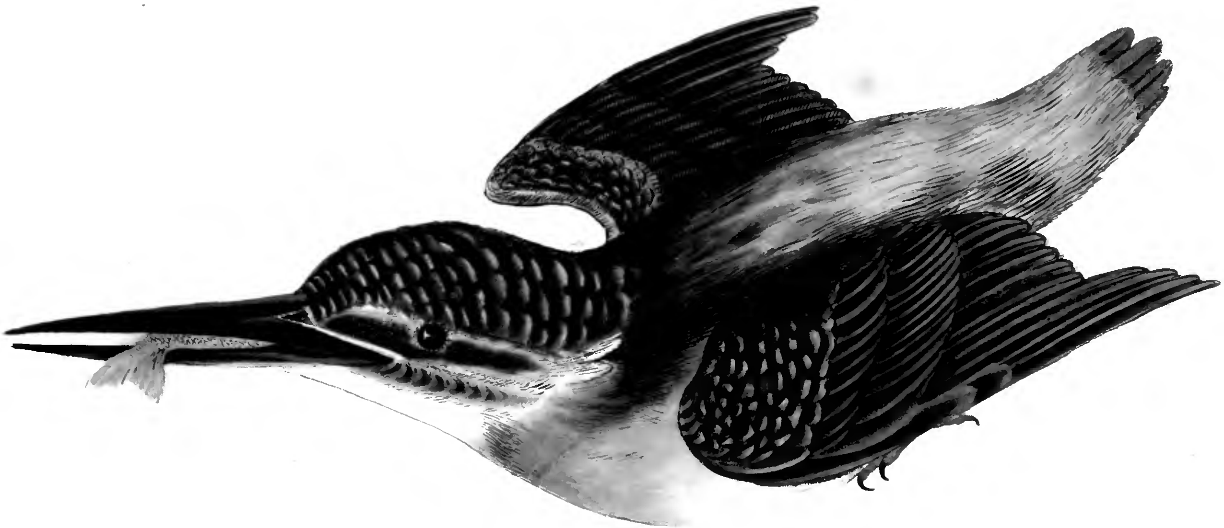
S. 470.



The Common King Fisher (Alcedo Ispida)

THE

NATURALIST;

ILLUSTRATIVE OF THE

ANIMAL, VEGETABLE, AND MINERAL KINGDOMS.

WITH HIGHLY-FINISHED COLOURED ENGRAVINGS AND WOOD CUTS.

CONDUCTED BY

B. MAUND, F.L.S., AND W. HOLL, F.G.S.

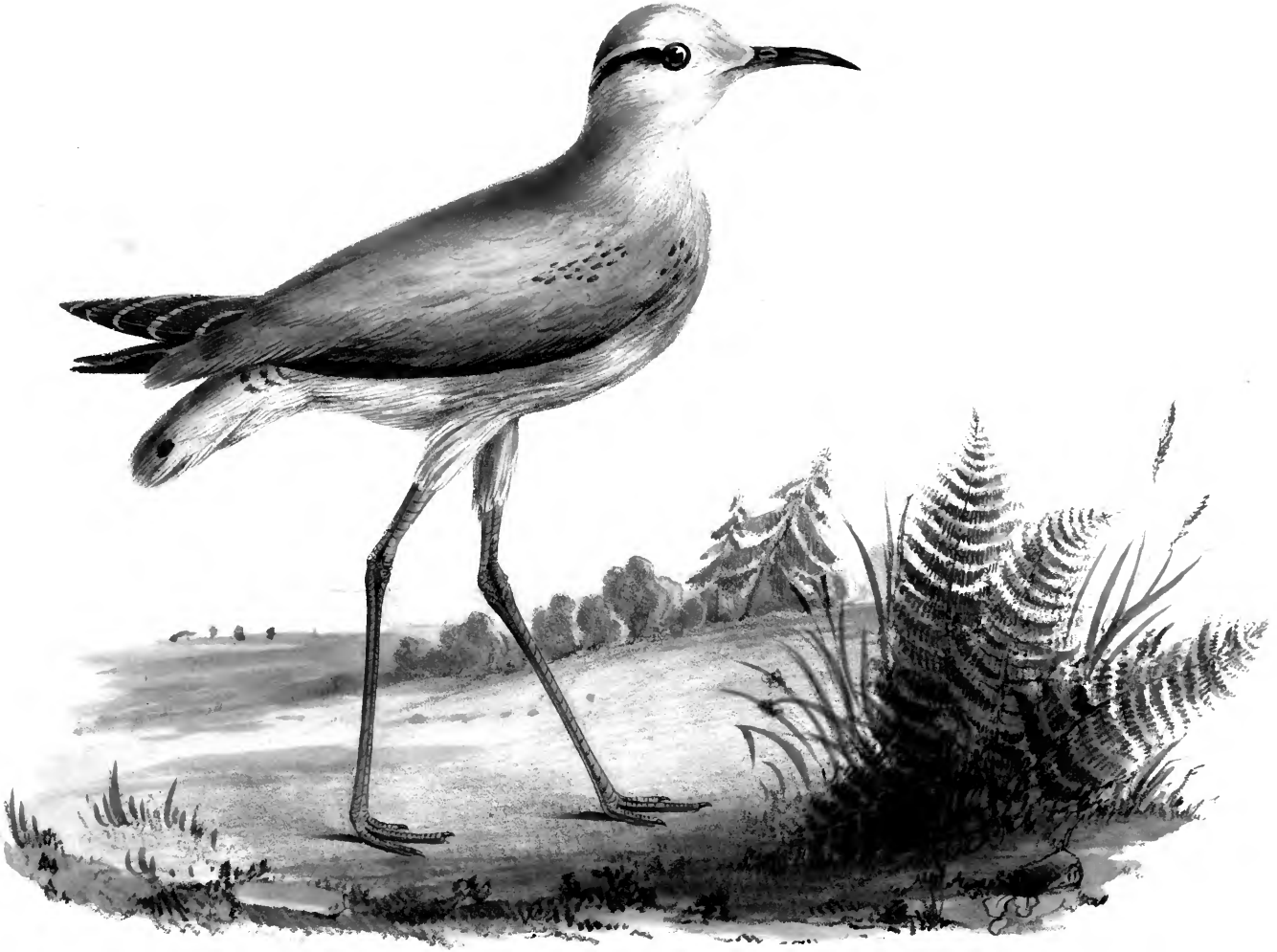
VOL. I.

LONDON:

R. GROOMBRIDGE, PATERNOSTER ROW.

M.DCCC.XXXVII.


BRITISH MUSEUM



THE NATURALIST.

CURSORIUS ISABELLINUS.

ORDER.—ECHASSIERS. *FAMILY.*—PRESSIROSTRES.

THE SWIFTFOOT.

By Shirley Palmer, M. D.

With the view rather of eliciting and collecting, than of communicating, information on divers obscure parts of Zoology, I propose to give occasionally, in *The Naturalist*, a sketch of one of the rarer or more curiously constructed animals. My delineations will be taken from the best living or the most perfectly preserved specimens to which I can obtain access. I shall describe, as minutely and correctly as possible, the external characters of the subject of the sketch; and any peculiarities of internal structure, or of economy, which it may be known to exhibit: and most especially shall I feel obliged by the communication of any authentic facts respecting the anatomy, physiology, or habits of such animal, which the experienced observer may be enabled, and have the kindness, to supply. Facts,—not opinions or hypotheses, however novel or specious,—are the only contributions which I crave, or covet, on these subjects.

The description of the specific characters and habits of the animal will be followed up, if not preceded, by a sketch of the characters of that genus to which, in my opinion, it has been most correctly referred; by an enumeration of its synonyms in the leading languages of Europe; and a reference to the most accurate delineations, iconographical or literary, of the animal in question, which I have hitherto seen.

For the subject of my *First Sketch*, I have selected, the Cream-coloured Swiftfoot, *Cursorius Isabellinus*,—a bird belonging to the Order, *Echassiers*, Family, *Pressirostres*, of Cuvier; and to the *Grallatores*, *Charadriadæ*, of modern British Ornithologists.

This elegant bird,—le Coure-vite Isabelle, of Temminck,—and Corrione biondo, of Italian writers, was arranged, by Gmelin, in the Plover genus, under the title of *Charadrius Gallicus;* and is briefly noticed, but not figured, by Bewick, in his last edition of the *History of British Birds*, as the Cream-coloured Plover. It was first separated from that genus by Latham, and taken as the type of a new genus, *Cursorius;* of which the following are the distinguishing characters: Bill shorter than the head; depressed at the base; slightly arched and curved, and pointed, at the tip. Nostrils, oval, basal, lateral, and surmounted by a slightly protuberant membrane. Legs long, slender, and naked to some distance above the tarso-tibial joint. Toes three, short; all directed forwards, and united by membrane at their base: interior toe much shorter than the middle toe. Nails small; that of the middle toe broad, and pectinated on its inner margin. Naked portion of the tibia, front of the tarsus, and upper surface of the toes scutellated. Wings of mean length: first quill-feather almost as long as the second, which is longest.

The following is a correct description of a finely-preserved specimen of the adult Cream-coloured Swiftfoot, in the Birmingham Museum of Natural History:

Bill black, nearly four-fifths of an inch long. Forehead and crown of the head, pale buff-orange; changing, on the hind head, into ash- or smoke-grey. (The irides, according to Selby, are pale yellowish-grey). A white streak extending from above the middle of the eye, pointed anteriorly and growing broader as it runs backward, to unite with its fellow at the occiput. Beneath, and in contact with this, a black streak of nearly uniform width, commencing at the posterior part of the eye, and extending to meet its fellow, by an attenuated line on the posterior margin of the white band on the occiput. The occipital angle of the white streak filled up, and bordered to a short distance, by an irregularly- but somewhat crescent-shaped patch of black. Nape of the neck bright buff-orange. Whole upper parts of the body sienna-yellow, with an irregularly distributed tinge of ash-grey. Chin, throat, neck, and inferior parts, pale yellowish-white. Quill-feathers deep-brown, bordered at the extremity with buff, and reaching to the end of the tail. Tail slightly rounded, buff-orange: tail-feathers exhibiting, near the tip, a dark-brown patch much more distinctly visible on the inferior than the superior surface. Tail-coverts, above and below, light-grey. Tibiæ invested, half way down, with grey feathers. Tarsi pale buff-orange. Toes more dusky. Claws brown.

Temminck describes "the young of the year," as exhibiting, on the superior parts, a much clearer yellow colour (isabelle beaucoup plus clair) than the adult bird; varied, on the scapulars and wing-coverts, by numerous zigzag marks of a deeper tint. The double black streak,—or rather, as I have more correctly described it, the ordinarily black streak and crescent,—is but faintly marked in bright-brown. Such, at least, are the characters of a young Swiftfoot preserved in the cabinet of Natural History, at Darmstadt.

The Cream-coloured Swiftfoot is a native of Africa, especially Abyssinia; and an occasional visitant only of the southern provinces of Europe. Three instances of its capture in our own island have only yet been recorded. The first specimen was shot in Kent, and sent to Dr. Latham: the second, killed in Wales, found its way into the collection of the late Professor Sibthorpe, of Oxford: the third and last, discovered at Charnwood Forest, Leicestershire, is in the possession of the Rev. Thomas Gisborne, of Yoxall Lodge; a man equally distinguished by his eloquence as a Christian minister, and by his talents as a naturalist and a poet.

Of the food, habits, or nidification of the Swiftfoot, little is, at present, known. The individual, shot in Kent, was observed to run with incredible swiftness, and occasionally pick up something from the earth. It suffered itself to be twice shot at; and could with difficulty be made to take wing. Its note was unlike that of any known bird.

For figures and descriptions of the Cream-coloured Courser, see Temminck, *Manuel d'Ornithologie*, vol. ii., p. 513; Weber, *Atlas des Oiseaux d'Europe*, Liv. 26, pl. 4; Selby, *Illustrations of British Ornithology*, Part ii., pl. 33, and vol. ii., p. 217; and Jenyns, *Manual of British Vertebrate Animals*, p. 176.

Two other species of *Cursorius* are, "to complete the monography of this little genus," enumerated, and briefly described, by Temminck. The first, *C. Asiaticus*,—Courte-vite de Coromandel,—inhabits Africa and India; and is distinguished by the following specific characters: Vertex ruddy; neck and breast chestnut-red; nucha, wings, and tail, brown: higher parts of the abdomen black; lower parts, rump, wing-coverts, and extremities of the tail-feathers, white. Beak black; legs yellowish. Length eight inches. The last, *C. bicinctus*,—Courte-vite à double collier,—found in the interior of Africa, by Le Vaillant, is characterized by the existence, as the specific designation indicates, of a *double* black *collar* around the neck. It is ten inches long; inhabits sterile lands at a distance from water; and runs with amazing swiftness.

From the structure of the beak and foot, and the fleetness in running, exhibited by the three known species of Swiftfoot, and probably also from the sandy and sterile districts selected for their habitation, Temminck was led to regard them as nearly allied to the smaller exotic species of the Bustard genus. In accordance with these views, the *Cursorius* is made immediately to follow the *Otis* genus, in Temminck's valuable work, and in the first edition of Selby's *Illustrations*. On deliberate examination, however, the Swiftfoots have been found more closely to resemble, in their external characters, the Plovers than the Bustards: and *Cursorius* has consequently been arranged, by later ornithologists, and by Selby, in his second edition, as a genus belonging to the *Charadriadæ*, or Plover family. In general form and character at least, the subject of my present sketch exhibits a more striking resemblance to the *Himantopus melanopterus*, or Black-winged Stilt, than to any other bird with which I am acquainted.

STUDY OF NATURE.

No. I.

Reciprocal influence of the Natural Sciences.

By Robert Mudie.

Though, in the professional part of Natural History, it is necessary, for the advancement of the science, that there should be a division of labour, something analogous to that which exists among the professors of the arts, whether inventive or handicraft; and though in the one, the other, and every department of each, this division of labour, whether more of the head or of the hand, is the only means by which truth in principle, and dexterity in practice, can be arrived at; yet, in that study and knowledge of the productions of Nature, which forms so essential and so valuable a part of general education, the mode of procedure should be very different. In this, the great danger, and it is great in proportion to the talent and zeal of the party, is, that some single department shall entice the mind away from that general attention to the whole, which is requisite not only to the pleasure and profit of a well-cultivated mind, in the business and enjoyment of life, and the furtherance of the general weal of society, but also to the proper understanding and successful pursuit of the one branch, although that branch is ultimately to be studied professionally. Thus, even he who is ultimately to be an artist in the investigation of Nature, must at first be a general student, in the same manner as he who wants to be successful in any pursuit of life must first be a general scholar, or receive a good education, in order to enable him to grapple with any difficulty that may arise.

It is true that there stand upon the record, among those who have shone the brightest in most departments of human knowledge, and in every branch of human pursuit, many who appear to have stormed the citadel of knowledge and the temple of art, without apparent previous education, and with the strength of their own minds alone. But granting—which not one of themselves would have granted—that such individuals possessed this innate or instinctive method of arriving at the high places of the intellectual world, others must not deceive themselves by such examples. This original genius, even were it as real as it is imaginary, is but as the one great prize in a lottery of ten thousand blanks; and thus, though many might expect it, only one could get it, and all the rest would be losers. But in truth there is no such original genius. Every step that any human being can take in knowledge, must be a step in reasoning; and if the foot is but once let fall anywhere else than on the firm ground of well-sifted and thoroughly-established experience, down he goes in the quagmire of error and absurdity; and the labour

which it costs him to regain his footing—if, indeed, he shall ever regain it at all—would, with proper heed to his steps, have carried him far onward upon his journey.

Besides, those "stars" of genius follow the law of all other stars, by being conspicuous only in the dark, and more conspicuous the more profound the obscurity is, and the more vacant the space athwart which they are seen. In the mighty darkness of those ages, during which the combined mischief of reckless war, and senseless superstition, had well-nigh banished science from the earth, a single scintillation, and that too of some false light—of some *ignis fatuus* of the polluted air—was sufficient to constitute a star of the first magnitude, after which the benighted children of men wondered and worshipped; and this they were prone to endow with "airs from heaven" or "blasts from hell," upon as slender grounds as those which called forth their wonder and their worship. But as the dawn of true knowledge broke, and the sun of science neared the horizon, the stars in that part waxed dim and disappeared; and when this glorious morning to the human mind had so far advanced as to shew, as it were, to the great body of the people upon the earth the objects immediately around them, in their true colours, so that each man might observe with his own senses, and judge with his own understanding, those stars of the darkness of intellectual night vanished away, as is the case with their namesakes of the natural sky.

We do not say that the full light of the sun of knowledge has yet broken upon even the most lofty pinnacles of human nature; but we do say that the morning dawn is both broad and glorious; so that any one who has eyes to see, and will use them, may fully understand everything which comes within the range of his observation, and within the legitimate pale of human philosophy. And it is precisely because such is the case—because the light of science is general, and sets off the qualities and the nature of things by their coincidencies and their contrasts, it has become so necessary thoroughly to understand the general nature of this light, before we proceed to the details of those subjects which it reveals to us.

The illustrations which we may draw from this analogy of the light of Nature, and of the light of Science, especially of the science of Nature, are very numerous, and they are equally apt and striking. It is the light itself which reveals to us the forms of things, and which paints them with all their varied colours. In the blackness of darkness, the most lovely flower, or the richest parterre, is a mere blank; and if we examine objects by means of a decomposed light, or through a tainted or coloured medium, the false colour of the light, or the taint of the medium, disguises all that we see; just as looking through a red glass makes the whole landscape red; or as the murky air, by turning aside all the more refrangible colours of the solar beam, makes the cloud, and even the sun itself, seem murky. Those matters were not understood until men knew how to divide the white light of the sun into its component shades. But when once this was

accomplished, the mine of knowledge therein contained was so far from being exhausted, that it was merely opened; and when chemical analysis came to be united with this optical, or mechanical, resolution of the sun-beam into its colours, it was soon found that there were principles there of which the colours, considered merely as such, had given no indication. The heat, found most intense without the red extremity of the spectrum, and fading away as the other extremity is approached, was one wonderful step in discovery; because it shewed that, besides the infinite variety of colouring influence in the solar beam, there is an infinite variety of another influence, following a different law, and not cognizable by our organs of sight. A further step was the power of oxidation at one extremity of the spectrum, and the power of deoxidation at the other, which are not discernible to the eye like the colours, neither are they palpable to the feeling, or to the thermometer, like the variations of heat.

This is not the ultimate boundary to which judicious analysis, proceeding cautiously by steps of experience, has already arrived on this most beautiful and truly wonderful subject; for there is a sort of glimmering forecast or belief that all those singular effects of the different extremities of the spectrum which are gradual from the one extremity to the other, are modifications of two antagonist powers, as it were, upon which every action of Nature depends, or rather in which every action of Nature consists. That there is a close connection, and, indeed, an absolute identity, with the action of heat, we need not say, for it is felt. On such subjects it requires great labour, and still greater care and skill, to arrive at any thing like even mental demonstration; but the probability is that there is a similar identity with those actions which we call electricity, and galvanism, and magnetism, which seem, in truth, to be nothing else than modifications of one general species of action; for when brought to a certain degree of intensity, which has been determined by experiment, their effects are the same; and identity of effect is the only means that we have of believing in identity of cause. Nor is this all; for what we call the principle of growth in vegetables, and the principle of life in animals, both of which are merely actions, not substances, and actions differently modified under different circumstances, we can still trace a striking similarity. Nay, we may almost venture upon one step farther, which would join the heavens and the earth together in one mighty problem, and furnish us with an instrument of universal knowledge, in so far as the material creation and its phenomena are concerned. Between those more stubborn energies of the solar beam, which resist most powerfully the refractive influence of the prism, and that gravitating influence which retains the planets in their orbits, there is a most singular, though, in the present state of knowledge, a most mysterious, resemblance,—they are both stubborn to the line which joins body and body. On the other hand, there is a corresponding resemblance between the more yielding or refractive energies, and that orbital force which balances the central one, and sustains the planet in its orbit. It is

true that we must speak with great caution of matters so refined as these are, and so little within the limits of our common observation; but still so many of them are clearly established, and they point so naturally to the establishment of the others, that it is desirable to keep the spirit of inquiry awake, and ready to avail itself of every means of additional knowledge.

Some may ask, what all this has to do with the study of the Natural Sciences? but such a question can be put only by those who have confined themselves to one department, and are, by necessary consequence, ignorant of the general bearings even of that department in its relations to, and its influence upon, the rest of nature. Let any one cast a glance of knowledge over the globe which we inhabit, and mark the various productions of its different hemispheres, its different latitudes, its different elevations, its different surfaces and soils, and its different alternations of land and of water; and he will not fail to see that some principle which will meet all those differences is absolutely necessary, if his contemplation is to do anything else than to torment him with the sting of his own ignorance. Why grows the pine in such countless millions in the higher latitudes of the northern hemisphere; while in those of the south there are no corresponding trees, except a few clusters of araucarias? Why does the fern stand, in certain southern forests, as a tall and perennial ornament, while our plants of the same natural family die down to the earth every season? Why does the palm rear its majestic stem and expand its graceful crown of leaves in every tropical country round the earth's girdle, and constitute there the most valuable tree, both for food and for shelter, to man; while so high as the middle latitudes of the quadrants, not a single specimen, planted by Nature, is to be found?

Such are one or two, out of countless thousands of questions, which stand at the very portal of the temple of Nature, loudly demanding each its answer before the student can profitably enter. We might extend them to every department of both kingdoms of active nature; and as the members of these are composed of the same matter as that which we call the inactive kingdom, it also must be included. All this, too, is confined to the present moment; but when once a man is imbued with a love of Nature, he cannot resist looking back at the record. Nor will he fail to ask himself such questions as the following: why are our tree fern, our elephant, our hippopotamus, and countless others, to be found only buried in the earth; while other regions in the world have theirs still growing or alive on its surface? We shall return to the subject.

OBSERVATIONS ON THE IMPORTANCE OF THE STUDY OF COMPARATIVE ANATOMY,

WITH A TRANSLATION OF BLUMENBACH'S CHAPTER ON THE STRUCTURE OF THE BONES.

HUMAN Anatomy and Physiology constitute the great foundation of all medical science. A correct acquaintance with the structure and functions of the lower animals is not less essential to the physiologist and the student of Zoology than to the medical philosopher. No one can acquire a profound insight into the functions of the human organs, unless he have borrowed from Comparative Anatomy the clear and powerful light which that interesting science can alone supply. Structure, again, is the broad and solid basis upon which all consistent and philosophical arrangements of the animal kingdom must ultimately repose. Had the late Dr. Haighton, of London, wisely condescended to examine, previously to the promulgation of his views, the relative situation of the spleen in some of the inferior animals, we should never have been favoured with his specious but ephemeral theory of the physiology of that organ in the human body. If the great Linnæus had been as sound a comparative anatomist, as he has shewn himself an accurate observer of the exterior forms of natural objects, the lobster could never have preposterously figured, in his System, among apterous insects. Nor by any zoologist, even slightly cognizant of the anatomy and physiological peculiarities of the *Cetacea*, or Whale tribe, could these singularly constructed animals have been placed, or retained, as by the superficial Pennant, in the class of Fishes.

The study of the animal kingdom, although not so obviously and directly useful, is almost as interesting to the man of business, and the student of the different sciences, as to the medical practitioner. To all, it offers an occupation for the hour of leisure or retirement, not less salutary than delightful. The individual, upon whose habits of order, precision of thought, and accuracy of discrimination, success or failure in the paths of commerce or agriculture must mainly depend, will be gratefully surprized at the increased facilities and power which he cannot fail to acquire, in the performance of these intellectual operations, from the habit of observing, and arranging in his mind, the varied facts and phenomena which the field of animated nature is incessantly presenting to his view. And the agriculturist, by an acquaintance with the principles of Comparative Anatomy and Physiology, will be best enabled to comprehend the nature and treatment of the diseases of those domestic animals in the well-being of which he is so deeply interested; as, by an insight into the economy and transformations of the insect tribes, he can alone be prepared to effectually remedy, or avert, their frequently ruinous depredations on the produce of his fields.

To the man of loftier intellect or aspirations, who has fortunately learned to gaze upon creation with the eye of the naturalist and philosopher, rather than of the poet, an examination of the structure and economy of the animal kingdom will disclose elevating and comprehensive views, and supply facts and illustrations; which, whatever be the path of science or literature he is destined to tread, may incessantly be turned to admirable account in his peculiar calling: and, as Cuvier has beautifully observed, the peaceful pursuits of Zoology will serve to tranquillize and sustain the agitated and the weary spirit amidst all the anxieties and disappointments, the petty jealousies and detractions, with which those paths are so sadly and so painfully infested.

The application of the study of Zoology, as of Natural History in general, to the science of Medicine, is not less evident in other respects, than in its more immediate connections with the Anatomy and Physiology of the human body. From the animal and vegetable, the mineral and gaseous kingdoms, the physician and surgeon derive all the boasted resources of their beneficent art: and ought not the workman to cultivate a familiarity the most intimate with the structure and composition, the properties and arrangement, of those instruments which he is incessantly called upon to employ? In the character and tendency of studies like these, as in the intellectual discipline which they necessarily impose, there are, also, an especial fitness, and an influence, calculated most powerfully to recommend them to the notice of medical men. For he, whose organs of observation have been sedulously trained to the accurate discrimination of the minuter differences whereby the various species of animal, plant, or mineral, are respectively characterized, will, doubtless, in general, more readily and distinctly appreciate, than the man of untutored eye, the slighter diversities, the more delicate and evanescent forms and phenomena, exhibited by disease. It may even be questioned whether science and humanity have not been principally indebted to the habits of close and patient observation acquired by Dr. Jenner, in his pursuits as a naturalist, for the splendid discovery which has immortalized his own name, and thrown an additional and enduring lustre around the scientific reputation of his country.

The mind of the medical practitioner, moreover, if, in the hour of retirement from the active duties of his profession, it be not occupied by these elevating and congenial subjects, will too frequently contract habits, or fly for recreation to amusements deeply injurious or destructive to that calm, contemplative, and philosophic spirit, which he will best consult his interests and reputation by cultivating or acquiring; and utterly inconsistent with the comprehensive attainments and intelligence, the purity and decorum, the lofty elevation of character and of feeling, by which the votary of medical science should invariably be distinguished.

Deeply impressed with a conviction of the utility of these studies, and the beneficent influence which they are calculated to exert upon the public mind, we have

lost no opportunity which presented itself, of inciting those around us, and more especially the younger members of the medical profession, to the prosecution of a path of inquiry from which we have, ourselves, derived such pure and delightful recreation,—so many and such solid advantages. In this spirit, we, nine years ago, contemplated a translation, from the German, of the last edition of Blumenbach's celebrated *Manual of Comparative Anatomy*. Subsequently to 1807, when Mr. Lawrence's masterly translation of that work was first published, Zootomy had made a rapid stride in this country, and, more particularly, on the continent; and one or two other editions of Blumenbach's *Manual* had seen the light. On receiving information, however, from Mr. Coulson, that he was actually engaged upon the work, we, without hesitation, abandoned the project. His translation, or rather revised edition of Mr. Lawrence's translation, soon afterwards appeared; but we candidly avow that the work, in its style of execution, falls very far short of the expectations which, from our knowledge of the talents, industry, and attainments of Mr. Coulson, we had been led to indulge. Several inaccuracies which had escaped the vigilant eye of Mr. Lawrence, have been suffered to pass without correction. Various errors, of which that distinguished writer never could have been guilty, disfigure the interpolations of Mr. Coulson; and divers passages, introduced by the German Professor into the last edition, have been doomed to inexplicable neglect. Still worse, the notes of Blumenbach and Lawrence have been frequently incorporated, by the sub-translator, with the original text: and the bulk of the volume has been needlessly swelled by the introduction of matter frequently uninteresting, and sometimes destitute of any very obvious connection with the subject. Under these circumstances, we may, perchance, render an acceptable service to the readers of *The Naturalist*, by presenting a close and nearly literal translation, without regard to elegancies of style, of certain portions of the pure text of the last edition of Blumenbach's *Manual;* and concisely adding, in notes, such new facts and illustrations as our own reading and observation may enable us to supply. For the benefit of the student of German, we shall add, in parentheses, the German synonyms of such of the various scientific and especially anatomical terms, as cannot be found in the ordinary dictionaries of the language. The French and Latin synonyms, when new or peculiar, will also be introduced.

The *Manual* of Blumenbach, it will be seen, is destined merely to communicate elementary knowledge: and, on this account, we have selected it as far better adapted for the purpose of conveying popular instruction, than the more elaborate, profound, and comprehensive productions of the later German and the French zootomists. A very correct general acquaintance with the anatomy of animals may, however, be acquired from an attentive and re-iterated perusal of Blumenbach's work; especially if the student be careful to impress upon his memory the leading facts of the German writer, and to verify his descriptions by frequent examination of, and their comparison with, such specimens of the animal structure

as may fall within his reach. They, who thirst for knowledge from a deeper source of zootomical science than the *Manual* of Blumenbach supplies, will find, in the writings of Cuvier, Blainville, and Geoffroy-St.-Hilaire, among the French—, of Meckel and Carus, among the German—, and Macartney, Lawrence, Grant, and Todd,* among British zoologists, ample stores wherewith to gratify their longing.

In this number, we shall merely present, as a specimen of our proposed labour, a transcript of the first short chapter of Blumenbach's work. The continuation, or abandonment, of the project will entirely depend upon its reception by the public. If deemed useful and instructive, it will be steadily prosecuted to the end. Yet an adverse opinion, however it may cause a slight deviation, will not ultimately deter us from our fixed purpose; which is that of exhibiting, in a series of contributions to *The Naturalist*, an outline, traced with all the clearness and precision which we can employ, of the anatomy, physiology, and principles of arrangement, of the Animal Kingdom.

MANUAL OF COMPARATIVE ANATOMY.

First Chapter.

Of the Structure of the Bones of Animals, in General.

§ 1. None but red-blooded animals (die rothblütigen Thiere) possess a true skeleton;† in which their bones are, with few exceptions,‡ united; and on which the general figure, and the degree of flexibility, of their body principally depend.

§ 2. The ordinary white colour¶ of the bones exhibits several shades or gra-

* We particularly recommend to the notice of the student the excellent *Cyclopædia of Anatomy and Physiology*, now in progress of publication, by Mr. Todd.

† Only in a few insects and worms (*Crustacea* and *Zoophytes*), are parts of a really osseous structure developed: as the bones in the stomach of the lobster, and other species of the *Cancer* (or *Astacus*) genus; and the bony apparatus in the mouth of the Sea-urchin, *Echinus* (See-Igel). These parts, at least, more closely resemble, in structure, true bone than the peculiar substance, *Os Sepiæ*, obtained from the Cuttle-fish, *Sepia officinalis*.

‡ These exceptions principally are the os hyoides, or bone of the tongue (zungenbein), the patella, and sesamoid bones, in many of the *Mammifera*, as in man; the bone of the *membrum virile*, in divers other of the same class, as the dog; the clavicular bones (ossa clavicularia) of certain *Mammalia*, as many of the *Feræ*, and some *Glires*, in which these bones exist, merely connected with the muscles; and the whole thoracic extremity in those animals which, as the *Solidungula*, possess no clavicle; the bony ring in the sclerotica of the bird's eye; and the intermuscular bones (Fleischgräten,—ossicula musculorum) of fishes; and their ventral fins, which correspond to the pelvic extremities of the higher animals.

¶ It is remarkable that the well-known experiment of imparting a red colour to the bones of an animal, by the admixture of madder with its food, succeeds very imperfectly in cold-blooded animals (kaltblütige Thiere).

dations, sometimes even in the same piece; as, for instance, in the grinding-teeth (backenzähnen) of the Elephant: and in some few genera, or races, of animals, they are invariably of another colour. Thus, the bones of the Gar-pike (der Hornfisch,—*Esox belone*,—*Belone vulgaris*, of modern ichthyologists,—la Bélone, Fr.) are green; and the bones of many varieties of the common fowl are of a blackish colour.

§ 3. Still more variable is their texture and grain, as well in different bones of the same skeleton, as in those of particular classes and orders of animals. Thus, the fragile constitution of the air-bones (Luftknochen) of birds; their fibrous structure in many of the larger *Amphibia* (Amphibien) and fishes; and their peculiar toughness and density in some parts of many cartilaginous fishes, (Knorpelfische) conspicuously distinguish them from other bones.

§ 4. The crown, or exposed portion, of the teeth excepted, the bones are universally invested, on the exterior, with periosteum (Beinhaut); and, for the most part, are provided internally with marrow;* which, differing greatly in consistence, is, in the *Cetacea* (Cetaceen), a fluid oil (ein flüssiger thran).

§ 5. The teeth again, for the most part, excepted, the bones are formed by the ossification of original cartilages. This process of ossification appears, *ceteris paribus*, to commence earlier, and go on more rapidly, in viviparous (lebendig gebährende) than in oviparous animals (Eyerlegende Thiere). This fact, at least, results from comparison of the incubated chick with the fœtus of *Mammifera* (ungebohrne Säugethiere). Among the latter, again, many points of ossification are sooner completed in quadrupeds than in man. P.

NOTES ON BRITISH INSECTS.

By James Charles Dale, M.A., F.L.S., &c., &c.

Coleoptera.—*Cicindela sylvatica* is found in great plenty on Parley Heath, in the New Forest, &c., in hot, dry, sandy paths or heaths, as early as May 9th, and appears in constant succession till October 9th, according to my journal. *Cicindela maritima* I have never taken, but have seen alive at Bourne Mouth, Hants, on hot, sandy places, near the sea, from the middle (?) of May; and according to the MSS. of the late Captain Blomer, he found it in profusion near the mouth of the river Ogmore, in South Wales, in June, 1832, and sent me several,

* Principal exceptions: The horns of the Stag, the long bones of the Seal, the *Cetacea*, and the Turtle, which exhibit no medullary cavity; and the air-bones of birds.

amongst which one appeared very nearly allied to, if not identical with, *C. hybrida*. *Cicindela Germanica* I have found at Black-Gang-Chine, in the Isle of Wight, and in great profusion near Charmouth, and Seaton, where I also found the larva. It appears from the middle of June to the middle of September, and differs from the other *Cicindelæ* in seldom taking wing, and delighting in wet places, among reeds, amidst which it runs very fast. It appears to be mostly confined to the coast, but has been found sparingly near Reading and Dartford. *Carabus purpurascens* has been discovered near Weymouth, by Mr. Saunders, about 1833. *Carabus intricatus:* one of these fine insects was caught in Mamhead Park, near Dawlish, a few years ago, and two specimens were taken amongst alders, at Shobroke, near Exeter, and are in the cabinet of a person at Taunton. *Cistela curvipes* was found on Lodmoor, near Weymouth, by Mr. Saunders. *Platypus cylindricus*, I took a few of, in the New Forest, on the 3rd of August last. *Cryptocephalus bilineatus*, in plenty near Langport and Carisbroke Castle. *Anisoplia ruricola* has been found abundant in the Devil's Ditch, and Triplow Heath? and Gog Magog Hills, where I took one, June 26, 1833. It seems nearly confined to that part of the kingdom, one only having been found near Reading till, I believe, last July 6th, when I was surprized by taking one near Lulworth, when I was in company with Frederick F. Morris, Esq.

Lepidoptera.—In the British Museum is a curious larva, black, with white belts, and a spine on the tail, found on the pine, in Scotland, by Dr. Leach. The year 1834 seems to have been very favourable for the appearance of the *sphingidæ*. Three specimens of *Deilephila Livornica* were taken near Peterborough, July 5, 1834, one of which (all ♀'s) laid eggs which were hatched and nearly full fed; besides a larva taken by a boy near that place and killed, another was taken, about the same time, near Worcester. One was found, April the 19th, 1829, at Wakering, Essex; and other captures, within a few years, refute the idea of its not being British. A very perfect specimen (though faded, from having been hung up many years in a glass case, on a wall) is in the cabinet of the Rev. F. O. Morris.—*Celerio:* I have a very fine one, found at Brighton; others have been found at Newcastle, Ramsgate, Worcester, Peterborough, near London, &c.—*Achemon*, of Drury: Mr. Stothard had one which, he said, he took in his garden, in Newman-street, Oxford-street, many years ago.—*Euphorbiæ:* there are two unset in the Linnean Cabinet, with a ticket—"Devon, Dr. Wavell, 1818."—*Galii* has been found at Bridgewater, Langport, Charmouth, Yarmouth, &c., all within these last two or three years: August and September seem to be the season for it.—*Atropos:* August 15, 1825, Captain Blomer found a larva, very dark, and similar (?) to Fuesly's figure, near Bideford; but the moth did not vary when bred.—*Populi:* I took a large pale variety of, July 30, 1808, and Captain Blomer bred another similar one, July 30, 1825. Those found in June are smaller, and darker in colour.

