth leaved Sumach, in the woods, on high glades, and old corn-fields.
8. *Vitis labrusca* and *Vulpina*, vines of several kinds.
9. *Sambucus Canadensis*, American Elder tree, along the hedges and on glades.
10. *Quercus phellos*, the swamp oak, in morasses.
11. *Azalea lutea*, the American upright honey-suckle, in the woods in dry places.
12. *Crataegus Crus galli*, the Virginian Azarole, in woods.
13. *Vaccinium* ———, a species of whortleberry shrub.
14. *Quercus prinus*, the chestnut oak, in good ground.
15. *Cornus florida*, the cornelian cherry, in all kinds of ground.
16. *Liriodendron Tulipifera*, the tulip tree, in every kind of soil.
17. *Prunus Virginiana*, the wild cherry tree.
18. *Vaccinium* ———, a frutex whortleberry, in good ground.
19. *Prinos verticillatus*, the winterberry tree, in swamps.
20. *Platanus occidentalis*, the water-beech.
21. *Nyssa aquatica*, the tupelo tree, on fields and mountains.*

22. *Liqui-*

* Dr. *Linnaeus* mentions only one species of *Nyssa*, namely *Nyssa aquatica*; Mr. *Kalm* does not mention the name of the species; but if his is not a different species, it must at least be a variety, since

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22. *Liquidambar styraciflua*, sweet gum tree, near springs.
 23. *Betula Alnus*, alder, a variety of the *Sweetish*; it was here but a shrub.
 24. *Fagus castanea*, the chesnut tree, on corn-fields, pastures, and in little woods.
 25. *Juglans nigra*, the black walnut tree, in the same place with the preceding tree.
 26. *Rhus radicans*, the twining sumach, climbed along the trees.
 27. *Acer Negundo*, the ash-leaved maple, in morasses and swampy places.
 28. *Prunus domestica*, the wild plumb tree.
 29. *Ulmus Americana*, the white elm.
 30. *Prunus spinosa*, sloe shrub, in low places.
 31. *Laurus sassafras*, the sassafras tree, in a loose soil mixed with sand.
 32. *Ribes nigrum*, the currant tree, grew in low places and in marshes.
 33. *Fraxinus excelsior*, the ash tree, in low places.
 34. *Smilax laurifolia*, the rough bind weed with the bay leaf, in woods and on pales or enclosures.
 35. *Kalmia latifolia*, the *American* dwarf laurel, on the northern side of mountains.
 36. *Morus rubra*, the mulberry tree, on fields, hills, and near the houses.
 37. *Rhus vernix*, the poisonous Sumach, in wet places.
 38. *Quercus rubra*, the red oak, but a peculiar variety.
- since he says it grows on hills, whereas the *aquatica* grows in the water. F.

39. *Hamamelis virginica*, the witch hazel.
 40. *Diospyros virginiana*, the persimon.
 41. *Pyrus coronaria*, the anchor tree.
 42. *Juniperus virginiana*, the red juniper, in a dry poor soil.
 43. *Laurus æstivalis*, spice-wood, in a wet soil.
 44. *Carpinus ostrya*, a species of horn beam, in a good soil.
 45. *Carpinus betulus*, a horn beam, in the same kind of soil with the former.
 46. *Fagus sylvatica*, the beech, likewise in good soil.
 47. *Juglans* ———, a species of walnut tree, on hills near rivers, * called by the Swedes *Butternustræ*.
 48. *Pinus Americana*, *Pensylvanian* fir-tree, on the north side of mountains, and in vallies. †
 49. *Betula lenta*, a species of birch, on the banks of rivers.
 50. *Cephalantus occidentalis*, button wood, in wet places.
 51. *Pinus taeda*, the *New Jersey* fir tree, on dry sandy heaths.
 52. *Cercis Canadensis*, the fallad tree, in a good soil.
 53. *Robinia pseudacacia*, the locust tree, on the corn-fields.
 54. *Magnolia glauca*, the laurel-leaved tulip tree, in marshy soil.
 55. *Tilia Americana*, the lime tree, in a good soil.

* Quere. Is this the *Juglans baccata* of *Linnaeus*? F.

† This species is not to be met with in *Linn. spec. plant.* F.

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56. *Gleditsia triacanthos*, the honey locust tree, or three thorned acacia, in the same soil.

57. *Celtis occidentalis*, the nettle tree, in the fields.

58. *Annona muricata*, the custard apple, in a fruitful soil.

WE visited several *Swedes*, who were settled here, and in very good circumstances. One of them (*Andrew Rambo*) has a fine house built of stone, two stories high, and a great orchard near it. We were every where well received, and stayed over night with the above-mentioned countryman. We saw no other marks of autumn, than that several fruits of this season were already ripe. For besides this, all the trees were yet as green, and the ground still as much covered with flowers, as in our summer. Thousands of frogs croaked all the night long in the marshes and brooks. The locusts and grasshoppers made likewise such a great noise, that it was hardly possible for one person to understand another. The trees too were full of all sorts of birds, which by the variety of their fine plumage delighted the eye, while the infinite variety of their tunes were continually re-echoed.

THE orchards, along which we passed to-day, were only enclosed by hurdles. But they contained all kinds of fine fruit. We wondered at first very much when our leader leaped over the hedge into the orchards, and gathered some agreeable fruit for us. But our astonishment was still greater, when we saw that the people in the garden were so little concerned at it, as not even

to look at us. But our companion told us, that the people here were not so exact in regard to a few fruits, as they are in other countries where the soil is not so fruitful in them. We afterwards found very frequently that the country people in *Sweden* and *Finland* guarded their turnips more carefully, than the people here do the most exquisite fruits.

Sept. 19th. As I walked this morning into the fields, I observed that a copious dew was fallen; for the grass was as wet as if it had rained. The leaves of the plants and trees had contracted so much moisture, that the drops ran down. I found on this occasion that the dew was not only on the superior, but likewise on the inferior side of the leaves. I therefore carefully considered many leaves both of trees and of other plants; both of those which are more above, and of those which are nearer to the ground. But I found in all of them, that both sides of the leaves were equally bedewed, except those of the *Verbascum Thapsus*, or *great Mullen*, which, though their superior side was pretty well covered with the dew, yet their inferior had but a little.

EVERY countryman, even a common peasant, has commonly an orchard near his house, in which all sorts of fruit, such as peaches, apples, pears, cherries, and others, are in plenty. The peaches were now almost ripe. They are rare in *Europe*, particularly in *Sweden*; for in that country hardly any people besides the rich taste them. But here every countryman had an orchard full of peach trees, which were covered with

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with such quantities of fruit, that we could scarcely walk in the orchard, without treading upon those peaches which were fallen off; many of which were usually left on the ground, and only part of them sold in town, and the rest was consumed by the family and strangers. Nay, this fine fruit was frequently given to the swine.

THIS fruit is however sometimes kept for winter use, and prepared in the following manner. The fruit is cut into four parts, the stone thrown away, and the fruit put upon a thread, on which they are exposed to the sunshine in the open air, till they are sufficiently dry. They are then put into a vessel for winter. But this manner of drying them is not very good, because the rain of this season very easily spoils and putrifies them, whilst they hang in the open air. For this reason a different method is followed by others, which is by far the most eligible. The peaches are as before cut into four parts, are then either put upon a thread, or laid upon a board, and so hung up in the air when the sun shines. Being dried in some measure, or having lost their juice by this means, they are put into an oven, out of which the bread has but just been taken, and are left in it for a while. But they are soon taken out and brought into the fresh air; and after that they are again put into the oven, and this is repeated several times, till they are as dry as they ought to be. For if they were dried up at once in the oven, they would shrivel up too much, and lose part of their flavour. They are then put up and kept for the winter. They are either baked into tarts and pyes, or
boiled

boiled and prepared as dried apples and pears are in *Sweden*. Several people here dry and preserve their apples in the same manner as their peaches.

THE peach trees were, as I am told, first planted here by the *Europeans*. But at present they succeed very well, and require even less care, than our apple and pear trees.

THE orchards have seldom other fruit than apples and peaches. Pear trees are scarce in this province. They have cherry trees in the orchards, but commonly on the sides of them towards the house, or along the enclosures. Mulberry trees are planted on some hillocks near the house, and sometimes even in the court-yards of the house. The black walnut trees, or *Juglans nigra*, grow partly on hills, and in fields near the farm-houses, and partly along the enclosures; but most commonly in the forests. No other trees of this kind are made use of here. The chestnuts are left in the fields; here and there is one in a dry field, or in a wood.

THE *Hibiscus esculentus*, or *Okra*, * is a plant which grows wild in the *West Indies*, but is planted in the gardens here. The fruit, which is a long pod, is cut whilst it is green, and boiled in soups, which thereby become as thick as pulse. This dish is reckoned a dainty by some people, and especially by the negroes.

Capsicum annuum, or *Guinea pepper*, is likewise planted in gardens. When the fruit is ripe it is almost entirely red, it is put to a roasted or

* In *Miller's Gardener's Dictionary*, it is called *Ketmia Indica folio ficus, fructu pentagono, recurvo, esculento, graciliori, et longiori.*
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boiled piece of meat, a little of it being strewed upon it, or mixed with the broth. Besides this, cucumbers are pickled with it. Or the pods are pounded whilst they are yet tender, and being mixed with salt are preserved in a bottle; and this spice is strewed over roasted or boiled meat, or fried fish, and gives them a very fine taste. But the fruit by itself is as biting as common pepper.

THIS country contains many species of the plant, which Dr. *Linnaeus* calls *Rhus*, and the most common is the *Rhus foliis pinnatis ferratis lanceolatis retrinque nudis*, or the *Rhus glabra*. The *English* call this plant *Sumach*. But the *Swedes* here have no particular name for it, and therefore make use of the *English* name. Its berries or fruits are red. They are made use of for dying, and afford a colour like their own. This tree is like a weed in this country, for if a corn-field is left uncultivated for some few years together, it grows on it in plenty, since the berries are spread every where by the birds. And when the ground is to be ploughed, the roots stop the plough very much. The fruit stays on the shrub during the whole winter. But the leaves drop very early in autumn, after they are turned reddish, like those of our *Swedish* mountain ash. The branches boiled with the berries afford a black ink like tincture. The boys eat the berries, there being no danger of falling sick after the repast; but they are very sour. They seldom grow above three yards high. On cutting the stem, it appears that it contains nothing but pith. I have cut several in this manner, and

found that some were ten years old; but that most of them were above one year old. When the cut is made, a yellow juice comes out between the bark and the wood. One or two of the most outward circles are white, but the innermost are of a yellowish green. It is easy to distinguish them one from another. They contain a very plentiful pith, the diameter of which is frequently half an inch, and sometimes more. It is brown, and so loose that it is easily pushed out by a little stick, in the same manner as the pith of the elder tree, raspberry, and blackberry bushes. This sumach grows near the enclosures, round the corn-fields, but especially on fallow ground. The wood seemed to burn well, and made no great crackling in the fire.

Sept. 20. IN the morning we walked in the fields and woods near the town, partly for gathering seeds, and partly for gathering plants for my herbal, which was our principal occupation; and in the autumn of this year, we sent part of our collection to *England* and *Sweden*.

A SPECIES of *Rhus*, which was frequent in the marshes here, was called the *poison tree* by both *English* and *Swedes*. Some of the former gave it the name of *swamp-sumach*, and my countrymen gave it the same name. Dr. *Linnaeus* in his botanical works calls it *Rhus Vernix*. Sp. pl. 1. 380. *Flor. Virgin.* 45. An incision being made into the tree, a whitish yellow juice, which has a nauseous smell, comes out between the bark and the wood. This tree is not known for its good qualities, but greatly so for the effect of its poison, which though it is noxious to some people,

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people, yet does not in the least affect others. And therefore one person can handle the tree as he pleases, cut it, peel off its bark, rub it or the wood upon his hands, smell at it, spread the juice upon his skin, and make more experiments, with no inconvenience to himself; another person, on the contrary, dares not meddle with the tree, while its wood is fresh, nor can he venture to touch a hand which has handled it, nor even to expose himself to the smoke of a fire which is made with this wood, without soon feeling its bad effects; for the face, the hands, and frequently the whole body, swells excessively, and is affected with a very acute pain. Sometimes bladders or blisters arise in great plenty, and make the sick person look as if he was infected by a leprosy. In some people the external thin skin, or cuticle, peels off in a few days, as is the case when a person has scalded or burnt any part of his body. Nay, the nature of some persons will not even allow them to approach the place where the tree grows, or to expose themselves to the wind, when it carries the effluvia or exhalations of this tree with it, without letting them feel the inconvenience of the swelling, which I have just now described. Their eyes are sometimes shut up for one, or two and more days together, by the swelling. I know two brothers, one of whom could without danger handle this tree in what manner he pleased, whereas the other could not come near it without swelling. A person sometimes does not know that he has touched this poisonous plant, or that he has been near it, before his face and hands shew it by their

their swelling. I have known old people who were more afraid of this tree than of a viper; and I was acquainted with a person who, merely by the noxious exhalations of it, was swelled to such a degree, that he was as stiff as a log of wood, and was turned about in his bed.

ON relating, in the winter of the year 1750, the poisonous qualities of the swamp sumach to my *Yungström*, he only laughed, and looked upon the whole as a fable, in which opinion he was confirmed by his having often handled the tree the autumn before, cut many branches of it, which he had carried for a good while in his hand, in order to preserve its seeds, and put many into the herbals, and all this, without feeling the least inconvenience. He would therefore, being a kind of philosopher in his own way, take nothing for granted of which he had no sufficient proofs, especially as he had his own experience in the summer of the year 1749, to support the contrary opinion. But in the next summer his system of philosophy was overturned. For his hands swelled, and he felt a violent pain and itching in his eyes, as soon as he touched the tree, and this inconvenience not only attended him when he meddled with this kind of sumach, but even when he had any thing to do with the *Rhus radicans*, or that species of sumach which climbs along the trees, and is not by far so poisonous as the former. By this adventure he was so convinced of the power of the poison tree, that I could not easily persuade him to gather more seeds of it for me. But he not only felt the noxious effects of it in summer, when he was

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very hot, but even in winter, when both he and the wood were cold. Hence it appears, that though a person be secured against the power of this poison for some time, yet, that in length of time, he may be affected with it, as well as people of a weaker constitution.

I HAVE likewise tried experiments of every kind with the poison tree on myself. I have spread its juice upon my hands, cut and broke its branches, peeled off its bark, and rubbed my hands with it, smelt at it, carried pieces of it in my bare hands, and repeated all this frequently, without feeling the baneful effects so commonly annexed to it; but I however once experienced, that the poison of the sumach was not entirely without effect upon me. On a hot day in summer, as I was in some degree of perspiration, I cut a branch of the tree, and carried it in my hand for about half an hour together, and smelt at it now and then. I felt no effects from it, till in the evening. But next morning I awoke with a violent itching of my eye-lids, and the parts thereabouts; and this was so painful, that I could hardly keep my hands from it. It ceased after I had washed my eyes for a while, with very cold water. But my eye-lids were very stiff all that day. At night, the itching returned; and in the morning as I awoke, I felt it as ill as the morning before, and I used the same remedy against it. However, it continued almost for a whole week together, and my eyes were very red, and my eye-lids were with difficulty moved, during all that time. My pain ceased entirely afterwards. About the same time,

time, I had spread the juice of the tree very thick upon my hand. Three days after they occasioned blisters, which soon went off without affecting me much. I have not experienced any thing more of the effects of this plant, nor had I any desire so to do. However, I found that it could not exert its power upon me, when I was not perspiring.

I HAVE never heard that the poison of this Sumach has been mortal; but the pain ceases after a few days duration. The natives formerly made their flutes of this tree, because it has a great deal of pith. Some people assured me, that a person suffering from its noisome exhalations, would easily recover by spreading a mixture of the wood, burnt to charcoal, and hog's lard, upon the swelled parts. Some asserted that they had really tried this remedy. In some places this tree is rooted out on purpose, that its poison may not affect the workmen.

I received, as a present, several curiosities belonging to the mineral kingdom, which were collected in the country. The following were those which were most worth attention. The first was a white, and quite transparent crystal.* Many of this kind are found in *Pensylvania*, in several kinds of stone, especially in a pale-grey limestone. The pieces are of the thickness and length of the little finger, and commonly as transparent as possible. But I have likewise got crystals here, of the

* *Nitrum Crystallus montana*, Linn. Syst. nat. 3. p. 84. *Crystallus hexagona pellucida non colorata*, Wallerius's Mineralogy, p. 100. *Crystallus montana*, colourless crystal. Forster's *Introductio in Mineralogy*, p. 13.

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length of a foot, and of the thickness of a middle-sized man's leg. They were not so transparent as the former.

THE *cubic Pyrites of Bishop Browallius*,* was of a very regular texture. But its cubes were different in size, for in some of the cubes, the planes of the sides only amounted to a quarter of an inch, but in the biggest cubes, they were full two inches. Some were exceedingly glittering, so that it was very easy to be perceived that they consisted of sulphureous pyrites. But in some, one or two sides only glittered so well, and the others were dark-brown. Yet most of these marcasites had this same colour on all the sides. On breaking them they shewed the pure pyrites. They are found near *Lancaster* in this province, and sometimes lie quite above the ground; but commonly they are found at the depth of eight feet or more from the surface of the ground, on digging wells and the like. Mr. *Hesselius* had several pieces of this kind of stone, which he made use of in his work. He first burnt them, then pounded or ground them to a powder, and at last rubbed them still finer in the usual way; and this afforded him a fine reddish-brown colour.

FEW *black pebbles* are found in this province, which on the other hand yields many kinds of *marble*, especially a *white one, with pale-grey bluish spots*, which is found in a quarry at the distance of a few *English miles* from *Philadelphia*, and is very

* *Pyrites crystallinus*, Linn. Syst. nat. 3. p. 113. *Marcasite hexaëdricæ tessellares*. Wallerius's Mineralogy, p. 211. *Marcasitæ, vel crystalli pyritacei*, Marcasites. Forster's Introd. to Mineralogy, p. 39.

good for working, though it is not one of the finest kind of marbles. They make many tombstones and tables, enchase chimneys and doors, floors of marble flags in the rooms, and the like, of this kind of marble. A quantity of this commodity is shipped to different parts of *America*.

MUSCOVY *glass*,* is found in many places hereabouts, and some pieces of it are pretty large, and as fine as those which are brought from *Russia*. I have seen some of them, which were a foot and more in length. And I have several in my collection that are nearly nine inches square. The *Swedes* on their first arrival here made their windows of this native glass.

A PALE grey fine limestone,† of a compact texture, lies in many places hereabouts, and affords a fine lime. Some pieces of it are so full of fine transparent crystals, that almost half of the stone consists of nothing else. But besides this limestone, they make lime near the sea-shore from oyster shells, and bring it to town in winter, which is said to be worse for masonry, but better for white-washing, than that which is got from the limestone.

COALS have not yet been found in *Pensylvania*; but people pretend to have seen them higher up in the country among the natives. Many peo-

* *Mica membranacea*, Linn. Syst. nat. 3. p. 58.

Mica membranacea pellucidissima flexilis alba. Wallerius's Min. p. 120.

Russian glass, *Muscovy glass*, *Isinglass*, *Vitrum ruthenicum*, *Vitrum Maris*. Forster's Introd. to Mineralogy, p. 18.

† *Marmor rude*, Linn. Syst. nat. 3. p. 41.

Calcareus particulis scintillantibus, Wall. Min. p. 39.

Calcareus scintillans, glittering limestone. Forster's Introd. to Mineral. p. 9.

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ple however agree that they are met with in great quantity more to the north, near *Cape Breton*.*

THE ladies make wine from some of the fruits of the land. They principally take white and red currants for that purpose, since the shrubs of this kind are very plentiful in the gardens, and succeed very well. An old sailor, who had frequently been in *Newfoundland*, told me that red currants grew wild in that country in great quantity. They likewise make a wine of strawberries, which grow in great plenty in the woods, but are sourer than the *Swedish* ones. The *American blackberries*, or *Rubus occidentalis*, are likewise made use of for this purpose, for they grow every where about the fields, almost as abundantly as thistles in *Sweden*, and have a very agreeable taste. In *Maryland* a wine is made of the wild grapes, which grow in the woods of that province. Raspberries and cherries which are planted on purpose, and taken great care of, likewise afford a very fine wine. It is unnecessary to give an account of the manner of making the currant wine, for in *Sweden* this art is in higher perfection than in *North America*.

Sept. 21st. THE common *Privet*, or *Ligustrum vulgare* Linn. grows among the bushes in thickets and woods. But I cannot determine whether it belongs to the indigenous plants, or to those which the *English* have introduced, the fruits of

* THIS has been confirmed, since *Cape Breton* is in the hands of the *English*; and it is reported that the strata of coals run through the whole isle, and some basset out to day near the sea-shore, so that this isle will afford immense treasures of coals, when the government will find it convenient to have them dug for the benefit of the nation. F.

which the birds may have dispersed every where. The enclosures and pales are generally made here of wooden planks and posts. But a few good æconomists, having already thought of sparing the woods for future times, have begun to plant quick hedges round their fields; and to this purpose they take the above-mentioned privet, which they plant in a little bank, which is thrown up for it. The soil every where hereabouts is a clay mixed with sand, and of course very loose. The privet hedges however, are only adapted to the tameness of the cattle and other animals here; for the hogs all have a triangular yoke about their necks, and the other cattle are not very unruly. But in such places where the cattle break through the enclosures, hedges of this kind would make but a poor defence. The people who live in the neighbourhood of *Philadelphia*, are obliged to keep their hogs enclosed.

IN the afternoon I rode with Mr. *Cock*, to his country seat, about nine miles from the town, to the north-west.

THE country on both sides of the road was covered with a great forest. The trees were all with annual leaves, and I did not see a single fir or pine. Most of the trees were different sorts of oak. But we likewise saw chestnut, walnut, locust, and apple trees, with hickory, blackberry bushes, and the like. The ground ceased to be so even as it was before, and began to look more like the *English* ground, diversified with hills and vallies. We found neither mountains nor great stones, and the wood was so much thinned, and the ground so uniformly even, that we could see

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a great way between the trees, under which we rode without any inconvenience; for there were no bushes to stop us. In some places, where the soil was thrown up, we saw some little stones of that kind of which the houses here are so generally built. I intend to describe them in the sequel.

As we went on in the wood, we continually saw, at moderate distances, little fields which had been cleared of the wood. Each of these was a farm. These farms were commonly very pretty, and a walk of trees frequently led from them to the high-road. The houses were all built of brick, or of the stone which is here commonly met with. Every countryman, even though he were the poorest peasant, had an orchard with apples, peaches, chestnuts, walnuts, cherries, quinces, and such fruits, and sometimes we saw the vines climbing along them. The vallies were frequently provided with little brooks which contained a crystal stream. The corn, on the sides of the road, was almost all mown, and no other grain besides maize and buckwheat was standing. The former was to be met with near each farm, in greater or lesser quantities; it grew very well and to a great length, the stalks being from six to ten feet high, and covered with fine green leaves. Buckwheat likewise was not very uncommon, and in some places the people were beginning to reap it. I intend, in the sequel, to be more particular about the qualities and use of these kinds of corn.

AFTER a ride of six *English* miles, we came to *Germantown*; this town has only one street, but is near two *English* miles long. It is for the

greatest part inhabited by *Germans*, who from time to time come from their country to *North America*, and settle here, because they enjoy such privileges, as they are not possessed of any where else. Most of the inhabitants are Manufacturers, and make almost every thing in such quantity and perfection, that in a short time this province will want very little from *England*, its mother country. Most of the houses were built of the stone which is mixed with glimmer, and found every where towards *Philadelphia*, but is more scarce further on. Several houses however were made of brick. They were commonly two stories high, and sometimes higher. The roofs consisted of shingles of the white cedar wood. Their shape resembled that of the roofs in *Sweden*, but the angles they formed at the top were either obtuse, right angled, or acute, according as the slopes were steep or easy. They sometimes formed either the half of an octagon, or the half of a dodecagon.

MANY of the roofs were made in such a manner, that they could be walked upon, having a balustrade round them. Many of the upper stories had balconies before them, from whence the people had a prospect into the street. The windows, even those in the third story, had shutters. Each house had a fine garden. The town had three churches, one for the Lutherans, another for the reformed Protestants, and the third for the Quakers. The inhabitants were so numerous, that the street was always full. The Baptists have likewise a meeting-house.

Sept. 22d. AFTER I had been at church, I employed

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employed the remainder of the day in conversing with the most considerable people in town, who had lived here for a long while, and I enquired into the curiosities hereabouts.

MR. *Cock* had a fine spring near his house; it came from a sandy hill, and afforded water enough constantly to fill a little brook. Just above this spring Mr. *Cock* had erected a building from those above-mentioned glittering stones, into which were put many jugs, and other earthen vessels full of milk: for it kept very well in cold water during the great heat with which the summer is attended here.

I AFTERWARDS met with many houses which were situated like this, on springs, and therefore were destined to keep the meat and milk fresh.

ALMOST all the enclosures round the corn-fields and meadows hereabouts, were made of planks fastened in a horizontal direction. I only perceived a hedge of privet in one single place. The enclosures were not made like ours; for the people here take posts from four to six feet in height, and make two or three holes into them, so that there was a distance of two feet and above between them. Such a post does the same service as two, and sometimes three poles are scarce sufficient. The posts were fastened in the ground, at two or three fathoms distance from each other, and the holes in them kept up the planks, which were nine inches, and sometimes a foot broad, and lay above each other from one post to the next. Such an enclosure therefore looked at a distance like the hurdles in which we enclose the sheep at night in *Sweden*. They

were really no closer than hurdles, being only destined to keep out the greater animals, such as cows and horses. The hogs are kept near the farm-houses every where about *Philadelphia*, and therefore this enclosure does not need to be made closer on their account. Chesnut-trees were commonly made use of for this purpose, because this wood keeps longest against putrefaction; and an enclosure made of it can stand for thirty years together. But where no chesnut wood was to be got, the white, and likewise the black oaks, were taken for that purpose. Of all kinds of wood, that of the red cedar holds out the longest. The greatest quantity of it is bought up here; for near *Philadelphia* it is not plentiful enough, to be made use of for enclosures; however there are many enclosures near the town made of this wood.

THE best wood for fuel, in every body's opinion, is the hickory, or a species of walnut; for it heats well, but is not good for enclosures, since it cannot well withstand putrefaction when it is in the open air. The white and black oaks are next in goodness for fuel. The woods with which *Philadelphia* is surrounded, would lead one to conclude, that fuel must be cheap there. But it is far from being so, because the great and high forest near the town is the property of some people of quality and fortune, who do not regard the money which they could make of them. They do not fell so much as they require for their own use, and much less would they sell it to others. But they leave the trees for times to come, expecting that wood will become much

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more scarce. However, they sell it to joiners, coach-makers, and other artists, who pay exorbitantly for it. For a quantity of hickory of eight foot in length, and four in depth, and the pieces being likewise four foot long, they paid at present eighteen shillings of *Pensylvanian* currency. But the same quantity of oak only came to twelve shillings. The people who came at present, to sell wood in the market, were peasants, who lived at a great distance from the town. Every body complained, that fuel, in the space of a few years, was risen in price to many times as much again as it had been; and, to account for this, the following reasons were given: The town is encreased to such a degree, as to be four or six times bigger, and more populous than what some old people have known it to be, when they were young. Many brick-kilns have been made hereabouts, which require a great quantity of wood. The country is likewise more cultivated than it used to be, and consequently great woods have been cut down for that purpose; and the farms built in those places likewise consume a quantity of wood. Lastly, they melt iron out of the ore, in several places about the town, and this work always goes on without interruption. For these reasons it is concluded, in future times, *Philadelphia* will be obliged to pay a great price for wood.

THE wine of blackberries, which has a very fine taste, is made in the following manner. The juice of the blackberries is pressed out, and put into a vessel; with half a gallon of this juice, an equal quantity of water is well mixed. Three pounds

pounds of brown sugar are added to this mixture, which must then stand for a while, and after that it is fit for use. Cherry wine is made in the same manner; but care must be taken that when the juice is pressed out, the stones be not crushed, for they give the wine a bad taste.

THEY make brandy from peaches here, after the following method. The fruit is cut asunder, and the stones are taken out. The pieces of fruit are then put into a vessel, where they are left for three weeks or a month, till they are quite putrid. They are then put into a distilling vessel, and the brandy is made and afterwards distilled over again. This brandy is not good for people who have a more refined taste, but it is only for the common kind of people, such as workmen and the like.

APPLES yield a brandy, when prepared in the same manner as the peaches. But for this purpose those apples are chiefly taken which fall from the tree before they are ripe.

THE *American Night-shade*, or *Phytolacca decandra* Linn. S. N. grows abundantly near the farms, on the high road, in hedges and bushes, and in several places in the fields. Whenever I came to any of these places I was sure of finding this plant in great abundance. Most of them had red berries, which grew in bunches, and looked very tempting, though they were not at all fit for eating. Some of these plants were yet in flower. In some places, such as in the hedges, and near the houses, they sometimes grow two fathom high. But in the fields were always low; yet I could no where perceive that the cattle had eaten

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 oner told me, that the dyers gathered the roots
 of this plant and made a fine red dye of them.

HERE are several species of *Squirrels*. The
ground Squirrels, or *Sciurus striatus Linn.* S. N. are
 commonly kept in cages, because they are very
 pretty: but they cannot be entirely tamed. The
greater Squirrels, or *Sciurus cinereus Linn.* S. N.
 frequently do a great deal of mischief in the plan-
 tations, but particularly destroy the maize. For
 they climb up the stalks, cut the ears in pieces,
 and eat only the loose and sweet kernel, which lies
 quite in the inside. They sometimes come by hun-
 dreds upon a maize-field, and then destroy the
 whole crop of a countryman in one night. In *Mary-*
land therefore every one is obliged annually to
 bring four squirrels, and their heads are given to
 the surveyor, to prevent deceit. In other provinces
 every body that kills squirrels received two pence
 a piece for them from the public, on delivering
 the heads. Their flesh is eaten and reckoned
 a dainty. The skins are sold, but are not much
 esteemed. Squirrels are the chief food of the rat-
 tle-snake and other snakes; and it was a common
 fancy with the people hereabouts, that when the
 rattle-snake lay on the ground, and fixed its eyes
 upon a squirrel, the latter would be as it were fas-
 cinated, and that though it were on the upper-
 most branches of a tree, yet it would come down
 by degrees, till it leaped into the snake's mouth.
 The snake then licks the little animal several
 times, and makes it wet all over with its spittle,
 that it may go down the throat easier. It then
 swallows the whole squirrel at once. When the
 snake

snake has made such a good meal, it lies down to rest without any concern.

THE quadruped, which Dr. *Linnæus*, in the memoirs of the Royal Academy of Sciences, has described by the name of *Ursus cauda elongata*, and which he calls *Ursus Lotor*, in his *Systema Naturæ*, is here called *Raccoon*. It is found very frequently, and destroys many chickens. It is hunted by dogs; and when it runs upon a tree to save itself, a man climbs upon the tree after it and shakes it down to the ground, where the dogs kill it. The flesh is eaten, and is reputed to taste well. The bone of its male parts is made use of for a tobacco-stopper. The hatters purchase their skins, and make hats out of the hair, which are next in goodness to beavers. The tail is worn round the neck in winter, and therefore is likewise valuable. The *Raccoon* is frequently the food of snakes.

SOME *Englishmen* asserted that near the river *Potomack* in *Virginia*, a great quantity of oyster-shells were to be met with, and that they themselves had seen whole mountains of them. The place where they are found is said to be about two *English* miles distant from the sea-shore. The proprietor of that ground burns lime out of them. This stratum of oyster-shells is two fathom and more deep. Such quantities of shells have likewise been found in other places, especially in *New York*, on digging in the ground; and in one place, at the distance of some *English* miles from the sea, a vast quantity of oyster-shells, and of other shells was found. Some people conjectured that the natives had formerly lived in that place,

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place, and had left the shells of the oysters which they had consumed, in such great heaps. But others could not conceive how it happened that they were thrown in such immense quantities all into one place.

EVERY one is of opinion that the *American* savages were a very good-natured people, if they were not attacked. No body is so strict in keeping his word as a savage. If any one of their allies come to visit them, they shew him more kindness, and greater endeavours to serve him, than he could have expected from his own countrymen. Mr. *Cock* gave me the following relation, as a proof of their integrity. About two years ago an *English* merchant travelling amongst the savages, in order to sell them necessaries, and to buy other goods, was secretly killed, without the murderer's being found out. But about a year after, the savages found out the guilty person amongst themselves. They immediately took him up, bound his hands on his back, and thus sent him with a guard to the governor at *Philadelphia*, and sent him word, that they could no longer acknowledge this wretch (who had been so wicked towards an *Englishman*) as their countryman, and therefore would have nothing more to do with him, and that they delivered him up to the governor, to be punished for his villainy as the laws of *England* direct. This Indian was afterwards hanged at *Philadelphia*.

THEIR good natural parts are proved by the following account, which many people have given me as a true one. When they send their ambassadors to the *English* colonies, in order to settle

settle things of consequence with the governor, they sit down on the ground, as soon as they come to his audience, and hear with great attention the governor's demands which they are to make an answer to. His demands are sometimes many. Yet they have only a stick in their hand, and make their marks on it with a knife, without writing any thing else down. But when they return the next day to give in their resolutions, they answer all the governor's articles in the same order, in which he delivered them, without leaving one out, or changing the order; and give such accurate answers, as if they had an account of them at full length in writing.

MR. *Sleidorn* related another story, which gave me great pleasure. He said he had been at *New York*, and had found a venerable old *American* savage amongst several others in an inn. This old man began to talk with *Sleidorn* as soon as the liquor was getting the better of his head, and boasted that he could write and read in *English*. *Sleidorn* therefore desired leave to ask a question, which the old man readily granted. *Sleidorn* then asked him, whether he knew who was first circumcised? and the old man immediately answered, *Father Abraham*; but at the same time asked leave to propose a question in his turn, which *Sleidorn* granted; the old man then said, who was the first quaker? *Sleidorn* said it was uncertain, that some took one person for it, and some another; but the cunning old fellow told him, you are mistaken, sir; *Mordecai* was the first quaker, for he would not take off his hat to *Haman*. Many of the savages, who are yet heathens, are said to have some obscure notion of the deluge. But I am convinced

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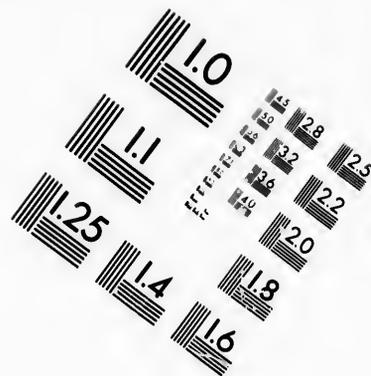
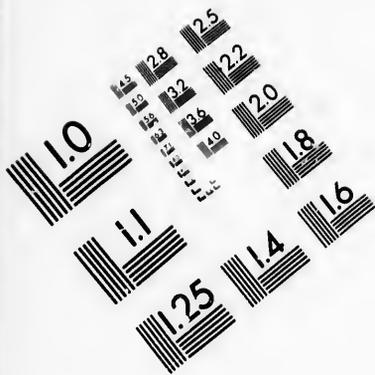
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convinced from my own experience, that they are not at all acquainted with it.

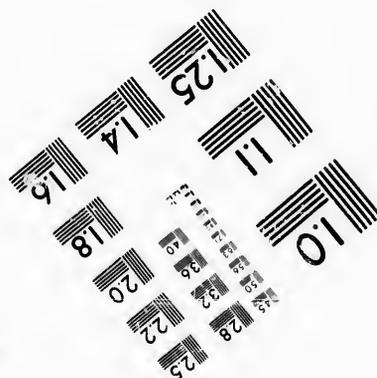
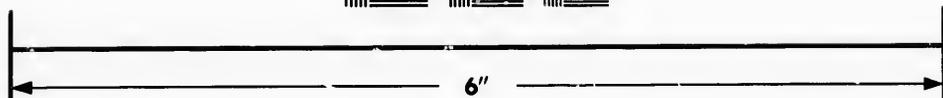
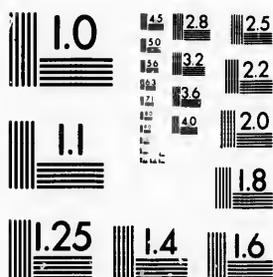
I MET with people here who maintained that giants had formerly lived in these parts, and the following particulars confirmed them in this opinion. A few years ago some people digging in the ground, met with a grave which contained human bones of an astonishing size. The *Tibia* is said to have been fourteen feet long, and the *os femoris* to have measured as much. The teeth are likewise said to have been of a size proportioned to the rest. But more bones of this kind have not yet been found. Persons skilled in anatomy, who have seen these bones, have declared that they were human bones. One of the teeth has been sent to *Hamburg*, to a person who collected natural curiosities. Among the savages, in the neighbourhood of the place where the bones were found, there is an account handed down through many generations from fathers to children, that in this neighbourhood, on the banks of a river, there lived a very tall and strong man, in ancient times, who carried the people over the river on his back, and waded in the water, though it was very deep. Every body to whom he did this service gave him some maize, some skins of animals, or the like. In fine, he got his livelihood by this means, and was as it were the ferryman of those who wanted to pass the river.

THE soil here consists for the greatest part of sand, which is more or less mixed with clay. Both the sand and the clay, are of the colour of pale bricks. To judge by appearance the ground was none of the best; and this conjecture was verified



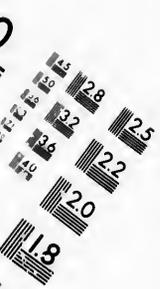


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ed by the inhabitants of the country. When a corn-field has been obliged to bear the same kind of corn for three years together, it does not after that produce any thing at all, if it be not well manured, or fallowed for some years. Manure is very difficult to be got, and therefore people rather leave the field uncultivated. In that interval it is covered with all sorts of plants and trees; and the countryman, in the mean while, cultivates a piece of ground which has till then been fallow, or he chuses a part of the ground which has never been ploughed before, and he can in both cases be pretty sure of a plentiful crop. This method can here be used with great convenience. For the soil is loose, so that it can easily be ploughed, and every countryman has commonly a great deal of land for his property. The cattle here are neither housed in winter, nor tended in the fields, and for this reason they cannot gather a sufficient quantity of dung.

THE cattle were originally brought from *Europe*. The natives have never had any, and, at present, few of them care to get any. But the cattle degenerate by degrees here, and become smaller. For the cows, horses, sheep, and hogs, are all larger in *England*, though those which are brought over are of that breed. But the first generation decreases a little, and the third and fourth is of the same size with the cattle already common here. The climate, the soil, and the food, altogether contribute their share towards producing this change.

It is remarkable that the inhabitants of the country, commonly sooner acquire understanding,

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but likewise grow sooner old, than the people in *Europe*. It is nothing uncommon to see little children, giving sprightly and ready answers to questions that are proposed to them, so that they seem to have as much understanding as old men. But they do not attain to such an age as the *Europeans*; and it is almost an unheard-of thing, that a person, born in this country, should live to be eighty or ninety years of age. But I only speak of the *Europeans* that settled here. For the savages, or first inhabitants, frequently attained a great age, though at present such examples are uncommon, which is chiefly attributed to the great use of brandy, which the savages have learnt of the *Europeans*. Those who are born in *Europe* attain a greater age here, than those who are born here of *European* parents. In the last war it plainly appeared that these new *Americans* were by far less hardy than the *Europeans*, in expeditions, sieges, and long sea-voyages, and died in numbers. It is very difficult for them to use themselves to a climate different from their own. The women cease bearing children sooner than in *Europe*. They seldom or never have children after they are forty or forty-five years old, and some leave off in the thirtieth year of their age. I enquired into the causes of this, but no one could give me a good one. Some said it was owing to the affluence in which the people live here. Some ascribed it to the inconstancy and changeableness of the weather, and believed that there hardly was a country on earth in which the weather changes so often in a day as it does here. For if it were ever so hot, one could not be certain

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whether in twenty-four hours there would not be a piercing cold. Nay, sometimes the weather will change five or six times a day.

THE trees in this country have the same qualities as its inhabitants. For the ships which are built of *American* wood, are by no means equal in point of strength, to those which are built in *Europe*. This is what nobody attempts to contradict. When a ship, which is built here, has served eight or twelve years, it is worth little; and if one is to be met with, which has been in use longer and is yet serviceable, it is reckoned very astonishing. It is difficult to find out the causes from whence this happens. Some lay the fault to the badness of the wood: others condemn the method of building the ships, which is to make them of trees which are yet green, and have had no time to dry. I believe both causes are joined. For I found oak, which at the utmost had been cut down about twelve years, and was covered by a hard bark: but upon taking off this bark, the wood below it was almost entirely rotten, and like flour, so that I could rub it into powder between my fingers. How much longer will not our *European* oak stand before it moulders?

AT night we returned to *Philadelphia*.

Sept. 23d. THERE are no *Hares* in this country, but some animals, which are a medium between our *Hares* and *Rabbits*, and make a great devastation whenever they get into fields of cabbage and turneps.

MANY people have not been able to find out why the *North American* plants, which are carried to *Europe* and planted there, for the greatest

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part flower so late, and do not get ripe fruit before the frost overtakes them, although it appears from several accounts of travels, that the winters in *Pensylvania*, and more so those in *New York*, *New England*, and *Canada*, are full as severe as our *Swedish* winters, and therefore are much severer than those which are felt in *England*. Several men of judgment charged me for this reason to examine and enquire into this phænomenon with all possible care. But I shall, instead of an answer, rather give a few remarks which I made upon the climate and upon the plants of *North America*, and leave my readers at liberty to draw the conclusions.

1. IT is true, that the winters in *Pensylvania*, and much more those in the more northern provinces, are frequently as severe as our *Swedish* winters, and much colder than the *English* ones, or those of the southern parts of *Europe*. For I found at *Philadelphia*, which is above twenty degrees more southerly than several provinces in *Sweden*, that the thermometer of professor *Celsius* fell twenty-four degrees below the freezing point in winter. Yet I was assured that the winters I spent here, were none of the coldest, but only common ones, which I could likewise conclude from the *Delaware's* not being frozen strong enough to bear a carriage at *Philadelphia* during my stay, though this often happens. On considering the breadth of the river, which I have already mentioned in my description of *Philadelphia*, and the difference between high and low

water, which is eight *English* feet; it will pretty plainly appear, that a very intense frost is required to cover the *Delaware* with such thick ice.

2. BUT it is likewise true, that though the winters are severe here, yet they are commonly of no long duration; and I can justly say, that they do not continue above two months, and sometimes even less at *Philadelphia*; and it is something very uncommon when they continue for three months together, insomuch that it is put into the gazettes. Nearer the pole the winters are somewhat longer, and in the quite northern parts they are as long as the *Swedish* winters. The daily meteorological observations which I have made during my stay in *America*, and which are annexed to this work, will give more light in this matter.

3. THE heat in summer is excessive, and without intermission. I own I have seen the thermometer rise to nearly the same degree at *Aobo* in *Finland*. But the difference is, that when the thermometer of professor *Celsius* rose to thirty degrees above the freezing point, once in two or three summers at *Aobo*, the same thermometer did not only, for three months together, stand at the same degree, but even sometimes rose higher, not only in *Pensylvania*, but likewise in *New York*, *Albany*, and a great part of *Canada*. During the summers which I spent at *Philadelphia*, the thermometer has, two or three times, risen to thirty-six degrees above the freezing point. It may therefore with great certainty be said, that in *Pensylvania*, the greatest part of *April*, the whole

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of *May*, and all the following months till *October*, are like our *Swedish* months of *June* and *July*. So excessive and continued a heat must certainly have very great effects. I here again refer to my meteorological observations. It must likewise be ascribed to the effects of this heat that the common melons, the water melons, and the pumpions of different sorts, are sown in the fields without any bells or the like put over them, and yet are ripe as early as *July*; further, that cherries are ripe at *Philadelphia* about the 25th of *May*, and that in *Pensylvania* the wheat is frequently reaped in the middle of *June*.

4. THE whole of *September*, and half, if not the whole of *October*, are the finest months in *Pensylvania*; for the preceding ones are too hot. But these represent our *July* and half of *August*. The greatest part of the plants are in flower in *September*, and many do not begin to open their flowers before the latter end of this month. I make no doubt that the goodness of the season, which is enlivened by a clear sky, and a tolerably hot sunshine, greatly contributes towards this last effort of *Flora*. Yet though these plants come out so late, they are quite ripe before the middle of *October*. But I am not able to account for their coming up so late in autumn; and I rather ask, Why do not the *Centaurea facca*, the *Gentiana*, *Amarella*, and *Centaureum*, of *Linnaeus*, and the common golden rod, or *Solidago Virgaurea*, flower before the end of summer? or why do the common noble liverwort, or *Anemone Hepatica*, the wild violets (*Viola martia* Linn.) the mezereon

(*Daphne Mezereum* Linn.) and other plants, shew their flowers so early in spring? It has pleased the Almighty Creator to give to them this disposition. The weather at *Philadelphia* during these months, is shewn by my meteorological tables. I have taken the greatest care in my observations, and have always avoided putting the thermometer into any place where the sun could shine upon it, or where he had before heated the wall by his beams; for in those cases my observations would certainly not have been exact. The weather, during our *September* and *October*, is too well known to want an explanation.*

5. HOWEVER there are some spontaneous plants in *Pensylvania*, which do not every year bring their seeds to maturity before the cold begins. To these belong some species of *Gentiana*, of *Asters*, and others. But in these too the wisdom of the Creator has wisely ordered every thing in its turn. For almost all the plants which have the quality of flowering so late in autumn, are perennial, or such as, though they have no seed to propagate themselves, can revive by shooting new branches and stalks from the same root every year. But perhaps a natural cause may be given to account for the late growth of these plants. Before the *Europeans* came into this country, it was inhabited by savage nations, who practised agriculture but

* THE *English* reader, who is perhaps not so well acquainted with the weather of the *Swedish* autumn, may form an idea of it, by having recourse to the *Calendarium Floræ*, or the botanical and æconomical almanack of *Sweden*, in Dr. *Linnaeus's* *Amœn. Acad.* and in Mr. *Stillingfleet's Swedish* tracts, translated from the *Amœn. Acad.* 2d edition. F.

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little, or not at all, and chiefly lived upon hunting and fishing. The woods, therefore, have never been meddled with, except that sometimes a small part was destroyed by fire. The accounts which we have of the first landing of the *Europeans* here, shew that they found the country all over covered with thick forests.* From hence it follows, that, excepting the higher trees, and the plants which grow in the water or near the shore, the rest must, for the greatest part, have been obliged to grow, perhaps for a thousand years together, in a shade, either below or between the trees, and they therefore naturally belong to those which are only peculiar to woody and shady places. The trees in this country drop their leaves in such quantities in autumn, that the ground is covered with them to the depth of four or five inches. These leaves lie a good while in the next summer before they moulder, and this must of course hinder the growth of the plants which are under the trees, at the same time depriving them of the few rays of the sun, which can come down to them through the thick leaves at the top of the trees. These causes joined together make such plants flower much later than they would otherwise do. May it not therefore be said, that in so many centuries these plants had at last contracted a *habit* of coming up very late, and that it would now require a great space of time to make them lose this habit, and use them to quicken their growth?

Sept. 24th. WE employed this whole day in ga-

* Vide *Hackluyt's* collect. voy. III. 246.

thering the seeds of plants of all kinds, and in putting scarce plants into the herbal.

Sept. 25th. MR. *Hesslius* made me a present of a little piece of petrified wood, which was found in the ground here. It was four inches long, one inch broad, and three lines thick. It might plainly be seen that it had formerly been wood. For in the places where it had been polished, all the longitudinal fibres were easily distinguishable, so that it might have been taken for a piece of oak which was cut smooth. My piece was part of a still greater piece. It was here thought to be petrified hiccory. I afterwards got more of it from other people. Mr. *Lewis Evans* told me, that on the boundaries of *Virginia*, a great petrified block of hiccory had been found in the ground, with the bark on it, which was likewise petrified.

MR. *John Bartram*, an *Englishman*, who lives in the country, about four miles from *Philadelphia*, has acquired a great knowledge of natural philosophy and history, and seems to be born with a peculiar genius for these sciences. In his youth he had no opportunity of going to school. But by his own diligence and indefatigable application he got, without instruction, so far in Latin, as to understand all Latin books, and even those which were filled with botanical terms. He has, in several successive years, made frequent excursions into different distant parts of *North America*, with an intention of gathering all sorts of plants which are scarce and little known. Those which he found he has planted in his own botanical garden, and likewise sent over their seeds or fresh roots

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roots to *England*. We owe to him the knowledge of many scarce plants, which he first found, and which were never known before. He has shewn great judgment, and an attention which lets nothing escape unnoticed. Yet with all these great qualities, he is to be blamed for his negligence; for he did not care to write down his numerous and useful observations. His friends at *London* once obliged him to send them a short account of one of his travels, and they were very ready, with a good intention, though not with sufficient judgment, to get this account printed. But this book did Mr. *Bartram* more harm than good; for as he is rather backward in writing down what he knows, this publication was found to contain but few new observations. It would not however be doing justice to Mr. *Bartram's* merit, if it were to be judged of by this performance. He has not filled it with a thousandth part of the great knowledge which he has acquired, in natural philosophy and history, especially in regard to *North America*. I have often been at a loss to think of the sources, from whence he got many things which came to his knowledge. I likewise owe him many things, for he possessed that great quality of communicating every thing he knew. I shall, therefore, in the sequel, frequently mention this gentleman. For I should never forgive myself, if I were to omit the name of the first inventor, and claim that as my own invention which I learnt from another person.

MANY *Muscle-shells*, or *Mytili anatini*, are to be met with on the north-west side of the town,
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in the clay-pits, which were at present filled with water from a little brook in the neighbourhood. These muscles seem to have been washed into that place by the tide, when the water in the brook was high. For these clay-pits are not old, but were lately made. Poor boys sometimes go out of town, wade in the water, and gather great quantities of these shells, which they sell very easily, they being reckoned a dainty.

THE *Virginian Azarole*, with a red fruit, or *Linnaeus's Cratægus Crus galli*, is a species of hawthorn, and they plant it in hedges, for want of that hawthorn, which is commonly used for this purpose in *Europe*. Its berries are red, and of the same size, shape, and taste, with those of our hawthorn. Yet this tree does not seem to make a good hedge, for its leaves were already fallen, whilst other trees still preserved theirs. Its spines are very long and sharp; their length being two or three inches. These spines are applied to some inconsiderable use. Each berry contains two stones.

MR. *Bartram* assured me, that the *North American* oak cannot resist putrefaction for near such a space of time as the *European*. For this reason, the boats (which carry all sorts of goods down from the upper parts of the country) upon the river *Hudson*, which is one of the greatest in these parts, are made of two kinds of wood. That part which must always be under water, is made of black oak; but the upper part, which is now above and now under water, and is therefore more exposed to putrefaction, is made of red cedar, or *Juniperis Virginiana*, which is reckoned
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the most hardy wood in the country. The bottom is made of black oak, because that wood is very tough. For the river being full of stones, and the boats frequently running against them, the black oak gives way, and therefore does not easily crack. But the cedar would not do for this purpose, because it is hard and brittle. The oak likewise is not so much attacked by putrefaction, when it is always kept under water.

IN autumn, I could always get good pears here; but every body acknowledged that this fruit would not succeed well in the country.

ALL my observations and remarks on the qualities of the *Rattle-snake*, are inserted in the Memoirs of the *Swedish Academy of Sciences*, for the year 1752, p. 316, and for the year 1753, p. 54, and thither I refer the reader.*

BEARS are very numerous higher up in the country, and do much mischief. Mr. *Bartram* told me, that when a bear catches a cow, he kills her in the following manner: he bites a hole into the hide, and blows with all his power into it, till the animal swells excessively and dies; for the air expands greatly between the flesh and the hide. † An old *Swede*, called *Nils Gustave's son*, who

* Vide Medical, &c. cases and experiments, translated from the *Swedish*, London 1758. p. 282. P.

† THIS has all the appearance of a vulgar error: neither does the succeeding account of the *American* bears being carnivorous, agree with the observations of the most judicious travellers, who deny the fact. P.

BUT however, it might be feasible to reconcile both opinions. For *Europe* has two or three kinds of bears, one species of which is carnivorous, the other lives only on vegetables: the large brown species, with its small variety, are reputed to be carnivorous,

who was ninety-one years of age, said, that in his youth, the bears had been very frequent hereabouts, but that they had seldom attacked the cattle: that whenever a bear was killed, its flesh was prepared like pork, and that it had a very good taste. And the flesh of bears is still prepared like ham, on the river *Morris*. The environs of *Philadelphia*, and even the whole province of *Pensylvania* in general, contain very few bears, they having been extirpated by degrees. In *Virginia* they kill them in several different ways. Their flesh is eaten by both rich and poor, since it is reckoned equal in goodness to pork. In some parts of this province, where no hogs can be kept, on account of the great numbers of bears, the people are used to catch and kill them, and to use them instead of hogs. The *American* bears, however, are said to be less fierce and dangerous than the *European* ones.

Sept. 26th. THE broad plantain, or *Plantago major*, grows on the high-roads, foot-paths, meadows, and in gardens, in great plenty. Mr. *Bartram* had found this plant in many places on his travels, but he did not know whether it was an original *American* plant, or whether the *Europeans* had brought it over. This doubt had its rise from the savages (who always had an extensive knowledge of the plants of the country) pretending that this plant never grew here before the arrival of the *Europeans*. They therefore gave it a name which signifies, the *Englishman's*

rous, the black species is merely phytivorous. In case therefore both species are found in *North America*, it would be very easy to account for their being both carnivorous and not. F.

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foot; for they say, that where a *European* had walked, there this plant grew in his footsteps.

THE *Chenopodium album*, or *Goosefoot* with sinuated leaves, grows in plenty in the gardens. But it is more scarce near the houses, in the streets, on dunghills, and corn-fields. This seems to shew, that it is not a native of *America*, but has been brought over amongst other seeds from *Europe*. In the same manner it is thought that the *Tansy*, (*Tanacetum vulgare* Linn.) which grows here and there in the hedges, on the roads, and near houses, was produced from *European* seeds.

THE common *vervain*, with blue flowers, or *verbena officinalis*, was shewn to me by Mr. *Bartram*, not far from his house, in a little plain near *Philadelphia*. It was the only place where he had found it in *America*. And for this reason I suppose it was likewise sown here amongst other *European* seeds.

MR. *Bartram* was at this time building a house in *Philadelphia*, and had sunk a cellar to a considerable depth, the soil of which was thrown out. I here observed the following strata: The upper loose soil was only half a foot deep, and of a dark brown colour. Under it was a stratum of clay, so much blended with sand, that it was in greater quantity than the clay itself; and this stratum was eight feet deep. These were both brick coloured. The next stratum consisted of little pebbles mixed with a coarse sand. The stones consisted either of a *clear*, or of a *dark*

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Quartz; * they were quite smooth and roundish on the outside, and lay in a stratum which was a foot deep. Then the brick-coloured clay mixed with sand appeared again. But the depth of this stratum could not be determined. Query, Could the river formerly have reached to this place and formed these strata?

MR. *Bartram* has not only frequently found oyster-shells in the ground, but likewise met with such shells and snails, as undoubtedly belong to the sea, at the distance of a hundred and more *English* miles from the shore. He has even found them on the ridge of mountains which separate the *English* plantations from the habitations of the savages. These mountains, which the *English* call the *blue mountains*, are of considerable height, and extend in one continued chain from north to south, or from *Canada* to *Carolina*. Yet in some places they have gaps, which are as it were broke through, to afford a passage for the great rivers, which roll down into the lower country.

THE *Cassia Chamæcrista* grew on the roads through the woods, and sometimes on uncultivated fields, especially when shrubs grew in them. Its leaves are like those of the *Sensitive plant*; or *Mimosa*, and have likewise the quality of contracting when touched, in common with the leaves of the latter.

* *Quartzum hyalinum*, Linn. Syst. nat. 3. p. 65.

Quartzum solidum pellucidum, Wallerii Miner. 91.

The common *Quartz*, Forster's Mineralogy. p. 16.

And *Quartzum coloratum*, Linn. Syst. nat. 3. p. 65.

Quartzum solidum opacum coloratum, Wall. Min. 99.

The impure *Quartz*, Forst. Min. p. 16.

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THE *Crows* in this country are little different from our common crows in *Sweden*. Their size is the same with that of our crows, and they are as black as jet in every part of their body. I saw them flying to-day in great numbers together. Their voice is not quite like that of our crows, but has rather more of the cry of the rook, or *Linnæus's Corvus frugilegus*.

MR. *Bartram* related, that, on his journies to the northern *English* colonies, he had discovered great holes in the mountains on the banks of rivers, which, according to his description, must exactly have been such *giants pots*, * as are to be met with in *Sweden*, and which I have described in a particular dissertation read in the Royal *Swedish* Academy of Sciences. Mr. *Bartram* has likewise addressed some letters to the Royal Society at *London* upon this subject. For some people pretended that these holes were made by the savages, that they might in time of war hide their corn, and other valuable effects in them. But he wrote against this opinion, and accounted for the origin of these cavities in the following manner: When the ice settles, many pebbles stick in it. In spring, when the snow melts, the water in the rivers swells so high, that it reaches above the place where these holes are now found in the mountains. The ice therefore will of course float as high. And then it often happens, that the pebbles, which were contained in it ever

* IN *Sweden*, and in the north of *Germany*, the round holes in rivers, with a stony or rocky bed, which the whirling of the water has made, are called *giants pots*; these holes are likewise mentioned in Mr. *Grosley's new observations on Italy*, Vol. 1. p. 8. F. since

since autumn, when it first settled on the banks of the river, fall out of the ice upon the rocky bank, and are from thence carried into a cleft or crack by the water. These pebbles are then continually turned about by the water, which comes in upon them, and by this means they gradually form the hole. The water at the same time polishes the stone by its circular motion round it, and helps to make the hole or cavity round. It is certain, that, by this turning and tossing, the stone is at last unfit for this purpose: but the river throws commonly every spring other stones instead of it into the cavity, and they are turned round in the same manner. By this whirling, both the mountain and the stone afford either a fine or a coarse sand, which is washed away by the water, when in spring, or at other times, it is high enough to throw its waves into the cavity. This was the opinion of Mr. *Bartram* about the origin of these cavities. The Royal Society of Sciences at *London*, has given a favourable reception to, and approved of them.* The remarks which I made in the summer of the year 1743, during my stay at *Land's-Ort*, in my country, will prove that I was at that time of the same opinion, in regard to these holes. I have since further explained this opinion in a letter to the Royal Academy of Sciences; and this letter is still preserved in the Academy's Memoirs, which have not yet been published. But

* How far this approbation of the Royal Society ought to be credited, is to be understood from the advertisements published at the head of each new volume of the Philosophical Transactions.
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there is great reason to doubt, whether all cavities of this kind, in mountains, have the same origin.

