longer remain a mystery, and it was for the Exhibition, which took place at the Mechanics' Institution, in the year 1840, that I engaged Mr. Mollart, an acknowledged proficient in that part of the art, technically called throwing, (which is the first process used by the potter, it is the formation of the vessel from a lump of raw clay,) to exhibit his art, which was the first time it was shewn to the public. In this I was encouraged by the help of my brothers, Messrs. Thomas, John, and Jos. Mayer, who lent me a potters-wheel, and presented me with some casks of clay, ready prepared for use, With these Mollart set to work making all sorts of forms and sizes of vases, cups, bowls, &c., as suggested to him by the bystanders. By his practiced hand and correct eye, he produced some of the most elegant and beautifully formed classic shapes that can be conceived, alike delighting, and at the same time astonishing the visitors, by the facility and rapidity with which he made them. Many of these articles were afterwards fired in a tobacco-pipe maker's kiln, in Hurst Street, there being at that time no pottery in Liverpool.

After the closing of this Exhibition, seeing the great interest the people took in the hitherto unseen art, I sent Mr. Mollart to various other places where similar Exhibitions took place, namely, to Manchester, Preston, Leeds, Sheffield, Hull, &c., and, finally, to the Anti-Corn-Law League Bazaar, held in London, where he drew large companies around him, to witness the skill and dexterity which he displayed in his art, and the surprising power he had over the clay.

I need scarcely say that I am much indebted to several persons who have presented me with authenticated specimens of Liverpool pottery, and for their valuable aid in my endeavors to form a collection of this ware. To all of them, I beg to offer my best thanks.

Remarks on the connection between Archeology and Natural History.

By Joseph Clarke, Esq., F.S.A., Hon. M.H.S.

(Read 22nd March, 1855.)

When I pass in review through my mind, the men of mark and likelihood who have gone before, who have, in a pre-eminent degree, combined the two, and after exhausting one science as far as their limits of observation
and research permitted them, have almost naturally turned to the other, I am led to the conclusion that the connection between these two scientific occupations must be closer than is at first imagined; and that the same faculties of mind which qualify any savant for the pursuit of one, equally fit him for the study of the other. Thus for an example in remote ages, Pliny, celebrated for a noble work on natural history, has introduced us to a profound knowledge of antiquities, and from him we learn the history and construction and decorations of those edifices which, even in this country, where from its distance from the Roman capital they must be considered as inferior, occasionally astonish us by their beauty, when excavations have accidentally brought any of them to light. And in mentioning this production of Pliny, it is to be regretted that there is no scholar of the present day, who is conversant enough with the above two studies to give us a new translation of this great work; but from the rapid strides now making by learned men, who are becoming naturalists and antiquaries, it is to be hoped that this will not be much longer a subject of regret.

A little knowledge of natural history would be a great acquisition to a literary antiquary, would prevent many misconceptions, and enable him to avoid many a blunder. As an illustration I will begin with the mediæval antiquary, the idolizer of Shakspeare, who, when the harmless and inoffensive toad is mentioned or alluded to, in his misconstruction of the matter, starts off with the celebrated and hackneyed lines,

"The toad, ugly and venomous,
Wears yet a precious jewel in his head."

Sentences more at variance with nature and common sense could not have been penned, and their absurdity is still often heightened by their application in quotation. Let us remark on the different points in order.

1. Art may fashion monsters, credulity may be frightened by its own conjurations, and imagination shadow forth hideous forms, and people its world with demons; but there is nothing placed upon earth by the creator which we have a right to call "ugly." Nevertheless there are forms even in nature which it requires the eye to be accustomed to to appreciate. But our poor toad has had to encounter the ignorance of nursery-maids, and the ill-grounded fears of weak and over credulous mothers, who impart to the young susceptible mind a horror of it, and the moment it is seen it is either shunned or often cruelly persecuted, whereas a little watching of its slow
and harmless motions, a little accustoming of the eye to its form, would soon familiarize it to the senses, and it would appear anything but ugly. A pet of ours was frequently introduced upon the tea-table, just at the time of evening when it began to shake off its drowsiness. At first it was looked upon with that sort of dread which unenlightened parents, in their ignorance, had succeeded in instilling into infancy; but it soon became very palpable that there was nothing to be feared from the creature, and after a while it began to be considered very amusing. As the eye became accustomed to it, all idea of ugliness vanished, and even admiration was accorded to some of its parts; in fact, of its kind it was a beauty. The proverb "as ugly as a toad" has done a great deal towards keeping up the absurd notion, and fairy tales, too, often deal largely in poisoning by toads.

2. Who ever knew from his own observation, or from reliable or respectable authority, of any body or any thing ever being poisoned by a toad? or of any injury that ever accrued from one? It is true that I once did, but it was not the fault of the creature itself, but that of the animal which swallowed it. A sow swallowed * a toad alive, which is under all circumstances exceedingly retentive of life, (for I once knew one live in a pot of turpentine all night, and crawl off, apparently unharmed, in the morning.) Here in its uncomfortable porcine prison, in its endeavours to free itself, it forced one of its claws through an intestine, inflammation ensued, and the sow died. But venom was out of the question, nor ought the death of the animal to be laid to the charge of the poor incarcerated toad, for you may depend upon it, it is incapable of doing the slightest injury. The toad has the advantage of being able to exist in the two elements of air and water, but activity on land it has none. Hide itself it may, and its means of protection from its wanton tormentors and pursuers is increasing its size by distending its skin to the utmost, evidently that a blow may fall with less violence upon its bones; the inflation also tending to protect its lungs and viscera from being crushed. Its only means of defence is the expulsion of a very disagreeable liquid, secreted against the time of need.