NOCTUA.—*Haworthi*, Curtis. There is a specimen in the Linnean Cabinet, marked "Angl., D. Jones, unknown."—*Præcox*, in Linnean Cabinet, marked "Portland Island, Allen."—*Citrina ?* in Linnean Cabinet, marked "*Noctua mucronea*, B. Clark: Suff., Kirby, 1797; rariss."—*Siona dealbata*, near Langport, June, 1835; Mr. Quekett.—*Arcturus:* Mr. Westwood says that Mr. Curtis's genus *Arcturus* must be *rejected*, having been previously used by Latreille, to distinguish a genus of *Crustacea*. (Perhaps *Latreille's* genus *Arcturus* may fall also, being used in *Astronomy;* and Stephens's *Janus* has been used by Kirby and Spence). But what will be gained by its being changed? Can a *Moth* ever be confounded with a *Crab ?* The name *Colias*, a genus of *Butterflies*, was previously used for a genus of *Fishes*, I believe, and yet *it* is continued by *all;* and perhaps neither may stand eventually, by the perpetual changing of systems. *Agabus* is used for a genus of Water Beetles, but its proper signification is a *Locust ! !*

Again; Mr. Curtis is said to have placed *Acentria* at col. 137 of his *Guide*, at the end of *Trichoptera*. Mr. Curtis not being *sure* that *Acentropus* was identical, of course gave another name, similar however, and, in the *Guide*, places it just before Lepidoptera, one of which Mr. Westwood considers it. Mr. Curtis's arguments have more weight with ME that it is *Trichopterous;* and they BOTH agree that Stephens is wrong in putting it in the *Neuroptera*.

Moses Harris, in his *Vade Mecum*, mentions his having seen an *Ægeria* on a flower, in Norwood. *Ægeria ichneumoniformis* I found an hermaphrodite specimen of, near Lulworth, on the 6th of July last; August 5th and 11th, I found several at Carisbroke Castle, varying much in size. The small variety is figured by Mr. Wood as a new species, and named *Muscæformis*. Mr. Rudd took a very large and magnificent specimen on the 11th, which shews it was not too late, although several were much faded; I also took one near Niton, on the 8th. The late Captain Blomer observed that they vary in size, and he found them in plenty near Teignmouth, settled on rocks from June 29 to the end of July. Some I observed were fond of the *Ononis:* they seemed partial to the neighbourhood of the sea. *Ægeria vespiformis*, (Curtis), I took in plenty, the end of May and beginning of June, in Clapham Park Woods, Bedfordshire: the first I saw was on a leaf of burdock; but I afterwards found the larvæ and pupæ under the bark of the stumps of oaks, and found them in every stage at the same time. Mr. Rudd took one in the New Forest the end of May, 1834; and I saw one the beginning of August, 1835, hovering over an oak stump there, but lost it; a cloud passing over the sun at the same time. *Hypogymna dispar*, found on the Turf Moor, near Shapwick, Somerset. In the Linnean Cabinet I observed a Moth allied to the genus *Spilosoma*, or *Arctia*. Whitish, or speckled slightly with black, and rather transparent, from Mr. Hudson; but it is not noticed as British in any book I have seen: the antennæ are too much pectinated for it to belong to

Spilosoma. Mr. Bentley bought the specimen of *denudatus** of *The Entomological Transactions*, at the sale of the late Mr. Haworth. *Penthrophera nigricans*, I had found previously two larvæ enclosed in cases, which I suspected to belong to this species, and I found one, August, 1835, on Parley Heath, which, not having bred the spring following, I cut open, and found it had changed to a *pupa*, but had died; which I attribute to the shaking it got on my returning home, on horseback, a distance of nearly thirty miles. I hope to ascertain more, against another time, about this curious insect. *Lobophera polycommata*, one taken near Sparkford Inn, Somerset, end of February, 1832. In the Linnean Cabinet there is a very large specimen of *Papilio Podalirius*,† I believe, from North America. Dr. Abbot mentions, in his MSS., having taken *Pontia Raphani* near Bedford, August 6, 1799. I bought his collection, but I cannot make out which specimen he means by it, as there is a variety of *Napi* and one of *Callidice* with the name of *glacialis* on it. In the Linnean Cabinet I observed a *Hipparchia*, with a ticket, on which is "Angl., Hudson, rariss:" mixed with three or four more under the name *Arcanius;* but the one with the ticket has certainly nothing to do with *Arcanius*, and is either a variety of *Davus* or *Polydama*, and probably from the neighbourhood of Bala Lake, or Pemble Meer. The ♀ of *Lycæna argiolus* taken in the spring, have a *narrow* black tip to the superior wings; that in the autumn, very *broad*. *Hesperia comma*, taken as early as July 22nd, 1835, on the Blandford race course.

Diptera.—*Cecidomya pictipennis* I have found as early as February 10th, in 1832, on moss, and roots, &c., of Whitethorn. *Anisomera? nigra*, a species with very long antennæ (especially the ♂) found at Kenfig Pool, South Wales, by the late Captain Blomer, 1832. *Leptomorphus Walkeri*, found dead in a window, at Blandford. *Messala Saundersii* I took at Glanville Wootton, this spring. *Oxycera Leonina:* the Rev. F. O. Morris gave me a ♀, and July 9th last I took a ♂ at Charmouth. *Oxycera Morrisii*, I took one of, at Backsbite, near Cambridge, June, 1833; which is the only locality I know of, besides the neighbourhood of Charmouth. *Medeterus conspersus*, on a boggy part of Lewel Heath, near Dorchester, 1835. *Œstrus pictus:* on the 31st of last July, in passing through some high fern near Rufus's stone, in the New Forest, two insects settled before me on the fern, which I missed taking, owing to the stems of the fern meeting the net. I thought, at the time, they were the *Œstrus pictus*. The next day, however, one came and settled before me on some dry leaves, near Lyndhurst, which I captured. It varies a little from Mr. Curtis's figure, having the centre of the thorax *tawny*. Mr. Samouelle's specimen (figured by Curtis) was taken in June.

* Mr. Raddon has a foreign specimen of *denudatus*.

† Mr. Curtis has figured *Podalirius* on plate 578 of his *British Entomology*.

HYMENOPTERA.—*Cephus satyrus, pusillus,* and *tabidus,* abundant at Glanville Wootton, in 1835. *Evania minuta* in plenty at Black-Gang-Chine, Isle of Wight; also, Parley Heath, and near Mount Misery, 1835. *E. fulvipes,* one near Christchurch Head, August, 1835. *Eumenes atricornis,* I have seen small round earthen pods on the heath, but never knew what they were till this year, when I bred this species, on July 6th. I have taken it as early as May 26th, and as late as the end of August, on Parley Heath, New Forest, and Ramsdown; and Captain Blomer found one or two in Wales. *Nomada:* I see by Captain Blomer's journal that he *bred* one! *Sparazion frontale* was found rather plentifully by Mr. Rudd and myself at Black-Gang-Chine and Parley Heath, last August, but *not* in the New Forest, I believe. *Scelio rugolosus* is in profusion at Lulworth. I have taken it at Glanville's Wootton, and other places, not uncommonly.

HEMIPTERA.—*Pentatoma pusilla:* I took four specimens in an inclosure in the New Forest, June 27, 1832. *Cydnus dubius* taken on the Gog Magog Hills, in April, at Portland ferry, by Mr. Streatfield; and I took a pair on Hodd Hill, August 19th, 1835.

There has been some difference of opinion as to whether *Lycœna Agestis, Salmacis,* and *Artaxerxes,* form three, two, or only one species; I am in favour of the last, and consider the difference to arise merely from the influence of locality, or geographical distribution. The *Artaxerxes,* I believe, is not found south of the Tweed, excepting only one found in Devon, according to Dr. Leach's MSS. But I have observed a few having a slight black pupil to the ocelli, on the reverse side; and one I took at Duddingston Loch has it more distinct than some of those taken at Newcastle, where it assumes the name of *Salmacis;* some resembling the former, and some differing but little from our southern species *(Agestis)* or variety, and which has been supposed by some persons to be *hybrids.* From those who contend for *three* species, I would request opinions as to a specimen lately taken, near Langport, by Edward Paul, Esq., being evidently *Agestis* (a remarkably fine ♀) with a more complete *white* spot, with a black pupil, than any I have seen from Newcastle; and I have a specimen or two shewing a little *white* cincture to the black spot. Surely it would be going too far to make a *fourth* species; and yet it is better than *Salmacis.* I think this proves, beyond doubt, that they are but *one* species; and I think this Langport variety an interesting capture. Mr. Bentley has a beautiful variety of *Agestis, totally destitute* of *black* ocelli on reverse. The larvæ of Butterflies are not very often met with, and I should have thought the time to seek for them would be in the sunshine; but by the MSS. of the late Captain Blomer, I find he collected several by the use of a lanthorn, such as *Hipparchia Galathea, Janira,* &c.: and I find, also, he bred from larva a specimen of *Lycœna Alsus,* our smallest British Butterfly; and from his journal I should imagine him to have been a most indefatigable collector.

NOTES OF A BOTANIST.

To the Editors of "The Naturalist."

The perusal of your prospectus has imparted to me, and I doubt not to many, a pleasurable satisfaction. That individual must, surely, be wilfully blind to what passes around him, who cannot recognize in very much of the boasted science of our times, an unhappy admixture of the leaven of scepticism; and sentiments are unblushingly promulgated, which, if extended to their extreme limits, would plunge us headlong into the vortex of unredeeming atheism. With some, indeed, it seems a matter of course to introduce into their communications, however irrelevant, a sneer at revelation, by way of episode. Such cowardly and uncourteous conduct, so far from recommending science and increasing the number of her votaries, makes her features repulsive, and her lineaments unamiable. It is a flagrant breach of the rights and privileges of the commonweal, to convert science into a subtile medium for sapping the foundation of all religion, whether natural or revealed; because the opinions thus infused happen to be the private sentiments of the individual whose name they bear, but who may be a stranger to the multifarious arguments by which opposite conclusions may be supported and confirmed. Far be it from me to fetter or to curb the reins of thought: nay, rather let thought expatiate boundlessly and range fearlessly among her magic creations. I would only stay her flight to forbidden regions, and confine her excursions to their legitimate province.

The spontaneous origination of matter, innate vitality of atoms, convertibility of plants into animals, and its reverse, with all their numerous offsets and ramifications, are among the hideous scars which mar the beauty of Natural History, in many of the writings of modern times. Vague and unmeaning hypotheses, remarkable only for their reckless folly, cradled among the atheistical notions of continental philosophy, form a chaos of absurdity in which not a few, I fear, of our pseudo-philosophers are now floundering purblind; and unmitigated by a solitary ray of genuine truth, inculcate sentiments and opinions as hostile to inductive science, as they are to common sense and sober reason.

The only maxims that will guide us surely and lead us safely, are those that own a Bacon for their counsellor, and a Newton for their engineer. Under their guidance and direction, the progress of knowledge will be solid and sterling, and her triumphs lasting and brilliant. The path of wisdom will then, indeed, be illuminated by a light from heaven. These are the tests and touchstone of genuine truth, and the only standard of legitimate appeal; and, while one says, "I am of Lamarck," and another, "I of Latreille or St. Hillaire," be it *mine*,

with Bacon, to admit nothing that bears not the stamp of trial and the signet of inductive scrutiny; be it *mine* to accept no theory as valid, that is not the offspring of accumulated facts, collected from the roll and register of multiplied and diversified experiments; be it *mine* never to torture or to twist, lengthen or shorten, with the inquisition of a Procrustes, however ingenious may be the device and cunning, facts and experiments to suit preconceived whims and fancies; be it *mine*, also, with Newton, to trace the phenomena of the universe of being, up to their divine origin and sublime and awful source.

I cannot, therefore, but rejoice, that, in your prospectus, you have avowed yourselves as determined never to forget the dependence of the whole on the one Divine Originator. I am sure numbers will join with me, in wishing every success to a periodical that comes to us so highly recommended; and I am quite certain there can be no sound philosophy that does not recognize an intelligent first cause, and a prospective and legislative Providence.

By way of apology for these preliminaries, I beg to communicate, *ad interim*, a few miscellanea, as an earnest of something more elaborate for an early number.

I.—Natural Ventilation of Seeds.

This occurs to me as one among many questions of curious interest in the physiology of plants; though I believe it has been entirely overlooked. The seed-vessel of the Heart's-ease is pendent and reversed; the seeds are ultimately naked and exposed till the period for their dispersion arrives, when the seed-vessel becomes erect, and adjusts its open valves to imbibe the direct rays of the sunbeam. In the former case, it is evident that rain could not injure the immature seeds, nor moisture lodge within the cavities. In some plants we find the reverse of all this, the exception being provided for their peculiar contingencies. The Butter-nut, is supplied with an open slit, or natural vent, for the specific purpose of ventilation; and there is, also, for the same reason, a circular orifice at the apex of the shell that encloses the triangular Brazilian Nuts—a shell possessed of adamantine hardness. By this opening atmospheric air, as in the former case, gains admission. In the capsules of the Poppy, the ventilating orifices are beneath the canopy which crowns them. On both sides of the *Hura crepitans*, or Monkey's Dinner-bell, there are narrow meshes, or windows, by which the air circulates, matures the seeds, and promptly dries up whatever moisture may find an occasional lodgement within the shell; it would, otherwise, explode long before the period of maturity supervenes. In the *Hernandia sonora*, or Whistling Jack-in-a-Box, the air winds among the avenues of the seeds, there being a round aperture on the summit of the capsule, and the seeds occupying only a limited portion of the inner chamber: the tree thus becomes

vocal; and the tropical traveller, often surprized by these unearthly sounds of the forest, starts affrighted. The Wild Carrot contracts and inflects its umbels during rain, and unfurls them in dry weather: the air then sifts and filters through the interstices, thus ventilating the seeds that might otherwise decay from excess of moisture. The spiral valves of the *Didymacarpus rexii* are sensible hygroscopes; they untwist in dry weather, and expose the seeds attached to the axis, to the genial and ripening influence of the atmosphere. In moist weather, the valves will be found screwed closely together, completely impervious to air and moisture. Similar phenomena are very numerous, and examples might be indefinitely multiplied; but these are sufficient to illustrate my position.

II.—Dietetics and Therapeutics, as applied to Vegetation.

That roots are selecting, discriminating, and appropriating organs, there can be no reasonable doubt; nor can it be expected that all plants should subsist on the same kind of food. As plants are infinitely diversified in their appearance, condition, and the local circumstances under which they are found, with the phenomena presented in their secretions and excretions, it follows that a diversity of diet is necessary. Various earths, and diversified materials from animal and vegetable sources, afford the nutriment we commonly apply; but oftentimes no rule of discrimination is adopted, for the same unvarying routine is incessantly repeated. Some peculiar kinds of plants are so much out of the ordinary way, in their port and manner, that they must, *prima facie*, enforce the importance of discrimination being necessary. The *Drosera rotundifolia*, and even the *Pinguicula*—the *Dionœa muscipula* and *Sarracenias*—are all clearly more indebted to animal matter for their supplies than other sources, and hence are duly supplied with bristles, pouches, and traps, to entangle and to catch insects; the decomposed animal matter being necessary to their well-being.

In the year 1818, I discovered that the bulbs of Hyacinths, the Narcissus, Persian Iris, &c., grown in root-glasses, excreted carbonic acid gas, &c., by their fibres. Macaire has since verified the fact; though I remember that, when I communicated the circumstance to Mr. Edward Rudge, he expressed much scepticism regarding the fact. This has, however, lately attracted considerable notice, and is likely to command still greater attention. Gum anime is found in cakes, among the roots of the *Hymenœa courbaril;* and it is notorious that the *Salsola kali* impregnates the soil, where it grows, with alkaline matter. The roots of many plants are very tenacious of life, and intense temperatures do not destroy their vitality; the roots of the *Vitex Agnus castus* will not be affected, though immersed in boiling water; and boiling water may, in many instances, be applied to the roots of plants, without injury. Again, if a mass of roots be divided into two parcels, acetate of lead, in solution, being absorbed on one side,

may be evolved again, by the second parcel, on the other side. Certain plants may absorb some 'poisons' by their roots, with impunity, which would be destructive to others. Other phenomena illustrate and confirm these truths, and it would be altogether superfluous to detail them.

But irrespective of the facts connected with the excretions of the roots which have been assumed as explanatory of the necessity of the rotation of crops, there is another interesting question involved in the curious inquiry, to which I am desirous to call attention, and which, as far as I know, has never been once suspected. It is this: how far particular plants may, or may not, prove injurious by their proximity to others, from exudations and exhalations of a more or less volatile kind, as well as gaseous products arising from stems, foliage, and flowers; and therefore to what extent plants reciprocally affect each other. Certain plants grow freely side by side, or in juxta-position; whilst the very reverse is the fact with others. Certain shrubs luxuriate beneath the shade of trees, and the copious showers that trickle from their branches; while myriads would be destroyed under similar circumstances. Many plants perish near others, or disappear without any visible cause. Though the corrosive liquid that distils from the branches of the Manchineel is of too palpable a character to be questioned, there are others that seem more dubious. The blighting influence of the Barberry on certain crops, however, appears not to be apocryphal. The hardiest weed will not dare to shew itself beside that gigantic reed, the Bamboo; and bees fall down dead suddenly, should they perchance alight on the branches of the *Rhus vernix*.

J. MURRAY, F.L. & G.S.

(To be continued.)

AN ACCOUNT OF THE STRUCTURE OF THE HEART IN THE TESTUDO MYDAS, OR GREEN TURTLE.

The heart, in the several families of the Tortoises and Turtles, presents curious peculiarities adapted to the mode of life of the animals in whom these anomalies of anatomical disposition are met with. Each species varies a little in the anatomical structure of the central organ of the circulation; but I shall, in this paper, take the *Testudo mydas* as the type of all animals of this order. The *Testudo mydas*, or Green Turtle,—the Tortue franche, of Cuvier, called by the Germans, die Grüne Schildkrote,—is found on all, or most of, the coasts of the torrid zone, feeding upon the weed at the bottom of the ocean, approaching the

mouths of great rivers for the purposes of respiration, and landing on the sand, during the night, to deposit its ova. The individual from which the present description is taken, weighed about 175lbs., the heart, when removed from the body, and emptied of its blood, was about the size of a large lamb's heart, and pulsated for six hours after death; the contractions of the heart, after they had apparently ceased, might easily be excited again by pricking it with the point of a needle. This excitability continued during three or four hours more.

The heart of this order of reptiles is composed of four cavities, like those of the mammalia and birds; two of the cavities receiving the blood from the body and lungs, the other two propelling it forward into the lungs, and to the system generally. Man and the higher orders of animals, as mammals and birds, have a perfect double circulation, the heart consisting of four distinct and separate cavities; two, the receiving parts, termed auricles, the propelling ones, called ventricles. The reptilia (of which the Turtles and Tortoises form the first order) have a circulation performed by an organ of a different anatomical construction: in these animals the cavities are still four-fold, but the cavities of the ventricles are not distinct from each other; they have communications through which the blood returning from the body generally, and that received from the lungs, are intermixed, and consequently an imperfectly decarbonized fluid is sent to the economy at large. The heart of the *Testudo mydas*, of which a general view is given in Fig. 1, is composed of two auricles and two ventricles, *a b* and *c d*, like

Fig. 1.

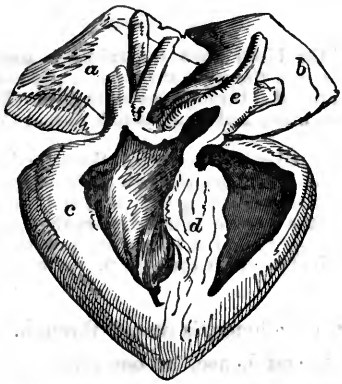


Fig. 2.

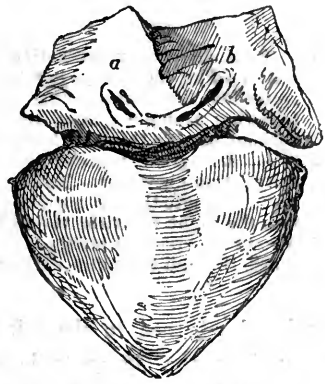


Fig. 1.—A front view of the heart, with the cavities of the right and left ventricles laid open. *a.* The right auricle. *b.* The left auricle. *c.* The right ventricle. *d.* The left ventricle. *e.* The pulmonary arteries. *f.* The aortæ, three in number; one destined to supply the head, neck, and fore limbs, the remaining two uniting to supply the posterior half of the body.

Fig. 2.—A back view of the heart, with the fissures, which mark the opening of the veins, returning the blood from the body and the lungs. *a.* The opening of the veins of the lungs into the left auricle. *b.* The opening of the venæ cavæ returning the blood from the body to the right auricle.

that of the mammalia and birds; the blood returning from the body, having circulated through it, is received first by the right auricle *(a)*, and propelled from it into the right ventricle *(c)*; but instead of being thrown from this cavity into the lungs completely, as it is in the circulation of all warm-blooded animals, we find that a portion only is distributed to these organs. The chief peculiarity in the heart is met with in this cavity, for from it all the blood-vessels of both lungs and body arise. From the extreme right of the cavity is sent off the aorta, or rather the aortæ, for the vessel immediately divides into three, the centre one of which is distributed to the upper or fore limbs, head, and neck, whilst the two outer ones unite into one to supply the lower, or posterior, half of the body with blood. The blood sent to the lungs is received back into the left ventricle *(d)*, and thence passed, through an opening between these two cavities, into the right ventricle. The course of the circulation is explained by the diagram, *Fig.* 4.

Fig. 3.

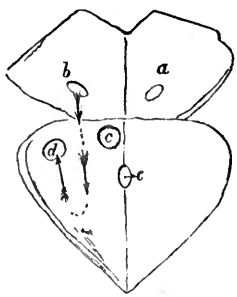


Fig. 4.

Fig. 3.—A diagram, representing the course of the blood when the animal is under water. The blood entering through the veins into the right auricle at *b*, passes directly into the corresponding ventricle, and is propelled through the aorta *(d)*; thus following a single course, returning from the body, and immediately re-sent to it without passing through the lungs.

Fig. 4.—A diagram, representing the double or mixed circulation, when the animal respires atmospheric air. The blood returning from the lungs, through the pulmonary veins *(a)*, into the left auricle, passes through its corresponding ventricle, and thence into the right ventricle, through the opening in the septum, which divides them *(e)*. The two currents of blood are here mixed, and re-propelled in this form, part to the lungs, through the pulmonary artery *(c)*, and the remainder through the aortæ *(d.)*

The blood returned to the left ventricle, from the lungs, is passed through, or thrown from, the left ventricle into the right, and hence, at once, by a double passage through the pulmonary artery *(e)* and the aortæ *(f)*, to the lungs and system generally. In the Crocodiles, and some species of Lizards, there is but one ventricle; and here the blood returning from the body and lungs is mixed in the same way. In the various species of Frogs and Serpents, the heart is reduced to two cavities, a single auricle and ventricle; and hence the blood which has been fitted for circulation by the action of the air upon it in its passage

through the lungs, is still more completely mingled with that which has not been submitted to this action, and which is just returned from the body to the heart.

The mode of life of the reptilia, most of whom are amphibious, renders this peculiarity in the structure of the heart necessary. The corporeal, or greater, circulation is, in these animals, in some measure independent of the lesser or pulmonary one; for, in warm-blooded animals, no blood can pass into the left ventricle, and thence to the body, which has not previously passed through the lungs; the aorta, a vessel which propels the blood to the body, arising, in all warm-blooded animals, from the left ventricle, and not from the right as in the reptilia. The blood cannot pass through the lungs except the animal breathes; consequently, no circulation could go on as long as the animal was under water: but from the peculiarity of the structure of the heart, we find that the blood passes directly from the right auricle to the right ventricle, whence the aorta arises, and the blood is sent straight on to the body again, without passing through the lungs, as in warm-blooded animals. This circulation, however, cannot go on ad infinitum, with this decarbonized blood, and the reptile is obliged to seek the atmosphere at certain intervals, to take in supplies of air. I do not agree with Blumenbach entirely, when he supposes that the general or corporeal circulation alone goes on when the reptile is under water; since the peculiarity of the lungs of the amphibia enables them to take in a supply of air which will last for a considerable time, and hence some degree, if not a perfect one, of arterialization of blood goes on when the animal is under water, as well as when he breathes atmospheric air. We may suppose, however, that a less quantity of blood passes through the lungs during the time the animal is under water, than when breathing air, and consequently the blood must be more imperfectly decarbonised at this time than at others, though under all circumstances the blood of the reptilia is of a lower temperature and of less stimulating character than in the animals of the classes of the aves and mammalia.

L. P.

ANIMAL PROGNOSTICS.

Every observer of Nature must have often remarked with what certainty many animals give signs of a change in the weather. Those signs are, with us, most conspicuous in the summer; and it is of rain, and not of fair weather, that they are given. Swifts and Swallows, though not one has been seen on the wing during weeks of drought, fly with ceaseless rapidity; and the former shrink from the top of the sky whenever the clouds above them are elaborating rain, and especially if that rain is accompanied with thunder. It is true that these birds do

not fly with so much assiduity, and indeed do not make their appearance during the day, until the cloud is formed, and the sky overcast. But then, it is not the darkness alone which brings them abroad; for the mere cloud of day may darken the sky fully more than the incipient rain-cloud, and yet not a Swift shall be tempted to take wing. There is no doubt that these birds come forth to feed; and consequently their insect prey must have the same feeling of the coming rain as they themselves have: but why insects should rise so high into the air, at these times, as the elevation at which the Swifts are found hawking, is a matter which we cannot easily determine.

Almost all birds which have been silenced by the drought renew their songs upon the approach of rain. Domestic poultry, also, make more noise than on other occasions; and the cackling of Geese, the gabbling of Turkies, the wailing of Guinea Fowl, and the screaming of Peacocks, are blended together in full chorus. It is somewhat remarkable that Chanticleer does not sound his silver bugle upon these occasions, but reserves it to welcome the day-spring from the east. Indeed, when the others are all in bustle and activity, as if rejoicing at the coming rain, he and his companions betake themselves to the roost, or at all events look out for shelter. There is something worthy of notice in this. Geese and Turkies are the most joyous inhabitants of the farm-yard upon these occasions. Geese are everywhere natives of humid places; for though they are, perhaps, the least aquatic of all web-footed birds, they do not thrive if they have not access to water. Turkies, too, are natives of the forests of North America, in which humidity is the prevailing character of the atmosphere; and it is by no means improbable that the rapid decrease of wild Turkies in the settled parts of the United States, is as much owing to the dry air which has been produced by destroying the woods, as to the vigilance of Jonathan with his rifle. The common domestic Fowl, on the other hand, is a native of the jungles of India, where drought is the prevailing character of the climate; and their plumage suffers more from rain than that of any other bird with which we are acquainted. The Guinea Fowl comes from a country of a somewhat intermediate character; its native zone being that between the northern and southern trade-winds, where the atmosphere is not under the control of either of the general currents; and thus it is easily disturbed by the production of heavy showers, by local causes.

Many other instances of prediction of the summer rain-storm, in animals freely exposed to the atmosphere, will occur to the reader; and it will always be found that animals which are pleasurably excited on such occasions, are originally natives of moist climates, or of humid places; while those which are painfully excited inhabit the dry country, and suffer from exposure to rain. We have a remarkable instance of this in the domestic Cat, whose face-washing and general trimming of her fur, has been the cottage barometer time out of mind; and the observation has been too repeatedly made to be doubtful. This operation of the

Cat is performed equally whether the animal is snugly housed beside the cottage fire, or out of doors, exposed to the air. It happens, too, sooner before the actual fall of rain, than the prognostics of most other animals. In this last circumstance there is a philosophical truth, which it is desirable that some intelligent reader of *The Naturalist* would work out and give to the world, through its pages. The domestic Cat is, of all animals with which we are very familiar, by far the most electric; that is, the most susceptible to electric action. Clear and dry air is well known to be a non-conductor of electric action; and the more dry and clear the air is, the more agreeable to Pussey. It is, indeed, highly probable that the love of dry air, as much as the love of heat, brings the Cat to bask by the fire when the air is damp and raw: but the subject has not been studied with the attention which it deserves, for, strange though it may seem to some, the Cat may be of more real service to the philosopher, in the study of meteorology, than it was to Whittington in acquiring that wealth which enabled him to purchase the triple mayoralty, or to Katerfelto in assisting him to impose upon the credulity of the multitude, as a conjurer,

"At his own wonders, wond'ring for his bread."

For the investigation of so delicate a fluid as the atmosphere, in the variations of its electric state, as resulting from the quantity of humidity in it, and from its motions, we want instruments of the most delicate kind; and no one will deny that the body of an animal must, under any circumstances, be a far more delicate instrument than any which can be made with hands. The finest of these must still be made of matter; and, consequently, the atmospheric change must be great enough for acting upon matter, before such an instrument can possibly point it out. The feeling of the animal, on the other hand, is not matter, but a result of the organization of matter; and, therefore, it must be sensible down to almost the extreme of smallness in atmospheric change, or in any other agent by which it is affected. Those effects of minute or incipient changes upon delicate animals, require a great deal of caution on the part of the observer; hasty conclusions, ought not, therefore, to be attempted to be drawn from them. They always precede our own observation; and though they are, in themselves, unerring, we must use the same precaution with regard to them as we would do in all other matters of reasoning: and it is this which brings us to one of the essential points of the case—why should the lower animals be more weather-wise than we are?

This is a very important question, not only as it concerns those animals, but as it bears on the highest—the immortal—interests of man. Simple as it, at first sight, appears, it really involves the whole distinction between animals, which have no powers beyond those that result from the organization of material substance, and man, whose noblest powers are those which are exercised by an immaterial

and indivisible, and therefore immortal, spirit. There is no question that, in as far as man is animal, his organization is more perfect, in all its parts, than that of any of the irrational animals; some of these exceed him in one particular application of their powers, and some in another. He has not, for instance, the scent of the Blood-hound, the swiftness of the Antelope, or the wing of the Eagle. But when we take it into consideration that the human body is only the instrument fitted for the use of a superior principle, while the body of the animal is both the principle and the instrument, we cannot fail to perceive that the universality of adaptation of which the human body is capable, is far better fitted for being obedient to all the purposes of an intellectual principle, than if the principal exertion of which it is capable had been concentrated upon some one particular kind of action, as is the case with those animals to which we have alluded, and, indeed, with every animal, except man.

From this general perfection of organization in the human body, we must conclude that if man had been entirely dependent upon animal instincts, as the rest of the living creation are—that is, if there had been nothing intervening between the impression on the bodily sense, general or local—man would have required, and would, according to the universal law which runs through the whole creation, have possessed more perfect instincts, and instincts more sentient to every change of external circumstances, than any other animal whatsoever. But in man there comes in a middle operation between the impression, or the sensal body, and the action; and it depends upon this middle part whether there shall be an action, or even a feeling, of the system, consequent of the impression upon the sense. This is a beautiful part of the physiology of man, and a part which gives him great advantages in a mental point of view. If man had been compelled by instinct to obey, or even to feel, every little variation or casualty from without, he could never by possibility have had repose and quietude enough for carrying on any elaborate process of thought. The temperature, the pressure, the motion, the humidity, and the electric state of the atmosphere by which our bodies are surrounded, at all times and at every point, are in a state of perpetual change; and if man had been sensitive to every slight shade of those changes, his life would have been both unprofitable and miserable. The gentle breeze would have shaken him as with an ague; the summer sun would have scorched him into agony; and the winter frost would have chilled him to an icicle.

We have approximate proofs of this in those whose bodies have an extreme degree of sensibility, or who are, as it is popularly denominated, of a nervous temperament; and all of us—except such as have the general structure of their bodies knit and sinewed by habitual exposure to the variable atmosphere, or are placed in an atmosphere so artificial as that the natural changes which are going on without have no effect upon them—at times feel, in our own systems, the pain of this kind of sensibility. This pain, though we often cannot give it a name, or assign it a local seat in any one part of the system, is torment to us beyond the

suffering of ordinary physical disease. We are ill we know not of what; and yet the sensibility of the system is so unimpaired by our indescribable illness, that acute bodily pain would be deliverance from such suffering.

A future opportunity may occur for inquiring into the peculiar tone of the sentient system in man which is most accordant with efficient mental operation; but we may, in the mean time, remark that this is a medium state, and that the bodily sensibility may be either too dull or too acute for the exercise of vigorous thought, or the performance of useful action. If it is too obtuse, the mind does not receive the impression, and, of course, neither thought nor action can follow; and if, on the other hand, it is too acute, the anguish of the bodily feeling makes so strong an impression, that the mind is incapable of applying its common mode of judgment, by analogy, to the cause of the impression, and its effect external of the body. It is the mental operation which is injured both by too much obtuseness and too much acuteness of the sense: and in each case the conduct of the human being approximates that of a mindless animal; and in the extreme cases the approximation may be so close that no observation can draw the line of distinction between them.

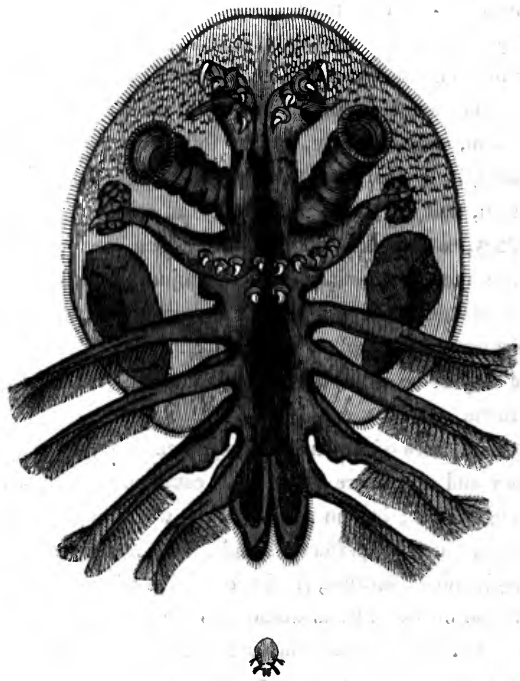
It is these extreme cases of insensibility and sensibility of the body, to which the names of idiocy and mania are given. In common language, we call both of them mental derangements; but no word can be worse applied. The mind, in order to be immortal, must be perfectly simple, and incapable of any division of parts, even in imagination; because, if the existence of separate parts were imaginable, the separation of those parts would also be imaginable; and this separation would be the death of the mind, and man would be brought down to the level of the beasts that perish. But, if composition be inconsistent with our original idea of mind, mental derangement must be equally so; for it is not possible to derange one single existence, be that existence what it may. To return from this digression, which, however, is far from being an useless one: we can see how wise and how good it is that the sentient part of the human frame is so tempered that it does not habitually break in upon the operations of mind; and, because we are worse barometers than the animals which we have mentioned, and, indeed, than all mindless animals, we are thinkers and philosophers, and they are not.

The animal which has the action instantly consequent upon the sensation, without any intermediate mental judgment by comparison with former experience, is, of course, wholly at the mercy of external circumstances, and compelled as necessarily and as instantly to obey every change of these to the full amount of its influence, as a fragment which the lightning shivers from the precipice is necessitated to descend by the force of gravitation. It is this perfect obedience of the system of mindless animals to the circumstances of Nature external of them, which renders the study of them so very valuable for meteorological purposes; and this study deserves far more attention than it has hitherto received.

OBSERVATIONS ON THE ARGULUS FOLIACEUS, (Jurine),

AS INJURIOUS TO GOLD AND SILVER FISHES.

By Miss Dobson.—(Communicated by Mr. George Samouelle).



Genus 85. Argulus, *Müll.*, *Jurine*, *Leach*, *Desmarest*, *Samouelle*: Binoculus, *Geoffroy*, *Latreille*.