HERE are different species of *Mulberry trees*, which grow wild in the forests of *North and South America*. In these parts the red mulberry trees are more plentiful than any other. However, Mr. *Bartram* assured me, that he had likewise seen the white mulberry trees growing wild, but that they were more scarce. I asked him, and several other people of this country, why they did not set up silk manufactures, having such a quantity of mulberries, which succeed so easily? For it has been observed, that when the berries fall upon the ground, where it is not compact, but loose, they soon put out several fine delicate shoots. But they replied, that it would not be worth while to erect any silk manufactures here, because labour is so dear. For a man gets from eighteen pence to three shillings and upwards, for one day's work, and the women are paid in proportion. They were therefore of opinion, that the cultivation of all sorts of corn, of hemp, and of flax, would be of greater advantage, and that at the same time it did not require near so much care as the feeding of silkworms. By the trials of a governor in *Connecticut*, which is a more northern province than *New York*, it is evident however, that silkworms succeed very well there, and that this kind of mulberry trees is very good for them. The governor brought up a great quantity of silkworms in his court-yard; and they succeeded so well,

well, and spun so much silk, as to afford him a sufficient quantity for cloathing himself and all his family.

SEVERAL sorts of *Vines* likewise grow wild hereabouts. Whenever I made a little excursion out of town, I saw them in numerous places climbing up trees and hedges. They clasp around them, and cover them sometimes entirely, and even hang down on the sides. This has the same appearance, at a distance, as the tendrils of hops climbing along trees. I enquired of Mr. *Bartram*, why they did not plant vineyards, or press wine from the grapes of the wild vine? But they answered, that the same objection lay against it, which lies against the erection of a silk manufacture, that the necessary hands were too scarce, and it therefore was more rational to make agriculture their chief employment. But the true reason undoubtedly is, that the wine which is pressed out of most of the *North American* wild grapes, is sour and sharp, and has not near such an agreeable taste as that which is made from *European* grapes.

THE *Virginian Wake robin*, or *Arum Virginicum*, grows in wet places. Mr. *Bartram* told me, that the savages boiled the *spadix* and the berries of this flower, and devoured it as a great dainty. When the berries are raw, they have a harsh, pungent taste, which they lose in great measure upon boiling.

THE *Sarothra Gentianoides*, grows abundantly in the fields, and under the bushes, in a dry sandy ground near *Philadelphia*. It looks extremely like

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like our whortleberry bushes when they first begin to green, and when the points of the leaves are yet red. Mr. *Bartram* has sent this plant to Dr. *Dillenius*, but that gentleman did not know where he should range it. It is reckoned a very good traumatic, and this quality Mr. *Bartram* himself experienced; for being thrown and kicked by a vicious horse, in such a manner as to have both his thighs greatly hurt, he boiled the *Sarothra*, and applied it to his wounds. It not only immediately appeased his pain, which before had been very violent, but he likewise, by its assistance, recovered in a short time.

HAVING read, in Mr. *Miller's Botanical Dictionary*, that Mr. *Peter Collinson* had a particular *Larch tree* from *America* in his garden, I asked Mr. *Bartram* whether he was acquainted with it? he answered, that he had sent it himself to Mr. *Collinson*; that it only grew in the eastern parts of *New Jersey*, and that he had met with it in no other *English* plantation. It differs from the other species of *Larch trees*, its cones being much less. I afterwards saw this tree in great plenty in *Canada*.

Mr. *Bartram* was of opinion, that the apple tree was brought into *America* by the *Europeans*, and that it never was there before their arrival. But he looked upon peaches as an original *American* fruit, and as growing wild in the greatest part of *America*. Others again were of opinion, that they were first brought over by the *Europeans*. But all the *French* in *Canada* agreed, that on the banks of the river *Mississippi*, and in
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the country thereabouts, peaches were found growing wild in great quantity. *

Sept. 27th. THE tree which the *English* here call *Perfimon*, is the *Diospyros Virginiana* of *Linnaeus*. It grows for the greatest part in wet places, round the water pits. I have already mentioned, that the fruits of this tree are extremely bitter and sharp before they are quite ripe, and that, being eaten in that state, they quite contract one's mouth, and have a very disagreeable taste. But as soon as they are ripe, which does not happen till they have been quite softened by the frost, they are a very agreeable fruit. They are here eaten raw, and seldom any other way. But in a great book, which contains a description of *Virginia*, you meet with different ways of preparing the *Perfimon*, under the article of that name. Mr. *Bartram* related, that they were commonly put upon the table amongst the sweet-meats, and that some people made a tolerably good wine of them. Some of these *Perfimon* fruits were dropped on the ground in his garden, and were almost quite ripe, having been exposed to a great degree of the heat of the sun. We picked up a few and tasted them, and I must own that those who praised this fruit as an agreeable one, have but done it justice. It

* *Thomas Herriot*, servant to Sir *Walter Raleigh*, who was employed by him to examine into the productions of *North America* makes no mention of the peach among the other fruits he describes; and *M. du Pratz*, who has given a very good account of *Louisiana* and the *Mississippi*, says, that the natives got their peaches from the *English* colony of *Carolina*, before the *French* settled there. P.

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really deserves a place among the most palatable fruit of this country, when the frost has thoroughly conquered its acrimony.

THE *Verbascum Thapsus*, or *great white Mullein*, grows in great quantity on roads, in hedges, on dry fields, and high meadows of a ground mixed with sand. The *Swedes* here call it the *tobacco of the savages*, but owned, that they did not know whether or no the *Indians* really used this plant instead of tobacco. The *Swedes* are used to tie the leaves round their feet and arms when they have the ague. Some of them prepared a tea from the leaves, for the dysentery. A *Swede* likewise told me, that a decoction of the roots was injected into the wounds of the cattle which are full of worms, which killed these worms, and made them fall out. *

Sept. 28th. THE meadows which are surrounded by wood, and were at present mown, have a fine lively verdure. On the contrary, when they lie on hills, or in open fields, or in some elevated situation, especially so that the sun may be able to act upon them without any obstacles, their grass looks brown and dry. Several people from *Virginia* told me, that on account of the great heat and drought, the meadows and pastures almost always had a brown colour, and looked as if they were burnt. The inhabitants of those parts do not therefore enjoy the pleasure

* THESE worms are the Larvas of the *Oestrus* or *Gadfly*, which deposits its eggs on the back of cattle, and the Larvas being hatched from these eggs, cause great sores, wherein they live till they are ready for their change. In the south of *Russia* they use for the same purpose the decoction of *Veratrum*, or the *white Hellebore*. F.

which an *European* feels at the sight of our verdant, odoriferous meadows.

THE *American Nightshade*, or the *Phytolacca decandra*, grows abundantly in the fields, and under the trees, on little hills. Its black berries are now ripe. We observed to-day some little birds with a blue plumage, and of the size of our *Hortulans* and *Yellow Hammers* (*Emberiza Citrinella* and *Emberiza Hortulanus*) flying down from the trees, in order to settle upon the nightshade and eat its berries.

TOWARDS night I went to Mr. *Bartram's* country seat,

Sept. 29th. THE *Gnaphalium margaritaceum* grows in astonishing quantities upon all uncultivated fields, glades, hills, and the like. Its height is different according to its different soil and situation. Sometimes it is very ramose, and sometimes very little. It has a strong, but agreeable smell. The *English* call it *Life everlasting*; for its flowers, which consist chiefly of dry, shining, silvery leaves (*Folia calycina*) do not change when dried. This plant is now every where in full blossom. But some have already lost the flowers, and are beginning to drop the seeds. The *English* ladies were used to gather great quantities of this *Life everlasting*, and to pluck them with the stalks. For they put them into pots with or without water, amongst other fine flowers which they had gathered both in the gardens and in the fields, and placed them as an ornament in the rooms. The *English* ladies in general are much inclined to have fine flowers all the summer long, in or upon the chimneys, sometimes

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sometimes upon a table, or before the windows, either on account of their fine appearance, or for the sake of their sweet scent. The *Gnaphalium* abovementioned, was one of those which they kept in their rooms during the winter, because its flowers never altered from what they were when they stood in the ground. Mr. *Bartram* told me another use of this plant. A decoction of the flowers and stalks is used to bathe any pained or bruised part, or it is rubbed with the plant itself tied up in a bag.

INSTEAD of flax several people made use of a kind of *Dog's bane*, or *Linnæus's Apocynum cannabinum*. The people prepared the stalks of this plant, in the same manner as we prepare those of hemp or flax. It was spun, and several kinds of stuffs were woven from it. The savages are said to have had the art of making bags, fishing-nets, and the like, for many centuries together, before the arrival of the *Europeans*.

I ASKED Mr. *Bartram*, whether he had observed in his travels that the water was fallen, and that the sea had formerly covered any places which were now land. He told me, that from what he had experienced, he was convinced, that the greatest part of this country, even for several miles together, had formerly been under water. The reasons which led him to give credit to this opinion were the following.

1. ON digging in the blue mountains, which are above three hundred *English* miles distant from the sea, you find loose oyster and other sorts of shells; and they are also likewise to be met with in the vallies formed by these mountains.

2. A VAST quantity of petrified shells are found in limestone, flint, and sandstone, on the same mountains. Mr. *Bartram* assured me at the same time, that it was incredible what quantities of them there were in the different kinds of stones of which the mountains consist.

3. THE same shells are likewise dug in great quantity, quite entire and not mouldered, in the provinces of *Virginia* and *Maryland*, as also in *Philadelphia* and in *New York*.

4. ON digging wells (not only in *Philadelphia*, but likewise in other places) the people have met with trees, roots, and leaves of oak, for the greatest part not yet rotten, at the depth of eighteen feet.

5. THE best soil and the richest mould is to be met with in the vallies hereabouts. These vallies are commonly crossed by a rivulet or brook. And on their declivity, a mountain commonly rises, which in those places, where the brook passes close to it, looks as if it were cut on purpose. Mr. *Bartram* believed, that all these vallies formerly were lakes; that the water had, by degrees, hollowed out the mountain, and opened a passage for itself through it; and that the great quantity of slime which is contained in the water, and which had subsided to the bottom of the lake, was the rich soil which is at present in the vallies, and the cause of their great fertility. But such vallies and cloven mountains are very frequent in the country, and of this kind is the peculiar gap between two mountains, through which a river takes its course, on the boundaries of *New York* and *Pensylvania*. The people, in a
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jest, say, that this opening was made by the Devil, as he wanted to go out of *Pensylvania* into *New York*.

6. THE whole appearance of the blue mountains plainly shews, that the water formerly covered a part of them. For many are broken in a peculiar manner, but the highest are plain.

7. WHEN the savages are told that shells are found on these high mountains, and that from thence there is reason to believe that the sea must formerly have extended to them, and even in part flown over them; they answer that this is not new to them, they having a tradition from their ancestors among them, that the sea formerly surrounded these mountains.

8. THE water in rivers and brooks likewise decreases. Mills, which sixty years ago were built on rivers, and at that time had a sufficient supply of water almost all the year long, have at present so little, that they cannot be used, but after a heavy rain, or when the snow melts in spring. This decrease of water, in part, arises from the great quantity of land which is now cultivated, and from the extirpation of great forests for that purpose.

9. THE sea-shore increases likewise in time. This arises from the quantity of sand continually thrown on shore from the bottom of the sea, by the waves.

MR. *Bartram* thought that some peculiar attention should be paid to another thing relating to these observations. The shells which are to be found petrified on the northern mountains, are of such kinds as, at present, are not to be got in the sea,

sea, in the same latitude, and they are not fished on the shore, till you come to *South Carolina*. Mr. *Bartram* from hence took an occasion to defend Dr. *Thomas Burnet's* opinion, that the earth, before the deluge, was in a different position towards the sun. He likewise asked whether the great bones, which are sometimes found in the ground in *Siberia*, and which are supposed to be elephants bones and tusks, did not confirm his opinion. For at present those animals cannot live in such cold countries; but if, according to Dr. *Burnet*, the sun once formed different zones about our earth, from those it now makes, the elephant may easily be supposed to have lived in *Siberia*.*

However

* THE bones and tusks of Elephants are not only found in *Russia*, but also in the canton of *Basil* in *Switzerland*, in the dominions of the Marquis of *Bereith* in *Franconia*. and more instances are found in the *Protogæa* of the celebrated *Leibnitz*. Lately, near the river *Ohio*, have been discovered, a great number of skeletons of Elephants, with their tusks, and very remarkable grinders, still sticking in their jaw bones, were sent to the *British Museum*; the late Dr. *Littleton*, Bishop of *Carlisle*, also lodged some teeth, sticking in their jaw bones, in the Museum of the Royal Society, which were brought from *Peru*. The rivers *Obatunga* and *Indigbirka*, in *Siberia*, are remarkable for affording, on their banks, great quantities of bones and tusks of Elephants, which being preserved there by the great frost, and in the short summer of a few weeks, the rain being rare, these tusks are commonly so fresh that they are employed in *Russia* as common ivory, on account of the great quantity brought from these places to *Russia*; some of them were eight feet long, and of three hundred pounds weight. There have been found grinders of nine inches diameter. But the *American* grinders of Elephants from near the *Ohio* are yet more remarkable, on account of their being provided with crowns at their tops, such as are only found in the carnivorous animals, and such as feed on hard bones or nuts. Whilst, on the contrary, Elephants, at present feeding on grasses and soft vegetables, have no such crowns at the tops of their grinders. *Livy*, it is true, makes a distinction between the *Asiatic* or *Indian* Elephants, and the *African* ones; and remarks the latter to be inferior to the former in size and vigour;

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Vol. lviii. F.

However it seems that all which we have hitherto mentioned, may have been the effect of different causes. To those belong the universal deluge, the increase of land, which is merely the work of time, and the changes of the course of rivers, which when the snow melts, and in great floods, leave their first beds, and form new ones.

At some distance from Mr. *Bartram's* country house, a little brook flowed through the wood, and likewise ran over a rock. The attentive Mr. *Bartram* here shewed me several little cavities in the rock, and we plainly saw that they must have been generated in the manner I before described, that is, by supposing a pebble to have

gour; but whether the teeth in these animals are so much different from those of the other variety, has never been attended to. This circumstance of the difference in the fossil grinders of Elephants, from those in the living ones, and the place where these skeletons were found in, viz. *Siberia, Germany, and America*, where at present no Elephants are to be met with, opens a wide field to conjectures, in regard to the way by which these animals were carried to those spots. The flood in the deluge perhaps has carried them thither: nor is it contrary to reason, history or revelation, to believe these skeletons to be the remainders of animals, which lived on the surface of this globe anterior to the Mosaic creation; which may be considered only as a new modification of the creatures living on this globe, adapted to its present state, under which it will remain till circumstances will make a new change necessary, and then our globe will, by a new creation or revolution, appear more adapted to its state, and be stocked with a set of animals more suitable to that state. Every man, used to philosophy and reasoning, will find, that this plan gives a grand idea of the Creator, his oeconomy and management of the universe: and moreover, it is conformable to the meaning of the words of a sacred writer, who says: *Psal. civ. 29, 30. Thou hidest thy face and they (small and great beasts) are troubled; thou takest away their breath, they die, and return to their dust. Thou sendest forth thy spirit, they are created; and thou renewest the face of the earth.* See Dr. *Hunter's* remarks on the above-mentioned teeth, in the *Philosophical Trans.* Vol. lviii. F.

remained

remained in a cleft of the rock, and to have been turned round by the violence of the water, till it had formed such a cavity in the mountain. For on putting our hands into one of these cavities, we found that it contained numerous small pebbles, whose surface was quite smooth and round. And these stones we found in each of the holes.

MR. *Bartram* shewed me a number of plants which he had collected into a herbal on his travels. Among these were the following, which likewise grow in the northern parts of *Europe*, of which he had either got the whole plants, or only broken branches.

1. *Betula alba*, the common birch-tree, which he had found on the *cats-hills*.

2. *Betula nana*. This species of birch grows in several low places towards the hills.

3. *Comarum palustre*, in the meadows, between the hills in *New Jersey*.

4. *Gentiana lutea*, the great *Gentian*, from the fields near the mountains. It was very like our variety, but had not so many flowers under each leaf.

5. *Linnæa borealis*, from the mountains in *Canada*. It creeps along the ground.

6. *Myrica Gale*, from the neighbourhood of the river *Susquebanna*, where it grows in a wet soil.

7. *Potentilla fruticosa*, from the swampy fields and low meadows, between the river *Delaware*, and the river *New York*.

8. *Trientalis Europæa*, from the *cats-hills*.

9. *Triglochin maritimum*, from the salt springs towards the country of the five nations.

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MR. *Bartram* shewed me a letter from *East Jersey*, in which he got the following account of the discovery of an Indian grave. In the *April* of the year 1744, as some people were digging a cellar, they came upon a great stone, like a tomb-stone, which was at last got out with great difficulty; and about four feet deeper under it, they met with a large quantity of human bones and a cake of maize. The latter was yet quite untouched, and several of the people present tasted it out of curiosity. From these circumstances it was concluded, that this was a grave of a person of note among the savages. For it is their custom to bury, along with the deceased, meat, and other things which he liked best. The stone was eight feet long, four feet broad, and even some inches more, where it was broadest, and fifteen inches thick at one end, but only twelve inches at the other end. It consisted of the same coarse kind of stone that is to be got in this country. There were no letters nor other characters visible on it.

THE corn which the *Indians* chiefly cultivate is the *Maize*, or *Zea Mays*, *Linn.* They have little corn fields for that purpose. But besides this, they likewise plant a great quantity of *Squashes*, a species of pumpions or melons, which they have always cultivated, even in the remotest ages. The *Europeans* settled in *America* got the seeds of this plant, and at present their gardens are full of it; the fruit has an agreeable taste when it is well prepared. They are commonly boiled, then crushed (as we are used to do with turneps when we make a pulse of them) and some
pepper

MR.

pepper or other spice thrown upon them, and the dish is ready. The Indians likewise sow several kinds of beans, which for the greatest part they have got from the *Europeans*. But pease, which they likewise sow, they have always had amongst them, before any foreigners came into the country. The squashes of the Indians, which now are likewise cultivated by the *Europeans*, belong to those kinds of gourds (*cucurbita*) which ripen before any other. They are a very delicious fruit, but will not keep. I have however seen them kept till pretty late in winter.

Sept. 30th. WHEAT and rye are sown in autumn about this time, and commonly reaped towards the end of *June*, or in the beginning of *July*. These kinds of corn, however, are sometimes ready to be reaped in the middle of *June*, and there are even examples that they have been mown in the beginning of that month. Barley and oats are sown in *April*, and they commonly begin to grow ripe towards the end of *July*. Buck-wheat is sown in the middle or at the end of *July*, and is about this time, or somewhat later, ready to be reaped. If it be sown before the above-mentioned time, as in *May*, or in *June*, it only gives flowers, and little or no corn.

MR. *Bartram* and other people assured me, that most of the cows, which the *English* have here, are the offspring of those which they bought of the *Swedes*, when they were masters of the country. The *English* themselves are said to have brought over but few. The *Swedes* either brought their cattle from home, or bought them of the *Dutch*, who were then settled here.

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NEAR the town, I saw an *Ivy* or *Hedera Helix*, planted against the wall of a stone building, which was so covered by the fine green leaves of this plant, as almost to conceal the whole. It was doubtless brought over from *Europe*, for I have never perceived it any where else on my travels through *North America*. But in its stead I have often seen wild vines made to run up the walls.

I ASKED Mr. *Bartram*, whether he had observed, that trees and plants decreased in proportion as they were brought further to the *North*, as *Catesby* pretends; he answered, that the question should be more limited, and then his opinion would prove the true one. There are some trees which grow better in southern countries, and become less as you advance to the north. Their seeds or berries are sometimes brought into colder climates by birds and by other accidents. They gradually decrease in growth, till at last they will not grow at all. On the other hand, there are other trees and herbs which the wise Creator destined for the northern countries, and they grow there to an amazing size. But the further they are transplanted to the south, the less they grow; till at last they degenerate so much as not to be able to grow at all. Other plants love a temperate climate, and if they be carried either south or north, they will not succeed well, but always decrease. Thus for example, *Pensylvania* contains some trees which grow exceedingly well, but always decrease in proportion as they are carried further off either to the north, or to the south.

AFTERWARDS, on my travels, had frequent proofs of this truth. The *Sassafras*, which grows in

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Pensylvania, under forty deg. of lat. and becomes a pretty tall and thick tree, was so little at *Oswego* and *Fort Nicholson*, between forty-three and forty-four deg. of lat. that it hardly reached the height of two or four feet, and was seldom so thick as the little finger of a full grown person. This was likewise the case with the *Tulip tree*. For in *Pensylvania* it grows as high as our tallest oaks and firs, and its thickness is proportionable to its height. But about *Oswego* it was not above twelve feet high, and no thicker than a man's arm. The *Sugar Maple*, or *Acer saccharinum*, is one of the most common trees in the woods of *Canada*, and grows very tall. But in the southern provinces, as *New Jersey* and *Pensylvania*, it only grows on the northern side of the blue mountains, and on the steep hills which are on the banks of the river, and which are turned to the north. Yet there it does not attain to a third or fourth part of the height which it has in *Canada*. It is needless to mention more examples.

Oct. 1st. THE gnats, which are very troublesome at night here, are called *Musquetoes*. They are exactly like the gnats in *Sweden*, only somewhat less; and the description which is to be met with in Dr. *Linnaeus's Systema Naturæ*, and *Fauna Suecica*, fully agrees with them, and they are called by him *Culex pipiens*. In day-time or at night they come into the houses, and when the people are gone to bed they begin their disagreeable humming, approach always nearer to the bed, and at last suck up so much blood, that they can hardly fly away. Their bite causes blisters in people of

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a delicate complexion. When the weather has been cool for some days, the musquetoës disappear. But when it changes again, and especially after a rain, they gather frequently in such quantities about the houses, that their numbers are astonishing. The chimneys of the *English*, which have no valves for shutting them up, afford the gnats a free entrance into the houses. In sultry evenings, they accompany the cattle in great swarms, from the woods to the houses or to town, and when they are drove before the houses, the gnats fly in wherever they can. In the greatest heat of summer, they are so numerous in some places, that the air seems to be quite full of them, especially near swamps and stagnate waters, such as the river *Morris* in *New Jersey*. The inhabitants therefore make a fire before their houses, to expel these disagreeable guests by the smoke. The old *Swedes* here, said that gnats had formerly been much more numerous; that even at present they swarmed in vast quantities on the sea shore, near the salt water; and that those which troubled us this autumn in *Philadelphia* were of a more venomous kind, than they commonly used to be. This last quality appeared from the blisters, which were formed on the spots, where the gnats had inserted their sting. In *Sweden* I never felt any other inconvenience from their sting than a little itching, whilst they sucked. But when they stung me here at night, my face was so disfigured by little red spots and blisters, that I was almost ashamed to shew myself.

I HAVE already mentioned somewhat about the enclosures usual here; I now add, that most of

the planks, which are put horizontally, and of which the enclosures in the environs of *Philadelphia* chiefly consist, are of the red cedar wood, which is here reckoned more durable than any other. But where this could not be got, either white or black oak supplied its place. The people were likewise very glad if they could get cedar wood for the posts, or else they took white oak, or chefnut, as I was told by Mr. *Bartram*. But it seems that that kind of wood in general does not keep well in the ground for a considerable time. I saw some posts made of chefnut wood, and put into the ground only the year before, which were already, for the greatest part, rotten below.

THE *Sassafras* tree, or *Laurus Sassafras* Linn. grows in abundance in the country, and stands scattered up and down the woods, and near bushes and enclosures. On old grounds, which are left uncultivated, it is one of the first that comes up, and is as plentiful as young birches are on those *Swedish* fields, which are formed by burning the trees which grew on them.* The *Sassafras* grows in a dry loose ground, of a pale brick colour, which consists, for the greatest part, of sand, mixed with some clay. It seems to be but a poor soil. The mountains round *Gotthenburgh*, in *Sweden*, would afford many places rich

* IN Mr. *Osbek's* Voyage to *China*, Vol. 1. p. 50. in a note, an account is given of this kind of land, which the *Swedes* call *Swedieland*; where it is observed, that the trees being burnt, their ashes afford manure sufficient for three years, after which they are left uncultivated again, till, after twenty or more years, a new generation of trees being produced on them, the country people burn them, and cultivate the country for three years again. F.

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enough for the *Sassafras* to grow in, and I even fear they would be too rich. I here saw it both in the woods amidst other trees, and more frequently by itself along the enclosures. In both it looks equally fresh. I have never seen it on wet or low places. The people here gather its flowers, and use them instead of tea. But the wood itself is of no use in œconomy; for when it is set on fire, it causes a continual crackling, without making any good fire. The tree spreads its roots very much, and new shoots come up from them in some places; but these shoots are not good for transplanting, because they have so few fibres, besides the root which connects them to the main stem, that they cannot well strike into the ground. If therefore any one would plant *Sassafras* trees, he must endeavour to get their berries, which however is difficult, since the birds eat them before they are half ripe. The cows are very greedy after the tender new shoots, and look for them every where.

THE bark of this tree is used by the women here in dying worsted a fine lasting orange colour, which does not fade in the sun. They use urine instead of alum in dying, and boil the dye in a brass boiler, because in an iron vessel it does not yield so fine a colour. A woman in *Virginia* has successfully employed the berries of the *Sassafras* against a great pain in one of her feet, which, for three years together, she had to such a degree, that it almost hindered her from walking. She was advised to broil the berries of *Sassafras*, and to rub the painful parts of her foot with the oil, which by this means would be got from the berries,

ries. She did so, but at the same time it made her vomit; yet this was not sufficient to keep her from following the prescription three times more, though as often as she made use thereof, it always had the same effect. However she was entirely freed from that pain, and perfectly recovered.

A BLACK *Woodpecker* with a red head, or the *Picus pileatus* Linn. is frequent in the *Pensylvanian* forests, and stays the winter, as I know from my own experience. It is reckoned among those birds which destroy the maize; because it settles on the ripe ears, and destroys them with its bill. The *Swedes* call it *Tillkroka*; but all other woodpeckers, those with gold yellow wings excepted, are called *Hackspickar* in the *Swedish* language. I intend to describe them all together more exactly in a particular work. I only observe here, that almost all the different species of woodpeckers are very noxious to the maize, when it begins to ripen: for by picking holes in the membrane round the ear, the rain gets into it, and causes the ear, with all the corn it contains, to rot.

Oct. 3d. IN the morning I set out for *Wilmington*, which was formerly called *Christina* by the *Swedes*, and is thirty *English* miles to the south-west of *Philadelphia*. Three miles behind *Philadelphia* I passed the river *Skulkill* in a ferry, beyond which the country appears almost a continual chain of mountains and vallies. The mountains have an easy slope on all sides, and the vallies are commonly crossed by brooks, with crystal streams. The greater part of the country is covered with several kinds of deciduous trees; for I scarcely saw a single tree of the fir kind, if

I except a few red cedars. The forest was high, but open below, so that it left a free prospect to the eye, and no under-wood obstructed the passage between the trees. It would have been easy in some places to have gone under the branches with a carriage for a quarter of a mile, the trees standing at great distances from each other, and the ground being very level. In some places little glades opened, which were either meadows, pastures, or corn-fields; of which latter some were cultivated and others not. In a few places several houses were built close to each other. But for the greatest part they were single. In part of the fields the wheat was already sown, in the *English* manner without trenches, but with furrows pretty close together. I sometimes saw the country people very busy in sowing their rye. Near every farm-house was a little field with maize. The inhabitants hereabouts were commonly either *English* or *Swedes*.

ALL the day long I saw a continual variety of trees; walnut trees of different sorts, which were all full of nuts; chesnut trees quite covered with fine chesnuts; mulberries, sassafras, liquidambar, tulip trees, and many others.

SEVERAL species of vines grew wild hereabouts. They run up to the summits of the trees, their clusters of grapes and their leaves covering the stems. I even saw some young oaks five or six fathoms high, whose tops were crowned with vines. The ground is that which is so common hereabouts, which I have already described, viz. a clay mixed with a great quantity of sand, and covered with a rich soil or vegetable earth. The

vines are principally seen on trees which stand single in corn-fields, and at the end of woods, where the meadows, pastures, and fields begin; and likewise along the enclosures, where they cling with their tendrils round the trees which stand there. The lower parts of the plant are full of grapes, which hang below the leaves, and were now almost ripe, and had a pleasant sourish taste. The country people gather them in great quantities, and sell them in the town. They are eaten without further preparation; and commonly people are presented with them when they come to pay a visit.

THE soil does not seem to be deep hereabouts; for the upper black stratum is hardly two inches. This I had an occasion to see, both in such places where the ground is dug up, and in such where the water, during heavy showers of rain, has made cuts, which are pretty numerous here. The upper soil has a dark colour, and the next a pale colour like bricks. I have observed every where in *America*, that the depth of the upper soil does not by far agree with the computation of some people, though we can almost be sure, that in some places it never was stirred since the deluge. I shall be more particular in this respect afterwards. *

* THE learned Dr. *Wallerius*, in his *Mineralogy*, § 8. in the note to the article, *Humus communis atra*, mentions, that some people were of opinion, that the mould of our globe increased gradually from the yearly putrefaction of plants and their parts, especially in such places as had been uncultivated ever since the deluge; and that thus, in a hundred years, half an inch of mould was produced. But he observes, in the same time, that this ob-

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THE *Datura Stramonium*, or *Thorn Apple*, grows in great quantities near all the villages. Its height is different according to the soil it is in. For in a rich soil it grows eight or ten feet high, but in a hard and poor ground, it will seldom come up to six inches. This *Datura*, together

ervation was not at all exact; for as the common mould seldom exceeds a foot, it must from thence follow, that since the deluge no more than 2400 years were elapsed, though the scripture chronology reckons upwards of 4000 years since that event: besides this, he remarks, that mould always becomes more dry and compressed, where it is out of the reach of rain and snow; and where it is exposed to rain; it is carried off to lower places, and therefore increases and decreases according to the qualities of its local situation. Moreover, vegetables, it is known, prosper the best where mould is found. As the surface of our globe has been covered with vegetables since the deluge, they must have had a mould to grow in ever since that time; consequently it is highly probable, that there must have been a mould covering the surface of our globe ever since the first origin. I should be led, by some other considerations, to doubt of the infallibility of this rule for the increase of mould. In *Russia*, on this side the river *Volga*, are high and extensive plains, which have been uncultivated ever since the deluge; for, we know from history, that the *Scythians*, *Sarmatians*, *Huns*, *Chazars*, and *Mogols*, were successively the masters of these vast countries, and were altogether nomadic nations, who lived without agriculture: the country has been without wood since time immemorial, nor could there even spring up any wood whatsoever, since its rambling possessors every spring set fire to the old dry grass, in order to make room for the new grass, which, in the latter end of *May*, I found come up very near to my waist. And these vast, desert plains, I saw every where covered with at least two feet mould; nay, in some places it amounted to four feet; this would give, according to the former rule of half an inch per century, 4800 years, in the first instance; and, in the second, 9600 years; and therefore shews, that this rule for calculating the increase of mould is very precarious. The chemical analysis of plants shews, that they consist of water, earth, acid, alkali, oil, and an inflammable principle, independent of the last substance, and called by a late *German* chemist, the *caustic*: these substances must enter yearly the new plants, and make their substance, and are as it were regenerated

gether with the *Phytolacca*, or *American Nightshade*, grow here in those places near the gardens, houses, and roads, which in *Sweden* are covered with nettles and goose-foot, which *European* plants are very scarce in *America*. But the *Datura* and *Phytolacca* are the worst weeds here, nobody knowing any particular use of them.

TURNIP-FIELDS are sometimes to be seen. In the middle of the high road I perceived a dead black snake, which was four feet six inches long, and an inch and a half in thickness. It belonged to the viper kind.

LATE at night a great Halo appeared round the moon. The people said that it prognosti-

in these new plants, after being set at liberty from the structure of the last year's plants by putrefaction, or by fire. Mould, chemically examined, has the same analogous parts. Acid and caustic are plentifully contained in the common air, and may also easily be restored to the mould, and thus circulate through a new system of plants. Water comes likewise from rain and snow, out of our atmosphere; alkaline and oily particles, or a kind of soap, are the only things wanting, which, when added with the former to any fertile earth, will make a good mould; and these are produced by putrefaction or fire, from vegetable and animal substances, and are the great promoters of vegetation.

BUT the great question is, from whence these various substances, necessary for vegetation, originally came? To believe they are produced from putrified vegetables, is begging the question, and making a *circulus vitiosus* in the argument. There is therefore no evasion; they were certainly produced by the great Creator of the universe, and endowed with such qualities as make them capable of producing in various mixtures new bodies; and when they are introduced by moisture into the first stamina of a plant, or a seed, they expand these stamina, and constitute a new being, capable of affording food to the animal creation. It is evident, Mr. *Kalm* hinted at the above-mentioned opinion of the increase of mould; and this gave me an opportunity of confirming his argument, and of stating fairly the great question on which agriculture, the most necessary branch of human arts, depends.

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cated either a storm, or rain, or both together. The smaller the ring is, or the nearer it comes to the moon, the sooner this weather sets in. But this time neither of these changes happened, and the halo had foretold a coldness in the air.

I SAW to-day the *Cbermes* of the alder (*Cbermes Alni*) in great abundance on the branches of that tree, which for that reason looks quite white, and at a distance appears as it were covered with mould.

Oct. 4th. I CONTINUED my journey early in the morning, and the country still had the same appearance as I went on. It was a continual chain of pretty high hills, with an easy ascent on all sides, and of vallies between them. The soil consisted of a brick-coloured mould, mixed with clay, and a few pebbles. I rode sometimes through woods of several sorts of trees, and sometimes amidst little fields, which had been cleared of the wood, and which at present were corn-fields, meadows, and pastures. The farm-houses stood single, sometimes near the roads, and sometimes at a little distance from them, so that the space between the road and the houses was taken up with little fields and meadows. Some of the houses were built of stone, two stories high, and covered with shingles of the white cedar. But most of the houses were wooden, and the crevices stopped up with clay, instead of moss, which we make use of for that purpose. No valves were to be met with in the chimneys, and the people even did not know what I meant by them. The ovens were commonly built up at some distance from the houses, and were either

either under a roof, or without any covering against the weather. The fields bore partly buck-wheat, which was not yet cut; partly maize, and partly wheat, which was but lately sown; but sometimes they lay fallow. The vines climbed to the top of several trees, and hung down again on both sides. Other trees again were surrounded by the ivy (*Hedera quinquefolia*) which, with the same flexibility, ascended to a great height. The *Smilax laurifolia* always joined with the ivy, and, together with it, twisted itself round the trees. The leaves of the ivy were at this time commonly reddish, but those of the vine were still quite green. The trees which were surrounded with them, looked at a distance like those which are covered with hops in our country; and on seeing them from afar off, one might expect to find wild hops climbing upon the trees. Walnut and chestnut trees were common near enclosures, in woods, and on hills, and at present were loaded with their fruit. The persimon was likewise plentiful near the roads, and in the woods. At some distance from *Wilmington*, I passed a bridge over a little river, which falls north into the *Delaware*. The rider pays here two pence toll for himself and his horse.

TOWARDS NOON I arrived at *Wilmington*.

WILMINGTON is a little town, about thirty *English* miles south-west from *Philadelphia*. It was founded in the year 1733. Part of it stands upon the grounds belonging to the *Swedish* church; which annually receives certain rents, out of which they pay the minister's salary, and

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employ the rest for other uses. The houses are built of stone, and look very pretty; yet they are not built close together, but large open places are left between them. The quakers have a meeting-house in this town. The *Swedish* church, which I intend to mention in the sequel, is half a mile out of town eastwards. The parsonage is under the same roof with the church. A little river called *Christina-kill* passes by the town, and from thence falls into the *Delaware*. By following its banks, one goes three miles before one reaches the *Delaware*. The river is said to be sufficiently deep, so that the greatest vessel may come quite up to the town; for at its mouth or juncture with the *Delaware* it is shallowest, and yet its depth even there, when the water is lowest, is from two fathoms to two and a half. But as you go higher, its depth encreases to three, three and a half, and even four fathoms. The largest ships therefore may safely, and with their full cargoes, come to and from the town with the tide. From *Wilmington* you have a fine prospect of a great part of the river *Delaware*, and the ships sailing on it. On both sides of the river *Christina-kill*, almost from the place where the redoubt is built to its juncture with the *Delaware*, are low meadows, which afford a great quantity of hay to the inhabitants. The town carries on a considerable trade, and would have been more enlarged, if *Philadelphia* and *Newcastle*, which are both towns of a more ancient date, were not so near on both sides of it.

THE *Redoubt*, upon the river *Christina-kill*, was erected this summer, when it was known that

that the *French* and *Spanish* privateers intended to sail up the river, and to attempt a landing. It stands, according to the accounts of the late Rev. Mr. *Tranberg*, on the same spot where the *Swedes* had built theirs. It is remarkable, that on working in the ground this summer, to make this redoubt, an old *Swedish* silver coin of Queen *Christina*, not quite so big as a shilling, was found at the depth of a fad, among some other things. The Rev. Mr. *Tranberg* afterwards presented me with it. On one side were the arms of the house of *Wasa*, with the inscription: CHRISTINA. D. G. DE. RE. SVE. that is, *Christina, by the grace of God, elected Queen of Sweden*; and near this the year of our Lord 1633. On the reverse were these words: MONETA NOVA REGNI SVEC. or, *A new coin of the kingdom of Sweden*. At the same time, a number of old iron tools, such as axes, shovels, and the like, were discovered. The redoubt, that is now erected, consists of bulwarks of planks, with a rampart on the outside. Near it is the powder magazine, in a vault built of bricks. At the erection of this little fortification, it was remarkable, that the quakers, whose tenets reject even defensive war, were as busy as the other people in building it. For the fear of being every moment suddenly attacked by privateers conquered all other thoughts. Many of them scrupled to put their own hands to the work; but forwarded it by supplies of money, and by getting ready every thing which was necessary.

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Delaware, and to get into *New Jersey*; with a view to get acquainted with the country; but as there was no ferry here to bring my horse over, I set out on my return to *Philadelphia*. I partly went along the high road, and partly deviated on one or the other side of it, in order to take more exact observations of the country, and of its natural history.

THE maize was sown in several places. In some its stalks were cut somewhat below the ear, dried and put up in narrow high stacks, in order to keep them as a food for the cattle in winter. The lower part of the stalk had likewise leaves, but as they commonly dry of themselves the people do not like to feed the cattle with them, all their flavour being lost. But the upper ones are cut whilst they are yet green.

THE vallies between the hills commonly contain brooks; but they are not very broad, and require no bridges, so that carriages and horse can easily pass through them; for the water is seldom above six inches deep.

THE leaves of most trees were yet quite green, such as those of oaks, chesnut trees, black walnut trees, hiccory, tulip trees, and *sassafras*. The two latter species are found in plenty on the sides of the little woods, on hills, on the fallow fields, near hedges, and on the road. The *permon* likewise had still its leaves; however, some trees of this kind had dropt them. The leaves of the *American* bramble were at present almost entirely red, though some of these bushes yet retained a lively green in the leaves. The *Cornelian* cherry likewise had already a mixture

of brown and pale leaves. The leaves of the red maple were also red.

I CONTINUED my journey to *Chichester*, a borough upon the *Delaware*, where travellers pass the river in a ferry. They build here every year a number of small ships for sale. From an iron work which lies higher in the country, they carry iron bars to this place, and ship them.

CANOES are boats made of one piece of wood, and are much in use with the farmers, and other people upon the *Delaware*, and some little rivers. For that purpose a very thick trunk of a tree is hollowed out: the red juniper, or red cedar tree, the white cedar, the chesnut tree, the white oak, and the tulip tree, are commonly made use of for this purpose. The canoes made of red and white cedar are reckoned the best, because they swim very light upon the water, and last twenty years together. But of these the red cedar canoes are most preferable. Those made of chesnut trees will likewise last for a good while. But those of white oak are hardly serviceable above six years, and also swim deep, because they are so heavy. The *Liquidambar tree*, or *Liquidambar styraciflua* Linn. is big enough, but unfit for making canoes, because it imbibes the water. The canoes which are made of the tulip tree, scarce last so long as those of white oak. The size of the canoes is different, according to the purposes they are destined for. They can carry six persons, who, however, must by no means be unruly, but sit at the bottom of the canoe in the quietest manner possible, lest the boat over-set. The *Swedes* in *Pensylvania* and *New Jersey*,

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near the rivers, have no other boats to go to *Philadelphia* in, which they commonly do twice a week on the market days, though they be several miles distant from the town, and meet sometimes with severe storms; yet misfortunes from the oversetting, &c. of these canoes, are seldom heard of, though they might well be expected, on account of the small size of this kind of boats. However, a great deal of attention and care is necessary in managing the canoes, when the wind is somewhat violent; for they are narrow, round below, have no keel, and therefore may easily be overfet. Accordingly, when the wind is more brisk than ordinary, the people make for the land.

THE common garden cresses grow in several places on the roads about *Chichester*, and undoubtedly come from the seeds, which were by chance carried out of the many gardens about that town.

THE *American* brambles are here in great plenty. When a field is left uncultivated, they are the first plants that appear on it; and I frequently observed them in such fields as are annually ploughed, and have corn sown on them. For when these bushes are once rooted, they are not easily extirpated. Such a bush runs out tendrils sometimes four fathoms off its root, and then throws a new root, so that on pulling it up, you meet with roots on both ends. On some old grounds, which had long been uncultivated, there were so many bushes of this kind, that it was very troublesome and dangerous walking in them. A wine is made of the berries, as

I have already mentioned. The berries are likewise eaten when they are ripe, and taste well.

Oct. 6th. THE *Cbenopodium anthelminticum* is very plentiful on the road, and on the banks of the river, but chiefly in dry places, in a loose sandy soil. The *English*, who are settled here, call it *Worm-seed*, and *Jerusalem Oak*. It has a disagreeable scent. In *Pensylvania* and *New Jersey* its seeds are given to children, against the worms, and for that purpose they are excellent. The plant itself is spontaneous in both provinces.

THE environs of *Chichester* contain many gardens, which are full of apple trees, sinking under the weight of innumerable apples. Most of them are winter fruit, and therefore were yet quite sour. Each farm has a garden, and so has each house of the better sort. The extent of these gardens is likewise not inconsiderable, and therefore affords the possessor, all the year long, great supplies in his house-keeping, both for eating and drinking. I frequently was surprized at the prudence of the inhabitants of this country. As soon as one has bought a piece of ground, which is neither built upon nor sown, his first care is to get young apple trees, and to make a garden. He next proceeds to build his house, and lastly prepares the uncultivated ground to receive corn. For it is well known that the trees require many years before they arrive to perfection, and this makes it necessary to plant them first. I now perceived, near the farms, mill-wheels, and other instruments, which are made

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use of in crushing the apples, in order to prepare cyder from them afterwards.

FROM *Chichester* I went on towards *Philadelphia*. The oaks were the most plentiful trees in the wood. But there were several species of them, all different from the *European* ones. The swine now went about in great herds in the oak woods, where they fed upon the acorns, which fell in great abundance from the trees. Each hog had a wooden triangular yoke about its neck, by which it was hindered from penetrating through the holes in the enclosures; and, for this reason, the enclosures are made very slender, and easy to put up, and do not require much wood. No other enclosures are in use, but those which are so like sheep-hurdles. A number of squirrels were in the oak woods, partly running on the ground, and partly leaping from one branch to another; and at this time they chiefly fed upon acorns.

I SELDOM saw beech trees; but I found them quite the same with the *European* ones. Their wood is reckoned very good for making joiner's planes of.

I do not remember seeing any other than the *black Ants*, or *Formica nigra*, in *Pensylvania*. They are as black as a coal, and of two sorts; some very little, like the least of our ants, and others of the size of our common reddish ants. I have not yet observed any hills of theirs, but only seen some running about singly. In other parts of *America* I have likewise found other species of ants, as I intend to remark in the sequel.

THE *common Privet*, or *Ligustrum vulgare*, is made

made use of in many places, as a hedge round corn-fields and gardens; and on my whole voyage, I did not see that any other trees were made use of for this purpose, though the *Englishmen* here well know that the hawthorn makes a much better hedge. The privet hedges grow very thick and close, but, having no spines, the hogs, and even other animals, break easily through them; and when they have once made a hole, it requires a long while before it grows up again. But when the hedges consist of spinose bushes, the cattle will hardly attempt to get through them.

ABOUT noon I came through *Chester*, a little market-town, which lies on the *Delaware*. A rivulet, coming down out of the country, passes through this place, and discharges itself into the *Delaware*. There is a bridge over it. The houses stand dispersed. Most of them are built of stone, and two or three stories high; some are however made of wood. In the town is a church, and a market-place.

WHEAT was now sown every where. In some places it was already green, having been sown four weeks before. The wheat fields were made in the *English* manner, having no ditches in them, but numerous furrows for draining the water, at the distance of four or six foot from one another. Great stumps of the trees which had been cut down, are every where seen on the fields, and this shews that the country has been but lately cultivated.

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tunities of observing this in several places where the trees were dug up; for I seldom saw one whose roots went above a foot deep into the ground, though it was a loose soil.

ABOUT two *English* miles behind *Chester*, I passed by an iron forge, which was to the right hand by the road side. It belonged to two brothers, as I was told. The ore however is not dug here, but thirty or forty miles from hence, where it is first melted in the oven, and then carried to this place. The bellows were made of leather, and both they and the hammers, and even the hearth, but small in proportion to ours. All the machines were worked by water. The iron was wrought into bars.

To-day I remarked, as I have since frequently seen on my travels in this country, that horses are very greedy of apples. When they are let into an orchard to feed upon the grass, if there are any apples on the ground, they frequently leave the fresh green grass, and eat the apples, which, however, are not reckoned a good food for them; and, besides that, it is too expensive.

THE *red Maple*, or *Acer rubrum*, is plentiful in these places. Its proper situations are chiefly swampy, wet places, in which the alder commonly is its companion. Out of its wood they make plates, spinning-wheels, rolls, feet for chairs and beds, and all sorts of work. With the bark they dye both worsted and linen, giving it a dark blue colour. For that purpose it is first boiled in water; and some copperas, such as the hat-makers and shoe-makers commonly make use of, is added, before the stuff (which is

to be dyed) is put into the boiler. This bark likewise affords a good black ink. When the tree is felled early in spring, a sweet juice runs out of it, like that which runs out of our birches. This juice they do not make any use of here; but, in *Canada*, they make both treacle and sugar of it. Here is a variety of this tree, which they call the *curled Maple*, the wood being as it were marbled within; it is much used in all kinds of joiner's work, and the utensils made of this wood, are preferable to those made of any other sort of wood in the country, and are much dearer than those made of the wood of the wild cherry trees (*Prunus Virginiana*) or of black walnut trees. But the most valuable utensils were those made of *curled black walnut*, for that is an excessive scarce kind of wood. The curled maple was likewise very uncommon, and you frequently find trees, whose outsides are marbled, but their inside not. The tree is therefore cut very deep before it is felled, to see whether it has veins in every part.

IN the evening I reached *Philadelphia*.

Oct. 7th. IN the morning we crossed the *Delaware* in a boat to the other side, which belongs to *New Jersey*, each person paying four pence for his passage. The country here is very different from that in *Pensylvania*; for here the ground is almost mere sand, but in the other province it is mixed with a good deal of clay, and this makes the ground pretty rich. The discoveries which I made to-day, of insects and plants, I intend to mention in another work.

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A SOIL like this in *New Jersey*, one might be led to think, could produce nothing, because it is so dry and poor. Yet the maize, which is planted on it, grows extremely well, and we saw many fields filled with it. The earth is of that kind in which tobacco commonly succeeds, but it is not near so rich. The stalks of maize are commonly eight feet high, more or less, and are full of leaves. The maize is planted, as usual, in rows, in little squares, so that there is a space of five feet and six inches between each square, both in length and breadth; on each of these little hills three or four stalks come up, which were not yet cut for the cattle; each stalk again has from one to four ears, which are large and full of corn. A sandy ground could never have been better employed. In some places the ground between the maize is ploughed, and rye sown in it, so that when the maize is cut, the rye remains upon the field.

WE frequently saw *Asparagus* growing near the enclosures, in a loose soil, on uncultivated sandy fields. It is likewise plentiful between the maize, and was at present full of berries, but I cannot tell whether the seeds are carried by the wind to the places where I saw them; it is however certain, that I have likewise seen it growing wild in other parts of *America*.

THE *Worm-seed* is likewise plentiful on the roads, in a sandy ground, such as that near the ferry, opposite to *Philadelphia*. I have already mentioned that it is given to children, as a remedy to carry off the worms. It is then put into brandy, and when it has been in it for one hour, it is

taken out again, dried, and given to the children, either in beer, sweetened with treacle, or in any other liquor. Its effects are talked of differently. Some people say it kills the worms; others again pretend that it forwards their encrease. But I know, by my own experience, that this wormseed has had very good effects upon children.

THE *Purslain*, which we cultivate in our gardens, grows wild in great abundance in the loose soil, amongst the maize. It was there creeping on the ground, and its stalks were pretty thick and succulent; which circumstance very justly gave reason to wonder from whence it could get juice sufficient to supply it, in such a dry ground. It is to be found plentiful in such soil, in other places of this country.

THE *Biders bipinnata*, is here called *Spanish Needles*. It grows single about farm houses, near roads, pales, and along the hedges. It was yet partly in flower; but for the greatest part it was already out of blossom. When its seeds are ripe it is very disagreeable walking where it grows. For they stick to the cloaths and make them black; and it is difficult to discharge the black spots which they occasion. Each seed has three spines at its extremity; and each of these again is full of numerous little hooks, by which the seed fastens itself to the cloaths.

IN the woods and along the hedges in this neighbourhood, some single *red Ants* (*Formica rubra*) crept about, and their antennæ or feel-horns were as long as their bodies.

TOWARDS night we returned to *Philadelphia*.
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quantity of the finest oysters, About this time the people began to bring them to *Philadelphia* for sale. They come from that part of the shore, which is near the mouth of the river *Delaware*. They are reckoned as good as the *New York* oysters, of which I shall make more particular mention afterwards. However, I thought that this latter sort of oysters was generally larger, fatter, and more palatable. It is remarkable that they commonly became palatable at the time when the agues had left off their fury. Some men went with whole carts full of oysters, crying them about the streets; this is unusual here when any thing else is to be sold, but in *London* it is very common. The oyster shells are thrown away, though formerly a lime was burnt from them, which has been found unnecessary, there being stones for burning of lime in this neighbourhood, and the lime of oyster shells not being as good as this other lime. The people shewed me some houses in this town which are built of stone, and to the mason work of which the lime of oyster shells had been employed. The walls of these houses were always so wet, two or three days before a rain, that great drops of water could plainly be perceived on them; and thus they were as good as Hygrometers.* Several people

* As the shells of oysters are a marine animal production, and their cavities are full of particles of sea-water, the moisture of it flies off, leaving behind its salt; when the shells are burnt; and the lime is slacked, the salt mixes with the lime: and though the mortar of such a lime grows ever so dry, the particles of salt immediately attract the moisture of the air, and cause that dampness complained of here. F.

who had lived in this kind of houses complained of these inconveniences.

Oct. 9th. PEASE are not much cultivated in *Pensylvania* at present, though formerly, according to the accounts of some old *Swedes*, every farmer had a little field with pease. In *New Jersey*, and the southern parts of *New York*, pease are likewise not so much cultivated as they used to be. But in the northern parts of *New York*, or about *Albany*, and in all the parts of *Canada*, which are inhabited by the *French*, the people sow great quantities, and have a plentiful crop. In the former colonies, a little despicable insect has obliged the people to give up so useful a part of agriculture. This little insect was formerly little known, but a few years ago it multiplied excessively. It couples in summer, about the time when the pease are in blossom, and then deposits an egg into almost every one of the little pease. When the pease are ripe, their outward appearance does not discover the worm, which, however, is found within, when it is cut. This worm lies in the pea, if it is not stirred, during all the winter, and part of the spring, and in that space of time consumes the greatest part of the inside of the pea: In spring, therefore, little more than the mere thin outward skin is left. This worm, at last, changes into an insect, of the coleoptera class, and in that state creeps through a hole of its own making in the husk, and flies off, in order to look for new fields of pease, in which it may couple with its cogeneric insects, and provide food sufficient for its posterity.

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vania to the north. For the country of *New York*, where it is common at present, has not been plagued with it above twelve or fifteen years ago; and before that time the people sowed pease every year, without any inconvenience, and had excellent crops. But by degrees these little enemies came in such numbers, that the inhabitants were forced to leave off sowing of pease. The people complained of this in several places. The country people about *Albany* have yet the pleasure to see their fields of pease not infected by these beetles, but are always afraid of their approach; as it has been observed they come every year nearer to that province.

I KNOW not whether this insect would live in *Europe*, and I should think our *Swedish* winters must kill the worm, even if it be ever so deeply inclosed in the pea; notwithstanding it is often as cold in *New York* (where this insect is so abundant) as in our country, yet it continues to multiply here every year, and proceeds always farther to the north. I was very near bringing some of these vermin into *Europe*, without knowing of it. At my departure from *America*, I took some sweet peas with me in a paper, and they were at that time quite fresh and green. But on opening the paper, after my arrival at *Stockholm*, on *August* the 1st, 1751; I found all the peas hollow, and the head of an insect peeping out of each. Some of these insects even crept out, in order to try the weather of this new climate; but I made haste to shut the paper again, in order to prevent the spreading of this noxious insect.* I own, that

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when I first perceived them, I was more frightened than I should have been at the sight of a viper. For I at once had a full view of the whole damage, which my dear country would have suffered, if only two or three of these noxious insects had escaped me. The posterity of many families, and even the inhabitants of whole provinces, would have had sufficient reason to detest me, as the cause of so great a calamity. I afterwards sent some of them, though well secured, to Count *Tessin*, and to Dr. *Linnaeus*, together with an account of their destructive qualities. Dr. *Linnaeus* has already inserted a description of them in an Academical Dissertation, which has been drawn up under his presidency, and treats of the damages made by insects.* He there calls this insect the *Bruchus* of *North America*.† It was very peculiar that every pea in the paper was eaten without exception.

WHEN the inhabitants of *Pensylvania*, sow pease procured from abroad, they are not commonly attacked by these insects for the first year; but in the next they take possession of the

rope with this insect, yet Dr. *Linnaeus* assures us, in his *Systema Naturæ*, that the southern countries of *Europe* are already infested with it; *Scopoli* mentions it among his *Insecta Carniolica*, p. 63. and *Geoffroy*, among his *Parisian Insects*, Vol. 1. p. 267. t. 4. f. 9. has given a fine figure of it. F.

* *Diff. de Noxa Insectorum*, *Amœn. Acad.* Vol. 3. p. 347.

† In his *Systema Naturæ*, he calls it *Bruchus Pisi*, or the Pease Beetle; and says, that the *Gracula Quiscalus*, or *Purple daw* of *Catoby*, is the greatest destroyer of them, and though this bird has been proscribed by the legislature of *Pensylvania*, *New Jersey*, and *New England*, as a maize-thief, they feel however the imprudence of extirpating this bird: for a quantity of worms, which formerly were eaten by these birds, destroy their meadows at present. F.

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pea. It is greatly to be wished that none of the ships, which annually depart from *New York* or *Pensylvania*, may bring them into the *European* countries. From hence the power of a single despicable insect will plainly appear; as also, that the study of the œconomy and of the qualities of insects, is not to be looked upon as a mere pastime and uselefs employment.*

THE *Rhus radicans* is a shrub or tree which grows abundantly in this country, and has in common with the ivy, called *Hedera arborea*, the quality of not growing without the support either of a tree, a wall, or a hedge. I have seen it climbing to the very top of high trees in the woods, and its branches shoot out every where little roots, which fasten upon the tree, and as it were enter into it. When the stem is cut, it emits a pale brown sap of a disagreeable scent. This sap is so sharp, that the letters and characters made upon linen with it, cannot be got out again, but grow blacker the more the cloth is washed. Boys commonly marked their names on their linen with this juice. If you write with it on paper, the letters never go out, but grow blacker from time to time.

THIS species of *Sumach* has the same noxious qualities as the poisonous sumach, or *Poison-tree*, which I have above described, being poisonous to some people though not to every one. Therefore all that has been said of the poison-tree is likewise applicable to this; excepting that

* If the pease were steeped, before they are sown, in a lye of lime water and some dissolved arsenic, the pupa or aurelia of the insect would be killed. F.

the former has the stronger poison. However, I have seen people who have been as much swelled from the noxious exhalations of the latter, as they could have been from those of the former. I likewise know, that of two sisters, the one could manage the tree without being affected by its venom, though the other immediately felt it as soon as the exhalations of the tree came near her, or whenever she came a yard too near the tree, and even when she stood in the way of the wind, which blew directly from this shrub. But upon me this species of sumach has never exerted its power; though I made above a hundred experiments upon myself with the greatest stems, and the juice once squirted into my eye, without doing me any harm. On another person's hand, which I had covered very thick with it, the skin, a few hours after, became as hard as a piece of tanned leather, and peeled off in the following days, as if little scales fell from it.

Oct. 10th. IN the morning I accompanied Mr. Cock to his country-seat.