* Swine are very voracious, and will devour almost anything that comes to hand. Animal matter of any kind is generally much to their taste; snakes they eat with avidity. Thus in the backwoods and uncleared regions of North America, the first care of the settler is to locate on his wild woodlands a herd of pigs, which at once busy themselves in freeing his newly acquired possessions from that dangerous denizen of the wilderness, the rattlesnake, as well as others of the genus.
which, when teazed or attacked, it readily ejects. This liquor is supposed to be poisonous. Not many years ago, a beautiful spaniel, fond of catching anything that shewed signs of life, frequently amused himself by catching and carrying a frog about, no doubt to the great inconvenience of the reptile; and often have I seen him pick up a toad, and smiled to observe how quickly he set it down again, and to get rid of the ejected offensive matter he suspended his tongue from his jaws, most copiously lubricated with saliva; but no harm came of it, nor did it deter him from doing the same thing again. Moreover, that this fluid is innocuous I can give personal evidence, having tasted a considerable quantity of it, without, it is needless to say, any harm accruing; but I can also bear testimony to its being indescribably nauseous, so much so, that it was a long time before I could get rid of the abominable flavour from my mouth. Yet it had not the effect upon my tongue that poisonous matter would have had.*

Yet we sometimes hear strange things from eye-witnesses. An old friend of mine, and a sensible man too, has several times indulged me with the recital of what he asserted to be a fact; that he had witnessed a large spotted toad seize a poor snake by its head, and while the snake was screaming with pain and terror, the venomous brute dragged it to a pool of water, and plunged in with it. Though my friend was of a temper not easily exasperated, he was so incensed on this occasion, that he threw stones after it, but he feared not with precision enough to save the snake. So convinced was he of all this, that it was quite useless for me to explain to him that the toad (Bufo vulgaris, Flemm.) and the frog (Rana temporaria, Linn.) were the natural food of the snake (Natrix torquata, Ray.), whose capacity of swallow is enormous, almost beyond conception, and which is often found lying in wait for its prey by the side of rivers and pools and in swampy meadows. The snake had really seized the toad, (frog, I suspect; I am not aware that toads scream as frogs do,) which was strong enough

* A worthy professor now living, saw a man in the fens of Ely catching snakes; on enquiring what he did with them, the answer was that he sent them to London, and on being asked how purchasers could be found for them, or what became of them in that city, he said he did not know, but he had orders for four or six dozens at a time occasionally, and he sent them up with their skins off! The professor's curiosity being roused, he determined, if possible, to ascertain their destination, and found it to be a celebrated eel pie establishment; and he came to the very reasonable conclusion, that when eels were scarce, these snakes were partially or wholly substituted. The Indians of North and South America consider snakes as delicacies; why should they not be thought so in Europe?
to drag its captor into an element where it could better deal with it, and thus instinctively rid itself of its antagonist. The adder or viper, (*Vipera communis*, Leach), as well as the common snake, often visit water-meadows and fen-lands in search of amphibia; and in the fen counties, where frogs, tritons, and toads abound, there snakes and adders abound also.* The authority of the ancients would bear my friend out in this error; for attached to a finger-ring, some six centuries old, in the cabinet of Lady Loundesborough, is a toad, well sculptured, swallowing a serpent, though possibly this might have been connected with the notion then entertained, "that a serpent must eat a serpent, to become a dragon." If so, it would appear that our forefathers, supposing it to be noxious, put the toad in the same category, and considered it as one of the race of serpents.

3. I now come to the "precious jewel in its head;" and here will be found a little piece of the superstition of the age in which the poet lived; and probably the immortal bard himself, when penning these lines, was under the influence of a myth. That the toad has *two* beautiful eyes, may be ascertained by any one who is disposed to look at them on a bright sunny day; and after having noted the rich colour of the iris, the elongated pupil, and their general mild brilliancy, he will not easily forget them. I should recommend all persons to judge for themselves, for it would be an approach towards softening down the vague ideas of ugliness, and would engender a more kindly disposition towards this harmless animal in future. It would be a first step towards that familiarity of vision, which, in this case, seems requisite to admiration. But the bard of Avon alluded not to the eye. From remote ages there has been a belief in spells and counter-spells, and charms and anti-charms; superstitious notions have ever been rife, more than one attaches itself to the reptile in question. Thus Pliny says, in his days, if a certain little bone taken from the right side of a toad were put into boiling water, "it would presently boil no more," and the bone from the left side would cause the water to become warm again.

* There is a lurking notion still among some portion of the educated classes, that the exudations from the follicles or tuberculated excrescences of the covering are venomous, and cause irritation of the skin, like the stinging of a nettle. I have picked up so many, and seen others in the delicate hands of ladies, that if this had been the case we should have found it out; therefore, this also may be consigned, as an error, to oblivion. As to the toad being capable of inflicting any injury by biting, this is another fallacy, as it has no teeth, and the horny consistency of its jaws would not enable it, by any effort, to make an incision in the skin of the most delicate finger; added to which, during the severer season its mouth is naturally closed, nor could it be opened without positive laceration.
The bone from this side, carried about the person, facilitated an inducement to love, while that of the contrary side produced an opposite effect. These bones were also a charm against curst dogs. The way in which they were obtained, was by incarcerating the toad in an ant-hill, an extremely cruel experiment, as the poor victim would be literally stripped of its skin and flesh while living; and I fear some of the junior osteologists of the present day are not clear of this sin. The skeleton of this creature, from its minuteness, is difficult to articulate, (or put together by wires), but if taken from the ants before the natural ligaments are destroyed, the specimen only requires bleaching, and putting into position. Pliny also says, that the milt, and more especially the head, is a counter-poison against its own venom. Something of this remains with us at the present day; for in the medicine chest of a British admiral, I saw a small bottle of viper's fat, as a remedy by application for the bite of deadly serpents. In the first of these counter-poisons against the pretended venom of the toad, I should have the most implicit faith; the viper's fat antidote I should be very sorry to test. But it was in the head of the toad that a stone was supposed to exist, which was the grand counter-charm, and was eagerly sought after, because the person possessing it, was supposed to have protection against all the evils arising from spells. Various ways are mentioned by the elder writers for obtaining this stone, most of which concur in stating that it must be taken out while the animal "is yet palpitating." Among the supernatural attributes ascribed to it, is, that if swallowed, it will drive out any poisonous matter from the intestines. It was also good against storms, and as a charm against drowning. Our sailors, for a similar reason, still have a superstitious reverence for the caul which envelopes the head of a newly-born infant. An old author on the serpent tribe, says there is a precious stone in the head of a toad, and many wear it in rings, "being well persuaded that it is good against gripings, and internal pains." Another writer says, it is good for the stone in the bladder. Another, that in the presence of poison, it will become hot, and even change colour; and virtue is attributed to it against the falling sickness. There was also much dispute between these elders about how, or by what means, it is engendered. The most general way of disposing of this fictitious stone, as well as one of the safest, was by setting it in a ring; and some of those which have been preserved, when seen in a peculiar light, have a tuberculated appearance,
and are said to be of shell imported from the East; but doubtless there were a variety of impositions; and there is one regarding a green stone vomited from the mouth of a snake, even now prevalent. In the celebrated picture of the money-changers, painted sometime about the year fifteen hundred, by Quintin Matsys, a duplicate of which is at Audley End, one of the misers has a toad-stone ring on his finger, no doubt for the purpose of guarding himself against spells, and protecting his wealth from all evil influences. In this picture, too, on a stool, are several of those coin-like pieces that are now called Nuremberg tokens, which have so long puzzled numismatists, but they were probably used as counters in calculation. It was this ideal stone, to which all sorts of fancied virtues were ascribed, that the poet indicated, when he penned the beautiful lines above quoted, and various allusions are made to it by other writers of the middle ages.