Shell oval, somewhat membranaceous, semi-transparent, anteriorly rounded, deeply notched behind: two hemispheric *eyes* inserted at the anterior and lateral parts of the clypeus: *antennæ* very small, inserted above the eyes: *rostellum* sterniform: twelve *legs*, unequal in size and form; *first pair* shorter, very membranaceous, capable of changing their form, broader at their tips, and constructed for adhering to objects; *second pair* prehensile, curved, much thicker towards their base, the thighs furnished with three spinules beneath; *tarsi* of the second pair three-jointed, the last joint with two claws and a pulvillus; *four hinder pairs* inserted at the sides of the abdomen, somewhat cylindric, formed for swimming, with their points bifid: *abdomen* cylindric; *tail* bilobate.

Sp. 1. *Arg. foliaceus*, Jurine.

Argulus delphinus, Müll., *Enton.*, 123. *Monoculus Argulus*, Fabr., *Ent. Syst.*, 489. *Argulus foliaceus*, Leach, *Suppl. to Encycl. Brit.*, p. 405.; Desmarest, *Considerations des Crust.*, p. 329, pl. 50, fig. 1, *a. e.*

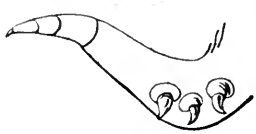
This species, which is the only one of the genus that has hitherto been noticed, inhabits ponds and rivulets, adhering to the larvæ of frogs and to fishes, particularly the pike. The larva has been described, by Müller, as a distinct species, under the name of *Argulus charon:* in this state, it differs from the full-grown animal in size, and in having four cylindric, equal, biarticulated, pencillated oars, two of which are attached to the animal above the eyes, and are furnished at their tips with four setæ; the other two, below the eyes, being terminated with three setæ: the two anterior legs are incrassated, elongated, and terminated by a strong bent claw.

The full-grown animal lays from one to four hundred eggs, which are yellow, ovate, and smooth, being generally deposited on stones, in two contiguous, longitudinal series. These eggs are hatched in about thirty days. The perfect animal is a most beautiful and highly interesting transparent object for the microscope.*

The following are the observations of Miss Dobson, on this singular parasite. "I took a gold fish out of a pond, that had been in a very sickly state for two or three months. Thinking it nearly dead, as it was lying on its side on the surface of the pond, I put it into a pan of water; and in an instant I saw a diminutive insect swimming about very actively. I immediately examined a portion of the same water, supposing the insect might have bred in it, and that I should find more of them: I was, however, mistaken, the water being perfectly clear. I returned to the gold fish, and found the number of insects increased; which led me to imagine they must have come from the fish. I therefore examined it, and perceived that the fins were perfectly covered with them, and several on different parts of the body. Finding I could not brush them off, I took the animal in my hand, and was obliged to scrape them off with my nail, they adhered so tightly. The fins were very much injured, being divided into threads; and one quarter of the tail was quite eaten away. The fish was greatly swollen; the scales stood erect; and the flesh between the scales had the appearance of jelly. It breathed with such difficulty, that I expected, in a short time, to find it dead: I was, therefore, much surprized on the following morning, to perceive the fish still alive, and a little improved; but the water smelt quite putrid, from the diseased state of the fish. By changing the water every day, the fish improved so wonderfully that the scales began to assume their proper condition, the swelling gradually decreased, and it became very lively; catching at some worms thrown into the water, and shaking them as a cat does a mouse. Having heard that fishes were very fond of graves in clay, I put a small ball into the dish. On the following morning, to my great regret and disappointment, I found the fish dead. Had it not been for this injudicious treatment, I feel persuaded it would have recovered."

* Samouelle's *Entomologist's Compendium*, second edit., p. 126.

"Immediately after I had relieved the fish from the insects, I placed one under my microscope; and no longer wondered at the difficulty I experienced in removing them from the fish. On each side of the throat is fixed a large hollow tube, capable of expansion and contraction to a considerable degree, imparting a wonderful power of adhesion, which enables the insect, notwithstanding its diminutive size and delicate formation, to hold so firmly to any substance as to require some force to remove it. The mouths of these tubes are very beautifully formed. being fringed all round with hair, folding over the edge or lip. Independent of these extraordinary tubes, they are provided with eighteen strongly-formed hooks, no doubt wonderfully provided to resist the violent agitation of the water. On the top of what I consider to be the antennæ, is placed a very long, sharp, pointed hook, apparently of a horny substance, very suddenly bent downwards. The horn seems to be placed in a socket or band, which the insect has the power of turning round at pleasure. In the middle of the horn, and on the band or socket, are likewise placed two more short, strong hooks; two between the horns, two much lower on the breast, below which are two more. Extending from each side the body (independent of four forked legs, or paddles, which are thickly fringed with strong hairs) is an arm, or fore-leg, with three socket joints, very thick set towards the body; on the elbow of which



are placed three of the same powerful hooks as above stated. The legs, or paddles, are kept in constant movement; the body terminates in an elegantly formed tail, partially divided. The eyes are large, prominent, and very beautiful, situated on each side the horns, arranged in rows, with a distinct division between each row, apparently as though they were a number of brilliant globes, or precious stones, floating in jelly, and enclosed in a transparent skin: they have likewise two pairs of palpi, or feelers, one behind, the other below, the horns, which I should not have discovered, from their being so extremely delicate and transparent, had I not had such frequent opportunities of observing the insect in a living state, under various different powers. The mouth is a long tube, extending from the centre of the forehead almost down to the breast, capable of expanding and contracting to a considerable length, in the form of a proboscis. The back of the insect has the appearance, in form, of the *Cassida*, or Tortoise Beetle, only of a soft flexible texture, without any division, or wings: on the under side of which it is wonderfully provided with numerous clusters (particularly round the head, tubes, &c.) of strong, but small, hooks, perfectly formed, which might, at first, be mistaken for hairs, until submitted to a strong magnifying power.

"After taking the insects from the fish, I left them in the same water till the following morning, by which time it had become quite offensive; before changing it I attentively, and for some length of time, observed their different actions; and

perceiving one of them more agitated than the rest, I watched it particularly, and fancied, what proved in reality to be the case, that it was casting its skin. Had I not witnessed this operation, I should have been deprived of much information and gratification. Notwithstanding the skin is so delicate, and when in the water so purely the same colour, a close observation afforded me the opportunity of collecting as many skins, during the time I was able to retain the insects alive, as, I think, were thrown off. The next object that struck my attention, was the appearance of a cluster of minute eggs, floating on the surface of the water, encircled by something that had the appearance of oil; specimens of which I placed on two glasses.

"On placing the cast skin under the microscope, I observed that each hair with which the legs or paddles are provided, was thickly set on each side with a row of fine hairs. I could not discover in the cast skins any portion of skin that could cover the eyes; the thin transparent membrane, therefore, that covers them in the perfect insect, has no appearance of net-work, as in most other insects.

"The insects became gradually weaker, and in four or five days they all died. I took a sketch of one before it was quite dead, which I think will convey a tolerable idea of the animal in its living state; as those prepared as specimens on glass, although very beautiful, do not, in consequence of their dried state, convey to the observer a correct idea of the insect without such aid; the cast skin assists, likewise, in its developement.

"The circulation of the blood, with a high magnifying power, was particularly interesting."

Mr. Samouelle has subjoined the following additional observations:—"On Sunday, May 20, 1836, I caught two insects, male and female, the latter full of ova, which, in the course of the same night, were deposited on the sides of the glass, in a cluster, to the number of seventy-nine. In order to give the insects food, I tried the experiment of their feeding for a time on the dead gold-fish, which they did for two days; when, on their appearing rather weakly, I removed them from the fish, and the water becoming impure, I restored them to the glass where the eggs were deposited; they became evidently refreshed, and the female hovered over and about the spot where the previous eggs were laid, and in the course of the same night she laid twenty-four more, and, after a short time died. By way of experiment, and as a resource for food, I had some minnows caught for the other, to see if it would feed upon them. It remained in the vessel for two days, when it disappeared, and I suppose it was eaten by the minnows. The eggs still remain unhatched, June 13th."

The engraving at the commencement of the article represents the *Argulus foliaceus* magnified, and of the natural size.

OBSERVATIONS ON THE SCARCE SWALLOW TAIL,

(PAPILIO PODALIRIUS.)

By J. E.

As the Lepidoptera are more attractive than the generality of our native insects, and as the butterfly has "found favour even in ladies' eyes," the announcement of the capture of one of the rarest and most elegant, the scarce Swallow Tail, *Papilio podalirius*, will be hailed, we doubt not, with joy, and still more happy will he be who can obtain a specimen of it. In a late number of Mr. Curtis's *British Entomology*, a specimen of this *Papilio* has been figured, which was taken near Windsor, by W. H. Rudston Read, Esq. and others have lately been purchased, as British, by G. Robertson, of Limehouse, and Dr. Bromfield, of Hastings. The principal object of calling attention to this subject is the hope that when this butterfly is generally known, others will come forward and furnish additional proof of British specimens having been taken; for although, like many others, it only apppears occasionally, yet when seasons are congenial to its habits, it will appear probably for many successive years. It is now known to be found at Hamburgh, which is as far to the north as York; therefore, the erroneous idea that its northern range renders its appearance here impossible, is no longer tenable. There is one thing, however, that collectors ought to be warned of, *P. podalirius*, and many other insects rare in Britain, are common enough on the Continent, and are easily obtained from thence, even in the larva state, and we are sorry to have reason to believe there are individuals who see no objection to selling such as British, in order to enhance their value.

THE ALYSSUM CALYCINUM.

The *Alyssum calycinum* has been lately discovered in Charnwood Forest, about half way between Gracedieu and Whitwick, in a botanizing excursion, by the Messrs. Churchill and Arthur Babingtons, and the Rev. Andrew Bloxam. It was found growing sparingly in a small field adjoining some rocks, amongst *Medicago lupulina*. Specimens have been sent to Mr. Watson, Professor Henslow, and other eminent botanists. This is the first time that the plant has been noted as growing in England. It was, however, discovered in two places in Scotland last year, at Dirleton Common, Haddingtonshire, and on the coast of Forfar, and a notice of it communicated to the *Edinburgh New Philosophical Journal*, by Professor Graham; it is also introduced into Mr. Watson's remarks on the distribution of British plants.

ON THE FEN REEDLING,

(Salicaria Arundinacea, Selby), Reed-Wren, or Reed-Warbler, of other Ornithologists.

By Edward Blyth.

Having some reason to suspect that this lively little songster is more generally diffused over the country than is commonly supposed, and apprehending that few distinguish its chant from that of the Sedge Reedling *(S. phragmitis)*, I am induced to offer a few observations to the attention of naturalists residing in districts where it has been hitherto undiscovered, in the expectation that they will lead to its detection in many localities where its presence has, as yet, been quite unsuspected.

Of course it is unnecessary here to describe the plumage and technical character of the species, as these will be found in most works on British ornithology. Bewick, however, omits to figure the bird, but annexes its name to a representation of the Sedge Reedling, obviously confounding the two together. The Sedge Reedling abounds in watery situations all over the country, even to the northernmost districts of Scotland; and no person of the least observation can be otherwise than familiar with its abrupt and chattering, but certainly not unpleasing, song, with which it incessantly enlivens every ditch, continuing to do so until about the middle or latter end of June; after that time it is seldom heard. It is a strange medley of a song, though, at the same time, it is altogether original; combining a characteristic *chiddy, chiddy, chit, chit, chit,* with a very sparrow-like *chou, chou,* and an occasional and emphatic *peet-weet,* reminding one forcibly of the Chimney Swallow. Then comes, perchance, a series of harsh, jarring tones, followed, perhaps, by a seeming imitation of something else; and not unfrequently the bird mounts, singing, a little way into the air, or chirrups as it flits from bush to bush, or from willow to willow. I am sure that there are very few who will not immediately recognize it from this description; more particularly if they have been accustomed to perambulate marshy and sedge-tufted places, during the spring and summer.

The extremely passerine character of many of this little bird's chirpings, have gained for it, in various places, the vulgar appellation, "Reed Sparrow;" just as the homely garb and familiar manners of the common Hedge Dunnock, another bird of slender bill, have occasioned the equally erroneous but popular name, "Hedge Sparrow," to be its ordinary cognomen.

Now, I certainly am not one of those who are willing to accept any kind of name, merely because it chance to be popularly applied. Undoubtedly there should be some rules for nomenclature, some system to regulate caprice. If any

meaning is to attach to the word "sparrow," if it is to signify a particular form among the feathered race, surely those species ought alone to be called *sparrow* which exhibit the characters briefly denoted under that name. To apply it to birds of other form occasions only unnecessary confusion. If a new species were to be denominated —— *sparrow*, we should, of course, expect it to pertain to the genus *Passer;* and why, therefore, do some naturalists persist in using erroneous appellations, merely because, in some districts, they happen to be popular? I say *some districts* only, because there are really very few names which are in general use throughout the country; consequently a classical and systematic nomenclature is doubly needed. In the south of England, for instance, what terms appear to be more universally accepted than *Goldfinch*, *Tomtit*, and *Kingfisher?* Yet the first applies, in Yorkshire, to the Yellow Bunting, the second, in the same county, to the common Wren, and the third, in Sutherlandshire, invariably denotes the Dipper. Not long ago, I heard a ludicrous dispute between a Yorkshireman and a native of Surrey, respecting which bird was the "Tomtit," the former insisting that the southron's *Tomtit* meant the *Blue-cap!* What we in Surrey term the *Goldfinch*, is, in Yorkshire, better known as the *Thistle-finch;* in Suffolk and Norfolk it is as popularly designated *King Harry*, and in Scotland it is the *Gooldie*, or *Gould-speuk*, of our northern neighbours. But while I advocate a well-digested and temperate reformation of the vernacular names to objects of Natural History, let me by no means be understood to adopt every ill-sounding name which some nomenclators, in their great enthusiasm, have proposed. At some future time I shall probably take the subject in hand myself, and hope that whatever new names I shall then have to offer, will not only possess the merit of propriety and exclusiveness of application, but will, also, not offend the more fastidious, by their want of euphony. It will, also, be my object to introduce as few new terms as possible, as I see no occasion for substituting "Goldwing" for *Siskin*, as the vernacular for *Carduelis*, "Treeling" for *Pettychaps*, &c., as some have done.

But to return to what in Surrey is called the Reed-*sparrow*. Our naturalists are mistaken in supposing that people in general (that is to say, unscientific observers of discrimination) ordinarily confuse, as professed *naturalists* have done,* the Sedge Reedling with the Reed Bunting. I have generally found that both birds were well known, and their respective notes also. I believe they will be found everywhere to be distinguished by separate names, and in Surrey the Reed Bunting is called "Blackheaded Bunting;" as good a name, without reference to its foreign congeners, as the more exclusive one now judiciously employed by all our naturalists.

The Fen Reedling, however, about which the present paper is *professed* to be

* Witness the various accounts of the Reed Bunting's *song*.

written, is very commonly confounded with its congener, by observers of all descriptions, when in its native haunts. In the hand, the two species are sufficiently dissimilar, and, for members of the same very natural genus, are by no means closely allied; but, in the bush, a little attention is necessary to discrimate between the two, and our naturalists are, I think, generally culpable, for not describing, with more precision, how they are then to be known apart. Thus, Montagu simply informs us that "their notes are similar;" forgetting that this very similitude rendered it doubly incumbent on him to point out whatever difference there may be between them, as most of his readers would, doubtless, be much better pleased to be enabled to distinguish the two in their native wilds, than as mere cabinet specimens, removed from their places in nature. It should be the constant aim of the ornithologist to pourtray his various subjects as they appear in their wild haunts, in order that his readers may at once recognize them in a state of freedom. In this respect, many of Mr. Mudie's eloquent descriptions may be cited as absolute models of perfection.

The Fen Reedling's notes are, most undoubtedly, very similar to those of its congener; but may be distinguished by a little attention to the following particulars. The song is even more hurriedly delivered, and is, also, more continuous; there are no harsh discordant chirpings, no apparent imitations of the Sparrow or Chimney Swallow; at the same time, the chant is certainly less varied, and, indeed, consists but of an incessant repetition of a number of detached chirrups, some of which are, however, by no means unmusical. This, also, is kept up night and day, though less habitually in the night season than that of the Sedge Reedling; and it is never uttered with more emphasis than when any one is very near the nest, an incident which provokes many of what are commonly termed "the Warblers" to sing loud, particularly the Blackcap and other Fauvets, as most bird's-nesting persons must have often noticed. The Fen Reedling sometimes chirrups on the wing, as it passes from one bush to another, but I believe it never rises singing into the air, like its only ascertained British congener. It also continues to chatter much later in the season than the Sedge Reedling, and may be heard till about the middle or third week of July; wherefore those observers who may have fancied that they have heard the Sedge Reedling until this period, will do well to entertain at least a suspicion that it was *S. arundinacea*, that is to say, if they were not previously well acquainted with the notes of the latter species.*

* I have since heard a Sedge Reedling pertinaciously chattering on the 20th of July, but during a refreshing thunder-shower, succeeding a long period of drought; a juncture at which, of all others, the feathered race are particularly musical; (see Mudie's description of the Green Woodpecker). Although many Fen Reedlings were in the vicinity, they were all silent, and I heard only that one Sedge Reedling, where, a few weeks before, both species would have vied in garrulity. As a general rule, therefore, this does not affect what I have above stated. The same evening, the Fen Reedlings were singing in the

Some writers have made out the Fen Reedling too *exclusively* an inhabitant of reedy places, which, after all, are not its most favourite habitat. No doubt it is commonly found in such situations, and frequently suspends, or rather fastens, its nest to a few contiguous reed-stems, as I have seen repeatedly; but I have more commonly observed it in tall bushes growing near the water, and sometimes placed against the trunk or large branch of a willow or poplar, interlacing one or two upright side shoots. When there are gardens adjoining its haunts, it very commonly selects a lilac-bush, and in such localities the nest will be rarely found among the reeds. I have now a beautiful specimen before me, which is fastened to a single slender stem of elder, from which, within the centre of the fabric, issues a young green shoot, the extremity only of which is visible.* One, described by Mr. Rennie, was situate within a tuft of lucerne, and, consequently, very near the ground; but I have seen them at a height of ten, twelve, and even fifteen feet from the surface, placed amid the perpendicular shoots of willow or lilac. This species is very partial to gardens in watery situations, and will usually admit of a much closer approach than its congener; but still, the glances one is enabled to get at it are so momentary, and oftentimes against the light, that unless our suspicions are aroused, it is seldom that an unpractised eye can tell it readily from the Sedge Reedling. Its bill, however, is considerably larger, and the whole plumage of a much more uniform tint, without the pale streak over the eye, so conspicuous in the other species.

The Sedge Reedling's nest is always placed near the ground, amid a thick tuft of herbage, or among the shoots from a low stool of willow: it is of somewhat massive construction, a great deal of material being worked up, and the cavity deep, containing often as many as seven eggs, of a pale ground colour, thickly besprinkled with small, confluent, greenish specks, which, at the large end, often form a zone; sometimes a few larger ash-coloured spots are observable, and, not unfrequently, some blackish dashes at the large end, which may be easily washed off by simply wetting them: a mode that will obliterate many of the darker markings upon the eggs of birds. The young of this species differ very little from their parents, but have a number of dusky spots upon the breast. Interior of the mouth bright orange.

same place, with very great spirit; which confirms an observation I have often made, that night-singing birds always continue their notes longer by night than in the day-time.

* I have subsequently seen a nest about which was wound a long piece of fishing-tackle. This nest was situate about twelve feet from the ground, and was fastened to some slender twigs of *Viburnum*: in construction it more resembles those specimens which are built among the reeds, being otherwise chiefly composed of the seed-tops and softer leaves of reeds and sedges, without any moss or cottony substance interwoven. It is, however, considerably less compact and neatly finished than that described in the text, and contains a less quantity of material. Those in the reeds are mostly of elegant formation.

The nest of the Fen Reedling also contains a good deal of material, but more compactly and beautifully interwoven. It is also very deep, whether it be placed among the reeds, where it is liable to be blown about by the winds, or amid the clustering, rigid stems of the poplar, when perfectly secure from such annoyance. The eggs are most usually five in number (more than which I have never known), of a pale, greenish white, blotched all over, and spotted with greenish brown, and sometimes a few spots of ash colour: there are likewise commonly some dark marks at the larger end, which, as in those of the other species, may be soon obliterated. The young are altogether more rufous than their parents, particularly on the throat and under parts, but have no trace of the breast-spots observable in the other, and the interior of the mouth is yellow; there are also two large black spots upon the tongue, which are very conspicuous when the young open their mouths for food. Both species leave the nest remarkably early, before their feathers have half attained their proper development. The notes of the young of both are harsh and dissonant.

I do not conceive it necessary to enter further into the history of these little birds, as might be done at considerable length: should the Fen Reedling occur in the vicinity of any reader of this article, he surely will not now fail to detect it. I am very desirous of ascertaining, with accuracy, how the migratory land-birds are distributed over the country; a fact which can only be satisfactorily elucidated by the co-operation of naturalists resident in different parts. At present there is a good deal to be learnt on this subject.

I have termed this species "Fen Reedling," as I think, it is rather more expressive of the precise nature of its haunts than *Marsh* Reedling, which has been proposed. The words are, undoubtedly, nearly synonymous, but the latter had better be reserved for *S. palustris*, an allied species, not hitherto found in Britain. In the fenny counties of England, and in Holland, the *S. arundinacea* is an exceedingly abundant species, and, according to Mr. Neville Wood, it occurs, in this country, as far north as Derbyshire: how far beyond this I wish to determine, and have penned the present article in the hope of ascertaining.

ON THE PAPILIO MACHAON,

By J. Curtis.

Of all the various sources of gratification arising from the study of insects, none appears to me more interesting than the rearing of them, very especially the Lepidoptera. We are enabled at our leisure to investigate and study their wonderful economy, and at the same time to obtain the most perfect specimens for our cabinets; thus enhancing the beauty of the collection, and securing perfect insects for future description.

It was my intention to have offered some *general* remarks on the pupæ or chrysalides of that favourite family the Papilionidæ; but I find that, in the present number, I must content myself with describing the process of the caterpillar of *Papilio machaon*, in changing to the pupa state. The caterpillar of this truly elegant and graceful insect (one of the two species of *Papilio* which we can alone lay claim to as British) having fixed upon a spot where he intends to take up his abode for the period of his imprisonment, turns his head on one side, and attaches a thread, which he carries over to the other, where he also fastens it, and returns again and again, backwards and forwards, until it has acquired a sufficient thickness to sustain his weight. The caterpillar now, having laid hold with his anal feet, is supported by these combined threads, which pass under the junction of the thorax and abdomen; and, by a violent muscular action, the skin of the caterpillar bursts at the head, and it is pushed or thrown off like an elastic garment. Having seen this remarkable process accomplished, I was curious to know by what means he could fasten the apex of the abdomen to the box; and, from the observations which I was enabled to make, I feel satisfied that it is by ejecting a glutinous fluid through the pores of the tail, which is the analogue of the anal feet, for, the skin being cast off, he placed the apex of his body close to the box, to which it instantly adhered. I then detached it, and again it firmly united; but a third trial had probably so exhausted its powers, that it afterwards remained suspended by the thoracic chord alone.

MUSIC OF SNAILS.

THERE is a poetical notion that Oysters, amongst other gentle qualities, love minstrelsy, and the fishermen, in some parts,

"Sing, to charm the spirits of the deep,"

as they troll their dredging nets; for

"The Herring loves the merry moonlight;
The Mackarel loves the wind;
But the Oyster loves the dredging song;—
For he comes of gentle kind."

These lines gave rise to a communication from a young lady, which I will send you. Perhaps some of your readers may confirm the supposition of the Snail's musical capabilities. She says:—"One evening I kneeled upon the window seat, when it was nearly dusk, and heard a soft *musical* sound; not a humming or murmuring, but a truly musical tone. I saw a Snail, and, having a desire to annihilate those destroyers of fruit and flowers, took it from the window. I had silenced the music! I recollected what I had heard, and felt a sort of pang."

S. KENNAWAY.

NOTICE OF THE REPORTED CAPTURE OF THE COMMON GAR-PIKE (BELONE VULGARIS) IN THE RIVER TAME.

In the month of April last, I received from Mr. Richard Bird, Surgeon, of Tamworth, a fine specimen of the common Gar-pike, said, by the man from whom he obtained it, to have been just caught in the River Tame, about two miles below Tamworth. That a sea-fish not mentioned, by any Ichthyologist with whose writings I am acquainted, as ever frequenting fresh water, should have ascended an inland river, to the distance of about one hundred and fifty miles from its termination in the ocean, appeared to me a somewhat extraordinary fact: and I should have been induced very strongly to suspect the correctness of the statement made to Mr. Bird, had not that gentleman, who is a very accurate and cautious observer, assured me that the fish exhibited the peculiar silvery lustre, and all the other characters of freshness, which indicated that life could not have been, many hours, extinct. I have, this day, seen Mr. Bird's informant; and questioned him very closely on the subject. He states that he took the fish, given to Mr. Bird, and another, considerably larger, of the same species, with a net, in the river Tame, just below Hopwas bridge; that it is the only instance of the capture of such fish in fresh water, which has fallen under his observation; but that an old fisherman, of Tamworth, recollects having taken a Gar-pike, about twenty years ago, in the river Tame, near Hopwas.

I shall feel much obliged by the communication, through the medium of *The Naturalist*, of any fact calculated to throw light upon this obscure and, in my opinion, still somewhat doubtful statement. That such a fish as the Gar-pike, which, however agile and vivacious, is not known to possess the saltatorial powers of the Salmon, should have made its way over the numerous weirs existing on the course of the Tame and Trent between Hopwas and the point of conflux of the latter with the Humber, it is difficult to conceive. A few weeks previously to the date of this reported capture, the Trent and its tributary streams had, I may, however, observe, been swollen to an unwonted height by the rapidly-dissolving snows, and profuse rains, of the early spring.

I shall conclude my brief notice with a slight outline of the generic and specific characters of this curious fish, and an exposition of the site which it occupies in the modern systems of Ichthyology.

The Gar-pike, associated, in the System of Linneus, with the common pike, under the title of *Esox belone*, has, of late, been separated from *Esox*, and taken as the type of a new genus, named *Belone*, from Βέλονη, the Greek designation of the gar-pike. The following are the generic characters of *Belone*; as traced by Fleming and Yarrell. Muzzle attenuated and greatly prolonged. Intermaxillary bones forming the entire margin of the upper jaw. Both jaws furnished with minute teeth; none, on the vomer, palatine bones, or tongue. Along each side

of the abdomen, a row of carinated scales. Dorsal and anal fins entire. Contains only one British species, *B. vulgaris*, the subject of our present sketch: which varies, from eighteen inches to two feet, in length; has the lower jaw considerably longer than the upper; *dorsal fin*, of 18 rays, situated very far behind; exactly opposed to, in situation, and resembling in figure, the *anal*, of 21 rays: *pectoral* of 13 rays, small, and attached a little behind the gill-opening: *ventral*, of 7 rays, still smaller, and situated far back. *Caudal fin*, of 13 rays, and forked. *Colour:* Head, back, and dorsal portion of sides, fine bluish-green. Gill-covers, and other parts of the body, of a bright silvery hue.

The flesh is edible; and said to resemble, in flavour, that of the Mackarel; but, from the circumstance of the bones acquiring a green colour, when boiled, a popular prejudice almost universally exists against its dietetic employment. On this account, also, it is sometimes distinguished by the provincial designation of *Green-bone:* at others, as preceding the Mackarel in its annual arrival on the coast in April, by that of the *Mackarel-guide.*

The ventral fins of the Gar-pike being situated posteriorly to the pectoral, this fish has, consistently with the principles of ichthyological arrangement adopted by Linneus, been placed in his Order *Abdominales*, of true or osseous fishes. Cuvier, in his distribution of this Class, constitutes three Orders of Malacopterygious, or Soft-finned Fishes: of these, the *first*, or *Abdominales*, is distinguished by the attachment of the *ventral posteriorly to the pectoral fins:* the *Second*, *Sub-brachiales*,—by the *insertion of the former below the latter;* and the last, *Apodes*, by the *entire absence of ventral fins.* Consequently, the Gar-pike belongs to the Order, *Malacoptérygiens Abdominales*, of Cuvier's System; and, as nearly allied to the common Pike, the genus *Belone*, to which it belongs, is included, by British Ichthyologists, in the *Esocidæ*, or Pike-family. This genus, as I have before observed, offers only one British species,*—la Bélone, of the French, —and der hornfisch, of German Naturalists. Figures of the Gar-pike are given by Pennant, *British Zoology*, vol. iii., pl. lxxiv.; by Donovan, *Natural History of British Fishes*, vol. iii., pl. liv.; and by Yarrell, *History of British Fishes*, vol. i., p. 391.

June 30th, 1836. S. P.

* The species, captured by Mr. Couch, at Polperro, and regarded by him,—See *Linnean Transactions*, vol. xiv., p. 85,—as the *Esox Brasiliensis*, or Little Gar, is probably only the young of some other fish: and the Saury, referred, by some Naturalists, to the *Belone* genus, under the title of *B. Saurus*, has been taken by Lacépède, to constitute a new genus; and named *Scomberesox saurus*, by Fleming; See *History of British Animals*, v. i., p. 184. It is principally distinguished from *Belone*, by the division of the posterior portions of the dorsal and anal fins into several finlets resembling those of the Mackerel:—hence the propriety of the generic designation, *Scomberesox*, or Mackarel-pike; and by the bi-carinated abdomen. An admirable figure of the Saury Pike is given, p. 394 of Yarrell's 1st vol.

THE REDSHANK.

By B. R. M.

In my shooting excursions lately, I have not unfrequently met with that very pretty and interesting little bird, the Redshank *(Totanus calidris)*; and as my observations upon it lead me to conclude its habits and manners to be rather different from what they are, in general, supposed to be, I send you the result, which may, perhaps, be interesting to some of your readers. I confess I was rather surprised at first to find the Redshank always in *very large* flocks, as I had always previously considered it and its congeners to be birds of solitary habits; but I have very seldom seen it in this neighbourhood in flocks of less than a dozen, frequently amounting even to one hundred and fifty, or two hundred; and the larger the flock the more shy and difficult were the birds of approach. Indeed, even in small flocks, it generally contrives to baffle and elude the attempts of the sportsman; as it is always on the look out, and takes wing on the least alarm, or the slightest appearance of approaching danger. Towards the beginning of the breeding season, they are, however, rather more accessible; for they do not fly very far on being disturbed, but generally alight again a few hundred yards off. The breeding season is the only time of the year in which they are not found in flocks; at this period they leave the shores, and disperse themselves over the country, in places more suitable for incubation. The tide here, on receding, leaves a very large surface of muddy sand exposed; and this seems to be peculiarly favourable to birds of this class, and accordingly it is very much frequented by the *Tringæ*, *Totani*, *Numenii*, and other birds of this family; for all these obtain their food in the same situations. The Redshank is, I think, most nearly allied, in its habits, to the genus *Tringa*; and it has the same kind of dipping motion, when running on the sands, for which the latter is so remarkable. I was very much struck with the curious manner in which they dart their bills into the mud or sand, for the purpose of getting at their food. They seem to bury it in the sand nearly its whole length, by jumping up, and thus giving it a sort of impetus, if I may use the word, by the weight of their bodies pressing it downwards. The bill is about an inch and a half long. The legs are delicate, of a deep orange colour, and long.

Dublin, May 10th, 1836.

REVIEWS.

Recherches Sur les Poissons Fossiles. Par Louis Agassiz. Neuchatel (Suisse). Quarto.

Professor Agassiz, in this elegant and most instructive Monograph on Ichthyolites, proposes, after an introduction on the study of fishes, to "exhibit a view of the Comparative Anatomy of the organic systems, which may facilitate the determination of the fossil species; a new classification of Fishes, shewing the relations which they have with the series of (geological) formations; the exposition of the laws of their succession and development during all the revolutions of the terrestrial globe, accompanied by general geological considerations; and, finally, the description of five hundred species no longer existing (except in a fossil state), and of which the characters have been determined from the relics contained in the earth's strata."

This is a truly comprehensive plan,—the emanation of an active, enterprizing, and profoundly philosophic spirit. As far as we can judge from an examination of the First Number (Première Livraison) now before us, it has verily been worked out with a master's hand. A production more honourable to the talents and industry of its author, or more useful and interesting to the Ichthyologist, the Comparative Anatomist, and, especially, to the student of Geology, we cannot well conceive.

Of the divers modes in which a book may be reviewed, the Analytical is peculiarly, and almost exclusively, applicable to those scientific productions which have facts, rather than hypotheses, for their foundation. Whenever such productions are, either from the expensive form, or from the language, in which they have been published, inaccessible or unavailable to the great mass of readers whom they are calculated to interest and inform, the motives for the analytical method are greatly and obviously strengthened. Such are precisely the conditions of the valuable *Researches* of Professor Agassiz. The work is, moreover, written in a style which we, who have long been familiar with the scientific language of the French, have at times found it no easy matter to comprehend, or at least render intelligible to the English reader. Consequently, it will afford an admirable subject for a purely analytical sketch, and for the exhibition of our skill and patience,—if such we possess,—in the difficult but useful process of literary evisceration.

The various new branches or departments of human acquirement demand, as they successively arise, new terms for their apt and precise designation. The influence of a philosophical language on the character and progress of the Sciences is far greater than a superficial view of the subject would lead us to believe. The

study of fishes in a living or recent state is, with obvious aptitude, called *Ichthyology:* for that of fossil fishes, we, at present, possess none but a circuitous and consequently inconvenient form of expression. *Ichthyolithology,** a term alike concise and destitute of ambiguity or objection, is so obviously and peculiarly apposite, that our only wonder is it should have been left for us to indicate or propose.

The whole work of Professor Agassiz will consist of five volumes, in quarto; and two hundred and fifty folio engravings. One part or number, composed of from ten to fifteen sheets of letter-press, and a fasciculus, of about twenty plates, is published every four months. The price of these is, in France, twenty-four francs.

The First Number contains three sheets of letter-press of the first volume; six sheets of the second; two, of the fourth; and one, of the fifth: the first *Fasciculus* of Engravings,—seven belonging to the first volume; ten, belonging to the second; and three each, to the fourth and fifth;—in all, twelve sheets of text, and twenty-three engravings. From this unusual and apparently irregular method of publication, the ostensible object of which is a pleasing "variety," no inconvenience, the Professor asserts, will result: as all his materials have been, beforehand, systematically arranged.

A Preface, and two Chapters, constitute the subject-matter of the first three sheets of the *First* Volume. To an analysis or description of these, our present article will be exclusively devoted. The work is dedicated in a style of simple, fervid, and affecting eulogy, to the CUVIER of his country, the illustrious HUMBOLDT.

PREFACE. The importance of the study of Ichthyolithology is very great: since fossil fishes, which occupy so elevated a rank in the series of organized beings, are found without interruption, and sometimes in great abundance, in all the *terrains de sédiment,* from the oldest to the most recent formation: and their state of preservation is generally such as to allow an examination of all those parts which are requisite to decide their classification, and to impart a correct knowledge of their structure. With little trouble, the entire skeleton, and all its fins, may be restored: and the scales are, in general, so well preserved as to supply the most valuable and unerring characters.

In the sciences of Zoology, Comparative Anatomy, and Geology, it is highly advantageous to be able to follow, in the Class of Fishes, the changes of organization which have been effected throughout all the revolutions suffered by the globe. Of all animals, fishes are those most intimately connected with the accidents of water: and, highly elevated, moreover, in the scale of organization, they are far better calculated, than any other Class, to furnish clear ideas respecting the revolutions which have taken place in the vast oceans by which the earth was formerly

* Ἰχθὺς, a fish; λίθος, a stone; λόγος, a discourse.

covered. By the information thus acquired, it is possible to determine whether a fish inhabited river, lake, or pond, the open sea, or the shallow waters; whether it lived on the surface, or frequented the great depths. These indications may serve to determine divers important circumstances in the formation of rocks.

Another peculiar advantage resulting from the study of Fossil Fishes is, that the examination invariably makes us acquainted with the whole organization, and affords a perfect idea of its pristine condition. Such researches must consequently lead to results much more satisfactory than the study of the *Mollusca*, of which only the shells have been preserved; and more general than that of the *Mammifera*, the whole skeleton of which is rarely discovered, and that only in the most recent strata. The Reptiles, even when more generally known, can scarcely emulate the fishes in importance: since they are of rarer occurrence, and were developed at a later period in the series of creations.