THOUGH the woods of *Pensylvania* afford many oaks, and more species of them than are found further north, yet they do not build so many ships in this province as they do in the northern ones, and especially in *New-England*. But experience has taught the people that the same kind of trees is more durable the further it grows to the north, and that this advantage decreases the more it grows in warm climates. It is likewise plain that the trees in the south grow more every year, and form thicker ringlets, than those in the north. The former have likewise much

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greater tubes for the circulation of the sap than the latter. And for this reason they do not build so many ships in *Pensylvania*, as they do in *New England*, though more than in *Virginia* and *Maryland*; but *Carolina* builds very few, and its merchants get all their ships from *New England*. Those which are here made of the best oak, hardly are serviceable above ten, or at most twelve years; for then they are so rotten, that no body ventures to go to sea in them. Many captains of ships come over from *England* to *North America*, in order to get ships built. But most of them choose *New England*, that being the most northerly province; and if they even come over in ships which are bound for *Philadelphia*, they frequently, on their arrival, set out from *Pensylvania* for *New England*. The *Spaniards* in the *West Indies*, are said to build their ships of a peculiar sort of cedar, which holds out against putrefaction and wet; but it is not to be met with on the continent in the *English* provinces. Here are above nine different sorts of oak, but not one of them is comparable to the single species we have in *Sweden*, with regard to its goodness. And therefore a ship of *European* oak costs a great deal more than one made of *American* oak.

MANY people who chiefly employed themselves in gardening, had found, in a succession of years, that the red *Beet*, which grew out of the seed which was got from *New York*, became very sweet, and had a very fine taste; but that it every year lost part of its goodness, if it was cultivated from seeds which were got here. The people were therefore obliged to get as many seeds of
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red beet every year from *New York*, as were wanted in their gardens. It has likewise been generally observed, that the plants which are produced from *English* seeds are always much better and more agreeable, than those which come from seeds of this country.

IN the garden of Mr. *Cock* was a radish, which was in the loose soil grown so big as to be seven inches in diameter. Every body that saw it, owned it was uncommon to see them of such a size.

THAT species of *Convolvulus* which is commonly called *Batatas*, has here the name of *Bermudian potatoes*. The common people, and the gentry, without distinction, planted them in their gardens. This is done in the same manner as with the common potatoes. Some people made little hillocks, into which they put these potatoes; but others only planted them in flat beds. The soil must be a mixture of sand and earth, and neither too rich nor too poor. When they are going to plant them, they cut them, as the common potatoes, taking care however that a bud or two be left upon each piece which is intended to be planted. Their colour is commonly red without, and yellow within. They are bigger than the common sort, and have a sweet and very agreeable taste, which I cannot find in the other potatoes, in artichokes, or in any other roots, and they almost melt in the mouth. It is not long since they have been planted here. They are dressed in the same manner as common potatoes, and eaten either along with them, or by themselves. They grow very fast and very well here.

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here; but the greatest difficulty consists in keeping them over winter, for they will bear neither cold, nor a great heat, nor wet. They must therefore be kept, during winter, in a box with sand, in a warm room. In *Pensylvania*, where they have no valves in their chimnies, they are put in such a box with sand, at some distance from the fire, and there they are secured both against frost and against over great heat. It will not answer the purpose to put them into dry sand in a cellar, as is commonly done with the common sort of potatoes. For the moisture which is always in cellars, penetrates the sand, and makes them putrify. It would probably be very easy to keep them in *Sweden* in warm rooms, during the cold season. But the difficulty lies wholly in bringing them over to *Sweden*. I carried a considerable number of them with me on leaving *America*, and took all possible care in preserving them. But we had a very violent storm at sea, by which the ship was so greatly damaged, that the water got in every where, and wetted our cloaths, beds, and other moveables, so much, that we could wring the water out of them. It is therefore no wonder that my *Bermuda* potatoes were rotten; but as they are now cultivated in *Portugal* and *Spain*, nay, even in *England*, it will be easy to bring them into *Sweden*. The drink which the *Spaniards* prepare from these potatoes, in their *American* possessions, is not usual in *Pensylvania*.*

* Mr. Miller describes this liquor in his *Gardener's Dictionary*, under the article of *Convolvulus*, species the 17th and 18th.

MR. *Cock* had a paper mill, on a little brook, and all the coarser sorts of paper are manufactured in it. It is now annually rented for fifty pounds *Pensylvania* currency.

Oct. 11th. I HAVE already mentioned, that every countryman has a greater or lesser number of apple trees planted round his farm-house, from whence he gets great quantities of fruit, part of which he sells, part he makes cyder of, and part he uses in his own family for pyes, tarts, and the like. However he cannot expect an equal quantity of fruit every year. And I was told, that this year had not by far afforded such a great quantity of apples as the preceding; the cause of which, they told me, was the continual and great drought in the month of *May*, which had hurt all the blossoms of the apple trees, and made them wither. The heat had been so great as to dry up all the plants, and the grafs in the fields.

THE *Polytrichum commune*, a species of moss, grew plentifully on wet and low meadows between the woods, and in several places quite covered them, as our mosses cover the meadows in *Sweden*. It was likewise very plentiful on hills.

AGRICULTURE was in a very bad state hereabouts. When a person had bought a piece of land, which perhaps had never been ploughed since the creation, he cut down part of the wood, tore up the roots, ploughed the ground, sowed corn on it, and the first time got a plentiful crop. But the same land being tilled for several years successively, without being manured, it at last must, of course, lose its fertility. Its possessor therefore leaves it fallow, and proceeds to another part

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of his ground, which he treats in the same manner. Thus he goes on till he has changed a great part of his possessions into corn-fields, and by that means deprives the ground of its fertility. He then returns to the first field, which now is pretty well recovered; this he again tills as long as it will afford him a good crop, but when its fertility is exhausted, he leaves it fallow again, and proceeds to the rest as before.

It being customary here, to let the cattle go about the fields and in the woods both day and night, the people cannot collect much dung for manure. But by leaving the land fallow for several years together, a great quantity of weeds spring up in it, and get such strength, that it requires a considerable time to extirpate them. From hence it likewise comes, that the corn is always so much mixed with weeds. The great richness of the soil, which the first *European* colonists found here, and which had never been ploughed before, has given rise to this neglect of agriculture, which is still observed by many of the inhabitants. But they do not consider, that when the earth is quite exhausted, a great space of time, and an infinite deal of labour, is necessary to bring it again into good order; especially in these countries which are almost every summer so scorched up by the excessive heat and drought. The soil of the corn-fields consisted of a thin mould, greatly mixed with a brick-coloured clay, and a quantity of small particles of glimmer. This latter came from the stones which are here almost every where to be met with at the depth of a foot or

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thereabouts. These little pieces of glimmer made the ground sparkle, when the sun shone upon it.

ALMOST all the houses hereabouts were built either of stone or bricks: but those of stone were more numerous. *Germantown*, which is about two *English* miles long, had no other houses, and the country houses thereabouts were all built of stone. But there are several varieties of that stone which is commonly made use of in building. Sometimes it consisted of a black or grey glimmer, running in undulated veins, the spaces between their bendings being filled up with a grey, loose, small-grained limestone, which was easily friable. Some transparent particles of quartz were scattered in the mass, of which the glimmer made the greatest part. It was very easy to be cut, and with proper tools could readily be shaped into any form. Sometimes however the pieces consisted of a black, small-grained glimmer, a white small-grained sandstone, and some particles of quartz, and the several constituent parts were well mixed together; and sometimes the stone had broad stripes of the white limestone without any addition of glimmer, but most commonly they were much blended together, and of a grey colour. Sometimes this stone was found to consist of quite fine and black pieces of glimmer, and a grey, loose, and very small-grained limestone. This was likewise very easy to be cut, being loose.

THESE varieties of the stone are commonly found close together. They were every where to be met with, at a little depth, but not in equal quantity and goodness; and not always easy to be

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be broken. When therefore a person intended to build a house, he enquired where the best stone could be met with. It is to be found on corn-fields and meadows, at a depth which varies from two to six feet. The pieces were different as to size. Some were eight or ten feet long, two broad, and one thick. Sometimes they were still bigger, but frequently much less. Hereabouts they lay in strata one above another, the thickness of each stratum being about a foot. The length and breadth were different, but commonly such as I have before mentioned. They must commonly dig three or four feet before they reach the first stratum. The loose ground above that stratum, is full of little pieces of this stone. This ground is the common brick-coloured soil, which is universal here, and consists of sand and clay, though the former is more plentiful. The loose pieces of glimmer which shine so much in it, seem to have been broken off from the great strata of stone.

It must be observed, that when the people build with this stone, they take care to turn the flat side of it outwards. But as that cannot always be done, the stone being frequently rough on all sides, it is easily cut smooth with tools, since it is soft, and not very difficult to be broken. The stones however are unequal in thickness, and therefore by putting them together they cannot be kept in such straight lines as bricks. It sometimes likewise happens that pieces break off when they are cut, and leave holes on the outside of the wall. But in order to fill up these holes, the little pieces of stone which cannot be made use

of are pounded, mixed with mortar, and put into the holes; the places thus filled up, are afterwards smoothed, and when they are dry, they are hardly distinguishable from the rest, at some distance. At last they draw, on the outside of the wall, strokes of mortar, which cross each other perpendicularly, so that it looks as if the wall consisted wholly of equal square stones, and as if the white strokes were the places where they were joined with mortar. The inside of the wall is made smooth, covered with mortar, and white-washed. It has not been observed that this kind of stone attracts the moisture in a rainy or wet season. In *Philadelphia* and its environs, you find several houses built of this kind of stone.

THE houses here are commonly built in the *English* manner.

ONE of Mr. *Cock's* negroes shewed me the skin of a badger (*Ursus Meles*) which he had killed a few days ago, and which convinced me that the *American* badger is the same with the *Swedish* one. It was here called *Ground Hog*.

TOWARDS night I returned to *Philadelphia*.

OCT. 12th. IN the morning we went to the river *Skullkill*, partly to gather seeds, partly to collect plants for the herbal, and to make all sorts of observations. The *Skullkill* is a narrow river, which falls into the *Delaware*, about four miles from *Philadelphia* to the south; but narrow as it is, it rises on the west side of those high mountains, commonly called the blue mountains, and runs two hundred *English* miles, and perhaps more. It is a great disadvantage to this country, that there are several cataracts in this river as low

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as *Philadelphia*, for which reason there can be no navigation on it. To-day I made some descriptions and remarks on such plants as the cattle liked, or such as they never touched.

I OBSERVED several little subterraneous walks in the fields, running under ground in various directions, the opening of which was big enough for a mole: the earth, which formed as it were a vault above it, and lay elevated like a little bank, was near two inches high, full as broad as a man's hand, and about two inches thick. In uncultivated fields I frequently saw these subterraneous walks, which discovered themselves by the ground thrown up above them, which when trod upon gave way, and made it inconvenient to walk in the field.

THESE walks are inhabited by a kind of mole,* which I intend to describe more accurately in another work. Their food is commonly roots: I have observed the following qualities in one which was caught. It had greater stiffness and strength in its legs, than I ever observed in other animals, in proportion to their size. Whenever it intended to dig, it held its legs obliquely like oars. I laid my handkerchief before it, and it began to stir in it with the snout, and taking away the handkerchief to see what it had done to it, I found that in the space of a minute it had made it full of holes, and it looked as if it had been pierced very much by an awl. I was obliged to put some books on the cover of the box in which

* This animal is probably the *Sorex cristatus* of Dr. Linnaeus, who says it is like the mole, and lives in *Pensylvania*. F.

I kept this animal, or else it was flung off immediately. It was very irascible, and would bite great holes into any thing that was put in its way; I held a steel pen-case to it, it at first bit at it with great violence, but having felt its hardness, it would not venture again to bite at any thing. These moles do not make such hills as the *European* ones, but only such walks as I have already described.

Oct. 13th. THERE is a plant here, from the berries of which they make a kind of wax or tallow, and for that reason the *Swedes* call it the *Tallow shrub*. The *English* call the same tree the *Candleberry-tree*, or *Bayberry-bush*; and Dr. *Linnaeus* gives it the name of *Myrica cerifera*. It grows abundantly on a wet soil, and it seems to thrive particularly well in the neighbourhood of the sea, nor have I ever found it high up in the country far from the sea. The berries grow abundantly on the female shrub, and look as if snow had been strewed upon them. They are gathered late in autumn, being ripe about that time, and are then thrown into a kettle or pot full of boiling water; by this means their fat melts out, floats at the top of the water, and may be skimmed off into a vessel; with the skimming they go on till there is no tallow left. The tallow, as soon as it is congealed, looks like common tallow or wax, but has a dirty green colour; it is for that reason melted over again, and refined; by which means it acquires a fine and pretty transparent green colour: this tallow is dearer than common tallow, but cheaper than wax. In *Philadelphia* they pay a shilling *Pensylvania* currency, for a pound of this tallow; but a pound of common

common tallow only came to half that money, and wax costs as much again. From this tallow they make candles in many parts of this province, but they usually mix some common tallow with it. Candles of this kind do not easily bend, nor melt in summer as common candles do; they burn better and slower, nor do they cause any smoke, but rather yield an agreeable smell, when they are extinguished. An old *Swede* of ninety-one years of age told me, that this sort of candles had formerly been much in use with his countrymen. At present they do not make so many candles of this kind, if they can get the tallow of animals; it being too troublesome to gather the berries. However these candles are made use of by poor people, who live in the neighbourhood of a place where the bushes grow, and have not cattle enough to kill, in order to supply them with a sufficient quantity of tallow. From the wax of the candleberry tree they likewise make a soap here, which has an agreeable scent, and is the best for shaving. This wax is likewise used by doctors and surgeons, who reckon it exceeding good for plasters upon wounds. A merchant of this town once sent a quantity of these candles to those *American* provinces which had Roman Catholic inhabitants, thinking he would be well paid, since wax candles are made use of in the Roman Catholic churches; but the clergy would not take them. An old *Swede* mentioned that the root of the candleberry tree was formerly made use of by the Indians, as a remedy against the tooth-ach, and that he himself having had the tooth-ach very violently, had cut the root in

pieces and applied it round his tooth; and that the pain had been lessened by it. Another *Swede* assured me, that he had been cured of the tooth-ach, by applying the peel of the root to it. In *Carolina*, they not only make candles out of the wax of the berries, but likewise sealing wax.

Oct. 14th. *PENNY Royal* is a plant which has a peculiar strong scent, and grows abundantly on dry places in the country. Botanists call it *Cunila pulegioides*. It is reckoned very wholesome to drink as a tea, when a person has got cold, as it promotes perspiration. I was likewise told, that on feeling a pain in any limb, this plant, if applied to it, would give immediate relief.

THE goods which are shipped to *London* from *New England* are the following: all sorts of fish caught near *Newfoundland* and elsewhere; train-oil of several sorts; whalebone, tar, pitch, masts, new ships, of which a great number is annually built, a few hides, and sometimes some sorts of wood. The *English* islands in *America*, as *Jamaica* and *Barbadoes*, get from *New England*, fish, flesh, butter, cheese, tallow, horses, cattle; all sorts of lumber, such as pails, buckets, and hog-heads; and have returns made in rum, sugar, molasses, and other produces of the country, or in cash, the greatest part of all which they send to *London* (the money especially) in payment of the goods received from thence, and yet all this is insufficient to pay off the debt.

Oct. 15th. THE *Alders* grew here in considerable abundance on wet and low places, and even sometimes on pretty high ones, but never reached the height of the *European* alders, and commonly

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stood like a bush, about a fathom or two high. Mr. *Bartram*, and other gentlemen who had frequently travelled in these provinces, told me, that the more you go to the south, the less are the alders; but that they are higher and taller, the more you advance to the north. I found afterwards myself, that the alders, in some places of *Canada*, are little inferior to the *Swedish* ones. Their bark is employed here in dying red and brown. A *Swedish* inhabitant of *America* told me, that he had cut his leg to the very bone, and that some coagulated blood had already been settled within: that he had been advised to boil the alder bark, and to wash the wound often with the water: that he followed this advice, and had soon got his leg healed, though it had been very dangerous at first.

THE *Phytolacca decandra* was called *Poke* by the *English*. The *Swedes* had no particular name for it, but made use of the *English*, with some little variation into *Paok*. When the juice of its berries is put upon paper or the like, it strikes it with a high purple colour, which is as fine as any in the world; and it is pity that no method is as yet found out, of making this colour last on woollen and linen cloth, for it fades very soon. Mr. *Bartram* mentioned, that having hit his foot against a stone, he had got a violent pain in it; he then bethought himself to put a leaf of the *Phytolacca* on his foot, by which he lost the pain in a short time. The berries are eaten by the birds about this time. The *English* and several *Swedes* make use of the leaves in spring, when they are just come out, and are yet tender and soft,

soft, and eat them partly as green cale, and partly in the manner we eat spinnage. Sometimes they likewise prepare them in the first of these ways, when the stalks are already grown a little longer, breaking off none but the upper sprouts, which are yet tender, and not woody; but in this latter case, great care is to be taken, for if you eat the plant when it is already grown up, and its leaves are no longer soft, you may expect death as a consequence, which seldom fails to follow; for the plant has then got a power of purging the body to excess. I have known people, who, by eating great full-grown leaves of this plant, have got such a strong dysentery, that they were near dying with it: its berries however are eaten in autumn by children, without any ill consequence.

WOOLLEN and linen cloth is dyed yellow with the bark of hickory, This likewise is done with the bark of the *black oak*, or *Linnaeus's Quercus nigra*, and that variety of it which *Catesby*, in his *Natural History of Carolina*, vol. i. tab. 19, calls *Quercus marilandica*. The flowers and leaves of the *Impatiens Noli tangere*, or balsamine, likewise dyed all woollen stuffs with a fine yellow colour.

THE *Collinsonia canadensis* was frequently found in little woods and bushes, in a good rich soil. Mr. *Bartram*, who knew the country perfectly well, was sure that *Pensylvania*, and all the parts of *America* in the same climate, were the true and original places where this plant grows. For further to the south, neither he nor Messrs. *Clayton* and *Mitchel* ever found it, though the latter gentlemen have made accurate observations in *Virginia* and part of *Maryland*. An from his own

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experience he knew that it did not grow in the northerly parts. I have never found it more than fifteen min. north of forty-three deg. The time of the year when it comes up in *Pensylvania*, is so late, that its seed has but just time sufficient to ripen in, and it therefore seems unlikely that it can succeed further north. Mr. *Bartram* was the first who discovered it, and sent it over into *Europe*. Mr. *Jussieu*, during his stay at *London*, and Dr. *Linnaeus* afterwards, called it *Collinsonia*, from the celebrated Mr. *Peter Collinson*, a merchant in *London*, and fellow of the *English* and *Swedish* Royal Societies. He well deserved the honour of having a plant called after his name, for there are few people that have promoted natural history and all useful sciences with a zeal like his; or that have done as much as he towards collecting, cultivating, and making known all sorts of plants. The *Collinsonia* has a peculiar scent, which is agreeable, but very strong. It always gave me a pretty violent head-ach whenever I passed by a place where it stood in plenty, and especially when it was in flower. Mr. *Bartram* was acquainted with a better quality of this plant, which was that of being an excellent remedy against all sorts of pain in the limbs, and against a cold, when the parts affected were rubbed with it. And Mr. *Conrad Weisser*, interpreter of the language of the Indians in *Pensylvania*, had told him of a more wonderful cure with this plant. He was once among a company of Indians, one of which had been stung by a rattle-snake, the savages gave him over; but he boiled the *collinsonia*, and made the poor wretch drink

drink the water, from which he happily recovered. Somewhat more to the north and in *New York* they call this plant *Horseweed*, because the horses eat it in spring, before any other plant comes up.

Oct. 16th. I ASKED Mr. *Franklin*, and other gentlemen who were well acquainted with this country, whether they had met with any signs, from whence they could have concluded, that any place which was now a part of the continent, had formerly been covered with water? and I got the following account in answer.

1. ON travelling from hence to the south, you meet with a place where the high road is very low in the ground between two mountains. On both sides you see nothing but oyster shells and muscle shells in immense quantities above each other; however the place is many miles off the sea.

2. WHENEVER they dig wells, or build houses in town, they find the earth lying in several strata above each other. At a depth of fourteen feet or more, they find globular stones, which are as smooth on the outside as those which lie on the sea-shore, and are made round and smooth by the rolling of the waves. And after having dug through the sand, and reached a depth of eighteen feet or more, they discover in some places a slime like that which the sea throws up on the shore, and which commonly lies at its bottom and in rivers: this slime is quite full of trees, leaves, branches, reed, charcoal, &c.

3. IT has sometimes happened that new houses have sunk on one side in a short time,

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and have obliged the people to pull them down again. On digging deeper, for a very hard ground to build upon, they have found a quantity of the above slime, wood, roots, &c.

ARE not these reasons sufficient to make one suppose, that those places in *Philadelphia*, which are at present fourteen feet and more underground, formerly were the bottom of the sea, and that, by several accidents, sand, earth, and other things, were carried upon it? or, that the *Delaware* formerly was broader than it is at present? or, that it has changed its course? This last still often happens at present; the river breaking off the bank on one side, and forming one on the other. Both the *Swedes* and *English* often shewed me such places.

Oct. 18th. AT present I did not find above ten different kinds of plants in blossom: they were, a *Gentiana*, two species of *Aster*, the common Golden Rod, or *Solidago Virga aurea*, a species of *Hieracium*, the yellow Wood Sorrel, or *Oxalis corniculata*, the Fox Gloves, or *Digitalis purpurea*, the *Hamamelis Virginiana*, or Witch Hazel, our common Millefoil, or *Achillea Millefolium*, and our Dandelion, or *Leontodon Taraxacum*. All other plants had for this year laid aside their gay colours. Several trees, especially those which were to flower early in spring, had already formed such large buds, that on opening them all the parts of fructification, such as *Calyx*, *Corolla*, *Stamina*, and *Pistillum*, were plainly distinguishable. It was therefore easy to determine the genus to which such trees belonged. Such were the red maple, or *Acer rubrum*, and the

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Laurus aestivalis, a species of bay. Thus nature prepared to bring forth flowers, with the first mild weather in the next year. The buds were at present quite hard, and all their parts pressed close together, that the cold might by all means be excluded.

THE *black Walnut trees* had for the greatest part dropt their leaves, and many of them were entirely without them. The walnuts themselves were already fallen off. The green peel which enclosed them, if frequently handled, would yield a black colour, which could not be got off the fingers in two or three weeks time, though the hands were washed ever so much.

THE *Cornus florida* was called *Dogwood* by the *English*, and grew abundantly in the woods. It looks beautiful when it is adorned with its numerous great white flowers in spring. The wood is very hard, and is therefore made use of for weavers spools, joiners planes, wedges, &c. When the cattle fall down in spring for want of strength, the people tie a branch of this tree on their neck, thinking it will help them.

Oct. 19th. THE *Tulip tree* grows every where in the woods of this country. The botanists call it *Liriodendron tulipifera*, because its flowers, both in respect to their size, and in respect to their exterior form, and even in some measure with regard to their colour, resemble tulips. The *Swedes* called it *Canoe tree*, for both the *Indians* and the *Europeans* often make their canoes of the stem of this tree. The *Englishmen* in *Pensylvania* give it the name of *Poplar*. It is reckoned a tree which grows to the greatest height and thick-

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ness of any in *North America*, and which vies in that point with our greatest *European* trees. The white oak and the fir in *North America*, however, are little inferior to it. It cannot therefore but be very agreeable to see in spring, at the end of *May* (when it is in blossom) one of the greatest trees covered for a fortnight together with flowers, which, with regard to their shape, size, and partly colour, are like tulips; the leaves have likewise something peculiar; the *English*, therefore, in some places, call the tree *the old woman's smock*, because their imagination finds something like it below the leaves.

Its wood is here made use of for canoes, boards, planks, bowls, dishes, spoons, door posts, and all sorts of joiners work. I have seen a barn of a considerable size, whose walls and roof were made of a single tree of this kind, split into boards. Some joiners reckoned this wood better than oak, because this latter frequently is warped, which the other never does, but works very easy; others again valued it very little. It is certain, that it contracts so much in hot weather, as to occasion great cracks in the boards, and in wet weather it swells so as to be near bursting, and the people hardly know of a wood in these parts which varies so much in contracting and expanding itself. The joiners, however, make much use of it in their work; they say there are two species of it; but they are merely two varieties, one of which, in time, turns yellow within; the other is white; the former is said to have a looser texture. The bark (like *Russia* glass) is divisible into very thin leaves, which

which are very tough like bast, though I have never seen it employed as such. The leaves, when crushed and applied to the forehead, are said to be a remedy against the head-ach. When horses are plagued with worms, the bark is pounded, and given them quite dry. Many people believe its roots to be as efficacious against the fever as the Jesuits bark. The trees grow in all sorts of dry soil, both on high and low grounds, but too wet a soil will not agree with them.

Oct. 20th. THE *Beaver tree* is to be met with in several parts of *Pensylvania* and *New Jersey*, in a poor swampy soil, or on wet meadows. Dr. *Linnaeus* calls it *Magnolia glauca*; both the *Swedes* and *English* call it *Beaver tree*, because the root of this tree is the dainty of beavers, which are caught by its means; however, the *Swedes* sometimes gave it a different name, and the *English* as improperly called it *Swamp Sassafras*, and *White Laurel*. The trees of this kind dropt their leaves early in autumn, though some of the young trees kept them all the winter. I have seldom found the beaver tree to the north of *Pensylvania*, where it begins to flower about the end of *May*. The scent of its blossoms is excellent; for by it you can discover, within three quarters of an *English* mile, whether these little trees stand in the neighbourhood, provided the wind be not against it. For the whole air is filled with this sweet and pleasant scent. It is beyond description agreeable to travel in the woods about that time, especially towards night. They retain their flowers for three weeks, and

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even longer, according to the quality of the soil on which the trees stand; and, during the whole time of their being in blossom, they spread their odoriferous exhalations. The berries likewise look very fine when they are ripe, for they have a rich red colour, and hang in bunches on slender stalks. The cough, and other pectoral diseases, are cured by putting the berries into rum or brandy, of which a draught every morning may be taken; the virtues of this remedy were universally extolled, and even praised for their salutary effects in consumptions. The bark being put into brandy, or boiled in any other liquor, is said not only to ease pectoral diseases, but likewise to be of some service against all internal pains and heat; and it was thought that a decoction of it could stop the dysentery. Persons who had caught cold, boiled the branches of the beaver tree in water, and drank it to their great relief. A *Swede*, called *Lars Lack*, gave the following account of a cure effected by this tree: One of his relations, an old man, had an open sore in his leg, which would not heal up again, though he had had much advice, and used many remedies. An *Indian* at last effected the cure in the following manner. He burnt some of this wood to charcoal, which he reduced to powder, mixed with the fresh fat of pork, and rubbed the open places several times. This dried up the holes, which before were continually open, and the legs of the old man were quite sound to his death. The wood is likewise made use of for joiners planes.

OS. 22d. UPON trial it has been found that
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the following animals and birds, which are wild in the woods of *North America*, can be made nearly as tractable as domestic animals.

THE wild *Cows* and *Oxen*, of which several people of distinction have got young calves from these wild cows, which are to be met with in *Carolina*, and other provinces to the south of *Pensylvania*, and brought them up among the tame cattle; when grown up, they were perfectly tame, but, at the same time, very unruly, so that there was no enclosure strong enough to resist them, if they had a mind to break through it; for as they possess a great strength in their neck, it was easy for them to overthrow the pales with their horns, and to get into the corn-fields; and as soon as they had made a road, all the tame cattle followed them; they likewise copulated with the latter, and by that means generated as it were a new breed. This *American* species of oxen is *Linnaeus's Bos Bison*, β .

AMERICAN Deer can likewise be tamed; and I have seen them tame myself in different places. A farmer in *New Jersey* had one in his possession, which he had caught when it was very young; and at present it was so tame, that in the day-time it run into the wood for its food, and towards night it returned home, and frequently brought a wild deer out of the wood, giving its master an opportunity to shoot it. Several people have therefore tamed young deer, and make use of them for hunting wild deer, or for decoying them home, especially in the time of their rutting.

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gone on fishing, and brought home what they had caught to their masters. This often is the case with *Otters*, of which I have seen some, which were as tame as dogs, and followed their masters wherever they went; if he went out in a boat, the otter went with him, jumped into the water, and after a while came up with a fish. The *Opossum* can likewise be tamed, so as to follow people like a dog.

THE *Raccoon*, which we (*Swedes*) call *Siuff*, can in time be made so tame as to run about the streets like a domestic animal; but it is impossible to make it leave off its habit of stealing. In the dark it creeps to the poultry, and kills in one night a whole stock. Sugar and other sweet things must be carefully hidden from it; for if the chests and boxes are not always locked up, it gets into them, eats the sugar, and licks up the treacle with its paws: the ladies therefore have every day some complaint against it, and for this reason many people rather forbear the diversion which this ape-like animal affords.

THE *grey* and *flying Squirrels* are so tamed by the boys, that they sit on their shoulders, and follow them every where.

THE *Turkey Cocks* and *Hens* run about in the woods of this country, and differ in nothing from our tame ones, except in their superior size, and redder, though more palatable flesh. When their eggs are found in the wood, and put under tame *Turkey* hens, the young ones become tame; however, when they grow up, it sometimes happens that they fly away; their wings are therefore commonly clipped, especially when young.

But the tamed turkeys are commonly much more irascible than those which are naturally tame. The *Indians* likewise employ themselves in taming them and keeping them near their huts.

WILD Geese have likewise been tamed in the following manner. When the wild geese first come hither in spring, and stop a little while (for they do not breed in *Pensylvania*) the people try to shoot them in the wing, which, however, is generally mere chance. They then row to the place where the wild goose fell, catch it, and keep it for some time at home; by this means many of them have been made so tame, that when they were let out in the morning, they returned in the evening; but, to be more sure of them, their wings are commonly clipped. I have seen wild geese of this kind, which the owner assured me, that he had kept for more than twelve years; but though he kept eight of them, yet he never had the pleasure to see them copulate with the tame ones, or lay eggs.

PARTRIDGES, which are here in abundance, may likewise be so far tamed, as to run about all day with the poultry, and to come along with them to be fed when they are called. In the same manner I have seen *wild Pigeons*, which were made so tame as to fly out and return again. In some winters there are immense quantities of wild pigeons in *Pensylvania*.

Oct. 24th. OF all the rare birds of *North America*, the *Humming-bird* is the most admirable, or at least most worthy of peculiar attention. Several reasons induce me to believe, that few parts of the world can produce its equal.

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Dr. *Linnæus* calls it *Trochilus Colubris*. The *Swedes*, and some *Engliffmen*, call it the *King's bird*; but the name of *Humming-bird* is more common. *Catesby*, in his *Natural History of Carolina*, Vol. 1. page 65. tab. 65. has drawn it, in its natural size, with its proper colours, and added a description of it.* In size it is not much bigger than a large *bumble-bee*, and is therefore the least of all birds, † or it is much if there is a lesser species in the world. Its plumage is most beautifully coloured, most of its feathers being green, some grey, and others forming a shining red ring round its neck; the tail glows with fine feathers, changing from green into a brass colour. These birds come here in spring, about the time when it begins to grow very warm, and make their nests in summer; but, towards autumn, they retreat again into the more southern countries of *America*. They subsist barely upon the nectar, or sweet juice of flowers, contained in that part which botanists call the *nectarium*, and which they suck up with their long bills. Of all the flowers, they like those most, which have a long tube; and I have observed that they have fluttered chiefly about the *Impatiens Noli tangere*, and the *Monarda* with crimson flowers. An inhabitant of the country is sure to have a

* THE same is to be met with in *Edwards's Natural History of Birds*, page 38. tab. 38. F.

† THERE is a much lesser species of humming-bird, by *Linnæus* called *Trochilus minimus*, being the least bird known; Sir *Hans Sloane's* living one weighed only twenty grains, and Mr. *Edwards's* dry one forty-five. It is drawn in *Edwards's birds*, p. 150. in its natural size, together with its egg. F.

number of these beautiful and agreeable little birds before his windows all the summer long, if he takes care to plant a bed with all sorts of fine flowers under them. It is indeed a diverting spectacle to see these little active creatures flying about the flowers like bees, and sucking their juices with their long and narrow bills. The flowers of the above-mentioned *Monarda* grow *verticillated*, that is, at different distances they surround the stalk, as the flowers of our mint (*Mentha*) bastard hemp (*Galeopsis*) mother-wort (*Leonurus*) and dead nettle (*Lamium*). It is therefore diverting to see them putting their bills into every flower in the circle. As soon as they have sucked the juice of one flower, they flutter to the next. One that has not seen them would hardly believe in how short a space of time they have had their tongues in all the flowers of a plant, which when large, and with a long tube, the little bird, by putting its head into them, looks as if it crept with half its body into them.

DURING their sucking the juice out of the flowers, they never settle on it, but flutter continually like bees, bend their feet backwards, and move their wings so quick, that they are hardly visible. During this fluttering, they make a humming like bees, or like that which is occasioned by the turning of a little wheel. After they have thus, without resting, fluttered for a while, they fly to a neighbouring tree or post, and resume their vigour again. They then return to their humming and sucking. They are not very shy; and I, in company with several other people, have not been full two yards from
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the place where they fluttered about and sucked the flowers ; and though we spoke and moved, yet they were no ways disturbed ; but, on going towards them, they would fly off with the swiftness of an arrow. When several of them were on the same bed, there was always a violent combat between them, in meeting each other at the same flower (for envy was likewise predominant amongst these little creatures) and they attacked with such impetuosity, that it would seem as if the strongest would pierce its antagonist through and through with its long bill. During the fight, they seem to stand in the air, keeping themselves up by the incredibly swift motion of their wings. When the windows towards the garden are open, they pursue each other into the rooms, fight a little, and flutter away again. Sometimes they come to a flower which is withering, and has no more juice in it ; they then, in a fit of anger, pluck it off, and throw it on the ground, that it may not mislead them for the future. If a garden contains a great number of these little birds, they are seen to pluck off the flowers in such quantities, that the ground is quite covered with them, and it seems as if this proceeded from a motion of envy.

COMMONLY you hear no other sound than their humming ; but when they fly against each other in the air, they make a chirping noise like a sparrow or chicken. I have sometimes walked with several other people in small gardens, and these birds have on all sides fluttered about us, without appearing very shy. They are so small that one would easily mistake them for great

humming-bees or butterflies, and their flight resembles that of the former, and is incredibly swift. They have never been observed to feed on insects or fruit; the nectar of flowers seems therefore to be their only food. Several people have caught some humming-birds, on account of their singular beauty, and have put them into cages, where they died for want of a proper food. However, Mr. *Bartram* has kept a couple of them for several weeks together, by feeding them with water in which sugar had been dissolved; and I am of opinion, that it would not be difficult to keep them all winter in a hot-house.

THE humming-bird always builds its nest in the middle of a branch of a tree, and it is so small, that it cannot be seen from the ground, but he who intends to see it must get up to the branch. For this reason it is looked upon as a great rarity if a nest is accidentally found, especially as the trees in summer have so thick a foliage. The nest is likewise the least of all; that which is in my possession is quite round, and consists in the inside of a brownish and quite soft down, which seems to have been collected from the leaves of the great mullein or *Verbascum Thapsus*, which are often found covered with a soft wool of this colour, and the plant is plentiful here. The outside of the nest has a coating of green moss, such as is common on old pales, or enclosures, and on trees; the inner diameter of the nest is hardly a geometrical inch at the top, and its depth half an inch. It is however known, that the humming-birds make their nests likewise of flax, hemp, moss, hair, and other such
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soft materials; they are said to lay two eggs, each of the size of a pea.

Oct. 25th. I employed this day and the next in packing up all the seeds gathered this autumn, for I had an opportunity of sending them to *England* by the ships which sailed about this time. From *England* they were forwarded to *Sweden*.

Oct. 27th. IN the morning I set out on a little journey to *New York*, in company with Mr. *Cock*, with a view to see the country, and to enquire into the safest road, which I could take in going to *Canada*, through the desert or uninhabited country between it and the *English* provinces.

THAT part where we travelled at present was pretty well inhabited on both sides of the road, by *Englishmen*, *Germans*, and other *Europeans*. Plains and hills of different dimensions were seen alternately; mountains and stones I never saw, excepting a few pebbles. Near almost every farm was a great orchard with peach and apple trees, some of which were yet loaded with fruit.

THE enclosures were in some parts low enough for the cattle to leap over them with ease; to prevent this the hogs had a triangular wooden yoke: and to the horse's neck was fastened a piece of wood, which at the lower end had a tooth or hook, fastening in the enclosure, and stopping the horse, just when it lifted its fore feet to leap over; but I know not whether this be a good invention with regard to horses. They were likewise kept in bounds by a piece of wood, one end of which was fastened to one of the

the fore feet, and the other to one of the hind feet, and it forced them to walk pretty slowly, as at the same time it made it impossible for them to leap over the enclosures. To me it appeared, that the horses were subject to all sorts of dangerous accidents from this piece of wood.

NEAR *New Frankfurt*; we rode over a little stone bridge, and somewhat further, eight or nine *English* miles from *Philadelphia*, we passed over another, which was likewise of stone. There are not yet any mile-stones put up in the country, and the inhabitants only compute the distances by guesses. We were afterwards brought over a river in a ferry, where we paid three pence a person, for ourselves and our horses.

AT one of the places where we stopt to have our horses fed, the people had a *Mocking-bird* in a cage; and it is here reckoned the best singing bird, though its plumage be very simple, and not showy at all. At this time of the year it does not sing. *Linnaeus* calls it *Turdus polyglottos*; and *Catesby*, in his *Natural History of Carolina*, Vol. 1. p. 27. tab. 27, has likewise described and drawn this bird. The people said that it built its nests in the bushes and trees, but is so shy, that if any body come and look at its eggs, it leaves the nest, never to come to it again. Its young ones require great care in being bred up. If they are taken from their mother and put into a cage, she feeds them for three or four days; but, seeing no hopes of setting them at liberty, she flies away. It then often happens, that the young ones die soon after, doubtless because they cannot accustom themselves to eat what the peo-
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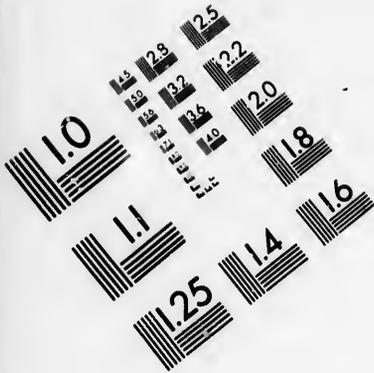


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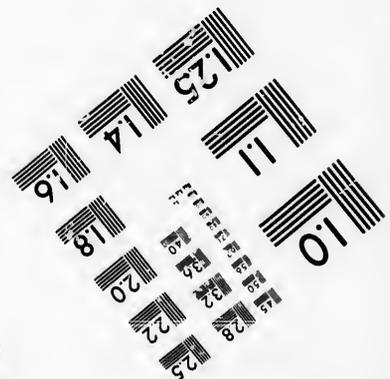
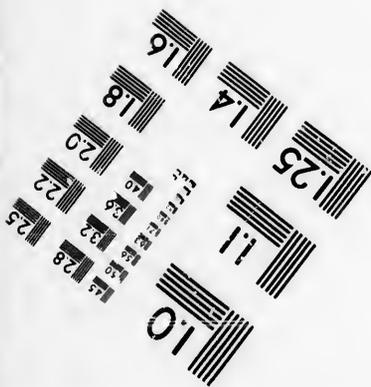
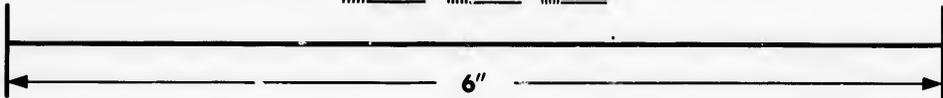
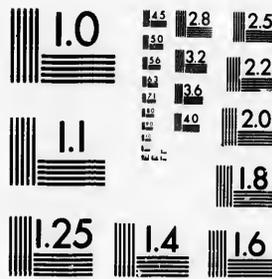


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ple give them. These birds stay all summer in the colonies, but retire in autumn to the south, and stay away all winter. They have got the name of *Mocking-birds*, on account of their skill in imitating the note of almost every bird they hear. The song peculiar to them is excellent, and varied by an infinite change of notes and melody; several people are therefore of opinion, that they are the best singing birds in the world. So much is certain, that few birds come up to them; this is what makes them precious.

ABOUT noon we came to *New Bristol*, a small town in *Pensylvania*, on the banks of the *Delaware*, about fifteen *English* miles from *Philadelphia*. Most of the houses are built of stone, and stand asunder. The inhabitants carry on a small trade, though most of them get their goods from *Philadelphia*. On the other side of the river, almost directly opposite to *New Bristol*, lies the town of *Burlington*, in which the governor of *New Jersey* resides.

COUNTRY seats appeared on both sides of the roads. But soon we came into a lane enclosed with pales on both sides, including pretty great corn-fields. Next followed a wood, and we perceived, for the space of four *English* miles, nothing but woods, and a very poor soil, on which the *Lupinus perennis* grew plentifully and succeeded well. I was overjoyed to see a plant come on so well in these poor dry places, and even began to meditate, how to improve this discovery in a soil like that which it inhabited. But I afterwards had the mortification to find that the horses and cows eat almost all the other plants,

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but left the lupine, which was however very green, looked very fresh, and was extremely soft to the touch. Perhaps means may be found out of making this plant palatable to the cattle. In the evening, we arrived at *Trenton*, after having previously passed the *Delaware* in a ferry.

Oct. 28th. *TRENTON* is a long narrow town, situate at some distance from the river *Delaware*, on a sandy plain; it belongs to *New Jersey*, and they reckon it thirty miles from *Philadelphia*. It has two small churches, one for the people belonging to the church of *England*, the other for the presbyterians. The houses are partly built of stone, though most of them are made of wood or planks, commonly two stories high, together with a cellar below the building, and a kitchen under ground, close to the cellar. The houses stand at a moderate distance from one another. They are commonly built so, that the street passes along one side of the houses, while gardens of different dimensions bound the other side; in each garden is a draw-well; the place is reckoned very healthy. Our landlord told us, that, twenty-two years ago, when he first settled here, there was hardly more than one house; but from that time *Trenton* has encreased so much, that there are at present near a hundred houses. The houses were within divided into several rooms by their partitions of boards. The inhabitants of the place carried on a small trade with the goods which they got from *Philadelphia*, but their chief gain consisted in the arrival of the numerous travellers between that city and *New York*; for they are commonly brought by the *Trenton*

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Trenton Yachts from *Philadelphia* to *Trenton*, or from thence to *Philadelphia*. But from *Trenton* further to *New Brunswick*, the travellers go in the waggons which set out every day for that place. Several of the inhabitants, however, likewise subsist on the carriage for all sorts of goods, which are every day sent in great quantities, either from *Philadelphia* to *New York*, or from thence to the former place; for between *Philadelphia* and *Trenton* all goods go by water, but between *Trenton* and *New Brunswick* they are all carried by land, and both these conveniences belong to people of this town.

For the yachts which go between this place and the capital of *Pensylvania*, they usually pay a shilling and six pence of *Pensylvania* currency per person, and every one pays besides for his baggage. Every passenger must provide meat and drink for himself, or pay some settled fare: between *Trenton* and *New Brunswick* a person pays two shillings and six pence, and the baggage is likewise paid for separately.

WE continued our journey in the morning; the country through which we passed was for the greatest part level, though sometimes there were some long hills; some parts were covered with trees, but far the greater part of the country was without woods; on the other hand, I never saw any place in *America*, the towns excepted, so well peopled. An old man, who lived in this neighbourhood, and accompanied us for some part of the road, however assured me, that he could well remember the time, when between *Trenton* and *New Brunswick* there were not above three

three farms, and he reckoned it was about fifty and some odd years ago. During the greater part of the day, we had very extensive corn-fields on both sides of the road, and commonly towards the south the country had a great declivity. Near almost every farm was a spacious orchard full of peaches and apple trees, and in some of them the fruit was fallen from the trees in such quantities, as to cover nearly the whole surface. Part of it they left to rot, since they could not take it all in and consume it. Wherever we passed by, we were always welcome to go into the fine orchards, and gather our pockets full of the choicest fruit, without the possessor's so much as looking after it. Cherry trees were planted near the farms, on the roads, &c.

THE *barns** had a peculiar kind of construction hereabouts, which I will give a concise description of. The whole building was very great, so as almost to equal a small church; the roof was pretty high, covered with wooden shingles, declining on both sides, but not steep: the walls which support it were not much higher than a full grown man; but, on the other hand, the breadth of the building was the more considerable: in the middle was the threshing floor, and above it, or in the loft or garret, they put the corn which was not yet threshed, the straw, or any thing else, according to the season: on one side were stables for the horses, and on the other for the cows. And the small cattle had likewise

* THE author seems to comprehend more by this word, than what it commonly includes, for he describes it as a building which contains both a barn and stables. F.

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their particular stables or styes; on both ends of the buildings were great gates, so that one could come in with a cart and horses through one of them, and go out at the other: here was therefore under one roof the threshing floor, the barn, the stables, the hay loft, the coach house, &c. This kind of buildings is chiefly made use of by the *Dutch* and *Germans*; for it is to be observed, that the country between *Trenton* and *New York* is inhabited by few *Englishmen*, but, instead of them, by *Germans* or *Dutch*,* the latter of which especially are numerous.

BEFORE I proceed, I find it necessary to remark one thing with regard to the *Indians*, or old *Americans*. For this account may perhaps meet with readers, who, like many people of my acquaintance, may be of opinion, that all *North America* was almost wholly inhabited by savage or heathen nations, and they may be astonished, that I do not mention them more frequently in my account. Others may perhaps imagine, that when I mention in my journal, that the country is much cultivated, that in several places, houses of stone or wood are built, round which are corn-fields, gardens, and orchards, that I am speaking of the property of the *Indians*; to undeceive them, I here give the following explication. The country, especially all along the coasts, in the *English* colonies, is inhabited by *Europeans*, who in some places are already so numerous, that few

* This kind of building is frequent in the north of *Germany*, *Holland*, and *Prussia*, and therefore it is no wonder that it is employed by people who were used to them in their own country. F.

parts of *Europe* are more populous. The *Indians* have sold the country to the *Europeans*, and have retired further up: in most parts you may travel twenty *Swedish* miles, or about a hundred and twenty *English* miles, from the sea-shore before you reach the first habitations of the *Indians*. And it is very possible for a person to have been at *Philadelphia* and other towns on the sea shore for half a year together, without so much as seeing an *Indian*. I intend in the sequel to give a more circumstantial account of them, their religion, manners, œconomy, and other particulars relating to them: at present I return to the sequel of my journal.

ABOUT nine *English* miles from *Trenton*, the ground began to change its colour; hitherto it consisted of a considerable quantity of hazel-coloured clay, but at present the earth was a reddish brown, so that it sometimes had a purple colour, and sometimes looked like logwood. This colour came from a red limestone, which approached very near to that which is on the mountain *Kinneulle* in *West Gothland*, and makes a particular stratum in the rock. The *American* red limestone therefore seems to be merely a variety of that I saw in *Sweden*, it lay in strata of two or three fingers thickness; but was divisible into many thinner plates or shivers, whose surface was seldom flat and smooth, but commonly rough: the strata themselves were frequently cut off by horizontal cracks. When these stones were exposed to the air, they, by degrees, shivered and withered into pieces, and at last turned into dust. The people of this neighborhood did not know
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how to make any use of it; the soil above is sometimes rich and sometimes poor: in such places where the people had lately dug new wells, I perceived, that most of the rubbish which was thrown up consisted of such a species of stone. This reddish brown earth we always saw till near *New Brunswick*, where 'tis particularly plentiful. The banks of the river shewed, in many places, nothing but strata of *Limestone*, which did not run horizontally, but dipped very much.

ABOUT ten o'clock in the morning we came to *Prince-town*, which is situated in a plain. Most of the houses are built of wood, and are not contiguous, so that there are gardens and pastures between them. As these parts were sooner inhabited by *Europeans* than *Pensylvania*, the woods were likewise more cut away, and the country more cultivated, so that one might have imagined himself to be in *Europe*.

WE now thought of continuing our journey, but as it began to rain very heavily, and continued so during the whole day and part of the night, we were forced to stay till next morning.

OCT. 29th. THIS morning we proceeded on our journey. The country was pretty well peopled; however there were yet great woods in many places: they all consisted of deciduous trees: and I did not perceive a single tree of the fir kind, till I came to *New Brunswick*. The ground was level, and did not seem to be every where of the richest kind. In some places it had hillocks, losing themselves almost imperceptibly in the plains, which were commonly crossed by a rivulet. Almost near every farm-house were great orchards. The houses were commonly built of

timber, and at some distance by themselves stood the ovens for baking, consisting commonly of clay.

On a hill covered with trees, and called *Rock-hill*, I saw several pieces of stone or rock, so big, that they would have required three men to roll them down. But besides these there were few great stones in the country; for most of those which we saw, could easily be lifted up by a single man. In another place we perceived a number of little round pebbles, but we did not meet with either mountains or rocks.

ABOUT noon we arrived at *New Brunswick*, a pretty little town in the province of *New Jersey*, in a valley on the west side of the river *Rareton*; on account of its low situation, it cannot be seen (coming from *Pensylvania*) before you get to the top of the hill, which is quite close up to it: the town extends north and south along the river. The *German* inhabitants have two churches, one of stone and the other of wood; the *English* church is of the latter kind, but the presbyterians were building one of stone: the town house makes likewise a pretty good appearance. Some of the other houses are built of bricks, but most of them are made either wholly of wood, or of bricks and wood; the wooden houses are not made of strong timber, but merely of boards or planks, which are within joined by laths: such houses as consist of both wood and bricks, have only the wall towards the street of bricks, all the other sides being merely of planks. This peculiar kind of ostentation would easily lead a traveller, who passes through the town in haste, to believe that most of the houses are built of bricks,

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The houses were covered with shingles; before each door there was an elevation, to which you ascend by some steps from the street; it resembled a small balcony, and had some benches on both sides, on which the people sat in the evening, in order to enjoy the fresh air, and to have the pleasure of viewing those who passed by. The town has only one street lengthways, and at its northern extremity there is a street across; both of these are of a considerable length.

THE river *Rareton* passes hard by the town, and is deep enough for great yachts to come up; its breadth near the town is within the reach of a common gun shot; the tide comes up several miles beyond the town, the yachts were placed lengthways along the bridge; the river has very high and pretty steep banks on both sides, but near the town there are no such banks, it being situated in a low valley. One of the streets is almost entirely inhabited by *Dutchmen*, who came hither from *Albany*, and for that reason they call it *Albany street*. These *Dutch* only keep company among themselves, and seldom or never go amongst the other inhabitants, living as it were quite separate from them. *New Brunswick* belongs to *New Jersey*; however the greatest part, or rather all its trade is to *New York*, which is about forty *English* miles distant; to that place they send corn, flour in great quantities, bread, several other necessaries, a great quantity of linseed, boards, timber, wooden vessels, and all sorts of carpenter's work. Several small yachts are every day going backwards and forwards between these two towns. The inhabitants like-

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wife get a considerable profit from the travellers who every hour pass through on the high road.

THE steep banks consist of the red limestone, which I have before described. It is here plainly visible that the strata are not horizontal, but considerably dipping, especially towards the south. The weather and the air has in a great measure dissolved the stone here: I enquired, whether it could not be made use of, but was assured, that in building houses it was entirely useless; for, though it is hard and permanent under ground, yet, on being dug out, and exposed for some time to the air, it first crumbles into greater, then into lesser pieces, and at last is converted into dust. An inhabitant of this town, however, tried to build a house with this sort of stone, but its outsides being exposed to the air, soon began to change so much, that the owner was obliged to put boards all over the wall, to preserve it from falling to pieces. The people however pretend that this stone is a very good manure, if it is scattered upon the corn-fields in its rubbish state, for it is said to stifle the weeds: it is therefore made use of both on the fields and in gardens.*

TOWARDS the evening we continued our journey, and were ferried over the river *Rareton*, together with our horses. In a very dry summer, and when the tide has ebbed, it is by no means dangerous to ride through this river. On the opposite shore the red juniper tree was pretty abundant. The country through which we now passed was

* PROBABLY it is a stone marle; a blue and reddish species of this kind is used with good success, in the county of *Bamff* in *Scotland*.

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WE saw *Guinea Hens* in many places where we passed by. They sometimes run about the fields, at a good distance from the farm-houses.

ABOUT eight *English* miles from *New Brunswick*, the road divided. We took that on the left, for that on the right leads to *Amboy*, the chief sea-town in *New Jersey*. The country now made a charming appearance; some parts being high, others forming vallies, and all of them well cultivated. From the hills you had a prospect of houses, farms, gardens, corn-fields, forests, lakes, islands, roads, and pastures.

In most of the places where we travelled this day the colour of the ground was reddish. I make no doubt, but there were strata of the before-mentioned red limestone under it. Sometimes the ground looked very like a cinnabar ore.

WOOD-BRIDGE is a small village in a plain, consisting of a few houses: we stopped here to rest our horses a little. The houses were most of them built of boards; the walls had a covering of shingles on the outside; these shingles were round at one end, and all of a length in each row: some of the houses had an *Italian* roof, but the greatest part had roofs with pediments; most of them were covered with shingles. In most places we met with wells, and buckets to draw up the water.

ELIZABETH-TOWN is a small town, about twenty *English* miles distant from *New Brunswick*: we arrived there immediately after sun-setting. Its houses are mostly scattered, but well built, and generally of boards, with a roof of shingles.

shingles, and walls covered with the same. There were likewise some stone buildings. A little rivulet passes through the town from west to east; it is almost reduced to nothing when the water ebbs away, but with the full tide they can bring up small yachts. Here were two fine churches, each of which made a much better appearance than any one in *Philadelphia*. That belonging to the people of the church of *England* was built of bricks, had a steeple with bells, and a balustrade round it, from which there was a prospect of the country. The meeting house of the presbyterians was built of wood, but had both a steeple and bells, and was, like the other houses, covered with shingles. The town house made likewise a good appearance, and had a spire with a bell. The banks of the river were red, from the reddish limestone; both in and about the town were many gardens and orchards; and it might truly be said, that *Elizabeth-town* was situated in a garden, the ground hereabouts being even and well cultivated.

AT night we took up our lodgings at *Elizabeth-town Point*, an inn, about two *English* miles distant from the town, and the last house on this road belonging to *New Jersey*. The man who had taken the lease of it, together with that of the ferry near it, told us that he paid a hundred and ten pounds of *Pensylvania* currency to the owner.

Oct. 30th. WE were ready to proceed on our journey at sun-rising. Near the inn where we had passed the night, we were to cross a river, and we were brought over, together with our horses, in a wretched half-rotten ferry. This river came a considerable way out of the country,
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and small vessels could easily sail up it. This was a great advantage to the inhabitants of the neighbouring country, giving them an opportunity of sending their goods to *New York* with great ease; and they even made use of it for trading to the *West Indies*. The country was low on both sides of the river, and consisted of meadows. But there was no other hay to be got, than such as commonly grows in swampy grounds; for as the tide comes up in this river, these low plains were sometimes overflowed when the water was high. The people hereabouts are said to be troubled in summer with immense swarms of gnats or musquetoës, which sting them and their cattle. This was ascribed to the low swampy meadows, on which these insects deposit their eggs, which are afterwards hatched by the heat.

As soon as we had got over the river, we were upon *Staten Island*, which is quite surrounded with salt water. This is the beginning of the province of *New York*. Most of the people settled here were *Dutchmen*, or such as came hither whilst the *Dutch* were yet in possession of this place. But at present they were scattered among the *English* and other *European* inhabitants, and spoke *English* for the greatest part. The prospect of the country here is extremely pleasing, as it is not so much intercepted by woods, but offers more cultivated fields to view. Hills and vallies still continued, as usual, to change alternately.

THE farms were near each other. Most of the houses were wooden; however some were built of stone. Near every farm-house was an

orchard with apple trees. Here, and on the whole journey before, I observed a press for cyder at every farm-house, made in different manners, by which the people had already pressed the juice out of the apples, or were just busied with that work. Some people made use of a wheel made of thick oak planks, which turned upon a wooden axis, by means of a horse drawing it, much in the same manner as the people do with woad; * except that here the wheel runs upon planks. Cherry trees stood along the enclosures round corn-fields.

THE corn-fields were excellently situated, and either sown with wheat or rye. They had no ditches on their sides, but (as is usual in *England*) only furrows, drawn at greater or lesser distances from each other.

IN one place we observed a water mill, so situated, that when the tide flowed, the water ran into a pond: but when it ebbed, the floodgate was drawn up, and the mill driven by the water, flowing out of the pond.

ABOUT eight o'clock in the morning we arrived at the place where we were to cross the water, in order to come to the town of *New York*. We left our horses here, and went on board the yacht: we were to go eight *English* miles by sea; however, we landed about eleven o'clock in the morning at *New York*. We saw a kind of wild ducks in immense quantities upon the water: the people called them *Blue bills*, and

* *Dr. Linnæus*, in his *Travels through Westrogothia*, has given a drawing of the machine by which woad is prepared, on the 128th page.

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they seemed to be the same with our *Pintail ducks*, or *Linnaeus's Anas acuta*: but they were very shy. On the shore of the continent we saw some very fine sloping corn-fields, which at present looked quite green, the corn being already come up. We saw many boats, in which the fishermen were busy catching oysters: to this purpose they make use of a kind of rakes with long iron teeth bent inwards; these they used either single, or two tied together, in such a manner, that the teeth were turned towards each other.

Oct. 31st. ABOUT *New York* they find innumerable quantities of excellent oysters, and there are few places which have oysters of such an exquisite taste, and of so great a size: they are pickled and sent to the *West Indies* and other places; which is done in the following manner. As soon as the oysters are caught, their shells are opened, and the fish washed clean; some water is then poured into a pot, the oysters are put into it, and they must boil for a while; the pot is then taken off from the fire again, the oysters taken out and put upon a dish, till they are somewhat dry: then you take some mace, allspice, black pepper, and as much vinegar as you think is sufficient to give a sourish taste. All this is mixed with half the liquor in which the oysters were boiled, and put over the fire again. While you boil it, great care is to be taken in scumming off the thick scum; at last the whole pickle is poured into a glass or earthen vessel, the oysters are put to it, and the vessel is well stopped to keep out the air. In this manner

ner oysters will keep for years together, and may be sent to the most distant parts of the world.