The toad is said to attain extreme length of years; and in this view it may deserve a passing thought of the antiquary as well as of the naturalist. This may easily be believed, since it appears to be a rule in nature, that those species of animals which arrive slowly at maturity, enjoy the longest periods of existence; and as the toad is not adult until its fifth year, we may take it for granted that many years are allotted to it. Twenty years is no uncommon time for it to have lived in captivity; and in a state of nature probably, "barring accidents," double or three times that period would not end its term of life. I knew of one which lived in a small enclosed garden for more than thirty years; in the dormant months of winter it hid itself in some hole or secluded corner, but during the active months presented itself at intervals, sometimes daily, opposite the kitchen window, for its accustomed allowance of bread and butter. It had attained a large size, but it unfortunately became the victim of prejudice, and was killed by a new servant; I say unfortunately, for all this time it was well carrying out the test of longevity, besides being a most useful occupant of its little domain, freeing the garden of slugs, caterpillars, woodlice, and all the other pests which gardeners so much complain of; and in no

* Lyly in his "Euphues," has
  "The fowle toad hath a faire stone in his head."

And in his play of the "Fox," Ben Jonson says—
  "What, was your mountebanke their call? their whistle?
   Were you enamour'd of his copper rings,
   His saffron jewel with the toadstone in it?"
instance had it ever done the slightest harm. There can be no question of its tenacity of the vital principle in case of accident, a quality bestowed upon it to make up in some degree for its utter helplessness on land, and of its entire want of the means of defence. It has the most astonishing powers of restoration after injury, and many a poor fellow, left for dead by wanton boys, has revived, and nature has repaired the damage done it so quickly, that in a very short space of time it has to all appearance been as well as ever. Yet injury to a serious extent would seem to shorten its life, for those in confinement which have been badly wounded, though recovering with extraordinary quickness, have paid the forfeit at no great distance of time. In man, three quarters of a century is rather a common period for his dissolution. Occasionally a favoured individual seems to despise age, and Parr nearly doubled this term. This occurs also with other animals; and the cold-blooded reptiles may carry this exception even to a still greater extent. Thus Belzoni, after clearing a passage leading into an Egyptian temple that had been for ages buried in the sand, found a toad of large size in it, which he conjectured, from its having no means of egress, must have been of great age. A doubt may be hazarded whether this was either of our British species Bufo vulgaris or calamita.

The stories of toads being cut out alive from solid stone or timber must be received with great suspicion. I can readily believe that an animal of this species can live for a considerable time in a hole or cleft of a tree, its own growth, and the yearly lessening of the aperture, precluding the possibility of escape. Here rain, dew, and sap supply it with moisture, and numerous small insects may find their way in, and the creature's aptitude for catching these is almost surpassing belief. You see a fly settle in near approximation to it, you could easily have seen it fly away, but it is gone! for without the slightest movement of its body the tongue of the toad has conveyed it to its mouth with a rapidity that has eluded your vision. A builder of respectability told me, that when a boy he had helped to build a wall across a garden, and finding a large toad, made a hollow for it, and built it in, marking the outside brick with a deep cross. Years after, the wall was ordered to be pulled down, and he hastened to seek the dormitory of the imprisoned object. He found it very sluggish, and not materially altered in appearance. But as far as my knowledge is concerned, most of the experiments made to test this quality of endurance
have proved failures. One of our professors of anatomy invariably at a
year's end found his prisoner dead: his plan was to put the reptile in a
garden pot, covered with a piece of glass, and then to bury it. My friend
Mr. John Brown, of Stanway, an eminent Essex geologist, keenly alive to
those parts of natural history and archeology which in any way relate
to his peculiar study, caused several toads, covered with garden pots, to be
buried three feet deep. At the end of four years, and he conjectured
they must have died at an early period of their immolation, no part of
them could be found. One, however, he found alive, very much reduced,
its hinder parts particularly attenuated. Moisture it had from the earth,
and possibly a worm or insect may occasionally have forced itself into the
dreary habitation. Without thinking of the consequences, he removed it
from its dark chilly abode into the bright warm sunshine, the change was
too sudden, and it soon ceased to exist. Here is at least an instance of
one having lived four years in a state of incarceration, but that any one
could do so without air or moisture is more than questionable.

Before bidding adieu to the bard of Avon, let me point out another
misconception of very frequent quotation—"every dog will have its day."
Those persons who are acquainted with the early editions of Shakespeare,
put forth to the world when printers were not so erudite as they are now,
are very well aware of the erratic position of many letters as well as
sentences, and a b, d, p and q might easily have been substituted for each
other. Thus in the last word of the line quoted, the b may have become
a d; the line as it stands, when analyzed, contains no very distinct meaning.
The life of a dog is a short one, it is true; ten or twelve years generally
terminate its existence. With the writers of Shakespeare's day, "bay" and
"bark" were synonymous, and the former word was frequently in use among
the poets, and in fact is so now, being the more euphonious word of the
two. Horace Smith, in his "Zillah," has—

"* * * * Hark
How Seylla and Charybdis bark!
They bay the moon, as if they strove
To tear her from the skies above."

Byron has—

"'Tis sweet to hear the watch-dog's honest voice
Bay deep-mouth'd welcome, as we draw near home."

And in the song of the "Wolf," so admirably set to music by Shield—

"When the wolf with nightly prowl,
Bays the moon with hideous howl."
Both these last seem to have been borrowed from some older line—

"Buys deep-mouth'd thunder to the waning moon."

And from the antecedent line of Shakespeare, it seems evident what he intended—

"* * * * the cat will mew,
And every dog will have his bay."

The "bay" of the dog, is here used in contradistinction to the "mew" of the cat; thus a familiar adage has positively become established on a blunder of the printers.