Fossil Fishes differ according to the great geological formations in which they are found; and exhibit, in each, a peculiar character of organization sufficient for their determination. They differ the more widely from the fishes of the existing period, as they are found in formations of a more ancient date. All the bony fishes anterior to the chalk, are referrible to genera, which have no longer representatives in the present world: they are invariably characterized by rhomboidal scales covered with enamel. Those of the same formations, which, in the present System, would be associated with the *Chondropterygii*, possess, like the genus *Cestracio*, flattened, dotted, or differently plaited teeth.

Comparisons thus multiplied, justify, in the opinion of the Professor, an alteration in the arrangement of Fishes; which will frequently indicate affinities hitherto unknown: and the new classification, which he advocates, is intended to expose the whole of the natural relations of fishes with each other, and their succession in the series of formations. General geological considerations, moreover, drawn from the study of these fossils, will exhibit the connection which exists between the organic development of the earth, and that of the different Classes of animals. These ideas will be completed by the organic representation of each of the great geological periods.

Great pains have evidently been taken, by Professor Agassiz, in examining the various organs of fishes found in a fossil state, and in discovering the characters proper for their distribution into families, genera, and species. With this view, he has applied himself, in an especial manner, to the study of the skeleton of fishes, and to the microscopic inspection of several thousands of scales belonging to more than two hundred species of different genera and families.

As regards the publication of the work, the first volume will be devoted to an examination of all the general questions. It will contain an Introduction to the study of Fossils; an indication of the sources from which the Professor has drawn, in the prosecution of his researches; and the general anatomy of the

skeleton of fishes, and of all those parts which may contribute to determine more precisely the fossil species. In proposing a new classification of these animals, the Professor will comparatively examine, under their zoological relations, all the fossil species which have bsen described; the genera to which they belong, and the situation which they should occupy in the Ichthyological System: in fine, he will seek to establish the relations of organization which exist between the fossil fishes of all the geological formations, and those of the present epoch: and exhibit the modifications which this study renders it necessary to introduce into the methodical distribution of fishes.

Each of the four succeeding volumes will contain the description of the fossil species of one of the Orders of the Class. The second volume will comprehend the Order of the *Ganoïdes;* the third, that of the *Placoïdes;* the fourth, the *Ctenoïdes;* and the fifth and last, the *Cycloïdes*, of the Professor's classification. All the species will be delineated with great care, and in minute detail; and be accurately compared with the living species which most nearly resemble them; with their skeletons and scales; and, in fact, with all the parts which may serve to convey the most correct idea of them, and to establish most completely their generic and specific characters.

Chapter I. includes "*Notices of the Collections of Fossil Fishes which the Professor has, himself, examined; and of the materials which have been placed at his disposal for the determination of the species.*" The long enumeration of these Collections is terminated by an indication of those which it is necessary for the student to visit, in order to acquire a general knowledge of the fossil fishes of the different geological formations. An *Appendix* to this Chapter is occupied by a "*Notice of the Collections which the Professor has not seen.*" In the whole of these, he calculates that a sufficient number of new species may be discovered to increase, by at least one half, the catalogue of Fossil Fishes already known.

Chapter II. is devoted to a "*Notice of the works which contain documents upon Fossil Fishes.*" Of the two Sections into which it is divided, the *first*, A. comprehends "*General Works, or particular Memoirs, which treat exclusively of Fossil Fishes:* and B. *General Works, or particular Memoirs, geological, zoological, or paleontological, containing Chapters, or scattered Notes,*" on the same subject. The work of Columna, *De Glossopetris Dissertatio*, 4to., Romæ, 1616, stands at the head of this Catalogue. It is terminated by that of the Spaniard, Torrubia, entitled, *Aparato para la Historia Natural Espannola*, folio, 1754.

The lithographic drawings, which accompany this Number, are executed in a style of extraordinary neatness and elegance: and, if we may be allowed to judge from the few instances in which we have yet had an opportunity of comparing the figure with the original, the correctness is not surpassed by the beauty of the execution.

A Manual of British Vertebrate Animals: or Descriptions of all the Animals belonging to the Classes Mammalia, Aves, Reptilia, Amphibia, and Pisces, which have hitherto been discovered in the British Islands, &c. By the Rev. Leonard Jenyns, M.A., &c. 8vo., pp. 559. Cambridge. 1835.

In the literature of British Zoology, the want of a work like the present has long been felt. The *Synopsis*, of Dr. Berkenhout, complete and excellent for the times in which it appeared, and valuable to those whose hands were destined to receive it, has long been out of print: and the information which, even when attainable, it is found to convey, is rendered uninteresting, and comparatively useless, by the discoveries and the innovations,—if not the improvements,—of zoological science in this inquisitive and aspiring age. Berkenhout, in the last Edition of his *Synopsis*, enumerated only fifty-four species of British *Mammifera*, including man: while, in the present work, man, with the domesticated, naturalized, extinct, and doubtful species excluded, "the number of described *Mammalia* amounts to sixty-one." And of the Zoophagous *Cetacea*,—by far the most feebly-executed and unsatisfactory portion of Mr. Jenyns' work,—two or three well-defined species which inhabit the seas, and occasionally visit the coasts, of Britain, are excluded from the catalogue of the Reverend Author. The whole of the British Vertebrated Animals, in fact, described by Berkenhout, amount only to four hundred and seventy-two: while the species of the five Classes, acknowledged as British by the Cambridge Zoologist, "when added together, give five hundred and eighty-one as the total number;" leaving, in favour of the latter, an increase of one hundred and nine newly discriminated, or newly discovered, species* of British *Mammifera*.

Upon the character and execution of the *British Fauna*, of Dr. Turton, which, with the exception of Pennant's *British Zoology*, comes next to the *Synopsis* of Berkenhout in order of time, we are unable to pronounce a judgment: a copy of it is nowhere to be had. The name and attainments of its author will, however, sufficiently vouch for the respectability of the work. But thirty years have now nearly elapsed since it was published; and the value of literary productions on the Natural Sciences is far more frequently impaired, than left untouched, by the destructive hand of time. The excellencies and defects of the zoological labours of Pennant are too well known to require eulogium or exposure here. As a work exhibiting far more of a popular than a scientific or synoptical character, the *British Zoology*, indeed, does not legitimately come within the line of our literary retrospect.

	Mam.	*Aves.*	*Rept.*	*Pisces.*	*Total.*
* Berkenhout	54	245	15	158	472
Fleming	50	264	11	162	487
Jenyns	61	297	13	210	581

Far otherwise with the *History of British Animals*, of Dr. Fleming; which, with all its errors and deficiencies, and after all the unmerited obloquies cast upon it, we are bold and stubborn enough to regard,*—yes, and publicly eulogize,—as a very meritorious and creditable production. The arrangement is, we are aware, confused and highly objectionable, and the characters of many of the genera will not stand scrutiny. Still, the specific characters are traced with a clear and masterly hand: and the *History of British Animals* has, we are confident, done much to facilitate and promote the study of zoological science in this country. The total number of British *Vertebrata*, we may add, enumerated or described by Dr. Fleming, amounts to only four hundred and eighty-seven; leaving a majority of ninety-four species for the Catalogue of Mr. Jenyns. (See note, p. 46).

Lectures on the Vertebrated Animals of the British Islands, published in 1831, by Dr. Shirley Palmer, next claim our attention. The very easy, popular, and even playful style in which this little work is written, would preclude its introduction into a strictly scientific retrospect; were it not for the *Table* of British *Mammifera* by which it is preceded, and the generally accurate and useful *Synopsis* of the various genera and species appended to it in the form of notes. In this table, and these notes, Dr. Palmer has enumerated and characterized sixty-five species of Mammifera belonging to the British islands. If to these are added the ten new species of the Bat-family described by Mr. Jenyns, the Oared Shrew, *Sorex remifer*, and the Bank-Campagnol, *Arvicola riparia*, first noticed by Sowerby and Yarrell, the catalogue of British *Mammalia* would be swelled to seventy-seven,—a number which exceeds, by sixteen, the whole of the vertebrated animals specified, by Jenyns, as inhabiting Britain, or frequenting its shores. From the period which has elapsed since the appearance of the first Part of Dr. Palmer's *Lectures*, there is little probability that he will now complete them.

The *Manual* of Mr. Jenyns, to which we finally and gladly revert, is, with a a few trivial exceptions, all that the student of British zoology can wish for, or require, in an elementary and synoptical work,—clear, luminous, minute, and, in general, extraordinarily accurate. We congratulate the reverend gentleman on the ability which he has so conspicuously exhibited in the execution of his arduous undertaking. We congratulate the younger naturalists of our country, on the acquisition of such a guide in their zoological studies and researches. Greatly should we rejoice to see the remaining Classes of animals,—the *Invertebrata*,—of the British Islands, synoptically illustrated by a hand as masterly, and in a style as clear, unostentatious and unexpensive, as that of the Rev. Leonard Jenyns.

* We have, of late, been mightily amused by the freaks of a modern writer on "Mammalogy;" who, while arranging the Bats under the Order *Quadrumana*, has the modesty to stigmatize the *History of British Animals*, as a "wretched" production. Does he know how his favourite term *Mammalogy* is constructed; or what *Quadrumana* actually means? Has he deigned to peruse the really valuable work which he so unjustly decries?

[From the Foreign Scientific Journals].

Professor Meisner, of Basle, has recently given some account of the prodigious growth of incisor teeth, in some of the *Rodentia*, which he thus accounts for. These teeth, in their normal state, are continually growing in length, slowly rising in height from the alveola, in such proportions as become requisite to compensate for the daily wearing away of their chisel-formed edges. This growth not ceasing during life, he remarks that all such teeth are invariably tubular at their base; and that the same effect is produced not only in the incisor teeth, but in all others whose roots remain unclosed. In animals—such as the Elephant, Babiroussa, Hippopotamus, and Narwal,—where these bony productions serve as a defence, the same observation seems fully to apply; and they sometimes attain an enormous length, no given measure having been ascribed to them for the full period of their maturity, that depending solely upon the duration of the animal's life. In the molar teeth of Hares, Rabbits, the Beaver, and some other Rodents, this fact holds equally good; but it is not so in the domestic Rat, Mouse, and others, in which the alveola is always closed; he cites the observations of Blumenbach on the monstrous growth of the molar teeth of a Hare, examined by him, and also those of Rudolphi on a similar lusus in an Indian Pig. We have fully confirmed these observations by an examination of several extraordinary examples of this phenomenon in the matchless Museum of the College of Surgeons. In a Rabbit, we observed the incisor teeth to have grown in a spiral form: in a Hare, also, in which, from their position, they must have occasioned the animal's death, by entering the head, or pressing so firmly upon it, at either side, as to wound the flesh and penetrate it. It thus appears clear that a beautiful provision of Nature is exhibited in the formation of these teeth; their continual increase enables them to preserve a fine, even, cutting edge, always set to a particular angle with each other, so long as they remain truly in opposition; the motion of gnawing or cutting their food, having also the effect of keeping the teeth sharp, by means of their constantly slipping over each other. If, however, by any accident or malformation of parts, these teeth cease to act against each other, their growth still going on, they form a curved line, extending to an indefinite length during the animal's life, and occasioning no doubt, in many instances, premature disease and death. So perfect is Nature in all her mechanism, that the slightest deviation from it, by accident or other causes, produces fatal effects.


NATURAL HISTORY

FICEDULA GARRULA.

ORDER.—INSESSORES. FAMILY.—SYLVIADÆ.

WHITEBREASTED FAUVET.

By Edward Blyth, Esq.*

As the Whitebreasted Fauvet—the Lesser Whitethroat of most of its describers—appears to be very little known, even to natualists who have attempted to describe it, I shall endeavour to give a full account of its habits, as observed in a neighbourhood where it is rather a common bird than otherwise; and I have no doubt some of the readers of *The Naturalist* will recognize it as a regular summer visitant in localities where it has been hitherto unsuspected.

It arrives in Surrey about the middle, or towards the close, of April, though I remember to have once seen its nest, with three eggs, so early as the 23rd of that month; this, however, I consider to be a very unusual occurrence, as sometimes it is not heard here till the beginning of May. Its coming is always announced by its characteristic shrill, shivering cry, often delivered from the midst of some tall, thick, hawthorn hedge, or from amid the branches of an elm, especially if growing near a ditch. It appears partial to the vicinity of human abodes, and is particularly abundant about little hedge-bound cottage gardens, where its tiresome and monotonous, but lively, note is perpetually reiterated, and becomes irksome from its too frequent repetition. It abounds in most of the market gardens near London, and may be discovered even on commons, provided there are trees; but it is never found in open braky localities, or low hedges, where there are no trees—the proper habitat of its congener, the Whitethroated Fauvet *(F. cinerea)*. In tall and leafy hedges, however, and in shrubberies, it occurs very commonly. The Whitebreasted Fauvet is the most lively and energetic of the British species, and the most restless when in motion. It is also of an extremely quarrelsome disposition, and will sometimes very fiercely attack and drive away a Whitethroat from the vicinity of its abode. The same pugnacity is displayed in a still greater degree in confinement, which renders it necessary to keep it alone, to prevent its worrying other birds to death, even though thrice its own size, and apparent strength. I have noticed in an aviary a bird of this species successively

* Communicated by Neville Wood, Esq., author of *British Song Birds*, &c.

drive away several of the larger *Fringillidæ*, the large Tit, and many others equally, to all appearance, its superiors in combat; but which were, nevertheless, quite unable to withstand the spirited attacks of the little Whitebreast. A very tame one, that was long in my possession, and which was often suffered to fly about the room, would frequently alight on the wires of a cage containing a Robin, and, on the latter approaching to defend his castle, the little termagant would fight fiercely with him through the wires, and soon compel him to retreat. Phrenologists may look for an ample development of combativeness in this little bird's cranium.

The characteristic activity of the Whitebreasted Fauvet is also very perceptible in confinement, and far exceeds that of any of its congeners. This beautiful little bird often assumes attitudes peculiarly calculated to shew itself to advantage;—throwing back its head, and at the same time partially expanding its wings and tail (the white exterior feathers of which then appearing conspicuous); in a moment it darts about with such rapidity that the eye can scarcely follow, or performs, in quick succession, rapid summersets in the air, throwing itself over backwards, and in a variety of fluttering and zig-zag ways. Then, perhaps, after a short time, it may be observed with the feathers of the crest and throat erected, and tail more or less raised, and often flirted, *check, check, checking* about, as is an occasional habit of all the Fauvets, more especially when they espy an enemy or object of distrust, which, in the wild state, they will thus follow for a considerable distance along the hedges.*

In the accompanying representation, I have endeavoured to delineate the bird in one of its characteristic attitudes, about to spring up into the air, and vacillate it knows not where; but such positions are, of course, only momentary.

The Whitebreasted Fauvet is of equally active habits in a state of nature, where, instead of dissipating its energy in the performance of summersets,† it may be seen, occasionally, fluttering, with strange irregular flight, from tree to tree, or winging a circuitous route across a field, ever and anon repeating its monotonous ditty as it flies; but it never rises singing into the air, or hovers warbling, as is observed in the Whitethroated Fauvet, or in the Dusky Furzelin (*Melizophilus fuscus*),‡ another species closely allied, though ranging in a separate minimum division. Indeed, its inward warble is rarely emitted on the wing, except immediately before it alights on a bough, as may be also noticed in the Blackcap and Garden Fauvets (*F. atricapilla* and *F. hortensis*), and in fact in numerous other small birds, all of which then continue the strain without stopping, after they have settled.

* All this I know from actual observation, having for many years paid especial attention to the highly interesting family of Warblers.—N. W.

† I have, however, noticed these summersets in wild individuals.—N. W.

‡ Dartford Warbler, of the books.

This inward warble of the Whitebreast is extremely pretty, cheerful, and lively, but very low, scarcely audible at a trifling distance. It consists of a variety of pleasing chirps, delivered continuously, in a warbling manner, and quite devoid of all that harshness which is too prevalent in the song of the Whitethroat. A note-like *sip, sip, sip,** is often introduced, which will enable the young ornithologist at once to recognize it. This warble is often repeated for many minutes, almost without intermission; as is also the case with that of the Blackcapt Fauvet, its more generally known congener. As in that charming songster, this warble commences, when in confinement, in spring, long before the loud notes are ever uttered, and it is similarly discontinued, by slow degrees, some time before the latter cease to be heard. As the Blackcap, too, almost invariably concludes with its loud and cheerful warble, so also does the Whitebreast mostly terminate with its loud, shrill, and monotonous shivering cry; which note not a little resembles the reiterated and tiresome chant of the Cirl Bunting. The louder songs of both the Blackcap and Whitebreast may be heard, though gradually less and less frequently, till the end of July.

The general habits of the wild Whitebreasted Fauvet approximate very closely to those of the Blackcap and Garden Fauvets, and it inhabits very nearly the same localities. Authors have described it to frequent exclusively the closest underwood; "on which account," says Selby, "specimens are only to be obtained with difficulty, and by patient watching." But it does not appear that this eminent ornithologist was personally much acquainted with the living bird, having, most probably, written from the imperfect description of some correspondent. In many parts of Surrey, where the species is extremely plentiful, it is as frequently observed in trees as the Garden Fauvet, and may be often seen, or rather heard (but, if watched for, may be seen also), at a considerable height from the ground. I have, indeed, more frequently noticed it near the summits of high trees than either of its British congeners, and have repeatedly shot it from such situations. Moreover, I cannot even admit that it is a particularly shy species; but, on the contrary, it is, from its restlessness, much more frequently visible, and therefore somewhat easier to procure, than either the Blackcap or Garden Fauvets. It may likewise be often seen resting, with its plumage puffed, perched conspicuously in the sunshine on some bare branch, where its snowy white breast renders it extremely noticeable.†

* Of course I am aware that consonants never occur in the notes of birds; at the same time, my purpose is sufficiently effected if some idea can be thus conveyed of the particular sound to which I allude, and this, I think, may be pretty correctly gleaned from the above attempt to spell it.

† I must here plead innocent of confounding, in this instance, the subject of the present memoir with the Grey Flycatcher (*Muscicapa grisola*), or the Grove Pettychaps (*Sylvia sibilans*), both of which may be often seen watching for passing insects in similar situations,

The nest is built in similar situations to that of the Blackcapt Fauvet, but is less frequently placed in a fork; sometimes it occurs in herbage close to the ground, and not unfrequently in tall hawthorn or other bushes, at six, eight, or even ten feet from the surface, but four or five is more the usual average. In construction it somewhat resembles that of the Whitethroated species, but is smaller, and more compact, and is invariably more or less lined with small rootlets, which is its distinguishing character. The eggs, four or five in number, are smaller than those of its British congeners, greenish white, blotched and spotted—chiefly at the large end, where the markings often form a zone—with brown and dusky ash-colour, the prevalent tints throughout the genus. They are comparatively little liable to variation, and have the spots always larger, and the ground colour much clearer, than in those of the Whitethroated Fauvet. The specimens figured in the plate represent, very nearly, the extremes of variation. This species is also exceedingly shy of having any liberties taken with its cradle, which it will forsake on a very trifling occasion.

The Whitebreasted Fauvet rears at least two, and, I suspect, often three, broods in a season, as I know to be the case with the Whitethroat. The young

their white under parts shewing very conspicuously. So far as I have observed, none of the Fauvets have any idea of following an insect upon the wing, however expert they may be at capturing them the moment they come within their reach. I have many times, in a room, seen the Whitebreast eagerly watch the motions of flying insects, and snap at them with almost unerring aim (though sometimes two or three times in quick succession) the instant they ventured within the reach of its bill; but I never knew one to attempt to follow them into the air, as is a common habit with the Redstart and Pettychaps genera (*Phœnicura*, and *Sylvia* as now limited). I observe, however, that Mr. Neville Wood, in his recently published work on *British Song Birds*, describes a habit of the Garden Fauvet (*F. hortensis*) which, he says, "does not appear to have been noticed by any preceding naturalist. And that is, its darting into the air to catch insects, in the same manner as the Flycatchers (*Muscicapa*), often taking its stand on a dahlia stake, watching for its prey, darting aloft with inconceivable rapidity, with its bill upwards, catching the fly with a loud snap of the bill, and immediately returning to its station, again and again to renew the same process, with similar success. Often as I have observed this interesting manœuvre, especially last summer, I do not remember a single instance in which it missed its prey." To these observations are annexed one or two remarks, in order to prove that he had not confused the Garden Fauvet with the Grey Flycatcher, a species with which, he assures us, he is equally familiar. For my own part, though I would by no means be understood to cast a doubt upon the accuracy of Mr. Wood's observations, still I cannot but observe that the habit he here mentions is at variance with the whole tenor of what I have hitherto noticed concerning the mode of taking insect-prey in this genus; all the members of which (I mean the British species) I have repeatedly seen to act precisely in the manner I have just detailed of *F. garrula*. I may add, also, that the individuals in which I have noticed this were not dull-spirited, broken-plumaged, victims of mal-treatment, but clean and perfect, lively and active, specimens, which the most scrutinizing eye could not have distinguished from wild birds.

are hatched after fourteen days' incubation, and in their nestling plumage nearly resemble the adult individuals, their feathers being, however. of looser texture, and the colour of the head and back more uniform The upper parts are of a brownish-ash colour, darkest about the ear-coverts, (which contrasts strikingly with the pure snowy white of the throat), and relieved by a lighter tint around the edges of the tertiary wing-feathers, which, however, do not in the least incline to mahogany colour, as in the Whitethroat: all the under parts are also white, inclining to silvery on the breast and flanks: exterior feathers of the tail whitish; legs and feet dusky lead colour. The adults differ chiefly in the purer grey of the feathers on the head, and some of the males have a very faint tinge, or rather gloss, of blush, upon the breast, as is more observable in the male Whitethroat.* The hue of the iris, also, which is hazel in the younger individuals, becomes of a beautiful pure pearly-white as they advance in age. Specimens with white irides are, however, comparatively seldom met with.†

Altogether, this is a bird of different aspect from that of either of its British congeners, but is nearly allied to a continental species, called *Sylvia passerina* by M. Temminck, and also to another, the *S. subalpina* of the same author,‡ which combines the peculiar structure of the Whitebreasted Fauvet with the dark vinous colouring of the Dusky Furzelin. All these little birds (more particularly the last-mentioned) are rather more full-looking and puffy of feather about the head and throat than the Blackcap and other typical *Ficedula;* and in affinities, appear to be intermediate between those species with black crowns and party-coloured tails, *(F. sarda, melanocephala,* &c.), and that form to which the Whitethroated Fauvet of this country belongs, and the continental *F. conspicillata;* which latter group, again, is connected with the typical species (those with tails of a uniform colour, as our *F. atricapilla,* and *F. hortensis),* by the intervention of the European *F. orphea,* a species common enough in the south of France, and remarkable for nidificating in society.§ The dusky Furzelin is, in many respects, intermediate between the Whitethroated and Whitebreasted Fauvets, (the Greater and Lesser Whitethroats of authors); but, nevertheless, possesses other characters of sufficient

* I remember to have read, in the writings of some French Naturalist, who laboured to prove that birds of the same species are much brighter coloured as we proceed southward, that this faint tinge of rose-colour on the breast of the present species is much finer in specimens obtained from Africa. What can be more shallow than such an assertion? since the identical individuals which pass the summer in Europe, retire, after having undergone their autumnal moult, to Africa, to spend the winter, and return in the very same garb to their summer haunts!

† I have only seen two with the iris perfectly white, three or four with it partially so. Of the former, one was a male, the other a female.

‡ *Curruca leucopizon* of Mr. Gould.

§ At least, so says Temminck:—"Niche dans les buissons, souvent plusieurs en un même lieu," &c.

importance to warrant its being ranked as a separate division, undoubtedly subordinate, however, in station, to *Ficedula*, of which it is a modification. In make of bill, the species composing the small sub-group of which the Whitebreasted Fauvet is typical, are intermediate between the Blackcapt and Whitethroated Fauvets, but approximate rather more to the former—their bills, in fact, differing chiefly from those of the Blackcap and Garden Fauvets in being somewhat more lengthened and attenuated. The Whitethroat's bill is more a miniature of that of the Black Thrush,* (each of which, be it remarked, are the *brake* birds of their respective genera), while this organ in the Blackcapt Fauvet is more in accordance with those of the arboreal Thrushes, (the Blackcap being likewise a tree-frequenting bird). The Dusky Furzelin presents the Whitethroat's bill, only rather more elongated and slender, and in general habits, song, nidification,† and eggs, approaches very nearly to the last-mentioned species, while, in other respects it as closely resembles the Whitebreast. Another character of the Dusky Furzelin, in accordance with the Whitethroat section of the Fauvets, is the yellowish colour of the legs and feet, which in the other *Ficedula* are of a leaden hue. In all the Fauvets, however, the structure of the bill is very different from what we observe in the genera *Salicaria* and *Sylvia*, which many systematists still confound with *Ficedula*, comprehending all these, and, indeed, many others equally distinct, in their vast and incongruous genus *Sylvia*, now with propriety restricted by most modern systematists to a truly *sylvan* group, the different species of Pettychaps, often popularly confused under the one name of "Willow Wren." It may be added, that the different species of Fauvet, even before they have a feather, may be told from the other genera just alluded to, by the red colour of the interior of the mouth, which in *Sylvia* is yellow, and in *Salicaria* either yellow or orange.

The Whitebreasted Fauvet exhibits a habit, in confinement, in common with the Dusky Furzelin, which is not observable in any of its British congeners,—that of climbing up the wires of its cage by repeated springs; a trivial particular, no doubt, but which is quite worthy of notice in connexion with its other peculiarities, as tending, together with many similar accordances, to intimate its near affinity to the last-mentioned species.

This same scansorial propensity was likewise observed by White, of Selborne, who, in one of his letters to the Hon. Daines Barrington, observes, that "a rare, and, I think, a new, little bird frequents my garden, which I have reason to suspect is the Pettychaps, [Garden Fauvet is intended]: it is common in many parts of the kingdom. * * * This bird much resembles the Whitethroat,

* *Blackbird* of ordinary colloquy.

† In this particular differing entirely from *Malurus*, to which it has been approximated.

but has a more white, or rather silvery, breast and belly; is restless and active, like the Willow Wrens, [genus *Sylvia*, as now restricted], and hops from bough to bough, examining every part for food;* it also runs [or, I should rather say, hops] up the stems of the Crown Imperials, and putting its head into the bells of those flowers, sips the liquor which stands in the nectarium of each petal. Sometimes it feeds on the ground, like the Hedge Dunnock, by hopping about on the grass-plots and mown walks." I have myself observed this latter habit, on more than one occasion. The other Fauvets are hardly ever seen upon the ground.

I may mention, among other accordances, observable in the Whitebreasted Fauvet and Dusky Furzelin, that both of these little birds emit, on certain emotions, a very peculiar low rattling note, which I have heard from no other species. This is repeated sometimes many times in succession, and in confinement, is almost sure to be uttered if any one approach their cage at night with a candle. From trivial peculiarities, such as these, we may judge of the true affinities of species.

The food of the Whitebreasted Fauvet consists of insects and their larvæ, which it seeks for with much assiduity amid the foliage of trees and bushes. It is less eminently frugivorous than the Blackcap and Garden Fauvets, more so than the Whitethroated Fauvet. Its depredations, however, are chiefly confined to the smaller fruits,—cherries, raspberries, and currants; later in the season, it devours elderberries, apparently feeding almost exclusively upon them. It departs rather late, a few stragglers occasionally remaining till the first week in October; indeed, that figured in the plate was shot in the last week of the preceding month, and accordingly exhibits the bird just moulted, with its feathers somewhat more neatly finished at the edges, than in those specimens which are killed in spring.

Nearly all birds shed, in the course of the spring and summer, the extreme terminal edgings of their feathers, and this by a natural process; not by their gradually wearing away, as is the common opinion. Thus, the white spots which adorn, in winter, the tertiary wing feathers of the Garden Siskin,† (*Carduelis*

* It will be observed that this most accurate naturalist does not by any means here corroborate the accounts given by Selby, Mudie, Neville Wood, and others, of the hidling habits of this species, nor lead one in the least to infer that it is "exclusively an inhabitant of the closest underwood;" but that the general tenor of his observations entirely bears out, on the contrary, what I have been asserting. If it be worth while quoting corroborative testimony, the Hon. and Rev. W. Herbert, in one of his interesting annotations to White's *Selborne*, justly remarks, on this particular passage, that "this bird certainly was not the Pettychaps [Garden Fauvet], which has not the manners here described;" but that "the detail exactly answers to the Blue-grey, or Lesser Whitethroat." —p. 304.

† For uniformity sake, I thus term the "Goldfinch" of the books; which latter term is however applied, in Yorkshire, to the Yellow Bunting. Hence the necessity of a systematical nomenclature.

elegans), disappear in summer, as if they had been cut out by a pair of scissors.* In some future communication, I may perhaps be induced to treat more fully upon this subject.

It may be remarked, that this specimen, killed so late in the year, was by no means, as some would otherwise perhaps be inclined to suppose, a weakly young bird of a late hatch, too feeble to accompany its fellows at the time of their migration; but its quill-feathers having been changed, (as is intimated by one or two of them not having yet attained their development), sufficiently proves that it was not a bird of that year, as no member of the *dentirostral* sub-order of perching birds changes its wing-primaries at the first renovation of its clothing plumage.

In confinement, the Whitebreast is hardy and healthy, and may be kept on the food usually given to insectivorous birds, allowing it also, occasionally, a little fruit, and insect diet whenever practicable. It mostly recommences singing about January; but does not utter its loud note until about six weeks or two months afterwards.

As to its distribution over the British islands, I believe it to be much more general than is commonly imagined, but that it is often most unaccountably overlooked, as it was, for a long time, in the southern counties. Mr. Neville Wood finds it plentiful in Derbyshire, and Mr. Herbert in the vicinity of Spofforth, in Yorkshire; Mr. Rennie, who, to my certain knowledge, is well acquainted with the bird, speaks of having seen it in Ayrshire, and at Musselbourgh Haugh, near Edinburgh. According to Temminck, it is diffused over the temperate parts of Europe and Asia, but does not spread farther to the north than Sweden, in which country Linneus also observed it; a fact which at least negatively corroborates the assertion that it also visits North Britain.

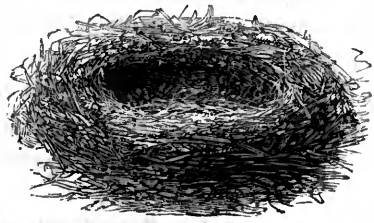
This bird is the "Lesser Whitethroat" of most ornithological writers, and is known in Surrey by the names *Nettlecreeper*, *Grey Whitethroat*, and *French Whitethroat*. Frequently, however, the first of these appellations is also applied by the peasantry, to the Whitethroated Fauvet, but whenever a distinction is made (which is more commonly the case with the nests and eggs), the latter is invariably the *Whitethroat*, and the other the *Nettlecreeper*. In Mr. Wood's recent work on *British Song Birds*, the subject of the present paper is called the "Garrulous Fauvet," though, strictly speaking, it is decidedly less *garrulous* than the Whitethroat. I have, therefore, preferred to designate it by the term *whitebreasted*, which name is at least sufficiently exclusive among the British species.

That there should be a standard and a systematic vernacular nomenclature for our native productions, is, I think, very much to be desired. At the same time it is of little use altering unless we can improve. Every succeeding writer approximates more towards supplying this deficiency, and most of the aquatic birds

* This, however, only takes place very partially in confinement.

in Mr. Selby's meritorious *British Ornithology* are very aptly and euphoniously designated. Yet this author is often extremely careless about the names of his land birds, though he seems to prefer the appellation "warbler" for the Fauvet genus. For my own part, I much object to "warbler" as a generic name at all: firstly, from its having been so very extensively applied by writers in quite a technical sense; and secondly, because it appears invidious to term exclusively any particular genus of song birds by an appellation of such very general import. When, however, we find such a non-exclusive term actually applied to birds that do not *warble*, and by those, too, who profess to reform the nomenclature, it becomes still more inapplicable. Who, for instance, can be expected to adopt the name "Hedge Warbler"* for a bird that neither *warbles* nor habitually frequents *hedges?* Yet such an appellation is proposed, by Mr. Neville Wood, for the *Sylvia loquax*, a species which might be aptly designated the *Dark-legged Pettychaps;* a name which is not liable to any such objections. Surely we ought to discriminate between *improvement* and *alteration*, and allow no newly-coined names to pass muster which are so very obviously inappropriate. In scientific nomenclature, the Whitebreast has been variously denominated by different authors. It is the *Motacilla curruca*, and also the *M. dermetorum* of Linneus; the *Curruca garrula* of Brisson and Selby; the *C. sylviella* of Dr. Fleming; it is the *Sylvia (Curruca) curruca* of Mr. Jenyns, the *S. curruca* of Latham and Temminck, and also the *S. dermetorum* of the former. Buffon calls it *La Fauvette Babillard*, and Temminck *Becfin babillard; Babillard* is also Mr. Rennie's name for it, in Montagu's *Dictionary*. It is the *Klapper Grasmücke* of the German, Meyer, and the *Bianchetto* of the Italians. Its more popular name among the Germans signifies "Little Miller."

* A name, too, which is not in the slightest degree the less objectionable from its having been applied, by many writers, to the *Accentor modularis*.



ON THE DIFFERENCES BETWEEN VERTEBRATED AND INVERTEBRATED ANIMALS.

By Robert Mudie.

The differences between the two grand divisions of the animal kingdom—those which have a vertebrated back-bone and internal skeleton on which all their organs of motion are inserted, and those which have no such skeleton, but have their organs of motion inserted in an external crust, or integument, of some description or other—offer many important lessons to the student of nature; and, in as far as the mechanical action of the animals is concerned, they furnish a countless number of examples, the proper understanding of which is very essential in the mechanical arts. These are the two grand objects which we ought always to have in view when we study nature: because the first is at once the source and the gratification of mental inquiry, and the other enables us to turn our knowledge to practical use, in a world where the labours and the enjoyments of society must keep pace with each other.

But though the more solid parts which sustain the immediate organs of motion in the vertebrated animals are internal of those organs, and the sustaining parts in the invertebrated animals are external, it must not be supposed that the two grand divisions are reverses of each other; for there are in the bodies of all animals many other structures than sustaining parts, and muscles to put those parts in motion, producing the external actions of the animal, varying according to the place which it occupies in the great system of nature.

There are four other essential systems possessed, in a greater or less degree, by animals of all kinds, though their general perfection or development, as it is called, and also their relative development in proportion to each other, are exceedingly varied in the different races. These four systems are, an assimilating system, a circulating system, a breathing system, and a nervous system; which last is understood to be that upon which sensation, the grand characteristic of animals, depends, though upon this subject we cannot come to any very positive conclusion. The reason is, the animal cannot live without the joint action of all these systems; and the dead animal, though it can shew us the anatomical structure, or number, form, and arrangement of the parts of the animal, can tell us nothing whatever about life. Hence we know life only as a phenomenon of the compound, and, consequently, we cannot refer it to any of the component parts separately from the rest.

We have countless instances of the effect of such unions when we examine compound substances, and the elements into which we can resolve them, or by the union of which we can reproduce them. Water, for instance, is exceedingly refreshing to animals and to plants, when applied to them in substance; but nei-

ther the oxygen nor the hydrogen of which water is composed, nor the two applied together in mechanical mixture, as a gas, produce this effect in the slightest degree. Water also boils at 212°, and freezes at 32°, of the common thermometer, but neither of its two elements does this. As gases, the ultimate effect of boiling has passed upon them in bringing them to that state; and neither of them can be rendered solid, or even liquid, by any degree of cold with which we are acquainted. Innumerable instances, many of them far more striking than this, will occur to every one who has even a very slight acquaintance with chemistry, and also to any one who attends to the difference between the properties of mixtures, and those of the ingredients of which they are formed.

The conclusion here is altogether irresistible; namely, that we cannot attribute any one property or phenomenon, of a material compound, to any one ingredient of that compound, to the exclusion of the rest. It is in the fact of being compounded that all the properties of the compound originate, and when the compound is dissolved all those properties are at an end.

This illustration is taken from compounds which are not organized, and therefore it is not exactly in point as applied to animals. But still it is the foundation upon which our judgment of animals must rest, and, consequently, we must admit into the organized and more complicated compound nothing which is inconsistent with it. In every part of its system the animal is matter, and therefore it must obey the laws of matter, in so far as those laws are not controlled by the power of organization in the animal; which is the fact of animal composition, and not a substance which could by possibility have a separate existence, or an existence in any other species of animal, or even in any other individual, than merely the one which was the immediate subject of the inquiry.