THE merchants here buy up great quantities of oysters about this time, pickle them in the above-mentioned manner, and send them to the *West Indies*: by which they frequently make a considerable profit: for, the oysters, which cost them five shillings of their currency, they commonly sell for a pistole, or about six times as much as they gave for them; and sometimes they get even more: the oysters which are thus pickled have a very fine flavour. The following is another way of preserving oysters: they are taken out of the shells, fried with butter, put into a glass or earthen vessel with the melted butter over them, so that they are quite covered with it, and no air can get to them. Oysters prepared in this manner have likewise an agreeable taste, and are exported to the *West Indies*, and other parts.

OYSTERS are here reckoned very wholesome, some people assured us, that they had not felt the least inconvenience, after eating a considerable quantity of them. It is likewise a common rule here, that oysters are best in those months, which have an *r* in their name, such as *September*, *October*, &c.; but that they are not so good in other months; however there are poor people, who live all the year long upon nothing but oysters with bread.

THE sea near *New York*, affords annually the greatest quantity of oysters. They are found chiefly in a muddy ground, where they lie in the slime, and are not so frequent in a sandy bottom:

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bottom : a rocky and a stony bottom is seldom found here. The oyster shells are gathered in great heaps, and burnt into a lime, which by some people is made use of in building houses, but is not reckoned so good as that made of limestone. On our journey to *New York*, we saw high heaps of oyster shells near the farm-houses, upon the sea shore ; and about *New York*, we observed the people had carried them upon the fields, which were sown with wheat. However they were entire, and not crushed.

THE *Indians*, who inhabited the coast before the arrival of the *Europeans*, have made oysters and other shell fish their chief food ; and at present, whenever they come to a salt water, where oysters are to be got, they are very active in catching them, and sell them in great quantities to other *Indians*, who live higher up the country : for this reason you see immense numbers of oyster and muscle shells piled up near such places, where you are certain that the *Indians* formerly built their huts. This circumstance ought to make us cautious in maintaining, that in all places on the sea shore, or higher up in the country, where such heaps of shells are to be met with ; the latter have lain there ever since the time that those places were overflowed by the sea.

LOBSTERS are likewise plentifully caught hereabouts, pickled much in the same way as oysters, and sent to several places. I was told of a very remarkable circumstance about these lobsters, and I have afterwards frequently heard it

it mentioned. The coast of *New York* had already *European* inhabitants for a considerable time, yet no lobsters were to be met with on that coast; and though the people fished ever so often, they could never find any signs of lobsters being in this part of the sea: they were therefore continually brought in great well-boats from *New England*, where they are plentiful; but it happened that one of these well-boats broke in pieces near *Hellgate*, about ten *English* miles from *New York*, and all the lobsters in it got off. Since that time they have so multiplied in this part of the sea, that they are now caught in the greatest abundance.

Nov. 1st. A KIND of cold fever, which the *English* in this country call *Fever and Ague*, is very common in several parts of the *English* colonies. There are, however, other parts, where the people have never felt it. I will in the sequel describe the symptoms of this disease at large. Several of the most considerable inhabitants of this town assured me, that this disease was not near so common in *New York*, as it is in *Pensylvania*, where ten were seized by it, to one in the former province; therefore they were of opinion, that this disease was occasioned by the vapours arising from stagnant fresh water, from marshes, and from rivers; for which reason those provinces, situated on the sea shore, could not be so much affected by it. However the carelessness with which people eat quantities of melons, water melons, peaches, and other juicy
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fruit, in summer, was reckoned to contribute much towards the progress of this fever; and repeated examples confirmed the truth of this opinion. The jesuit's bark was reckoned a good remedy against it. It has, however, often been found to have operated contrary to expectation, though I am ignorant whether it was adulterated, or whether some mistake had been committed in the manner of taking it. Mr. *Davis van Horne*, a merchant, told me, that he cured himself, and several other people, of this fever, by the leaves of the common *Garden Sage*, or *Salvia officinalis* of *Linnaeus*. The leaves are crushed or pounded in a mortar, and the juice is pressed out of them; this is continued till they get a spoonful of the liquid, which is mixed with lemon juice. This draught is taken about the time that the cold fit comes on; and after taking it three or four times, the fever does not come again.

THE bark of the white oak was reckoned the best remedy which had as yet been found against the dysentery. It is reduced to a powder, and then taken: some people assured me, that in cases where nothing would help, this remedy had given a certain and speedy relief. The people in this place likewise make use of this bark (as is usually done in the *English* colonies) to dye wool a brown colour, which looks like that of bohea tea, and does not fade by being exposed to the sun. Among the numerous shells which are found on the sea shore, there are some, which by the *English* here are called *Clams*, and which bear some resemblance

to

to the human ear. They have a considerable thickness, and are chiefly white, excepting the pointed end, which both without and within has a blue colour, between purple and violet. They are met with in vast numbers on the sea shore of *New York, Long Island*, and other places. The shells contain a large animal, which is eaten both by the *Indians* and *Europeans* settled here.

A CONSIDERABLE commerce is carried on in this article, with such *Indians* as live further up the country. When these people inhabited the coast, they were able to catch their own clams, which at that time made a great part of their food; but at present this is the business of the *Dutch* and *English*, who live in *Long Island* and other maritime provinces. As soon as the shells are caught, the fish is taken out of them, drawn upon a wire, and hung up in the open air, in order to dry by the heat of the sun. When this is done, the flesh is put into proper vessels, and carried to *Albany* upon the river *Hudson*; there the *Indians* buy them, and reckon them one of their best dishes. Besides the *Europeans*, many of the native *Indians* come annually down to the sea shore, in order to catch clams, proceeding with them afterwards in the manner I have just described.

THE shells of these clams are used by the *Indians* as money, and make what they call their wampum; they likewise serve their women for an ornament, when they intend to appear in full dress. These wampums are properly made of the purple parts of the shells, which the *Indians*

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value more than the white parts. A traveller, who goes to trade with the *Indians*, and is well stocked with them, may become a considerable gainer; but if he take gold coin, or bullion, he will undoubtedly be a loser; for the *Indians*, who live farther up the country, put little or no value upon these metals which we reckon so precious, as I have frequently observed in the course of my travels. The *Indians* formerly made their own wampums, though not without a deal of trouble: but at present the *Europeans* employ themselves that way; especially the inhabitants of *Albany*, who get a considerable profit by it. In the sequel I intend to relate the manner of making the wampum.

Nov. 2d. BESIDES the different sects of Christians, there are many Jews settled in *New York*, who possess great privileges. They have a synagogue and houses, and great country seats of their own property, and are allowed to keep shops in town. They have likewise several ships, which they freight, and send out with their own goods. In fine, they enjoy all the privileges common to the other inhabitants of this town and province.

DURING my residence at *New York*, this time, and in the two next years, I was frequently in company with Jews. I was informed, among other things, that these people never boiled any meat for themselves on Saturday, but that they always did it the day before; and that in winter they kept a fire during the whole Saturday. They commonly eat no pork; yet I have been told by several men of credit, that

that many of them (especially among the young Jews) when travelling, did not make the least difficulty about eating this, or any other meat that was put before them; even though they were in company with Christians. I was in their synagogue last evening for the first time, and this day at noon I visited it again, and each time I was put into a particular seat, which was set apart for strangers or Christians. A young *Rabbi* read the divine service, which was partly in *Hebrew*, and partly in the *Rabbinical* dialect. Both men and women were dressed entirely in the *English* fashion; the former had all of them their hats on, and did not once take them off during service. The galleries, I observed, were appropriated to the ladies, while the men sat below. During prayers the men spread a white cloth over their heads; which perhaps is to represent sackcloth. But I observed that the wealthier sort of people had a much richer cloth than the poorer ones. Many of the men had Hebrew books, in which they sang and read alternately. The *Rabbi* stood in the middle of the synagogue, and read with his face turned towards the east: he spoke, however, so fast, as to make it almost impossible for any one to understand what he said. *

NEW YORK, the capital of a province of the same name, is situated under forty deg. and forty min. north lat. and seventy-four deg. and four min. of western long. from *London*; and is about

* As there are no Jews in *Sweden*, Prof. *Kalm* was an utter stranger to their manners and religious customs, and therefore relates them as a kind of novelty. F.

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ninety-seven *English* miles distant from *Philadelphia*. The situation of it is extremely advantageous for trade: for the town stands upon a point which is formed by two bays; into one of which the river *Hudson* discharges itself, not far from the town; *New York* is therefore on three sides surrounded with water: the ground it is built on, is level in some parts, and hilly in others; the place is generally reckoned very wholesome.

THE town was first founded by the *Dutch*; this, it is said, was done in the year 1623, when they were yet masters of the country; they called it *New Amsterdam*, and the country itself *New Holland*. The *English*, towards the end of the year 1664, taking possession of it under the conduct of *Des Cartes*, and keeping it by the virtue of the next treaty of peace, gave the name of *New York* to both the town and the province belonging to it: in size it comes nearest to *Boston* and *Philadelphia*. But with regard to its fine buildings, its opulence, and extensive commerce, it disputes the preference with them: at present it is about half as big again as *Gottenburgh* in *Sweden*.

THE streets do not run so straight as those of *Philadelphia*, and have sometimes considerable bendings: however they are very spacious and well-built, and most of them are paved, except in high places, where it has been found useless. In the chief streets there are trees planted, which in summer give them a fine appearance, and during the excessive heat at that time, afford a cooling shade: I found it extremely pleasant to walk

walk in the town, for it seemed quite like a garden: the trees which are planted for this purpose, are chiefly of two kinds. The *Water beech*, or *Linnaeus's Platanus occidentalis*, are the most numerous, and give an agreeable shade in summer, by their great and numerous leaves. The *Locust tree*, or *Linnaeus's Robinia Pseud-Acacia*, is likewise frequent: its fine leaves, and the odoriferous scent which exhales from its flowers, make it very proper for being planted in the streets near the houses, and in gardens. There are likewise lime trees and elms in these walks, but they are not by far so frequent as the others: one seldom met with trees of the same sort next to each other, they being in general planted alternately.

BESIDES numbers of birds of all kinds which make these trees their abode, there are likewise a kind of frogs which frequent them in great numbers in summer; they are Dr. *Linnaeus's Rana arborea*, and especially the *American* variety of this animal. They are very clamorous in the evening and in the nights (especially when the days had been hot, and a rain was expected) and in a manner drown the singing of the birds. They frequently make such a noise, that it is difficult for a person to make himself heard.

MOST of the houses are built of bricks; and are generally strong and neat, and several stories high. Some had, according to old architecture, turned the gable-end towards the streets; but the new houses were altered in this respect. Many of the houses had a balcony on the roof, on which the people used to sit in the evenings in the

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the summer season; and from thence they had a pleasant view of a great part of the town, and likewise of part of the adjacent water and of the opposite shore. The roofs are commonly covered with tiles or shingles: the latter of which are made of the white fir tree, or *Pinus Strobus* (Linn. sp. plant.) which grows higher up in the country. The inhabitants are of opinion, that a roof made of these shingles is as durable as one made in *Pennsylvania* of the *White Cedar*, or *Cupressus thyoides* (Linn. spec. plant.) The walls were white-washed within; and I did not any where see hangings, with which the people in this country seem in general to be but little acquainted. The walls were quite covered with all sorts of drawings and pictures in small frames. On each side of the chimnies they had usually a sort of alcove; and the wall under the windows was wainscotted, and had benches placed near it. The alcoves, and all the wood work, were painted with a bluish grey colour.

THERE are several churches in the town, which deserve some attention. 1. *The English Church*, built in the year 1695, at the west end of the town, consisting of stone, and has a steeple with a bell. 2. *The new Dutch Church*, which is likewise built of stone, is pretty large, and is provided with a steeple; it also has a clock, which is the only one in the town. This church stands almost due from north to south. No particular point of the compass has here been in general attended to in erecting sacred buildings. Some churches stand as is usual from east to west, others from south to north, and others in differ-

ent positions. In this *Dutch church* there is neither altar, vestry, choir, sconces, nor paintings. Some trees are planted round it, which make it look as if it was built in a wood. 3. *The old Dutch Church*, which is also built of stone. It is not so large as the new one. It was painted in the inside, though without any images, and adorned with a small organ, of which governor *Burnet* made them a present. The men, for the most part, sit in the gallery, and the women below. 4. *The Presbyterian church*, which is pretty large, and was built but lately. It is of stone, and has a steeple and a bell in it. 5. *The German Lutheran Church*. 6. *The German Reformed Church*. 7. *The French Church*, for protestant refugees. 8. *The Quaker's Meeting house*. 9. To these may be added the *Jewish Synagogue*, which I mentioned before.

TOWARDS the sea, on the extremity of the promontory, is a pretty good fortress, called *Fort George*, which entirely commands the port, and can defend the town, at least from a sudden attack on the sea side. Besides that, it is likewise secured on the north, or towards the shore, by a pallisade, which however (as for a considerable time the people have had nothing to fear from an enemy) is in many places in a very bad state of defence.

THERE is no good water to be met with in the town itself, but at a little distance there is a large spring of good water, which the inhabitants take for their tea, and for the uses of the kitchen. Those however, who are less delicate in this point, make use of the water from the wells in

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town, though it be very bad. This want of good water lies heavy upon the horses of the strangers that come to this place; for they do not like to drink the water from the wells in the town.

THE port is a good one: ships of the greatest burthen can lie in it, quite close up to the bridge: but its water is very salt, as the sea continually comes in upon it; and therefore is never frozen, except in extraordinary cold weather. This is of great advantage to the city and its commerce; for many ships either come in or go out of the port at any time of the year, unless the winds be contrary; a convenience, which, as I have before observed, is wanting at *Philadelphia*. It is secured from all violent hurricanes from the south-east by *Long Island*, which is situated just before the town: therefore only the storms from the south west are dangerous to the ships which ride at anchor here, because the port is open only on that side. The entrance however has its faults: one of them is, that no men of war can pass through it; for though the water is pretty deep, yet it is not sufficiently so for great ships. Sometimes even merchant ships of a large size have, by the rolling of the waves and by sinking down between them, slightly touched the bottom, though without any bad consequences. Besides this, the canal is narrow; and for this reason many ships have been lost here, because they may be easily cast upon a sand, if the ship is not well piloted. Some old people, who had constantly been upon this canal, assured me, that it was neither deeper nor shallower at present, than in their youth.

THE common difference between high and low water, at *New York*, amounts to about six feet, *English* measure. But at a certain time in every month, when the tide flows more than commonly, the difference in the height of the water is seven feet.

NEW YORK probably carries on a more extensive commerce, than any town in the *English North American* provinces; at least it may be said to equal them: *Boston* and *Philadelphia* however come very near up to it. The trade of *New York* extends to many places; and it is said they send more ships from thence to *London*, than they do from *Philadelphia*. They export to that capital all the various sorts of skins which they buy of the *Indians*, sugar, logwood, and other dying woods, rum, mahogany, and many other goods which are the produce of the *West Indies*; together with all the specie which they get in the course of trade. Every year they build several ships here, which are sent to *London*, and there sold; and of late years they have shipped a quantity of iron to *England*. In return for these, they import from *London* stuffs, and every other article of *English* growth or manufacture, together with all sorts of foreign goods. *England*, and especially *London*, profits immensely by its trade with the *American* colonies; for not only *New York*, but likewise all the other *English* towns on the continent, import so many articles from *England*, that all their specie, together with the goods which they get in other countries, must altogether go to *Old England*, in order to pay the amount, to which they are however insufficient. From hence it appears

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appears how much a well-regulated colony contributes to the increase and welfare of its mother country.

NEW YORK sends many ships to the *West Indies*, with flour, corn, biscuit, timber, tuns, boards, flesh, fish, butter, and other provisions; together with some of the few fruits that grow here. Many ships go to *Boston* in *New England*, with corn and flour; and take in exchange, flesh, butter, timber, different sorts of fish, and other articles, which they carry further to the *West Indies*. They now and then take rum from thence, which is distilled there in great quantities, and sell it here with a considerable advantage. Sometimes they send yachts with goods from *New York* to *Philadelphia*, and at other times yachts are sent from *Philadelphia* to *New York*; which is only done, as appears from the gazettes, because certain articles are cheaper at one place than at the other. They send ships to *Ireland* every year, laden with all kinds of *West India* goods; but especially with linseed, which is reaped in this province. I have been assured, that in some years no less than ten ships have been sent to *Ireland*, laden with nothing but linseed; because it is said the flax in *Ireland* does not afford good seed. But probably the true reason is this; the people of *Ireland*, in order to have the better flax, make use of the plant before the seed is ripe, and therefore are obliged to send for foreign seed; and hence it becomes one of the chief articles in trade.

At this time a bushel of linseed is sold for

eight shillings of *New York* currency, or exactly a piece of eight.

THE goods which are shipped to the *West Indies*, are sometimes paid for with ready money, and sometimes with *West India* goods, which are either first brought to *New York*, or immediately sent to *England* or *Holland*. If a ship does not chuse to take in *West India* goods in its return to *New York*, or if no body will freight it, it often goes to *Newcastle* in *England* to take in coals for ballast, which when brought home sell for a pretty good price. In many parts of the town coals are made use of, both for kitchen fires, and in rooms, because they are reckoned cheaper than wood, which at present costs thirty shillings of *New York* currency per fathom; of which measure I have before made mention. *New York* has likewise some intercourse with *South Carolina*; to which it sends corn, flour, sugar, rum, and other goods, and takes rice in return, which is almost the only commodity exported from *South Carolina*.

THE goods, with which the province of *New York* trades, are not very numerous. They chiefly export the skins of animals, which are bought of the *Indians* about *Oswego*; great quantities of boards, coming for the most part from *Albany*; timber and ready-made lumber, from that part of the country which lies about the river *Hudson*; and lastly, wheat, flour, barley, oats, and other kinds of corn, which are brought from *New Jersey* and the cultivated parts of this province. I have seen yachts from *New Brunswick*, laden with wheat which lay loose on board, and with

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with flour packed up in tuns; and also with great quantities of linseed. *New York* likewise exports some flesh and other provisions out of its own province, but they are very few; nor is the quantity of pease, which the people about *Albany* bring, much greater. Iron however may be had more plentifully, as it is found in several parts of this province, and is of a considerable goodness; but all the other products of this country are of little account.

Most of the wine, which is drank here and in the other colonies, is brought from the Isle of *Madeira*, and is very strong and fiery.

No manufactures of note have as yet been established here; at present they get all manufactured goods, such as woollen and linen cloth, &c. from *England*, and especially from *London*.

THE river *Hudson* is very convenient for the commerce of this city; as it is navigable for near an hundred and fifty *English* miles up the country, and falls into the bay not far from the town, on its western side. During eight months of the year this river is full of yachts, and other greater and lesser vessels, either going to *New York* or returning from thence, laden either with inland or foreign goods.

I CANNOT make a just estimate of the ships that annually come to this town or sail from it. But I have found, by the *Pensylvania* gazettes, that from the first of *December* in 1729, to the fifth of *December* in the next year, 211 ships entered the port of *New York*, and 222 cleared it; and since that time there has been a great increase of trade here.

THE country people come to market in *New York* twice a week, much in the same manner as they do at *Philadelphia*; with this difference, that the markets are here kept in several places.

THE governor of the province of *New York* resides here, and has a palace in the fort. Among those who have been entrusted with this post, *William Burnet* deserves to be had in perpetual remembrance. He was one of the sons of Dr. *Thomas Burnet* (so celebrated on account of his learning) and seemed to have inherited the knowledge of his father. But his great assiduity in promoting the welfare of this province, is what makes the principal merit of his character. The people of *New York* therefore still reckon him the best governor they ever had, and think that they cannot praise his services too much. The many astronomical observations which he made in these parts, are inserted in several *English* works. In the year 1727, at the accession of king *George II.* to the throne of *Great Britain*, he was appointed governor of *New England*. In consequence of this he left *New York*, and went to *Boston*, where he died universally lamented, on the 7th of *September* 1729.

AN assembly of deputies, from all the particular districts of the province of *New York*, is held at *New York* once or twice every year. It may be looked upon as a parliament or dyet in miniature. Every thing relating to the good of the province is here debated. The governor calls the assembly, and dissolves it at pleasure: this is a power which he ought only to make use of, either when no farther debates are necessary, or when

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the members are not so unanimous in the service of their king and country as is their duty: it frequently however happens, that, led aside by caprice or by interested views, he exerts it to the prejudice of the province. The colony has sometimes had a governor, whose quarrels with the inhabitants, have induced their representatives, or the members of the assembly, through a spirit of revenge, to oppose indifferently every thing he proposed, whether it was beneficial to the country or not. In such cases the governor has made use of his power; dissolving the assembly, and calling another soon after, which however he again dissolved upon the least mark of their ill humour. By this means he so much tired them, by the many expences which they were forced to bear in so short a time, that they were at last glad to unite with him, in his endeavours for the good of the province. But there have likewise been governors who have called assemblies and dissolved them soon after, merely because the representatives did not act according to their whims, or would not give their assent to proposals which were perhaps dangerous or hurtful to the common welfare.

The king appoints the governor according to his royal pleasure; but the inhabitants of the province make up his excellency's salary. Therefore a man entrusted with this place has greater or lesser revenues, according as he knows how to gain the confidence of the inhabitants. There are examples of governors, in this and other provinces of *North America*, who, by their dissensions with the inhabitants of their respective governments,

ments, have lost their whole salary, his Majesty having no power to make them pay it. If a governor had no other resource in these circumstances, he would be obliged either to resign his office, or be content with an income too small for his dignity; or else to conform himself in every thing to the inclinations of the inhabitants: but there are several stated profits, which in some measure make up for this. 1. No one is allowed to keep a public house without the governor's leave; which is only to be obtained by the payment of a certain fee, according to the circumstances of the person. Some governors therefore, when the inhabitants refused to pay them a salary, have hit upon the expedient of doubling the number of inns in their province. 2. Few people who intend to be married, unless they be very poor, will have their banns published from the pulpit; but instead of this they get licences from the governor, which empower any minister to marry them. Now for such a licence the governor receives about half a guinea, and this collected throughout the whole province, amounts to a considerable sum. 3. The governor signs all passports, and especially of such as go to sea; and this gives him another means of supplying his expences. There are several other advantages allowed to him, but as they are very trifling, I shall omit them.

At the above assembly the old laws are reviewed and amended, and new ones are made: and the regulation and circulation of coin, together with all other affairs of that kind, are there

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determined. For it is to be observed, that each *English* colony in *North America*, is independent of the other, and that each has its proper laws and coin, and may be looked upon in several lights as a state by itself. From hence it happens, that in time of war, things go on very slowly and irregularly here; for not only the sense of one province is sometimes directly opposite to that of another; but frequently the views of the governor, and those of the assembly, of the same province are quite different: so that it is easy to see, that while the people are quarrelling about the best and cheapest manner of carrying on the war, an enemy has it in his power to take one place after another. It has commonly happened, that whilst some provinces have been suffering from their enemies, the neighbouring ones were quiet and inactive, and as if it did not in the least concern them. They have frequently taken up two or three years in considering whether they should give assistance to an oppressed sister colony, and sometimes they have expressly declared themselves against it. There are instances of provinces who were not only neuter in these circumstances, but who even carried on a great trade with the power which at that very time was attacking and laying waste some other provinces.

THE *French* in *Canada*, who are but an inconsiderable body, in comparison with the *English* in *America*, have, by this position of affairs, been able to obtain great advantages in times of war; for if we judge from the number and power of

the *English*, it would seem very easy for them to get the better of the *French* in *America*.*

It is however of great advantage to the crown of *England*, that the *North American* colonies are near a country, under the government of the *French*, like *Canada*. There is reason to believe that the king never was earnest in his attempts to expel the *French* from their possessions there; though it might have been done with little difficulty. For the *English* colonies in this part of the world have increased so much in their number of inhabitants, and in their riches, that they almost vie with *Old England*. Now in order to keep up the authority and trade of their mother country, and to answer several other purposes, they are forbid to establish new manufactures, which would turn to the disadvantage of the *British* commerce: they are not allowed to dig for any gold or silver, unless they send them to *England* immediately: they have not the liberty of trading to any parts that do not belong to the *British* dominions, excepting some settled places; and foreign traders are not allowed to send their ships to them. These and some other restrictions, occasion the inhabitants of the *English* colonies to grow less tender for their mother country. This coldness is kept up by the many foreigners, such as *Germans*, *Dutch*, and *French*, settled here, and living among the *English*, who commonly have no particular attachment to *Old*

* THIS has really happened by a greater union and exertion of power from the colonies and the mother country; so that *Canada* has been conquered, and its possession has been confirmed to *Great Britain* in the last peace. F.

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England; add to this likewise, that many people can never be contented with their possessions, though they be ever so great, and will always be desirous of getting more, and of enjoying the pleasure which arises from changing; and their over great liberty, and their luxury, often lead them to licentiousness.

I HAVE been told by *Englishmen*, and not only by such as were born in *America*, but even by such as came from *Europe*, that the *English* colonies in *North America*, in the space of thirty or fifty years, would be able to form a state by themselves, entirely independent on *Old England*. But as the whole country which lies along the sea-shore is unguarded, and on the land side is harrassed by the *French* in times of war, these dangerous neighbours are sufficient to prevent the connection of the colonies with their mother country from being quite broken off. The *English* government has therefore sufficient reason to consider the *French* in *North America* as the best means of keeping the colonies in their due submission. But I am almost gone too far from my purpose; I will therefore finish my observations on *New York*.

THE declination of the magnetic needle in this town, was observed by *Philip Wells*, the chief engineer of the province of *New York*, in the year 1686, to be eight deg. and forty-five min. to the westward. But, in 1723, it was only seven deg. and twenty min. according to the observations of governor *Burnet*.

FROM hence we may conclude, that, in thirty-eight years, the magnet approaches about one deg.

deg. and twenty-five min. nearer to the true north; or, which is the same thing, about two min. annually. Mr. *Alexander*, a man of great knowledge in astronomy and in mathematics, assured me, from several observations, that, in the year 1750, on the eighteenth of *September*, the deviation was to be reckoned six deg. and twenty-two min.

THERE are two printers in the town, and every week some *English* gazettes are published, which contain news from all parts of the world.

THE winter is much more severe here than in *Pensylvania*, it being nearly as cold as in some of the provinces of *Sweden*: its continuance, however, is much shorter than with us: their spring is very early, and their autumn very late, and the heat in summer is excessive. For this reason, the melons sown in the fields are ripe at the beginning of *August*; whereas we can hardly bring them so soon to maturity under glasses and on hot beds. The cold of the winter I cannot justly determine, as the meteorological observations which were communicated to me, were all calculated after thermometers, which were so placed in the houses, that the air could not freely come at them. The snow lies for some months together upon the ground; and sledges are made use of here as in *Sweden*, but they are rather too bulky. The river *Hudson* is about an *English* mile and a half broad at its mouth: the difference between the highest flood and the lowest ebb, is between six and seven feet, and the water is very brackish: yet the ice stands in it not only

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one, but even several months : it has sometimes a thickness of more than two feet.

THE inhabitants are sometimes greatly troubled with *Musquitoes*. They either follow the hay, which is made near the town, in the low meadows which are quite penetrated with salt water, or they accompany the cattle at night when it is brought home. I have myself experienced, and have observed in others, how much these little animalcules can disfigure a person's face during a single night ; for the skin is sometimes so covered over with little blisters from their stings, that people are ashamed to appear in public. The water melons, which are cultivated near the town, grow very large : they are extremely delicious, and are better than in other parts of *North America* ; though they are planted in the open fields, and never in a hot-bed. I saw a water melon at Governor *Clinton's*, in *September 1750*, which weighed forty-seven *English* pounds, and at a merchant's in town another of forty-two pounds weight : however, they were reckoned the biggest ever seen in this country.

IN the year 1710, five kings, or *Sachems*, of the *Iroquois*, went from hence to *England*, in order to engage *Queen Anne* to make an alliance with them against the *French*. Their names, dress, reception at court, speeches to the *Queen*, opinion of *England*, and of the *European* manners, and several other particulars about them, are sufficiently known from other writings ; it would therefore be here unnecessary to enlarge about them. The kings or *Sachems* of the *Indians*, have commonly no greater authority over
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their subjects, than constables in a meeting of the inhabitants of a parish, and hardly so much. On my travels through the country of these *Indians*, I had never any occasion to go and wait upon the *Sachems*; for they always came into my habitation without being asked: these visits they commonly paid in order to get a glass or two of brandy, which they value above any thing they know. One of the five *Sachems*, mentioned above, died in *England*; the others returned safe.

THE first colonists in *New York* were *Dutchmen*: when the town and its territories were taken by the *English*, and left them by the next peace in exchange for *Surinam*, the old inhabitants were allowed either to remain at *New York*, and to enjoy all the privileges and immunities which they were possessed of before, or to leave the place with all their goods: most of them chose the former; and therefore the inhabitants, both of the town and of the province belonging to it, are yet for the greatest part *Dutchmen*; who still, especially the old people, speak their mother tongue.

THEY begin, however, by degrees, to change their manners and opinions; chiefly indeed in the town and in its neighbourhood; for most of the young people now speak principally *English*, and go only to the *English* church; and would even take it amiss if they were called *Dutchmen* and not *Englishmen*.

THOUGH the province of *New York* has been inhabited by *Europeans* much longer than *Pensylvania*, yet it is not by far so populous as that colony.

lony. This cannot be ascribed to any particular discouragement arising from the nature of the soil, for that is pretty good; but I was told of a very different reason, which I will mention here. In the reign of *Queen Anne*, about the year 1709, many *Germans* came hither, who got a tract of land from the government, on which they might settle. After they had lived there for some time, and had built houses and churches, and made corn-fields and meadows, their liberties and privileges were infringed, and, under several pretences, they were repeatedly deprived of parts of their land. This at last roused the *Germans*; they returned violence for violence, and beat those who thus robbed them of their possessions. But these proceedings were looked upon in a very bad light by the government; the most active people among the *Germans* being taken up, they were very roughly treated, and punished with the utmost rigour of the law. This, however, so far exasperated the rest, that the greater part of them left their houses and fields, and went to settle in *Pensylvania*: there they were exceedingly well received, got a considerable tract of land, and were indulged in great privileges, which were given them for ever. The *Germans*, not satisfied with being themselves removed from *New York*, wrote to their relations and friends, and advised them, if ever they intended to come to *America*, not to go to *New York*, where the government had shewn itself so unequitable. This advice had such influence, that the *Germans*, who afterwards went in great numbers to *North America*, constantly avoided *New York*,

and always went to *Pensylvania*. It sometimes happened that they were forced to go on board such ships as were bound to *New York*; but they were scarce got on shore, when they hastened on to *Pensylvania*, in sight of all the inhabitants of *New York*.

BUT the want of people in this province may likewise be accounted for in a different manner. As the *Dutch*, who first cultivated this country, obtained the liberty of staying here by the treaty with *England*, and of enjoying all their privileges and advantages without the least limitation, each of them took a very large piece of ground for himself; and many of the more powerful heads of families made themselves the possessors and masters of a country of as great an extent as would be sufficient to form a middling and even a great parish. Most of them being very rich, their envy of the *English* led them not to sell them any land but at an excessive rate; a practice which is still punctually observed among their descendants. The *English*, therefore, as well as people of different nations, have little encouragement to settle here. On the other hand, they have sufficient opportunity in the other provinces to purchase land at a more moderate price, and with more security to themselves. It is not then to be wondered, that so many parts of *New York* are still uncultivated, and have entirely the appearance of deserts. This instance may teach us how much a small mistake in a government will injure population.

Nov. 3d. ABOUT noon we set out from *New York* on our return; and, continuing our journey,

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RACCOON.



AMERICAN POLE-CAT.



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journey, we arrived at *Philadelphia* on the fifth of *November*.

IN the neighbourhood of this capital (of *Pensylvania*) the people had a month ago made their cyder, which they were obliged to do, because their apples were so ripe as to drop from the trees. But on our journey through *New York* we observed the people still employed in pressing out the cyder. This is a plain proof, that in *Pensylvania* the apples are sooner ripe than in *New York*; but whether this be owing to the nature of the soil, or a greater heat of the summer in *Philadelphia*, or to some other cause, I know not. However, there is not the least advantage in making cyder so early; for long experience had taught the husbandmen that it is worse for being made early in the year; the great heat in the beginning of autumn being said to hinder the fermentation of the juice.

THERE is a certain quadruped which is pretty common not only in *Pensylvania*, but likewise in other provinces both of *South* and *North America*, and goes by the name of *Polecat* among the *English*. In *New York* they generally call it *Skunk*. The *Swedes* here, by way of nickname, called it *Fiskatta*, on account of the horrid stench it sometimes causes, as I shall presently show. The *French* in *Canada*, for the same reason, call it *Bête puante*, or stinking animal, and *Enfant du diable*, or child of the devil. Some of them likewise call it *Pekan*: *Catesby*, in his *Natural History of Carolina*, has described it in Vol. 2, p. 62. by the name of *Putorius Americanus striatus*, and drawn it plate 62. Dr. *Linnæus* calls

it *Viverra Putorius*. * This animal, which is very similar to the *Marten*, is of about the same size, and commonly black: on the back it has a longitudinal white stripe, and two others on each side, parallel to the former. Sometimes, but very seldom, some are seen which are quite white. On our return to *Philadelphia*, we saw one of these animals: far from town, near a farmer's house, killed by dogs. And afterwards I had, during my stay in these parts, several opportunities of seeing it, and of hearing its qualities. It keeps its young ones in holes in the ground, and in hollow trees; for it does not confine itself to the ground, but climbs up trees with the greatest agility: it is a great enemy to birds, for it breaks their eggs, and devours their young ones; and if it can get into a hen-roost, it soon destroys all its inhabitants.

THIS animal has a particular quality by which it is principally known: when it is pursued by men or dogs, it runs at first as fast as it can, or climbs upon a tree; but if it is so beset by its pursuers, as to have no other way of making its escape, it squirts its urine upon them. This, according to some, it does by wetting its tail with the urine, whence, by a sudden motion, it scatters it abroad; but others believe, that it could send its urine equally far without the help of its tail; I find the former of these accounts to be the most likely. For some credible people

* OF this animal, and of the above-mentioned *Racoon*, is a representation given plate 2, both from original drawings; the *German* and the *Swedish* edition of Prof. *Kalm's* work being both without this plate, F.

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assured me, that they have had their faces wetted with it all over, though they stood above eighteen feet off from the animal. The urine has so horrid a stench, that nothing can equal it: it is something like that of the *Cranesbill*, or *Linnaeus's Geranium robertianum*, but infinitely stronger. If you come near a polecat when it spreads its stench, you cannot breathe for a while, and it seems as if you were stifled; and in case the urine comes into the eyes, a person is likely to be blinded. Many dogs, that in a chase pursue the polecat very eagerly, run away as fast as they can when they are wetted; however, if they be of the true breed, they will not give over the pursuit till they have caught and killed the polecat; but they are obliged now and then to rub their noses in the ground in order to relieve themselves.

CLOTHES which have been wetted by this animal retain the smell for more than a month, unless they be covered with fresh soil, and suffered to remain under it for twenty-four hours together, when it will, in a great measure, be removed. Those likewise who have got any of this urine upon their face and hands, rub them with loose earth; and some even hold their hands in the ground for an hour, as washing will not help them so soon. A certain man of rank, who had by accident been wetted by the polecat, stunk so ill, that on going into a house, the people either ran away, or, on his opening the door, rudely denied him entrance. Dogs that have hunted a polecat are so offensive, for some days afterwards, that they cannot be borne in the

house. At *Philadelphia* I once saw a great number of people on a market day throwing at a dog that was so unfortunate as to have been engaged with a polecat just before, and to carry about him the tokens of its displeasure. Persons when travelling through a forest, are often troubled with the stink which this creature makes; and sometimes the air is so much infected that it is necessary to hold one's nose. If the wind blows from the place where the polecat has been, or if it be quite calm, as at night, the smell is more strong and disagreeable.

IN the winter of 1749, a polecat, tempted by a dead lamb, came one night near the farm house where I then slept. Being immediately pursued by some dogs, it had recourse to its usual expedient in order to get rid of them. The attempt succeeded, the dogs not choosing to continue the pursuit: the stink was so extremely great, that, though I was at some distance, it affected me in the same manner as if I had been stifled; and it was so disagreeable to the cattle, that it made them roar very loudly: however, by degrees it vanished. Towards the end of the same year one of these animals got into our cellar, but no stench was observed, for it only vents that when it is pursued. The cook, however, found for several days together that some of the meat which was kept there was eaten; and suspecting that it was done by the cat, she shut up all avenues, in order to prevent their getting at it. But the next night, being awoke by a noise in the cellar, she went down, and, though it was quite dark, saw an animal with two shining eyes, which seemed

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to be all on fire; she however resolutely killed it, but not before the polecat had filled the cellar with a most dreadful stench. The maid was sick of it for several days; and all the bread, flesh, and other provisions kept in the cellar, were so penetrated with it, that we could not make the least use of them, and were forced to throw them all away.

FROM an accident that happened at *New York* to one of my acquaintances, I conclude that the polecat either is not always very shy, or that it sleeps very hard at night. This man coming home out of a wood in a summer evening, thought that he saw a plant standing before him; stooping to pluck it, he was to his cost convinced of his mistake, by being all on a sudden covered with the urine of a polecat, whose tail, as it stood upright, the good man had taken for a plant: the creature had taken its revenge so effectually, that he was much at a loss how to get rid of the stench.

HOWEVER though these animals play such disagreeable tricks, yet the *English*, the *Swedes*, the *French*, and the *Indians*, in these parts, tame them. They follow their masters like domestic animals, and never make use of their urine, except they be very much beaten or terrified. When the *Indians* kill such a polecat, they always eat its flesh; but when they pull off its skin, they take care to cut away the bladder, that the flesh may not get a taste from it. I have spoken with both *Englishmen* and *Frenchmen*, who assured me that they had eaten of it, and found it very good meat, and not much unlike the

the flesh of a pig. The skin, which is pretty coarse, and has long hair, is not made use of by the *Europeans*; but the *Indians* prepare it with the hair on, and make tobacco pouches of it, which they carry before them.

November 6th. IN the evening I made a visit to Mr. *Bartram*, and found him in conversation with a gentleman of *Carolina*, from whom I obtained several particulars; a few of which I will here mention.

TAR, *pitch*, and *rice* are the chief products of *Carolina*. The soil is very sandy, and therefore many pines and firs grow in it, from which they make tar: the firs which are taken for this purpose are commonly such as are dried up of themselves; the people here in general not knowing how to prepare the firs by taking the bark off on one, or on several sides, as they do in *Ostrobotnia*. In some parts of *Carolina* they likewise make use of the branches. The manner of burning or boiling, as the man describes it to me, is entirely the same as in *Finland*. The pitch is thus made: they dig a hole into the ground, and smear the inside well with clay, into which they pour the tar, and make a fire round it, which is kept up till the tar has got the consistence of pitch. They make two kinds of tar in the *North American* colonies: one is the common tar, which I have above described, and which is made of the stems, branches, and roots, of such firs, as were already considerably dried out before; which is the most common way in this country. The other way is peeling the bark from the firs on one side, and afterwards letting them stand ano-

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ther year; during which the resin comes out between the cracks of the stem. The tree is then felled and burnt for tar; and the tar thus made is called *green tar*, not that there is that difference of colour in it, for in this respect they are both pretty much alike; but the latter is called so from being made of green and fresh trees; whereas *common tar* is made of dead trees: the burning is done in the same manner as in *Finland*. They use only black firs; for the white firs will not serve this purpose, though they are excellent for boards, masts, &c. Green tar is dearer than common tar. It is already a pretty general complaint, that the fir woods are almost wholly destroyed by this practice.

RICE is planted in great quantity in *Carolina*; it succeeds best in marshy and swampy grounds, which may be laid under water, and likewise ripens there the soonest. Where these cannot be had, they must choose a dry soil; but the rice produced here, will be much inferior to the other; the land on which it is cultivated must never be manured. In *Carolina* they sow it in the middle of *April*, and it is ripe in *September*: it is planted in rows like pease, and commonly fifteen inches space is left between the rows; as soon as the plants are come up, the field is laid under water. This not only greatly forwards the growth of the rice, but likewise kills all weeds, so as to render weeding unnecessary. The straw of rice is said to be excellent food for cattle, who eat it very greedily. Rice requires a hot climate, and therefore it will not succeed well in *Virginia*, the summer there

there being too short, and the winter too cold; and much less will it grow in *Pensylvania*. They are as yet ignorant in *Carolina* of the art of making arrack from rice: it is chiefly *South Carolina* that produces the greatest quantity of rice; and on the other hand they make the most tar in *North Carolina*.

Nov. 7th. THE stranger from *Carolina*, whom I have mentioned before, had met with many oyster shells at the bottom of a well, seventy *English* miles distant from the sea, and four from a river: they lay in a depth of fourteen *English* feet from the surface of the earth: the water in the well was brackish; but that in the river was fresh. The same man, had, at the building of a saw-mill, a mile and a half from a river, found, first sand, and then clay filled with oyster shells. Under these he found several bills of sea birds as he called them, which were already quite petrified: they were probably *Glossopetra*.

THERE are two species of *foxes* in the *English* colonies, the one grey, and the other red: but in the sequel I shall shew that there are others which sometimes appear in *Canada*. The grey *foxes* are here constantly, and are very common in *Pensylvania* and in the southern provinces: in the northern ones they are pretty scarce, and the *French* in *Canada* call them *Virginian Foxes* on that account: in size they do not quite come up to our foxes. They do no harm to lambs: but they prey upon all sorts of poultry, whenever they can come at them. They do not however seem to be looked upon

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as animals that cause a great deal of damage; for there is no reward given for killing them: their skin is greatly sought for by hatters, who employ the hair in their work. People have their clothes lined with it sometimes: the greafe is used against all sorts of rheumatic pains. These foxes are said to be less nimble than the red ones: they are sometimes tamed; though they be not suffered to run about, but are tied up. Mr. *Catesby* has drawn and described this sort of foxes in his *Natural History of Carolina*, by the name of the *grey American fox*, vol. 2. p. 78. tab. 78. A skin of it was sold in *Philadelphia* for two shillings and six-pence in *Pensylvanian* currency.

THE *red Foxes* are very scarce here: they are entirely the same with the *European* sort. Mr. *Bartram* and several others assured me, that, according to the unanimous testimony of the *Indians*, this kind of foxes never was in the country, before the *Europeans* settled in it. But of the manner of their coming over I have two different accounts: Mr. *Bartram* and several other people were told by the *Indians*, that these foxes came into *America* soon after the arrival of the *Europeans*, after an extraordinary cold winter, when all the sea to the northward was frozen: from hence they would infer, that they could perhaps get over to *America* upon the ice, from *Greenland* or the northern parts of *Europe* and *Asia*. But Mr. *Evans*, and some some others, assured me, that the following account was still known by the people. A gentleman of fortune in *New England*, who had

had a great inclination for hunting, brought over a great number of foxes from *Europe*, and let them loose in his territories, that he might be able to indulge his passion for hunting.* This is said to have happened almost at the very beginning of *New England's* being peopled with *European* inhabitants. These foxes were believed to have so multiplied, that all the red foxes in the country were their offspring. At present they are reckoned among the noxious creatures in these parts; for they are not contented, as the grey foxes, with killing fowl; but they likewise devour the lambs. In *Pensylvania* therefore there is a reward of two shillings for killing an old fox, and of one shilling for killing a young one. And in all other provinces there are likewise rewards offered for killing them. Their skin is in great request, and is sold as dear as that of the grey foxes, that is, two shillings and six-pence, in *Pensylvanian* currency.

* NEITHER of these accounts appear to be satisfactory; and therefore I am inclined to believe that these red foxes originally came over from *Asia*, (most probably from *Kamtschatka*, where this species is common. See *Miller's Account of the Navigations of the Russians*, &c.) though in remote times, and thus spread over *North America*. It is perhaps true that the *Indians* never took notice of them till the *Europeans* were settled among them; this, however, was because they never had occasion to use their skins: but when there was a demand for these they began to hunt them, and, as they had not been much accustomed to them before, they esteemed them as a novelty. What gives additional confirmation to this is, that when the *Russians*, under Commodore *Bering*, landed on the western coast of *America*, they saw five red foxes which were quite tame, and seemed not to be in the least afraid of men: now this might very well have been the case, if we suppose them to have been for many generations in a place where no body disturbed them; but we cannot account for it, if we imagine that they had been used to a country where there were many inhabitants, or where they had been much hunted. F.

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THEY have two sorts of *Wolves* here, which however seem to be of the same species. For some of them are yellowish, or almost pale grey, and others are black or dark brown. All the old *Swedes* related, that during their childhood, and still more at the arrival of their fathers, there were excessive numbers of wolves in the country, and that their howling and yelping might be heard all night. They likewise frequently tore in pieces, sheep, hogs, and other young and small cattle. About that time or soon after, when the *Swedes* and the *English* were quite settled here, the *Indians* were attacked by the small pox: this disease they got from the *Europeans*, for they knew nothing of it before: it killed many hundreds of them and most of the *Indians*, of the country, then called *New Sweden*, died of it. The wolves then came, attracted by the stench of so many corpses, in such great numbers that they devoured them all, and even attacked the poor sick *Indians* in their huts, so that the few healthy ones had enough to do, to drive them away. But since that time they have disappeared, so that they are now seldom seen, and it is very rarely that they commit any disorders. This is attributed to the greater cultivation of the country, and to their being killed in great numbers. But further up the country, where it is not yet so much inhabited, they are still very abundant. On the coasts of *Pensylvania* and *New Jersey*, the sheep stay all night in the fields, without the people's fearing the wolves: however, to prevent their multiplying too much, there

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there is a reward of twenty shillings in *Pennsylvania*, and of thirty in *New Jersey*, for delivering in a dead wolf, and the person that brings it may keep the skin. But for a young wolf the reward is only ten shillings of the *Pennsylvanian* currency. There are examples of these wolves being made as tame dogs.

THE *wild Oxen* have their abode principally in the woods of *Carolina*, which are far up in the country. The inhabitants frequently hunt them, and salt their flesh like common beef, which is eaten by servants and the lower class of people. But the hide is of little use, having too large pores to be made use of for shoes. However the poorer people in *Carolina* spread these hides on the ground instead of beds.

THE *Viscum filamentosum*, or *Fibrous mistletoe*, is found in abundance in *Carolina*; the inhabitants make use of it as straw in their beds, and to adorn their houses; the cattle are very fond of it: it is likewise employed in packing goods.

THE *Spartium scoparium* grew in Mr. *Bartram's* garden from *English* seeds; he said that he had several bushes of it, but that the frost in the cold winters here had killed most of them: they however grow spontaneously in *Sweden*.

MR. *Bartram* had some *Truffles*, or *Linnaeus's Lycoperdon Tuber*, which he had got out of a sandy soil in *New Jersey*, where they are abundant. These he shewed to his friend from *Carolina*, and asked him whether they were the *Tuckaboo* of the *Indians*. But the stranger denied it, and added, that though these truffles were likewise very common in *Carolina*, yet he had never seen them

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used any other way but in milk, against the dysentery; and he gave us the following description of the *Tuckaboo*. It grows in several swamps and marshes, and is commonly plentiful. The hogs greedily dig up its roots with their noses in such places; and the *Indians* in *Carolina* likewise gather them in their rambles in the woods, dry them in the sun-shine, grind them, and bake bread of them. Whilst the root is fresh it is harsh and acrid, but being dried it loses the greatest part of its acrimony. To judge by these qualities the *Tuckaboo* may very likely be the *Arum Virginianum*. Compare with this account, what shall be related in the sequel of the *Tabim* and *Tuckab.*

AFTER dinner I again returned to town.

Nov. 8th. SEVERAL *English* and *Swedish* æconomists kept bee-hives, which afforded their possessors profit: for bees succeed very well here: the wax was for the most part sold to tradesmen: but the honey they made use of in their own families, in different ways. The people were unanimous, that the common bees were not in *North America* before the arrival of the *Europeans*; but that they were first brought over by the *English* who settled here. The *Indians* likewise generally declare, that their fathers had never seen any bees either in the woods or any where else, before the *Europeans* had been several years settled here. This is further confirmed by the name which the *Indians* give them: for, having no particular name for them in their language, they call them *English* flies, because the *English* first brought them over; but at present they fly plentifully about the woods of *North America*.

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America. However it has been observed, that the bees always, when they swarm, spread to the southward, and never to the northward. It seems as if they do not find the latter countries so good for their constitution: therefore they cannot stay in *Canada*, and all that have been carried over thither, died in winter. It seemed to me as if the bees in *America* were somewhat smaller than ours in *Sweden*. They have not yet been found in the woods on the other side of the *Blue Mountains*, which confirms the opinion of their being brought to *America* of late. A man told Mr. *Bartram*, that on his travels in the woods of *North America*, he had found another sort of bees, which, instead of separating their wax and honey, mixed it both together in a great bag. But this account wants both clearing up and confirming.

Nov. 9th. ALL the old *Swedes* and *Englishmen*, born in *America*, whom I ever questioned, asserted that there were not near so many birds fit for eating at present, as there used to be when they were children, and that their decrease was visible. They even said, that they had heard their fathers complain of this, in whose childhood the bays, rivers, and brooks were quite covered with all sorts of water fowl, such as wild geese, ducks, and the like. But at present there is sometimes not a single bird upon them; about sixty or seventy years ago, a single person could kill eighty ducks in a morning; but at present you frequently wait in vain for a single one. A *Swede* above ninety years old assured me, that he had in his youth killed twenty-three ducks at a shot.

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THIS good luck nobody is likely to have at present, as you are forced to ramble about for a whole day, without getting a sight of more than three or four. *Cranes** at that time came hither by hundreds in the spring: at present there are but very few. The *wild Turkeys*, and the birds, which the *Swedes* in this country call *Partridges* and *Hazel-hens*, were in whole flocks in the woods. But at this time a person is tired with walking before he can start a single bird.

THE cause of this diminution is not difficult to find. Before the arrival of the *Europeans*, the country was uncultivated, and full of great forests. The few *Indians* that lived here seldom disturbed the birds. They carried on no trade among themselves, iron and gunpowder were unknown to them. One hundredth part of the fowl, which at that time were so plentiful here, would have sufficed to feed the few inhabitants; and considering that they cultivated their small maize fields, caught fish, hunted stags, beavers, bears, wild cattle, and other animals whose flesh was delicious to them, it will soon appear how little they disturbed the birds. But since the arrival of great crouds of *Europeans*, things are greatly changed: the country is well peopled, and the woods are cut down: the people increasing in this country, they have by hunting and shooting in part extirpated the birds, in part scared them away: in spring the people still

* WHEN Captain *Amadas*, the first *Englishman* that ever landed in *North America*, set foot on shore. (to use his own words) such a flocke of *Cranes* (the most part white) arose under us with such a cry, redoubled by many echoes, as if an armie of men had shouted altogether.

take both eggs, mothers, and young indifferently, because no regulations are made to the contrary. And if any had been made, the spirit of freedom which prevails in the country would not suffer them to be obeyed. But though the eatable birds have been diminished greatly, yet there are others, which have rather increased than decreased in number, since the arrival of the *Europeans*: this can most properly be said of a species of daws, which the *English* call *Blackbirds*,* and the *Swedes*, *Maize thieves*; *Dr. Linnæus* calls them *Gracula Quiscalus*. And together with them, the several sorts of *Squirrels* among the quadrupeds have spread; for these and the former live chiefly upon maize, or at least they are most greedy of it. But as population increases, the cultivation of maize increases, and of course the food of the above-mentioned animals is more plentiful: to this it is to be added, that these latter are rarely eaten, and therefore they are more at liberty to multiply their kind. There are likewise other birds which are not eaten, of which at present there are nearly as many as there were before the arrival of the *Europeans*. On the other hand I heard great complaints of the great decrease of eatable fowl, not only in this province, but in all the parts of *North America*, where I have been.

AGED people had experienced that with the fish, which I have just mentioned of the birds: in their youth, the bays, rivers, and brooks, had such quantities of fish, that at one draught in the

* PROPERLY *shining blackbirds*.

morning, they caught as many as a horse was able to carry home. But at present things are greatly altered; and they often work in vain all the night long, with all their fishing tackle. The causes of this decrease of fish, are partly the same with those of the diminution of the number of birds; being of late caught by a greater variety of contrivances, and in different manners than before. The numerous mills on the rivers and brooks likewise contribute to it in part: for it has been observed here, that the fish go up the river in order to spawn in a shallow water; but when they meet with works that prevent their proceeding, they turn back, and never come again. Of this I was assured by a man of fortune at *Boston*: his father was used to catch a number of herrings throughout the winter, and almost always in summer, in a river, upon his country seat: but he having built a mill with a dyke in this water, they were lost. In this manner they complained here and every where of the decrease of fish. Old people asserted the same in regard to oysters at *New York*; for though they are still taken in considerable quantity, and are as big and as delicious as can be wished, yet all the oyster-catchers own, that the number diminishes greatly every year: the most natural cause of it, is probably the immoderate catching of them at all times of the year.

MR. FRANKLIN told me, that in that part of *New England* where his father lived, two rivers fell into the sea, in one of which they caught great numbers of herrings, and in the other not one. Yet the places where these rivers discharged them-

themselves into the sea, were not far asunder. They had observed that when the herrings came in spring to deposit their spawn, they always swam up the river, where they used to catch them, but never came into the other. This circumstance led Mr. *Franklin's* father, who was settled between the two rivers, to try whether it was not possible to make the herrings likewise live in the other river. For that purpose he put out his nets, as they were coming up for spawning, and he caught some. He took the spawn out of them, and carefully carried it across the land into the other river. It was hatched, and the consequence was, that every year afterwards they caught more herrings in that river; and this is still the case. This leads one to believe that the fish always like to spawn in the same place where they were hatched, and from whence they first put out to sea; being as it were accustomed to it.

THE following is another peculiar observation. It has never formerly been known that codfish were to be caught at cape *Hinlopen*: they were always caught at the mouth of the *Delaware*: but at present they are numerous in the former place. From hence it may be concluded, that fish likewise change their places of abode of their own accord.

A CAPTAIN of a ship who had been in *Greenland*, asserted from his own experience, that on passing the seventieth deg. of north lat. the summer heat was there much greater, than it is below that degree. From hence he concluded, that the summer heat at the pole itself, must be still
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more excessive, since the sun shines there for such a long space of time, without ever setting. The same account, with similar consequences drawn from thence, Mr. *Franklin* had heard of the ship-captains in *Boston*, who had sailed to the most northern parts of this hemisphere. But still more astonishing is the account he got from Captain *Henry Atkins*, who still lives at *Boston*. He had for some time been upon the fishery along the coasts of *New England*. But not catching as much as he wished, he sailed north, as far as *Greenland*. At last he went so far, that he discovered people, who had never seen *Europeans* before (and what is more astonishing) who had no idea of the use of fire, which they had never employed; and if they had known it, they could have made no use of their knowledge, as there were no trees in the country. But they eat the birds and fish which they caught quite raw. Captain *Atkins* got some very scarce skins in exchange for some trifles.

It is already known from several accounts of voyages, that to the northward neither trees nor bushes, nor any ligneous plants, are to be met with, fit for burning. But is it not probable that the inhabitants of so desolate a country, like other northern nations which we know, burn the train oil of fishes, and the fat of animals in lamps, in order to boil their meat, to warm their subterraneous caves in winter, and to light them in the darkest season of the year? else their darkness would be insupportable.

Nov. 11th. In several writings we read of a large animal, which is to be met with in *New England*,

England, and other parts of *North America*. They sometimes dig very long and branched horns out of the ground in *Ireland*, and no body in that country, or any where else in the world, knows an animal that has such horns. This has induced many people to believe that it is the *Moose-deer*, so famous in *North America*, and that the horns found were of animals of this kind, which had formerly lived in that island, but were gradually destroyed. It has even been concluded, that *Ireland*, in distant ages, either was connected with *North America*, or that a number of little islands, which are lost at present, made a chain between them. This led me to enquire, whether an animal with such excessive great horns, as are described to the *Moose-deer*, had ever been seen in any part of this country. Mr. *Bartram* told me, that, notwithstanding he had carefully enquired to that purpose, yet there was no person who could give him any information which could be relied upon; and therefore, he was entirely of opinion, that there was no such an animal in *North America*. Mr. *Franklin* related, that he had, when a boy, seen two of the animals which they call *Moose-deer*, but he well remembered that they were not near of such a size as they must have been, if the horns found in *Ireland* were to fit them: the two animals which he saw, were brought to *Boston*, in order to be sent to *England* to *Queen Anne*. The height of the animal up to the back was that of a pretty tall horse, but the head and its horns were still higher: Mr. *Dudley* has given a description

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scription of the *Moose-deer* which is found in *North America*. On my travels in *Canada*, I often enquired of the *Frenchmen*, whether there had ever been seen so large an animal in this country, as some people say there is in *North America*, and with such great horns as are sometimes dug out in *Ireland*. But I was always told, that they had never heard of it, and much less seen it: some added, that if there was such an animal, they certainly must have met with it in some of their excursions in the woods. There are elks here, which are either of the same sort with the *Swedish* ones, or a variety of them: of these they often catch some which are larger than common, whence perhaps the report of the very large animal with excessive horns in *North America* first had its rise. These elks are called *Originals* by the *French* in *Canada*, which name they have borrowed from the *Indians*: perhaps *Dudley*, in describing the *Moose-deer*, meant no other animals than these large elks.*

MR. *Franklin* gave me a piece of a stone, which, on account of its indestructibility in the fire, is made use of in *New England* for making melting furnaces and forges.

* WHAT gives still more weight to Mr. *Kalm's* opinion of the Elk being the *Moose-deer*, is, the name *Musku*, which the *Algonkins* give to the elk, as Mr. *Kalm* himself observes in the sequel of his work; and this circumstance is the more remarkable, as the *Algonkins*, before the *Irokeese* or *five-nations* got so great a power in *America*, were the most powerful nation in the northern part of this continent; insomuch that, though they be now reduced to an inconsiderable number, their language is however a kind of universal language in *North America*; so that there is no doubt that the elk is the famous *Moose-deer*. F.