The digression, or rather series of digressions, which nearly seduced me into the natural history of the toad,* leads me to a near approach to that of the serpent, with which archaeology has been largely connected from very remote to late medieval times, but this subject would require many papers and much abler hands to exemplify. In passing, however, I will give one example from the ancients of the belief in their powers of fascination, and endeavour to illustrate the cause of this belief, which, I think, can be accounted for without any great stretch of the imagination. In the interesting tessellated pavement of the temple of Fortune, found at Præneste, the depicted scenes on which are entirely Egyptian, there is a serpent in the act of charming a flight of birds; two of the flock are falling, and one

* It is well known that this animal sheds its skin periodically, previous to which time its mouth had been closed for a season, after which it becomes free; and a lady friend of mine told me that more than once she had seen a pet of hers gorge its cast-off skin; and I myself saw a very fresh looking, but inactive creature, apparently half choked by its nearly finished meal, with the exuvia of one of its legs hanging from its mouth. The dauntless and celebrated arctic voyager, Sir John Richardson, after having exhausted all his provisions, describes his breakfasting off his boots; but our innocent friend's first meal, after his long fast, is its old jacket! And this casting its slough is one link in the creation in connection with the serpent tribe. If what I have written should have the effect of causing this poor almost helpless reptile to be treated with a little consideration, and its entire harmlessness and great usefulness to be understood, I shall be amply repaid for this or any other exertion I may make in its favour. I have always endeavoured to protect it whenever I have found it. I have watched it with great interest, looked at its beautiful eyes, and noted, when purposely interrupting its passage towards a pond, how it puffs out its sides, and instinctively becomes larger, that the anticipated blow may fall with less effect upon its bones; and on its near approach to the water how quickly it becomes less, just before it quietly glides into its other element. I may state that there are two distinct species, which, until late years, have been confounded as one, and are so still, except amongst the initiated: the toad (Bufo vulgaris, Flemm.), and the natterjack or mephitic toad (Bufo calamita, Leach). In some counties of England one prevails, and in other parts of the kingdom the other numbers the most specimens. In the midland counties they appear to be about equal. The latter becomes impatient of confinement and soon sickens. By a little attention they are easily known apart; and the quiet sedate hop of the toad is readily distinguished from the run of the natterjack. You will miss the rich hazel in the eyes of the latter, they have a yellower hue, the eyelids are much more prominent, the neck is longer, and the nose more obtuse.
is already in its mouth. This reptile, in common with others, has its own peculiar instinct in procuring its food; and leaving fascination out of the question, sudden fright will often cause paralysis, even in the human species. In the lower creation two instances of it have fallen under my observation. One was, a horse running down a street, the vehicle to which it was attached came in contact with some iron railing connected with stone steps, and carried a portion away with great noise. The mistress of the house shrieked with alarm, a canary bird (*Fringilla canaria, Linn.*) in its cage fluttered its wings, and with a short cry fell dead from its perch. As it was evening, and the shutters were closed, this death was from auricular fright. The next was this; a gentleman brought from abroad a sulphur crested cockatoo (*Psittacus sulphureus, Linn.*); being found too noisy to retain, the cage with the bird in it was put upon a table for a person to look at, with a view of sale. A cat jumped suddenly up, on which the bird screamed, and instantly expired; unlike the other, in this case the fright was visual. A serpent coming suddenly upon a bird might produce the same effect. Then again, people who walk much about the fields know that many species of the feathered tribe simulate lameness, and even death, to decoy any intruder from an approach to their young; and how many youths in fancying they were going to catch a wounded partridge (*Perdix cinerea, Penn.*) have thus been seduced from its helpless progeny. A friend* seeing some of the young of the willow-wren (*Sylvia trochilus, Penn.*) just emancipated from the nest, who with their parents were perched upon a bush, and from the promise their very immature appearance gave, he attempted to catch one of these young ones with his hat, when suddenly an old one fell, as if dead, to the ground. While he was looking for this, the young birds escaped, and the old bird had taken good care to creep away in the long grass; by which species of instinctive dissimulation it saved its young one from capture. But the serpent's intuitiveness would probably, from the quickness of its movements, have made this affectionate little parent its prey; and a bird hovering over a serpent, with a view to induce it to leave the vicinity of its nest, may, in its forgetfulness of self, in solicitude for its young, or from fright, become a victim. These are some of the causes which keep up the delusion of the fascination of serpents.

Of the eminent men who have pursued archaeology and natural history

* Mr. John Young Akerman.
in conjunction, Pliny has been mentioned. Pallas, though acquiring a
first class reputation as a naturalist, did not lose sight of antiquities; and
our own Leland stands prominently forward in the cultivation of the two
pursuits, as also does the gentleman-like Pennant, and the enthusiastic
and accomplished Edward Daniel Clarke, as his travels amply testify.
Borlase, Peck, Richardson, Thoresby, Plott, and many others, might be
mentioned; and Donovan, the industrious author of "British Zoology,"
has given us "Descriptive Excursions through South Wales," with elaborate
accounts of its antiquities. Boys, the author of an admirable book,
"Collections for a History of Sandwich," has not been unmindful of its
natural history; his taste for antiquities has descended to his grandson, Mr.
W. H. Rolfe of that place, whose museum is ever open for all useful
purposes; nor must I omit that most amiable writer the Rev. Gilbert
White, whose "Natural History and Antiquities of Selbourne" have been
the delight of youth and age, and his successor at Selbourne, Professor
T. Bell, author of "British Quadrupeds," and "Reptiles," by no means
leaves antiquities unstudied. Of your own honorary members, we sometimes
find the Woodwardian Professor of Cambridge (Sedgwick) relaxing from the
weightier studies of that extensive and important branch of natural history
which is his particular walk in Science, to mingle with the antiquaries;
and another professor (Henslowe) of that university, whose knowledge
extends to all branches of natural history, we find opening barrows, and
forming a museum of antiquities. A second on your list, Mr. C. C. Babington,
having obtained a proficiency in British botany rarely surpassed, and
otherwise devoted to natural history, follows out the pursuit of archaeology
with equal ardour. In every archaeological expedition Dr. Buckland of the
sister university was always foremost, in looking well into the natural
history of the district; and that indefatigable explorer and author in the
primeval fields of antiquity, the Hon. Mr. Neville, has also made a study
of natural history. Mr. Akerman, author of several works on antiquities,
and compiler of the "Numismatic Manual," takes an enthusiastic interest
in natural history; and Mr. Yarrell, the author of a most scientific and
delightful work, "The History of British Birds," and another on "Fishes,
is carrying out the numismatic branch with avidity. The author of
"Reliquiae Isuriæ," Mr. Ecroyd Smith, is no mean botanist, and is
perfectly alive to all the works of nature; and Mr. Westwood, while
following out the arduous pursuit of entomology, has published a valuable work on antiquities. And the Saxon antiquary, Mr. Thomas Wright, another of your honorary members, has written an article on fabulous natural history, in which he states that the “Bestiaries” of the middle ages, relate that the elephant is afraid of a mouse. But this is not entirely a fable; an immense animal, belonging to that prince of showmen of wild beasts, George Wombwell, was one day drawing himself up into a corner of his den, and shrieking with affright, not only causing consternation to his visitors, but attracting the attention of his keepers, who were at a loss to conjecture what could ail him; at first it was supposed the floor of his carriage had given way, as he looked so intently to one part of it; but on removing the straw, out jumped a mouse; so terrified had the bulky and powerful animal been that it was some time before his perturbation could be allayed. The only idea the keeper had on the subject was, that the elephant feared the mouse would get into his trunk.* It would be taxing your patience, or the foregoing list might be carried to a long extent of both ancient and modern names, but still from this very incomplete catalogue you will be naturally led to the conclusion that the two pursuits are not incompatible. It is, however, that branch of natural history denominated Ethnology which is destined to cement the union more firmly.