Such being the case, we must be very careful, and not dogmatically attribute any function to any one structure of an animal, or even to any one organ, how necessary so ever that organ may be to the exercise of the function. Thus, for instance, an eye is absolutely necessary to the function of vision; but still it would be most unphilosophical to say that an eye sees; because, if such were the case, a dead eye, if in perfect preservation, ought to see as well as a living one. The very same argument applies to every organ in all the other systems. Nothing is more common, for instance, than the belief that animals perceive, and are impelled to act, by the brain; and there are not a few who assign different impulses to different parts of this organ: but were this the case, an uninjured brain, separated from the rest of the animal, ought to be as "cogitative" and "volontative" as ever.

But to leave this preliminary caution, which is a most essential one, especially to young naturalists, let us return to the organic systems which, in their combination, make up the body of an animal, and observe how they are distributed in the two grand divisions of vertebrated and invertebrated—or skeletoned and skeleton-

less—animals. The three systems of assimilation or nutrition, circulation, and respiration, are intimately connected with each other—so much so, that they ought, perhaps, to be considered as parts of one compound system,—the vital system, or that by means of which the body of the animal is originally formed and maintained during the period of its life in the exercise of those functions which belong to its species. We need not mention that the first part of this compound system, in its organization, consists of the whole alimentary passage, together with the accessory parts which promote digestion, and those by which the assimilated food is conveyed to the blood; that the second consists of the circulating vessels, whether their contents be blood in the arterial or venous state, or any other circulating liquid; and that the third part consists of that apparatus by which the waste (in most cases apparently the surplus carbon) of the system is conveyed by means of air or water to the general mass of inorganic matter. In the greater number of animals, whether vertebrated or not, the alimentary, or assimilating, part of the system, is internal; the circulating part is, also, more or less distributed throughout the whole body; and the respiratory part is variously placed—being internal in the warm-blooded vertebrata, and in many invertebrated animals, but more or less external in others. The nervous system is very differently situated; though it is always internal in what may be considered as its most essential parts, and more or less ramified through the body in the others.

In all vertebrated animals, the nervous system is really the central part; for the brain and its spinal elongation, from which the nerves proceed to all parts of the body, are always lodged within the vertebral part of the skeleton. In them, too, the three parts of what we have described as the vital system, are internal as regards the whole mass of the body, but external as regards the spinal column. They proceed from the opening of the mouth, and are lodged in cavities of the chest and abdomen, suspended upon one side of the vertebral column, and correspondingly on the same side of it, in all the classes of the grand division; but though they are supported on the spine, they are never contained in the same cavity with its essential contents. Of the system of reproduction we do not speak, because this is connected with the succession of generations in the animal, and not with any one animal considered as an individual.

In animals of this grand division, therefore, the several parts of the more important systems are kept separate from each other, and each enjoys a different degree of protection from external injury, and even from injury by the working of the mechanical system. The central parts of the nervous system are wholly enclosed within the bones of the vertebral column, so that no external injury can happen to them, except from the fracture or dislocation of this column; and the processes or projections of the different vertebræ are so formed, that dislocation of the column is next to impossible, by any ordinary strain to which the animal can be subjected. The breathing apparatus, and the heart, or centre of

circulation, are also well protected, and kept separate from each other, and from the alimentary or assimilating system; so that no two of these can interfere with each other, unless by such an injury as would be fatal to the animal. Then, as the whole of them are within the mechanical system, none of them can receive any displacement by the natural action of that system. It is thus evident that, in such animals, the greatest care is taken both of the compound system which carries on the vital functions, and of that which is understood to be more immediately concerned in the function of sensation.

It is very different with invertebrated animals, in all their classes, which are far more numerous and varied than those of the vertebrated ones. The whole of their structures, vital, motive, and sensal, are lodged within the same cavity; and thus, if we except the motive one, which gains from the arrangement some mechanical advantages afterwards to be noticed, they cannot have the same freedom or action as in the vertebrated animals, which have them apart. Accordingly, the organs of assimilation, of respiration, and of circulation, are far less perfect than they are in the vertebrated animals. No single description can be made applicable to all the differences which are found among them; but it may, in general, be stated that there is much less distinctness in the stomach and its auxiliary organs, though this is probably the most important part of them, because every animal must receive matter for its growth, and also for its nourishment; consequently, this part is the most complete. In the circulation there is no distinct heart, for, in many of them at least, the assimilated blood goes directly to the growth or nourishment of the parts; and they are provided with a sort of breathing tubes generally distributed through the cavity of the body, which perform the necessary process of aëration upon the nourishing fluid in its progress to the different parts. The system of sensation is, however, the least perfectly developed of the whole. There is not, in any invertebrated animal, any organ which can be positively said to be a true brain; and, generally speaking, the central parts of the nervous system are placed near the system of nourishment, the most conspicuous ganglion, or enlargement, being situated on the gullet, and the others in the continuation of the cavity of the body. In the orders which are most humble in their organization, the radiata, there are no symmetrical organs, the counterparts of each other upon opposite sides, as we find in all vertebrated animals, and in the higher orders of the invertebrated ones. The whole proceeds, as it were, from a centre, and, in very many instances, almost any point is capable of becoming a centre; for if the body is divided, the parts, in time, become entire animals.

It should seem, therefore, that the invertebrated animals are founded upon the system of assimilation, or nourishment, and that their predominant function is that of growth. They all do, indeed, possess sensation in some degree or other, higher in one class, and lower in another; but this part of their general system is always very inferior in its structure, and very subordinate in its power, to the

nourishing and growing portion. Many of them, indeed, have curious instincts, and perform labours in which a great deal of what we would call ingenuity, if they were the results of contrivance, is displayed. The cells of the bee, the webs of the spiders, the nests and covert-ways of the white ants, and a countless number of others, might be mentioned in proof of this; but the animals which perform those curious labours display no more sagacity and resource than the humblest of the whole. The bee or the spider, for example, does not display more sagacity than the common earthworm, which is, perhaps, the most sentient of the three; and yet it has no visible organs of localized senses. This, by the way, is a pretty convincing proof that sensation is the result of the organization taken generally, and not of any particular part of it; though there is no doubt that any particular modification of sense must be acute in proportion to the perfection of its organ.

The vertebrated animals are as evidently founded upon the nervous system. It is the first organic portion which can be traced in the embryo when little else than a gelatinous mass; and in that part of it which may be considered as central, and as such productive of the nervous energy, it is everywhere so fenced in and protected by bones, as that none of the other systems, and more especially the mechanical system, can in the least interfere with it. In the invertebrated animals the case is very different; the nervous system is, in its central and essential parts, mixed up both with the vital and the mechanical system, and it is subservient to them. We can easily understand from the structure of man and of the higher orders of vertebrated animals, that the nervous system, in order to work to the full degree of perfection of which it is susceptible, must work perfectly alone and undisturbed; and though it is impossible for us to say what specific effect this system has on the ultimate action of the animal as a whole, yet as that is always superior in proportion as the nervous system is developed, we must conclude that this system is a most essential part. Another opportunity will be afforded in a future number of *The Naturalist*, for investigating the curious connexion which there appears to be between the nervous energy of animals and that general energy of matter, whether organized or not, which is known by the several names of caloric, electricity, and galvanism, and conversely by the name of magnetism. But we may, in the mean time, remark that those animals and parts of animals which are capable of the most powerful action, how brief soever may be its duration, are also the most susceptible to electric excitement.

This protection afforded to the centre of the nervous system in the vertebrated animals, is obtained at some sacrifice of effect in proportion to exertion in the mechanical system; and the sacrifice is always the greater the more that the nervous system is developed and protected. It is greater in mammalia than in birds; greater in birds than in reptiles; and greater in reptiles than in fishes: and it is greatest of all in the cartilaginous fishes, which, though superior to common fishes

in some of the humbler parts of their organization, are very inferior in vertebration and nervous energy.

But while the absolute effect of the muscles or mechanical organs of the more highly developed animals is less, upon the whole, than that of the lower, there are counterbalancing advantages; for the internal skeleton is, if we may be allowed the term, much more disposable, that is, capable of much more varied action in a single articulation, than the external crust. We may take the *Crustacea* and *Arachnida*, of which the common crab and the garden spider may be taken as types, as expressive of the highest mechanical structure of invertebrated animals; and we may take the human body, in consequence of the universality of its application, as the most characteristic of the vertebrated ones. In these, if any one examines the pincer-claw of the crab in the articulations of its crust, and the skeleton of the human arm in the articulations of the bones, he will not fail to be struck at the very limited range of motion which the former possesses to that possessed by the latter. In the claw, the hard parts which are moved are external of the muscles which move them; and, therefore, if there is an articulation of one part of the crust upon another, there must be two centres, and an axis of motion passing through those centres. But two points determine, and fix the position of a line, so that it cannot by possibility vary, if the points themselves are fixed; as, for instance, a line on the earth's surface, passing through a fixed point at Birmingham and another at London, would be determined until it girded the earth as a great circle, and could not by possibility deviate a single inch to the right hand or to the left, even at the remotest distance from those two fixed points. The two centres of motion in the articulation of the crusted animal are two fixed points in the crust; and therefore the axis of motion, which must pass through them, can have no angular play, and the motion must be confined to one plane, from which it cannot deviate a single hair's breadth. Such a joint must act with the most perfect precision; and it will be found that in all the hinge joints of the crab's claw there is not the least lateral motion. If, therefore, the limb of an invertebrated animal is jointed by crust articulated upon crust, a great number of joints is required, in order to produce even a very limited variety of motion; and no number of joints could produce the variety which the articulations of the human arm can communicate to the point of the finger. A more varied motion is obtained, by uniting the extremities of the two pieces of crust by a certain portion of cartilaginous matter, as we find in those joints which unite the crab's claw to the body of the animal, and also in the joints of the smaller claws, or walking legs. This mode of union, for it is not strictly an articulation, allows of bending in any direction, in proportion to the extent and flexibility of the cartilage that joins the two portions of crust. This, however, has a limit, and a very narrow one, because a very little extent or increased flexibility of the cartilage would render the limb so feeble and unsteady that it would not be efficient for any one purpose. Any

one who reflects upon the subject, and chooses to examine the specimen to which we have referred, will see at once that the range of action in the moving parts of an animal having the muscles inserted in an external crust or integument must be exceedingly limited; and that, in order to produce even a fraction of the different motions of which an animal with an internal skeleton is capable, there must be a much greater number both of articulations and of muscles. Accordingly, we find that the muscles of a caterpillar exceed by hundreds the muscles of a greyhound or an eagle; and yet its motions are mere crawling as compared with theirs, and its body is a thing of no weight in comparison.

In the human arm, or in any other limb having internal bones, the motion of a single joint may command a good deal more than an entire hemisphere, having the length of the articulated bone for its radius. This can be done in consequence of the real centre of motion in the joint of two internal bones being a point, which is equally affected to every plane passing through it, and, therefore, not tied down to any straight line crossing the direction of the articulated bones when they are straight. It is true that we never have in the body of any vertebated animal this extreme variety of motion of which the joint of such an animal could be made capable; because, joints being made for purposes, must, from the very nature of the case, have motion in the direction of their purpose, and a fulcrum or support for that motion in the opposite direction. This, however, does not affect the perfect universality of the principle; and as motion on a single point, as a centre, is not affected by, or confined to, one direction more than another, there is an unlimited basis to the motions of vertebrated animals; and thus a joint can be formed capable of having its best motion in any direction that can be imagined. When several such joints are combined, the result is such as would stagger the belief of even those who are conversant with common mechanics, if they have not thought upon this very subject. Say that the human arm is, for instance, two feet in length, (making a little allowance for flexion in some positions), and that it can command three-fourths of a sphere of two feet radius, which is within the truth, the human finger can, as told to the microscope, divide this space to the two-thousandth part of an inch every way; and as it must pass from one of these very proximate points to the other, it may absolutely be said to divide this space to infinitude—that is, to a degree of minuteness which we cannot express by numbers, and of which, in fact, we can have no conception. Add to this, the motion which the shoulder-joint can receive from the action of the rest of the body, and add to this the additional motion given by walking or running, or by the use of the feet generally—and the power of the finger in dividing space becomes an especial wonder, and should lead every one to employ, in the most useful manner, an instrument which has no parallel in the catalogue of material things. This subject is as long as it is instructive, and our limits are already exceeded; but we may resume it on some future occasion.

NOTICE OF CUTTINGS IN A DISTRICT OF THE LONDON AND BIRMINGHAM RAILWAY,

BETWEEN

CASTLE-THORP, NORTHAMPTONSHIRE, AND BLETCHLEY, BUCKINGHAMSHIRE.

BY THE REV. JOSIAH BULL, JUN., F.G.S.

DURING frequent visits to a portion of the London and Birmingham Railway, some facts have fallen under my observation which have induced me to draw up the following notice, although my acquaintance with geology is limited, and I have little opportunity of acquiring a practical knowledge of subjects connected with it. The opinions I entertain may, consequently, be incorrect, but facts cannot be useless, and I therefore willingly make a statement of them.

The line of railway between Bletchley and Castle-Thorp nearly traverses the breadth of the Oxford clay, or rather a stratum of clay, which has been regarded as constituting the widest part of that formation south of Huntingdon. There is certainly an uniformity in the character of this deposit, throughout its whole extent; but it by no means agrees with the ordinary features of the Oxford clay, nor even with that formation in its immediate neighbourhood. Its fossils are different, and many of them evidently extraneous. It presents, also, other appearances which shew that this deposit must have originated under circumstances of a totally different nature to those which were present during the deposition of that formation.

The first point at which my observations have commenced is Castle-Thorp, on the borders of Northamptonshire. At the time I visited this spot, there was a cutting of about eighteen feet in depth through the deposit to which I have alluded, and the nature of which I shall presently describe. There was also a section, of a similar character, about half a mile from this, upon the south side of the hill. The line immediately proceeds across the valley of the Ouse, where a large viaduct is erecting. Beyond this point, at the north side of the valley, is a cutting of considerable depth, through horizontal strata of gravelly sand and clay, and boulders of limestone. Here also occur, in a horizontal position, large, flat, tabular masses of limestone, having a yellowish brown exterior, and being blue within. A little farther on, the same limestone occurs in a large mass, forming a stratum, which dips at a small angle towards the north. This limestone is covered by a clay similar to that at Thorp. Beyond this hill is the valley of Bradwell Abbey, and the ground rises again towards the village of Loughton. Here is a very fine section opposite the church at Loughton, the depth of which will not be less than forty feet, when the summit of the hill is reached. The depth, at present, is about twenty-eight feet through the same bed of clay; and I

am informed by the engineer of the works that the deposit presents a similar character at Bletchley, distant three miles from Loughton, and seven from Thorp.

I have spoken of a bed of clay which prevails throughout the whole line, with the exception of one point, the acclivity to the south of the valley of the Ouse, where it is less clearly defined. Now this stratum, although it occurs in what is denominated the Oxford-clay formation, presents characters which clearly prove that it has no connection with that deposit. It generally presents an uniform appearance, being a hard, dry *clay*, of a very dark blue colour, occasionally breaking down in very large masses. Nodules of chalk, from the size of a pin's head to two or three inches in diameter, occur in great numbers, pretty regularly distributed throughout it. These are always rounded and smooth, and numerous flints are associated with them. The most interesting fact, however, is the number and variety of the fossils found in this deposit. These consist principally of Ammonites, of at least from fifteen to twenty species; numerous specimens of *Gryphæa, dilitata* and *incurva*, especially the former; *Belemnites*, portions of *Pentacrinites*, several kinds of *Terebratula*, and specimens of *Ostrea* and *Serpula*. I have one specimen of *Echinus*, which is filled with chalk, and, though very much worn, exactly retains the appearance of the chalk fossils. Many of the fossils are, indeed, worn, others are broken; the fragments of *Ammonites* are particularly numerous, and are often covered with indurated clay, or limestone, which has been worn round and smooth by the action of water. Beds of sand and gravel frequently occur through the deposit, and in them are found numerous small specimens of *Ammonites* and univalve shells, most of which are composed of iron pyrites. A few saurian vertebræ have also been discovered.

Now it is very evident that this deposit has little in common with the Oxford clay, although traversing the whole breadth of the formation so designated; for, in addition to the peculiar fossils of that deposit, we here find those of the Chalk, Lias, and Oolites. The fossils of the Oxford clay, it is well know, are frequently much compressed, and, when they are of a delicate structure, preserved with difficulty. This is especially the case with the Ammonites. Of these, as also of *Gryphæa dilitata*, (a characteristic shell), I have several specimens from Newport Pagnel, four miles east of the railway, and from Willan, one mile to the south of Newport, where the deposit bears the true character of the Oxford clay. Here, also, I have found very beautiful remains of the *Ichthyosaurus*. The fossils, however, in this formation, are generally very few: in this respect forming a striking contrast to those discovered in the railway cuttings.

Without offering any theory upon the subject, there is abundant evidence for the following conclusions. That, although supposed to form a part of the Oxford clay, the formation I have attempted to describe is of a totally different character; that it is posterior in its deposition to the Chalk formation; and that its fossils have been brought from a distance: and from all the circumstances of the case, it seems to be undoubtedly a deposit of diluvial origin.

Before bringing this notice to a conclusion, I ought not to omit mentioning the occurrence of some interesting vegetable remains which have been found in the Limestone which I described as forming a stratum to the south of the vale of the Ouse. In connection with large specimens of Lignite, are beautiful Ferns and coniferous plants. There are many cones in excellent preservation, imbedded in the limestone, all of which are about the size of a Brazil nut. The limestone is very similar in its character to that of the Forest Marble. It contains but a small number of shells, among which are the genera, Terebratula, Mytilus, &c.

It is unfortunate for geological inquiry, that the sections to which reference has been made, and others of a similar kind, are so soon hidden from observation. It has, of course, been an object with me to obtain as many specimens as possible of the fossils and of the beds in which they occur; and by these I shall be able at any time to confirm the statements I have made. In conclusion, I may be allowed to say that I shall sincerely rejoice if these brief observations may stimulate the inquiry and elicit the opinion of those who are far more competent judges of the subject than I can pretend to be.*

Newport Pagnel, March 14, 1836.

List of Fossils from the London and Birmingham Railway, chiefly from the Parish of Loughton, Bucks:

Ammonites biplex, (with perfect termination)
A. communis
A. triplicatus
A. serratus
A. excavatus
A. spinosus
A. omphaloides
A. contractus
A. Turneri
A. Duncani
Ammonites Harveyi
A. Gulielmii
A. Humphresianus
A. Lamberti
(With three others not figured)
Nautilus lineatus
Belemnites vulgaris
B. crassus
B. minimus
B. gracilis
Cidaris —— ?

* The above interesting communication was forwarded to us a few months since; and we sincerely hope that its publication may induce some competent geologist to undertake an examination of the singular deposit which Mr. Bull has described. Mr. W. H. Inwood, the architect, a zealous collector of fossils, has visited the localities alluded to by Mr. Bull, and we have had an opportunity of examining, at his residence in Euston Square, the specimens obtained by him at the railroad. We were particularly struck with the great variety and beautiful preservation of the *Ammonites*. The fossil cones are particularly interesting, and occur in a limestone apparently belonging to some member of the oolitic group.—Ed.

Spatangus —— ?
Modiola elegans
Modiola —— ?
Cerithium —— ?
Lucina —— ?
Unio Listeri
U. —— ?
Pectunculus sublavis
P. —— ?
Plagiostoma —— ?
Nucula ovum
N. —— ?
Pecten lens
Pecten —— ?
Terebratula tetrahedra
T. trilineata
T. —— ?
T. —— ?
Serpula —— ?
Gryphœa incurva
G. obliquata
G. dilitata
G. bullata
Madrepora turbinata
Pentacrinites —— ?

EXPERIMENT ON THE NEST OF A BLACKCAPT FAUVET,

(Ficedula atricapilla).

The shy and jealous nature of this species during the period of incubation, is well known to almost every tyro in ornithology. Touching the nest, or even looking at it, before the eggs are laid, almost invariably causes the birds to desert. The following, however, is a curious deviation from this general rule:—On the 6th of July, I found a Blackcapt Fauvet's nest, without eggs. On the 8th it contained two eggs, which were warm. I then put a bit of light rotten wood into the nest, about the size of one of the eggs. This had been thrown out on the 10th, and a third egg was laid. I now inserted a small piece of hard mould, and took out one of the eggs; this was ejected the same day, and a few days afterwards I added to the two remaining eggs a pebble, equal in size to one of the eggs, and somewhat resembling them in shape and colour. Whether this proved too heavy for the birds to move, or whether it was not distinguished from the eggs themselves, I had no means of determining; but it was never removed. The young birds, two in number, were hatched on the 20th. Another remarkable circumstance, is, that the female should only have laid *three* eggs, *five* being the usual number; and even more than five might reasonably have been expected, as birds will frequently continue laying considerably more than the ordinary quantum of eggs, if one or more of these be removed before incubation has commenced.

The nest which furnished the above interesting experiments, was situated at the extremity of the branch of a yew tree, in a thick grove—a most unusual locality for this bird, and one in which I never before met with it. I have, however, lately heard of another similar instance, communicated by a scientific friend residing in the south of England. N. W.

ADAPTATION OF FISHES TO DEPTHS OF WATER.

Few departments of natural history are more interesting, both in a philosophical and in an economical point of view, than the natural history of fishes. They live in an element which, exclusive of lakes and rivers, covers seven tenths of the surface of our globe; and they inhabit that element, not merely in the breadth of its surface, as mammalia inhabit the land, but they inhabit it to the depth of a considerable number of fathoms. In consequence of this great breadth and depth of their pasture, as compared with the pasture of land animals, their numbers, and their powers of keeping up those numbers, are correspondingly great. The shoals of some of the surface fishes, and also of some of the ground ones—as, for instance, the common Herring and the Cod,—are numerous beyond all the powers of arithmetic; and their fertility corresponds, for a single individual of the Cod produces four millions at a birth, and there are many other species scarcely less productive; while land animals, whether mammalia or birds, are reckoned exceedingly prolific if they average a dozen, and some of the more important and highly developed races have very rarely indeed more than one.

This vast abundance of the finny tribes and the extensive means of keeping up their succession, not only in the individual race, but that the one may supply food for the support of the others, give them a great deal of interest in a philosophical point of view, by showing us how much we are mistaken when we suppose that the waters are the waste places of our globe. There is another consideration: we do not need, generally speaking, to cultivate the waters as we cultivate the land; or to breed fishes as we breed land animals. It is true that fresh-water fishes, and in some instances salt-water ones also, are bred for domestic purposes; but this is done more for the gratification of luxury than for economical purposes.

We need hardly mention that, besides the cartilaginous fishes, which approximate some of the reptiles in some points of their physiology, there are two distinct divisions of true or bony fishes, distinguished from each other by the characters of their fins, or swimming organs. These are *acanthopterygii*, or fishes which have the rays of the fins in one continuous piece, more or less flexible, but sometimes an absolute spine of bone; and *malacopterygii*, or fishes which have the rays of the fins jointed, and, generally speaking, of a less bony consistency than those in the others.

Both of these grand divisions inhabit, in their different genera, different depths of the sea; but it may be said, that, taking them on the whole, the fishes with spinous rays are the most discursive through the waters, and inhabit nearest the surface. Those with jointed rays to the fins are more divisible according to the grades of depths which they occupy; and these grades follow pretty closely the arrangement of the fins on the under part of the body. In considering the mechanical action of a fish, it is distinctly to be understood that the tail is the

grand organ of motion, and that the muscles which form by far the greater part of the bulk of the animal, are so inserted upon the processes of the vertebral column as to give to this organ of swimming the greatest energy which it can possess consistently with the bulk of the animal. But the tail of a fish has no motion except lateral motion, that is striking right and left in the direction of a plane, which, in the majority of fishes, passes equally through the centre of the back and the centre of the belly; and this, though it gives motion, and in many instances very rapid motion, has no power of ascent or descent in it, because it can strike the water neither downwards nor upwards; and it is by striking the water in one direction, that the body of a fish, or any substance immersed in the water, is impelled in the opposite direction. The direction of the course of fishes thus depends chiefly upon the action of those fins on the under part of the body, which answer to the four extremities in the mammalia; and those which have only two such fins—and for that reason are called *apodal*, or footless—have lengthened bodies, and partly direct their motions—which are, generally speaking, much slower than those of other fishes—by the contrary flexures of the lengthened body, as may be observed in the Eels, which have no distinct and separate caudal fin, but have the dorsal and the anal continued over a great portion of their length, and meeting each other at the extremity, as one continuous fin.

In the majority of fishes, however, there are four fins on the under part, and the different place of the posterior pair, determines, in a great measure, the mode of swimming in the animal, and the depth at which it inhabits the water. There is, also, a form of the body correspondent to this position of the fins, and to the depth of water at which the fish in general inhabits. If it is a surface fish, the body is, generally speaking, compressed in its lateral diameter, and the head is rather small, so that the centre of gravity falls nearly in the middle of the length, or rather midway between the anterior and the posterior fins on the under part, or, as they are called, the pectoral and ventral fins. A fish formed in this manner, is adapted more for straight forward motion than for rapid ascent and descent; and such fishes are furnished with dorsal fins, which, as well as the anal fins, are generally produced in proportion as the body of the fish is short and compressed according to its depth. Of this form we have examples in the Lancet fishes, and a number of others, many of which are vegetable feeders, living upon weeds; and others, again, feed upon the small animals which inhabit, in great numbers, the floating sea-weed which remains in the great eddies in the tropical seas. Such fishes, as they are not predatory upon any other fishes, are very often armed with powerful defences against the attacks of these. Those armatures consist of hard and sharp spines situated on various parts of the body—near the tail in the Lancet fishes, on the gill-lids in others, and in the dorsal fin, or in advance of it, in those fishes which inhabit the bottom of the waters, as in the Weever. In short, those defensive weapons are always so placed upon the body of the fish

that they may be used in the readiest manner in the direction from which an attack is likely to come. The attack on the Lancet fishes feeding on sea-weed, can hardly be made except in the rear, and thus they have their very sharp and powerful weapons upon the sides of the tail, not far from the origin of the caudal fin. The Weevers, again, and fishes of similar habit, which lie at the bottom of the shallows and feed there, have their defensive weapons in the dorsal fin, or sometimes on the head; and they repel their enemies by striking upwards with a violent rising motion of the body; whereas, the surface fishes strike laterally with the tail or the side of the head, according to the situation of their defensive weapons. It is not understood, however, that any one weapon of this kind with which a fish is armed upon any part of the body, is ever used for offensive purposes. Animals, in fact, whether they inhabit the land or the water, have never any weapons of mere warfare in the way of attack; their offensive weapons are given them for the purpose of obtaining their food; and when this purpose is accomplished, the animals repose, and are at peace with all the world.

Fishes whose habit it is to swim freely through the water without much ascending or descending, have always the posterior pair of fins on the under side, abdominal, or placed backwards; though many which have this form are ground fishes. It is to be understood, however, that this arrangement of the fins gives the fishes more command of the waters, in freedom of range, than those which have them differently situated. The Salmon may be taken as a common or abridged type of this form of fishes, and it is exceedingly discursive. The Herring also, and all the herring family have a similar arrangement of the fins; and they too are remarkable for the distance to which they can range. If ascent and descent are more the motions of the fish, the second pair of fins on the under part are placed forwards; sometimes immediately under the pectoral fins, and sometimes in advance of them. By this means the fish has great command over the head, in ascending or descending; and in such fishes the head is usually large in proportion, and the mass of the body concentrated on the fore part. The cod family are examples of this; and, though they differ a good deal from each other, they may be all considered as ground fishes, or opposite in their habits to the free swimmers, which have the second pair of their fins abdominal. Such fishes do not inhabit the shallows near the shore, but the banks and the surfaces of the rocks out at sea. They are exceedingly numerous in localities suited to them; and in point of numbers, and also in the lightness and wholesomeness of their flesh, they are among the most valuable tenants of the deep. The true fishes of the shallows, which keep and feed near the ground, are the flounder family, or flat fish as they are called; they are, perhaps, the least discursive of the fishes. There is a peculiarity in the structure of their spine which is possessed by no other animal. The vertebræ, of what may be considered as the neck, have a twist to the right hand in some of the genera, and to the left hand in others; so that the eyes

are always situated upon one side of the body, and not one on each side, as is the case with all other vertebrated animals. This twist of the cervical vertebræ throws the body on its side; and as the body is much compressed, it has the appearance of being broad and flat, whereas in reality it is thin and deep. In its action in the water, however, the body is always on the side; and the one side is like the belly of a common fish in the texture of its skin, and the other side like the back of an ordinary fish in the same respect. From this position of the body, the motions of the spine and caudal fin, in swimming, are up and down, and not right and left, as they are in the majority of fishes. The fins upon the two sides also, which may be considered as dorsal and anal, are similar to each other in size and form, and extend nearly the whole length of the body. The one of these fins is really on the back of the flat fish, and the other on the belly; but in the position in which the fish swims they are on the sides, as estimated in the greatest dimension across the body. Some of the fishes of this description have the fins on the under side formed into a disc or sucker, and others of them have a sucker upon the head, by means of which they can adhere to rocks, the bottoms of ships, and other solids. The eel family close the list, and though they do not inhabit the extreme depths of the ocean, they are more decidedly ground fishes than any of the others; and in cold countries they pass the winter buried in the mud, and in a dormant state.

R. M.

SCARCITY OF THE WALL SWIFT (Cypselus murarius).

Mr. Waterton tells me he has not seen a single Swift in his neighbourhood (Walton Hall, near Wakefield) this year, and the Rev. W. T. Bree informs me that it is becoming much more scarce in some of the midland counties than it was formerly. In a letter dated October 31, 1835, Mr. B. observes—"I often hear the remark that 'we have fewer Swallows than usual;' may not this be owing to their wanton destruction? The Swifts, more especially, appear to me to be diminishing everywhere, to my no small regret, as they are charming creatures to my mind, and I love their harsh scream, perhaps, almost as well as the melody of the Brake Nightingale. I was forcibly struck with the comparative scarcity of these birds during a tour I made last May through various parts of Oxfordshire, Berkshire, Buckinghamshire, and Northamptonshire." Mr. Blyth also mentions the Swift having become of much less common occurrence of late years in Surrey. For my own part, I have found it extremely abundant in Derbyshire, and in the part of Yorkshire (Campsall Hall, near Doncaster) in which I now reside, during the present year.

NEVILLE WOOD.

POLLEN OF FLOWERS.

On examining the flowers of a species of Amaryllis with the assistance of a microscope, I observed that its grains of pollen, which are elliptical, on being immersed in water, quickly assumed a spherical shape. On watching them, whilst under the microscope, until the water in which they were immersed had evaporated, I distinctly saw them gradually assume their original elliptical form. The length of the grains of pollen being twice their breadth, their external membranous coating must possess greater elasticity than could have been anticipated. I afterwards applied heat to the dry pollen as it remained on the object-glass of the microscope, till some of its grains contracted into irregular shapes. On being again immersed in water they still possessed elasticity, generally became spherical, but some bluntly elliptical. I then applied heat to them whilst immersed. This experiment indicated the existence of a single orifice in each grain, and also that they contained a portion of free air, the rarification and consequent escape of which occasioned a minute bubble to rise on each grain of pollen.

These facts, in themselves, are unimportant, but I have reason to believe that you desire both to communicate and elicit information; and such facts may induce attention to the subject by some of your readers who are better qualified, and have more leisure, than myself. It may not be amiss just to hint at the *extent* of this field of inquiry. Gleichen, Brongniart, and others, have been travellers herein; and we are told that numerous minute spherical granules have been discovered within each grain of pollen. The Amaryllis pollen which I examined may be considered as large sized, in comparison with that of the generality of flowers; still I find that one hundred and eighty thousand of these, placed regularly in rows, would cover but a square inch. How inconceivably small must be the size of one individual of those minute granules, if they be numerous in such a grain of pollen as I have described! The imagination endeavours, in vain, to trace out the comparative dimension of its untangible materiality. I wish *The Naturalist* all possible success, and I shall most probably trouble you with other facts, as they happen to come under my observation in this world of wonders; a world, by the bye, which most of us are satisfied to travel through blindfolded.

Βητα.

ON THE HABITS OF THE COMMON COOT (Fulica atra, Linn.).

By Neville Wood, Esq.*

The Common Coot belongs, according to the quinary system, as developed by Vigors, to the fourth order of birds, *Grallatores*, and to the fourth family, *Rallidæ;* an aberrant group, which has not as yet been divided into the five sub-families which it must contain, supposing the arrangement now followed by most of our eminent ornithologists to be a natural one. As zoological classification is, however, at present, confessedly in its infancy, it would be a waste of space and time to fatigue the readers of *The Naturalist* with further observations on this subject. The specific names, *common* and *atra*, are neither of them unobjectionable, but I am compelled to adopt them until better are proposed.

The habits of the Coot do not appear to have been very minutely studied by British naturalists, although so common a species in almost every part of the kingdom; indeed, its abundance would almost seem to be the cause of this neglect. Thus, few birds are more cursorily noticed in most ornithological works than the common House Sparrow, and yet, when we more closely examine its habits, we find them by no means destitute of interest.

The Coot is not particularly nice in the choice of its habitats, and is almost certain to be found in moist situations; it abounds, however, much more in some localities than in others, and in general prefers large, unsheltered sheets of water, of considerable depth, and where the weeds, rushes, &c., are not over luxuriant, to the smaller pools, surrounded by woods, and choked up with herbage, which is the typically favourite haunt of the Gallinule. The lake which pasess through Foston, Derbyshire, is of the latter description, and while its surface literally swarms with Gallinules in the evening, scarce a Coot is to be seen; whilst in the beautiful sheet of water behind Sudbury Hall, only two miles from Foston, the Coot is extremely plentiful, and the Gallinule comparatively scarce. This lake, though by no means destitute of aquatic herbage, is perfectly open, and only a very small portion is bordered by trees. It is worthy of remark that the Coot is seldom or never seen in the sheltered situations; while, on the contrary, the Gallinule frequents the secluded spots, only venturing far from the covert towards the approach of night. Another remarkable difference in the habits of the Coot and the Gallinule is, that the former retires to rest at sunset, while the dusk of evening is one of the favourite times for the sports of the latter; and I have even seen several on the water, both summer and winter, many hours after it has become dark. In summer its shrill voice is sometimes heard at intervals throughout the night, as I have frequently observed when listening to the charming melody of the Brake Nightingale.

* Author of the *Ornithologist's Text Book*, *British Song Birds*, &c.

The Coot is not so often met with in wet ditches as the Gallinule, and the former is quite as aquatic as any of the duck family *(Anatidæ)*. Indeed, so partial is it to the water, that, during the many years which I have observed its habits, I have rarely seen one on land, and then only for a short time; while the Gallinule is often found at a great distance from any water, on roads, near houses, &c. In districts where the Coot abounds, it may be seen in considerable numbers in all seasons, on the water during the whole day, either seeking its food on the surface of the lake, diving, half-diving, or lazily allowing itself to be wafted by the winds and waves on the surface of the pure element, with its head buried between its shoulders, in the manner of the Herons *(Ardea)* and other aquatic birds. During the March winds it generally remains in this sulky mood the entire day; and I have, at such times, frequently seen more than twenty floating and tossing about on the waves, having all the appearance of inanimate bodies but for an occasional dart at an insect or fish which had unwarily approached within their reach. At these stormy periods they are seldom seen to dive, which at other times they do expertly (although rather a clumsy half-diver); but no sooner do the winds subside and give place to the balmy air of April, than their aquatic sports commence in full vigour, and they may be observed frolicing on the water, diving beneath, and testifying their joy in a thousand different ways.

This species cannot be termed gregarious, for although from forty to fifty may frequent a single sheet of water, yet each individual keeps perfectly distinct throughout the autumn and winter, and even in the breeding season they are not very often found in pairs; this peculiarity has prevented my ascertaining the *exact* time at which they pair, which, however, usually takes place in March, though sometimes later, according as the seasons vary.