It consists of a mixture of *Lapis Ollaris*, or Serpentine stone, and of *Asbest*. The greatest part of it is a gray Serpentine stone, which is fat and smooth to the touch, and is easily cut and worked. Here and there are some glittering speckles of that sort of asbest, whose fibres come from a center like rays, or *Star Asbest*. This stone is not found in strata or solid rocks, but here and there scattered on the fields.

ANOTHER stone is called *Soapstone* by many of the *Swedes*, being as smooth as soap on the outside. They make use of it for rubbing spots out of their cloaths. It might be called *Saxum talcosum particulis spataceis granatisque immixtis*, or a talc with mixed particles of spar and garnets. A more exact description I reserve for another work. At present I only add, that the ground-colour is pale green, with some dark spots, and sometimes a few of a greenish hue. It is very smooth to the touch, and runs always waved. It is likewise easily sawed and cut, though it is not very smooth. I have seen large stones of it, which were a fathom and more long, proportionably broad, and commonly six inches or a foot deep. But I cannot determine any thing of their original size, as I have not been at the place where they are dug, and have only seen the stones at *Philadelphia*, which are brought there ready cut. The particles of talc in this stone are about thirty times as many as those of spar and garnet. It is found in many parts of the country, for example in the neighbourhood of *Chester* in *Pensylvania*. The *English* likewise

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call it *Soapstone*, * and it is likely that the *Swedes* have borrowed that name from them.

This stone was chiefly employed in the following manner. First, the people took spots out of their cloaths with it. But, for this purpose, the whole stone is not equally useful, for it includes in its clear particles some dark ones which consist wholly of serpentine stone, and may easily be cut with a knife; some of the loose stone is scraped off like a powder, and strewed upon a greasy spot, in silk or any other stuff; this imbibes the grease, and after rubbing off the powder the spot disappears: and as this stone is likewise very durable in the fire, the country people make their hearths with it, especially the place where the fire lies, and where the heat is the greatest, for the stone stands the strongest fire. If the people can get a sufficient quantity of this stone, they lay the steps before the houses with it, instead of bricks, which are generally used for that purpose.

THE walls round the court-yards, gardens, burying-places, and those for the sloping cellar doors towards the street, which are all commonly built of brick, are covered with a coping of this stone; for it holds excellently against all the effects of the sun, air, rain, and storm, and does not decay, but secures the bricks. On account of this quality, people commonly get the door

* It seems to be either the substance commonly called *French chalk*, or perhaps the *Soap-rock*, which is common in *Cornwall*, near the *Lizard point*, and which consists besides of some particles of talc, chiefly of an earth like *magnesia*; which latter, with acid vitriol, yields an earthy vitriolic salt, or *Etsem salt*. F.

posts,

posts, in which their hinges are fastened, made of this stone; and, in several public buildings, such as the house of assembly for the province, the whole lower wall is built of it, and in other houses the corners are laid out with it.

THE *Salt*, which is used in the *English North American* colonies, is brought from the *West Indies*. The *Indians* have in some places salt springs, from which they get salt by boiling. I shall in the sequel have occasion to describe some of them. Mr. *Franklin* was of opinion, that the people in *Pensylvania* could easier make good salt of sea water, than in *New England*, where sometimes salt is made of the sea water on their coast; though their situation is more northerly. *Lead-ore* has been discovered in *Pensylvania*, but as it is not to be met with in quantity, no body ever attempted to use it. *Loadstones* of considerable goodness have likewise been found; and I myself possess several pretty pieces of them.

IRON is dug in such great quantities in *Pensylvania*, and in the other *American* provinces of the *English*, that they could provide with that commodity not only *England*, but almost all *Europe*, and perhaps the greater part of the globe. The ore is here commonly infinitely easier got in the mines than our *Swedish* ore. For in many places, with a pick-ax, a crow-foot, and a wooden club, it is got with the same ease with which a hole can be made in a hard soil. In many places the people know nothing of boring, blasting, and firing; and the ore is likewise very fusible. Of this iron they get such quantities, that not only the numerous inhabi-

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tants of the colonies themselves have enough of it, but great quantities are sent to the *West Indies*, and they have lately began even to trade to *Europe* with it. This iron is reckoned better for ship building than our *Swedish* iron, or any other, because salt water does not corrode it so much. Some people believed, that, without reckoning the freight, they could sell their iron in *England* at a lower rate than any other nation; especially when the country becomes better peopled, and labour cheaper.

THE mountain flax, * or that kind of stone, which Bishop *Browallius* calls *Amiantus fibris separabilibus molliusculis*, in his lectures on mineralogy, which were published in 1739, or the amiant with soft fibres, which can easily be separated, is found abundantly in *Pensylvania*. Some pieces are very soft, others pretty tough: Mr. *Franklin* told me, that, twenty and some odd years ago, when he made a voyage to *England*, he had a little purse with him, made of the mountain flax of this country, which he presented to Sir *Hans Sloane*. I have likewise seen paper made of this stone; and I have likewise received some small pieces of it, which I keep in my cabinet. Mr. *Franklin* had been told by others, that, on exposing this mountain flax to the open air in winter, and leaving it in the cold and wet, it would grow together, and more

* *Amiantus (Aloestus) fibrosus, fibris separabilibus flexibilibus tenacibus, Linn. Syst. nat. p. 55.*

Amiantus fibris molliibus parallelis facile separabilibus, Wallg. Min. 140.

Mountain flax, *Linum montanum, Ferriar's Mineralogy, p. 17. F. fit*

fit for spinning. But he did not venture to determine how far this opinion was grounded. On this occasion he related a very pleasant accident which happened to him with this mountain flax: he had, several years ago, got a piece of it, which he gave to one of his journeymen printers, in order to get it made into a sheet at the paper mill. As soon as the fellow brought the paper, Mr. *Franklin* rolled it up, and threw it into the fire, telling the journeyman he would see a miracle, a sheet of paper which did not burn: the ignorant fellow asserted the contrary, but was greatly astonished upon seeing himself convinced. Mr. *Franklin* then explained to him, though not very clearly, the peculiar qualities of the paper. As soon as he was gone, some of his acquaintance came in, who immediately knew the paper. The journeyman thought he would shew them a great curiosity and astonish them. He accordingly told them, that he had curiously made a sheet of paper which would not burn, though it was thrown into the fire. They pretended to think it impossible, and he as strenuously maintained his assertion. At last they laid a wager about it; but whilst he was busy with stirring up the fire, the others slyly besmeared the paper with fat: the journeyman, who was not aware of it, threw it into the fire, and that moment it was all in flames: this astonished him so much, that he was almost speechless; upon which they could not help laughing, and so discovered the whole artifice.

In several houses of the town, a number of little *Ants* run about, living under ground, and in holes

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holes in the wall. The length of their bodies is one geometrical line. Their colour is either black or dark red: they have the custom of carrying off sweet things, if they can come at them, in common with the ants of other countries. Mr. *Franklin* was much inclined to believe that these little insects could by some means communicate their thoughts or desires to each other, and he confirmed his opinion by some examples. When an ant finds some sugar, it runs immediately under ground to its hole, where, having stayed a little while, a whole army comes out, unites, and marches to the place where the sugar is, and carries it off by pieces; or if an ant meets with a dead fly, which it cannot carry alone, it immediately hastens home, and soon after some more come out, creep to the fly, and carry it away. Some time ago Mr. *Franklin* put a little earthen pot with treacle into a closet. A number of ants got into the pot, and devoured the treacle very quietly. But as he observed it, he shook them out, and tied the pot with a thin string to a nail which he had fastened in the ceiling; so that the pot hung down by the string. A single ant by chance remained in the pot: this ant eat till it was satisfied; but when it wanted to get off, it was under great concern to find its way out: it ran about the bottom of the pot, but in vain: at last it found, after many attempts, the way to get to the ceiling by the string. After it was come there, it ran to the wall, and from thence to the ground. It had hardly been away for half an hour, when a great swarm of ants came out, got up to the ceiling, and crept along the

the string into the pot, and began to eat again: this they continued till the treacle was all eaten: in the mean time, one swarm running down the string, and the other up.

Nov. 12th. A MAN of fortune, who has long been in this province, asserted, that, by twenty years experience, he had found a confirmation of what other people have observed with regard to the weather, *viz.* that the weather in winter was commonly foretold by that on the first of *November*, old stile, or twelfth new stile; if that whole day be fair, the next winter will bring but little rain and snow along with it; but if the first half of the day be clear, and the other cloudy, the beginning of winter would accordingly be fair, but its end, and spring, would turn out rigorous and disagreeable: of the same kind were the other presages. I have likewise in other places heard of similar signs of the weather; but as a mature judgment greatly lessens the confidence in them, so the meteorological observations have sufficiently shewn, how infinitely often these prophecies have failed.

PENNSYLVANIA abounds in springs, and you commonly meet with a spring of clear water on one or the other, and sometimes on several sides of a mountain. The people near such springs use them for every purpose of a fine spring water. They also conduct the water into a little stone building near the house, where they can confine it, and bring fresh supplies at pleasure. In summer they place their milk, bottles of wine, and other liquors, in this building, where they keep cool and fresh. In many country houses, the kitchen

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kitchen or buttry was so situated, that a rivulet ran under it, and had the water near at hand.

Not only people of fortune, but even others that had some possessions, commonly had fish ponds in the country near their houses. They always took care that fresh water might run into their ponds, which is very salutary for the fish: for that purpose the ponds were placed near a spring on a hill.

Nov. 13th. I SAW, in several parts of this province, a ready method of getting plenty of grass to grow in the meadows. Here must be remembered what I have before mentioned about the springs, which are sometimes found on the sides of hills, and sometimes in vallies. The meadows lie commonly in the vallies between the hills: if they are too swampy and wet, the water is carried off by several ditches. But the summer in *Pensylvania* is very hot; and the sun often burns the grass so much, that it dries up entirely. The husbandmen therefore have been very attentive to prevent this in their meadows: to that purpose they look for all the springs in the neighbourhood of a meadow; and as the rivulets flowed before by the shortest way into the vallies, they raise the water, as much as possible and necessary, to the higher part of the meadow, and make several narrow channels from the brook, down into the plain, so that it is entirely watered by it. When there are some deeper places, they frequently lay wooden gutters across them, through which the water flows to the other side; and from thence it is again, by very narrow channels, carried to all the places where

where it seems necessary. To raise the water the higher, and in order to spread it more, there are high dykes built near the springs, between which the water rises till it is so high as to run down where the people want it. Industry and ingenuity went further: when a brook runs in a wood, with a direction not towards the meadow, and it has been found, by levelling, and taking an exact survey of the land between the meadow and the rivulet, that the latter can be conducted towards the former; a dyke is made, which hems the course of the brook, and the water is led round the meadow, over many hills, sometimes for the space of an *English* mile and further, partly across vallies in wooden pipes, till at last it is brought where it is wanted, and where it can be spread as above-mentioned. One that has not seen it himself, cannot believe how great a quantity of grass there is in such meadows, especially near the little channels; whilst others, which have not been thus managed, look wretchedly. The meadows commonly lie in the vallies, and one or more of their sides have a declivity. The water can therefore easily be brought to run down in them. These meadows, which are so carefully watered, are commonly mowed three times every summer. But it is likewise to be observed, that summer continues seven months here. The inhabitants seldom fail to employ a brook or spring in this manner, if it is not too far from the meadows to be led to them.

THE leaves were at present fallen from all the trees; both from oaks, and from all those which have

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have deciduous leaves, and they covered the ground in the woods six inches deep. The great quantity of leaves which drop annually, would necessarily seem to encrease the upper black mould greatly. However, it is not above three or four inches thick in the woods, and under it lays a brick-coloured clay, mixed with a sand of the same colour. It is remarkable, that a soil, which, in all probability, has not been stirred, should be covered with so little black mould: but I shall speak of this in the sequel.

Nov. 14th. *THE Squirrels*, which run about plentifully in the woods, are of different species; I here intend to describe the most common sorts more accurately.

THE grey Squirrels are very plentiful in *Pensylvania*, and in the other provinces of *North America*. Their shape corresponds with that of our *Swedish* squirrel; but they differ from them by keeping their grey colour all the year long, and in size being something bigger. The woods in all these provinces, and chiefly in *Pensylvania*, consist of trees with deciduous leaves, and in such these squirrels like to live. *Ray*, in his *Synopsis Quadrupedum*, p. 215, and *Catesby*, in his *Natural History of Carolina*, Vol. 2, p. 74, tab. 74, call it the *Virginian greater grey Squirrel*; and the latter has added a figure after life. The *Swedes* call it *grao Ickorn*, which is the same as the *English, grey Squirrel*. Their nests are commonly in hollow trees, and are made of moss, straw, and other soft things: their food is chiefly nuts; as hazel nuts, chinquapins, chesnuts, walnuts, hiccory nuts, and the acorns of the

different sorts of oak which grow here; but maize is what they are most greedy of. The ground in the woods is in autumn covered with acorns, and all kinds of nuts which drop from the numerous trees; of these the squirrels gather great stores for winter, which they lay up in holes dug by them for that purpose: they likewise carry a great quantity of them into their nests.

As soon as winter comes, the snow and cold confines them to their holes for several days, especially when the weather is very rough. During this time they consume the little store which they have brought to their nests: as soon therefore as the weather grows milder, they creep out, and dig out part of the store which they have laid up in the ground: of this they eat some on the spot, and carry the rest into their nests on the trees. We frequently observed, that, in winter, at the eve of a great frost, when there had been some temperate weather, the squirrels, a day or two before the frost, ran about the woods in greater numbers than common, partly in order to eat their fill, and partly to store their nests with a new provision for the ensuing great cold, during which they did not venture to come out, but lay snug in their nests: therefore, seeing them run in the woods in greater numbers than ordinary, was a safe prognostic of an ensuing cold.

THE *hogs* which are here driven into the woods, whilst there is yet no snow in them, often do considerable damage to the poor squirrels, by rooting up their store-holes, and robbing their winter provisions. Both the *Indians*, and the

Europeans

European Americans, take great pains to find out these store-holes, whether in trees or in the ground, as all the nuts they contain are choice, and not only quite ripe, but likewise not pierced by worms. The nuts and acorns which the *Dormice*, or *Mus Cricetus Linn.* store up in autumn, are all in the same condition. The *Swedes* relate, that, in the long winter, which happened here in the year 1741, there fell such a quantity of snow, that the squirrels could not get to their store, and many of them were starved to death.

THE damage which these animals do in the maize fields, I have already described: they do the more harm, as they do not eat all the corn, but only the inner and sweet part, and as it were take off the husks. In spring, towards the end of *April*, when the oaks were in full flower, I once observed a number of squirrels on them, sometimes five, six, or more in a tree, who bit off the flower-stalks a little below the flowers, and dropt them on the ground; whether they eat any thing off them, or made use of them for some other purpose, I know not; but the ground was quite covered with oak flowers, to which part of the stalk adhered. For this reason the oaks do not bear so much fruit by far, to feed hogs and other animals, as they would otherwise do.

OF all the wild animals in this country, the squirrels are some of the easiest to tame, especially when they are taken young for that purpose. I have seen them tamed so far, that they would follow the boys into the woods, and run about every where, and when tired would sit on their

shoulders. Sometimes they only ran a little way into the wood, and then returned home again to the little hole that had been fitted up for them. When they eat, they sit almost upright, hold their food between their fore feet, and their tail bent upwards. When the tame ones got more than they could eat at a time, they carried the remainder to their habitations, and hid it amongst the wool which they lay upon. Such tame squirrels shewed no fear of strangers, and would suffer themselves to be touched by every body, without offering to bite. They sometimes would leap upon strangers' cloaths, and lie still on them, in order to sleep. In the farm-houses, where they were kept, they played with cats and dogs: they likewise eat bread.

THE wild grey squirrels likewise hold up their tails when sitting. As soon as they perceive a man, they continually wag their tails and begin to gnash with their teeth, and make a great noise, which they do not readily give over. Those who go a shooting birds and other animals, are therefore very angry at them, as this noise discovers them, and alarms the game. Though a grey squirrel does not seem to be very shy, yet it is very difficult to kill; for when it perceives a man, it climbs upon a tree, and commonly chuses the highest about it. It then tries to hide itself behind the trunk, so that the shooter may not see it, and though he goes ever so fast round the tree, yet the squirrel changes its place as quickly, if not quicker; if two boughs bend towards each other, the squirrel lies in the middle of them, and presses itself so close, that it is hard-

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ly visible. You may then shake the tree, throw sticks and stones to the place where it lies, or shoot at it, yet it will never stir. If three branches join, it takes refuge between them, and lies as close to them as possible, and then it is sufficiently safe. Sometimes it escapes on a tree, where there are old nests of squirrels, or of large birds: it slips into such, and cannot be got out, either by shooting, throwing, or any thing else; for the grey squirrels seldom leap from one tree to another, except extreme danger compels them. They commonly run directly up the trees, and down the same way, with their head straight forward. Several of them which I shot in the woods had great numbers of fleas.

I HAVE already mentioned, that these squirrels are among the animals, which at present are more plentiful than they formerly were, and that the infinitely greater cultivation of maize, which is their favourite food, is the cause of their multiplication. However, it is peculiar, that in some years a greater number of squirrels come down from the higher countries into *Pensylvania*, and other *English* colonies. They commonly come in autumn, and are then very busy in the woods gathering nuts and acorns, which they carry into hollow trees or their store-holes, in order to be sufficiently provided with food for winter. They are so diligent in storing up of provisions, that though the nuts have been extremely plentiful this year, yet it is difficult to get a considerable quantity of them. The people here pretended, from their own experience, to know, that when the squirrels came down in

such numbers from the higher parts of the country, the winter ensuing was uncommonly rigorous and cold, and for that reason they always look upon their coming down as a sure sign of such a winter. Yet this does not always prove true, as I experienced in the autumn of the year 1749: at that time a great number of squirrels came down into the colonies, yet the winter was very mild, and no colder than common. But it appeared that their migration was occasioned by the scarcity of nuts and acorns, which happened that year in the higher parts of the country, and obliged them to come hither for their food. Therefore they generally return the next year to the place from which they came.

SOME people reckon squirrel flesh a great dainty, but the generality make no account of it. The skin is good for little, yet small straps are sometimes made of it, as it is very tough: others use it as a furr lining, for want of a better. Ladies shoes are likewise sometimes made of it.

THE *Rattle-snake* often devours the squirrels, notwithstanding all their agility. This unweildy creature is said to catch so agile an one, merely by fascination. I have never had an opportunity of seeing how it is done: but so many credible people assured me of the truth of the fact, and asserted that they were present, and paid peculiar attention to it, that I am almost forced to believe their unanimous accounts. The fascination is effected in the following manner: the snake lies at the bottom of the tree upon which the squirrel sits; its eyes are fixed upon the little animal, and from that moment it cannot escape; it

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it begins a doleful outcry, which is so well known, that a person passing by, on hearing it, immediately knows that it is charmed by a snake. The squirrel runs up the tree a little way, comes downwards again, then goes up, and now comes lower again. On that occasion it has been observed, that the squirrel always goes down more than it goes up. The snake still continues at the root of the tree, with its eyes fixed on the squirrel, with which its attention is so entirely taken up, that a person accidentally approaching, may make a considerable noise, without the snake's so much as turning about. The squirrel as before-mentioned comes always lower, and at last leaps down to the snake, whose mouth is already wide open for its reception. The poor little animal then with a piteous cry runs into the snake's jaws, and is swallowed at once, if it be not too big; but if its size will not allow it to be swallowed at once, the snake licks it several times with its tongue, and by that means makes it fit for swallowing. Every thing else remarkable at this enchantment, I have described in a treatise inserted in the *Memoirs of the Royal Swedish Academy of Sciences*, in the Volume for the year 1753. I therefore am not so circumstantial here. The same power of enchanting is ascribed to that kind of snake, which is commonly called the *black snake in America*, and it is said to catch and devour squirrels in the same manner as the former*.

BUT

*It has been observed, that only such squirrels and birds as have their nests near the place where such snakes come to, make this
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BUT these little animals do considerable damage to the maize, not only whilst it is upon the stalk, as I have before observed, but even when it is brought home into the barns: for if they can come at it without any obstacle, they can in a few nights bring a whole bushel away into their lurking holes. The government, in most of the *North American* colonies, has therefore been obliged to offer a certain premium to be paid out of the common treasury, for the head of a squirrel. It seems inconceivable what a sum of money has been paid for grey and black squirrels heads, in the province of *Pensylvania* only, from the first of *January* 1749, to the first of *January* 1750; for when the deputies from the several districts of the province met, in order to deliberate upon the affairs of the province, each of them complained that their treasuries were exhausted by paying so much for squirrels; for at that time the law had appointed a reward of three pence for each squirrel's head. So far extended the vengeance taken upon these little creatures, i. e. upon the grey and black squirrels. It was found, by casting up accounts, that in that one year eight thousand pounds of *Pensylvania* currency had been expended in paying these rewards: this I was assured of

pitiful noise, and are so busy in running up and down the tree and the neighbouring branches, in order to draw off the attention of the snake from their brood, and often they come so very near in order to fly away again, that being within reach of the snakes, they are at last bit, poisoned, and devoured; and this will, I believe, perfectly account for the powers of fascinating birds and small creatures in the snakes. F.

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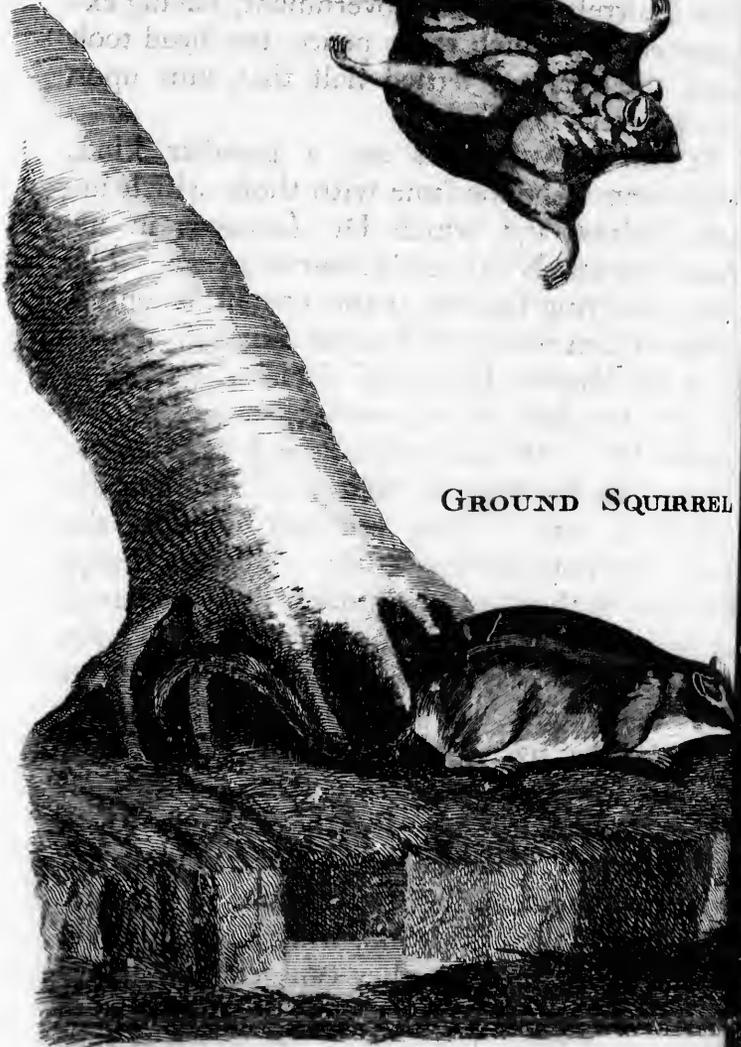
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MANY people, especially young men, left all other employment, and went into the woods to shoot squirrels; but the government, having experienced how much three pence per head took out of the treasury, settled half that sum upon each squirrel's head.

FLYING SQUIRRELS are a peculiar kind, which seem to be the same with those which inhabit *Finland*, and which Dr. *Linnaeus*, in his *Fauna Svecica*, N^o 38, calls *Sciurus volans*. The *American* flying squirrel at the utmost is only a variety of that which we have in *Finland*. *Catesby*, in his *Natural History of Carolina*, Vol. 2, p. 76, 77, has described it, and tab. 76, 77, drawn it after life. He likewise calls it *Sciurus volans*. *Edwards* in his *Natural History of Birds* represents it, t. 191. They are met with in the woods, but not very frequently. They are scarce ever seen in the day-time, unless they are forced out by men who have discovered their nests: for they sleep in the day-time, but as soon as it grows dark, they come out and run about almost all night. They live in hollow trees, and by cutting one down, seven or more flying squirrels are frequently found in it. By the additional skin with which Providence has provided them on both sides, they can fly from one tree to another. They expand their skins like wings, and contract them again as soon as they can get hold of the opposite tree. Some people say that they fly in a horizontal line; but others asserted that they first went a little downwards, and then rose up again,

REL.



SQUIRREL



again, when they approached the tree to which they would fly: they cannot fly further than four or five fathoms. Among all the squirrels in this country, these are the most easily tamed. The boys carry them to school, or wherever they go, without their ever attempting to escape: if even they put their squirrel aside, it leaps upon them again immediately, creeps either into their bosom, or their sleeve, or any fold of the clothes, and lies down to sleep: its food is the same with that of the grey squirrel.

THERE is a small species of squirrels abounding in the woods, which the *English* call *ground Squirrels*. *Catesby* has described and drawn them from life, in the 2d Vol. of his *Natural History of Carolina*, p. 75, tab. 75, and *Edwards* in his *Natural History of Birds*, t. 181.* He and Dr. *Linnaeus* call it *Sciurus striatus*, or the *streaked Squirrel*. These do not properly live in trees, as others of this genus, but dig holes in the ground (much in the same manner as rabbits) in which they live, and whither they take refuge when they perceive any danger. Their holes go deep, and commonly further inwards divide into many branches. They are also cunning enough to make sometimes an opening or hole to the surface

* As *Catesby* and *Edwards* have both represented the *flying Squirrel* in a sitting attitude, I have given here, plate I. a figure of one with the expanded membrane, and joined to it on the same plane a more accurate figure of the *ground Squirrel*.

It is not yet made out with certainty, whether the *American* flying squirrel, and that found in *Finland*, and in the north of *Europe* and *Asia*, be the same animal. The *American* kind has a pennated tail, but the *European* kind a round one, which affords a very distinguishing character. F.

of the ground from one of these branches. The advantage they have from hence, is, that when they stroll about for food, and the hole is stopt up through which they went out, they may not expose themselves to be caught, but presently find the other hole, into which they may retreat: but in autumn, when the leaves fall from the trees, or some time after, it is diversion to see the consternation they are sometimes in when pursued; for their holes being easily covered with the great fall of leaves, or by the wind, they have a great deal to do, to find them on a sudden: they then run backwards and forwards, as if they had lost their way: they seem to know the places where they have made their subterraneous walks, but cannot conceive where the entrances are. If they be then pursued, and one claps his hands, they know no other refuge than that of climbing upon a tree; for it is to be observed that these squirrels always live under ground, and never climb upon trees unless pursued, and unable in the hurry to find their holes. This kind of squirrels is much more numerous in *Pensylvania*, than in any other province of *North America* through which I have travelled. Its length is commonly six inches, without the curved tail; and it is very narrow. The skin is ferruginous, or of a reddish brown, and marked with five black streaks, one of which runs along the back, and two on each side. Their food consists of all sorts of corn, as rye, barley, wheat, maize, and of acorns, nuts, &c. They gather their winter provisions in autumn, like the common grey squirrels, and keep them in their holes under ground.

ground. If they get into a granary, they do as much mischief as mice and rats. It has often been observed that if, after eating rye, they come to some wheat, they throw up the former, which they do not like so well as the wheat, in order to fill their belly with the latter. When the maize is reaped in the fields, they are very busy in biting off the ears, and filling the pouches in their mouth with corn, so that their cheeks are quite blown up. With this booty they hasten into the holes which they have made in the ground.

As a *Swede* was making a mill-dyke, pretty late in autumn, he employed for that purpose the soil of a neighbouring hill, and met with a hole on a subterraneous walk belonging to these squirrels: he followed it for some time, and discovered a walk on one side like a branch, parting from the chief stem: it was near two feet long, and at its end was a quantity of choice acorns of the white oak, which the little careful animal had stored up for winter. Soon after he found another walk on the side like the former, but containing a fine store of maize: the next had hiccory nuts, and the last and most hidden one contained some excellent chesnuts, which might have filled two hats.

In winter these squirrels are seldom seen, for during that season they live in their subterraneous holes, upon the provisions which they have stored up there. However on a very fine and clear day they sometimes come out. They frequently dig through the ground, into cellars in which the country people lay up their apples, which they partly eat, and partly spoil, so that the mas-

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ter has little or nothing left. They handle the maize stores full as roughly as the apples. But the cats are their great enemies, who devour them and bring them home to their young ones: their flesh is not eaten by men, and their skin is not made use of.

OF all the squirrels in the country, these are the most difficult to be tamed; for, though they be caught very young, yet it is dangerous to touch them with naked hands, as they bite very sharp when one is not aware of them. Many boys, who had lost a deal of time in trying to tame these squirrels, owned that they knew of no art to make them quite tame; at least they are never so far tamed as the other species. In order to do any thing towards taming them, they must be caught when they are very small. Some people kept them in that state in a cage, because they looked very pretty.

I SHALL take another opportunity of speaking of the black and ferruginous squirrels, which likewise inhabit this country.

Nov. 15th. In the morning I returned to *Philadelphia*. Mr. *Cock* told me to-day, and on some other occasions afterwards, an accident which happened to him, and which seemed greatly to confirm a peculiar sign of an imminent hurricane. He sailed to the *West Indies* in a small yacht, and had an old man on board, who had for a considerable time sailed in this sea. The old man sounding the depth, called to the mate to tell Mr. *Cock* to launch the boats immediately, and to put a sufficient number of men into them, in order to tow the yacht during the calm, that they might reach

reach the island before them, as soon as possible, as within twenty-four hours there would be a strong hurricane. Mr. *Cock* asked him what reasons he had to think so, the old man replied, that on sounding, he saw the lead in the water at a distance of many fathoms more than he had seen it before; and that therefore the water was become clear all of a sudden, which he looked upon as a certain sign of an impending hurricane in the sea. Mr. *Cock* likewise saw the excessive clearness of the water. He therefore gave immediate orders for launching the boat, and towing the yacht, so that they arrived before night in a safe harbour. But before they had quite reached it the waves began to rise more and more, and the water was as it were boiling, though no wind was perceptible. In the ensuing night the hurricane came on, and raged with such violence, that not only many ships were lost, and the roofs were torn off from the houses, but even Mr. *Cock's* yacht and other ships, though they were in safe harbours, were by the wind, and the violence of the sea, washed so far on shore, that several weeks elapsed before they could be got off.

An old *Dutch* skipper said, that he had once caught a dogfish in the bay of *New York*, which being cut open, had a quantity of eels in his stomach.

Nov. 18th. MR. *Bartram* shewed me an earthen pot, which had been found in a place where the *Indians* formerly lived. He, who first dug it out, kept grease and fat in it to smear his shoes, boots, and all sorts of leather with: Mr. *Bartram* bought the pot of that man; it was yet

entire

entire and not damaged: I could perceive no glaze or colour upon it, but on the outside it was very much ornamented, and upon the whole well made. Mr. Bartram shewed me several pieces of broken earthen vessels which the *Indians* formerly made use of. It plainly appeared in all these that they were not made of mere clay; but that different materials had been mixed with it, according to the nature of the places where they were made. Those *Indians*, for example, who lived near the sea-shore, pounded the shells of snails and muscles, and mixed them with the clay. Others who lived further up in the country, where mountain crystals could be found, pounded them and mixed them with their clay; but how they proceeded in making the vessels, is entirely unknown: it was plain that they did not burn them much, for they were so soft that they might be cut in pieces with a knife: the workmanship however seems to have been very good; for at present they find whole vessels or pieces in the ground, which are not damaged at all, though they have lain in the ground above a century. Before the *Europeans* settled in *North America*, the *Indians* had no other vessels to boil their meat in, than these earthen pots of their own making: but since their arrival, they have always bought pots, kettles, and other necessary vessels, of the *Europeans*, and take no longer the pains of making some, by which means this art is entirely lost among them. Such vessels of their own construction are therefore a great rarity even among the *Indians*. I have seen such old pots and pieces of them, consisting of a

kind

kind of *Serpentine stone*, or *Linnaeus's Talcum*, Syft. nat. 3. p. 52.

MR. *Bartram* likewise shewed me little pieces of a *black slate*, which is plentifully found in some parts of the river *Skullkill*. There are pieces to be found, which are four feet and above square: the colour and configuration is the same as in the *Table slate* (*Schistus tabularis Linn.*) Syft. nat. 3. p. 37. except that this is a little thicker. The inhabitants of the country thereabouts (in the neighbourhood of the *Skullkill*) cover their roofs with it; Mr. *Bartram* assured me, that he had seen a whole roof composed of four such slates. The rays of the sun, heat, cold, and rain do not act upon the stone.

MR. *Bartram* further related, that in several parts of the country, caves or holes were to be met with, going deep into the mountains: he had been in several of them and had often found a number of *Stalactites*, *Linnaeus's Stalactites stillatitius*. Syft. nat. 3. p. 183. of different dimensions at the top; they differed in colour, but the greatest curiosity was, that in some of the caves Mr. *Bartram* had found *Stalactites*, whose outward side was as it were wreathed from top to bottom; he had sent some pieces of it to *London*, and had none at present.

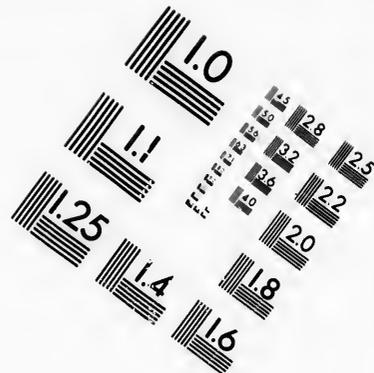
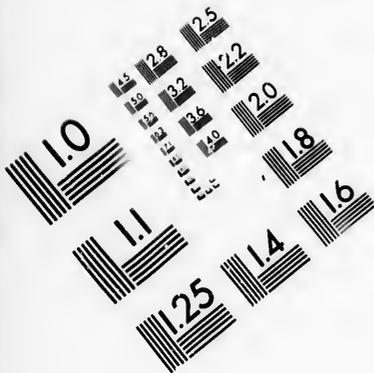
Nov. 20th. THIS morning I set out in company of a friend, on a journey to *Raccoon* in *New Jersey*, where many *Swedes* live, who have their own church. We had three miles to go before we came to the ferry which was to bring us over the *Delaware*. The country here was very low in some places: the plains on the banks of the river

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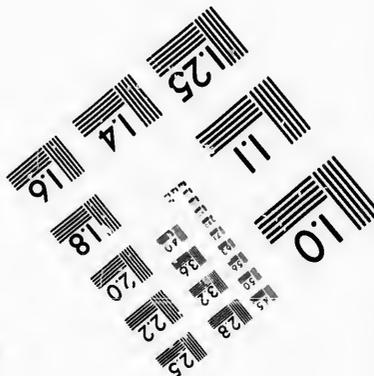
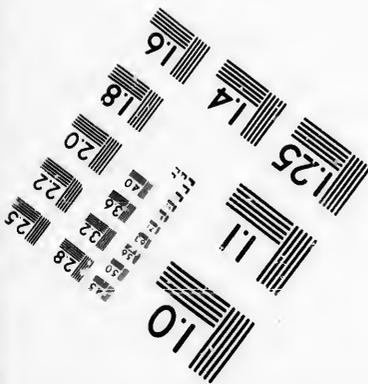
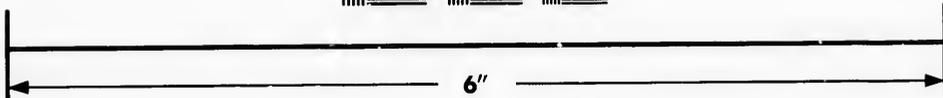
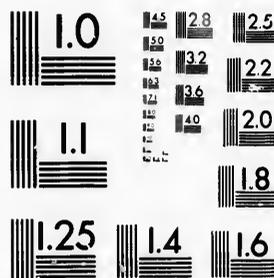
river were overflowed at every high water or flowing of the tide, and at the ebbing they were left dry again. However the inhabitants of the country hereabouts made use of this plain: for that purpose they had in several places thrown up walls or dykes of earth towards the river, to prevent its overflowing the plains, which they made use of as meadows. On them the *Water-beeches* (*Platanus occidentalis* Linn.) were planted in great numbers on both sides the road, quite close together: these in summer afford a pleasant shade, on account of the abundance and size of their leaves, and make the road extremely delightful, as it resembles a fine shady walk. The *Delaware* has nearly the same breadth here, which it has near *Philadelphia*. Near the place where the ferry is to be met with, several pretty houses were built on both sides, where travellers might get all kinds of refreshment. On our journey from *Pensylvania* to *New Jersey*, we were brought over the *Delaware* in a ferry belonging to the *Pensylvania-men*; but on our return we were obliged to take the ferry belonging to the *New Jersey* side. As soon as we had crossed the river, we were in a different province; for the *Delaware* makes the division between *Pensylvania* and *New Jersey*, so that every thing to the west of it belongs to the former, and all to the east, to the latter province. Both these provinces have in most things different laws, and their peculiar coin.

WE now pursued our journey further, and soon observed that the country on this side appeared very different from that on the other; for in *Pensylvania* the ground consists of more clay
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and black mould, and is very fertile; but in *New Jersey* it is more sandy and very poor, so that the horses went very deep in sand in several parts of the road. Near the place where we were brought over, and a little way along the shore, was a thick fir wood: the trees were not very high, but in their greatest vigour; between them appeared now and then a low bush of oak. But after travelling about three *English* miles, the fir wood ended, and we saw no more trees of this kind till we came to the church in *Raccoon*. In all the parts of *Pensylvania* where I have been, I have found few fir woods; on the other hand, they are abundant in *New Jersey*, and especially in the lower part of that province. We afterwards found all the day long no other trees, than such as have deciduous leaves; most of these were oaks of different sorts, and of considerable height, but they stood every where far enough asunder to admit a chaise to pass through the wood without any inconvenience, there being seldom any shrubs or underwood between the trees, to obstruct the way. In several places flowed a small rivulet. The country was commonly plain, but sometimes formed a few hills with an easy declivity, though no high mountains appeared, and in a few places we found some small stones not bigger than a fist. Single farm houses were scattered in the country, and in one place only was a small village: the country was yet more covered with forests than cultivated, and we were for the greatest part always in a wood.

THIS day and the next we passed several *Kills*, or small rivulets, which flowed out of the country into the *Delaware* with no great descent nor rapidity.

rapidity. When the tide came up in the *Delaware*, it likewise rose in some of these rivulets a good way; formerly they must have spread to a considerable breadth by the flowing of the tide, but at present there were meadows on their banks, formed by throwing up strong dykes as close as possible to the water, to keep it from overflowing. Such dykes were made along all rivers here to confine their water: therefore when the tide was highest, the water in the rivers was much higher than the meadows: in the dykes were gates through which the water can be drawn from, or led into the meadows; they were sometimes placed on the outward side of the wall, so that the water in the meadows forced it open, but the river water shut it.

IN the evening we came into the house of a *Swede*, called *Peter Rambo*, and we staid the night at his house.

THE pines which we had seen to-day, and which I have mentioned before, were of that kind which has double leaves and oblong cones, covered with aculeated scales. The *English* to distinguish it call it the *Jersey Pine*: commonly there were only two spines or leaves in one fascicle, as in our common *Swedish* pines, but sometimes three; the cones had long spines so that they were difficult to be touched. These pines look at a distance wholly like the *Swedish* ones, so that if the cones were not regarded, they might easily be taken for the same species. Of these pines they make a great quantity of tar, of which I shall speak in the sequel; but as most of them are but small, they are good for nothing else;

else; for if they be employed as posts, or poles in the ground, they are in a short time rendered useless by rotting: as soon as they are cut down the worms are very greedy of them; they soon eat through the wood, and only a few weeks after it is cut down; however it is made use of as fuel, where no other wood is to be got, in several places they make charcoal of it, as I intend to mention in the sequel. There is another thing which deserves notice, in regard to these trees, and which several people besides myself have experienced. In the great heat of the summer, the cattle like to stand in the shade of these trees, preferably to that of the oak, hickory, walnut, water-beech, and other trees of this kind, whose foliage is very thick; and when the cattle find the latter with the former, they always, choose to stand under the firs and pines, though the other trees with annual deciduous leaves could afford a better shade: and if there be but a single pine in a wood, as many cattle from the herd as can stand under it, throng to it. Some people would infer from hence, that the resinous exhalations of these trees, were beneficial to the cattle, and which made them more inclined to be near firs and pines, than any other trees.

THE *Spoon tree*, which never grows to a great height, we saw this day in several places. The *Swedes* here have called it thus, because the *Indians*, who formerly lived in these provinces, used to make their spoons and trowels of the wood of this tree. In my cabinet of natural curiosities, I have a spoon made of this wood by an *Indian*, who has killed many stags and other animals on

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the very spot where *Philadelphia* afterwards was built; for in his time that spot was yet covered with trees and shrubs. The *English* call this tree a *Laurel*, because its leaves resemble those of the *Laurocerasus*. Dr. *Linnaeus*, conformable to the peculiar friendship and goodness which he has always honoured me with, has been pleased to call this tree, *Kalmia foliis ovatis, corymbis terminalibus*, or *Kalmia latifolia*. It succeeds best on the side of hills, especially on the north side, where a brook passes by; therefore on meeting with some steep places (on hills) towards a brook, or with a steep side of a hill towards a marsh, you are sure to find the *Kalmia*. But it frequently stands mixed among beech trees. The higher the *Kalmias* stand on the north side of a mountain the less they grow: I have seen them not only in *Pensylvania* and *New Jersey*, but even in *New York*, but there they are more scarce: I never found them beyond the forty-second degree of north lat. though I took ever so great care to look for them: they have the quality of preserving their fine green leaves throughout winter, so that when all other trees have lost their ornaments, and stand quite naked, these cheer the woods with their green foliage. About the month of *May* they begin to flower in these parts, and then their beauty rivals that of most of the known trees in nature: the flowers are innumerable, and sit in great bunches. Before they open they have a fine red colour, but as they are expanded the sun bleaches them, so that some are quite white; many preserve the colour of roses. Their shape is singular, for they resemble a crater of

the ancients: their scent however is none of the most agreeable. In some places it was customary to adorn the churches on Christmas-day or New-year's-day with the fine branches of this tree, which are then thick covered with leaves.

BUT these trees are known for another remarkable quality; their leaves are poison to some animals, and food for others: experience has taught the people that when sheep eat of these leaves, they either die immediately, or fall very sick, and recover with great difficulty. The young and more tender sheep are killed by a small portion, but the elder ones can bear a stronger dose. Yet this food will likewise prove mortal to them, if they take too much of it: the same noxious effect it shews in regard to calves which eat too much of the leaves: they either die, or do not recover easily. I can remember, that in the autumn of the year 1748, some calves eat of the leaves, but fell very sick, swelled, foamed at the mouth, and could hardly stand, however they were cured by giving them gunpowder and other medicines: the sheep are most exposed to be tempted by these leaves in winter; for, after having been kept in stables for some months, they are greedy of all greens, especially if the snow still lies upon the fields, and therefore the green but poisonous leaves of the *Kalmia* are to them very tempting. Horses, oxen, and cows, which have eaten them, have likewise been very ill after the meal, and though none of them ever died of eating these leaves, yet most people believed, that if they took too great a portion of them, death would certainly be the result. For it has

been

been observed that when these animals only eat small quantities, yet they suffer great pains. On the other hand, the leaves of the *Kalmia* are the food of stags; when the snow covers the ground, and hides all other provisions from them. Therefore, if they be shot in winter, their bowels are found filled with these leaves; and it is very extraordinary, that if those bowels are given to dogs, they become quite stupid and as it were drunk, and often fall so sick, that they seem to be at the point of death; but the people, who have eaten the venison, have not felt the least indisposition. The leaves of the *Kalmia* are likewise the winter food of those birds, which the *Swedes* in *North America* call *Hazel-bens*, and which stay here all winter, for when they are killed, their crop is found quite filled with them.

THE wood of the *Kalmia* is very hard, and some people on that account make the axis of their pulleys of it. Weavers shuttles are chiefly made of it, and the weavers are of opinion, that no wood in this country is better for this purpose; for it is compact, may be made very smooth, and does not easily crack, or burst. The joiners and turners here employ it in making all kinds of work, which requires the best wood; they chiefly use the root because it is quite yellow; the wood has a very suitable hardness and fineness, and from the center, spreads as it were small rays, which are at some distance from each other. When the leaves of the *Kalmia* are thrown into the fire, they make a crackling like salt. The chimney-sweepers make brooms in winter of the branches with the leaves on them, since they

cannot get others in that season. In the summer of the year 1750, a certain kind of worms devoured the leaves of almost all the trees in *Pennsylvania*; yet they did not venture to attack the leaves of the *Kalmia*. Some people asserted, that when a fire happened in the woods, it never went further, as soon as it came to the *Kalmias*, or *Spoon trees*.

Nov. 21st. THE *Swedes* and all the other inhabitants of the country plant great quantities of maize, both for themselves and for their cattle. It was asserted that it is the best food for hogs, because it makes them very fat, and gives their flesh an agreeable flavour, preferable to all other meat. I have given in two dissertations upon this kind of corn to the *Swedish Royal Academy of Sciences*, which stand in their *Memoirs* for 1751 and 1752.

THE wheels of the carts which are here made use of, are composed of two different kinds of wood. The felloes were made of what is called the *Spanish oak*, and the spokes of the white oak.

THE *Sassafras* tree grows every where in this place. I have already observed several particulars in regard to it, and intend to add a few more here. On throwing some of the wood into the fire, it causes a crackling as salt does. The wood is made use of for posts belonging to the enclosures, for it is said to last a long time in the ground: but it is likewise said, that there is hardly any kind of wood, which is more attacked by worms than this, when it is exposed to the air without cover; and that in a short time it is

quite

quite worm-eaten through and through. The *Swedes* related, that the *Indians*, who formerly inhabited these parts, made bowls of it. On cutting some part of the *sassafras* tree, or its shoots, and holding it to the nose, it has a strong but pleasant smell. Some people peel the root, and boil the peel with the beer which they are brewing, because they believe it wholesome. For the same reason, the peel is put into brandy, either whilst it is distilling, or after it is made.

AN old *Swede* remembered that his mother cured many people of the dropsy, by a decoction of the root of *sassafras* in water, drank every morning: but she used, at the same time, to cup the patient on the feet. The old man assured me, he had often seen people cured by this means, who had been brought to his mother wrapped up in sheets.

WHEN a part of a wood is destined for cultivation, the *sassafras* trees are commonly left upon it, because they have a very thick foliage, and afford a cool shade to the cattle, during the great heats. Several of the *Swedes* wash and scour the vessels, in which they intend to keep cyder, beer, or brandy; with water in which the *sassafras* root or its peel has been boiled; which they think renders all those liquors more wholesome. Some people get their bedposts made of *sassafras* wood, in order to expel the bugs; for its strong scent it is said prevents those vermin from settling in them. For two or three years together this has the desired effect; or about as long as the wood keeps its strong aromatic smell; but after that time it has been observed to lose its effect. A
joiner

joiner shewed me a bed, which he had made for himself, the posts of which were of sassafras wood, but as it was ten or twelve years old, there were so many bugs in it, that it seemed likely, they would not let him sleep peaceably. Some *Englishmen* related, that some years ago it had been customary in *London* to drink a kind of tea of the flowers of sassafras, because it was looked upon as very salutary; but upon recollecting that the same potion was much used against the venereal disease, it was soon left off, lest those that used it, should be looked upon as infected with that disease. In *Pensylvania* some people put chips of sassafras into their chests, where they keep all sorts of woollen stuffs, in order to expel the moths (or *Larvæ*, or caterpillars of moths or tinies) which commonly settle in them in summer. The root keeps its smell for a long while: I have seen one which had lain five or six years in the drawer of a table, and still preserved the strength of its scent.

A *SWEDE*, named *Rambo*, related that the *Indians* formerly dyed all sorts of leather red with the bark of the chesnut oak.

Nov. 22d. *AOKE HELM* was one of the most considerable *Swedes* in this place, and his father came over into this country along with the *Swedish* governor *Prince*; he was upwards of seventy years of age. This old man told us, that in his youth there was grass in the woods, which grew very close, and was every where two feet high; but that it was so much lessened at present, that the cattle hardly find food enough, and that therefore four cows now give no more milk

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than one at that time ; but the causes of this alteration are easy to find. In the younger years of old *Helm*, the country was little inhabited, and hardly the tenth part of the cattle kept which is at present ; a cow had therefore as much food at that time, as ten now have. Further, most kinds of grass here are annual, and do not for several years together shoot up from the same root, as our *Swedish* grasses : they must sow themselves every year, because the last year's plant dies away every autumn. The great numbers of cattle hinder this sowing, as the grass is eaten before it can produce flowers and fruit. We need not therefore wonder that the grass is so thin on fields, hills, and pastures in these provinces. This is likewise the reason why travellers in *New Jersey*, *Pennsylvania*, and *Maryland*, find many difficulties, especially in winter, to get forwards with their own horses, for the grass in these provinces is not very abundant, because the cattle eat it before it can bring feeds : but more to the north, as in *Canada*, are a sufficient quantity of perennial grasses ; so wisely has the Creator regulated every thing. The cold parts of the earth naturally bring forth a more durable grass, because the inhabitants want more hay to feed their cattle with, on account of the length of the winter. The southern provinces again have less perennial grass, as the cattle may be in the fields all the winter. However careful œconomists have got seeds of perennial grasses from *England*, and other *European* states, and sowed it in their meadows, where they seem to thrive exceedingly well.

THE *Persimon* (*Diospyros Virginiana*) was pretty common here: I have already mentioned it before, but I intend now to add some more particulars. Some of its fruits began to ripen and to become fit for eating about this time, for they always ripen very late in autumn, and then the people eat them like other fruit: they are very sweet and glutinous, yet have a little astringency; I frequently used to eat a great quantity of them, without feeling the least inconvenience. From the persimon several *Englishmen* and *Swedese* brew a very palatable liquor, in the following manner. As soon as the fruit is ripe, a sufficient quantity is gathered, which is very easy, as each tree is well stocked with them. These persimon apples are put into a dough of wheat or other flour, formed into cakes, and put into an oven, in which they continue till they are quite baked, and sufficiently dry, when they are taken out again: then, in order to brew the liquor, a pot full of water is put on the fire, and some of the cakes are put in: these become soft by degrees as the water grows warm, and crumble in pieces at last; the pot is then taken from the fire, and the water in it well stirred about, that the cakes may mix with it: this is then poured into another vessel, and they continue to steep and break as many cakes as are necessary for a brewing: the malt is then infused, and they proceed as usual with the brewing. Beer thus prepared is reckoned much preferable to other beer. They likewise make brandy of this fruit in the following manner; having collected a sufficient quantity of persimons in autumn, they are all together put into a vessel, where

where they lie for a week till they are quite soft : then they pour water on them, and in that state they are left to ferment of themselves, without promoting the fermentation by any addition. The brandy is then made in the common way, and is said to be very good, especially if grapes (in particular of the sweet sort) which are wild in the woods, be mixed with the persimon fruit. Some persimons are ripe at the end of *September*, but most of them later, and some not before *November* and *December*, when the cold first overcomes their acrimony. The wood of this tree is very good for joiners instruments, such as planes, handles to chissels, &c. but if after being cut down, it lies exposed to sunshine and rain, it is the first wood which rots, and in a year's time there is nothing left but what is useless. When the persimon trees get once into a field they are not easily got out of it again, as they spread so much. I was told, that if you cut off a branch, and put it into the ground, it strikes root ; but in very strong winters, these trees often die by frost, and they, together with the peach trees, bear cold the least of any.

Nov. 23d. SEVERAL kinds of gourds and melons are cultivated here: they have partly been originally cultivated by the Indians, and partly brought over by *Europeans*. Of the gourds there was a kind which were crooked at the end, and oblong in general, and therefore they were called *crooked necks* (Crocknacks;) they keep almost all winter. There is yet another species of gourds which have the same quality: others again are cut in pieces or slips, drawn upon thread, and dried ;

dried ; they keep all the year long, and are then boiled or stewed. All sorts of gourds are prepared for eating in different manners, as is likewise customary in *Sweden*. Many farmers have a whole field of gourds.

SQUASHES are a kind of gourds, which the *Europeans* got from the Indians, and I have already mentioned them before. They are eaten boiled, either with flesh or by themselves. In the first case, they are put on the edge of the dish round the meat ; they require little care, for into whatever ground they are sown, they grow in it and succeed well. If the seed is put into the fields in autumn, it brings squashes next spring, though during winter it has suffered from frost, snow, and wet.

THE Calabashes are likewise gourds, which are planted in quantities by the *Swedes* and other inhabitants, but they are not fit for eating, and are made use of for making all sorts of vessels ; they are more tender than the squashes, for they do not always ripen here, and only when the weather is very warm. In order to make vessels of them, they are first dried well ; the seeds, together with the pulpy and spongy matter in which they lie, are afterwards taken out and thrown away ; the shells are scraped very clean within, and then great spoons or ladles, funnels, bowls, dishes, and the like, may be made of them : they are particularly fit for keeping seeds of plants in, which are to be sent over sea, for they keep their power of vegetating much longer, if they be put in calabashes, than by any other means. Some people scrape the outside of the calabashes before they

are

are opened, dry them afterwards, and then clean them within; this makes them as hard as bones: they are sometimes washed, so that they always keep their white colour.

MOST of the farmers in this country, sow *Buck-wheat*, in the middle of *July*; it must not be sown later, for in that case the frost ruins it; but if it be sown before *July*, it flowers all the summer long, but the flowers drop, and no seed is generated. Some people plough the ground twice where they intend to sow buck-wheat; others plough it only once, about two weeks before they sow it. As soon as it is sown the field is harrowed. It has been found by experience, that in a wet year buck-wheat has been most likely to succeed: it stands on the fields till the frost comes on. When the crop is favourable, they get twenty, thirty, and even forty bushels from one. The *Swedish* churchwarden *Ragnilsson*, in whose house we were at this time, had got such a crop: they make buck-wheat cakes and pudding. The cakes are commonly made in the morning, and are baked in a frying pan, or on a stone: are buttered and then eaten with tea or coffee, instead of toasted bread with butter, or toast, which the *English* commonly eat at breakfast. The buck-wheat cakes are very good, and are likewise usual at *Philadelphia* and in other *English* colonies, especially in winter. Buck-wheat is an excellent food for fowls; they eat it greedily, and lay more eggs, than they do with other food; hogs are likewise fattened with it. Buck-wheat straw is of no use; it is therefore left upon the field, in the places where it has been thrashed, or

it is scattered in the orchards, in order to serve as a manure by putrifying. Neither cattle nor any other animal will eat of it, except in the greatest necessity, when the snow covers the ground, and nothing else is to be met with. But though buck-wheat is so common in the *English* colonies, yet the *French* had no right notion of it in *Canada*, and it was never cultivated among them.

TOWARDS night we found some *Glow Worms* in the wood: their body was linear, consisting of eleven articulations, a little pointed before and behind; the length from head to tail was five and a half geometrical lines; the colour was brown, and the articulations joined in the same manner as in the *Onisci* or woodlice. The antennæ or feel horns were short and filiform, or thread-shaped; and the feet were fastened to the foremost articulations of the body: when the insect creeps, its hindmost articulations are dragged on the ground, and help its motion. The extremity of the tail contains a matter which shines in the dark, with a green light: the insect could draw it in, so that it was not visible. It had rained considerably all day, yet they crept in great numbers among the bushes, so that the ground seemed as it were sown with stars. I shall in the sequel have occasion to mention another kind of insects or flies which shine in the dark, when flying in the air.

Nov. 24th. HOLLY, or *Ilex Aquifolium*, grows in wet places, scattered in the forest, and belongs to the rare trees; its leaves are green both in summer and in winter. The *Swedes* dry its leaves, bruise them in a mortar, boil them in small beer, and take them against the pleurisy.

RED

RED is dyed with brazil wood, and likewise with a kind of moss, which grows on the trees here: *blue* is dyed with *Indigo*; but to get a black colour, the leaves of the common field sorrel (*Rumex Acetofella*) are boiled with the stuff to be dyed, which is then dried, and boiled again with *logwood* and copperas: the black colour thus produced, is said to be very durable. The people spin and weave a great part of their every day's apparel, and dye them in their houses. Flax is cultivated by many people, and succeeds very well, but the use of hemp is not very common.

RYE, wheat, and buck-wheat are cut with the sickle, but oats are mown with a scythe. The sickles which are here made use of are long and narrow, and their sharp edges have close teeth on the inner side. The field lies fallow during a year, and in that time the cattle may graze on it.

ALL the inhabitants of this place, from the highest to the lowest, have each their orchard, which is greater or less according to their wealth. The trees in it are chiefly peach trees, apple trees, and cherry trees: compare with this what I have already said upon this subject before.

A LITTLE before noon we left this place, and continued our journey, past the *Swedish* church in *Raccoon*, to *Peils groves*. The country, on the sides of this road, is very sandy in many places, and pretty near level. Here and there appear single farms, yet they are very scarce; and large extensive pieces of ground are still covered with forests, which chiefly consist of several

ral species of oak and hiccory. However we could go with ease through these woods, as there are few bushes (or under-wood) and stones to be met with. It was not only easy to ride in every part of the wood on horseback, but even in most places there was sufficient room for a small coach or a cart.

Nov. 25th. DURING my stay at *Raccoon*, at this time and all the ensuing winter, I endeavoured to get the most information from the old *Swedes* relating to the increase of land, and the decrease of water in these parts; I shall therefore insert the answers here, which I have received to my questions. They are as I got them; and I shall only throw in a few remarks which may serve to explain things: the reader therefore is left at liberty to draw his own inferences and conclusions.