Natural history and archaeology are blended in the name of the ancient town of Saffron Walden, and the architect who studies both will not fail to admire its light and elegant church, or to make out the saffron flower (*Crocus sativus, LINN.*) sculptured on some of the spandrils. The arms of the town are three saffron buds, surrounded by a castellated wall. The botany of one of the most accomplished antiquaries of the present day must have been floundering in the mud of the Fleet-ditch, or surely his eyes were dazzled by the flaunting show of handkerchiefs of Field-lane, when in his admirable paper on the “River Fleet”, he supposed “that its continuation, Saffron-hill, might once have been *yellow* with this flower,” for its petals are of a delicate purple, as are all the autumn-blooming varieties, and not *yellow*, as the most common of our spring crocuses is; and a field of saffron, with its crimson stiles (these latter being the only part constituting its commercial value,) must have had a very gaudy appearance.

*This animal, which had attained the age of a hundred and twenty years, has just been destroyed, from incurable infirmity in its feet.
To the traveller both sciences would be found useful and essential, for when disappointed of his hopes in one, he could generally take refuge in the other. In visiting the ivy-mantled ruin, if no historic or archaeological value attaches to it, its inhabitants the owls and the bats may interest him, the little bird that builds its nest in the corner may amuse him, and the insects lurking in their hiding places among the ivy, or humming around its blooms, may arrest a passing moment; while the wood through which he may have strolled, besides presenting many an animal, bird, insect, or flower, may shadow forth to him in its tall trunks and intermingled branches, the gothic pile and fretted aisles, while the taller trees that tower above, would suggest the spire and pinnacles. In an avenue of aged lime trees, (*Tilia Europaea*, Linn.) he would be impressed with the idea of clustered columns and tall pointed arches most completely: in fact, a gothic cathedral is nothing more than an elegant imitation of a forest scene in stone. In the capital of a column of the Corinthian order is generally seen a sculptured representation of the leaf of the *Acanthus spinosa*, a plant belonging to a natural order, the most highly developed in the vegetable kingdom, thus showing a concordance between the most beautiful in form among plants, and the most beautiful in architecture. In his travels abroad, the naturalist-antiquary might stop for a moment to survey almost in an archaeological point of view, the patriarchal olive-trees (*Olea Europaea*, Linn.) of Gethsemane, which I point out to his notice from the assumption of their great age by a French botanist, who conjectures it may be two thousand years, though he is probably mistaken. The average age of an English oak (*Quercus robur*, Linn.) is two hundred years, though, doubtless, many in favoured situations may double that period. If a transverse section could be obtained from the bole of any of these trees, the number of concentric rings would indicate its age to a certainty. But it often happens that young trees spring up, at or near the place where their predecessors stood, as in the case of Hearn's oak, in Windsor forest, which as they become old, having no medieval historian, are in after years mistaken for the original trees. And speaking of these ancient trees, the thought suggests itself to me, that in searching for more of those interesting antiquities, which your Secretary has so well elucidated, in connection with the submarine forest of Hoylake, the botanist might be equally well employed in seeking the fruit, and ascertaining the species, and the age, of the different stumps which are now studding the beach at low-water; and
even in rescuing from the mud the remains of some of those primæval insects which in days of yore inhabited that forest. And here the microscope opens a wonderful field to the inquirer, and it has been brought to the service of the antiquary in examining the moulds for Roman silver coins, chiefly of the time of Severus, found at Lingwellgate in Yorkshire, which instead of being formed of the ashes of any particular wood, plastic cement, or any other extraordinary material, as would be the case now, are simply composed of the clay of the district, the microscope having clearly tested this by showing the infusoria to be of the same species. Thus ready were the Romans in the adaptation of materials. In all their works we find striking illustrations of this, as in their mosaic floors, in the construction of which they freely used such materials as they found upon the spot, importing others that were required. Another instance is furnished by the walls of Chester. Where any of the Roman walls or foundations exist, they appear as imperishable as when first built, but the medieaval structure erected on them is crumbling to decay. On closer inspection, every Roman stone will be found to have its peculiar silver-grey lichens (Urceolaria scruposa), while those of the middle ages have a different species, which the eye of the naturalist will not be long in detecting. This has enabled our primæval antiquary, Mr. C. Roach Smith, to distinguish with accuracy the portions of the existing wall which belong to either people. The short time which I had to spend in the examination of these walls left me no time for a searching investigation into this interesting part of my subject. The Romans seem to have been quite aware of the perishable nature of the new kind of red sandstone in the immediate vicinity of Chester, and with that judgment so invariably displayed by them, they rejected it, and with their usual industry, worked a quarry of the old-red sandstone, eight miles distant. The Rev. W. H. Massie, of that city, says, "the older portion of the wall is of the peculiar strong-grained sandstone from Helsby Hill, some ten miles off." But the moderns wanted both the industry and discrimination of their predecessors, and hence the state of the medieaval part of the walls of Chester.