The nest is built in a bed of rushes or irises, in an open spot several feet from the land, and is never situated, like that of the Gallinule, in a thick tuft of herbage, with a view to concealment, but may be easily discovered at a considerable distance. Its composition does not differ from that of the Gallinule, but it is larger and flatter. The eggs are of a light chocolate colour, marked with thickly-set spots of brown and purple. Their usual number is seven or eight, but I have occasionally seen nine, and even ten. The first broods are hatched about the middle or towards the end of May, but there is a continual succession of broods through the month of June. My observations lead me to believe that the Coot has but one brood in the year; and if two broods are ever raised I should be inclined to consider it rather a rare occurrence. The young quit the nest immediately they are hatched, keeping close to their parents until they can manage for themselves; they remain in the immediate neighbourhood of the spot three or four days, sleeping in the nest at night, and then disappear. If you approach the newly-hatched brood in the day-time they all disperse, diving underneath the water, and rising to the surface under cover of the aquatic herbage, and are often con-

ducted to a place of safety by the male bird; whilst the female remains about the nest, manifesting as much alarm at your presence as if her brood was actually there.

The young birds have a very grotesque appearance, with black bodies, red heads, and white bills; with yellow down sticking to their heads and necks on first quitting the nest. When they are in danger the parents swim anxiously round the object of alarm, uttering low chucks, and sometimes a kind of bark; in producing this latter note the beak is opened as wide as it will permit. The common call-note of the Coot is a loud, chucking, mournful note, which may at times be heard issuing from a dozen different parts of the lake. I have likewise known it emit a noise resembling that of a Fowl before laying.

In general the Coot is rather a shy bird, but in some places, as at Sudbury, they are extremely familiar; and if you sit down near the edge of the water, and remain quiet a short time, they will swim up to reconnoitre you, without the slightest indications of alarm: and their peculiar habits and attitudes are then studied with ease. When swimming it never flirts up its tail, like the Gallinule, but moves its head backwards and forwards, often erecting the feathers of its whole body, and setting up its wings in the manner of the Swan. The Coot has a heavy body and short wings, and is, therefore, little adapted for flight. Whenever it attempts to rise into the air, which is but seldom, the feet are allowed to trail in the water, as if it were unwilling to leave its favourite element even for a moment. It always preens its feathers in the water, and occasionally tumbles over in this element in a most remarkable manner, and apparently with no other view than for its own amusement. When it has a nest to guard, it seems entirely to lose all shyness and fear of man, and is by no means easily driven off when sitting, and will even allow itself to be touched gently with a stick, but with true birdish wisdom endeavouring to cover its head. If the female is disturbed the male (which, at that season, remains "within call") immediately swims up, and becomes so bold as to approach within a few yards of where you are standing. On your leaving the place the male generally follows to a considerable distance, as if to attract your attention; while the female slily enters her nest on the other side of the patch of herbage in which it is situated. If she is again disturbed she quits her nest much less reluctantly than before; but, however often she may be driven off in the course of a single day, I have never known her desert her charge, as so frequently happens with the Gallinule.

When the Coot leaves its nest it never covers the eggs; and I have often been surprised that the eggs and young of this and other aquatic species are not more frequently plundered by the Water Rat, with which the aquatic plants abound, than appears to be the case; but after many years close observation of these birds I have never discovered, with certainty, that they were molested by this quadruped. As the bird often quits its nest for a considerable time,

frequent opportunities are offered to the depredations of these animals; but as these favourable occasions seem to pass unheeded we may fairly conclude that the thievish propensities of which this animal is accused properly belong to another species, and one, possibly, of rarer occurrence. That the eggs and young of water birds are occasionally devoured by some four-footed animals is undeniable; and I have, probably, erroneously described these and other depredations as appertaining to the Water Rat, in the *British Song Birds*. I believe Mr. Blyth is of opinion that the Water Rat never feeds on any animal matter; and that gentleman has communicated to me some experiments which certainly go very far to prove his opinion. I hope the doubt and obscurity in which this point is involved will be satisfactorily cleared up in Mr. Bell's beautiful work on *British Quadrupeds*, now in the course of publication.

The food of the Coot consists of small fish, and various insects, slugs, &c., which it obtains either on the surface of the water, amongst the weeds at the sides of lakes and ponds, or by diving. I have occasionally seen it struggling for five minutes or more to devour an unusually large fish, but it never desists until its object is accomplished. I never tasted the flesh of this bird, but it is probably fishy and unpalatable; at all events its *smell* is by no means inviting.

The crown of the head and the bill are of an opaque white, and cause the bird to be conspicuous at a very considerable distance. The feathers of the head and neck are of a glossy black; those of the body dusky brown: in swimming the tail is usually higher than the head. In the neighbourhood of Campsall, seven miles to the north of Doncaster, both the Coot and Gallinule are comparatively rare; a circumstance for which I have not yet been able to account.

THE GREY WAGTAIL (MOTACILLA CINEREA) A SONG BIRD.

No author with whom I am acquainted makes any mention of the song of this bird, and in the *British Song Birds* it is stated that, "with regard to vocal powers, the Grey Wagtail has no claims on our attention." In this, however, I have since discovered that I was mistaken, having heard the song, for the first time, about a week ago, in a corn field. The Pied Wagtail is by no means a constant songster; the present species is, undoubtedly, even less so; and perhaps the Oatears *(Budytes)* have no song at all. The notes of this bird are pleasing, but cursory, and much resemble those of the Pied Wagtail.

N. W.

July 24, 1836.

CENSUS OF INSECTS.

Dr. Imhoff, of Basle, has made an estimate of the number of insects now known, and such as, in all probability, may yet be discovered. In the first instance, he establishes a comparison between the number of insects mentioned in different faunas—and particularly Stephens' *Catalogue of British Insects*—with the probable number of insects now known, or yet to be found, in Germany. The sum total of this comparison gives, according to Stephens, 9,791 for Great Britain, and for Germany, according to the Doctor, 14,000 species.

To arrive at a general result, Dr. Imhoff does not think it advisable to estimate the number of insects as compared with species of plants, but he has chosen reptiles, as a class of animals with which the comparison may more fairly be calculated. Admitting, therefore, that in Germany there exist thirty-five or forty species of reptiles, and on the surface of the globe 1,500, that is, nearly forty times the number of those in Germany, the application of this system of comparison would give for the insect tribes the number of 560,000, being 14,000 multiplied by 40; an mount considerably short of the probable number of insects inhabiting the world, since at least 2,500, or perhaps more, may be added to Stephens' *Catalogue*.

To this calculation we add those of some eminent entomologists, in order to prove, as far as analogous reasoning goes, that something approximating a probable reality may be inferred by taking a medium or averaged computation. Linneus, in his *Swedish Fauna*, 1761, described 1,700 species, and in the twelfth edition of the *Systema Naturæ* the entire number of these animals, including the Swedish and exotic species, he was then acquainted with, amounted to 3000. Since his time, however, and more particularly during the last half century, the study of entomology has received such an impetus, that Mr. Leay, in his *Horæ Entomologicæ*, states that there are certainly more than 100,000 annulose animals preserved in various cabinets, nearly synonymous with the Linnean insects.

Dr. Burmeister, whose census of insects is the most recent, takes his point of comparison with known plants, by which it will be seen that Dr. Imhoff's calculation produces a larger amount of insect creation, though we think even his numbers short of the reality. In Germany, Burmeister states there are about 6,000 plants, including *Cryptogamia*, and upwards of 12,000 insects; thus, if the proportion be a constant one, the number of insects known, according to the 60—70,000 described plants, will amount to 120—140,000 species; and if the generally received opinion of modern botanists is adopted, that only about a third of the collective species of plants is known, the number of species inhabiting the earth would amount to 360—420,000 species of insects.

The venerable Kirby, in his calculation of the number of insect species, assumes that there are, on an average, six species of insects to one phanerogamous

plant; and considering that there may be 100,000 species of such plants in the world, the number of insects would amount to 600,000.

In the Royal Entomological Cabinet at Berlin, there are 28,000 species of Beetles; and from the presumed superiority in point of extent of the coleopterous order, Burmeister assumes that the actually known amount of insect species, and their relative proportions of number, in the different orders, may thus be distributed in round figures:—

Coleoptera	36,000
Lepidoptera	12,000
Hymenoptera	12,000
Diptera	10,000
Hemiptera	4,000
Varia	4,000
	78,000

Stephens, with his usual accuracy, establishes the following numbers of each of the Orders, as regards British species of insects: they must, however, be considerably increased by the addition of many minute *Hymenoptera* and *Diptera*, noticed since the publication of his *Catalogue*:—

Coleoptera	3,300
Lepidoptera	1,838
Hymenoptera	2,054
Diptera	1,671
Hemiptera	605
Varia	544
British species	10,012

By a parity of reasoning on this distribution, it is manifest that the numerical strength of the orders is comparatively far greater than Burmeister calculates: we need only illustrate the two first, to arrive at a similar conclusion with regard to the others. Stephens makes the *Coleoptera not quite twice* the number of the *Lepidoptera*, while Burmeister makes the *Coleoptera three times* more numerous than the *Lepidoptera*.

That good christian and excellent naturalist, John Ray, (to whose memory the equally great Cuvier paid a tribute when he styled him "le premier véritable naturaliste pour le règne animal"), says, in his *Wisdom of God*,—with great caution, however, not to overstep the bounds of truth or the modesty of conjecture—"supposing, then, there be a thousand several sorts of insects in this island and the sea near it, if the same proportion holds between the insects, natives of England and those of the rest of the world, as doth between plants, domestic and exotic, (that is, I guess, decuple), the species of insects on the whole earth—land and

water—will amount to 10,000, and I do believe they rather exceed than fall short of this sum." Having afterwards discovered a greater number of English moths and butterflies, he was induced to imagine the number of British insects might be increased to 2,000, making the total number of the insect creation on the globe's surface 20,000—not so many as are now extant of one order in one collection, and only twice the number of British species in one catalogue, without the subsequent discoveries.

Thus, Ray *guessed* the total amount of insect tribes to be a quarter of those now actually known to entomologists of the present day; and this number is assumed to be less than an eighth of those supposed to exist in the world. From such facts it requires no extraordinary stretch of imagination to conceive what yet remains to be discovered in this reign of creation alone, without adding the boundless stars of Nature's other works, of which, in some instances, we know but little more, and in others far less. The strides now rapidly making in the study of natural history must produce extraordinary results; but we need only adduce the present subject as an instance of how far mankind is distant from the point of general knowledge, even of such things as are tangible and meet the eye, without embracing a microscopic world of animated beings, not less important in their several functions and purposes, and probably far more numerous in all their classes.

C. D.

SOME ACCOUNT OF THE LEVEL OF HATFIELD CHASE.

By the Rev. F. Orpen Morris.

Journeying from Doncaster in a north-easterly direction, an hour's ride will bring you to the border of Lincolnshire, crossing which you will soon reach the village of Wroot. Even those who have never before been in Roger Wildrake's "moist county of Lincoln," at this extremity of it, will at once recognize its peculiar characteristics, although the traveller on the road from Doncaster will have been gradually prepared for the wild and dreary tract of country which will here meet his view. I have travelled much, both in England and Ireland, but never did I before behold so strange and anomalous a region. The naturalist will visit "the Level of Hatfield Chase" with a spirit of inquiry, at least such was my case, for I had heard so much of the mystery in which its history is involved that I embraced the first opportunity of accompanying a friend who had greatly excited my curiosity by his description of the country. The following observations from my inspection of this locality are chiefly intended with the view of obtaining further information or corroborating my suppositions on the subject. There are three

conclusions with respect to this singular district at which it will be necessary to arrive with me. *First*, that the whole of this extensive region has been (at what remote period I am unable to say) an extensive and tangled forest; *secondly*, that it has been completely covered by fresh water; *thirdly*, that it has been entirely inundated by the sea. The facts from which these conclusions are derived, and the manner in which I account for them, are as follow: *first*, that it has formerly been an extensive forest is evident, for everywhere you meet with roots of trees, and trunks, and branches; and you cannot dig below the surface to any depth without striking against them. I have no doubt that the village of Wroot derived its name from the roots of trees which surround it on every side; and it is also possible that our modern word *root* may formerly have been thus spelt.* It is probable the village was originally partly built with these roots, and even at the present day extensive fences are made of this material, both in the open fields and in the village. In the less cultivated fields (for the country has been partially enclosed some years) many trunks of trees project above the surface, while in some of the best tilled enclosures there are none at all apparent, in consequence of their having fallen under the axe of the husbandman. There is no entire tree remaining above the ground; the action of the wind and weather, and perhaps the necessities of the inhabitants, having long since destroyed every part, except the base, and such portions as are under ground. The air being excluded, many roots and parts of trunks are left uninjured, and indeed unaltered, save that they have become exceedingly dark, indeed almost black in colour, and are harder than any modern trees. They make excellent palings, and are sold as such at rather a high price, requiring no paint, either for appearance or preservation. The whole face of this county is intersected by dykes of different dimensions, crossing each other at right angles, at the interval of almost every field. Even with these drains, the whole surface has, in past years, been completely covered with water, occasionally for three and sometimes six weeks, to the entire destruction of the crops; but a steam engine has been erected for the purpose of emptying the dykes and remedying this evil. From the observations I made on inspecting the clearing out of one of these dykes, I am led to my second conclusion, namely, that the region has been, in past times, covered by fresh water, but whether this was prior to the inundation by the sea is more than I can, at present, determine. The men employed in clearing out this drain dug down to a depth of about eight feet below the surface, and two and a half feet below the *low water* level of the sea. At the greatest depth they find the roots or parts of the trunks of trees in an upright position, and exactly as they grew. There are some also, as previously mentioned, growing, or rather standing, nearer to the *present* surface, so that the ground must have been formerly undulating and uneven, to what heighth or depth we can only ascertain as

* *Root* is derived from the Swedish word *rot* and the Danish *roed*.—Ed.

far as has been dug down; at the lowest depth, however, trunks or roots are found so close together as to justify my former supposition as to the thickness of the forest; for whilst clearing out the dyke, the whole road was lined with the fragments of the trees thrown up. Oak is the prevailing kind of timber, but there are also other sorts whose species I cannot ascertain, though birch and alder are, I think, among them. With the trees, at even the lowest depth, are found, here and there, very many species of shells, not fossilized, but in a recent state; and it is from many of these being land species that we must infer, as I have before observed, the inundation of the plain by some river; *Helices*, and a great variety of other land shells, being found among them. If left on the bank as they are thrown up, the atmospheric influence soon destroys them; but I have several preserved in my collection which are unlike any I have ever seen, and relative to which I should be glad to have the opinion of some more able conchologist. In other places nuts and acorns are dug up, from various depths, in a perfect state, though apt to crumble to pieces after two or three days exposure to the air. The present extremely level state of the surface has evidently been brought about by the action of water (probably when receding), filling up or smoothing down the inequalities which I have before shewn to have existed. The tide is still kept from floating the present surface of the country by embankments on the Trent, and even at low water it is still above the level where these sea-shells and nuts and acorns are found in deepening the dykes, which might probably be discovered even still lower, if the soil were cleared away to a sufficient depth.

It would appear, then, that the question must be asked, whether the sea has risen on the eastern coast, since the washing in of these shells; and also whether it must not have *first* fallen to allow of the present surface (so much above the *former* deposit left by the sea) becoming high and dry? It also requires some explanation to account for the great accumulation of soil, to the depth, as I have shewn, of at least *eight* feet, over every part of the plain; although this is *partly* accounted for by the upper inequalities of surface filling up the hollows, when subjected to the washing of so great a body of water.

With regard to the former of these two suppositions, the sea has certainly, even of late years, made great inroads on this eastern coast, and some suppose that this is partially accounted for by its gradual rising above its accustomed level, independent of the crumbling nature of some of the cliffs, which leaves them an easy prey to the ceaseless dashing of the mighty ocean. With respect to these lands having been also formerly covered by the sea, this is abundantly evidenced by the numerous species of sea-shells, muscles, and other shells, with which they abound. Whether the anomaly of sea-shells being found by the excavators in some parts of the Levels at a similar depth to that at which, in other parts, they discover acorns and nuts, may be explained by supposing a slight inaccuracy of measurement, and that one or the other may lie in a stratum an inch or two more

elevated—(the mistake as to depth, if any, cannot be greater)—I have not, at present, the means of ascertaining.

There are various theories entertained with regard to this singular region; but the most reasonable supposition appears to be this: that, in the olden times, some vast stream must have flowed through these tracts; that its course, on some occasion, must have been impeded by an accumulation of fallen trees, (whether a sudden or a gradual accumulation it is now difficult to determine, though probably impetuously carried down by some storm and flood); its outlet being thus obstructed, the natural consequence was the overflowing of the low land in its vicinity; and the water was, in all probability, prevented from running off into the sea again by such low eminences as still exist and now are useful to keep out the tide in the Trent from forcing its way, in its turn, over the land inside. The deluge of this river probably remained for some considerable time, until, at length, some obstruction was removed from staying its onward course; and when it retired it left an accumulation of soil, such as a river will always bring down, upon the previously levelled surface which the action of the sea (*i. e.* on the supposition that the sea was the first invader) had already prepared for its reception. Whether it *was* the sea that prepared it thus, as I have supposed, for the overflowing of the river—or the overflowing of the river for the irruption of the sea—is more than I can take upon me to assert.

All the substratum of this tract is a very black and rich *looking* soil, and is no doubt an amalgamation of vegetable matter; but it, as well as the superjacent earth, is poor and unproductive; though, with plenty of manure, when well cultivated, it will produce a very fair average crop. Much of the wood below the surface has a thin coating of a bright indigo-blue colour. I am entirely at a loss even to guess as to what it can owe its formation.

The Level of Hatfield Chase, was first drained by a Dutchman, on the plan of the dykes used in the low countries of Holland for keeping out the sea. I have in my possession some bones of animals, which were dug out of one of these dykes, which I have not alluded to, doubting whether, though found at considerable depth underneath the slough, they might not have sunk gradually into it, having been cast in there at some comparatively recent period. One is a large thigh-bone, apparently of a horse; the other, I imagine, the skull of a deer. On inspecting the latter again rather more minutely, I discovered, in one of the orifices for the arteries, a beautifully perfect shell, nearly hidden in the hollow, but which I safely extricated in an entire state. This probably may, in some measure, corroborate the original supposition, as to their having been deposited coeval with the inundation of water. I will only add, that the word *Chase* signifies a forest, which is in favour of my first conclusion, that this tract formerly wore a similar appearance to Cranborne Chase, in Dorsetshire, and many others.

ON THE CULTIVATION OF NATURAL HISTORY.

Mr. Coquand, whose residence and scientific labours in the Pyrenees are so well known and so much admired, has opened a gratuitous course of lectures on Natural History, at the college of St. Bertrand, under the direction of Mr. Cabal. The ardour which his young pupils already begin to exhibit in collecting and learning the names of the different natural productions met with in their walks, and the emulation which this delightful pursuit imparts to all their other studies, sufficiently demonstrates the great utility to be derived from establishing, in every public or private seminary, similar elementary courses for young persons. But let the heads of these establishments carefully avoid the danger that may arise and frustrate all their best and most earnest intentions, if the professor to whom this instruction is confided does not avoid all theoretical considerations of method and of classification, which, at the outset, would inspire repugnance, disgust them from a study apparently surrounded with insurmountable difficulties, and make a laborious task of that which may be rendered a mental relaxation for the young or old. Let him, on the contrary, confine himself to instructing his pupils in the technical and common names of the objects they meet with—let him point out the strong indications nature always furnishes, more or less distinctly, of her own undeviating system—let him, so far as he can, at the same time furnish his scholars with the most familiar facts regarding the uses and applications of natural objects to domestic economy, the arts, &c. Let him point out, as a constant guide, the natural affinities of creation, so as to enable the young student to approximate and class together, from his own ideas, the genera and families of animated creation—let him describe the cheapest and simplest method of forming an infant *Hortus siccus*, of displaying and preserving the first capture in entomology, or arranging the pupil's geological specimens; and this study will soon present daily increasing charms, more fascinating, more varied, than any other of their juvenile pleasures: they will imperceptibly acquire that love of observation—of order—of research—and above all, when properly directed, that reverence of the great architect of nature—which will influence their future lives, affording them a source of consolation and mental enjoyment in the midst of the anxious cares of life, and their relative future positions in civilized society; it will also, at an early period of life, prevent the fatal consequences of idleness or ill-spent leisure, but too frequently, morally and physically, exhibited in large schools.

These remarks may not, probably, be considered novel; but why has no attention been paid to them? Eminent men concur in advising such a step. The system of present education fully sanctions the introduction of the study of Natural History, as being instructive to the youngest person; yet no measures are generally taken to promote it in our juvenile schools or colleges, where, if it is adopted, it is only recommended to pupils of a certain age, whose advance in learning has

already developed well-defined propensities, too late to be checked if bad ones, too confirmed to be guided into another channel, and most frequently derived from any other source than that every day presented by nature's inexhaustible storehouse. It is also true that, with boys somewhat advanced, they, to a certain extent, disdain the first principles of natural science, as only worthy their junior's attention: they would, as it were, acquire natural history *per saltum*, and begin where they should end, in forming or embracing a particular system. It is, therefore, with the younger classes that a study of this nature is most likely to produce beneficial results, a lasting moral impression, and obviate infallibly many vicious propensities or opinions so much to be deplored in youth, so difficult to correct in after years. The present time is most fruitful in elementary works for the instruction of youth, but they are all founded on subjects too difficult to acquire without making a labour of that which may be learned without fatigue in the book of nature; and there are always opportunities afforded to do so, without the study wearing the appearance of a task. It has been urged that, with children, some branches of Natural History could not be taught, as it involves a degree of cruelty incompatible with the benefit attempted to be imparted; and the child who, in infancy, could deliberately pin a butterfly to a piece of cork, might, at a more advanced age, feel disposed, with the same *sang froid*, to stab a fellow creature. Bad, indeed, must be the instruction that could lead to such a conclusion—to such a perversion of the first principles of humanity. Let every species of philosophical cruelty be avoided, as it readily may be; confine the pupil's study to such objects as present a vegetable existence, or are merely of inorganic formation, leaving to the result of time the peculiar taste that may arise for the investigation of other portions of creation when the mind is capable of acquiring information at the smallest sacrifice of humanity, and when such knowledge may conduce to the general benefit of mankind rather than to the peculiar gratification of any one's individual taste.

C. D.

UNUSUAL LOCALITY FOR THE NEST OF THE COMMON GALLINULE (GALLINULA CHLOROPUS).

I HAVE seen the nest of this bird situated in the upper branches of a middle-sized Portugal laurel, overhanging the water, and at several feet from its surface. I had previously met with more than one instance where it was built in bushes, but never before at so considerable a height from the ground. It would have been interesting to have observed the manner in which the newly-fledged young were conveyed from the nest; but this, unfortunately, I had not an opportunity of doing.—N. W.

REVIEWS.

Transactions of the Geological Society of Pennsylvania. Vol. I., Part 2. Philadelphia: James Kay and Brother.

Our brethren across the Atlantic, with that shrewdness and foresight which enters largely into their national character, are wisely anticipating the advantages which, as a flourishing commercial people, they will derive from an intimate acquaintance with the geological history of their own country. In many of the United States, geological surveys are going forward, encouraged by the immediate sanction, or even active co-operation of the legislature; and judging from what has already been effected, the completion of these important undertakings will not be retarded by any lack of spirit and energy on the part of the government, or from a want of competency among those who have volunteered their services in the cause. Three or four years hence, and a considerable portion of the new world will be before us with its geological relations familiarly laid down in colours, or as minutely detailed in black and white, as are now (thanks to the industry and perseverance of British geologists) those of our own island.

There is something at first almost startling to the imagination, in contemplating a task so arduous as that of working out the geological features of the vast continent of North America. Difficult, however, as the attempt may appear, the undertaking is not one beset with insurmountable obstacles. The ground, it is true, may be untrodden, but he who ventures to explore it is not without a beacon to direct his steps. The American geologist has a course of investigation before him, in which the *modus operandi* is already determined. On entering the field of inquiry, a track that has been beaten elsewhere points out to him the line of research which he must adopt. The rocks in this country will be, as it were, the stepping-stones to the mountain-ranges in his own; and while traversing the deep ravines and boundless plains of that extensive region, he will not be unmindful of the benefits conferred on science through the patient industry and unflinching zeal which animated Smith, or fail to appreciate the true spirit of philosophy which prompted the labours of Coneybeare or Greenhough.

The work now before us is the second part of the first volume of transactions, published by the Geological Society of Pennsylvania: a Society established in 1832, at that time consisting of only seven individuals, but which now enrolls on its list of supporters more than 200 resident or corresponding members.

It is with feelings of the most lively interest that we observe the name of our countryman, Richard Cowling Taylor, as one of the leading contributors to the present volume. Six years have now elapsed since this enterprising geologist

quitted England for America, carrying with him that indefatigable ardour in the promotion of scientific objects which, being united to the happiest qualifications for the services on which he was engaged, could hardly fail to rouse a spirit of philosophical research among those into whose society he might be thrown. The name of Featherstonehaugh is as well known for his enthusiasm in the cause of science, as for the possession of talents which enable him to exert that enthusiasm so powerfully in her behalf. He has been one of those most actively engaged in geological surveys in several of the States, and the result of some portion of his labours has been laid before the public at the express desire of the American government. The following passage is from the pen of Mr. F. He is describing the travertin deposited by the waters in the valley of Sweet Springs, Alleghany county, Virginia, and proceeds to relate a highly interesting phenomenon connected with them :—

"I was one day returning to my cabin with some specimens of this travertin, when I met Mr. Rogers, the landlord of the establishment at the Sweet Springs, an old inhabitant of this part of the country and a very intelligent and worthy person. He assured me that, some years ago, when hunting deer in the hills, he had seen some rocks exactly resembling them. As he is a man of very good judgment, I proposed to him to accompany me there, and he cheerfully consented. Mounting his horse and accompanied by myself on foot, we went about six miles in a north direction; but so many years had elapsed since he had casually observed the place, and the deep dells and hills, clothed with their everlasting woods, resembled each other so much, that we passed an entire morning wandering about, climbing one hill and descending another, till I began to think he had been mistaken, and told him so; but he proposed trying another hill side called Snake Run Mountain, and there I followed him. Being in advance of me, I heard him holloa, and I immediately knew that the game was found. He approached me holding in his hand a piece of very ancient travertin, which I recognized at once; and leading me to the brow of a hill, *at least three hundred and fifty feet above the level of the Sweet Spring*, I saw, to my great surprise, a huge mural escarpement of travertin, skirting the brow of the hill, with the weather-worn remains of old stalactites; whilst the body of the rock resembled, in every particular, the recent one at the cascade, abounding in large pipes of calcareous matter, which had formerly enclosed logs and branches of wood. The pendant stalactites consisted of concentric circles; and there was the complete evidence that a stream of mineral water of great breadth, containing carbonate of lime, had, for a great length of time, passed over this brow, and formed the rock. The surface of the rock, in many parts, was interspersed with what are vulgarly called pot-holes, being circular perforations made in rocks by pieces of rock and gravel, kept whirling in them by streams of water similar to those which I have seen at the summit of the lofty hills of Lake George, in the State of New York. This Snake

Run Mountain stood, as I found by compass, N. N. E. by E. from the Sweet Springs; and Peter's Mountain, of which I could get a peep through the trees, bore east of the place where I stood.

"Here was an extraordinary phenomenon! an immense deposit of travertin, lying three hundred and fifty feet above the level of the spring from which it probably was derived. It seems to be susceptible of no other explanation than that the level of the valley was, at some remote period, much higher than it is now, and that the springs were, at least, at this level. The Snake Run Mountain is a large limestone outlier from Peter's Mountain, such as are constantly found in the valleys. Before these were scooped out by the retiring currents, it is probable that the whole surface of this now deeply-sulcated region was continuous, and that the springs issued from the bottom of the ocean. When the valleys were swept out, these knobs, hills, and spurs, being hard, compact, transition limestone, resisted, and were left; whilst the conglomerates, shales, and sandstones, were carried away: since that period the softer parts of the formations, occupying that part of the valley where the springs now are, have been gradually worn down, and a new direction given to the stream; whilst the old travertin remains a monument of the ancient level, and one of the strong geological proofs of the process of denudation."

A considerable portion of the communications now under consideration relate to subjects more or less connected with the mineral resources of some parts of the United States, and which, though of the highest importance, naturally possess a more local interest than other parts of the volume. The contributions relating to organic remains contain some new and valuable information; but the limits of our present article will not admit of extending our analysis to them, and we must therefore refer our readers for points connected with their history to the work itself.

There is certainly one subject upon which we cannot help expressing our regret, and that is, that the present volume should be so destitute of information upon the tertiary geology of America. With the exception of a short notice, by Mr. Conrad, upon a portion of the Atlantic tertiary region, we find no allusion whatever to the supra-cretaceous deposits, which are so largely developed in some parts of the United States. The important results which have attended the examination of the beds above the chalk in England and the adjoining continent; the wide field which has been opened for theoretical inquiry into the causes of phenomena which are there presented to us; and the connection existing between the newest rocks of this period and those deposits which are accumulating from the operation of agents now in activity, give a degree of interest to facts bearing upon the history of that epoch which does not attach itself to any other department of geological investigation.

We are not, it is true, entirely without sources of information upon the ter-

tiary formations in America. Mr. Rogers's report recently laid before the British Association for the Advancement of Science, gives a general outline of their extent, besides furnishing much valuable matter respecting them. No one, we presume, will dispute the talent and ability which he has displayed in the execution of the task, but he has performed it under a conviction of the soundness of *the new principle* in the arrangement of tertiary strata. He can infer, with precision, the exact comparative age of a deposit by comparing its fossil shells with existing species! If we may hazard an opinion with reference to this subject, it would be that the new principle, however beautiful in theory, or apparently simple in application, as it at present stands, is as much a stumbling-block on the one hand as it may be an assistance on the other. Mr. Conrad, it would appear, does not always see his way so clearly as could be wished in making out his formations upon the new system; the per centages do not always tell up exactly as they ought. At page 340 he observes, "I have rather too hastily supposed that the equivalent of Mr. Lyell's miocene period occurred in this country; but I am now convinced that all above the eocene may more properly be termed older and newer pliocene. There is no gradual transition from the older to the newer tertiary, but so vast has been the change in the period of time which elapsed between them that a single species of testacea has alone survived it; besides, so many recent species of the Atlantic coast of North America occur in every deposit of the tertiary above the eocene, that although the amount varies considerably in different localities, from fifteen to thirty per cent., yet I believe the discrepancy to have been caused by different depths of water, or peculiarity of situation, not difference of time in which the species existed. These remarks, however, do not apply to those deposits which are composed almost exclusively of existing species; they are certainly entitled to the appellation of newer pliocene, and occur chiefly in Maryland, North Carolina, and South Carolina."

We cannot help wishing that Mr. Conrad had been a little more explicit in his observation respecting the variation in the per centage of extinct fossil shells. As the passage now stands it is involved in considerable obscurity. Every one must be aware that in order to ascertain what proportion of fossil mollusca are identical with existing forms in any one deposit, the comparison is made with species from all depths and situations. The explanation given by Mr. Conrad is only applicable upon the supposition that the recent types to which the fossil ones are referred are exclusively littoral, or have all existed under similar physical conditions. Then, indeed, we might reasonably infer that, in our examination of a fossiliferous deposit, those localities would furnish us with the greatest number of recent species in which the conditions which formerly existed most closely resembled those from whence the living testacea had been obtained, and *vice versa*.

If Mr. Conrad can bring forward evidence proving that deposits of the same geological age exhibit a variation of fifteen per cent. in the number of extinct spe-

cies which they contain, he will undoubtedly have established a limit of error to that amount in the application of the new principle.

It may, perhaps, be urged that, in the present instance, no serious error could have arisen from the application of the new principle, because fifteen per cent. forms the maximum of variation; there being every intermediate degree from one to that number. This consideration, however, does not at all modify the bearing of Mr. Conrad's statement, with reference to the per centage test; because those localities which have furnished the intermediate proportions, and so connected the whole together, might have been destroyed by denudation, or might not have been accessible. Had this (which is by no means an unreasonable surmise) been the case, part of what Mr. Conrad now considers older pliocene would, under those circumstances, have been miocene.

We are rather surprised that Mr. Taylor should not have directed his attention to the tertiary formations in America. The *Transactions of the Geological Society of London*, and the pages of the *Philosophical Magazine*, bear ample proofs of the interest which he felt in those of England. It is true that, at Philadelphia, he is not exactly in the tertiary district; but fifty or a hundred miles are *nothing* in America, and even the *crag* at Bramerton, the favourite resort of cabinet collectors, will not bear competition with the bank of the Potomac.

We must not draw our observations to a close, without adverting to the valuable paper, by Dr. Harlan, on the remains of the Basilosaurus. As the description of this animal is before the public in another form,* we shall only allude to its prodigious length, which far exceeds that of any other saurian.

"We understand from Mr. Conrad, that he was informed by Mr. Creagh, that on his first settlement in that portion of the country, a train of vertebræ belonging to this animal was observed on the surface of this rock extending in a line much over 100 feet in length. This statement agrees with that made by Judge Bree; 150 feet in length being attributed by him to the Arkansa skeleton." —p. 350.

Had the Basilosaurus been discovered anywhere but in America, we should have thought the above statement exaggerated; but we are already familiar with the history of the great Sea Serpent, to which reptile we should, *à priori*, imagine it to be allied.

We wonder what Mr. Hawkins, of saurian notoriety would say to this monster of the "*pre-Adamite epoch.*" He compares some of his specimens to Moloch, Satan, and Abaddon;† but they surely must yield the palm now.

One more extract and we have done; it is from the Miscellaneous Intelligence:—

* Dr. H. has published this paper, with many others, in a separate volume.—Ed.

† *Memoirs of Ichthyosauri and Plesiosauri*, by Thomas Hawkins, F.G.S., &c., &c., &c.

"We insert the following letter, which has just been received from Dr. Johnson, of Louisville, Kentucky, without further comment, at present, than merely observing that we place entire confidence in the author's statements, whose observations were made on the spot. Specimens of the substance in question have been placed in the cabinet of the Geological Society in Pennsylvania, and in the private collections of Messrs. Taylor, Harlan, and Wetherill. It is the intention of Mr. W. to analyze these grains, which appear, in some instances, to display, when fractured, a shining surface. Exposed to the blow-pipe, they are reduced to a fine white ash, and yield neither smoke nor flame. The grains represent the true Indian variety of corn.

"*Louisville, July*, 1835.

"*My dear Sir*,—I now send you, by Mr. Frazer, the *fossilized corn* of which I spoke when I last saw you. It is found in the alluvial bank of the Ohio River, about twenty-five miles below Wheeling, both above and below the mouth of Fish Creek, and extending up the creek some distance, and four or five miles on the Ohio; it may extend farther, but it shews itself only that distance by the washing of the river against the bank. The stratum is generally from eight to ten inches thick, and from five to six feet below the surface, and contains nothing but the corn grains closely impacted together with the black dust which you perceive among the corn, filling up the interstices. No *cob* or *stock* of the corn has ever been found with the grains. The same stratum has been met with in places distant from this, in digging below the surface. This is all that I could learn relative to this unaccountable and interesting deposition. Why or how did the corn get from the cob? It certainly must have been charred, or it would not have been thus preserved. It could not have been reduced to this black cinder, like the loaves of bread and grains, of different kinds, found at Pompeii, or rather it could not have resulted from a like cause. I do believe if all the corn raised on the Ohio, and all its tributaries above this point, were collected in one mass, it would not amount to one-tenth of this deposition.

"Most truly your's,

"R. HARLAN, M.D." "J. C. JOHNSON.

There is a disposition in England to give credit to our fellow labourers in America for occasionally making "*mountains of mole-hills*" in their investigation of natural phenomena. This credulity on our part is certainly not without foundation, and until we are fully satisfied that the causes in which it has originated no longer exist, all relations emanating from the new world which border upon the marvellous will be received here with some degree of scepticism, unless supported by evidence of a most explicit and unexceptionable character. As an illustration of the very limited insight into some branches of natural science which its cultivators possessed on that continent, even within a comparatively recent period, we would refer our readers to a catalogue published a few years since, of the

objects contained in the Museum of Natural History, at the Lyceum, New York. This catalogue is drawn up by one of the leading members of that institution, and, as an indication of his competency for the task, we find ten or twelve honorary titles and three or four *et cetera's* attached to his name. The writer, after giving a list of numerous *Buccinums*, *Venuses*, *Turbos*, vertebræ and teeth of *sea-serpents*, &c., notices a flint-stone from England containing two *Echinites*, one of which is "*fast in its hole*," while the other, *mirabile dictu*, "*can be made to revolve upon its own axis!*" This remarkable phenomenon appears to have amazingly puzzled the learned compiler of the catalogue, who does not presume to attempt any solution of the problem.