ONE of the *Swedes* called *King*, who was above fifty years of age, was convinced, that about this time the little lakes, brooks, springs, and rivers had much less water, than they had when he was a boy. He could mention several lakes on which the people went in large boats in his youth, and had sufficient water even in the hottest summers; but now, they were either entirely dried up, or for the greatest part; and in the latter case, all the water was lost in summer. He had himself seen the fish dying in them; and he was apt to believe that at this time it did not rain so much in summer, as it did when he was young. One of his relations, who lived about eight miles from the river *Delaware*, on a hill near a rivulet, had got a well, dug in his court yard:

yard: at the depth of forty feet, they found a quantity of shells of oysters and muscles, and likewise a great quantity of reed, and pieces of broken branches. I asked, to what causes they ascribed what they had discovered; and I was answered, that some people believed these things had lain there ever since the deluge, and others, that the ground increased.

PETER RAMBO, a man who was near sixty years of age, assured me, that in several places at *Raccoon*, where wells had been dug, or any other work carried deep into the ground, he had seen great quantities of muscle shells and other marine animals. On digging wells, the people have sometimes met with logs of wood at the depth of twenty feet, some of which were putrified, and others as it were burnt. They once found a great spoon in the ground at this depth. Query, Is it not probable, that the burnt wood which has been thus dug up, was only blackened by a subterraneous mineral vapour? People however have concluded from this, that *America* has had inhabitants before the deluge. This man (*Peter Rambo*) further told me, that bricks had been found deep in the ground; but may not the brick-coloured clay (of which the ground here chiefly consists, and which is a mixture of clay and sand) in a hard state have had the appearance of bricks? I have seen such hardened clay, which at first sight is easily mistaken for brick. He likewise asserted, that the water in rivers was still as high as it used to be, as far back as memory could reach; but little lakes, ponds, and waters in marshes

marshes are visibly decreased, and many of them dried up.

MAONS KEEN, a *Swede*, above seventy years old, asserted, that, on digging a well, he had seen, at the depth of forty feet, a great piece of chefnut wood, together with roots and stalks of reed, and a clayey earth like that which commonly covers the shores of salt-water bays and coves. This clay had a similar smell and a saline taste. *Maons Keen*, and several other people, inferred from hence, that the whole country, where *Raccoon* and *Penn's neck* are situated, was anciently quite overflowed by the sea. They likewise knew, that, at a great depth in the ground, such a trowel, as the *Indians* make use of, had been found.

SVEN LOCK, and *William Cobb*, both above fifty years of age, agreed, that in many places hereabouts, where wells had been dug, they had seen a great quantity of reed, mostly rotten, at the depth of twenty or thirty feet and upwards.

As *Cobb* made a well for himself, the workmen, after digging twenty feet deep, came upon so thick a branch, that they could not get forwards, till it was cut in two places; the wood was still very hard. It is very common to find, near the surface of the earth, quantities of all sorts of leaves not quite putrified. On making a dyke some years ago, along the river on which the church at *Raccoon* stands; and for that purpose cutting through a bank, it was found quite full of oyster shells, though this place is above a hundred and twenty *Englisch* miles from the
nearest

nearest sea shore. These men, and all the inhabitants of *Raccoon*, concluded from this circumstance (of their own accord, and without being led to the thought) that this tract of land was a part of the sea many centuries ago. They likewise asserted, that many little lakes, which in their youth were full of water, even in the hottest season, now hardly formed a narrow brook in summer, except after heavy rains; but it did not appear to them that the rivers had lost any water.

AOKE HELM found (on digging a well) first sand and little stones, to the depth of eight feet; next a pale-coloured clay, and then a black one. At the depth of fifteen feet he found a piece of hard wood, and several pieces of mundick or pyrites. He told me, that he knew several places in the *Delaware*, where the people went in boats, when he was young, but which at present were changed into little islands, some of which were near an *English* mile in length. These islands derive their origin from a sand or bank in the river; on this the water washes some clay, in which rushes come up, and thus the rest is generated by degrees.

ON a meeting of the oldest *Swedes* in the parish of *Raccoon*, I obtained the following answers to the questions which I asked them on this account. Whenever they dig a well in this neighbourhood, they always find, at the depth of twenty or thirty feet, great numbers of oyster shells and clams: the latter are, as was above-mentioned, a kind of large shells, which are found in bays, and of which the *Indians* make their

their money. In many places, on digging wells, a quantity of rushes and reeds have been found almost wholly undamaged; and once on such an occasion a whole bundle of flax was brought up, found between twenty and thirty feet under ground; it seemed as little damaged as if it had been lately put under ground; all looked at it with astonishment, as it was beyond conception how it could get there: but I believe the good people saw some *American* plants, such as the wild *Virginian* flax, or *Linum Virginianum*, and the *Antirrhinum Canadense*, which look very like common flax; yet it is remarkable that the bundle was really tied together. The *Europeans*, on their arrival in *America*, found our common flax neither growing wild nor cultivated by the *Indians*, how then could this bundle get into the ground? Can it be supposed, that past ages have seen a nation here, so early acquainted with the use of flax? I would rather abide by the opinion, that the above *American* plants, or other similar ones, have been taken for flax. Charcoal and fire-brands have often been found under ground: The *Swedish* church-warden, *Eric Ragnilsson*, told me that he had seen a quantity of them, which had been brought up at the digging of a well: on such occasions, people have often found (at the depth of between twenty and fifty feet) great branches and blocks. There were some spots where, twenty feet under the surface of the earth, the people had found such trowels as the *Indians* use: from these observations they all concluded, that this tract of land had formerly been the bottom of the sea. It is to be observed,

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observed, that most of the wells which have hitherto been made, have been dug in new settlements, where the wood was yet standing, and had probably stood for centuries together. From the observations which have hitherto been mentioned, and to which I shall add similar ones in the sequel, we may, with a considerable degree of certainty, conclude, that a great part of the province of *New Jersey*, in ages unknown to posterity, was part of the bottom of the sea, and was afterwards formed by the slime and mud, and the many other things which the river *Delaware* carries down along with it, from the upper parts of the country: however, *Cape May* seems to give some occasion for doubts, of which I shall speak in the sequel.

Nov. 27th. THE *American* ever-greens are,

1. *Ilex Aquifolium*, holly.
2. *Kalmia latifolia*, the spoon tree.
3. *Kalmia angustifolia*, another species of it.
4. *Magnolia glauca*, the beaver tree. The young trees of this kind only keep their leaves, the others drop them.
5. *Viscum album*, or mistletoe; this commonly grows upon the *Nyssa aquatica*, or tupelo tree, upon the *Liquidambar styraciflua*, or sweet gum tree, the oak and lime tree, so that their whole summits were frequently quite green in winter.
6. *Myrica cerifera*, or the candleberry tree; of this however only some of the youngest shrubs preserve some leaves, but most of them had already lost them.
7. *Pinus Abies*, the pin

8. *Pinus*

8. *Pinus sylvestris*, the fir.
9. *Cupressus thyoides*, the white cedar.
10. *Juniperus Virginiana*, the red cedar.

SEVERAL oaks and other trees dropt their leaves here in winter, which however keep them ever green, a little more to the south, and in *Carolina*.

Nov. 30th. IT has been observed, that the *Europeans* in *North America*, whether they were born in *Sweden, England, Germany, or Holland*; or in *North America*, of *European* parents; always lost their teeth much sooner than common; the women especially were subject to this disagreeable circumstance; the men did not suffer so much from it. Girls not above twenty years old, frequently had lost half of their teeth, without any hopes of getting new ones: I have attempted to penetrate into the causes of this early shedding of the teeth, but I know not whether I have hit upon a true one. Many people were of opinion that the air of this country hurt the teeth: so much is certain, that the weather can no where be subject to more frequent and sudden changes; for the end of a hot day often turns out piercing cold, and *vice versa*. Yet this change of weather cannot be looked upon as having any effect upon the shedding of the teeth, for the *Indians* prove the contrary: they live in the same air, and always keep fine, entire white teeth; this I have seen myself, and have been assured of by every body: others ascribe it to the great quantities of fruit and sweetmeats which are here eaten. But I have known many people,

who

who never eat any fruit, and nevertheless had hardly a tooth left.

I THEN began to suspect the tea, which is drank here in the morning and afternoon, especially by women, and is so common at present, that there is hardly a farmer's wife, or a poor woman, who does not drink tea in the morning: I was confirmed in this opinion, when I took a journey through some parts of the country which were still inhabited by *Indians*. For Major General *Johnson* told me at that time, that several of the *Indians*, who lived close to the *European* settlements, had learnt to drink tea. And it has been observed, that such of the *Indian* women, as used themselves too much to this liquor, had, in the same manner as the *European* women, lost their teeth prematurely, though they had formerly been quite sound. Those again, who had not used tea, preserved their teeth strong and sound to a great age.

I AFTERWARDS found, that the use of tea could not entirely cause this accident. Several young women, who lived in this country, but were born in *Europe*, complained that they lost most of their teeth after they came to *America*: I asked, whether they did not think that it arose from the frequent use of tea, as it was known, that strong tea, as it were enters into and corrodes the teeth; but they answered, that they had lost their teeth before they had begun to drink tea; but, continuing my enquiries, I found at last a sufficient cause to account for the loss of their teeth: each of these women owned, that they were accustomed to eat every thing hot, and nothing

nothing was good, in their opinion, unless they could eat it as fast as it came from the fire. This is likewise the case with the women in the country, who lose their teeth much sooner and more abundantly than the men. They drink tea in greater quantity, and much oftener, in the morning, and even at noon, when the employment of the men will not allow them to sit at the tea-table. Besides that, the *Englishmen* care very little for tea, and a bowl of punch is much more agreeable to them. When the *English* women drink tea, they never pour it out of the cup into the saucer, but drink it hot as it is out of the former. The *Indian* women, in imitation of them, swallow the tea in the same manner. On the contrary, those *Indians*, whose teeth are sound, never eat any thing hot, but take their meat either quite cold, or only just milk warm.

I ASKED the *Swedish* church-warden in *Philadelphia*, Mr. *Bengtson*, and a number of old *Swedes*, whether their parents and countrymen had likewise lost their teeth as soon as the *American* colonists; but they told me that they had preserved them to a very great age. *Bengtson* assured me, that his father, at the age of seventy, cracked peach stones and the black walnuts with his teeth, notwithstanding their great hardness, which at this time no body dares to venture at that age. This confirms what I have before said, for at that time the use of tea was not yet known in *North America*.

No disease is more common here, than that which the *English* call *fever and ague*, which is sometimes quotidian, tertian, or quartan. But

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it often happens, that a person who has had a tertian ague, after losing it for a week or two, gets a quotidian ague in its stead, which, after a while, again changes into a tertian. The fever commonly attacks the people at the end of *August*, or beginning of *September*, and commonly continues during autumn and winter, till towards spring, when it ceases entirely.

STRANGERS who arrive here, commonly are attacked by this sickness the first or second year after their arrival; and it is more violent upon them, than upon the natives, so that they sometimes die of it; but if they escape the first time, they have the advantage of not being visited again the next year, or perhaps never any more. It is commonly said here, that strangers get the fever to accustom them to the climate. The natives, of *European* offspring, have annual fits of this ague in some parts of the country: some, however, are soon delivered from it; with others, on the contrary, it continues for six months together, and others are afflicted with it till they die. The *Indians* also suffer it, but not so violently as the *Europeans*. No age is secured against it: in those places where it rages annually, you see old men and women attacked with it; and even children in the cradle, sometimes not above three weeks old: it is likewise quotidian, tertian, or quartan, with them. This autumn the ague was more violent here than it commonly used to be. People who are afflicted with it look as pale as death, and are greatly weakened, but in general are not prevented from doing their work in the intervals. It is remarkable, that every year there are

are great parts of the country where this fever rages, and others where scarce a single person has been taken ill. It likewise is worth notice, that there are places where the people cannot remember that it formerly prevailed in their country, though at present it begins to grow more common: yet there was no other visible difference between the several places. All the old *Svedes*, *Englishmen*, *Germans*, &c. unanimously asserted, that the fever had never been so violent, and of such continuance, when they were boys, as it is at present. They were likewise generally of opinion, that about the year 1680, there were not so many people afflicted with it, as about this time. However, others equally old were of opinion, that the fever was proportionably as common formerly as it is at present; but that it could not at that time be so sensibly perceived, on account of the scarcity of inhabitants, and the great distance of their settlements from each other; it is therefore probable that the effects of the fever have at all times been equal.

It would be difficult to determine the true causes of this disease; they seem to be numerous, and not always alike: sometimes, and, I believe, commonly, several of them unite. I have taken all possible care to sound the opinions of the physicians here on that head, and I here offer them to the reader.

SOME of them think that the peculiar qualities of the air of this country cause this fever; but most of them assert, that it is generated by the standing and putrid water, which it seems is confirmed by experience. For it has been observed,

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observed, in this country, that such people, as live in the neighbourhood of morasses or swamps, or in places where a stagnant, stinking water is to be met with, are commonly infested with the fever and ague every year, and get it more readily than others. And this chiefly happens at a time of the year when those stagnant waters are most evaporated by the excessive heat of the sun, and the air is filled with the most noxious vapours. The fever likewise is very violent in all places which have a very low situation, and where salt water comes up with the tide twice in twenty-four hours, and unites with the stagnant fresh water in the country. Therefore, on travelling in summer, over such low places where fresh and salt water unite, the nauseous stench arising from thence often forces the traveller to stop his nose. On that account most of the inhabitants of *Penn's neck*, and *Salem* in *New Jersey*, where the ground has the above-mentioned quality, are annually infested with the fever to a much greater degree than the inhabitants of the higher country. If an inhabitant of the higher part of the country, where the people are free from the fever, removes into the lower parts, he may be well assured that the fever will attack him at the usual time, and that he will get it again every year, as long as he continues in that country. People of the liveliest complexion, on coming into the low parts of the country, and continuing there for some time, have entirely lost their colour and become quite pale. However, this cannot be the sole cause of the fever, as there have been in several parts of the country which had

had a low situation, and had stagnant waters near them, where the people declared they seldom suffered from this sickness; but these places were about two or three degrees more northerly.

OTHERS were of opinion that diet did very much contribute towards it, and chiefly laid the blame upon the inconsiderate and intemperate consumption of fruit. This is particularly the case with the *Europeans*, who come into *America*, and are not used to its climate and its fruit; for those who are born here can bear more, yet are not entirely free from the bad effects of eating too much. I have heard many *Englishmen*, *Germans*, and others, speak from their own experience on this account; they owned, that they had often tried, and were certain that after eating a water melon once or twice before they had breakfasted, they would have the fever and ague in a few days after. Yet it is remarkable, that the *French* in *Canada* told me that fevers were less common in that country, though they consumed as many water melons as the *English* colonies, and that it had never been observed that they occasioned a fever; but that on coming in the hot season to the *Illinois*, an *Indian* nation which is nearly in the same latitude with *Pensylvania* and *New Jersey*, they could not eat a water melon without feeling the shaking fits of an ague, and that the Indians therefore warned them not to eat of so dangerous a fruit. Query, Does not this lead us to think that the greater heat in *Pensylvania*, and the country of the *Illinois*, which are both five or six degrees more southerly than *Canada*, makes fruit in some measure more dan-

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gerous? In the *English* North American colonies, every countryman plants a number of water melons, which are eaten whilst the people make hay, orduring the harvest, when they have nothing upon their stomachs, in order to cool them during the great heat, as that juicy fruit seems very proper to give refreshment. In the same manner melons, cucumbers, gourds, squashes, mulberries, apples, peaches, cherries, and such like fruit are eaten here in summer, and all together contribute to the attacks of the ague.

BUT that the manner of living contributes greatly towards it, may be concluded from the unanimous accounts of old people, concerning the times of their childhood; according to which, the inhabitants of these parts, were at that time not subject to so many diseases as they are at present, and people were seldom sick. All the old *Swedes* likewise agreed, that their countrymen, who first came into *North America*, attained to a great age, and their children nearly to the same; but that their grand children, and great grand children did not reach the age of their ancestors, and their health was not near so vigorous and durable. But the *Swedes* who first settled in *America*, lived very frugally; they were poor, and could not buy rum, brandy, or other strong liquors, which they seldom distilled themselves, as few of them had a distilling vessel. However they sometimes had a good strong beer. They did not understand the art of making cyder, which is now so common in the country: tea, coffee, chocolate, which are at present even the country people's daily breakfast, were wholly unknown to them: most

of them had never tasted sugar or punch. The tea which is now drank, is either very old, or mixed with all sorts of herbs, so that it no longer deserves the name of tea: therefore it cannot have any good effect upon those who use it plentifully; besides, it cannot fail of relaxing the bowels, as it is drank both in the morning and in the afternoon quite boiling hot. The *Indians*, the offspring of the first inhabitants of this country, are a proof of what I have said. It is well known that their ancestors, at the time of the first arrival of the *Europeans*, lived to a very great age. According to the common accounts, it was then not uncommon to find people among the *Indians*, who were above a hundred years old: they lived frugally, and drank pure water: brandy, rum, wine, and all the other strong liquors, were utterly unknown to them; but since the Christians have taught them to drink these liquors, and the *Indians* have found them too palatable, those who cannot resist their appetites, hardly reach half the age of their parents.

LASTLY, some people pretended that the loss of many odoriferous plants, with which the woods were filled at the arrival of the *Europeans*, but which the cattle have now extirpated, might be looked upon as a cause of the greater progress of the fever at present. The number of those strong plants occasioned a pleasant scent to rise in the woods every morning and evening. It is therefore not unreasonable to think, that the noxiousness of the effluvia from putrifying substances was then prevented, so that they were not so dangerous to the inhabitants.

SEVERAL

SEVERAL remedies are employed against this disease: the jesuit's bark was formerly a certain one, but at present it has not always this effect, though they sell it genuine, and for the very best. Many people accused it of leaving something noxious in the body. Yet it was commonly observed, that when the bark was good, and it was taken as soon as the fever made its appearance, and before the body was weakened, it was almost sure to conquer the fever, so that the cold fits never returned, and no pain or stiffness remained in the limbs; but when the disease is rooted in, and has considerably weakened the patients, or they are naturally very weak, the fever leaves them after using the jesuit's bark, but returns again in a fortnight's time, and obliges them to take the bark again; but the consequence frequently is a pain and a stiffness in their limbs, and sometimes in their bowels, which almost hinders them from walking: this pain continues for several years together, and even accompanies some to the grave. This bad effect is partly attributed to the bark, which can seldom be got genuine here, and partly to the little care which the patients take in using the bark. A man of my acquaintance was particularly dexterous in expelling the ague by the use of the jesuit's bark. His manner of proceeding was as follows: when it was possible, the patient must use the remedy as soon as the fever begun, and before it was settled in his body: but before he took the medicine, he was to take a diaphoretic remedy, as that had been found very salutary; and as the fever is frequently of such a nature here, as not to make the patient sweat,

sweat, even when the hot fit is upon him, a perspiration was to be brought about by some other means. To that purpose the patient took his dose on the day when he had his cold fit, and was not allowed to eat any thing at night. The next morning he continued in a warm bed, drank a quantity of tea, and was well covered, that he might perspire plentifully. He continued so till the perspiration ceased, and then left the bed in a hot room, and washed his body with milk-warm water, in order to cleanse it from the impurities that settled on it from the perspiration, and to prevent their stopping up of the pores. The patient was then dried again, and at last he took the bark several times in one day. This was repeated twice or thrice on the days after he had the ague, and it commonly left him without returning, and most people recover so well, that they do not look pale after their sickness.

THE bark of the root of the *Tulip tree*, or *Liriodendron Tulipifera*, taken in the same manner as the jesuit's bark, sometimes had a similar effect.

SEVERAL people peeled the roots of the *Cornus florida*, or *Dog wood*, and gave this peel to patients; and even some people, who could not be cured by the jesuit's bark, have recovered by the help of this. I have likewise seen people cured of the fever, by taking brimstone reduced to powder, and mixed with sugar, every night before they went to bed, and every morning before they got up: they took it three or four times in the intervals, and at each time drank some warm liquor, to wash the powder down. How-

ever

ever others that tried the same remedy did not find much relief from it.

SOME people collected the yellow bark of the peach tree, especially that which is on the root, and boiled it in water, till half of it was evaporated by boiling. Of this decoction the patient took every morning about a wine glass full, before he had eaten any thing. This liquor has a disagreeable taste, and contracts the mouth and tongue like alum; yet several persons at *Raccoon* who had tried many remedies in vain, were cured by this.

OTHERS boiled the leaves of the *Potentilla reptans*, or of the *Potentilla canadensis*, in water, and made the patients drink it before the ague fit came on, and it is well known that several persons have recovered by this means.

THE people who are settled upon the river *Mohawk* in *New York*, both *Indians* and *Europeans*, collect the root of the *Geum rivale*, and pound it. This powder some of them boil in water till it is a pretty strong decoction: others only infuse cold water on it and leave it so for a day; others mix it with brandy. Of this medicine the patient is to take a wine glass full on the morning of the day when the fever does not come, before he has eaten any thing. I was assured that this was one of the surest remedies, and more certain than the jesuit's bark.

THE people who live near the iron mines, declared that they were seldom or never visited by the fever and ague; but when they have the fever, they drink the water of such fountains, as arise from the iron mines, and have a strong cha-

lybeat taste; and they assured me that this remedy was infallible. Other people therefore who did not live very far from such springs, went to them for a few days, when they had the fever, in order to drink the water, which commonly cured them.

I HAVE already shewn above, that sage mixed with lemon juice, has been found very salutary against the ague.

IT was however universally remarkable, that that which cures one person of it, has no effect upon another.

THE pleurisy is likewise a disease which the people of this country are much subject to. The *Swedes* in this province call it *stitches and burning*, and they always mean the pleurisy whenever they mention those words. Many of the old *Swedes* told me that they had heard very little of it when they were young, and that their parents had known still less of it in their childhood; but that it was so common now, that many people died every year of it: yet it has been observed, that in some years this disease has been very moderate, and taken few people away with it, whilst in other years it makes great havock: it likewise is more violent in some places than in others.

In the autumn of the year 1728, it swept away many at *Penn's neck*, a place below *Raccoon*, and nearer to the *Delaware*, where a number of *Swedes* are settled. Almost all the *Swedes* there died of it, though they were very numerous. From hence it happened that their children who were left in a very tender age, and grew up

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among the *English* children, forgot their mother tongue, so that few of them understand it at present. Since that time, though the pleurisy has every year killed a few people at *Penn's neck*, yet it has not carried off any considerable numbers. It rested as it were till the autumn of the year 1748, but then it began to make dreadful havock, and every week six or ten of the old people died. The disease was so violent, that when it attacked a person, he seldom lived above two or three days; and of those who were taken ill with it, very few recovered. When the pleurisy was got into a house, it killed most of the old people in it: it was a true pleurisy, but it had a peculiarity with it, for it commonly began with a great swelling under the throat and in the neck, and with a difficulty of swallowing. Some people looked upon it as contagious, and others seriously declared, that when it came into a family, not only those who lived in the same house suffered from it, but even such relations as lived far off. There have been several people at *Penn's neck*, who, without visiting their sick friends, have got the pleurisy and died of it: I do not dispute the truth of this, though I do not agree to the conclusion. The pleurisy was the most violent in *November*; yet some old people died of it even in the next winter; but children were pretty free from it. The physicians did not know what to make of it, nor how to remedy it.

It is difficult to determine the causes of such violent diseases. An old *English* surgeon who lived here gave the following reason. The inhabitants of this country drink great quantities

of punch and other strong liquors in summer, when it is very hot; by that means the veins in the diaphragm contract, and the blood grows thick. Towards the end of *October* and the beginning of *November*, the weather is apt to alter very suddenly, so that heat and cold change several times a day. When the people during this changeable weather are in the open air, they commonly get this disease. It is likewise certain that the air is more unwholesome one year than another, which depends upon the heat, and other circumstances: this peculiar quality of the air must of course produce a pleurisy. It is remarkable, that both in the year 1728, and in the present, when so many people died at *Penn's neck*, few died at *Raccoon*, though the two places are near each other, and seem to have the same soil and climate. But there is this difference, that *Penn's neck* lies remarkably low, and *Raccoon* pretty high. The people in the former place have settled between marshes and swamps, in which the water stagnates and putrifies; and most of these places are covered with trees, by which means the wet is shut up still more, and near such marshes are the houses. Lastly, the water at *Penn's neck* is not reckoned so good as that in *Raccoon*. It likewise becomes brackish in several little rivers, when the *Delaware*, during the tide, rises very high, and runs up into them. On the banks of these rivulets live many of the *Swedes*, and take water for common use from them.

December the 3d. THIS morning I set out for *Philadelphia*, where I arrived in the evening.

WILD

WILD grapes are very abundant in the woods, and of various kinds; a species of them which are remarkable for their size, grow in the marshes, and are greedily eaten by the *Raccoon*: they are therefore called *marsh grapes*, but the *English* call them *fox grapes*: they have not an agreeable flavour, and are seldom eaten by the inhabitants of this country, who make use of a small kind of wild grapes, which grow on a dry soil: pretty late in autumn when they are quite ripe, they have a very good flavour, being a mixture of sweet and acid. Some people dry these grapes when gathered, and bake them in tarts, &c. they likewise make use of them as dried sweetmeats. The *Swedes* formerly made a pretty good wine from them; but have now left it off. However some of the *English* still press an agreeable liquor from these grapes, which they assured me was as good as the best claret, and that it would keep for several years.

THE manner of preparing this sort of wine has been described at large in an almanack of this country, for the year 1743, and is as follows: the grapes are collected from the twenty-first of *September* to about the eleventh of *November*, that is as they grow ripe: they must be gathered in dry weather, and after the dew is gone off: the grapes are cleared of the cobwebs, dry leaves, and other things adhering to them. Next a great hogshhead is prepared which has either had treacle or brandy in; it is washed very clean, one of the bottoms beat out, and the other placed on a stand for the purpose, or

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on pieces of wood in the cellar, or else in a warm room, about two feet above the ground : the grapes are put into this hogshhead, and as they sink lower in three or four days time, more are added. A man with naked feet gets into the hogshhead and treads the grapes, and in about half an hour's time the juice is forced out ; the man then turns the lowest grapes uppermost, and treads them for about a quarter of an hour : this is sufficient to squeeze the good juice out of them : for an additional pressure would even crush the unripe grapes, and give the whole a disagreeable flavour. The hogshhead is then covered with a thick blanket ; but if there is no cellar, or it is very cold, two are spread over it. Under this covering the juice is left to ferment for the first time, and in the next four or five days it ferments and works very strongly. As soon as the fermentation ceases, a hole is made about six inches from the bottom, and some of the juice is tapped off about twice in a day. As soon as this is clear and settled, it is poured into an anker of a middling size ; for from twenty bushels of grapes, they get about as many gallons of juice : the anker remains untouched ; and the must in it ferments a second time : at this time it is necessary that the anker be quite full ; the scum which settles at the bung-hole must be taken off, and the anker always filled up with more must, which is kept ready for that purpose : this is continued till Christmas, when the anker may be stopped up ; at last the wine is ready in *February* and bottled. It is likewise usual here, to put some of the ripe grapes into a vessel,

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a vessel, in order to make a vinegar : and that which is got by this means is very good. Several people made brandy from these grapes, which has a very pleasant taste, but is still more pleasant; if the fruits of the persimon are mixed with it. The wood of these vines is of no use, it is so brittle that it cannot be used for sticks : on cutting into the stem, a white, insipid resin comes out a few hours after the wound is made. In many gardens vines are planted for the purpose of making arbours, for which they are indeed excellent ; as their large and plentiful leaves form a very close cover against the scorching heat of the sun. When the vines flower here in *May* and *June*, the flowers exhale a strong, but exceeding pleasant and refreshing smell, which is perceptible even at a great distance. Therefore on coming into the woods about that time, you may judge from the sweet perfume in the air, arising from the flowers of the vines, that you are near them, though you do not see them. Though the winters be ever so severe, yet they do not affect the vines. Each grape is about the size of a pea, but further southward they are said to be of the size of common raisins, and of a finer flavour. Further up in the country, during a part of autumn, they are the chief food of bears, who climb up the trees in order to pluck them. People are of opinion, that if the wild vines were cultivated with more care, the grapes would grow larger, and more palatable.

December the 5th. I SHALL here mention two prognostics of the weather, which were greatly

greatly valued here. Some people pretended to foretel that the ensuing winter would not be a severe one: this they conjectured from having seen wild geese and other migratory birds go to the south in *October*, but return a few days ago in great numbers, and even pass on further to the north. Indeed the ensuing winter was one of the most temperate ones.

SEVERAL persons likewise assured us that we should have rain before to-morrow night. The reason they gave for this conjecture was, that this morning at sun-rising, from their windows they had seen every thing very plainly on the other side of the river, so that it appeared much nearer than usual, and that this commonly foreboded rain. This presage was likewise pretty exactly fulfilled.

THE *Indians*, before the arrival of the *Europeans*, had no notion of the use of iron, though that metal was abundant in their country. However they knew in some measure how to make use of copper. Some *Dutchmen* who lived here, still preserved the old account among them, that their ancestors on their first settling in *New York* had met with many of the *Indians*, who had tobacco pipes of copper, and who made them understand by signs, that they got them in the neighbourhood: afterwards the fine copper mine was discovered, upon the *second river* between *Elizabeth-town* and *New York*. On digging in this mine, the people met with holes worked in the mountain, out of which some copper had been taken, and they found even some tools, which the *Indians* probably made use of, when they endeavoured

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deavoured to get the metal for their pipes. Such holes in the mountains have likewise been found in some parts of *Pensylvania*, viz. below *Newcastle* towards the sea side, and always some marks of a copper ore along with them. Some people have conjectured, that the *Spaniards*, after discovering *Mexico*, sailed along the coasts of *North America*, and landed now and then, in order to enquire whether any gold or silver was to be met with, and that they perhaps made these holes in the mountains: but supposing them to have made such a voyage along the coasts, they could not immediately have found out the copper mines; and they probably did not stop to blast this ore, as they were bent only upon gold and silver; it is therefore almost undoubted that the *Indians* dug these holes: or may we be allowed to suspect that our old *Normans*, long before the discoveries of *Columbus*, came into these parts, and met with such veins of copper, when they sailed to what they called the excellent *Wineland**, of which our ancient traditional records called *Sagor* speak, and which undoubtedly was *North America*? But in regard to this, I shall have occasion in the sequel better to explain my sentiments. It was remarkable, that in all those places where such holes have lately been found in the mountains, which manifestly seem to have been dug by men, they were always covered with a great quantity

* SEE for this opinion the scarce and curious work intituled, *Torfæi historia Finlandiæ antiquæ seu partis Americæ septentrionalis. Hæjniæ 1715. 4to. F.*

of earth, as if they were intended to remain hidden from strangers.

Dec. 6th. ON long voyages the sailors sometimes catch such fish as are known to none of the ship's company; but as they are very greedy after fresh provisions, they seldom abstain from eating them: however it proves often venturing too much, experience having shown, that their want of caution has often cost them their lives, for sometimes poisonous fish are caught. But there is a method of finding them out, as I have heard from several captains of ships; it is usual when such unknown fish are boiled, to put a silver button, or any piece of silver, into the kettle, which, if the fish be poisonous, will turn quite black, but if it be not, it will not change: some of the seamen referred to their own repeated experience*.

Mr. *Franklin* and several other gentlemen frequently told me, that a powerful *Indian*, who possessed *Rhode Island*, had sold it to the *English* for a pair of spectacles: it is large enough for a prince's domain, and makes a peculiar government at present. This *Indian* knew to set a true value upon a pair of spectacles: for undoubtedly if those glasses were not so plentiful, and only a few of them could be found, they

* THIS experiment with the silver supposes, that the broth of the fish would be so strong as to act as a solvent upon the silver; but there may be poisons, which would not affect the silver, and however prove fatal to men; the surest way therefore would be to suppress that appetite, which may become fatal not only to a few men of the crew, but also endanger the whole ship, by the loss of necessary hands. F.

would,

would, on account of their great use, bear the same price with diamonds.

THE *servants* which are made use of in the *English American* colonies are either free persons, or slaves, and the former are again of two different sorts.

1. THOSE who are quite free serve by the year; they are not only allowed to leave their service at the expiration of their year, but may leave it at any time when they do not agree with their masters. However in that case they are in danger of losing their wages, which are very considerable. A man servant who has some abilities, gets between sixteen and twenty pounds in *Pensylvania* currency, but those in the country do not get so much. A servant maid gets eight or ten pounds a year: these servants have their food besides their wages, but must buy their own clothes, and what they get of these, they must thank their master's goodness for.

2. THE second kind of free servants consist of such persons as annually come from *Germany, England*, and other countries, in order to settle here. These new comers are very numerous every year: there are old and young ones, and of both sexes; some of them have fled from oppression, under which they supposed themselves to have laboured. Others have been driven from their country by persecution on account of religion; but most of them are poor, and have not money enough to pay their passage, which is between six and eight pounds sterling for each person; therefore they agree with the captain that they will suffer themselves to be sold for
a few

a few years, on their arrival. In that case the person who buys them, pays the freight for them; but frequently very old people come over, who cannot pay their passage, they therefore sell their children, so that they serve both for themselves and for their parents: there are likewise some who pay part of their passage, and they are sold only for a short time. From these circumstances it appears, that the price of the poor foreigners who come over to *North America* is not equal, and that some of them serve longer than others: when their time is expired, they get a new suit of clothes from their master, and some other things: he is likewise obliged to feed and clothe them during the years of their servitude. Many of the *Germans* who come hither, bring money enough with them to pay their passage, but rather suffer themselves to be sold, with a view, that during their servitude they may get some knowledge of the language and quality of the country, and the like, that they may the better be able to consider what they shall do when they have got their liberty. Such servants are taken preferable to all others, because they are not so dear; for to buy a *Negroe* or black slave, requires too much money at once; and men or maids who get yearly wages, are likewise too dear; but this kind of servants may be got for half the money, and even for less; for they commonly pay fourteen pounds, *Pensylvania* currency, for a person who is to serve four years, and so on in proportion. Their wages therefore are not above three pounds *Pensylvania* currency per ann. This kind

kind of servants, the *English* call *servings*. When a person has bought such a servant for a certain number of years, and has an intention to sell him again, he is at liberty to do so; but he is obliged, at the expiration of the term of the servitude, to provide the usual suit of cloaths for the servant, unless he has made that part of the bargain with the purchaser. The *English* and *Irish* commonly sell themselves for four years, but the *Germans* frequently agree with the captain before they set out, to pay him a certain sum of money, for a certain number of persons; as soon as they arrive in *America*, they go about and try to get a man who will pay the passage for them: in return they give according to the circumstances, one, or several of their children, to serve a certain number of years: at last they make their bargain with the highest bidder.

3. THE *Negroes* or *Blacks* make the third kind. They are in a manner slaves; for when a Negro is once bought, he is the purchaser's servant as long as he lives, unless he gives him to another, or makes him free. However it is not in the power of the master to kill his Negro for a fault, but he must leave it to the magistrates to proceed according to the laws. Formerly the *Negroes* were brought over from *Africa*, and bought by almost every one who could afford it. The *Quakers* alone scrupled to have slaves; but they are no longer so nice, and they have as many *Negroes* as other people. However many people cannot conquer the idea of its being contrary to the laws of Christianity to keep slaves. There are likewise several free

Negroes in town, who have been lucky enough to get a very zealous Quaker for their master, who gave them their liberty, after they had faithfully served him for some time.

AT present they seldom bring over any Negroes to the *English* colonies, for those which were formerly brought thither, have multiplied considerably. In regard to their marriage they proceed as follows: In case you have not only male but likewise female Negroes, they must intermarry, and then the children are all your slaves: but if you possess a male Negro only, and he has an inclination to marry a female belonging to a different master, you do not hinder your Negro in so delicate a point; but it is no advantage to you, for the children belong to the master of the female; it is therefore advantageous to have Negro-women. A man who kills his Negro must suffer death for it: there is not however an example here of a white man's having been executed on this account. A few years ago it happened that a master killed his slave; his friends and even the magistrates secretly advised him to leave the country, as otherwise they could not avoid taking him prisoner, and then he would be condemned to die according to the laws of the country, without any hopes of saving him. This lenity was employed towards him, that the Negroes might not have the satisfaction of seeing a master executed for killing his slave; for this would lead them to all sorts of dangerous designs against their masters, and to value themselves too much.

THE Negroes were formerly brought from
Africa,

Africa, as I mentioned before; but now this seldom happens, for they are bought in the *West Indies*, or *American Islands*, whither they were originally brought from their own country: for it has been found that on transporting the Negroes from *Africa*, immediately into these northern countries, they have not such a good state of health, as when they gradually change places, and are first carried from *Africa* to the *West Indies*, and from thence to *North America*. It has frequently been found, that the Negroes cannot stand the cold here so well as the *Europeans* or whites; for whilst the latter are not in the least affected by the cold, the toes and fingers of the former are frequently frozen. There is likewise a material difference among them in this point; for those who come immediately from *Africa*, cannot bear the cold so well as those who are either born in this country, or have been here for a considerable time; for the frost easily hurts the hands or feet of the Negroes which come from *Africa*, or occasions violent pains in their whole body, or in some parts of it, though it does not at all affect those who have been here for some time. There are frequent examples that the Negroes on their passage from *Africa*, if it happens in winter, have some of their limbs destroyed by frost, on board the ship, when the cold is but very inconsiderable, and the sailors are scarce obliged to cover their hands. I was even assured, that some Negroes have been seen here, who have had an excessive pain in their legs, which afterwards broke in the middle, and dropt entirely from the body, together with the

flesh on them. Thus it is the same case with men here, as with plants which are brought from the southern countries, and cannot accustom themselves to a colder climate.

THE price of Negroes differs according to their age, health, and abilities. A full-grown Negro costs from forty pounds and upwards to a hundred of *Pensylvania* currency. A Negro boy, or girl, of two or three years old, can hardly be got for less than eight or fourteen pounds in *Pensylvania* currency. Not only the Quakers, but likewise several Christians of other denominations, sometimes set their Negroes at liberty. This is done in the following manner: when a gentleman has a faithful Negro who has done him great services, he sometimes declares him independent at his death. This is however very expensive; for they are obliged to make a provision for the Negro thus set at liberty, to afford him subsistence when he is grown old, that he may not be driven by necessity to wicked actions, or that he may be at any body's charge, for these free Negroes become very lazy and indolent afterwards. But the children which the free Negro has begot during his servitude are all slaves, though their father be free. On the other hand those Negro children are free whose parents are at liberty. The Negroes in the *North American* colonies are treated more mildly, and fed better than those in the *West Indies*. They have as good food as the rest of the servants, and they possess equal advantages in all things, except their being obliged to serve their whole life-time, and get no other wages than what their master's goodness

goodness allows them: they are likewise clad at their master's expence. On the contrary, in the *West Indies*, and especially in the *Spanish Islands*, they are treated very cruelly; therefore no threats make more impression upon a Negro here, than that of sending him over to the *West Indies*, in case he would not reform. It has likewise been frequently found by experience, that when you show too much remissness to these Negroes, they grow so obstinate, that they will no longer do any thing but of their own accord: therefore a strict discipline is very necessary, if their master expects to be satisfied with their services.

In the year 1620, some Negroes were brought to *North America* in a *Dutch* ship, and in *Virginia* they bought twenty of them. These are said to have been the first that came hither. When the *Indians*, who were then more numerous in the country than at present, saw these black people for the first time, they thought they were a true breed of Devils, and therefore they called them *Manitto* for a great while: this word in their language signifies not only God, but likewise the Devil. Some time before that, when they saw the first *European* ship on their coasts, they were perfectly persuaded that God himself was in the ship. This account I got from some *Indians*, who preserved it among them as a tradition which they had received from their ancestors: therefore the arrival of the Negroes seemed to them to have confused every thing; but since that time, they have entertained less disagreeable notions of the Negroes, for at present many

live among them, and they even sometimes intermarry, as I myself have seen.

THE Negroes have therefore been upwards of a hundred and thirty years in this country: but the winters here, especially in *New England* and *New York*, are as severe as our *Swedish* winters. I therefore very carefully enquired, whether the cold had not been observed to affect the colour of the Negroes, and to change it, so that the third or fourth generation from the first that came hither, were not so black as their ancestors. But I was generally answered, that there was not the least difference of colour to be perceived; and that a Negro born here, of parents which were likewise born in this country, and whose ancestors both men and women had all been blacks born in this country, up to the third or fourth generation, was not at all different in colour, from those Negroes who are brought directly over from *Africa*. From hence many people conclude, that a Negro or his posterity do not change colour, though they continue ever so long in a cold climate; but the mixing of a white man with a Negro woman, or of a Negro with a white woman, has a different effect; therefore to prevent any disagreeable mixtures of the white people and Negroes, and that the Negroes may not form too great an opinion of themselves, to the disadvantage of their masters, I am told there is a law made, prohibiting the whites of both sexes to marry Negroes, under pain of death, and deprivation of the clergyman who marries them: but that the whites and blacks

sometimes mix, appears from children of a mixed complexion, which are sometimes born.

It is likewise greatly to be pitied, that the masters of these Negroes in most of the *English* colonies take little care of their spiritual welfare, and let them live on in their pagan darkness. There are even some, who would be very ill pleased at, and would by all means hinder their Negroes from being instructed in the doctrines of Christianity, to this they are partly led by the conceit of its being shameful, to have a spiritual brother or sister among so despicable a people; partly by thinking that they should not be able to keep their Negroes so meanly afterwards; and partly through fear of the Negroes growing too proud, on seeing themselves upon a level with their masters in religious matters.

SEVERAL writings are well known, which mention, that the Negroes in *South America* have a kind of poison with which they kill each other, though the effect is not sudden, but happens a long time after the person has taken it: the same dangerous art of poisoning is known by the Negroes in *North America*, as has frequently been experienced. However only a few of them know the secret, and they likewise know the remedy against it, therefore when a Negro feels himself poisoned, and can recollect the enemy who might possibly have given him the poison, he goes to him, and endeavours by money and entreaties to move him to deliver him from the poison; but if the Negro is malicious, he does not only deny that he ever poisoned him, but likewise that he knows a remedy against it: this

poison does not kill immediately, for sometimes the sick person dies some years after. But from the moment he has the poison he falls into a consumption, and enjoys few days of good health: such a poor wretch often knows that he is poisoned, the moment he gets the poison. The Negroes commonly employ it on such of their brethren as behave well, are beloved by their masters, and separate as it were from their countrymen, or do not like to converse with them. They have likewise often other reasons for their enmity; but there are few examples of their having poisoned their masters. Perhaps the mild treatment they receive, keeps them from doing it, or perhaps they fear that they may be discovered, and that, in such a case, the severest punishments would be inflicted on them.

THEY never discover what the poison consists of, and keep it secret beyond conception. It is probable that it is a very common thing, which may be got all the world over, for wherever they are they can always easily procure it. Therefore it cannot be a plant, as several learned men have thought; for that is not to be met with every where. I have heard many accounts here of Negroes who have been killed by this poison. I shall only mention one incident, which happened during my stay in this country. A man here had a Negro who was exceedingly faithful to him, and behaved so well, that he would not have given him for twenty other Negroes. His master likewise shewed him a peculiar kindness, and the slave's conduct equalled that of the best Christian servant; he likewise conversed as little

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as possible with the other Negroes; on that account they hated him to excess; but as he was scarce ever in company with them, they had no opportunity of conveying the poison to him, which they had often tried. However, on coming to town during the fair (for he lived in the country) some other Negroes invited him to drink with them. At first he would not, but they pressed him till he was obliged to comply. As soon as he came into the room, the others took a pot from the wall and pledged him, desiring him to drink likewise: he drank; but when he took the pot from his mouth, he said, what beer is this? It is full of *****. I purposely omit what he mentioned, for it seems undoubtedly to have been the name of the poison with which malicious Negroes do so much harm, and which is to be met with almost every where. It might be too much employed to wicked purposes, and it is therefore better that it remains unknown. The other Negroes and Negro-women fell a laughing at the complaints of their hated countryman, and danced and sung as if they had done an excellent action, and had at last obtained the point so much wished for. The innocent Negro went away immediately, and, when he got home, said, that the other Negroes had certainly poisoned him: he then fell into a consumption, and no remedy could prevent his death.

Dec. 7th. In the morning I undertook again a little journey, to *Raccoon*, in *New Jersey*.

It does not seem difficult to find out the reasons, why the people multiply more here than in *Europe*. As soon as a person is old enough, he may

may marry in these provinces, without any fear of poverty; for there is such a tract of good ground yet uncultivated, that a new-married man can, without difficulty, get a spot of ground, where he may sufficiently subsist with his wife and children. The taxes are very low, and he need not be under any concern on their account. The liberties he enjoys are so great, that he considers himself as a prince in his possessions. I shall here demonstrate, by some plain examples, what effect such a constitution is capable of.

MAONS KEEN, one of the *Swedes* in *Raccoon*, was now near seventy years old: he had many children, grandchildren, and great-grandchildren; so that, of those who were yet alive, he could muster up forty-five persons. Besides them, several of his children and grandchildren died young, and some in a mature age. He was, therefore, uncommonly blessed. Yet his happiness is not comparable to that which is to be seen in the following examples, and which I have extracted from the *Philadelphia* gazette.

IN the year 1732, died at *Ipswich*, in *New England*, Mrs. *Sarah Tutbil*, a widow, aged eighty-six years. She had brought sixteen children into the world; and from seven of them only, she had seen one hundred and seventy-seven grandchildren and great-grandchildren.

IN 1739, *May* 30th, the children, grand, and great-grandchildren, of Mr. *Richard Buttington*, in the parish of *Chester*, in *Pensylvania*, were assembled in his house; and they made together one hundred and fifteen persons. The parent of these children, *Richard Buttington*, who was born in *England*, was then entering into his
eighty

eighty-fifth year; and was at that time quite fresh, active, and sensible. His eldest son, then sixty years old, was the first *Englishman* born in *Pensylvania*.

IN 1742, 8th of Jan. died at *Trenton*, in *New Jersey*, Mrs. *Sarah Furman*, a widow, aged ninety-seven years. She was born in *New England*, and left five children, sixty-one grandchildren, one hundred and eighty-two great-grandchildren, and twelve great-great-grandchildren, who were all alive when she died.

IN 1739, 28th of Jan. died at *South Kingston*, in *New England*, Mrs. *Maria Hazard*, a widow, in the hundredth year of her age. She was born in *Rhode Island*, and was a grandmother of the then vice-governor of that island, Mr. *George Hazard*. She could count altogether five hundred children, grandchildren, great-grandchildren, and great-great-grandchildren. When she died, two hundred and five persons of them were alive; a grand-daughter of hers had already been grandmother near fifteen years.

IN this manner, the usual wish or blessing in our liturgy, that the new-married couple may see their grandchildren, till the third and fourth generation, has been literally fulfilled in regard to some of these persons*.

Dec. 9th. IN every country we commonly meet with a number of insects; of which many, though they be ever so small and contemptible, can do considerable damage to the inhabitants. Of these dangerous insects there are likewise some

* Mr. *Kalm* speaks here of the *Swedish* Liturgy.

in *North America*: some are peculiar to that country, others are common to *Europe* likewise.

I HAVE already mentioned the *Mosquitoes* as a kind of disagreeable gnats; and another noxious insect, the *Bruchus Pisi*, which destroys whole fields with pease. I shall here add some more.

THERE are a kind of *Locusts*, which, about every seventeenth year, come hither in incredible numbers. They come out of the ground in the middle of *May*, and make, for six weeks together, such a noise in the trees and woods, that two persons who meet in such places, cannot understand each other, unless they speak louder than the locusts can chirp. During that time, they make, with the sting in their tail, holes into the soft bark of the little branches on the trees, by which means these branches are ruined. They do no other harm to the trees or other plants. In the interval, between the years when they are so numerous, they are only seen or heard single in the woods.

THERE is likewise a kind of *Caterpillars* in these provinces, which eat the leaves from the trees. They are also innumerable in some years. In the intervals there are but few of them: but when they come, they strip the trees so entirely of their leaves, that the woods in the middle of summer are as naked as in winter. They eat all kinds of leaves, and very few trees are left untouched by them. As, about that time of the year, the heat is most excessive, the stripping the trees of their leaves has this fatal consequence, that they cannot withstand the heat, but dry up entirely. In this manner, great forests are sometimes entirely ruined. The *Swedes*, who live here,

here, shewed me, here and there, great tracts in the woods, where young trees were now growing, instead of the old ones, which, some years ago, had been destroyed by the caterpillars. These caterpillars afterwards change into moths, or *phalænæ*, which shall be described in the sequel, in their proper places.

IN other years the *Grass-worms* do a great deal of damage in several places, both in the meadows and corn-fields. For the fields are at certain times over-run with great armies of these worms, as with the other insects; yet it is very happy that these many plagues do not come all together. For in those years, when the locusts are numerous, the caterpillars and grass-worms are not very considerable, and it happens so with the latter kinds, so that only one of the three kinds comes at a time. Then there are several years when they are very scarce. The grass-worms have been observed to settle chiefly in a fat soil; but as soon as careful husbandmen discover them, they draw narrow channels with almost perpendicular sides quite round the field in which the worms are settled; then, by creeping further, they all fall into the ditch, and cannot get out again. I was assured, by many persons, that these three sorts of insects followed each other pretty closely; and that the locusts came in the first year, the caterpillars in the second, and the grass-worms in the last: I have likewise found, by my own experience, that this is partly true.

MOths, or *Tineæ*, which eat the clothes, are likewise abundant here. I have seen cloth, worsted gloves, and other woollen stuffs, which had

had hung all the summer locked up in a shrine, and had not been taken care of, quite cut thro' by these worms, so that whole pieces fell out. Furs, which had been kept in the garret, were frequently so ruined by worms, that the hair went off by handfuls. I am, however, not certain whether these worms were originally in the country, or whether they were brought over from *Europe*.

FLEAS are likewise to be found in this part of the world. Many thousands were undoubtedly brought over from other countries; yet immense numbers of them have certainly been here since time immemorial. I have seen them on the grey squirrels, and on the hares which have been killed in such desert parts of this country, where no human creature ever lived. As I afterwards came further up into the country, and was obliged to lie at night in the huts and beds of the *Indians*, I was so plagued by immense quantities of fleas, that I imagined I was put to the torture. They drove me from the bed, and I was very glad to sleep on the benches below the roof of the huts. But it is easy to conceive that the many dogs which the *Indians* keep, breed fleas without end. Dogs and men lie promiscuously in the huts; and a stranger can hardly lie down and shut his eyes, but he is in danger of being either squeezed to death, or stifled, by a dozen or more dogs, which lie round him, and upon him, in order to have a good resting-place. For I imagine they do not expect that strangers will venture to beat them, or throw them off, as their masters and mistresses commonly do.

THE noisy *Crickets* (*Gryllus domesticus*) which

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are sometimes to be met with in the houses in Sweden, I have not perceived in any part of Pennsylvania or New Jersey; and other people whom I have asked, could not say that they had ever seen any. In summer there are a kind of *black Crickets* * in the fields, which make exactly the same chirping noise as our house crickets. But they keep only to the fields, and were silent as soon as winter or the cold weather came on. They say it sometimes happens that these field crickets take refuge in houses, and chirp continually there, whilst it is warm weather, or whilst the rooms are warm; but as soon as it grows cold they are silent. In some parts of the province of *New York*, and in *Canada*, every farm-house, and most of the houses in the towns, swarm with so many, that no farm-house in our country can be better stocked with them. They continue their music there throughout the whole winter.

Bugs (*Cimex lectularius*) are very plentiful here. I have been sufficiently tormented by them, in many places in *Canada*: But I do not remember having seen any with the *Indians*, during my stay at *Fort Frederick*. The commander there, *Mr. de Loufignan*, told me, that none of the *Illinois* and other *Indians* of the western parts of *North America* knew any thing of these vermin. And he added, that he could with certainty say this from his own experience, having been among them for a great while. Yet I cannot determine

* Perhaps it is the *Gryllus campestris*, or common black field cricket of Europe, of which *Rocfel*, in his work on insects, vol. 2, Gryll. f. 13. has given a fine drawing. F.

whether

estlicus) which are

whether bugs were first brought over by the *Europeans*, or whether they have originally been in the country. Many people looked upon them as natives of this country, and as a proof of it said, that under the wings of bats the people had often found bugs, which had eaten very deep into the flesh. It was therefore believed that the bats had got them in some hollow tree, and had afterwards brought them into the houses, as they commonly fix themselves close to the walls, and creep into the little chinks which they meet with. But as I have never seen any bugs upon bats, I cannot say any thing upon that subject. Perhaps a louse or a tick (*Acarus*) has been taken for a bug. Or, if a real bug has been found upon a bat's wing, it is very easy to conceive that it fixed on the bat, whilst the latter was sitting in the chinks of a house stocked with *European* bugs.

As the people here could not bear the inconvenience of these vermin, any more than we can in *Sweden*, they endeavoured to expel them by different means. I have already remarked, that the beds to that purpose were made of *Sassafras* wood, but that they were only temporary remedies. Some persons assured me that they had found, from their own experience, and by repeated trials, that no remedy was more effectual towards the expulsion of bugs, than the injecting of boiling water into all the cracks where they are settled, and washing all the wood of the beds with it; this being twice or thrice repeated, the bugs are wholly destroyed. But if there are bugs in neighbouring houses, they will fasten

fasten to one's clothes, and thus be brought over into other houses.

I cannot say whether these remedies are good or no, as I have not tried them; but by repeated trials I have been convinced that sulphur, if it be properly employed, entirely destroys bugs and their eggs in beds and walls, though they were ten times more numerous than the ants in an ant hill.*

THE *Mill-beetles*, or *Cock-roaches*, are likewise a plague of *North America*, and are settled in many of its provinces. The learned Dr. *Colden* was of opinion that these insects were properly natives of the *West-Indies*, and that those that were found in *North America* were brought over from those islands. To confirm his opinion, he said, that it was yet daily seen how the ships coming with goods from the *West-Indies* to *North-America* brought mill-beetles with them in great numbers. But from the observations which I have made in this country, I have reason to believe that these insects have been on the continent of *North America* time immemorial. Yet notwithstanding this I do not deny their being brought over from the *West-Indies*. They are in almost every house in the city of *New York*; and those undoubtedly came over in ships. But how can that be said of those mill-beetles, which are found in the midst of the woods and deserts?

THE *English* likewise call the *Mill-beetles*, *Cock-roaches*, and the *Dutch* give them the name of

* A still more infallible remedy, is to wash all the furniture, infected with that vermin, with a solution of arsenic. F.

Kackerlack. The *Swedes* in this country call them *Brodoetare*, or *Bread-eaters*, on account of the damage they do to the bread, which I am going to describe. Dr. *Linnaeus* calls them *Blatta Orientalis*. Many of the *Swedes* call them likewise *Kackerlack*. They are not only observed in the houses, but in the summer they appear often in the woods, and run about the trees, which are cut down. On bringing in all sorts of old rotten blocks of wood for fuel, in *February*, I discovered several cock-roaches settled in them; they were at first quite torpid, or as it were dead; but after lying in the room for a while, they recovered, became very lively, and began to run about. I afterwards found very often, that when old rotten wood was brought home in winter, and cut in pieces for fuel, the cock-roaches were got into it in numbers, and lay in it in a torpid state. In the same winter, a fellow cut down a great dry tree, and was about to split it. I then observed in a crack, some fathoms above the ground, several cock-roaches together with the common ants. They were, it seems, crept up a great way, in order to find a secure place of abode against winter. On travelling, in the middle of *October* 1749, through the uninhabited country between the *English* and *French* colonies, and making a fire at night near a thick half rotten tree, on the shore of lake *Champlain*, numbers of cock-roaches came out of the wood, being wakened by the smoke and the fire, which had driven them out of their holes. The *Frenchmen*, who were then in my company, did not know them, and could not give them any name. In

Canada

Canada the *French* did not remember seeing any in the houses. In *Pensylvania*, I am told, they run in immense numbers about the sheaves of corn, during the harvest. At other times they live commonly in the houses in the *English* settlements, and lie in the crevices, especially in the cracks of those beams which support the ceiling, and are nearest to the chimney.

THEY do a deal of damage by eating the soft parts of the bread. If they have once made a hole into a loaf, they will in a little time eat all the soft part in it, so that on cutting the loaf, nothing but the crust is left. I am told they likewise eat other victuals. Sometimes they bite people's noses or feet, whilst they are asleep. An old *Swede*, called *Sven Laock*, a grandson of the Rev. Mr. *Laockenius*, one of the first *Swedish* clergymen that came to *Pensylvania*, told me, that he had in his younger years been once very much frightened on account of a cock-roach, which crept into his ear whilst he was asleep. He waked suddenly, jumped out of bed, and felt that the insect, probably out of fear, was endeavouring with all its strength to get deeper. These attempts of the cock-roach were so painful to him, that he imagined his head was bursting, and he was almost senseless; however he hastened to the well, and bringing up a bucket full of water, threw some into his ear. As soon as the cock-roach found itself in danger of being drowned, it endeavoured to save itself, and pushed backwards out of the ear, with its hind feet, and thus happily delivered the poor man from his fears.

THE *Wood-lice* are disagreeable insects, which in a manner are worse than the preceding; but as I have already described them in a peculiar memoir, which is printed among the memoirs of the Royal Academy of Sciences for the year 1754, I refer my readers to that account.

Dec. 11th. THIS morning I made a little excursion to *Penn's Neck*, and further over the *Delaware* to *Wilmington*. The country round *Penn's Neck* has the same qualities as that about other places in this part of *New Jersey*. For the ground consists chiefly of sand, with a thin stratum of black soil. It is not very hilly, but chiefly flat, and in most places covered with open woods of such trees as have annual leaves, especially oak. Now and then you see a single farm, and a little corn-field round it. Between them are here and there little marshes or swamps, and sometimes a brook with water, which has a very slow motion.