Another proof of the want of attention to this point in the middle ages has been suggested to me, namely, that scarcely a tombstone that has been exposed can be found two centuries old, whereas on the Roman altars and inscriptions, some of them ten times that age, the legends, where un-
mutilated by violence, retain their sharpness, and the material is still sound. The inscription at Goodwood, of the reign of Claudius, relating to the temple of Neptune and Minerva, is composed of one of the most indestructible materials of this country—the marble of Purbeck, an interesting geological production of this kingdom, now nearly exhausted. A Roman altar, of the highest interest, dedicated to the Deae Matres, discovered in pulling down a church at Winchester, and fully described in his "Collectanea Antiqua," by Mr. C. Roach Smith, is found to be of Quarr-Abbey-stone, from Binstead, in the Isle of Wight. These quarries were granted by William the First and William Rufus to the bishops of Winchester, for the building and repairing of their cathedral, and are still visible, though out of use—this stone having been superseded by that from Caen, in Normandy, and the oolite productions of our own island of Portland. The Roman walls of Colchester, though built principally with flint, and other stones of the neighbourhood, are bonded together with tile-bricks of a very superior description, as far as material is concerned, to any which the mediaeval ages have produced; but the projecting round towers occasionally exhibit pieces of scoria, which must have been introduced from some volcanic region, probably Italy, and the quern, or mill stones, discovered there, as elsewhere in deserted Roman habitations, are found to be of a deposit of lava, from a quarry near Andernach on the Rhine. The uppermost stone of a Roman-quern very much reduced by abrasion, the aperture for the stick used in turning it being worn through to the under surface, rendering it useless, was lately (1855) found at Maidstone and is now in the possession of Mr. C. Roach Smith. It is pronounced by Mr. Brayley to be trachitic lava, containing pyroxene crystals of augite; none of which substance is found in England, and but a very small portion in the north-west of Ireland; though it is abundant at Andernach, and other places on the Rhine. Nor will it lessen our astonishment of their judgment in selection when we know that the moderns have been wise enough in this instance to follow their example, as the best mill stones used in England at the present day come from that same vicinity. In the explorations of walls and ruins, in exhumations of ancient cemeteries, and the opening of barrows, amidst articles of great historic and antiquarian value, bones, horns, celts of flint, and of other materials, stones, and pieces of marble continually come to light.
Skeletons, in Saxon harrows, are sometimes surrounded with a row of flints, and next to them a row of small bones, and in one instance the body had been completely covered over with small bones, which were ascertained to be those of the water rat (*Arvicola amphibia*, DESM.), a species confined to banks of rivers and ponds, injuring the trees by gnawing off the bark for their store, and not visiting the habitations of man. The old English black rat (*Mus rattus*, LINN.) was not then known, having, centuries since, been introduced from India. And that pest, now so common, the brown or Norway rat (*Mus decumanus*, FALL.), which has exterminated the other race, being a native of Persia, had not inflicted a visitation on this kingdom previous to seventeen hundred and thirty. It seems to be a law in nature that the weaker should disappear before the stronger; thus, our partridge (*Perdix cinerea*, BRiSS.) disappears before the red legged or French partridge (*Perdix rubra*, BRiSS.) wherever it is allowed to exist. And even man is not exempt; the Red Indian completely blotted out from existence the Aztec of America, to be in his turn extirpated from the earth by the Anglo-Saxon race of mankind.

Immense numbers of the shells of one of the pests of our gardens—the common snail (*Helix aspersa*, MULL.) have been found in some of the graves above mentioned: how often do I wish they were all there! It has been said they are an article of commerce with America, where they are sent in barrels and sold as delicacies. Quantities of a species of *Nerita* have also been found in similar graves. Douglass figures shells of the genus *Cypria* in conjunction with burial places, and Mr. C. Roach Smith says specimens of the genus *Nerita* and *Buccinum*, drilled as beads for necklaces, were discovered with remains at Settle, in Yorkshire. And at Sandwich a gold coin and cowry-shell were found in an urn. In the debris from the diggings at Colchester, the geological attainments of Mr. Brown, of Stanway, have been most liberally and usefully contributed to the antiquary in that locality, and a little knowledge of natural history will always be found of essential service during these explorations, nor would it be useless in avoiding and detecting imposition. The visitor to Warwick Castle will, amongst other wonders, be indulged with the sight of the rib of the terrible duncow slain by the redoubted Guy, but his knowledge of comparative anatomy will enable him to assign it to the fossil elephant. At Chesterfield Church another rib of this monster cow, no less than seven feet long, is exhibited,
and may be identified with the jaw-bone of a small species of whale. The brown bear (Ursus arctos, LINN.) is one of our ancient indigenous animals, and infested some portions of this kingdom almost as late as the sixteenth century. The beaver (Castor Fiber, LINN.) was noticed in Wales by Giraldus de Barri, in one thousand one hundred and eighty-eight, and is known to have existed in great abundance at an early period on the banks of the river Hull, in Yorkshire, where the memory of its denizenship is still retained in the name of the town of Beverley—and Cambridgeshire has produced a skull of it in a fossil state. The wolf (Canis lupus, LINN.), now happily exterminated, continued to prowl about our homesteads and sheepfolds almost to the eighteenth century. The wild boar (Sus scrofa, LINN.) ranged the forests about London in the reign of Henry the Second, and its tusks are rather abundant in or near most Roman encampments. One found at Richborough had an ornamental piece of brass attached to it, and had probably been worn as a trophy or remembrance of some animal of extraordinary endurance in the chase, or ferocity in fight. Some legs of cocks (Gallus domesticus, BRISS.) were found at Bartlow, which might have been preserved from the latter motive. I am not aware that any of our primæval antiquaries have noticed the bones of any of the foregoing in their explorations, except those of the boar. Although the bones of the red deer (Cervus elaphus, LINN.), and the roebuck (Cervus capreolus, LINN.), are found at various Roman stations, I once saw the greater part of a skeleton of the former which the peat had preserved, taken from the bottom of a ditch which emptied itself into the river at Colchester. From these facts, a fair inference may be drawn that they were once numerous in our woods and forests. The roebuck exists still in small numbers in Dorsetshire, but the red deer has been driven to take refuge in the Highlands of Scotland, which, three hundred years ago, were inhabited by a native buffalo (Bos Taurus, LINN.) which since that time has been extinct. It may be interest-
ing to know that an antique Highland drinking horn, which was in the possession of the late Mr. Croker, was of the horn of this animal. In the sister kingdom of Ireland have been found, at various places, preserved in the peat bog of that Island, the skeletons of the Irish elk (Megacerus Hibernicus), and in one instance the bones were discovered in combination with weapons of bronze, evidencing that this noble stag, now extinct for many centuries, was coeval with man, and came by its death by his machinations. In several instances it has been found in England, and one of the localities where it has been brought to light is your forest of Hoylake. In that forest you have yet a mine of scientific wealth.