With regard to the statement respecting the fossil corn, we are by no means disposed to question its authenticity, notwithstanding the apparently anomalous conditions attending its deposition. These, perhaps, may be explained when a more minute investigation has been made of the locality in which this singular stratum has been discovered. The only instance at all analogous to the present, with which we are acquainted, is the prodigious accumulation of fruits and seeds in the London clay of the Isle of Sheppy. It is not at all beyond the limits of probability to imagine that, under some circumstances, the clay might, by aqueous agency, be removed, and a continuous stratum of seeds left. We are, however, unwilling to enlarge upon so novel a fact as that related by Mr. Johnson until we have all the circumstances connected with its history before us.

In closing the present volume we cannot help expressing the gratification we have derived from its perusal, and the sincere hope that this year will not pass away without the publication of a second.

A History of British Quadrupeds. By Thomas Bell, F.R.S., F.L.S., Lecturer on Comparative Anatomy at Guy's Hospital. Illustrated by a Wood-cut of each Species, and numerous Vignettes. 8vo. London: Van Voorst. 1836.

Of all the *Vertebrata* of the British Islands, the Mammiferous, or Mastozoary,* animals have been the least frequently and efficiently delineated by the artist. While the birds have been figured with various degrees of ability and success, by Pennant, Lewin, Donovan, and the lamented Bewick; and a highly respectable work, by Meyer, on British Ornithology, is in active progress; and our

*. To the newly-introduced term, *Mammal*, we have an insuperable objection; and the hybrid compound, *Mammalogy*, is not to be, for a moment, tolerated by an educated ear. There is, in fact, no such term in the Greek, as μάμμα, signifying teat or dug: and, even were it so, what would *Mammalogy* express, but dug-discourse,—not, as it is meant to imply, the doctrine of teated or Mammiferous Animals. *Mastozoology*, although not exactly to our taste, is surely far preferable, as compounded of μαστὸς, a dug or teat, ζῶον, an animal, and λόγος, a discourse, to the spurious, unscientific, and unmeaning "*Mammalogy*."

fishes have been iconographically displayed by Pennant and Donovan, and recently, in a style of surpassing excellence, by Yarrell, we have, at present, no illustrated publication on the British *Mammalia* at all comparable, in extent and comprehensiveness of design, or in correctness of execution, with them. The *British Zoology*, of Pennant, contains indifferently drawn figures of only seventeen species of animals belonging to this Class: the *History of Quadrupeds*, by Bewick, not more than thirty-four species. Of the shewy and expensive *History of British Quadrupeds*, by Donovan,—the only monograph on the subject with which we are acquainted,—justice forbids us to speak in any other terms than those of unqualified reprobation and contempt. Contemplated either as a work of Science or of Art, it is alike disgraceful to its author, and unworthy of the age and of the country on which it has been obtruded. Under these circumstances, we hail, with no ordinary feelings of gratification, the appearance of the first two Parts of the *History of British Quadrupeds*, some time since announced by Mr. Bell. Our expectations, highly as they have been excited by a knowledge of the character, talents, and opportunities of the author, even a cursory inspection of the commencement of his work has completely satisfied. It is quite worthy to occupy the same shelf, in the zoological library, as Yarrell's *British Fishes*: a more eloquent eulogium than this, we are unable to pronounce. If the illustrated works on British Birds, Reptiles and Amphibia, Crustacea, and Zoophytes, recently announced for publication, correspond as closely in correctness and beauty of execution, as is contemplated in form and style, with the two productions already before us, a new and most auspicious era will have dawned upon the hitherto obscure and entangled paths of British Zoography.

Parts 1 and 2 of Mr. Bell's work exhibit a description of the genera and species belonging to the *Vespertilionidæ* and *Rhinolophidæ*, of the Order *Cheiroptera*, and the Hedge-hog and the Mole, respectively arranged under the *Erinaceadæ* and *Talpidæ*, of the Order *Insectivora*. The notices of the internal structure, of the generic and specific characters, and the habits and economy, of the various animals are singularly accurate and luminous, frequently original, and always interesting. The figures of the bats are, moreover, without one solitary exception, uncommonly spirited and characteristic: and those of the hedge-hog and the mole, in particular, so powerfully executed that they would make our old favorite Bewick, were he allowed to behold them, "start from the dreamless slumbers of the grave." If the volume be completed in the spirit, and with the zeal and talent, which the opening parts display, it will prove to the student of zoology in general, and more especially to the British naturalist, a most instructive and delightful work.

Until the appearance of Dr. Fleming's valuable *History of British Animals*, six species only of the Bat-Family were recognized by systematic writers, as natives of the British islands. To this scanty catalogue, a seventh species, the

Vespertilio emarginatus, was added by Fleming. Aware, or, at least, suspecting, from our own cursory observation, that some few still remained undistinguished and undescribed, still we were little prepared for the acquisition of ten new species of British *Cheiroptera*. Such, however, is absolutely the case: seventeen species are now enumerated as inhabiting Great Britain; and so clearly characterized, both by Mr. Jenyns and Mr. Bell, as to leave no shadow of a doubt upon the zoologist's mind, of their perfectly distinct nature.

This large addition having rendered necessary a new systematic distribution of the British *Cheiroptera*, we propose, in our next Number, to present a Synoptical Sketch of the Families, Genera, and Species, according to Mr. Bell's principles of characterization and plan of arrangement. To this, we shall prefix a cursory view of the anatomical structure of the Order to which these curious and interesting animals belong: sincerely hoping that the little information which our confined limits will allow us to communicate, may spur on many of our readers to a deeper study of this yet unexhausted subject, and to a profitable use of the abundant sources from which our own supplies will be principally drawn—the admirable *History of British Quadrupeds*, by Mr. Bell; and the Article, *Cheiroptera*, in Dr. Todd's excellent *Cyclopædia of Anatomy and Physiology*.

EXTRACTS FROM FOREIGN SCIENTIFIC JOURNALS.

1.—M. De Blainville has published, in the *Nouvelles Annales du Muséum de l'Academie des Sciences*, an account of the Dodo, or Dronte (*Dipus ineptus*, L.). This remarkable bird, only at present known by an oil painting of a dried foot preserved in the British Museum, and a head and foot in the University of Oxford, has occupied much of the ornithologist's attention. It is, in fact, a remarkable circumstance that a bird of such magnitude should no longer be found, and that it should, as it were, have passed away from the face of nature. Besides the reflections that may attach to this and other circumstances, de Blainville has principally directed his researches towards establishing the zoological position of this strange bird. In 1497 and 1499, the Dodo was abundantly found by the Portuguese in an island beyond the Cape of Good Hope. The Dutch, in 1598, also found it in the same island, now called Maurice Island (Mauritius), Isle de Bourbon, Isle de France. Clusius, a Dutch author, in 1605, gave a description of this bird, under the name of Walgh-Vogel, or a disgusting bird, on account of its tough and bad-scented flesh. In 1634, Herbert describes this bird under the name of Dodo, which it still retains: he describes it as weighing upwards of fifty

pounds, very fat, and possessing a melancholy look. The portion of this bird now extant in the Oxford Museum came from the collection of Tradiscant, where it had existed prior to 1681. The bird was even intact in 1700; in 1755 the committee threw the greater part away, merely retaining the head and two feet. The oil portrait in the British Museum appears to have been painted in Holland, from a living specimen brought from the Mauritius. Collecting all the facts relating to this bird in original documents, it may be concluded that the Dodo is a massive bird, very large, not at all graceful, with short feet, and thick legs; the body oval, somewhat resembling that of a large Duck whose posterior part is not pointed; the neck is thick, short, and curved in the form of an S. The head is very large, particularly the beak; the tongue appears pointed, the leg is feathered to the knee: the toes are four in number, short, thick, and armed with strong nails, without any trace of interdigital membrane. The back is of a black colour, the head greenish gray; the feathers of the wings of the tail are white. But little is known of its habits, it appears to have possessed no powers of flight, and the stones found in its gizzard lead to a conclusion that it is graminivorous. With respect to its place in an ornithological series, ancient writers placed it near to the Swan, or the *Echassiers*. Temminck places it, as a genus of a particular order, after the series of birds: Mc Leay approximates it to the *Gallinaceæ*, and, on account of its short wings, it has also been classed with the Ostriches. De Blainville combats all the opinions of previous writers, and finishes by concluding that it is more nearly related to the birds of prey than any other order; adding also that he is by no means satisfied that this bird has positively become extinct; and so little being hitherto known of the natural productions of the Mauritius, it is hoped some traces may yet be discovered to throw a further light on the history of this most singular bird.

2.—M. DE LA SAUSSAYE, secretary to the next scientific congress of France, which is to be held at Blois, on the 11th of Sept. next, has published a programme of questions relative to history and natural sciences; among them are many of high interest to the antiquary and naturalist. One of these is to determine the precise spot mentioned by Cæsar as the site of the great annual meeting of the Druids, and to examine if those places in which the greater number of Druidical monuments are to be found are not also those in which christianity first founded its religious establishments. Another question of general importance is, to give the rise and progress of printing in the different localities of France. In agriculture—to examine the origin of the diseases in wheat, their effect on the animal economy, and their best mode of cure. In natural science—to determine whether it is not possible to create a mineralogical classification presenting the advantages resulting from the natural methods followed in zoology and botany. To pronounce if there exists among animals a primitive type in which all the creations of that

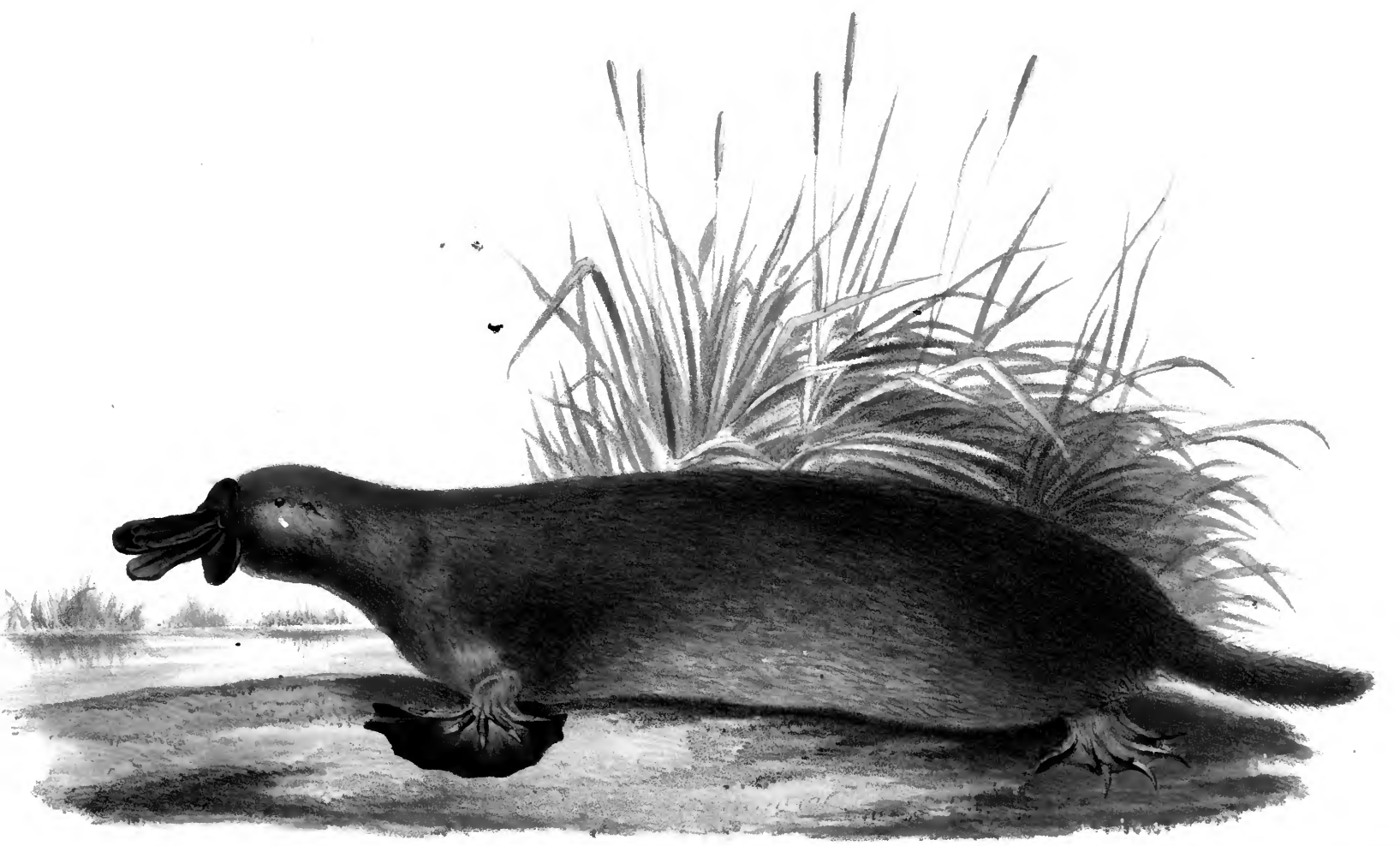
great class of organized beings are more or less combined. To inquire if external circumstances can so modify the organization of animals and plants as to change their specific, or even generic, characters. To examine if it is well demonstrated that the cellular tissue of plants presents a nervous system analagous to that of animals, and to indicate in what that physiological analogy consists. If there is any transformation of the cellular tissue of plants into vessels, or have the vessels an individual existence from the first instant of their manifestation. Are botanists agreed on the mode of formation of the ligneous strata in dicotyledonous vegetables.

3.—THREE new species of South American Pheasants are added to the Parisian Menagerie; their familiarity and gentleness are remarkable. The cry of the male bird distinctly utters the three syllables *ca tra ca;* the name by which they are recognised in their native localities, and that now scientifically adopted.

4.—M. DE PARAVEY has communicated to the Academy of Sciences a memoir on slate found in the primitive formations of the Meuse; in which it is observed that it possesses the property of dividing into plates, according to the given direction of the longitudinal fibres, called, by the workmen, *longrain*, according to whom no slate is good not presenting this constant and regular division. Therefore slate of a more modern formation, such as that of St. Anger's, which breaks, like glass, into irregular fractures or splinters, never lasts more than about thirty years, while that of the Ardennes exist uninjured during a lapse of two centuries; a fact proved by inscriptions on the green slates with which the roofs of some ancient monuments in Belgium are covered. It is to this peculiar property of separating lengthwise, according to the parallel direction of the fibres—which supposes a species of crystallization—that M. de Paravey wishes to draw the attention of geologists.

5.—GEOLOGISTS in France appear to be in a complete state of uncertainty respecting the supposed impressions of bird's feet in the sandstone of Hildburghausen. Do they belong to terrestrial or marine mammals—to reptiles—to saurians—to birds—or are they impressions of vegetables? The zoologist declares they are not the foot-marks of animals or reptiles, the ornithologist assures us he can trace no resemblance whatever to the feet of birds, and de Jussieu denies positively that they can be vegetable impressions. These and other contradictory opinions on geological subjects keep alive that interesting science, and must ultimately produce the most satisfactory conclusions, as well as much able discussion in the learned world.


BRITISH MUSEUM
NATURAL



R. Martin & Co. lith. 26 Long Acre.

ORNITHORHYNCHUS PARADOXUS.

ORDER.—PALMATA. *FAMILY.*—BRUTA.

By Frederick Ryland.

This singular animal has excited the attention of naturalists in a very great degree, from the peculiarities of its organization, which, until they were more minutely investigated, caused some doubt as to whether it could properly be arranged under any of the existing classes of *vertebrata*, and hence the name Ornithorhynchus paradoxus was assigned it by Professor Blumenbach, and has been retained to the present day.

The body of the animal is rather flattened horizontally, and partakes of the characters of the Otter, the Mole, and the Beaver.* Its length, measured from the extremity of the mandible to the end of the tail, varies, in full-grown specimens, from sixteen to twenty-three or twenty-four inches; the male is generally found to be, in a slight degree, larger than the female. The body is covered externally with long silky hairs of a dark-brown colour approaching to black, underneath which is a very fine soft fur of a greyish colour, the latter being thicker and softer on the under surface of the animal. In the possession of these two kinds of hair, the *Ornithorhynchus* resembles many of the amphibious quadrupeds, as the Otter and the Beaver. The tail is flat and broad, and varies in length from four and a half to six inches; the hair covering its upper surface is longer and coarser than that of any other part of the body, and projects a little distance beyond the termination of the tail.

The legs are exceedingly short; the hinder ones rather shorter than the fore legs; the feet have each five toes, connected with each other by a strong membranous expansion, like the feet of a Duck; in the fore feet, which are the largest and most powerful, the web extends a little distance beyond the extremities of the claws, whilst in the hinder feet it attains only to the roots of the claws. The claws on the fore feet are strong and blunt, and well adapted for burrowing, those on the hind feet are sharp and curved backwards. The fore feet, with their membranous web are, when expanded, four inches across, and that part of the web

* See an account of the structure and habits of the *Ornithorhynchus*, in the *Transactions of the Zoological Society of London*, vol. i., part iii., by Mr. G. Bennett, to which the author is indebted for most of the facts contained in the present article.

which projects beyond the extremities of the toes, is loose, and can, therefore, fall back when the animal burrows. Owing to this arrangement, the *Ornithorhynchus* has the full benefit of its broad foot as a paddle when swimming; and when making its way into the earth, where strength more than breadth is requisite, the falling back of the web increases the power of resistance in the foot, and, at the same time, allows the strong blunt claws to come into operation. The male has a moveable spur upon the posterior and inner surface of the hind leg, a little distance above the claws.

The head, like the body, is compressed horizontally; the eyes of a light brown colour, very small, but brilliant, are placed rather backwards. There is no projecting external ear, but the orifice of the auditory canal is situated behind and external to the eye, and the animal has the power of opening and closing it at pleasure. The mouth or beak is the most characteristic part of this curious quadruped; it is formed of two flat projecting lips or mandibles, of a cartilaginous structure, and slightly serrated at the sides; altogether bearing a very strong resemblance to the beak of the Shoveller Duck. It is of a dirty greyish black colour, and covered with innumerable minute dots. At the base of each mandible is a loose projecting fold of skin, of the same dark colour as the beak, and to this different uses have been assigned. Mr. Bennett is of opinion that it affords protection to the eyes when the animal is engaged in burrowing or seeking its food in the mud; Sir Everard Home* considers the use of these folds to be, to prevent the beak from being pushed into the soft mud beyond this part, which is so broad as completely to stop its further progress.

The possession of cheek-pouches is the only other structural peculiarity to which it is necessary to refer in the description of this animal. When recently captured, they generally contain mud and small stones mixed up with the animalculæ on which the creature feeds; and it is supposed that in these pouches the food undergoes trituration and other changes, preliminary to its digestion in the stomach.

The *Ornithorhynchus* is ovoviviparous, but suckles its young, after birth, like most other quadrupeds.

From the singular organization of this creature, we can scarcely wonder at the indicision of naturalists, in the first instance, as to what place it ought to occupy in the animal series. To increase the dilemma, it was always believed, till very recently, that the *Ornithorhynchus* propagated its species by means of eggs, but the investigations of Mr. Bennett and Mr. Owen† have completely set that question at rest. In its mode of generation, it resembles the reptile tribe; its want of bony teeth, the singular formation of its duck-like bill, and the possession of

* *Philosophical Transactions* for 1800.

† *Philosophical Transactions*, for 1834; and *Zoological Transactions*, vol. i., p. 221.

webbed feet, seem to ally this animal to the family of the water-fowl; whilst its general appearance, its hairy covering, and internal structure prove indisputably its title to be ranked amongst the mammalia.

The *Ornithorhynchus* is an inhabitant of Australia, and is found both in New Holland and in Van Dieman's land. The race is very numerous: they frequent the rivers of those countries, and form their burrows in the banks. They are called by the colonists *Water-Moles*, from a resemblance they are supposed to bear to the common European Mole. Their shyness and timidity are extreme; so that "on seeing them," says Mr. Bennett,* who had many opportunities of observing them in their native haunts, "the spectator must remain perfectly stationary, as the slightest noise or movement of the body would cause their instant disappearance, so acute are they in sight or hearing, or perhaps in both; and they seldom re-appear when they have been frightened. By remaining perfectly quiet when the animal is "up," the spectator is enabled to obtain an excellent view of its movements on the water; it seldom, however, remains longer than one or two minutes playing and paddling on the surface, soon diving again and re-appearing a short distance above or below, generally according to the direction in which it dives. It dives head foremost with an audible splash." They swim very low, so that the upper part of the back and the head only are seen above the surface of the water; and when their fur is wet, they resemble a mass of dirty weeds rather than a living animal, on which account they often escape observation.

Their food consists of river insects, small shell-fish, and other animalculæ, which they obtain for the most part by inserting their beaks into the soft mud on the sides of the rivers, and particularly at the roots of the various aquatic plants that grow in such situations. Their mode of seeking food in the mud or water is very like that of a Duck when feeding in similar places; immediately after withdrawing the beak from the mud, they raise the head, and masticate the prey they have obtained by a lateral motion of the mandibles one upon the other.

Their habitations are formed by burrowing in the banks of the rivers which they frequent. The burrows are generally about twenty feet long, but they have been found as much as fifty feet in length; they have two entrances, one of them situated three or four feet above the surface of the river, and the other a short distance below the level of the water. At the commencement they are capacious, but immediately afterwards become contracted to a size little more than sufficient to let the body of the animal pass; they proceed upwards, rather in a serpentine direction, and terminate just beneath the surface of the ground in a kind of chamber large enough to contain the mother and three or four young ones. The nest is made of dried weeds, bark, and small fibrous roots. The entrance of the burrow is so placed as to be concealed from observation by surrounding grass, weeds,

* *Loc. Cit.*, page 234.

and shrubs, and no heaps of dirt are found near it; so that Mr. Bennett suggests the probability of the animal carrying away the loose mould collected during the excavation, in order that the heap, which would otherwise be formed, may not point out the situation of the burrow.

Mr. Bennett succeeded in capturing two full-furred young *Ornithorhynci*, in one of the burrows that he examined. He conveyed them to Sidney, and was in hopes of sending them alive to England; but, though they were at first very active and sprightly, in a short time they became meagre, their coats lost the sleek glossy appearance indicative of health, they ate little, and at length died, about five weeks from the period of their capture. As his opportunities of observing these animals were considerable, and his account of their habits is the only one of much value that we possess, I shall not hesitate to transcribe, in his own words, some of the observations he made upon their proceedings.

"The young animals sleep in various postures, sometimes in an extended position, and often rolled up like a hedgehog, in the form of a ball." The latter posture, which is a favourite one with them, "is effected by the fore paws being placed under the beak, with the head and mandibles bent down towards the tail, the hind paws crossed over the mandibles, and the tail turned up; thus completing the rotundity of the figure. They usually reposed side by side, like a pair of furred balls, and awful little growls issued from them when disturbed; but when very sound asleep, they might be handled and examined with impunity. One evening, both the animals came out about dusk, went as usual, and eat food from the saucer, and then commenced playing one with the other like two puppies, attacking with their mandibles, and raising the fore paws against each other. In the struggle one would get thrust down, and at the moment when the spectator would expect it to rise again and renew the combat, it would commence scratching itself, its antagonist looking on, and waiting for the sport to be renewed." They were very fond of combing themselves with their hind feet; an operation they generally performed after being in the water, and before retiring for the night. "It was most ludicrous to observe these uncouth-looking little beasts running about, overturning and seizing one another with their mandibles, and then, in the midst of their fun and frolic, coolly inclining to one side, and scratching themselves in the gentlest manner possible. After the cleaning operation was concluded, they would perambulate the room for a short time, and then seek repose." Their mode of climbing to the summit of a book-case, or any other elevated piece of furniture, is very surprising, because the opportunity of exercising such an instinct or propensity could scarcely have occurred to them when in a state of nature; it reminds one of a late celebrated escape from Newgate. "This was at last discovered to be effected by the animal supporting its back against the wall, and placing its feet against the book-case, and thus, by means of the strong cutaneous muscles of the back, and the claws of the feet, contriving to reach the top

very expeditiously. They performed this mode of climbing often, so that I had frequent opportunities of witnessing the manner in which it was done."

As far as we are at present acquainted with the disposition of the *Ornithorhynchus*, it is free from vicious propensities; its extreme timidity induces it to seek for solitude, and to haunt only the most unfrequented parts of rivers; when handled or disturbed, it evinces its impatience and dislike by a low growl, but never shews a disposition to bite or scratch. It has been asserted that the spur with which the hind leg of the male is armed is perforated, and that through it a poisonous secretion is discharged, when the animal is irritated.* Mr. Bennett endeavoured to ascertain the correctness of this, by seizing the hind leg of the male animal, and roughly handling him; but he could not perceive that any effort was made to avail himself of the spur in his defence, and he appears to think, therefore, that the statement touching the use of the spur is entirely groundless.

This animal, though not strictly amphibious, appears to spend as much of its time on the water as on the land; its short legs and webbed feet are better adapted for urging the body through the former element than over the surface of the latter. In the water it finds its food, in the immediate vicinity of the water it constructs its habitation. Mr. Bennett generally indulged his captives with an occasional swim, in which they seemed to take great delight. When placed near the water (a cord having been fastened round the hind leg to prevent escape), they would instinctively find their way into it, and travel up and down the stream, at the same time shewing a partiality for those places that most abounded in aquatic weeds. After swimming and feeding, they laid themselves down on the grassy bank, combing and cleaning their coats with the claws of the hind feet.

I am not aware that this animal has, as yet, been made, in any way, serviceable to the human race. The natives of Australia use them as food, but as they devour, with equal avidity, frogs, snakes, and rats, this cannot be considered as any very great recommendation of their edible qualities.

Besides the name of *Ornithorhynchus*, this animal is commonly known by the name of *Platypus*, which was given to it by Dr. Shaw; and it is still more frequently called the Dùck-billed Animal, from the peculiar form of its beak.

* *History of Austral-Asia*, by R. M. Martin, F.S.S., page 111.

ON THE MORAL ADVANTAGES OF THE STUDY OF NATURE.

THOUGH it may seem superfluous to offer any observations on this subject in a work not likely, in the present stage of its career, to fall into the hands of readers not already devoted to the pursuit of Natural History, yet we are induced to do so in the hope that, if they should approve our remarks, they may point them out to their friends, and so perchance increase the number of the cultivators of natural science. It is more particularly with a view to excite the attention of parents and teachers that we throw out these suggestions, since it is more especially in their power to give them effect. These influential persons would we intreat in favour of those interesting beings, the members of the rising generation, committed to their care. We would appeal to every feeling and principle of their better nature, in their behalf. Few parents can be charged with neglecting the bodily health of their children, though some err in the choice of the means by which it is to be promoted; but many, very many, are either indifferent to the mental and spiritual welfare of their offspring, or err grievously in the choice of the means by which they are to be secured. The education which is necessary to fit an individual for the discharge of the *social* duties of his station, and for forwarding the interests of the community, it is undoubtedly right that he should receive. But man lives not for society alone, but also for himself; he lives not for time only, but for eternity: and an education is required for these too, which, in many cases, he never receives, or at least never has provided for him by his parents.

Let us not be misunderstood, nor let it be supposed that we undervalue or would dispense with classical learning, or the kind of learning necessary to carry on mercantile affairs. Far from it: our wish is that they should have that, and much more. While some of their time is devoted to acquire those languages by which man has held, or still holds, intercourse and sweet communion with his fellow men, improvement and enlargement of their minds must follow. But while we teach them many tongues, and enable them to read many books, shall we leave them ignorant of the signs and characters of the book of nature, or give them no opportunity of perusing the bright volume of creation, the pages of which are daily and annually unrolled before us, containing the autograph of its mighty author, and which, to use the impressive words of Lord Bacon, "is written in the only language that hath gone out to all the ends of the earth, unaffected by the confusion of Babel."

Alas! that we should teach them to read what will only enable them to "heap up riches, *while they know not who shall gather them*," and fail to teach them how to commune with their God, and to acquire a portion of that treasure which they, *and not another*, shall inherit throughout eternity.

Those who are born and bred in large cities are rarely permitted, still less purposely led out, to see the face of nature, to trace her lineaments, and feel the influence of her smiles. They are not taught to regard her as the common mother

of all organized beings, nor to look upon her with the eyes of affectionate children. The case is not altered when they are sent to any of the schools, whether suburban or remote from the city of their birth ; for in the walks which are then taken, as a part of the system, they are made to march, during the stated period, only for the health of the body, in formal columns, and not allowed to delay to examine any natural object, nor even to turn their eyes either to the right side or the left. And thus they quit these seminaries as ignorant of the operations of nature as if they had continued to dwell in the centre of the most crowded metropolis, or had been denied all use of the organ of sight. This important period of life, when they are so susceptible of receiving beneficial impressions from the examination of the works of creation, being allowed to pass unimproved, the parent imagines he has discharged his duty to his children if he then places them at the entrance of the paths which lead to wealth, to honour, to glory, or to power. But the fondest hopes may be disappointed, the best laid schemes for arriving at distinction may be frustrated, and the unsuccessful candidate may be compelled to retire from the busy mart, and to close those books and correspondence which he trusted would have proved the instruments of his gain, and betake himself to an obscure or solitary abode, far from the smoke of cities and the hum of men. How irksomely must pass his days, what a dreary and desolate void must be his existence, if, from ignorance of its alphabet, the book of natural wisdom lies open before him in vain,

> " —— where, beneath the white-armed beach,
> By valley's stream, or hillock's verdant crown,
> Her simple lesson nature waits to teach."

But suppose the greatest success to have attended his efforts, and that he has become the possessor of " woods, and lawns, and long-withdrawing vales." His bosom may dilate when his eye surveys the fruit of his toil and his gratified ambition, and his ear may be regaled with the lowing of his cattle on a thousand hills ; but all these he must leave to another, nor can it be said that while in possession of them his mind was more improved, or even as much, as that of the ploughman who tilled his acres, or the herd who tended his flocks, if the latter, and not the former, saw and understood, and traced to their source, the operations of nature continually taking place around them, and which could alone render his lands productive, and his position an object of vulgar envy.

An able divine (the Rev. W. Jones, of Nayland) has well observed—" Let a man have all the world can give him, he is still miserable, if he has a grovelling, unlettered, indevout mind. Let him have his gardens, his fields, his woods, his lawns, for grandeur, plenty, ornament, and gratification : while at the same time *God* is not in all his *thoughts ;* and let another have neither field nor garden, let him only look at nature with an enlightened mind—a mind which can see and adore the Creator in his works, can consider them as demonstrations of his

power, his wisdom, his goodness, and his truth: this man is greater, as well as happier, in his poverty, than the other in his riches. The one is but a little higher than a beast, the other but a little lower than an angel."

The very leisure for which the wealthy merchant sighed may prove his greatest bane, and, finding time hang heavy, and deprived of the excitement connected with his former pursuits, he may, as a substitute, betake himself to debasing and ruinous ones—to gambling, or dissipation, and perchance impair, if not lose, his fortune, and, to meet the consequences of his extravagance, may oppress his tenants whom he should befriend, and, becoming morose and selfish, introduce misery and distress into his domestic circle.

"But," says Dr. Drummond, in his excellent *Letters to a Young Naturalist*, "who are these men to whom time is a burden? Are they geologists, or astronomers, or chemists? Are they botanists, or landscape painters? Are they entomologists, are they naturalists or philosophers of any kind? We may safely, I believe, answer in the negative. No one who pursues science is likely to complain of the *ennui* of modern times; and I feel convinced that science, in union with natural religion, is the pursuit best of all calculated to make our time pass happily, and the world we inhabit seem a paradise."

Another writer (Dr. Boot) has eloquently said—"There is a mysterious communion between the mind and heart of man and the sights and sounds of natural objects. A voice, descending from heaven, and borne upon the breath of morn, is heard along the enamelled mead, or through the mazes of the dark forest, which penetrates to the sources of our thoughts and affections, and which kindles a spirit of devotion to light and warm our own bosoms, to be thence reflected upon all around us. Listen to its instructions in the delightful solitude of your occasionally secluded hours, far from the contaminating influence of worldly ambition; and you will return to society with feelings better adapted to the discharge of your duties there, and in possession of a mean for happiness of which no adversity can rob you, and with a refinement of mind which no prosperity can vitiate."

Nor is it only in the joyous morn or active noon of life that these things should engage our attention, or are capable of yielding pleasure, and bringing with them their reward. For after a long period of usefulness to ourselves and others, when the sun of our day begins to cast lengthened and prophetic shadows along the vale of life, we naturally feel anxious to retire, to repose and meditate awhile, ere we quit this for another scene of being. Then what occupation can be found so calm and tranquil, so befitting the evening of life, as the contemplation of the objects of nature? In observing and considering "the lilies, how they grow," we at once comply with the divine injunction and reap the benefit of our compliance, in finding our minds gradually purified from those stains of earth which even the best of us contract during a lengthened intercourse with the world, and so become progressively prepared for the change which awaits us.—Z.

HISTORY OF THE COMMON DIPPER, (Cinclus aquaticus).

By William Mac Gillivray, A.M., F.R.S.E., M.W.S., &c.,
CONSERVATOR OF THE MUSEUM OF THE ROYAL COLLEGE OF SURGEONS OF EDINBURGH.

The Dipper is, in many respects, one of the most interesting of our native birds. Residing chiefly in the wild glens of the mountainous districts, it now and then presents itself to the wandering naturalist as it flits along the streams, or is seen perched on a stone in the midst of the water; the white patch on its breast rendering it conspicuous at a great distance. Even the mere collector of plants—who, of all men, seems to be the least capable of comprehending the harmonies of nature—pauses to gaze upon it, as it shoots past him in its rapid and even flight; the solitary shepherd, wending his way to the mountain corry, meets it with delight; and the patient and contemplative angler, as he guides his tackle over the deep pool, smiles upon the tiny fisher whose frequent becks have attracted his notice. The singular circumstance of its obtaining its food under the surface of the water, although in form and structure it is allied to the Thrushes and other land birds, has especially drawn the attention of ornithologists to it; and the explanation of its mode of progression in that element has exercised their ingenuity, although very few have based their conjectures on actual observation. Lastly, the land-proprietor or his factor, too much occupied with other pursuits to inquire for themselves, and trusting to the reports of prejudiced persons, direct their gamekeepers and shepherds to destroy the lively and harmless creature whenever an opportunity occurs, because it has been supposed to destroy the eggs and fry of the salmon.

This bird having, in a particular manner, attracted my attention in the course of my many rambles, I have been enabled in some measure to trace its history, which I now have the pleasure of presenting to the readers of *The Naturalist*, assuring them that it contains nothing but the results of long-continued observation. In the first place, however, I shall give the generic characters of *Cinclus*, of which only three species are known to me: *C. Pallasii*, found by Professor Pallas, in the Crimea; *C. Americanus*, which inhabits Mexico and the Rocky Mountains; and *C. aquaticus*, found in most parts of Europe.

Cinclus,—(Bechst). Dipper.

Bill rather short, slender, slightly ascending, deeper than broad at the base, much compressed towards the end. Upper mandible, with the dorsal line, slightly arched, the ridge rounded, the sides convex, the edges sharp and inflected, with an obscure notch close to the narrow, somewhat deflected, tip. Lower mandible slightly bent upwards, the angle medial and very narrow, the crura having the

sides sloping outwards, the dorsal line slightly convex, the ridge narrow and rounded, the tip rather acute. Mouth very narrow; upper mandible internally narrow, concave, with a central depressed line; palate nearly flat; aperture of the posterior nares linear, margined with acute papillæ; lower mandible concave, with a central prominent line. Tongue slightly extensile, sagittate, narrow, grooved, serrulato-setose towards the end, and terminated by two bristle-points. Œsophagus of nearly uniform diameter; proventriculus with oblong simple glandules. Stomach muscular, compressed, with two roundish central tendons; its cuticular coat dense, tough, and rugous. Intestine of nearly uniform diameter; two very small vermiform cœca.

Nostrils linear, direct, with a bare margin above, in the lower and fore part of the nasal membrane, which is covered with very short feathers. Eyes rather small; eyelids densely feathered. Aperture of external ear round, of moderate size.