THE woods of these parts consist of all sorts of trees, but chiefly of oak and hickory. These woods have certainly never been cut down, and have always grown without hindrance. It might therefore be expected that there are trees of an uncommon great age to be found in them; but it happens otherwise, and there are very few trees three hundred years old. Most of them are only two hundred years old; and this convinced me that trees have the same quality as animals, and die after they are arrived at a certain age. Thus we find great woods here, but when the trees in them have stood an hundred and fifty or an hundred and eighty years, they
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are either rotting within, or losing their crown, or their wood becomes quite soft, or their roots are no longer able to draw in sufficient nourishment, or they die from some other cause. Therefore when storms blow, which sometimes happens here, the trees are broke off either just above the root, or in the middle, or at the summit. Several trees are likewise torn out with their roots by the power of the winds. The storms thus cause great devastations in these forests. Every where you see trees thrown down by the winds, after they are too much weakened by one or the other of the above-mentioned causes to be able to resist their fury. Fire likewise breaks out often in the woods, and burns the trees half way from the root, so that a violent gust of wind easily throws them down.

ON travelling through these woods, I purposely tried to find out, by the position of the trees which were fallen down, which winds are the strongest hereabouts. But I could not conclude any thing with certainty, for the trees fell on all sides, and lay towards all the points of the compass. I therefore judged, that any wind which blows from that side where the roots of the tree are weakest and shortest, and where it can make the least resistance, must root it up and throw it down. In this manner the old trees die away continually, and are succeeded by a young generation. Those which are thrown down lie on the ground and putrify, sooner or later, and by that means encrease the black soil, into which the leaves are likewise finally changed, which drop abundantly in autumn, are blown about by

the winds for some time, but are heaped up, and lie on both sides of the trees, which are fallen down. It requires several years before a tree is intirely reduced to dust. When the winds tear up a tree with the roots, a quantity of loose soil commonly comes out with, and sticks to them for some time, but at last it drops off, and forms a little hillock, which is afterwards augmented by the leaves, which commonly gather about the roots. Thus several inequalities are formed in the woods, such as little holes and hills; and by this means the upper soil must likewise be heaped up in such places.

Some trees are more inclined to putrify than others. The *tupelo-tree* (*Nyssa*), the *tulip-tree* (*Liriodendron*), and the *sweet gum-tree* (*Liquidambar*), became rotten in a short time. The *hiccory* did not take much time, and the *black oak* fell sooner to pieces than the *white oak*; but this was owing to circumstances. If the bark remained on the wood, it was for the greatest part rotten, and entirely eaten by worms within, in the space of six, eight, or ten years, so that nothing was to be found but a reddish brown dust. But if the bark was taken off, they would often lie twenty years before they were entirely rotten. The suddenness of a tree's growth, the bigness of its pores, and the frequent changes of heat and wet in summer, cause it to rot sooner. To this it must be added, that all sorts of insects make holes into the stems of the fallen trees, and by that means the moisture and the air get into the tree, which must of course forward putrefaction. Most of the trees
here

here have deciduous or annual leaves. Many of them begin to rot whilst they are yet standing and blooming. This forms the hollow trees, in which many animals make their nests and places of refuge.

THE breadth of the *Delaware* directly opposite *Wilmington*, is reckoned an *English* mile and a half; yet to look at it, it did not seem to be so great. The depth of the river, in the middle, is said to be from four to six fathoms here.

Dec. 12th. THE *Joiners* say, that among the trees of this country they chiefly use the *black walnut-trees*, the *wild cherry-trees*, and the *curled maple*. Of the *black walnut-trees* (*Juglans nigra*) there is yet a sufficient quantity. However careless people take pains enough to destroy them, and some peasants even use them as fuel. The wood of the *wild cherry-trees* (*Prunus Virginiana*) is very good, and looks exceedingly well; it has a yellow colour, and the older the furniture is, which is made of it, the better it looks. But it is already difficult to get at it, for they cut it every where, and plant it no where. The *curled maple* (*Acer rubrum*) is a species of the common red maple, but likewise very difficult to be got. You may cut down many trees without finding the wood which you want. The wood of the *sweet gum-tree* (*Liquidambar*) is merely employed in joiner's work, such as tables, and other furniture. But it must not be brought near the fire, because it warps. The firs and the *white cedars* (*Cupressus thyoides*) are likewise made use of by the joiners for different sorts of work.

THE millers who attended the mill which stood here, said, that the axle-trees of the wheels of the mill were made of *white oak*, and that they continued good three or four years, but that the fir-wood does not keep so well. The cogs of the mill-wheel, and the pullies, are made of the wood of the white walnut-tree, because it is the hardest which can be got here. The wood of *mulberry-trees* is of all others reckoned the most excellent for pegs and plugs in ships and boats.

AT night I went over the river *Delaware*, from *Wilmington*, to the ferrying-place, on the *New Jersey* side.

Dec. 13th. IN the morning I returned to *Raccoon*.

ON many trees in the woods of this country, either on one of the sides, or in the middle of a branch, or round a branch, are greater or lesser *knobs* or excrescences. Sometimes there is only a single one in a tree. In the size there is a considerable difference, for some of these knobs are as big and bigger than a man's head, others are only small. They project above the surface of the tree, like a tumor. Sometimes a tree was quite covered with them. They do not lie on one side only, but often form a circle round a branch, and even round the stem itself. The trees which have these knobs are not always great ones, but some not above a fathom high. The knobs commonly consist of the same parts as the wood itself, and look within like curled wood. Some of them are hollow. When a knob on a little tree is cut open, we commonly find a number of little worms in it, which are sometimes

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times also common in the greater knobs. This shews the origin of the knobs in general. The tree is stung by insects, which lay their eggs under the bark, and from the eggs worms are afterwards hatched. They occasion an extravasation of the sap, which gradually condenses into a knob. Only the trees with annual deciduous leaves have these knobs, and among them chiefly the oak, of which again the black and *Spanish oak* have the greatest abundance of knobs. The *ash trees*, (*Fraxinus excelsior*) and the *red maple* (*Acer rubrum*) likewise have enough of them. Formerly the *Swedes*, and more especially the *Finlanders*, who are settled here, made dishes, bowls, &c. of the knobs which were on the ash-trees. These vessels, I am told, were very pretty, and looked as if they were made of curled wood. The oak-knobs cannot be employed in this manner, as they are commonly worm-eaten and rotten within. At present the *Swedes* no longer make use of such bowls and dishes, but make use of earthen ware, or vessels made of other wood. Some knobs are of an uncommon size, and make a tree have a monstrous appearance. Trees with knobs are very common in the woods of this country*.

THE

* In *Siberia*, and in the province of *Wiatka*, in the government of *Cazan*, in *Russia*, the inhabitants make use of the knobs, which are pretty frequently found in birches, to make bowls and other domestic utensils thereof. They are turned, made pretty thin, and covered with a kind of varnish, which gives them a pretty appearance; for the utensil looks yellow, and is marbled quite in a picturesque manner, with brown veins. The best kind of these vessels are made so thin that they are semidiaphanous, and when put into hot water they grow quite pliant, and may be formed

THE roads are good or bad according to the difference of the ground. In a sandy soil the roads are dry and good ; but in a clayey one they are bad. The people here are likewise very careless in mending them. If a rivulet be not very great, they do not make a bridge over it ; and travellers may do as well as they can to get over : Therefore many people are in danger of being drowned in such places, where the water is risen by a heavy rain. When a tree falls across the road, it is seldom cut off, to keep the road clear, but the people go round it. This they can easily do, since the ground is very even, and without stones ; has no underwood or shrubs, and the trees on it stand much asunder. Hence the roads here have so many bendings.

THE farms are most of them single, and you seldom meet with even two together, except in towns, or places which are intended for towns ; therefore there are but few villages. Each farm has its corn-fields, its woods, its pastures and meadows. This may perhaps have contributed something towards the extirpation of wolves, that they every where met with houses, and people who fired at them. Two or three farm-houses have generally a pasture or a wood in common, and there are seldom more together ; but most of them have their own grounds divided from the others.

formed by main force, quite flat, but when again left to themselves, and grown cold, they return to their original shape. This kind of wood is called, in *Russia*, *Kap*, and the vessels made of it, *Kappowie Tchasbkt*, and are pretty high in price, when they are of the best kind, and well varnished. F.

Dec. 18th. ALL persons who intend to be married, must either have their banns published three times from the pulpit, or get a licence from the governor. The banns of the poorer sort of people only are published, and all those who are a little above them get a licence from the governor. In that licence he declares that he has examined the affair, and found no obstacles to hinder the marriage, and therefore he allows it. The licence is signed by the governor; but, before he delivers it, the bridegroom must come to him in company with two creditable and well-known men, who answer for him, that there really is no lawful obstacle to his marriage. These men must subscribe a certificate, in which they make themselves answerable for, and engage to bear all the damages of, any complaints made by the relations of the persons who intend to be married, by their guardians, their masters, or by those to whom they may have been promised before. For all these circumstances the governor cannot possibly know. They further certify that nothing hinders the intended marriage, and that nothing is to be feared on that account. For a licence they pay five and twenty shillings in *Pensylvanian* money, at *Philadelphia*. The governor keeps twenty shillings, or one pound, and the remaining five shillings belong to his secretary. The licence is directed only to protestant clergymen. The quakers have a peculiar licence to their marriages. But as it would be very troublesome, especially for those who live far from the governor's residence, to come

come up to town for every licence, and to bring the men with them who are to answer for them, the clergymen in the country commonly take a sufficient number of licences and certificates, which are ready printed, with blanks left for the names; they give them occasionally, and get the common money, one pound five shillings, for each of them, besides something for their trouble. The money that they have collected, they deliver to the governor as soon as they come to town, together with the certificates, which are signed by two men, as above-mentioned; they then take again as many licences as they think sufficient: from hence we may conceive that the governors in the *English North American* colonies, besides their salaries, have very considerable revenues*.

THERE is a great mixture of people of all sorts in these colonies, partly of such as are lately come over from *Europe*, and partly of such as have not yet any settled place of abode. Hence it frequently happens that when a clergyman has married such a couple, the bridegroom says he has no money at present, but would pay the fee at the first opportunity: however he goes off with his wife, and the clergyman never gets his due. This proceeding has given occasion to a custom which is now common in *Maryland*.

* Though it is very desirable, that the members of the church of *England* may enjoy the same religious liberty in *America* as the rest of their fellow-subjects, and have every part of their religious establishment among themselves, and that therefore bishops might be introduced in *America*, it is however to be feared this will prove one of the obstacles to the introducing of *English* bishops in that part of the world.

When

When the clergyman marries a very poor couple, he breaks off in the middle of the Liturgy, and cries out, *Where is my fee?* The man must then give the money, and the clergyman proceeds; but if the bridegroom has no money, the clergyman defers the marriage till another time, when the man is better provided. People of fortune, of whom the clergyman is sure to get his due, need not fear this disagreeable question, when they are married.

HOWEVER, though the parson has got licences to marry a couple, yet if he be not very careful, he may get into very disagreeable circumstances; for in many parts of the country there is a law made, which, notwithstanding the governor's licence, greatly limits a clergyman in some cases. He is not allowed to marry a couple who are not yet of age, unless he be certain of the consent of their parents. He cannot marry such strangers as have bound themselves to serve a certain number of years, in order to pay off their passage from *Europe*, without the consent of their masters; if he acts without their consent, or in opposition to it, he must pay a penalty of fifty pounds, *Pensylvania* currency, though he has the licence, and the certificate of the two men who are to answer for any objection. But parents or masters give themselves no concern about these men, but take hold of the clergyman, who is at liberty to prosecute those who gave him the certificate, and to get his damages repaid. With the consent of the parents and masters, he may marry people without danger to himself. No clergyman is allowed

lowed to marry a negro with one of *European* extraction, or he must pay a penalty of one hundred pounds, according to the laws of *Pensylvania*.

THERE is a very peculiar diverting custom here, in regard to marrying. When a man dies, and leaves his widow in great poverty, or so that she cannot pay all the debts with what little she has left; and that, notwithstanding all that, there is a person who will marry her, she must be married in no other habit than her shift. By that means, she leaves to the creditors of her deceased husband her cloaths, and every thing which they find in the house. But she is not obliged to pay them any thing more, because she has left them all she was worth, even her cloaths, keeping only a shift to cover her, which the laws of the country cannot refuse her. As soon as she is married, and no longer belongs to the deceased husband, she puts on the cloaths which the second has given her. The *Swedish* clergymen here have often been obliged to marry a woman in a dress which is so little expensive, and so light. This appears from the registers kept in the churches, and from the accounts given by the clergymen themselves. I have likewise often seen accounts of such marriages in the *English* gazettes, which are printed in these colonies; and I particularly remember the following relation: A woman went, with no other dress than her shift, out of the house of her deceased husband to that of her bridegroom, who met her half way with fine new cloaths, and said, before all who were present, that he lent them his
bride;

bride; and put them on her with his own hands. It seems he said that he lent the cloaths, lest, if he had said he gave them, the creditors of the first husband should come and take them from her; pretending, that she was looked upon as the relict of her first husband, before she was married to the second.

Dec. 21st. IT seems very probable, from the following observations, that long before the arrival of the *Swedes*, there have been *Europeans* in this province; and, in the sequel, we shall give more confirmations of this opinion. The same old *Maons Keen*, whom I have already mentioned before, told me repeatedly, that, on the arrival of the *Swedes* in the last century, and on their making a settlement, called *Helsingburg*, on the banks of the *Delaware*, somewhat below the place where *Salem* is now situated; they found, at the depth of twenty feet, some wells, inclosed with walls. This could not be a work of the native *Americans*, or *Indians*, as bricks were entirely unknown to them when the *Europeans* first settled here, at the end of the fifteenth century; and they still less knew how to make use of them. The wells were, at that time, on the land; but in such a place, on the banks of the *Delaware*, as is sometimes under water, and sometimes dry. But since, the ground has been so washed away, that the wells are entirely covered by the river, and the water is seldom low enough to shew the wells. As the *Swedes* afterwards made new wells for themselves, at some distance from the former, they discovered, in the ground, some broken earthen vessels, and some
entire

entire good bricks; and they have often got them out of the ground by ploughing.

FROM these marks, it seems, we may conclude, that, in times of yore, either *Europeans*, or other people of the then civilized parts of the world, have been carried hither by storms, or other accidents, settled here, on the banks of the river, burnt bricks, and made a colony here; but that they afterwards mixed with the *Indians*, or were killed by them. They may gradually, by conversing with the *Indians*, have learnt their manners, and turn of thinking. The *Swedes* themselves are accused, that they were already half *Indians*, when the *English* arrived in the year 1682. And we still see, that the *French*, *English*, *Germans*, *Dutch*, and other *Europeans*, who have lived for several years together in distant provinces, near and among the *Indians*, grow so like them, in their behaviour and thoughts, that they can only be distinguished by the difference of their colour. But history, together with the tradition among the *Indians*, assures us, that the above-mentioned wells and bricks cannot have been made at the time of *Columbus's* expedition, nor soon after; as the traditions of the *Indians* say, that those wells were made long before that epocha. This account of the wells, which had been inclosed with bricks, and of such bricks as have been found in several places in the ground, I have afterwards heard repeated by many other old *Swedes*.

Dec. 22d. AN old farmer foretold a change of the weather, because the air was very warm this day at noon, though the morning had been very

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very cold. This he likewise concluded, from having observed the clouds gathering about the sun. The meteorological observations annexed to this work, will prove that his observation was just.

Dec. 31st. THE remedies against the tooth-ach are almost as numerous as days in a year. There is hardly an old woman but can tell you three or four score of them, of which she is perfectly certain that they are as infallible and speedy in giving relief, as a month's fasting, by bread and water, is to a burthensome paunch. Yet it happens often, nay, too frequently, that this painful disease eludes all this formidable army of remedies. However, I cannot forbear observing the following remedies, which have sometimes, in this country, been found effectual against the tooth-ach.

WHEN the pains come from the hollowness of the teeth, the following remedy is said to have had a good effect: A little cotton is put at the bottom of a tobacco-pipe; the tobacco is put in upon it, and lighted; and you smoke till it is almost burnt up. By smoking, the oil of the tobacco gets into the cotton, which is then taken out, and applied to the tooth as hot as it can be suffered.

The chief remedy of the *Iroquois*, or *Iroquese*, against the tooth-ach, occasioned by hollow teeth, I heard of Captain *Lindsey's* lady, at *Oswego*; and she assured me, that she knew, from her own experience, that the remedy was effectual. They take the seed capsules of the *Virginian Anemone*, as soon as the seed is ripe, and rub

them in pieces. It will then be rough, and look like cotton. This cotton-like substance is dipped into strong brandy, and then put into the hollow tooth, which commonly ceases to ache soon after. The brandy is biting or sharp, and the seeds of the anemone, as most seeds of the *Polyandria Polygynia* class of plants (or such as have many *Stamina*, or male flowers, and many *Pistilla*, or female flowers) have likewise an acrimony. They therefore, both together, help to assuage the pain; and this remedy is much of the same kind with the former. Besides that, we have many seeds which have the same qualities with the *American* anemone.

THE following remedy was much in vogue against the tooth-ach which is attended with a swelling: They boil gruel, of flour of maize, and milk; to this they add, whilst it is yet over the fire, some of the fat of hogs, or other suet, and stir it well, that every thing may mix equally. A handkerchief is then spread over the gruel, and applied as hot as possible to the swelled cheek, where it is kept till it is gone cool again. I have found, that this remedy has been very efficacious against a swelling; as it lessens the pain, abates the swelling, opens a gathering, if there be any, and procures a good discharge of the *Pus*.

I HAVE seen the *Iroquese* boil the inner bark of the *Sambucus Canadensis*, or *Canada Elder*, and put it on that part of the cheek in which the pain was most violent. This, I am told, often diminishes the pain.

AMONG the *Iroquese*, or *Five Nations*, upon the river *Mohawk*, I saw a young *Indian* woman,
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who, by frequent drinking of tea, had got a violent tooth-ach. To cure it, she boiled the *Myrica asplenii folia*, and tied it, as hot as she could bear it, on the whole cheek. She said, that remedy had often cured the tooth-ach before.

Jan. 2d, 1749. BEFORE the *Europeans*, under the direction of *Columbus*, came to the *West-Indies*, the *savages* or *Indians* (who lived there since times immemorial) were entirely unacquainted with iron, which appears very strange to us, as *North America*, almost in every part of it, contains a number of iron mines. They were therefore obliged to supply this want with sharp stones, shells, claws of birds and wild beasts, pieces of bones, and other things of that kind, whenever they intended to make hatchets, knives, and such like instruments. From hence it appears, that they must have led a very wretched life. The old *Swedes*, who lived here, and had had an intercourse with the *Indians* when they were young, and at a time when they were yet very numerous in these parts, could tell a great many things concerning their manner of living. At this time the people find accidentally, by ploughing and digging in the ground, several of the instruments which the *Indians* employed, before the *Swedes* and other *Europeans* had provided them with iron tools. For it is observable that the *Indians* at present make use of no other tools, than such as are made of iron and other metals, and which they always get from the *Europeans*: Of this I shall be more particular, in its proper place. But having had an opportunity of seeing,

and partly collecting a great many of the ancient *Indian* tools; I shall here describe them.

THEIR *hatchets* were made of stone. Their shape is similar to that of the wedges with which we cleave our wood, about half a foot long, and broad in proportion; they are made like a wedge, sharp at one end, but rather blunter than our wedges. As this hatchet must be fixed on a handle, there was a notch made all round the thick end. To fasten it, they split a stick at one end, and put the stone between it, so that the two halves of the stick come into the notches of the stone; then they tied the two split ends together with a rope, or something like it, almost in the same way as smiths fasten the instrument with which they cut off iron, to a split stick. Some of these stone-hatchets were not notched or furrowed at the upper end, and it seems they only held those in their hands in order to hew or strike with them, and did not make handles to them. Most of the hatchets which I have seen, consisted of a hard rock-stone; but some were made of a fine, hard, black, apyrous stone. When the *Indians* intended to fell a thick strong tree, they could not make use of their hatchets, but, for want of proper instruments, employed fire. They set fire to a great quantity of wood at the roots of the tree, and made it fall by that means. But that the fire might not reach higher than they would have it, they fastened some rags to a pole, dipped them into water, and kept continually washing the tree, a little above the fire. Whenever they intended to hollow out a thick tree for a canoe, they laid dry branches all along the stem of the tree, as far as it must be hollow-

ed out. They then put fire to those dry branches, and, as soon as they were burnt, they were replaced by others. Whilst these branches were burning, the *Indians* were very busy with wet rags, and pouring water upon the tree, to prevent the fire from spreading too far on the sides, and at the ends. The tree being burnt hollow as far as they found it sufficient, or as far as it could, without damaging the canoe, they took the above described stone-hatchets, or sharp flints, and quartzes, or sharp shells, and scraped off the burnt part of the wood, and smoothed the boats within. By this means they likewise gave it what shape they pleased. Instead of cutting with a hatchet such a piece of wood as was necessary for making a canoe, they likewise employed fire. A canoe was commonly between thirty and forty feet long. The chief use of their hatchets was, according to the unanimous accounts of all the *Swedes*, to make good fields for maize-plantations; for if the ground where they intended to make a maize-field was covered with trees, they cut off the bark all round the trees with their hatchets, especially at the time when they lose their sap. By that means the tree became dry, and could not take any more nourishment, and the leaves could no longer obstruct the rays of the sun from passing. The smaller trees were then pulled out by main force, and the ground was a little turned up with crooked or sharp branches.

INSTEAD of *knives* they were satisfied with little sharp pieces of flint or quartz, or else some other hard kind of a stone, or with a sharp shell,

or with a piece of a bone which they had sharpened.

AT the end of their *arrows* they fastened narrow angulated pieces of stone; they made use of them, having no iron to make them sharp again, or a wood of sufficient hardness: these points were commonly flints or quartzes, but sometimes likewise another kind of a stone. Some employed the bones of animals, or the claws of birds and beasts. Some of these ancient harpoons are very blunt, and it seems that the *Indians* might kill birds and small quadrupeds with them; but whether they could enter deep into the body of a great beast or of a man, by the velocity which they get from the bow, I cannot ascertain; yet some have been found very sharp and well made.

THEY had *stone pestles*, about a foot long, and as thick as a man's arm. They consist chiefly of a black sort of a stone, and were formerly employed, by the *Indians*, for pounding maize, which has, since times immemorial, been their chief and almost their only corn. They had neither wind-mills, water-mills, nor hand-mills, to grind it, and did not so much as know a mill, before the *Europeans* came into the country. I have spoken with old *Frenchmen*, in *Canada*, who told me, that the *Indians* had been astonished beyond expression, when the *French* set up the first wind-mill. They came in numbers, even from the most distant parts, to view this wonder, and were not tired with sitting near it for several days together, in order to observe it; they were long of opinion that it was
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not driven by the wind, but by the spirits who lived within it. They were partly under the same astonishment when the first water-mill was built. They formerly pounded all their corn or maize in hollow trees, with the above-mentioned pestles, made of stone. Many *Indians* had only wooden pestles. The blackish stone, of which the hatchets and pestles are sometimes made, is very good for a grindstone, and therefore both the *English* and the *Swedes* employ the hatchets and pestles chiefly as grindstones, at present, when they can get them.

THE old boilers or kettles of the *Indians*, were either made of clay, or of different kinds of pot-stone, (*Lapis ollaris*). The former consisted of a dark clay, mixt with grains of white sand or quartz, and burnt in the fire. Many of these kettles have two holes in the upper margin, on each side one, through which the *Indians* put a stick, and held the kettle over the fire, as long as it was to boil. Most of the kettles have no feet. It is remarkable that no pots of this kind have been found glazed, either on the outside or the inside. A few of the oldest *Swedes* could yet remember seeing the *Indians* boil their meat in these pots. They are very thin, and of different sizes; they are made sometimes of a greenish, and sometimes of a grey pot-stone, and some are made of another species of apyrous stone; the bottom and the margin are frequently above an inch thick. The *Indians*, notwithstanding their being unacquainted with iron, steel, and other metals, have learnt to hollow out very ingeniously these pots or kettles of pot-stone.

THE old *tobacco-pipes* of the *Indians* are likewise made of clay, or pot-stone, or serpentine-stone. The first sort are shaped like our tobacco-pipes, though much coarser and not so well made. The tube is thick and short, hardly an inch long, but sometimes as long as a finger; their colour comes nearest to that of our tobacco-pipes which have been long used. Their tobacco-pipes of pot-stone are made of the same stone as their kettles. Some of them are pretty well made, though they had neither iron nor steel. But besides these kinds of tobacco-pipes, we find another sort of pipes, which are made with great ingenuity, of a very fine red pot-stone, or a kind of serpentine marble. They are very scarce, and seldom made use of by any other than the *Indian Sachems*, or elders. The fine red stone, of which these pipes are made, is likewise very scarce, and is found only in the country of those *Indians* who are called *Ingouex*, and who, according to father *Charlevoix*, live on the other side of the river *Mississippi* *. The *Indians* themselves commonly value a pipe of this kind as much as a piece of silver of the same size, and sometimes they make it still dearer. Of the same kind of stone commonly consists their *pipe of peace*, which the *French* call *calumet de paix*, and which they make use of in their treaties of peace, and alliances. Most authors who have wrote of these nations mention this instrument, and I intend to speak of it when an opportunity offers.

* See his *Journal historique d'un voyage de l'Amérique*. Tome v. p. m. 311. and the 13th letter.

THE *Indians* employ hooks made of bone, or bird's claws, instead of *fishing-hooks*. Some of the oldest *Swedes* here told me, that when they were young, a great number of *Indians* had been in this part of the country, which was then called *New Sweden*, and had caught fishes in the river *Delaware* with these hooks.

THEY made fire by rubbing one end of a hard piece of wood continually against another dry one, till the wood began to smoke, and afterwards to burn.

SUCH were the tools of the ancient *Indians*, and the use which they made of them, before the *Europeans* invaded this country, and before they (the *Indians*) were acquainted with the advantages of iron. *North America* abounds in iron-mines, and the *Indians* lived all about the country before the arrival of the *Europeans*, so that several places can be shewn in this country, where at present there are iron-mines, and where, not a hundred years ago, stood great towns or villages of the *Indians*. It is therefore very remarkable that the *Indians* did not know how to make use of a metal or ore which was always under their eyes, and on which they could not avoid treading every day. They even lived upon the very spots where iron ores were afterwards found, and yet they often went many miles in order to get a wretched hatchet, knife, or the like, as above described. They were forced to employ several days in order to sharpen their tools, by rubbing them against a rock, or other stones, though the advantage was far from being equal to the labour. For they could never
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cut down a thick tree with their hatchets, and with difficulty they felled a small one. They could not hollow out a tree with their hatchets, or do a hundredth part of the work which we can perform with ease, by the help of our iron hatchets. Thus we see how disadvantageous the ignorance and inconsiderate contempt of useful arts is. Happy is the country which knows their full value!

January the 5th. CHRISTMAS-DAY was celebrated this day by the *Suedes* and *English*, for they kept them to the *old stile*.

January the 6th. THERE are a great number of hares in this country, but they differ from our *Swedish* ones in their size, which is very small, and but little bigger than that of a rabbit; they keep almost the same grey colour both in summer and winter, which our *Northern* hares have in summer only; the tip of their ears is always grey, and not black; the tail is likewise grey on the upper side, at all seasons; they breed several times a year: in spring they lodge their young ones in hollow trees, and in summer, in the months of *June* and *July*, they breed in the grass. When they are surpris'd they commonly take refuge in hollow trees, out of which they are taken by means of a crooked stick, or by cutting a hole into the tree, opposite to the place where they lie; or by smoke, which is occasioned by making a fire on the outside of the tree. On all these occasions the greyhounds must be at hand. These hares never bite, and can be touched without any danger. In day-time they usually lie in hollow trees, and hardly ever stir
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from thence, unless they be disturbed by men or dogs; but in the night they come out, and seek their food. In bad weather, or when it snows, they lie close for a day or two, and do not venture to leave their retreats. They do a great deal of mischief in the cabbage-fields; but apple-trees suffer infinitely more from them, for they peel off all the bark next to the ground. The people here agreed that the hares are fatter in a cold and severe winter, than in a mild and wet one, of which they could give me several reasons, from their own conjectures. The skin is useless, because it is so loose, that it can be drawn off; for when you would separate it from the flesh, you need only pull at the fur, and the skin follows: these hares cannot be tamed. They were at all times, even in the midst of winter, plagued with a number of common fleas*.

Jan. 16th. THE common mice were in great abundance in the towns and in the country; they do as much mischief as in the old countries. *Oldmixon* in his book, the *British Empire in America*, vol. i. p. 444, writes, that *North America* had neither rats nor mice before *European* ships brought them over. How far this is true I know not. It is undoubted, that in several desert places, where no man ever lived, I have seen and killed the common mice, in crevices of stones or mountains; and it is probable that all such mice as are spread in this manner, through-

* This account sufficiently proves, that these hares are a species distinct from our *European* reddish grey kind, and also of that species or variety only, which in the northern parts of *Europe* and *Asia* is white in winter, with black tipped ears, and has a grey coat in summer. Upon a closer examination naturalists will perhaps find more characters to distinguish them more accurately. F.

out the inland parts of the country, derive their origin from those which were brought over from *Europe*?

RATS likewise may be ranked among those animals which do great damage in this country. They live both in the cities and in the country, and destroy the provisions. Their size is the same with that of our rats, but their colour differs; for they are grey, or blue-grey. I enquired of the *Swedes*, Whether these rats had been here prior to the arrival of the *Europeans*, or whether they came over in the ships? But I could not get an answer which I might depend upon. All agreed, that a number of these dangerous and mischievous animals were every year brought to *America*, by ships from *Europe* and other countries. But Mr. *Bartram* maintained, that before the *Europeans* settled here, rats had been in the country; for he saw a great number of them on the high mountains, which are commonly called the *Blue Mountains*, where they lived among stones, and in the subterraneous grottoes which are in those mountains. They always lie very close in the daytime, and you hardly ever see one out; but at night they come out, and make a terrible noise. When the cold was very violent, they seemed quite torpid; for during the continuance of the cold weather, one could not hear the least noise, or shrieking, occasioned by them. It is to be observed, that neither the *Swedes* nor the *English* have any dark windows in their houses here. There is hardly a dormer-window in the garret; but only loose boards. The walls in the wooden houses are frequently not closed, even with moss;

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so that the rooms, though they have fires in them, are no warmer than the outside apartment, or hall. The rooms where the servants sleep have never any fire in them, though the winter is pretty severe sometimes. The rats have, therefore, little or no warmth in winter; but as soon as a milder season makes its appearance, they come out again. We observed several times this winter, that the rats were very active, and made an unusual noise all night, just before a severe cold. It seems, they had some sensation of cold weather being at hand; and that they therefore eat sufficiently, or stored up provisions. In mild weather, they were used to carry away apples, and other provisions: therefore, we could always conclude, with certainty, when the rats made an uncommon noise at night, or were extremely greedy, that a severe cold would ensue. I have already observed, on page 244, that the grey squirrels in this country have the same quality. When these, and the common mice, eat maize, they do not consume the whole grains, but only the loose, sweet and soft kernel, and leave the rest.

Jan. 21st. THE cold now equalled that of Sweden, though this country is so much more southerly. The *Celsian* or *Swedish* thermometer was twenty-two degrees below the freezing point, in the morning. As the rooms are without any shutters here, the cracks in the walls not closed with moss, and sometimes no fire-place or chimney in the room, the winters here must be very disagreeable to one who is used to our *Swedish* warm winter-rooms. But the greatest comfort

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here is, that the cold is of a very short duration; Some days of this month, the room which I lodged in was such, that I could not write two lines before the ink would freeze in my pen. When I did not write, I could not leave the ink-stand on the table; but was forced to put it upon the hearth, or into my pocket. Yet, notwithstanding it was so cold, as appears from the meteorological observations annexed to this work; and though it snowed sometimes for several days and nights together, and the snow lay near six inches high upon the ground; yet all the cattle are obliged to stay, day and night, in the fields, during the whole winter. For neither the *English* nor the *Swedes* had any stables; but the *Germans* and *Dutch* had preserved the custom of their country, and generally kept their cattle in stables during winter. Almost all the old *Swedes* say, that on their first arrival in this country, they made stables for their cattle, as is usual in *Sweden*; but as the *English* came, and settled among them; and left their cattle in the fields all winter, as is customary in *England*, they left off their former custom, and adopted the *English* one. They owned, however, that the cattle suffered greatly in winter, when it was very cold, especially when it froze after a rain; and that some cattle were killed by it in several places, in the long winter of the year 1741. About noon, the cattle went out into the woods, where there were yet some leaves on the young oak; but they did not eat the leaves, and only bit off the extremities of the branches, and the tops of the youngest oaks. The horses went in-

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to the maize fields, and eat the dry leaves on the few stalks which remained. The sheep ran about the woods, and on the corn fields. The chickens perched on the trees of the gardens, at night; for they had no particular habitations. The hogs were likewise exposed to the roughness of the weather, within a small inclosure.

A SMALL kind of birds, which the *Swedes* call *Snow-bird*, and the *English* *Chuck-bird*, came into the houses about this time. At other times, they sought their food along the roads. They are seldom seen, but when it snows, *Gatesby*, in his *Natural History of Carolina*, calls it *Passer nivalis*; and Dr. *Linnaeus*, in his *Systema Naturæ*, calls it *Emberiza hyemalis*.

THE river *Delaware* was now covered with ice opposite *Philadelphia*, and even somewhat lower, and the people could walk over it; but nobody ventured to ride over on horseback.

Jan. 22d. THERE are partridges in this country; but they are not of the same kind with ours. The *Swedes* called them sometimes *rappbons* (partridges), and sometimes *aekkerboens* (quails). Some of the *English* likewise called them partridges, others quails. Their shape is almost the same with that of the *European* partridges, and their nature and qualities the same: I mean, they run and hide themselves, when pursued. But they are smaller, and entirely different in colour. In this work I cannot insert, at large, the descriptions which I have made of birds, insects, quadrupeds, and plants; because it would swell my volume too much. I only observe, that the feet are naked, and not hairy; the back

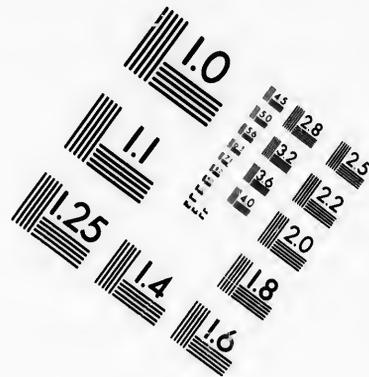
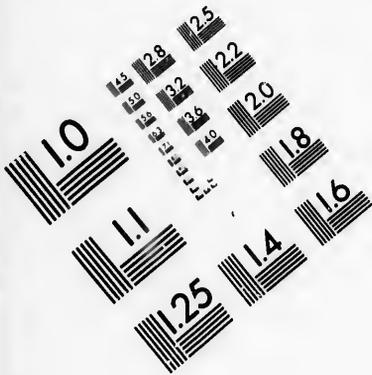
is spotted with brown, black, and white; the breast is dark yellow; and the belly whitish, with black edges on the tips of the feathers. The size is nearly that of a hazel-hen, or *tetrao bonasia*. Above each eye is a narrow stroke of whitish yellow. These birds are numerous in this part of the country. On going but a little way, you meet with great coveys of them. However, they keep at a great distance from towns; being either extirpated, or frightened there by the frequent shooting. They are always in lesser or greater coveys, do not fly very much, but run in the fields, and keep under the bushes and near the inclosures, where they seek their food. They are reckoned very delicious food; and the people here prepare them in different ways. For that purpose they are caught, and shot in great numbers. They are caught by putting up a sieve, or a square open box, made of boards, in the places they frequent. The people strew some oats under the sieve, and lift it up on one side by a little stick, and as soon as the partridges are got under the sieve, in order to pick up the oats, it falls, and they are caught alive. Sometimes they get several partridges at once. When they run in the bushes, you can come very near them, without starting them. When they sleep at night, they come together in an heap. They scratch in the bushes and upon the field, like common chickens. In spring they make their nests, either under a bush or in the maize fields, or on the hills in the open air: they scratch some hay together, into which they lay about thirteen white eggs. They eat several

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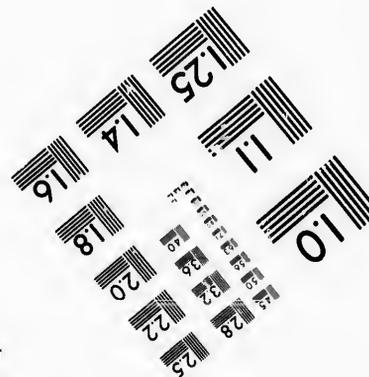
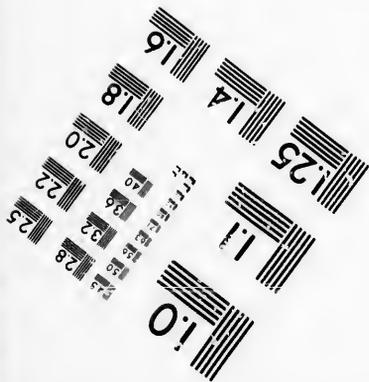
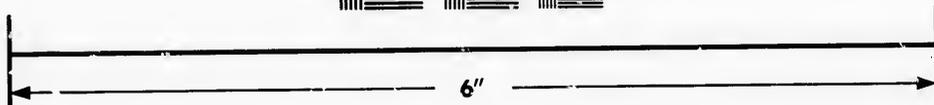
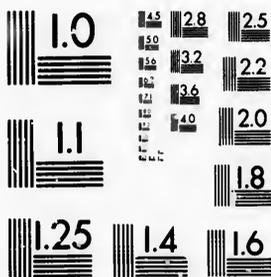
several sorts of corn, and seeds of grass. They have likewise been seen eating the berries of *sumach*, or *rhus glabra*. Some people have taken them young, and kept them in a cage till they were tame: then they let them go; and they followed the chickens, and never left the court-yards.

THE inclosures made use of in *Pensylvania* and *New Jersey*, but especially in *New York*, are those which, on account of their serpentine form resembling worms, are called *worm-fences* in *English*. The poles which compose this fence are taken from different trees; but they are not all of equal duration: the red *cedar* is reckoned the most durable of any, for it holds out above thirty years; but it is very scarce, and grows only in a single place hereabouts, so that no fences can be made of it. It is true, the fences about *Philadelphia* (which however are different from the *worm-fences*) are all made of red *cedar*; but it has been brought by water from *Egg-harbour*, where it grows in abundance. The supports on which the poles lie are made of the white *cedar*, or *Cupressus thyoides*, and the poles which are laid between them of the red *cedar* or *Juniperus Virginiana*. Next to the *cedar-wood*, *oak* and *chestnut* are reckoned best. *Chestnut* is commonly preferred, but it is not every where so plentiful as to be made into fences; in its stead they make use of several sorts of *oak*. In order to make inclosures, the people do not cut down the young trees, as is common with us; but they fell here and there thick trees, cut them in several places, leaving the pieces as long as it is necessary, and





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split them into poles of the usual thickness; a single tree affords a multitude of poles. Several old men in this country told me, that the *Swedes*, on their arrival here, made such inclosures as are usual in *Sweden*, but they were forced to leave off in a few years time, because they could not get posts enough; for they had found by experience, that a post being put into the ground would not last above four or six years before the part under ground was entirely rotten; but the chief thing was, that they could not get any switches for to tie them together; they made some of *hiccory*, which is one of the toughest trees in this country, and of the white *oak*; but in the space of a year or two the switches were rotten, and the fence fell in pieces of itself, therefore they were forced to give over making such inclosures. Several of the new comers again attempted, but with the same bad success, to make fences with posts and switches. The *Swedish* way of inclosing therefore will not succeed here. Thus the *worm-fences* are one of the most useful sorts of inclosures, especially as they cannot get any post, made of the woods of this country, to stay above six or eight years in the ground without rotting. The poles in this country are very heavy, and the posts cannot bear them well, especially when it blows a storm; but the *worm-fences* are easily put up again, when they are thrown down. Experience has shewn that an inclosure made of *chestnut* or white *oak* seldom holds out above ten or twelve years, before the poles and posts are thoroughly rotten: when the poles are made of other wood, the fences

fences hardly stand six or eight years. Considering how much more wood the *worm-fences* require, (since they run in bendings) than other inclosures which go in strait lines, and that they are so soon useleſs, one may imagine how the forests will be consumed, and what ſort of an appearance the country will have forty or fifty years hence, in caſe no alteration is made; eſpecially as wood is really ſquandered away in immense quantities, day and night all the winter, or nearly one half of the year, for ſewel.

Feb. 8th. THE *Muſk-rats*, ſo called by the *Engliſh* in this country, on account of their ſcent, are pretty common in *North America*; they always live near the water, eſpecially on the banks of lakes, rivers, and brooks. On travelling to places where they are, you ſee the holes which they have dug in the ground juſt at the water's edge, or a little above its ſurface. In theſe holes they have their neſts, and there they continue whenever they are not in the water in purſuit of food. The *Swedes* call them *Déſmans Rattor* *, and the *French*, *Rats muſqués*. *Linnaeus* calls this animal *Caſtor Zibethicus*. Their food is chiefly the muſcles which lie at the bottom of lakes and rivers; you ſee a number of ſuch ſhells near the entrance of their holes. I am told they likewiſe eat ſeveral kinds of roots and plants. They differ from the *European Muſk-rat*, or *Linnaeus's Caſtor Moſchatus*. The

* *Déſm* ſignifies *muſk* in the *Swediſh*, and in ſome provincial dialects of the *German* language; conſequently *Déſman rat* is nothing but *Muſk-rat*, and from hence Mr. *de Buffon* has formed his *Déſman* or *Ruſſian Muſk-rat*. F.

teeth are the same in both; the tail of the *American* is compressed on the sides so, that one sharp edge goes upwards and the other downwards: the hind feet are not palmated, or joined by a moveable skin, but are peculiar for having on both sides of the feet, long, white, close, pectinated, off-standing hair, besides the short hair with which the feet are quite covered. Such hairs are on both sides of the toes, and do the same service in swimming as a web. Their size is that of a little cat, or to be more accurate, the length of the body is about ten inches, and the tail of the same length: the colour of the head, neck, back, sides, and of the outside of the thighs, is blackish brown; the hairs are soft and shining; under the neck, on the breasts, and on the inside of the thighs, they are grey. They make their nests in the dykes that are erected along the banks of rivers to keep off the water from the adjoining meadows; but they often do a great deal of damage, by spoiling the dykes with digging, and opening passages for the water to come into the meadows; whereas *Beavers* stop up all the holes in a dyke or bank. They make their nests of twigs and such like things externally, and carry soft stuff into them for their young ones to lie upon. The *Swedes* asserted that they could never observe a diminution in their number, but believed that they were as numerous at present as formerly. As they damage the banks so considerably, the people are endeavouring to extirpate them, when they can find out their nests; the skin is paid for, and this is an encouragement towards catching the animal.

A skin

A skin of a *Musk-rat* formerly cost but three-pence, but at present they gave from six-pence to nine-pence. The skins are chiefly employed by hatters, who make hats of the hair, which are said to be nearly as good as *Beaver* hats. The *Musk-rats* are commonly caught in traps, with apples as baits. In the country of the *Iroquese*, I saw those *Indians* following the holes of the *Musk-rats*, by digging till they came to their nests, where they killed them all. Nobody here eats their flesh; I do not know whether the *Indians* eat it, for they are commonly not over nice in the choice of meat. The musk-bag is put between the cloaths in order to preserve them against worms. It is very difficult to extirpate these *Rats* when they are once settled in a bank. A *Swede*, however, told me, that he had freed his bank, or piece of dyke along the river, from them in the following manner: He sought for all their holes, stopped them all up with earth, excepting one, on that side from whence the wind came. He put a quantity of sulphur into the open entrance, set fire to it, and then closed the hole, leaving but a small one for the wind to pass through. The smoke of the sulphur then entered their most remote nests, and stifled all the animals. As soon as the sulphur was burnt, he was obliged to dig up part of the ground in the bank, where they had their nests; and he found them lie dead by heaps. He sold the skins, and they paid his trouble, not to mention the advantage he got by clearing his bank of the *Musk-rats*.

BEAVERS were formerly abundant in *New Sweden*, as all the old *Swedes* here told me. At that time they saw one bank after another raised in the rivers by beavers. But after the *Europeans* came over in great number, and cultivated the country better, the beavers have been partly killed, and partly extirpated, and partly are removed higher into the country, where the people are not so numerous. Therefore there is but a single place in *Pensylvania* where beavers are to be met with; their chief food is the bark of the beaver-tree, or *Magnolia glauca*, which they prefer to any other. The *Swedes* therefore put branches of this tree near the beaver-dykes, into traps, which they laid for the beavers, whilst they were yet plentiful; and they could almost be certain of good success. Some persons in *Philadelphia* have tamed beavers, so that they go a fishing with them, and they always come back to their masters. Major *Roderfert*, in *New York*, related that he had a tame beaver above half a year in his house, where he went about quite loose, like a dog. The Major gave him bread, and sometimes fish, which he was very greedy of. He got as much water in a bowl as he wanted. All the rags and soft things he could meet with he dragged into a corner, where he was used to sleep, and made a bed of them. The cat in the house, having kittens, took possession of his bed, and he did not hinder her. When the cat went out, the beaver often took the kitten between his fore paws and held it to his breast to warm it, and doated upon it; as soon as the cat returned he gave her the kitten again,

again. Sometimes he grumbled, but never did any hurt, or attempted to bite.

The *English* and the *Swedes* gave the name of *Mink* to an animal of this country, which likewise lives either in the water, or very near it. I have never had an opportunity to see any more than the skin of this animal. But the shape of the skin, and the unanimous accounts I have heard of it, make me conclude with much certainty, that it belonged to the genus of *weasels* or *mustelæ*. The greatest skin I ever saw, was one foot, eight inches long, a lesser one was about ten inches long, and about three inches, one third broad, before it was cut; the colour was dark brown, and sometimes almost black; the tail was bushy, as that of a marten; the hair was very close; and the ears short, with short hair. The length of the feet belonging to the lesser skin was about two inches long. I am told this animal is so similar to the *American polecat*, or *Viverra putorius*, that they are hardly distinguishable*. I have had the following accounts given me of its way of living; it seldom appears in day-time, but at night it comes out of the hollow trees, on the banks of rivers. Sometimes it lives in the docks and bridges, at *Philadelphia*, where it is a cruel enemy to the rats. Sometimes it gets into the court-yards at night, and creeps into the chicken-house, through a small hole, where it kills all the poultry, and sucks their blood, but seldom eats one. If it meets with geese, fowls, ducks, or other

* The *Mink*, or *Minx*, is a kind of small otter, which is called by Dr. *Linnaeus*, *Mustela lutreola*, in his *System* i. p. 66. F.

birds on the road, it kills and devours them. It lives upon fish and birds. When a brook is near the houses, it is not easy to keep ducks and geese, for the *mink*, which lives near rivers, kills the young ones. It first kills as many as it can come at, and then it carries them off, and feasts upon them. In banks and dykes near the water, it likewise does mischief, with digging. To catch it the people put up traps, into which they put heads of birds, fishes, or other meat. The skin is sold in the towns, and at *Philadelphia*; they give twenty-pence and even two shillings a-piece for them, according to their size. Some of the ladies get muffs made of these skins; but for the greatest part they are sent over to *England*, from whence they are distributed to other countries. The old *Swedes* told me that the *Indians* formerly used to eat all kinds of flesh, except that of the *mink*.

I have already mentioned something of the *Raccoon*; I shall here add more of the nature of this animal, in a place which is properly its native country *. The *English* call it every where by the name of *Raccoon*, which name they have undoubtedly taken from one of the *Indian* nations; the *Dutch* call it *Hespan*, the *Swedes*, *Espan*, and the *Iroquese*, *Attigbro*. It commonly lodges in hollow trees, lies close in the day-time, never going out but on a dark, cloudy day; but at night it rambles and seeks its food. I have been told by several people, that in bad weather, especially when it snows and blows

* The village of *Raccoon*.

a storm,

a storm, the *Raccoon* lies in its hole for a week together without coming out once; during that time it lives by sucking and licking its paws. Its food are several sorts of fruit, such as maize, whilst the ears are soft. In gardens it often does a great deal of damage among the apples, chesnuts, plumbs, and wild grapes, which are what it likes best; among the poultry it is very cruel. When it finds the hens on their eggs, it first kills them, and then eats the eggs. It is caught by dogs, which trace it back to its nest, in hollow trees, or by snares and traps, in which a chicken, some other bird, or a fish, is put as a bait. Some people eat its flesh. It leaps with all its feet at once; on account of this and of several other qualities, many people here reckoned it to the genus of bears. The skin sold for eighteenpence, at *Philadelphia*. I was told that the *Raccoons* were not near so numerous as they were formerly; yet in the more inland parts they were abundant. I have mentioned the use which the hatters make of their furs; as likewise that they are easily tamed, that they are very greedy of sweet-meats, &c. in the preceding pages. Of all the *North American* wild quadrupeds none can be tamed to such a degree as this.

February the 10th. IN the morning I went to *Philadelphia*, where I arrived towards night. On my arrival at the ferry upon the river *Delaware*, I found the river quite covered with drifts of ice, which at first prevented our crossing the water. After waiting about an hour, and making an opening near the ferry, I, together with many more passengers, got over, before any more

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more shoals came on. As it began to freeze very hard soon after the twelfth of *January* (or *New Year*, according to the old style) the river *Delaware* was covered with ice, which by the intenseness of the frost grew so strong, that the people crossed the river with horses at *Philadelphia*. The ice continued till the eighth of *February*, when it began to get loose, and the violent hurricane, which happened that night, broke it, and it was driven down so fast, that on the twelfth of *February* not a single shoal came down, excepting a piece or two near the shore.

CROWS flew in great numbers together to-day, and settled on the tops of trees. During the whole winter we hardly observed one, though they are said to winter there. During all this spring they commonly used to sit at the tops of trees in the morning; yet not all together, but in several trees. They belong to the noxious birds in this part of the world, for they chiefly live upon corn. After the maize is planted or sown, they scratch the grains out of the ground and eat them. When the maize begins to ripen, they peck a hole into the involucre which surrounds the ear, by which means the maize is spoiled, as the rain passes through the hole which they have made, and occasions the putrefaction of the corn. Besides eating corn, they likewise steal chickens. They are very fond of dead carcases. Some years ago the government of *Pensylvania* had given three-pence, and that of *New Jersey* four-pence premium for every head of a *Crow*, but this law has now been repealed, as the expences are too great. I have seen the young *Crows* of this

this kind in several places playing with tame ones whose wings were cut. The latter hopped about the fields, near the farm-houses where they belonged to, but always returned again, without endeavouring to escape on any occasion. These *American Crows* are only a variety of the *Roxton Crow*, or *Linnaeus's Corvus Cornix*.

Feb. 12th. IN the afternoon I returned to *Raccoon* from *Philadelphia*.

ON my journey to *Raccoon*, I attentively observed the trees which had yet any leaves left. The leaves were pale and dried up, but not all dropt from the following trees :

THE *Beech-tree*, (*Fagus sylvatica*) whether great or small ; it always kept a considerable part of its leaves during the whole winter even till spring. The greater trees kept the lowermost leaves.

THE *white oak* (*Quercus alba*). Most of the young trees, which were not above a quarter of a yard in diameter, had the greatest part of their leaves still on them, but the old trees had lost most of theirs, except in some places where they have got new shoots. The colour of the dry leaves was much paler in the white oak than in the black one.

THE *black oak* (as it is commonly called here). Dr. *Linnaeus* calls it the red oak, *Quercus rubra*. Most of the young trees still preserved their dried leaves. Their colour was reddish brown, and darker than that of the white oak.

THE *Spanish oak*, which is a mere variety of the black oak. The young trees of this kind likewise keep their leaves.

A SCARCE

A SCARCE species of oak which is known by its leaves having a triangular apex or top, whose angles terminate in a short bristle; the leaves are smooth below, but woolly above*. The young oaks of this species had still their leaves.

WHEN I came into any wood where the above kinds of oaks were only twenty years, and even not so old, I always found the leaves on them.

IT seems that Providence has, besides other views, aimed to protect several sorts of birds, it being very cold and stormy about this time, by preserving even the dry leaves on these trees. I have this winter at several times seen birds hiding in the trees covered with old leaves, during a severe cold or storm.

Feb. 13th. As I began to dig a hole to-day, I found several insects which were crept deep into the ground in order to pass the winter. As soon as they came to the air, they moved their limbs a little, but had not strength sufficient for creeping, except the black ants, which crept a little, though slowly.

FORMICA nigra, or the black ant, were pretty numerous, and somewhat lively. They lay about ten inches below the surface.

CARABUS latus. Some of these lay at the same depth with the ants. This is a very common insect in all North America.

SCARABÆUS; chestnut-coloured, with a hairy thorax; the elytræ shorter than the abdomen, with several longitudinal lines; beset with hair. It is something similar to the cock-chaffer, but

* This seems to be nothing but a variety of the *Quercus rubra*, Linn. F.

differs in many respects. I found it very abundant in the ground.

Gryllus campestris, or the field-cricket: They lay ten inches deep; they were quite torpid, but as soon as they came into a warm place, they revived and were quite lively. In summer I have found these crickets in great plenty in all parts of *North America* where I have been. They leaped about on the fields, and made a noise like that of our common house-crickets, so that it would be difficult to distinguish them by their chirping. They sometimes make so great a noise, that it causes pain in the ears, and even two people cannot understand each other. In such places where the rattle-snakes live, the field-crickets are very disagreeable, and in a manner dangerous, for their violent chirping prevents the warning, which that horrid snake gives with its rattle, from reaching the ear, and thus deprives one of the means of avoiding it. I have already mentioned that they likewise winter sometimes in chimnies. Here they lie all winter in the ground, but at the beginning of *March*, as the air was grown warm, they came out of their holes, and began their music, though at first it was but very faint and rarely heard. When we were forced on our travels to sleep in uninhabited places, the crickets had got into the folds of our clothes, so that we were obliged to stop an hour every morning in examining our clothes, before we could get rid of them.

The red ants (Formica rufa) which in *Sweden* make the great ant-hills, I likewise found to-day and the following day; they were not in the ground,

ground, for when my servant *Yungstroem* cut down old dry trees, he met with a number of them in the cracks of the tree. These cracks were at the height of many yards in the tree, and the ants were crept so high, in order to find their winter habitation. As soon as they came into a warm place, they began to stir about very briskly.

Feb. 14th. THE Swedes and the English gave the name of *blue bird* to a very pretty little bird, which was of a fine blue colour. *Linnaeus* calls it *Motacilla Sialis*. *Catesby* has drawn it in his *Natural history of Carolina*, vol. I. pl. 47, and described it by the name of *Rubecula Americana caerulea*; and *Edwards* has represented it in his *Natural history of birds*, plate and page 24. In my own journal I called it *Motacilla caerulea nitida, pectore rufo, ventre albo*. In *Catesby's* plate I must observe, that the colour of the breast ought to be dirty red or ferruginous; the tibiae and feet black as jet; the bill too should be quite black; the blue colour in general ought to be much deeper, more lively and shining; no bird in *Sweden* has so shining and deep a blue colour as this: The jay has perhaps a plumage like it. The food of the blue bird is not merely insects, he likewise feeds upon plants; therefore in winter, when no insects are to be met with, they come to the farm-houses in order to subsist on the seeds of hay, and other small grains.

RED-bird is another species of small bird. *Catesby* has likewise figured it*. Dr. *Linnaeus*

* See *Catesby's Natural history*, vol. I. pl. 38. *Coccothraustes rubra*.

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calls it, *Loxia Cardinalis*. It belongs to that class of birds which are enemies to bees, lying in wait for them and eating them. I fed a cock for five months together in a cage ; it eat both maize and buck-wheat, for I gave it nothing else. By its song it attracted others of its species to the court-yard, and after we had put some maize on the ground under the window where I had it, the others came there every day to get their food ; it was then easy to catch them by means of traps. Some of them, especially old ones, both cocks and hens, would die with grief on being put into cages. Those on the other hand which were grown tame, began to sing exceedingly sweet. Their note very nearly resembles that of our *European* nightingale, and on account of their agreeable song, they are sent to *London*, in cages. They have such strength in their bill, that when you hold your hand to them they pinch it so hard as to cause the blood to issue forth. In spring they sit warbling on the tops of the highest trees in the woods, in the morning. But in cages they sit quite still for an hour ; the next hour they hop up and down, singing ; and so they go on alternately all day.

Feb. 17th. CRANES (*Ardea Canadensis*) were sometimes seen flying in the day-time, to the northward. They commonly stop here early in spring, for a short time, but they do not make their nests here, for they proceed on more to the north. Certain old *Swedes* told me, that in their younger years, as the country was not yet much cultivated, an incredible number of cranes were here every spring ; but at present they are not so numerous.

numerous. Several people who have settled here, eat their flesh, when they can shoot them. They are said to do no harm to corn, or the like.

Feb. 23d. THIS morning I went down to *Penn's Neck*, and returned in the evening.

SNOW lay yet in several parts of the woods, especially where the trees stood very thick, and the sun could not make its way: however it was not above four inches deep. All along the roads was ice, especially in the woods, and therefore it was very difficult to ride horses, which were not sharp-shoed. The people who are settled here know little of sledges, but ride on horseback to church in winter, though the snow is sometimes near a foot deep. It lays seldom above a week before it melts, and then some fresh snow falls.

A species of birds, called by the *Swedes*, *maize-thieves*, do the greatest mischief in this country. They have given them that name, because they eat maize, both publicly and secretly, just after it is sown and covered with the ground, and when it is ripe. The *English* call them *black-birds*. There are two species of them, both described and drawn by *Catesby* *. Though they are very different in species, yet there is so great a friendship between them, that they frequently accompany each other in mixed flocks. How-

* See *Catesby's nat. hist. of Carolina*, vol. i. tab. 12. *the purple crow*; and tab. 13. *the red-winged starling*: but as both these drawings are in a very expensive work, we have, from specimens lately brought over from *America*, made a new drawing, which represents them both, and it is engraved here, tab. I. F.