Amongst the osteological remains found in London, Colchester and Hartlip, are the skulls of an entirely extinct ox (Bos longifrons); others found at Chesterford, belong to a smaller species which may be referred to that which is now called Alderney. The bone skates of the mediæval times, in the valuable museum of Mr. C. Roach Smith, dug up in Moorfields, probably lost when that locality was a moor, covered in winter with water and frozen over, are said to be the bones of horses; but some smaller ones that I have seen, are evidently the metatarsal and metacarpal bones of the red deer. I know not what to make of the bronze cow found at Aldborough in Yorkshire, but Mr. Ecroyd Smith amongst the discoveries there, has depicted a well executed head, in bronze also, of the roe-buck, with characteristics sufficient to identify it at once. The interesting museum of Mr. Bateman, of Youlgrave, Derbyshire, contains a musical instrument, in length nine inches; it was blown from the larger end, and has four holes for the fingers, and was found with some urns, close to the Ermyn street at Lincoln, in the year eighteen hundred and twenty four. In the last age it would have been called a flute, but with us it would be a whistle. Several Roman flutes are known; they are chiefly made in short pieces, and must have been cemented together, their fabricators not having mechanical appliances to make them in one piece. I have observed part of one in that admirable museum in Colquitt street, which your
honorary curator Mr. Mayer allows so liberal a use to be made of; there is also another of the same description in the collection of the Cambridge Antiquarian Society, found by the late Mr. Tuskip, of Shefford, at Stanford, in Bedfordshire. These were played, as far as can be judged, as flutes are now, by being held from left to right, the hole by which the wind entered being upon the same plane as those which were stopped by the fingers. In the Disneyan collection at Cambridge, there is an antique statuette of a faun playing upon a flute precisely in the same way; and in the time of our Queen Elizabeth the illuminated works of the day testify that flutes, or perhaps rather fifes, were used in a similar manner, although a century and a half after, flutes of this description were unknown in this kingdom, the only one in use in Handel's day being nothing more than a monster whistle, played from the end. The instrument as at present known has since been introduced from Germany. So far the Lincoln instrument is of value to the archæologist; to the naturalist it is interesting from the circumstance of its being made of the tibia or thigh bone of a British bird, though now extinct, (as far as Britain goes,) the crane (Grus cinerea, Beck.), which in the time of Ray the naturalist, who wrote in 1611, was plentiful throughout England. Civilization has completely extirpated it, and the last straggling specimens upon record were taken in 1831. This part of the subject might be prolonged to an indefinite length, but enough has been said for my purpose.

But little I fear can be brought to light, of the knowledge of natural history during the dark ages which intervened between the exodus of the Romans, anno domini 428, and the advent of William the first in the year 1066, yet it may be interesting to know that our Saxon forefathers were not unmindful of it. A sculptured tomb-stone forming part of the foundations of the old Church of St. Dennis, at York, of this latter period, exhibited some rude representations of animals and men. One of these is clearly Romulus and Remus receiving nutriment from the dugs of a wolf, and in Bakewell church-yard, which has been elucidated in Mr. Bateman's "Vestiges," another of these roof-shaped coffin-lids or tombs has been discovered, displaying a bull and an elephant fighting, and at the end of this same tomb are two animals more like Llamas, (Llama pacos, Less.), than anything else, but it cannot be supposed that this South-American quadruped could be known in this hemisphere. They have been called Griffins,
but were probably intended for Giraffes, (*Camelopardalis Giraffa*, Gmel.), and it is a curious matter for speculation to reflect on, whether our Pagan ancestors had really any knowledge of the elephant or giraffe, or whether they yielded to the force of imitation and copied from existing Roman works, as both these animals were known to that people through their African colonies. In the case of the York tomb, the latter seems to be a certain conclusion to come to, the wolf with Romulus and Remus having with great probability, been copied from the coin which was, and is so plentiful from Constantine downwards. In the rude composition of the Bakewell elephant and bull-fight tomb, there is so much of the same character as one of the subjects on a tesselated-floor, of the temple of Diana discovered at Rome, that I have come to the same conclusion; and Giraffes are depicted on the Roman mosaic floor at Praeneste, before alluded to. The round form of the upper part of the head of the elephant in the floor of the temple of Diana at Rome, and its very large ears, are characteristics sufficient to indicate that it is the African (*Elephas Africana*, Bleum.) not the Asiatic or Indian (*Elephas Indicus*, Cuv.) elephant to which latter class all the animals now introduced belong. No living African elephant has ever been known in Europe, and the only mounted skeleton and skin, is in the museum of Saffron Walden. The African are said to be more intractable, yet it is nearly certain all the elephants used by the Romans belonged to this species.
The antiquary in visiting those very interesting relics which have escaped the ravages of time and spoliation, the tessellated pavements of the Romans may bring his natural history into play in various ways. At Woodchester, Frampton, Cirencester, and other places, the animals are depicted with tolerable accuracy, and those apartments which are called rooms of the seasons, from the emblematical busts at the four corners of the floor, will not fail to attract attention, each bust displaying its peculiar attribute; Spring, with its sprig of flowers in the bud, and at Cirencester, a swallow, the harbinger of spring, sitting upon its shoulder; then Summer, with its full blown flowers; and Autumn, with its fruit and ripened ears of corn; and lastly comes Winter, with its hood and leafless branch. On the floor of Præneste before alluded to, the hippopotamus, rhinocerous, giraffe, crocodile, and many others, have character enough about them to be assigned to their proper places.

Understanding that there was a Roman villa preserved at Northleigh in Oxfordshire, I was induced to visit that locality, expecting to see it carefully preserved, and was rather disappointed, that with the exception of one room, which had been covered in, it is in so ruinous a condition. Still it was highly worthy of a visit, and would well repay the careful attention of the antiquary. It stands in a delightful valley, and the day of visiting was fine, and all was gay with the flora of the country:

"Ye field flowers, the gardens eclipse you 'tis true,
Yet, wildlings of nature, I dote upon you:"

and ample amusement presented itself. I found, to my surprise, crawling about the ruins in tolerable abundance, the large white snail (*Helix pomatia*, LINN.), the cottager who lives on the spot told me they were very destructive to his garden, often clearing off his crop of young vegetables, but were never found half a mile distant from the villa. There they were confined entirely to this warm secluded valley. There is a colony of them at Newton, in Cambridgeshire, though history is silent as to this ever having been a station of that people, or that a Roman-road ever ran near. The finding of their coins however, and the remains of a considerable fosse, sufficiently indicate that it was once in their occupation. My friend, Mr. R. Headley, tells me that he has transferred many of these snails to his garden at Stapleford, a most salubrious spot, but has failed to perpetuate them, and also to a warm situation at Babraham, with a like result. This helix is said to be found in some of our southern
counties, and I once picked up some dead shells of this species on one of the Sussex downs, not very far from Bignor, where several of the beautiful mosaic pavements still remain, though now threatened with destruction. It is said also to be found near some other Roman stations in England, and Mr. C. Roach Smith tells me he has a shell of one found with Roman remains. They were undoubtedly introduced from Italy by the Romans during their residence in this country, and are as we see still found lingering in the localities which were occupied by that people. They were fattened by them in pits as luxuries for the table, from which circumstance they were named by Dr. Leach 'pomatia antiquorum,' and by De Costa 'cochlea pomatia,' from their being picked from their shells by an implement called cochlea; and we learn that they were served up at a feast of Nero's, first fried and then grilled on silver. Nine of these animals I transferred alive to my plant box, and transported them to the northern corner of Essex, deposited them in a well walled-in garden of a friend, who was nothing loth, in a warm situation. There their habits were well watched, they deposited their eggs almost as soon as they arrived, but no young could ever be discovered, and they lingered until the fourth year, when the last of them died; thus proving their incapacity to increase, or to exist for any length of time, in higher latitudes or an unpropitious spot, and proving also the wisdom of the Romans in the selection of the sites for their residences. Dr. Lister, an able antiquary as well as naturalist, who wrote in sixteen hundred and seventy eight, says they were eaten in this kingdom in his day, boiled in spring water, and served with oil, salt, and pepper, and made a dainty dish; and to such a dish as this, in his "Every man in his own humour," Ben Jonson evidently alludes in the lines,

"neither have I
dress'd snails or mushrooms curiously before you."