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ever, in *Pensylvania*, the first sort are more obvious, and often fly together, without any of the red-winged *stares*. The first sort, or the purple daws, bear, in many points, so great a likeness to the daw, the stare, and the thrush, that it is difficult to determine to which genus they are to be reckoned, but seem to come nearest to the stare; for the bill is exactly the same with that of the thrush, but the tongue, the flight, their sitting on the trees, their song and shape, make it entirely a stare; at a distance they look almost black, but close by they have a very blue or purple cast, but not so much as *Catesby's* print: their size is that of a stare; the bill is conic, almost subulated, strait, convex, naked at the base, black, with almost equal mandibles, the upper being only a very little longer than the lower; the nostrils are oblong, yet a little angulated, so as to form almost squares; they are placed obliquely at the base of the bill, and have no hair; there is a little horny knob, or a small prominence, on the upper side of them; the tongue is sharp and bifid at the point; the iris of the eyes is pale; the forehead, the crown, the nucha, the upper part, and the sides of the neck are of an obscure blue and green shining colour; the sides of the head under the eyes are obscurely blue; all the back and coverts of the wings are purple; the upper coverts of the tail are not so conspicuous a purple colour, but as it were blackened with soot; the nine primary quill-feathers are black; the other secondary ones are likewise black, but their outward margin is purple; the twelve tail feathers have a blackish

purple colour, and their tips are round ; those on the outside are the shortest, and the middle extremely long. When the tail is spread, it looks round towards the extremity. The throat is blueish green, and shining ; the breast is likewise black or shining green, according as you turn it to the light ; the belly is blackish, and the vent feathers are obscurely purple-coloured ; the parts of the breast and belly which are covered by the wings, are purple-coloured ; the wings are black below, or rather sooty ; and the thighs have blackish feathers ; the legs (*tibiæ*), and the toes are of a shining black. It has four toes, as most birds have. The claws are black, and that on the back toe is longer than the rest. Dr. *Linnaeus* calls this bird *Gracula quiscalus*.

A FEW of these birds are said to winter in swamps, which are quite overgrown with thick woods ; and they only appear in mild weather. But the greatest number go to the south at the approach of winter. To-day I saw them, for the first time this year. They flew in great flocks already. Their chief and most agreeable food is maize. They come in great swarms in spring, soon after the maize is put under ground. They scratch up the grains of maize, and eat them. As soon as the leaf comes out, they take hold of it with their bills, and pluck it up, together with the corn or grain ; and thus they give a great deal of trouble to the country people, even so early in spring. To lessen their greediness of maize, some people dip the grains of that plant in a decoct. of the root of the *veratrum album*, or white hellebore, (of which I shall speak
in

in the sequel) and plant them afterwards. When the maize-thief eats a grain or two, which are so prepared, his head is disordered, and he falls down: this frightens his companions, and they dare not venture to the place again. But they repay themselves amply towards autumn, when the maize grows ripe; for at that time, they are continually feasting. They assemble by thousands in the maize-fields, and live at discretion. They are very bold; for when they are disturbed, they only go and settle in another part of the field. In that manner, they always go from one end of the field to the other, and do not leave it till they are quite satisfied. They fly in incredible swarms in autumn; and it can hardly be conceived whence such immense numbers of them should come. When they rise in the air they darken the sky, and make it look quite black. They are then in such great numbers, and so close together, that it is surprising how they find room to move their wings. I have known a person shoot a great number of them on one side of a maize-field, which was far from frightening the rest; for they only just took flight, and dropped at about the distance of a musket-shot in another part of the field, and always changed their place when their enemy approached. They tired the sportsman, before he could drive them from off the maize, though he killed a great many of them at every shot. They likewise eat the seeds of the *aquatic tare-grass* (*Zizania aquatica*) commonly late in autumn, after the maize is got in. I am told, they likewise eat buck-wheat, and oats. Some people say, that they

even eat wheat, barley, and rye, when pressed by hunger; yet, from the best information I could obtain, they have not been found to do any damage to these species of corn. In spring, they sit in numbers on the trees, near the farms; and their note is pretty agreeable. As they are so destructive to maize, the odium of the inhabitants against them is carried so far, that the laws of *Pensylvania* and *New Jersey* have settled a premium of three-pence a dozen for dead maize-thieves. In *New England*, the people are still greater enemies to them; for Dr. *Franklin* told me, in the spring of the year 1750, that, by means of the premiums which have been settled for killing them in *New England*, they have been so extirpated, that they are very rarely seen, and in a few places only. But as, in the summer of the year 1749, an immense quantity of worms appeared on the meadows, which devoured the grass, and did great damage, the people have abated their enmity against the maize-thieves; for they thought they had observed, that those birds lived chiefly on these worms before the maize is ripe, and consequently extirpated them, or at least prevented their spreading too much. They seem therefore to be entitled, as it were, to a reward for their trouble. But after these enemies and destroyers of the worms (the maize-thieves) were extirpated, the worms were more at liberty to multiply; and therefore they grew so numerous, that they did more mischief now than the birds did before. In the summer 1749, the worms left so little hay in *New England*, that the inhabitants were forced to get
hay

hay from *Pensylvania*, and even from *Old England*. The maize-thieves have enemies besides the human species. A species of little hawks live upon them, and upon other little birds. I saw some of these hawks driving up the maize-thieves, which were in the greatest security, and catching them in the air. Nobody eats the flesh of the purple maize-thieves or daws (*Gracula quiscalis*); but that of the red-winged maize-thieves, or stares (*Oriolus Phœniceus*) is sometimes eaten. Some old people have told me, that this part of *America*, formerly called *New Sweden*, still contained as many maize-thieves as it did formerly. The cause of this they derive from the maize, which is now sown in much greater quantity than formerly; and they think that the birds can get their food with more ease at present.

The *American* whortleberry, or the *Vaccinium bispidulum*, is extremely abundant over all *North America*, and grows in such places where we commonly find our whortle-berries in *Sweden*. The *American* ones are bigger, but in most things so like the *Swedish* ones, that many people would take them to be mere varieties. The *English* call them *Cranberries*, the *Swedes* *Tranbær*, and the *French* in *Canada* *Atopa*, which is a name they have borrowed from the *Indians*. They are brought to market every *Wednesday* and *Saturday* at *Philadelphia*, late in autumn. They are boiled and prepared in the same manner as we do our red whortle-berries, or *Vaccinium vitis idæa*; and they are made use of during winter, and part of summer, in tarts and other kinds of pastry. But as they are very sour, they require a deal of sugar;

but that is not very dear, in a country where the sugar-plantations are not far off. Quantities of these berries are sent over, preserved, to *Europe*, and to the *West Indies*.

Mar. 2d. *Mytilus anatinus*, a kind of muscle-shells, was found abundantly in little furrows, which crossed the meadows. The shells were frequently covered on the outside with a thin crust of particles of iron, when the water in the furrows came from an iron mine. The *Englishmen* and *Swedes* settled here seldom made any use of these shells; but the *Indians* who formerly lived here broiled them and eat the flesh. Some of the *Europeans* eat them sometimes.

Mar. 3d. THE *Swedes* call a species of little birds, *Snofogel*, and the *English* call it *Snow-bird*. This is Dr. *Linnaeus's* *Emberiza hyemalis*. The reason why it is called snow-bird is because it never appears in summer, but only in winter, when the fields are covered with snow. In some winters they come in as great numbers as the maize-thieves, fly about the houses and barns, into the gardens, and eat the corn, and the seeds of grass, which they find scattered on the hills.

AT eight o'clock at night we observed a meteor, commonly called a *snow-fire* *.

WILD Pigeons, (*Columba migratoria* †), flew in the woods, in numbers beyond conception, and I was assured that they were more plentiful

* Probably nothing but an *Aurora borealis*.

† Of this *Pigeon of Passage* we have given here a plate, tab. ii. taken from a parcel of birds, lately brought from *America*, of which we were favoured with a fine specimen. F.

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AMERICAN MIGRATORY PIGEON.



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than they had been for several years past. They came this week, and continued here for about a fortnight, after which they all disappeared, or advanced further into the country, from whence they came. I shall speak of them more particularly in another place.

Mar. 7th. SEVERAL people told me, that it was a certain sign of bad weather here when a thunder-storm arose in the south or south west, if it spread to the east and afterwards to the north: but that on the contrary, when it did not spread at all, or when it spread both east and west, though it should rise in south or south west, yet it would prognosticate fair weather. To-day it was heard in south west; but it did not spread at all.

TILL now the frost had continued in the ground, so that if any one had a mind to dig a hole, he was forced to cut it through with a pick-ax. However it had not penetrated above four inches deep. But to-day it was quite gone out. This made the soil so soft, that on riding, even in the woods, the horse sunk in very deep.

I often enquired among the old *Englishmen* and *Swedes*, whether they had found that any trees were killed in very severe winters, or had received much hurt. I was answered, that young hiccory trees are commonly killed in very cold weather; and the young black oaks likewise suffer in the same manner. Nay sometimes black oaks, five inches in diameter, were killed by the frost in a severe winter, and sometimes, though very seldom, a single mulberry-tree was killed. Peach-trees very frequently die

in a cold winter, and often all the peach-trees in a whole district are killed by a severe frost. It has been found repeatedly, with regard to these trees, that they can stand the frost much better on hills, than in vallies; infomuch, that when the trees in a valley were killed by frost, those on a hill were not hurt at all. They assured me that they had never observed that the black walnut-tree, the sassafras, and other trees, had been hurt in winter. In regard to a frost in spring, they had observed at different times, that a cold night or two happened often after the trees were furnished with pretty large leaves, and that by this most of the leaves were killed. But the leaves thus killed have always been supplied by fresh ones. It is remarkable that in such cold nights the frost acts chiefly upon the more delicate trees, and in such a manner, that all the leaves, to the height of seven, and even of ten feet from the ground, were killed by the frost, and all the top remained unhurt. Several old men assured me they had made this observation, and the attentive engineer, Mr. *Lewis Evans*, has shewn it me among his notes. Such a cold night happened here, in the year 1746, in the night between the 14th and 15th of *June*, new style, attended with the same effect, as appears from Mr. *Evans's* observations. The trees which were then in blossom, had lost both their leaves and their flowers in these parts which were nearest the ground; some time after they got fresh leaves, but no new flowers. Further it is observable, that the cold nights which happen in spring and summer never do any hurt to high grounds, damaging
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ing only the low and moist ones. They are likewise very perceptible in such places where limestone is to be met with; and though all the other parts of the country be not visited by such cold nights in a summer, yet those where limestone lies have commonly one or two every summer. Frequently the places where the limestone lies are situated on a high ground; but they suffer notwithstanding their situation; whilst a little way off in a lower ground, where no limestone is to be found, the effects of the cold nights are not felt. Mr. *Evans* was the first who made this observation, and I have had occasion at different times to see the truth of it, on my travels, as I shall mention in the sequel. The young hickory-trees have their leaves killed sooner than other trees, in such a cold night, and the young oaks next; this has been observed by other people, and I have found it to be true, in the years 1749 and 1750.

Mar. 11th. Of the genus of *Wood-peckers*, we find here all those, which *Catesby* in his first volume of the *Natural History of Carolina*, has drawn and described. I shall only enumerate them, and add one or two of their qualities; but their description at large I defer for another occasion.

Picus principalis, the *King of the Wood-peckers*, is found here, though very seldom, and only at a certain season.

Picus pileatus, the *crested Wood-pecker*. This I have already mentioned.

Picus auratus, the *gold-winged Wood-pecker*. This species is plentiful here, and the *Swedes* call

it

it *Hittock*, and *Piut*; both these names have a relation to its note; it is almost continually on the ground, and is not observed to pick in the trees; it lives chiefly on insects, but sometimes becomes the prey of hawks; it is commonly very fat, and its flesh is very palatable. As it stays all the year, and cannot easily get insects in winter, it must doubtless eat some kinds of grass or plants in the fields. Its form, and some of its qualities, make it resemble a cuckow.

Picus Carolinus, the *Carolina Wood-pecker*. It lives here likewise, and the colour of its head is of a deeper and more shining red than *Catesby* has represented it, vol. i. p. 19. t. 19.

Picus villosus, the *spotted, hairy, middle-sized Wood-pecker* is abundant here; it destroys the apple-trees by pecking holes into them.

Picus erythrocephalus, the *red-headed Wood-pecker*. This bird was frequent in the country, and the *Swedes* called it merely *Hackspick*, or *Wood-pecker*. They give the same name to all the birds which I now enumerate, the gold-winged wood-pecker excepted. This species is destructive to maize-fields and orchards, for it pecks through the ears of maize, and eats apples. In some years they are very numerous, especially where sweet apples grow, which they eat so far, that nothing but the mere peels remain. Some years ago there was a premium of two pence *per* head, paid from the public funds, in order to extirpate this pernicious bird, but this law has been repealed. They are likewise very fond of acorns. At the approach of winter they travel to the southward. But when they stay in

numbers in the woods, at the beginning of winter, the people look upon it as a sign of a pretty mild winter.

Picus varius, the lesser, spotted, yellow-bellied Wood-pecker. These birds are much more numerous than many people wished; for this, as well as the preceding and succeeding species, are very hurtful to apple-trees.

Picus pubescens, or the least spotted Wood-pecker. This species abounds here. Of all the wood-peckers it is the most dangerous to orchards, because it is the most daring. As soon as it has pecked a hole into the tree, it makes another close to the first, in a horizontal direction, proceeding till it has pecked a circle of holes round the tree. Therefore the apple-trees in the orchards here have several rings round their stems, which lie very close above each other, frequently only an inch distant from each other. Sometimes these wood-peckers peck the holes so close, that the tree dries up. This bird, as *Catesby* remarks, is so like the lesser spotted wood-pecker, in regard to its colour and other qualities, that they would be taken for the same bird, were not the former (the *Picus pubescens*) a great deal less. They agree in the bad quality, which they both possess, of pecking holes into the apple-trees.

Rana ocellata are a kind of frogs here, which the Swedes call, *Sill-hoppetoffer*, i. e. *Herring-hoppers*, and which now began to quack in the evening, and at night, in swamps, pools, and ponds. The name which the Swedes give them is derived from their beginning to make their noise

noise in spring, at the same time when the people here go catching what are called herrings, which however differ greatly from the true *European* herrings. These frogs have a peculiar note, which is not like that of our *European* frogs, but rather corresponds with the chirping of some large birds, and can nearly be expressed by *picet*. With this noise they continued throughout a great part of spring, beginning their noise soon after sun-setting, and finishing it just before sun-rising. The sound was sharp, but yet so loud that it could be heard at a great distance. When they expected rain they cried much worse than commonly, and began in the middle of the day, or when it grew cloudy, and the rain came usually six hours after. As it snowed on the 16th of the next month, and blew very violently all day, there was not the least sign of them at night; and during the whole time that it was cold, and whilst the snow lay on the fields, the frost had so silenced them, that we could not hear one: but as soon as the mild weather returned, they began their noise again. They were very timorous, and it was difficult to catch them; for as soon as a person approached the place where they lived, they are quite silent, and none of them appeared. It seems that they hide themselves entirely under water, except the tip of the snout, when they cry. For when I stepped to the pond where they were in, I could not observe a single one hopping into the water. I could not see any of them before I had emptied a whole pool, where they lodged in. Their colour is a dirty green, variegated with spots of brown. When they

they are touched they make a noise and moan; they then sometimes assume a form, as if they had blown up the hind part of the back, so that it makes a high elevation; and then they do not stir, though touched. When they are put alive into spirits of wine, they die within a minute.

Mar. 12th. THE bird which the *English* and *Swedes* in this country call *Robin-red-breast* *, is found here all the year round. It is a very different bird from that which in *England* bears the same name. It is *Linnæus's Turdus migratorius*. It sings very melodiously, is not very shy, but hops on the ground, quite close to the houses.

THE *Hazels* (*Corylus avellana*) were now opening their blossoms. They succeeded best in a rich mould, and the *Swedes* reckoned it a sign of a good soil where they found them growing.

Mar. 13th. THE *alder* (*Betula Alnus*) was just blossoming.

THE *Dracontium fœtidum* grew plentifully in the marshes and began to flower. Among the stinking plants, this is the most fœtid; its nauseous scent was so strong, that I could hardly examine the flower; and when I smelled a little too long at it, my head ached. The *Swedes* call it *Byorn-blad* (bear's-leaf) or *Byorn-retter* (bear's-root.) The *English* call it *Polecat-root*, because its effluvia are as nauseous and fœtid as those of the polecat, which I have mentioned before. The flowers are purple-coloured; when they are in full flower, the leaves begin to come

* Of this bird we have given a figure in plate 3, where likewise the *Mocking-bird* is represented; both drawn after specimens lately brought from *America*, and which we were favoured with. F.

out of the ground; in summer the cattle do not touch it. Dr. *Colden* told me, that he had employed the root in all cases where the root of the arum is made use of, especially against the scurvy, &c. The *Swedish* name it got, because the bears, when they leave their winter habitations, are fond of it in spring. It is a common plant in all *North America*.

THE *Draba verna* was abundant here, and now appeared in flower.

THE *Veratrum album* was very common in the marshes, and in low places over all *North America*. The *Swedes* here call it *Dack*, *Dackor*, or *Dackretter*, that is puppet-root, because the children make puppets of its stalks and leaves. The *English* call it *Itch-reed* or *Ellebore*. It is a poisonous plant, and therefore the cattle never touch it; however it sometimes happens that the cattle are deceived in the beginning of spring, when the pastures are bare, and eat of the fine broad green leaves of this plant, which come up very early; but such a meal frequently proves fatal to them. Sheep and geese have likewise often been killed with it. By means of its root, the maize is preserved from the greediness of voracious birds, in the following manner: The roots are boiled in water, into which the maize is put as soon as the water is quite cool; the maize must lie all night in it, and is then planted as usual. When the maize-thieves, crows, or other birds, pick up or pluck out the grains of maize, their heads grow delirious, and they fall, which so frightens the rest, that

that they never venture on the field again; when those which have tasted the grains recover, they leave the field, and are no more tempted to visit it again. By thus preparing maize, one must be very careful that no other creatures touch it; for when ducks or fowls eat a grain or two of the maize which is thus 'steeped, they become very sick; but if they swallow a considerable quantity they die. When the root is thrown away raw, no animal eats it; but when it is put out boiled, its sweet taste tempts the beasts to eat it. Dogs have been seen to eat a little of it, and have been very sick after it; however they have recovered after a vomit, for when animals cannot free themselves of it by this means, they often die. Some people boil the root, and wash the scorbutic parts with the water or decoct. This is said to cause some pain, and even a plentiful discharge of urine, but it re-establishes the patient. When the children here are plagued with vermin, the women boil this root, put the comb into the decoction, and comb the head with it, and this kills them most effectually.

Mar. 17th. AT the first arrival of the *Swedes* in this country, and long after that time, it was filled with *Indians*. But as the *Europeans* proceeded to cultivate the land, the *Indians* sold their land, and went further into the country. But in reality few of the *Indians* really left the country in this manner; most of them ended their days before, either by wars among themselves, or by the small-pox, a disease which the *Indians* were unacquainted with before their commerce with the *Europeans*, and which since that time has killed

killed incredible numbers of them. For though they can heal wounds and other external hurts, yet they know not how to proceed with fevers, or in general with internal diseases. One can imagine, how ill they would succeed with the cure of the small-pox, when, as soon as the pustules appeared, they leaped, naked, into the cold water of the rivers, lakes, or fountains, and either dived over head into it, or poured it over their body in great abundance, in order to cool the heat of the fever. In the same manner they carry their children, when they have the small-pox, into the water and duck them*. But brandy has killed most of the *Indians*. This liquor was likewise entirely unknown to them, before the *Europeans* came hither; but after they had tasted it, they could never get enough of it. A man can hardly have a greater desire of a thing, than the *Indians* have of brandy. I have heard them say, that to die by drinking brandy, was a desi-

* Professor *Kalm* wrote this, when the truly laudable method of treating the small-pox with a cold regimen, was not yet adopted; and he thought therefore, the way in which the *Americans* treated this disease, was the cause of its being so deleterious. But when the *Kbalmucks*, in the *Russian* dominions, get the small-pox, it has been observed, that very few escape. Of this I believe no other reason can be alledged, than that the small-pox is always dangerous, either when the open pores of the human skin are too numerous, which is caused by opening them in a warm-water bath; or when they are too much closed, which is the case with all the nations that are dirty and greasy. All the *American Indians* rub their body with oils, the *Kbalmucks* never wash themselves, and rub their bodies and their fur coats with grease; the *Hottentots* are I believe known to be patterns of filthiness, their bodies being richly anointed with their ornamental greasy sheep guts; this shuts up all the pores, hinders perspiration entirely, and makes the small-pox always lethal among these nations; to which we may yet add the too frequent use of spirituous inflammatory liquors, since their acquaintance with the *Europeans*. F.

rable and an honourable death; and indeed 'tis no very uncommon thing to kill themselves by drinking this liquor to excess.

THE food of these *Indians* was very different from that of the inhabitants of the other parts of the world. Wheat, rye, barley, oats, and rice-groats, were quite unknown in *America*. In the same manner it is with regard to the fruits and herbs which are eaten in the old countries. The maize, some kinds of beans, and melons, made almost the whole of the *Indian* agriculture and gardening; and dogs were the only domestic animals in *North America*. But as their agriculture and their gardening were very trifling, and they could hardly live two months in a year upon their produce, they were forced to apply to hunting and fishing, which at that time, and even at present, are their chief subsistence, and to seek some of the wild plants and trees here. Some of the old *Swedes* were yet alive, who in their younger years had an intercourse with the *Indians*, and had seen the minutiae of their œconomy. I was therefore desirous of knowing which of the spontaneous herbs they made use of for food at that time; and all the old men agreed that the following plants were what they chiefly consumed:

HOPNISS or *Hapniss* was the *Indian* name of a wild plant, which they ate at that time. The *Swedes* still call it by that name, and it grows in the meadows in a good soil. The roots resemble potatoes, and were boiled by the *Indians*, who eat them instead of bread. Some of the *Swedes* at that time likewise ate this root for want of bread.

Some of the *English* still eat them instead of potatoes. Mr. *Bartram* told me, that the *Indians* who live farther in the country do not only eat these roots, which are equal in goodness to potatoes, but likewise take the pease which lie in the pods of this plant, and prepare them like common pease. Dr. *Linnaeus* calls the plant *Glycine Apios*.

KATNISS is another *Indian* name of a plant, the root of which they were likewise accustomed to eat, when they lived here. The *Swedens* still preserve this name. It grows in low, muddy, and very wet ground. The root is oblong, commonly an inch and an half long, and one inch and a quarter broad in the middle; but some of the roots have been as big as a man's fists. The *Indians* either boiled this root or roasted it in hot ashes. Some of the *Swedens* likewise eat them with much appetite, at the time when the *Indians* were so near the coast; but at present none of them make any use of the roots. A man of ninety-one years of age, called *Nils Gustafson*, told me, that he had often eaten these roots when he was a boy, and that he liked them very well at that time. He added that the *Indians*, especially their women, travelled to the islands, dug out the roots, and brought them home; and whilst they had them, they desired no other food. They said that the hogs, which are amazingly greedy of them, have made them very scarce. The cattle are very fond of its leaves. I afterwards got some of these roots roasted, and in my opinion they tasted well, though they were rather dry: the taste was nearly the same with that of the potatoes.

toes. When the *Indians* come down to the coast and see the turnips of the *Europeans*, they likewise give them the name of *katnifs*. Their *katnifs* is in an arrow-head or *Sagittaria*, and is only a variety of the *Swedish* arrow-head or *Sagittaria sagittifolia*, for the plant above the ground is entirely the same, but the root under ground is much greater in the *American* than in the *European*. Mr. *Osbeck* in his voyage to *China*, mentions, that the *Chinese* plant a *Sagittaria*, and eat its roots. This seems undoubtedly to be a variety of this *katnifs*. Further in the north of this part of *America*, I met with the other species of *Sagittaria* which we have in *Sweden*.

TAW-HO and Taw-him was the *Indian* name of another plant, the root of which they eat. Some of them likewise call it *Tuckab*; but most of the *Swedes* still knew it by the name of *Taw-ho*. It grows in moist ground and swamps. Hogs are very greedy of the roots, and grow very fat by feeding on them. Therefore, they often visit the places where these roots grow; and they are frequently seen rooting up the mud, and falling with their whole body into the water, so that only a little of the back part was out of the water. It is therefore very plain, that these roots must have been extirpated in places which are frequented by hogs. The roots often grow to the thickness of a man's thigh. When they are fresh, they have a pungent taste, and are reckoned a poison in that fresh state. Nor did the *Indians* ever venture to eat them raw, but prepared them in the following manner: They gathered a great heap of these roots, dug a great
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long hole, sometimes two or three fathoms and upwards in length, into which they put the roots, and covered them with the earth that had been taken out of the hole; they made a great fire above it, which burnt till they thought proper to remove it; and then they dug up the roots, and consumed them with great avidity. These roots, when prepared in this manner, I am told, taste like potatoes. The *Indians* never dry and preserve them; but always take them fresh out of the marshes, when they want them. This *Taw-ho* is the *Arum Virginicum*, or *Virginian Wake-robin*. It is remarkable, that the *Arums*, with the plants next akin to them, are eaten by men in different parts of the world, though their roots, when raw, have a fiery pungent taste, and are almost poisonous in that state. How can men have learnt, that plants so extremely opposite to our nature were eatable; and that their poison, which burns on the tongue, can be conquered by fire? Thus the root of the *Cala palustris*, which grows in the north of *Europe*, is sometimes used instead of bread on an exigency. The *North American Indians* consume this species of *Arum*. Those of *South America*, and of the *West Indies*, eat other species of *Arums*. The *Hottentots*, at the *Cape of Good Hope*, in *Africa*, prepare bread from a species of *Arum* or *Wake-robin*, which is as burning and poisonous as the other species of this plant. In the same manner, they employ the roots of some kinds of *Arum* as a food, in *Egypt* and *Asia*. Probably, that severe but sometimes useful mistress, necessity, has first taught men to find out
a food,

a food, which the first taste would have rejected as useless. This *Taw-bo* seems to be the same with what the *Indians* in *Carolina* call *Tuckaboo*.

TAW-KEE is another plant, so called by the *Indians*, who eat it. Some of them call it *Taw-kim*, and others *Tackvim*. The *Swedes* call it always by the name of *Taw-kee*. The plant grows in marshes, near moist and low grounds, and is very plentiful in *North America*. The cattle, hogs, and stags, are very fond of the leaves in spring; for they are some of the earliest. The leaves are broad, like those of the *Convallaria*, or Lilly of the Valley, green on the upper side, and covered with very minute hair, so that they looked like a fine velvet. The *Indians* pluck the seeds, and keep them for eating. They cannot be eaten fresh or raw, but must be dried. The *Indians* were forced to boil them repeatedly in water, before they were fit for use; and then they ate them like pease. When the *Swedes* gave them butter or milk, they boiled or broiled the seeds in it. Sometimes they employ these seeds instead of bread; and they taste like pease. Some of the *Swedes* likewise ate them; and the old men among them told me, they liked this food better than any of the other plants which the *Indians* formerly made use of. This *Taw-kee* was the *Orontium aquaticum*.

BILBERRIES were likewise a very common dish among the *Indians*. They are called *Huckle-berries* by the *English* here, and belong to several species of *Vaccinium*, which are all of them different from our *Swedish* bilberry-bush, though their berries, in regard to colour, shape, and taste,

are so similar to the *Swedish* bilberry, that they are distinguished from each other with difficulty. The *American* ones grow on shrubs, which are from two to four feet high; and there are some species which are above seven feet in height. The *Indians* formerly plucked them in abundance every year, dried them either in the sunshine or by the fire-side, and afterwards prepared them for eating, in different manners. These huckle-berries are still a dainty dish among the *Indians*. On my travels through the country of the *Iroquese*, they offered me, whenever they designed to treat me well, fresh maize-bread, baked in an oblong shape, mixed with dried *Huckleberries*, which lay as close in it as the raisins in a plumb-pudding, of which more in the sequel. The *Europeans* are likewise used to collect a quantity of these berries, to dry them in ovens, to bake them in tarts, and to employ them in several other ways. Some preserve them with treacle. They are likewise eaten raw, either quite alone or with fresh milk.

I SHALL, on the 27th of *March*, find occasion to mention another dish, which the *Indians* ate formerly, and still eat, on formal ceremonies.

Mar. 18th. ALMOST during the whole of this spring, the weather and the winds were always calm in the morning at sun-rising. At eight o'clock the wind began to blow pretty hard, and continued so all day, till sun-setting; when it ceased, and all the night was calm. This was the regular course of the weather; but sometimes the winds raged, without intermission, for two
or

or three days together. At noon it was commonly most violent. But in the ordinary way, the wind decreased and increased as follows: At six in the morning, a calm; at seven, a very gentle western breeze, which grew stronger at eight; at eleven it was much stronger; but at four in the afternoon, it is no stronger than it was at eight o'clock in the morning; and thus it goes on decreasing till it is quite a calm, just before sun-set. The winds this spring blew generally west, as appears from the observations at the end of this work.

I was told, that it was a very certain prognostic of bad weather, that when you see clouds in the horizon in the south-west, about sun-setting, and when those clouds sink below the horizon, in an hour's time, it will rain the next day, though all the forenoon be fair and clear. But if some clouds be seen in the south-west, in the horizon, at sun-set, and they rise some time after, you may expect fair weather the next day.

Mar. 20th. AN old *Swede* prognosticated a change in the weather, because it was calm today; for when there has been wind for some days together, and a calm follows, they say, rain or snow, or some other change in the weather, will happen. I was likewise told, that some people here were of that false opinion, that the weather commonly alters on *Friday*; so that, in case it had rained or blown hard all the week, and a change was to happen, it would commonly fall on *Friday*. How far the former prognostic has been true, appears from my own observations of the weather, to which I refer.

Mar. 21st. The red maple (*Acer rubrum*) and the American elm (*Ulmus Americana*) began to flower at present; and some of the latter kind were already in full blossom.

Mar. 24th. I WALKED pretty far to-day, in order to see whether I could find any plants in flower. But the cloudy weather, and the great rains which had lately fallen, had allowed little or nothing to grow up. The leaves now began to grow pretty green. The plants which I have just before mentioned, were now in full blossom.

THE noble Liverwort, or *Anemone hepatica*, was now every where in flower. It was abundant; and the Swedes call it *Blablomster*, or Blue-flower. They did not know any use of it.

NEAR all the corn-fields on which I walked to-day, I did not see a single ditch, though many of them wanted it. But the people generally followed the *English* way, of making no ditches along the fields, without considering whether the corn-fields wanted them or not. The consequence was, that the late rain had in many places washed away great pieces of the grounds, sown with wheat and rye. There were no ridges left between the fields, except a very narrow one near the fence, which was entirely over-grown with the Sumach, or *Rhus glabra*, and with black-berry bushes, so that there the cattle could find very little or no food. The corn-fields were *broad-cast*, or divided into pieces, which were near seventeen feet broad, and separated from each other only by means of furrows. These pieces

pieces were uniform, and not elevated in the middle.

MELŒ majalis, a species of oil-beetle, crept about on the hills.

PAPILIO Antiopa, or willow butterfly, flew in the woods to-day, and was the first butterfly which I saw this year.

PAPILIO Euphrosyne, or the *April* butterfly, was one of the scarce species. The other *American* insects, which I described this day and the following days, I shall mention on some other occasion. In the sequel I shall only mention those which were remarkable for some peculiar qualities.

THE hay-stacks were commonly made here after the *Swedish* manner, that is, in the shape of a thick and short cone, without any cover over it. When the people wanted any hay, they cut some of it loose, by a peculiar sort of a knife. However, many people, especially in the environs of *Philadelphia*, had hay-stacks with roofs which could be moved up and down. Near the surface of the ground were some poles laid, on which the hay was put, that the air may pass freely through it. I have mentioned before, that the cattle have no stables in winter or summer, but must go in the open air, during the whole year. However, in *Philadelphia*, and in a few other places, I have seen that those people who made use of the latter kind of hay-stacks, viz. that with moveable roofs, commonly had built them so, that the hay was put a fathom or two above the ground, on a floor of boards, under which the cattle could stand in winter, when the weather

was

was very bad. Under this floor of boards were partitions of boards on all the sides, which however stood far enough from each other, to afford the air a free passage.

Mar. 27th. In the morning I went in order to speak with the old *Swede*, *Nils Gustafson*, who was ninety-one years of age. I intended to get an account of the former state of *New Sweden*. The country which I now passed through was the same with that which I had found in those parts of *North America* I had hitherto seen. It was diversified with a variety of little hills and vallies; the former consisted of a very pale brick-coloured earth, composed, for the greatest part, of a fine sand mixed with some mould. I saw no mountains, and no stones, except some little stones, not above the size of a pigeon's or hen's egg, lying on the hills, and commonly consisting of white quartz, which was generally smooth and polished on the outside. At the bottom, along the vallies, ran sometimes rivulets of chry-stalline water, the bottom of which was covered with such white pebbles as I have just described. Now and then I met with a swamp in the vallies. Sometimes there appeared, though at considerable distances from each other, some farms frequently surrounded on all sides by corn-fields. Almost on every corn-field there yet remained the stumps of trees, which had been cut down; a proof that this country has not been long cultivated, being overgrown with trees forty or fifty years ago. The farms did not lie together in villages, or so that several of them were near each other, in one place; but they were all separated

separated from one another. Each countryman lived by himself, had his own ground about his house, separated from the property of his neighbour. The greatest part of the land, between these farms so distant from each other, was overgrown with woods, consisting of tall trees. Here and there appeared some fallen trees, thrown down by the wind; some were torn up by the roots; others broken quite across the stem. In some parts of the country the trees were thick and tall, but in others I found large tracts covered with young trees, only twenty, thirty, or forty years old: these tracts, I am told, the *Indians* formerly had their little plantations in. I did not yet see any marks of the leaves coming out, and I did not meet with a flower in the woods: for the cold winds, which had blown for several days together successively, had hindered this. The woods consisted chiefly of several species of oak, and of hiccory. The swamps were filled with red maple, which was all now in flower, and made these places look quite red at a distance.

THE old *Swede*, whom I came to visit, seemed to be still pretty hearty and fresh, and could walk by the help of a stick; but he complained of having felt, in these latter years, some pains in his back, and limbs, that he could keep his feet warm in winter only by sitting near the fire. He said he could very well remember the state of this country, at the time when the *Dutch* possessed it, and in what circumstances it was in before the arrival of the *English*. He added, that he had brought a great deal of timber to *Philadelphia*, at the time that it was built. He still remembered

remembered to have seen a great forest on the spot where *Philadelphia* now stands. The father of this old man had been one of the *Swedes* who were sent over from *Sweden*, in order to cultivate and inhabit this country. He returned me the following answers to the questions I asked him.

QUERY, Whence did the *Swedes*, who first came hither, get their cattle? The old man answered, that when he was a boy, his father and other people told him, that the *Swedes* brought their horses, cows, and oxen, sheep, hogs, geese, and ducks, over with them. There were but few of a kind at first, but they multiplied greatly here afterwards. He said, that *Maryland*, *New York*, *New England*, and *Virginia*, had been sooner inhabited by *Europeans* than this part of the country; but he did not know whether the *Swedes* ever got cattle of any kind, from any of these provinces, except from *New York*. Whilst he was yet very young, the *Swedes*, as well as he could remember, had already a sufficient stock of all these animals. The hogs had propagated so much at that time, there being so great a plenty of food for them, that they ran about wild in the woods, and that the people were obliged to shoot them, when they intended to make use of them. The old man likewise recollected, that horses ran wild in the woods, in some places; but he could not tell whether any other kind of cattle turned wild. He thought that the cattle grow as big at present as they did when he was a boy, supposing they get as much food as they want. For in his younger years, food for all kinds of cattle was so plentiful, and even so

superfluous, that the cattle were extremely well fed by it. A cow at that time gave more milk, than three or four do at present; but she got more and better food at that time, than three or four get now.

QUERE, Whence did the *English* in *Pensylvania* and *New Jersey* get their cattle? They bought them chiefly from the *Swedes* and *Dutch*, who lived here; and a small number were brought over from *Old England*. The form of the cattle, and the unanimous accounts of the *English* here, confirmed what the old man had said.

QUERE, Whence did the *Swedes* here settled get their several sorts of corn, and likewise their fruit-trees and kitchen-herbs? The old man told me that he had frequently heard, when he was young, that the *Swedes* had brought all kinds of corn, and fruits, and herbs, or seeds of them, with them. For, as far as he could recollect, the *Swedes* here were plentifully provided with wheat, rye, barley, and oats. The *Swedes*, at that time, brewed all their beer of malt made of barley, and likewise made good strong beer. They had already got distilling vessels, and made good brandy. Every one among them had not a distilling vessel, but when they intended to distil, they lent their apparatus to one another. At first they were forced to buy maize of the *Indians*, both for sowing and eating. But after continuing for some years in this country they extended their maize plantations so much that the *Indians* were obliged, some time after, to buy maize of the *Swedes*. The old man likewise assured me, that the *Indians* formerly, and about the time of the first

first settling of the *Swedes*, were more industrious and laborious in every branch of business, than they are now. Whilst he was young, the *Swedes* had a great quantity of very good *white cabbage*, *Winter cabbage*, or *Cale*, which was left on the ground during winter, was likewise abundant. They were likewise well provided with turnips. In winter they kept them in holes under ground. But the old man did not like that method; for when they had lain too long in these holes, in winter, they became spongy. He preferred that method of keeping them which is now commonly adopted, and which consists in the following particulars. After the turnips have been taken out of the ground in autumn, and exposed to the air for a while, they are put in a heap upon the field, covered with straw at the top, and on the sides, and with earth over the straw. By this means they stand the winter very well here, and do not become spongy. The *Indians* were very fond of turnips, and called them sometimes *Hopniss*, sometimes *Katniss*. The *Swedes* likewise cultivated carrots, in the old man's younger years. Among the fruit-trees were *Apple-trees*. They were not numerous, and only some of the *Swedes* had little orchards of them, whilst others had not a single tree. None of the *Swedes* made cyder, for it is come into use but lately. The *Swedes* brewed strong beer and small beer, and it was their common liquor. But at present there are very few who brew beer, for they commonly prepare cyder. *Cherry-trees* were abundant when *Nils Gustafson* was yet a boy. *Peach-trees* were at that time more numerous than at present, and the

the *Swedes* brewed beer of the fruit. The old man could not tell from whence the *Swedes* first of all got the peach-trees.

DURING the younger years of this old man, the *Indians* were every where spread in the country; they lived among the *Swedes*, and were scattered every where. The old man mentioned *Swedes* who had been killed by the *Indians*; and he mentioned two of his countrymen who had been scalped by them. They stole children from the *Swedes*, and carried them off, and they were never heard of again. Once they came and killed some *Swedes*, and took the upper part of their skulls with them; on that occasion they scalped a little girl, and would have killed her, if they had not perceived a boat full of *Swedes*, making towards them, which obliged them to fly; the girl was afterwards healed, but never got any hair on her head again: she was married, had many children, and lived to a considerable age. At another time the *Indians* attempted to kill the mother of this old man, but she vigorously resisted them, and in the mean while a number of *Swedes* came up, who frightened the *Indians*, and made them run away. Nobody could ever find out to what nation of *Indians* these owe their origin; for in general they lived very peaceably with the *Swedes*.

THE *Indians* had their little plantations of maize in many places; before the *Swedes* came into this country, the *Indians* had no other than their hatchets made of stone. In order to make maize plantations they cut out the trees and prepared the ground in the manner I have before

mentioned. They planted but little maize, for they lived chiefly upon hunting; and throughout the greatest part of summer, their *Hopniss* or the roots of the *Glycine Apios*, their *Katniss* or the roots of the *Sagittaria Sagittifolia*, their *Taw-bo* or the roots of the *Arum Virginicum*, their *Taw-kee* or *Orontium aquaticum*, and whortle-berries, were their chief food. They had no horses or other cattle which could be subservient to them in their agriculture, and therefore did all the work with their own hands. After they had reaped the maize, they kept it in holes underground, during winter; they dug these holes seldom deeper than a fathom, and often not so deep; at the bottom and on the sides they put broad pieces of bark. The *Andropogon bicorne*, a grass which grows in great plenty here, and which the *English* call *Indian Grass*, and the *Swedes* *Wilskt Grass**, supplies the want of bark; the ears of maize are then thrown into the hole, and covered to a considerable thickness with the same grass, and the whole is again covered by a sufficient quantity of earth: the maize kept extremely well in those holes, and each *Indian* had several such subterraneous stores, where his corn lay safe, though he travelled far from it. After the *Swedes* had settled here, and planted apple-trees and peach-trees, the *Indians*, and especially their women, sometimes stole the fruit in great quantity; but when the *Swedes* caught them, they gave them a severe drubbing, took the fruit from them, and often their clothes too. In the

* Grass of the savages.

same manner it happened sometimes, that as the Swedes had a great increase of hogs, and they ran about in the woods, the *Indians* killed some of them privately and feasted upon them: but there were likewise some *Indians* who bought hogs of the Swedes and fed them; they taught them to run after them like dogs, and whenever they removed from one place to another, their hogs always followed them. Some of those *Indians* got such numbers of these animals, that they afterwards gave them to the Swedes for a mere trifle. When the Swedes arrived in *America*, the *Indians* had no domestic animals, except a species of little dogs. The *Indians* were extremely fond of milk, and ate it with pleasure when the Swedes gave it them. They likewise prepared a kind of liquor like milk in the following manner: they gathered a great number of hickory nuts, and walnuts from the black walnut-trees, dried and crushed them; then they took out the kernels, pounded them so fine as flour, and mixed this flour with water, which took a milky hue from them, and was as sweet as milk. They had tobacco-pipes of clay, manufactured by themselves; at the time that the Swedes arrived here; they did not always smoke true tobacco, but made use of another plant instead of it, which was unknown to the old Swedes, but of which he assured me that it was not the common mullein, or *Verbascum Thapsus*, which is generally called *Indian Tobacco* here.

As to their religion, the old man thought it very trifling, and even believed that they had none at all; when they heard loud claps of thunder,

thunder, they said that the evil spirit was angry ; some of them said that they believed in a God, who lives in heaven. The old *Swede* once walked with an *Indian*, and they met with a red-spotted snake on the road: the old man therefore went to seek a stick in order to kill the snake ; but the *Indian* begged he would not touch it, because he adored it: perhaps the *Swede* would not have killed it, but on hearing that it was the *Indian's* deity, he took a stick and killed it, in the presence of the *Indian*, saying : Because thou believest in it, I think myself obliged to kill it. Sometimes the *Indians* came into the *Swedish* churches, looked at them, heard them, and went away again, after a while. One day as this old *Swede* was at church, and did not sing, because he had no psalm-book by him, one of the *Indians*, who was well acquainted with him, tapped him on the shoulder, and said: *Why dost thou not sing with the others, Tantanta! Tantanta! Tantanta?* On another occasion, as a sermon was preached in the *Swedish* church at *Raccoon*, an *Indian* came in, looked about him ; and, after hearkening a while to the preacher, he said : *Here is a great deal of prattle and nonsense, but neither brandy nor cyder ;* and went out again. For it is to be observed, that when an *Indian* makes a speech to his companions, in order to encourage them to war, or to any thing else, they all drink immoderately on those occasions.

At the time when the *Swedes* arrived, they bought land at a very inconsiderable price. For a piece of baize, or a pot full of brandy, or the like, they could get a piece of ground, which at present would be worth more than four hundred pounds, *Pensylvania* currency. When they sold
a piece

a piece of land, they commonly signed an agreement; and though they could neither read nor write, yet they scribbled their marks, or signatures, at the bottom of it. The father of old *Nils Gustafson* bought a piece of ground from the *Indians* in *New Jersey*. As soon as the agreement was drawn up, and the *Indians* should sign it, one of them, whose name signified a beaver, drew a beaver; another of them drew a bow and arrow; and a third a mountain, instead of their names. Their canoes they made of thick trees; which they hollowed out by fire, and made them smooth again with their hatchets, as has been before mentioned.

THE following account the old man gave me, in answer to my questions with regard to the weather and its changes: It was his opinion, that the weather had always been pretty uniform ever since his childhood; that there happen as great storms at present as formerly; that the summers now are sometimes hotter, sometimes colder, than they were at that time; that the winters were often as cold and as long as formerly; and that still there often falls as great a quantity of snow as in former times. However, he thought that no cold winter came up to that which happened in the year 1697; and which is often mentioned in the almanacks of this country; and I have mentioned it in the beginning of this volume. For in that winter the river *Delaware* was so strongly covered with ice, that the old man brought many waggons full of hay over it, near *Christina*: and that it was passable in sledges even lower. No cattle, as far as he could recollect,

were starved to death in cold winters; except, in later years, such cattle as were lean, and had no stables to retire into. It commonly does not rain, neither more nor less, in summer than it did formerly; excepting that, during the last years, the summers have been more dry. Nor could the old *Swede* find a diminution of water in brooks, rivers, and swamps. He allowed, as a very common and certain fact, that wherever you dig wells, you meet with oyster-shells in the ground.

The old *Gustafson* was of opinion, that intermitting fevers were as frequent and violent formerly as they are now; but that they seemed more uncommon, because there were fewer people at that time here. When he got this fever, he was not yet full grown. He got it in summer, and had it till the ensuing spring, which is almost a year; but it did not hinder him from doing his work, either within or out of doors. *Pleurisy* likewise attacked one or two of the *Swedes* formerly; but it was not near so common as it is now. The people in general were very healthy at that time.

SOME years ago, the old *Swede's* eyes were so much weakened that he was forced to make use of a pair of spectacles. He then got a fever; which was so violent, that it was feared he would not recover. However, he became quite well again, and at the same time got new strength in his eyes; so that he has been able to read without spectacles since that time.

THE houses which the *Swedes* built when they first settled here, were very bad. The whole
house

house consisted of one little room, the door of which was so low, that one was obliged to stoop in order to get in. As they had brought no glass with them, they were obliged to be content with little holes, before which a moveable board was fastened. They found no moss, or at least none which could have been serviceable in stopping up holes or cracks in the walls. They were therefore forced to close them, both without and within, with clay. The chimnies were made in a corner, either of grey sand, a stone, or (in places where no stone was to be got) of mere clay, which they laid very thick in one corner of the house. The ovens for baking were likewise in the rooms.

BEFORE the *English* came to settle here, the *Swedes* could not get as many cloaths as they wanted; and were therefore obliged to make shift as well as they could. The men wore waistcoats and breeches of skins. Hats were not in fashion; and they made little caps, provided with flaps before. They had worsted stockings. Their shoes were of their own making. Some of them had learnt to prepare leather, and to make common shoes, with heels; but those who were not shoemakers by profession, took the length of their feet, and sewed the leather together accordingly; taking a piece for the sole, one for the hind-quarters, and one more for the upper-leather. At that time, they likewise sowed flax here, and wove linen cloth. Hemp was not to be got; and they made use of flaxen ropes and fishing tackle. The women were dressed in jackets and petticoats of skins. Their beds, ex-

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cepting the sheets, were skins of several animals; such as bears, wolves, &c.

TEA, coffee, and chocolate, which are at present universally in use here, were then * wholly unknown. Bread and butter, and other substantial food, was what they breakfasted upon; and the above-mentioned superfluities have only been lately introduced, according to the account of the old *Swede*. Sugar and treacle they had in abundance, as far as he could remember; and rum formerly bore a more moderate price.

FROM the accounts of this old *Swede* I concluded, that before the *English* settled here, they followed wholly the customs of *Old Sweden*; but after the *English* had been in the country for some time, the *Swedes* began gradually to follow their customs. When this *Swede* was but a boy, there were two *Swedish* smiths here, who made hatchets, knives, and scythes, exactly like the *Swedish* ones, and made them sharper than they can be got now. The hatchets now in use are in the *English* way, with a broad edge; and their handles are very narrow. Almost all the *Swedes* made use of baths; and they commonly bathed every *Saturday*. They celebrated *Christmas* with several sorts of games, and with several peculiar dishes, as is usual in *Sweden*; all which is now, for the greatest part, left off. In the younger years of this *Swede*, they made a peculiar kind of carts here. They sawed thick pieces of liquid-amber trees, and made use of two of them for the foremost wheels, and of two more for the

* Before the *English* settled here,

hindmost. With those carts they brought home their wood. Their sledges were at that time made almost in the same manner as they are now, or about as broad again as the true *Swedish* ones. Timber and great beams of wood were carried upon a dray. They baked great loaves, such as they do now. They had never any biscuit, though the clergymen, who came from *Sweden*, commonly got some baked.

THE *English* on their arrival here bought large tracts of land of the *Swedes*, at a very inconsiderable price. The father of the old *Swede* sold an estate to the *English*, which at this time would be reckoned worth three hundred pounds, for which he got a cow, a sow, and a hundred gourds.

With regard to the decrease of birds, the number of them and fish, he was wholly of that opinion which I have already mentioned. This was the account which the old man gave me of the former state of the *Swedes* in this country. I shall speak more particularly of it in the sequel.

HURRICANES are sometimes very violent here, and often tear up great trees. They sometimes proceed as it were in peculiar tracts, or lines. In some places, especially in the hurricane's tract, all the trees are struck down, and it looks as if the woods were cut down designedly; but close to the tract the trees receive no hurt. Such is the place which was shewn to me to-day. It is dangerous to go into the woods where the hurricanes blow; for no one can guard sufficiently against the sudden fall of trees.

THE *Pennsylvanian Asp* was now in full blossom. But neither this tree, nor those near a-kin to it, shewed their leaves.

AN old countryman asserted, that he commonly sowed a bushel of rye, on an acre of ground, and got twenty bushels in return; but from a bushel of barley he got thirty bushels. However in that case the ground must be well prepared. Wheat returns about as much as rye. The soil was a clay mixed with sand and mould.

IN the evening I returned*.

Mar. 28th. I FOUND a black beetle † (*Scarabæus*) with a pentagonal oval *Clypeus* or shield, on the head a short blunt horn, and a gibbous or hump-backed *Thorax*, or Corselet. This beetle is one of the bigger sort here. I found here and there holes on the hills, which were so wide that I could put my finger into them. On digging them up I always found these beetles lying at the bottom, about five inches under ground. Sometimes there were short whitish worms, about as thick as one's finger, which lay with the beetles; and perhaps they were related to them. There were likewise other insects in such holes, as a black cricket (*Gryllus campestris*) spiders, earth-beetles (*Carabi*), and others. This beetle had a scent exactly like the *Trifolium melilotus cærulea*, or the blue melilot. It was entirely covered with oblong pale ticks (*Acari*).

* From *Nils Gustafson*, the old Swede.

† The beetle here described, seems to be the *Scarabæus Carolinus*, Linn. Syst. Nat. p. 545, and of *Drury* Illustrations of Nat. Hist. tab. 35. f. 2. It is common in *New York*, *New Jersey*, *Pennsylvania*, *Maryland*, and *Carolina*. F.

Its feet were as strong as those of the common *Dung chaffer* (*Scarabæus stercorarius*).

Apr. 4th. A *Cicindela*, or shining beetle, with a gold-green head, thorax, and feet, and a blue-green abdomen or belly, flew every where about the fields, and was hunting other insects. It is very common in *North America*, and seems to be a mere variety of the *Cicindela campestris*.

CIMEX lacustris, a kind of *Water-bugs*, hopped in numbers on the surface of waters which had a slow course.

DYTISCUS piceus, or, the great *Water-beetle*, swam sometimes in the water.

ABOUT sixty years ago, the greatest part of this country was covered with tall and thick trees, and the swamps were full of water. But it has undergone so great a change, as few other places have undergone in so short a time. At present the forests are cut down in most places, the swamps drained by ditches, the country cultivated, and changed into corn-fields, meadows, and pastures. Therefore, it seems very reasonable to suppose, that so sudden a change has likewise had some effect upon the weather. I was therefore desirous of hearing from the old *Swedes*, who have lived the longest in this country, and have been inhabitants of this place during the whole time of the change mentioned, whether the present state of the weather was in some particulars remarkably different from that which they felt in their younger years? The following is an account which they all unanimously gave me in answer to this question.

THE winter came sooner formerly than it does
NOW.

now. Mr. *Isaac Narris*, a wealthy merchant, who has a considerable share in the government of *Pensylvania*, confirmed this by a particular account. His father, one of the first *English* merchants in this country, observed, that in his younger years, the river *Delaware* was commonly covered with ice, about the middle of *November*, old style, so that the merchants were obliged to bring down their ships in great haste before that time, for fear of their being obliged to lie all winter. On the contrary, this river seldom freezes over at present, before the middle of *December*, old style.

IT snowed much more in winter, formerly, than it does now; but the weather in general was likewise more constant and uniform; and when the cold set in, it continued to the end of *February*, or till *March*, old style, when it commonly began to grow warm. At present, it is warm, even the very next day after a severe cold; and sometimes the weather changes several times a day.

MOST of the old people here were of opinion, that spring came much later at present, than formerly, and that it was now much colder in the latter end of *February*, and the whole month of *May*, than when they were young. Formerly the fields were as green, and the air as warm, towards the end of *February*, as it is now in *March*, or in the beginning of *April*, old style. The *Swedes* at that time made use of this phrase: *Pask bitida, Pask sent, altid Gras*, that is, we have always grass at *Easter*, whether it be soon or late in the year. But perhaps we can account as

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follows,

follows, for the opinion which the people here have, that vegetation appeared formerly more forward than it does now. Formerly the cattle were not so numerous as now; however, the woods were full of grass and herbs, which, according to the testimony of all the old people here, grew to the height of a man. At present a great part of the annual grasses and plants have been entirely extirpated by the continual grazing of numbers of cattle. These annual grasses were probably green very early in spring, and (being extirpated) might lead the people to believe, that every thing came on sooner formerly than it does at present.

It used to rain more abundantly than it does now; during the harvest especially, the rains fell in such plenty, that it was very difficult to bring home the hay and corn. Some of the last years had been extremely dry. However, a few people were of opinion that it rained as plentifully at present, as formerly.

ALL the people agreed, that the weather was not by far so inconstant, when they were young, as it is now. For at present it happens at all times of the year, that when a day has been warm, the next is very cold, and *vice versa*. It frequently happens that the weather alters several times in one day; so that when it has been a pretty warm morning, the wind blows from N. W. about ten o'clock, and brings a cold air with it; yet a little after noon it may be warm again. My meteorological observations sufficiently confirm the reality of these sudden changes of weather, which are said to cause, in a great measure,

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the people to be more unhealthy at present, than they were formerly.

I likewise found every body agree in asserting, that the winter, betwixt the autumn of the year 1697, and the spring of the year 1698, was the coldest and the severest which they had ever felt.

Apr. 6th. SANGUINARIA *Canadensis*, which is here called *Blood-root*, because the root is great and red, and, when cut, looks like the root of red beet, and the *Epigæa repens*, which some call the *creeping ground Laurel*, were both beginning to flower. The former grew in a rich mould, the other in a poorer soil.

THE *Laurus æstivalis*, which some people call *Spice-wood*, likewise began to blossom about this time; its leaves were not yet broke out; it liked a moist soil in the woods.

Apr. 9th. APOCYNUM *Cannabinum* was by the *Swedes* called *Hemp of the Indians**; and grew plentifully in old corn-grounds, in woods, on hills, and in high glades. The *Swedes* have given it the name of *Indian hemp*, because the *Indians* formerly, and even now, apply it to the same purposes as the *Europeans* do hemp; for the stalk may be divided into filaments, and is easily prepared. When the *Indians* were yet settled among the *Swedes*, in *Pensylvania* and *New Jersey*, they made ropes of this *Apocynum*, which the *Swedes* bought, and employed them as bridles, and for nets. These ropes were stronger, and kept longer in water, than such as were made of common hemp. The *Swedes* commonly got fourteen

* *Wilsk* Hampa,

yards of these ropes for one piece of bread. Many of the *Europeans* still buy such ropes, because they last so well. The *Indians* likewise make several other stuffs of their hemp. On my journey through the country of the *Iroquese*, I saw the women employed in manufacturing this hemp. They made use neither of spinning-wheels nor distaffs, but rolled the filaments upon their bare thighs, and made thread and strings of them, which they dyed red, yellow, black, &c. and afterwards worked them into stuffs, with a great deal of ingenuity. The plant is perennial, which renders the annual planting of it altogether unnecessary. Out of the root and stalk of this plant, when it is fresh, comes a white milky juice, which is somewhat poisonous. Sometimes the fishing tackle of the *Indians* consists entirely of this hemp. The *Europeans* make no use of it, that I know of.

FLAX and *Cat-tail*, were names given to a plant which grows in bays, rivers, and in deep whirlpools, and which is known to botanists by the name of *Typha latifolia*. Its leaves are here twisted together, and formed into great oblong rings, which are put upon the horse's neck, between the mane and the collar, in order to prevent the horse's neck from being hurt by the collar. The bottoms of chairs were frequently made of these leaves, twisted together. Formerly the *Swedes* employed the wool or cotton which surrounds its seeds, and put it into their beds instead of feathers; but as it coalesces into lumps after the beds have been used for some time, they have left off making use of them. I omit the use of this

this plant in physic, it being the peculiar province of the physicians.

A SPECIES of *Leek**, very like that which appears only in woods on hills in *Sweden*, grows at present on almost all corn-fields mixed with sand. The *English* here called it *Garlick*. On some fields it grew in great abundance. When the cattle grazed on such fields, and ate the garlick, their milk, and the butter which was made of it, tasted so strongly of it, that they were scarce eatable. Sometimes they sold butter in the *Philadelphia* markets, which tasted so strongly of garlick that it was entirely useles. On this account, they do not suffer milking cows to graze on fields where garlick abounds: this they reserve for other species of cattle. When the cattle eat much of this garlick in summer, their flesh has likewise such a strong flavour, that it is unfit for eating. This kind of garlick appears early in spring; and the horses always passed by it without ever touching it.

* *Allium arvense*; odore grami, capitulis bulbosis rubentibus. See Gronow. *Flora Virginica*, 37. This Leek seems to be Dr. *Linnaeus*'s *Allium Canadense*, scapo nudo tereti, foliis linearibus, capitulo bulbifero. *Spec. plant.* 1. p. 431. F.

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