I fear it would be too dainty a dish for our stomachs now, though I believe in the northern parts of this kingdom snail feasts are still held once a year.

A small bronze branch or sprig, of the Roman period, in the interesting collection of national antiquities belonging to Mr. C. Roach Smith, though rude, has characteristics enough about it to determine the genus to which it belongs. The cones upon it, their shape, the fascicolated leaves (in
bundles), at once indicate that it was intended to represent a branch of fir. Its owner says, it may probably have been an accessory to a statuette. The fir-tree or pine was sacred to Cybele and Pan among the Romans, as the cone was, in some not very proper way to Venus among the Assyrians. The cones were also sacrificed to Esculapius, being considered by the Romans as a remedy for a cough, and were thought excellent against asthma; as they were also to Bacchus, from their being thrown into their vats to give pungency to their wines. The astringent flavour thus given was agreeable to their palates; and the custom is practised to this day in Italy. It is well known that the beverage called spruce-beer now in Britain, is flavoured with the twigs and cones of the spruce-fir, (Pinus excelsa, Wall.) The thyrsus of Bacchus, too, is generally terminated by a pine-cone. It is not unlikely, therefore, that this pine-sprig may have once occupied the hand, or otherwise formed an adjunct to this latter deity. The kernels of the stone pine (Pinus pinea, Link.), a species very common in Italy, are soft and of an agreeable flavour, and are used at the present day as a dessert; they have been found in the pantries and amongst the domestic stores at Herculaneum and Pompeii.

The Egyptian antiquary may admire the graceful and correct drawing of the Ibis (Ibis religiosa) on the monuments and tombs of that ancient people, and meditate over the species of plant that produced the papyrus, and look with curious eye on the beetle (Scarabeus sacer) which is so frequently mixed up with their worship, a species very numerous in Egypt, and probably made an object of worship from excessive industry, and the great
care it takes of its young; as also those other species of beetle, and their larvæ which have been found in the heads of mummies, and from their number they produce quite a field for the entomologist which forms a most interesting and puzzling inquiry for the student in that science. As many as half a score species of beetles and their larvæ, and pupæ of dipterous (two-winged) insects have been discovered at different times in the heads of mummies. Nearly three hundred specimens of the *Dermestes pollinclus* of Hope were found in one skull; but few of them can be identified with species now living. The different stages of development in which these insects are found, prove either that the system pursued was a very slow one, or that the body was much neglected before it underwent the process of embalming, as after the asphaltum was once injected, and the air excluded by bitumen and bandages, it would be next to impossible for animal life to exist. The naturalist antiquary may further amuse himself with mummies of the cat, crocodile, as well as those of his own species, in their gorgeous cases, which have been torn from their magnificent tombs. “Man is a noble animal; glorious in ashes, pompous in the grave.” Or he may trouble himself on the vexed question as to whether a grain of wheat or a tulip-root will retain its vitality two or three thousand years; and he may learn from their bread which has come down to us, that it was from a coarse wheat, coarsely ground, and was made into loaves, without any of the bran being extracted. The Ethnologist who seems destined to draw in closer bonds the two studies, can always find an abundant field for the pursuit and exercise of both. Lord Carlisle in his recent work, supplies me with a case in point, he says, the figures of the Dacians on Trajan’s pillar, are said to resemble the modern Wallachians, in feature, person, and costume, and with the help of a little Latin, and a little practice, their language might soon be made out, and in one of the narrow gorges of the Danube just below Moldova, the inscription cut in the rock to commemorate Trajan’s Dacian campaign is still legible. If he should stray so far while studying the natural characteristics of the Wallachians, his zeal will lead him to survey the wall thrown by that emperor across the isthmus, and at the same time look after the fauna and flora of that region, he will be rendering an important service both to archæology and natural-history. Without doubt Liverpool has several men conversant with both, as well as many eminent men of other sciences who reflect great credit upon their
town, and doubtless the Historic Society will bring out much latent talent. To them these hints will be quite unnecessary. You have one of by-gone days, your poet-historian, Roscoe, to whom all honour is due, and you may be justly proud of another native of Liverpool, Swainson, who although now inhabiting a distant region, stands very prominently forward as a most accomplished naturalist and author.

I will now conclude with a verse of Campbell's, on the wild flowers, which beautifully shadows forth that combination of sciences for which I am contending, and had I thought of it sooner it might have served me for a motto:—

"Not a pastoral song has a pleasanter tune
Than ye speak to my heart, little wildlings of June,
Of old ruin'd castles you tell—
Where I thought it delightful your beauties to find
When the magic of nature just breath'd on the mind
And your blossoms were part of her spell."

ON THE RESULTS OF THE SELF-REGISTERING TIDE GAUGE.

By Lieutenant W. Lord, R.N.

(Read 26th April, 1855.)

It is not generally known that Liverpool, notwithstanding its importance, has possessed a self-registering tide gauge for little more than twelve months, while other ports of far inferior importance have been able to boast its possession for many years. There are two of these connected with what is officially termed "the port of Liverpool," both of which were constructed by the dock surveyor in the close of the year 1853. One is at Hilbre Island, the eastern entrance of the river Dee, and the other at St. George's Dock, Liverpool. They were intended to commence operations on the first of January, 1854, but practically it was about the 15th of the month. The machinery, which is by Newman, of Regent street, London, consists of a cylinder or "drum" connected with a clock. The cylinder carries round with it in its revolutions a prepared sheet of paper, on which hours are marked in one direction and feet in the direction at right angles to it in dark lines. Each of these is subdivided by fainter lines into more minute spaces, representing respectively quarters of hours and three-inch spaces. The large landing stage at the George's pier forms the float,