Head oblong, rather small, compressed, the forehead low. Neck rather short. Body compact, rather deeper than broad. Legs strong, of ordinary length; tarsus compressed, covered anteriorly with a long undivided plate and four inferior scutella, posteriorly with two long plates united at a very acute angle, and several transverse rugæ below. Toes rather large and strong, covered above with a few plates, papillar beneath; first, second, and fourth nearly equal, third much longer; second slightly connected at the base, by a web, with the third, which is connected with the fourth by a longer but narrower web, as far as the second joint of each. Claws short, bluntish, much compressed, slightly margined, laterally grooved, that of the hind toe considerably larger.

Plumage ordinary, rather compact, the feathers oblong and rounded; those about the base of the bill very short and somewhat velvety, without bristly points. No bristles at the base of the bill. Wings rather short, broad, rounded; primary quills ten, the first very short and narrow, the third longest, and, with the next three, slightly cut out on the outer web towards the end; secondary quills nine, long, broad, rounded; all the quills much decurved. Tail short, even, of twelve broadish feathers, which are slightly decurved. Legs feathered to the tibio-tarsal joint. The whole body closely covered with down, as in the diving sea-birds.

Cinclus aquaticus,—(Bechst). *The Common Dipper.*

The Dipper, Water Ouzel, or Water Crow, is remarkable for the compactness of its form, in which respect, as well as in some of its motions and attitudes, it bears more resemblance to the Kingfisher and the Common Wren, than to any other British bird. Among foreign birds, the species of the genus *Pitta*, are those which approach nearest to it in form. Its plumage is of ordinary length, soft, rather compact, slightly glossed, very short on the fore part of the head,

where it resembles that of the diving palmipede birds. The wings, when closed, reach one-third down the tail, and when expanded are of a semi-ovate form, broad and rounded. The first quill is very short and narrow; the third longest, but the second and fourth are scarcely shorter. The quills are all much curved downwards, the secondaries slightly bent inwards, all rounded. The tail is short and even.

The bill is blueish-black, tinged with brown at the edges; the inside of the mandibles blackish; the palate white; the tongue blackish anteriorly, yellowish behind. Iris pale brown, with a ring of black in the middle. Tarsi and toes blueish grey, tinged with brown; claws dusky. Head and hind-neck deep brown; both eye-lids with a white speck. The general colour of the upper parts is dark-grey, each feather broadly margined with black. First row of coverts and all the quills slightly tipped with pale grey; the quills and tail dark brown, tinged with grey. Throat and fore-neck pure white; breast chestnut-brown, that colour gradually blended with the deep grey of the abdomen. Sides and lower tail-coverts of a lighter grey, the latter slightly tipped with pale-brown. The down and the downy parts of the feathers, are dull dark-greyish-blue, the concealed part of the shafts whitish.

The œsophagus is two inches long, its glandular part five-twelfths. The stomach is oblong, compressed, muscular, the cuticular coat hard and rugous. Intestine twelve inches long, diminishing a little in diameter towards the cœca, which come off at the distance of about an inch from the extremity, and are only $\frac{1}{8}$ of an inch in length.

The entire length is $7\frac{3}{4}$ inches; bill $\frac{5}{8}$ along the ridge, 9-8ths along the edge; extent of wings $12\frac{1}{4}$; wing from flexure $3\frac{3}{4}$; longest quill $2\frac{1}{2}$; tail $2\frac{1}{4}$; tarsus $1\frac{1}{4}$, middle toe $1\frac{1}{8}$.

The female differs very little from the male in external appearance, the brown of the head being merely a little lighter, the brownish-red of the breast less intense, and the white of the fore-neck of somewhat less extent. Length $7\frac{1}{4}$; bill $\frac{7}{8}$; extent of wings 11; tarsus $1\frac{1}{8}$; middle toe 1 and 1-16th inches.

Adult individuals vary chiefly with respect to the tints of the breast, that part having more or less of the red or chestnut colour, and sometimes a white band down the centre. The changes that take place in the plumage, as it becomes old and worn, are not very remarkable. The tail-feathers and primary quills are those which suffer most from rubbing.

The Dipper frequents the sides of rivers and streams of inferior magnitude, especially such as are clear and rapid, with pebbly or rocky margins. I have met with it in every part of Scotland, as well as in the hilly portions of Cumberland and Westmoreland; and it is said, by Montagu, to occur in Wales and Devonshire. In Scotland, it is not peculiar to the mountainous regions, being found in the lowest parts of the Lothians, as well as on the alpine rills of the Grampians,

and other elevated tracts; but it is generally more abundant in hilly ground, and, although never common in any district, is nowhere more plentiful than on the Tweed and its tributaries in the pastoral counties of Peebles and Selkirk. It is also a well-known bird in all the larger Hebrides. It is not only a permanent resident, but seldom shifts its station to any great extent, excepting during continued frosts, when it descends along the streams, and is seen flitting about by the rapids and falls. On lakes having a muddy or peaty bottom I have never observed it; but it may sometimes be seen on those which are shallow and pebbly at the margins, as on St. Mary's Loch, where I have shot it.

The flight of the Dipper is steady, direct, and rapid, like that of the Kingfisher, being effected by regularly timed and quick beats of the wings, without intermissions or sailings. It perches on stones or projecting crags by the sides of streams, or in the water, where it may be seen frequently inclining the breast downwards, and jerking up the tail, much in the manner of the Wheatear and Stonechat, and still more of the Wren; its legs bent, its neck retracted, and its wings slightly drooping. It plunges into the water, not dreading the force of the current, dives and makes its way beneath the surface, generally moving against the stream, and often with surprising speed. It does not, however, immerse itself head foremost, like the Kingfisher, the Tern, or the Gannet; but either walks out into the water, or alights upon its surface, and then plunges like an Auk or Guillemot. I have seen it moving under water in situations where I could observe it with certainty, and I readily perceived that its actions were precisely similar to those of the Divers, Mergansers, and Cormorants, which I have often watched from an eminence as they pursued the shoals of Sand-eels along the sandy shores of the Hebrides. It, in fact, flew—not merely using the wing from the carpal joint, but extending it considerably and employing its whole extent, just as if moving in the air. The general direction of the body in these circumstances is obliquely downwards; and great force is evidently used to counteract the effects of gravity, the bird finding it difficult to keep itself at the bottom. Montagu well describes the appearance which it presents under such circumstances:—"In one or two instances, where we have been able to perceive it under water, it appeared to tumble about in a very extraordinary manner, with its head downwards, as if picking something; and at the same time great exertion was used, both by the wings and legs." When searching for food, it does not proceed to great distances under water; but, alighting on some spot, sinks, and soon reappears in the immediate neighbourhood, when it either dives again, or rises on the wing to drop somewhere else on the stream, or settle on a stone. The assertion of its walking below the water, which some persons have ventured, is not made good by observation nor countenanced by reason. The Dipper is by no means a walking bird: even on land I have never seen it move more than a few steps, which it accomplished by a kind of leaping motion. Its short legs and long curved claws are

very ill adapted for running, but admirably calculated for securing a steady footing on slippery stones, whether above or beneath the surface of the water.

My first opportunities of observing this bird moving under water were in Braemar, in 1819; since which time I have had much pleasure in taking notice of it in various parts of the country. In September, 1832, I watched a Dipper for some time, on a part of the Tweed, where the current was very rapid. It flew off from the shore, and alighted in the middle of the stream, where it immediately dived. Re-appearing a little way farther up the river, it floated for a few seconds, dived, emerged, and flew to the opposite bank, on reaching which it again disappeared under water for a short time, and thus continued its exertions. When perched on a stone near the shore, it usually makes short incursions into the water, apparently for the purpose of procuring food, and returns to its station. On these occasions it is not difficult to approach it, provided due precaution be used; but in general it is shy and easily alarmed.

In August, 1834, while ascending White Coom, the highest mountain in Dumfriesshire, accompanied by a boy, I observed a Dipper retreating beneath a large stone, over which the water fell, in the midst of a streamlet that flowed along the bottom of a narrow scar or rut. Imagining that its nest or young might be concealed there, we went up to the place, and, on seeing the bird behind the little waterfall, endeavoured to catch it, on which it sallied forth, plunged into a pool, and attempted to escape down the stream, but without success, for we met it at every turn, and it was obliged to betake itself again to its retreat. We now turned off the water from the stone, when it again plunged into the pool, and after some turnings, at length effected its escape. This bird on emerging at some distance, flew off: and I considered it strange that it had not used its wings from the beginning, as it certainly could have more easily escaped through the air than through the water. The chace afforded another rare opportunity of viewing its subaqueous flight, which, in all probability, was caused by excessive alarm.

On being wounded, it commonly plunges into the water, flies beneath its surface to the shore, and conceals itself among the stones or under the bank. In fact, on all such occasions, if enough of life remains, it is sure to hide itself, so that one requires to look sharply after it. In this respect it greatly resembles the Common Gallinule, or Water-hen. In the winter of 1829, I shot one on the Almond, which flew to the other side, walked deliberately out into the water, disappeared, and slowly emerged under a bank at some distance, where I found it after crossing the stream. Another had just strength sufficient to fly into a deep hole under a bridge on the Yarrow, partially filled with water, on which it was found floating, dead. In August, 1834, I shot a Dipper on Mannor Water, in Tweeddale, when it flew off, dived, and hid itself under a bank, on which I forded the stream and endeavoured to secure it, but it slipped out under water, swam down the current twenty yards or so, and got under a large stone, where it was traced. The intro-

duction of the gun-rod only caused the persecuted bird to retreat as far as it could, and when I was employed in removing some pebbles and gravel from behind the stone, it slipped out under water, and proceeded down the stream a considerable way before it rose to breathe. I noticed the place where it dived in under the bank, and it being at length obliged to come up to respire I met the bird with my hand, and so secured it.

Men are not much accustomed to regard with interest or compassion the sufferings of animals, especially of the smaller species; and although the death of an Elephant at Exeter 'Change, or a Giraffe in Windsor Park, may make a great noise—that of a Mouse in a trap, or a Snipe in a springe, is as little considered as the fall of a leaf or a flake of snow. The most melancholy ornithological exhibition that I remember to have witnessed, was that of a wounded Dipper, which was shot through the lungs, above Cramond Bridge, near Edinburgh. It stood still without attempting to fly off, apparently insensible to all external objects, its legs bent, its wings drooping, its head declined. The blood was oozing from its side and gurgling in its windpipe, which the poor bird made ineffectual efforts to clear. At intervals, a convulsive heaving of the chest took place, followed by an effort to vomit; and in this state the sufferer stood for five minutes until I got over the stream to it, when it expired in my hand. In the agony of death, the pupil became contracted to a mere point, and presently after dilated; when the lower eyelid gradually rose and covered the eye. This is commonly the case in birds, which do not expire with the eyes open, like man and most quadrupeds.

I may here remark that there are two very expeditious modes of killing a wounded bird: one, first shewn to me by my friend Mr. Audubon, consists of squeezing with the finger and thumb the sides of the bird against its heart, which in a very few seconds ceases to act: the other, which is still more rapidly effectual, is to introduce a pin between the occiput and atlas, and thus lacerate the spinal cord.

When wounded and caught, the Dipper struggles hard, grasping firmly with the feet, but does not attempt to bite. I mention this circumstance as common to certain species of birds, such as the Fieldfare, Blackbird, and Starling, which, without possessing the power of annoying their enemy, yet do not tamely suffer themselves to be destroyed, but struggle to the last, undismayed and ready to use the slightest chance of escape. Other species, equal in strength, such as the Snipe, the Golden Plover, and the Lapwing, do not struggle so vigorously, but meet their fate in a quiet and apparently stupid manner. Some birds, again, such as the Titmice and some *Sylviæ*, although evidently extremely frightened on being seized, watch every opportunity of biting. I need scarcely add that some, as the Kestril and Sparrowhawk, grasp and bite with as much good will as effect. These diversities of character may in general be traced to differences in organization; but the general rules or laws to which one might attempt to reduce them are not easily detected.

The food of the Dipper is said, by authors, to consist of small fishes, roe, and water-insects; and there is nothing incredible in this, although these persons have not asserted that they have observed fish or their eggs in the stomach of this species. I have opened not a few, at all seasons of the year, and have never found any other substances than *Lymneæ*, *Ancyli*, *Coleoptera*, and grains of gravel. As to the ova and fry of the Salmon, there is no evidence whatever that the Dipper ever swallows them; and, therefore, the persecution to which this bird has been subjected in consequence of the mere suspicion, ought to cease until the fact be proved. With respect to the sand and gravel, which many birds, insectivorous as well as granivorous, swallow, I may here remark that none of it, so far as I have observed, ever passes into the intestines, excepting in the tribe of Geese and Ducks.

The Dipper is generally seen in pairs, sometimes singly, and, at the breeding season, in families, but never in flocks. To the naturalist, its occurrence along the streams of our wild and mountainous districts is peculiarly delightful. Even shepherds and labourers take special notice of it; the Water Crow, as it is commonly named, being familiar to the inhabitants of such districts as it frequents. Its song is short, but lively, and continued at intervals. It bears no resemblance to that of any species of Thrush, excepting the Redwing, but is not unlike the subdued song of the Starlings. This gentle warble is not confined to any period of the year, but may be heard during sunny weather at all seasons. Its common note, which it frequently utters while perched on a stone or while flying along the stream, resembles the syllable, chit.

Early in spring the Dipper begins to form its nest, so that its first brood is abroad at the same time with that of the Blackbird. The nest is bulky, composed of mosses, grass, and roots, lined with dry leaves and covered with an arch of the same materials. It is placed among the moss on the bank of a stream, or among the roots of a tree in a concealed place overhanging the water, sometimes in a crevice of the rock, or under a bridge. The eggs, five or six in number, are of a regular oval form, rather pointed, pure white, generally eleven-twelfths of an inch long, and nearly nine-twelfths in their greatest breadth.

The general colour of the upper parts of the young bird when fledged is dull grey, lighter than that of the adult; the head and hind-neck are of the same colour as the back, all the feathers being margined with brownish-black. The wings are brownish-black; the quills, alula, and larger coverts margined with grey, the latter slightly tipped with greyish-white. The throat, fore-neck, and breast are of a delicate pale-buff or cream colour intermixed with blackish, the margins of all the feathers being of the latter colour. The upper and hind part of the sides, the abdomen, and lower tail-coverts, are dull grey, mixed with cream colour, and the proximal tail-coverts are chiefly of the latter. The tail is like the wings, but tipped with brownish-white. The bill and eyes are as in the adult; but the tarsi

are paler anteriorly, as are the toes, and the claws are hair-brown, margined with whiteish.

At the first autumnal moult, which takes place in September, the young assume nearly the appearance of the adults: the fore-neck becomes white, the breast dusky, with more or less red, and the head brown; but it is not until the second change that the colours are completed.

Several curious circumstances are observed with respect to the bill of the Dipper. In the first place, when the bird is young, it precisely resembles that of the genus Turdus, being merely a little more slender; but when the bird is advanced in age, it is not merely proportionally, but actually much shorter, and the tips, by being rubbed, become similar to those of the bill of the Woodpeckers, although less neatly wedged. In this respect, the Dipper resembles the Oyster-catcher; and the change in the form of the bill is caused by the same action in both species. Again, in old birds, the thin edges of the mandibles become marked with parallel cuts, similar to those of the mandibles of the Gannet, although generally perpendicular, as in the Jabiru.

The Dipper, which in the form of its bill and feet, and in the structure of its digestive organs, is allied to the Thrushes, Pittæ, and Chamæzæ, is singular in respect to its plumage, which is in a great measure that of an aquatic bird. The parts of the body which in these birds are bare of down, are in it closely covered; bristles are entirely wanting at the base of the bill; the feathers on the fore part of the head are very short; the wings and tail are also short; and the body being nearly as broad as deep, the adaption for floating and diving is obvious, although the feet are not webbed, and the claws rather large, compressed, and curved. These latter circumstances shew that the bird is not fitted for pursuing fishes under water; and, as I have remarked, although authors conjecture that fish forms part of its food, none of them assert that they know this to be the case from actual observation.

The digestive organs are entirely analogous to those of the Thrushes, and other allied genera, but bear no resemblance to those of the piscivorous birds, the œsophagus being narrow and the stomach a true gizzard. The bird is destined to feed upon aquatic insects and mollusca, which adhere to the stones under the water. It is, therefore, fitted for making its way to the bottom at small depths, and maintaining itself there for a short time—a minute or more; in conformity with which design, its plumage is short and dense, its tail short, its wings short, broad, and strong, its bill unincumbered by bristles and of the proper form for seizing small objects. Having its feet constructed like those of a Thrush, but proportionally stronger, the Dipper thus forms a connecting link between the slender-billed passerine birds and the diving palmipedes, as the Kingfisher seems to unite them with the plunging birds of the same order, or perhaps with the Herons.

In this account of a bird with which I have been in some measure familiar for years, I have refrained from all poetical embellishment, and confined myself entirely to the results of observation; judging that histories of birds constructed on the plan of a fashionable romance are not such as can gratify the taste of the real lover of nature. And in truth the realities of existence are much more admirable than the creations of the most unbridled imagination.

ON THE SILURIAN AND OTHER ROCKS OF THE DUDLEY AND WOLVERHAMPTON COAL-FIELD,*

FOLLOWED BY A SKETCH PROVING THE LICKEY QUARTZ ROCK TO BE OF THE SAME AGE AS THE CARADOC SANDSTONE.

By Roderick Impey Murchison, Esq., F.G.S., V.P.R.S.

The author having previously shown that the coal-field extending from Dudley into the adjacent parts of Staffordshire is surrounded and overlaid by the lower member of the new red sandstone, laid before the Society an Ordnance map, geologically coloured, and then proceeded to give, 1st, A general sketch of the structure of the coal-field in descending order: 2ndly, Detailed accounts of the Silurian rocks which protrude through the coal measures or lie beneath them: 3rdly, A sketch of the quartz rocks of the Lickey: 4thly, A description of the trap rocks: 5thly, General remarks upon the dislocation of the stratified deposits; and the dependence of these phenomena upon the intrusion of trap rocks.

1. *Coal measures.*—In most parts of the productive coal-field the coal measures are covered by a considerable quantity of detritus, the greater part of which has been derived from the breaking up of the new red sandstone which once overspread this tract, with which are mixed, especially in the northern part of the field, a few boulders of northern origin and some from the surrounding region.

General and detailed sections are then given of the regular succession of the carboniferous strata; for the greater part of which in the neighbourhood of Dudley, and for much valuable information, Mr. Murchison expresses great obligation to Mr. Downing; the best sections of the Wolverhampton field having been afforded by Mr. J. Barker. The principal points of novelty consist in drawing a

* The following Paper, which was read before the Geological Society of London, on the 11th of May, is published with the permission of the author.—Ed.

clear distinction between the upper or thicker measures, which contain the ten-yard coal, generally known as the Dudley coal, and the *underlying* carbonaceous strata, or ironstone measures. The latter, rising from beneath the ten-yard coal, range to the N.N.E. from Wednesbury and Bilston, in a long tract between the parallels of Walsall and Wolverhampton, extending to Cannock Chace. At the southern end of the field, emerging from beneath the ten-yard coal, they occupy the district between Stourbridge and Halcs Owen, containing the well-known "fire clay;" though some of the most valuable of the Wolverhampton iron-stones, beneath those called the "New Mine," are here wanting, viz. the "Gubbins," and "Blue Flats." This poverty in the lower coal measures extends over all the district south of Dudley. In the northern and southern end of the district, these lower measures represent the whole carboniferous system; and in various natural sections near the Hagley and Clent hills, the author has detected them, in very feeble bands, passing upwards and conformably into the lower new red sandstone. Besides the open works formerly alluded to by him in previous memoirs, Mr. M. now states, that his former conjectures respecting the passage of the ten-yard coal beneath the new red sandstone which flanks it on the east and west, have been verified by the efforts of the Earl of Dartmouth, who, after sinking to a depth of 151 yards through strata of the lower new red sandstone, has very recently succeeded by further borings, carried down to the depth of 290 yards, in discovering the one-foot, two-foot, and "Brooch" coal seams, which *overlie* the ten-yard coal throughout the Dudley field. These operations have taken place at Christchurch, one mile beyond the superficial boundary of the coal field.

Besides the plants so common in all carboniferous tracts, the author has observed the presence of animal organic remains. Unios of several species are abundant; and in the northern or lower part of the field he has extracted fragments of fishes, which have been named by Professor Agassiz, *Megalichthys Hibbertii*, *M. Sauroides*, and *Diptodus gibbus;* together with scales, coprolites, &c., proving an identity between the animals deposited in these coal measures and those of Edinburgh, described by Dr. Hibbert. The same species, it will be recollected, have been pointed out by Sir Philip Egerton, as occurring in the N. Staffordshire coal-field, and one of them has been observed by Mr. Prestwich in the coal-field of Coalbrook Dale. Mr. Murchison, however, remarks that he has not yet observed any marine remains in these coal measures similar to those of Coalbrook Dale; and nothing *yet* found can invalidate the inference that the coal of Dudley and Wolverhampton may have been accumulated exclusively in fresh water.

b. Silurian rocks.—The mountain or carboniferous limestone and the old red sandstone, which in so many other parts of England form the support of coal tracts, being wanting, this field reposes directly on rocks which Mr. Murchison proves to consist of the two *upper members of the Silurian system*, viz., the "Ludlow

rocks," and " Wenlock limestone."* As, however, these rocks rise up irregularly, like separate islands, through the surrounding coal measures, and not in their regular order of superposition, so it was obviously impracticable to have determined their *relative* age by any local evidences; and hence no attempts could have been made to distinguish the younger from the older deposits, until the structure and organic remains of the different members of the Silurian system had been fairly worked out in other districts, where these types were fully and clearly displayed in their regular order.

2. *Ludlow rocks.*—These rocks appear at the surface in three detached points in this coal-field, viz., Sedgeley, Turner's Hill, and the Hayes. At Sedgeley they are thrown up in an elongated ellipse, very much resembling a large inverted ship, of which Sedgeley Beacon, 630 feet above the sea, may be considered as the keel. The upper Ludlow rock, though not thick, is plainly marked by containing the *Laptæna lata*, the *Serpula gigantea*, &c., and by overlying a limestone which is in every respect identical with that of *Aymestrey* or the middle member of the *Ludlow* rocks, presenting the same lithological structure, *i. e.* a dull argillaceous grey limestone, which among other well-known shells, such as the *Terebratula Wilsoni* and the *Lingula*, contains also the beautiful *Pentamerus Knightii* so entirely *peculiar* to this stratum. As at Ludlow and Aymestrey, this limestone of Sedgeley, known here as the " black limestone," forms an excellent cement under water.

Turner's Hill, a small elevation between Gornals and Himley, is composed of Ludlow rocks; and the Hayes is a narrow short tongue of the same, with a central band of limestone, which rises at a high angle from beneath the coal measures, on the main road from Stourbridge to Hales Owen, a portion of the lower Ludlow rock being also well exposed.

2*a*. *Wenlock limestone.*—This limestone formation is much more largely developed than that of the Ludlow rocks, constituting several ellipsoidal masses near the town of Dudley, which have been long worked and extensively known among collectors, from the number and beauty of their organic remains. Hence the rock has been usually termed the " Dudley limestone." As, however, it was impossible to have ascertained in this district the relative age of these rocks, their different members being independently in contact with the coal measures, the nomenclature of the Silurian system already selected is adhered to, because in Shropshire the Wenlock limestone, in its fullest standard, rises out regularly from beneath the Ludlow rocks, and the latter passing beneath the old red sandstone and carboniferous limestone (both of which are wanting at Dudley) complete the proofs required. The author, therefore, entreats geologists not to employ the

* There is one spot, however, within the author's knowledge where the underground works reached a thick mass of red shale or marl *beneath* the coal-field; but the works having been long abandoned, no correct knowledge of these red rocks can be now obtained.

term Dudley limestone, except as the synonym of Wenlock, with which he proceeds to show its lithological and geological identity. This limestone is described in detail at the Castle Hill, Wren's Nest, and Hurst Hill, in all of which it forms ellipsoidal elevated masses, 500 to 650 feet high, protruding through the coal measures in lines parallel to similarly shaped masses of Ludlow rock at Sedgeley, &c.; *i. e.*, tending from 10° E. of N., to 10° W. of S. Two strong bands of limestone occur in these hills, overlaid and separated from each other by shale, charged with numerous small concretions of impure limestone, the "bavin" of the workmen. The limestone having been quarried out from these bands, which have been raised up from a common centre, and disposed with a quâquâversal dip at high angles, it is evident that the hills themselves would ere now have been demolished, had they been composed throughout of calcareous masses of equal purity; but the "bavin" or refuse composes the framework of these perforated hills, and preserves their outline. The Wenlock shale, or underlying part of the formation, constitutes the nucleus of the Wren's Nest, the largest and most perfect of these ellipsoids, and of this the author gives a detailed plan. These ellipsoids usually feather off at one extremity with a broken-down margin, and thus complete their resemblance in physical features to ancient craters of eruption.* The greatest superficial extent of the Wenlock formation is in the neighbourhood of Walsall, where it rises both in dome-shaped masses and in rectilinear ridges, running from S.S.W. to N.N.E., parallel to the axis of the Wolverhampton coal-field, of which one of these ridges forms the eastern boundary, the limestone plunging beneath the coal-field at a rapid angle. The other ridge is continuous with the new red sandstone of the Bar-beacon, and is known as the Hey Head lime. In the Dudley, or ten-yard coal tract, few works have yet proceeded downwards beneath the lower coals, and hence the subjacent Silurian rocks are little known to the miners. A remarkable and accidental discovery of a mass of limestone took place recently, near Dudley Port, on the rise side of a great fault, which bounds the downcast of the coal, called "Dudley Trough." Having worked out the coal on the upcast side, a shaft was sunk in and upon the southern side of this fault, when, at a depth of 208 yards, and about 100 yards below the exhausted coal strata, a mass of limestone was met with, which proved to be near seven yards thick, and of very good crystalline quality. Being found to extend in a form more or less horizontal, extensive works were promptly opened in it for the extraction of a rock so precious in the heart of the coal-field. When the author visited it, a considerable cavity had been formed, in which no trace of moisture was discernible, whilst it was known that copious streams of water were flowing in the coal measures overhead. He accounts for this mass of limestone being hermetically excluded from the per-

* See account of Valley of Woolhope for similar phenomena on a larger scale, and with a greater number of concentric and enveloping formations.—*Proceedings Geol. Soc.*, vol. ii., p. 15.

colation of water, by the impervious nature of the Silurian shale which separates the coal measures from the limestone, and by the shafts being sunk in the fault itself, which, like other lines of fissure, is filled up with clay and other materials, so closely compacted as to form complete dams to water. At the north-western edge of the subterranean excavation, the fault was stripped, and the materials of which it is composed having thinned out, the limestone was found in contact with a bed of coal, the edges of which appeared *bent*, both the *coal and the limestone* having a slickensides polish. By boring through the limestone, a second calcareous stratum was found, thus completing the proofs of identity between this underground mass and that which rises to the surface in the hills of Dudley Castle and the Wren's Nest.

In the northern or Wolverhampton field, where the whole of the coal measures, even to beneath the lowest beds of ironstone, (the *blue flats*), are traversed by shafts not exceeding 120 yards in depth, the field has been proved at several points to rest on shale and impure limestone, the equivalents of the Ludlow and Wenlock formations. For lists of the fossils in this group of Upper Silurian rocks, the author refers to previous memoirs, announcing that more perfect lists will shortly be laid before the public in his large work upon the Silurian system.

3. *Lickey Quartz rock, Caradoc sandstone, (Lower Silurian rocks).*—Dr. Buckland first called the attention of geologists to the Lickey quartz rock;* and, showing that it had been one of the principal magazines of the quartz pebbles in the new red sandstone and diluvium of the southern counties, he further compared it with certain rocks *in situ* in the neighbourhood of the Wrekin. The Rev. J. Yates has also clearly described the lithological structure of this rock, and has briefly touched upon some of its fossils.† Mr. Murchison undertakes to prove the true geological position of these rocks. He shows that they lie in the direct prolongation of the Silurian rocks of Dudley, and that, being partially flanked and covered by thin patches of coal, they emerge through a surrounding area of the lower new red sandstone and calcareous red conglomerate (described in previous memoirs). Unlike, however, the succession in the Dudley field, there are here no traces of the Ludlow rock and Aymestrey limestone. Nor are there masses of any size of the Wenlock limestone; but shreds only of the shale or lower part of this formation, with some of its well-recognised fossils *(Colmers)*.

The lower Silurian rocks rise from beneath the Wenlock shale in thin courses of bastard limestone, alternating with red and green courses of sandstone and shale, the equivalents of those bands which, at various places in Shropshire and at Woolhope in Herefordshire, constitute the top of the formation of Caradoc sand-

* *Transactions Geol. Soc.*, 1st Series, vol. v., p. 507.

† *Transactions Geol. Soc.*, 2nd Series, vol. ii., p. 137.

stones. Like these, they are here underlaid by flag-like sandstones, sometimes rather more argillaceous and approaching to clay slate, the whole passing down into silicious sandstones, both thick and thin bedded. In the latter are casts of several fossils of the Caradoc formation, such as *Pentameri* of two species, and corals peculiar to it. These fossiliferous strata are well exposed on the eastern side of the hills by recent cuttings, where the new road from Bromsgrove to Birmingham traverses the ridge. The ridge itself, however, consists essentially of quartz rock, which the author shows is nothing more than altered Caradoc sandstone, precisely analogous to that which he has on former occasions pointed out on the flanks of Caer Caradoc, the Wrekin, Stiper Stones, &c. In those districts the passage from a fossiliferous sandstone to a pure quartz rock has been accounted for by the latter being in absolute contact with eruptive masses of igneous origin; and here it is suggested that the same cause may have operated, though the contact is not visible, because the line of quartz rock is precisely upon the prolongation of the trappean axis of the Rowley Hills, whilst the southern end of the parallel outburst of the Clent Hills is but little distant. Notwithstanding their highly altered condition, it is shown that all the quartz rocks throughout this ridge of low hills are uniformly *stratified*, the dip being either to the E.N.E. or W.S.W., *i. e.* at right angles to the direction; and the parallelopipedal fragments into which the rock breaks are shown to be produced by fissures more or less at right angles to the planes of stratification; these fissures being so numerous where the mass is much altered, as almost to obscure the true laminæ of deposit.

4. *Trap.*—The composition and characters of the trap rocks and basaltic masses of the Rowley Hills are first described, together with the manner in which they are supposed to rise through and cut off the coal upon their flanks. Rocks of similar origin occur at various detached points to the west of Dudley, of which Barrow Hill is the principal, affording the most convincing proofs of the volcanic mass having burst through the carboniferous strata, since the latter are not only highly disturbed and broken, but fragments of coal and coal measures, in highly altered conditions, are found twisted up upon the sides, and even mixed with the trap itself. In the Wolverhampton or northern coal-field, the chief vent of eruption is at Pouk Hill, two miles west of Walsall, where the greenstone is arranged in fan-shaped columns. After pointing out distinct evidences of the intrusion of similar rocks at Bentley Forge and the Birch Hills, in some of the old open works near which the trap is seen to overlie the coal, the author gives various sections of subterranean works, which prove the existence of greenstone, in bands more or less horizontal. As these bands of trap have jagged edges, are of limited extent, of exceeding irregularity in thickness, and often produce great alteration upon the inclosing carbonaceous masses, the author has no hesitation in expressing his belief that they are not true beds, but simply wedges of injected matter which

have issued from central foci, and have been intruded laterally amid the coal strata; an opinion formerly expressed by Mr. A. Aikin in an able memoir.*

Although these lateral masses of greenstone in the Wolverhampton field are of origin posterior to the accumulation of coal strata, the author does not deny that the tufaceous conglomerates of Hales Owen, which have a strong analogy in composition to a certain class of volcanic grits described in former memoirs, may have been formed contemporaneously with the carboniferous deposits.

The trap of the Clent Hills is then briefly described, and is shown to be identical with that of the Abberley Hills, also mentioned in previous memoirs.

5. *Principal lines of dislocation.*—The whole of this carboniferous tract has been upcast through a cover of new red sandstone, the lower members of which are frequently found to have been dislocated conformably with the inferior carbonaceous masses, proving (as formerly expressed by Mr. Murchison) that some of the greatest of these movements took place *subsequently* to the deposits of the red sandstone. In describing the faults along the boundary of the new red sandstone, he directs particular attention to that of Wolverhampton, where the coal measures dip slightly inwards from the line of fissure, along which they are conterminous with the *overlying* strata, a fact, perhaps, without parallel in this or the adjacent coal-fields (including Coalbrook Dale), the usual phenomena being that, however disrupted, the carbonaceous or upcast strata always incline outwards, as if they would pass eventually beneath the lower new red sandstone on their flanks. This exception is supposed to have been caused by the upheaving of a subjacent mass of Silurian or trap rocks close to the edge of the line of fault.

Having next described the effect of the great longitudinal faults produced by the upcast of the Wenlock limestone of Walsall, he shows that the subterranean mass at Dudley Port, is upon the same parallel, *i. e.* from N. E. to S.W., if not directly on the same line of fissure. This line of eruption is strongly marked on both edges of the northern half of the coal-field extending to Cannock Chace.

Another great axis of elevation which affects the Dudley field, diverges at a considerable angle from the former. It is prominently marked by the line of the Rowley Hills, and after concealment for a certain distance beneath the red sandstone to the S. of Hales Owen, re-appears in the ridge of the Lickey quartz rock. The lofty trappean ridge of the Clent Hills is parallel to this last-mentioned axis. It is further pointed out as remarkable that at the angle formed by the confluence of these diverging lines of elevation, the Silurian or fundamental rocks of the tract are raised in inflated ellipsoidal forms from common centres, the strata having a quâquâversal dip, in one case completing the outlines of a very perfect valley of elevation. The author infers that such curvatures are exactly what might be expected at the point of greatest flexure in the axis of the coal-field, where the volca-

* *Transactions Geol. Soc.*, 1st Series, vol. iii., p. 251.

nic matter, unable to find issue, has produced these inflated masses. There are numberless faults in this coal-field to which no reference is made, it being stated that much additional labour is required to give a complete history of them; but attention is called to the Birch Hill, Lanesfield, and Barrow Hill faults, which are the principal *transverse* faults, and which the author conceives may be explained upon the principles of the theory of Mr. Hopkins, or as cross fractures which have resulted from elevation of the coal-field *en masse*.

The memoir concludes with referring to the importance of one of the problems to which the author has been directing public attention during the last few years, viz., the probable extension of carboniferous tracts of the central counties beneath the *surrounding* new red sandstone; and he rejoices that the deductions which necessarily follow from his observations in this and the adjacent coal-fields, have recently been so ably supported by the masterly observations of Mr. Prestwich upon Coalbrook Dale, with whose opinions he entirely coincides.

The quantity, therefore, of unwrought coal beneath the new red sandstone of Shropshire, Worcestershire, Staffordshire, &c., though previously omitted in statistical data, must form an element in all calculations concerning the probable duration of the carboniferous wealth of the empire.

NOTES OF A BOTANIST.

Medicinal Plants applied to Vegetation.

There is an expression used by Gardeners; namely, that "plants draw up plants," which would seem to indicate that plants do reciprocally affect each other, and that the fact is admitted. A gentleman once told me that a choice exotic, exposed *sub die*, flowered in winter, and though surprised by frost, suffered no injury; but this resistance he attributed to a *dose of brandy* which he administered to the plant! Be this as it may, there is one extraordinary fact which I have verified by direct experiment: I had read somewhere of the sanative or healing effects of *Chamomile* on some particular plants; but I confess I treated the statement as fanciful. The remarkable effects of the revivification of a plant, apparently dying, by placing two small pots of Chamomile beneath its branches, and pointed out to me in a gentleman's garden at Leicester, induced me to apply the curious remedy to several plants, as China Roses, a shrubby *Calceolaria* and

Malva, &c., all sickly and apparently dying; I however succeeded in restoring every one of them to health and vigour. It is also a very curious circumstance that the Chamomile is materially affected, and suffers in its turn; indeed generally dies. Some systematic action supervenes, and the question is altogether one, not merely curious in itself, but promises a new field of observation. How far other odoriferous or medicinal herbs, as Feverfew, Sage, Tansy, &c., may affect particular plants, it would certainly be interesting to inquire.

Plants sometimes Plant their own Seeds.

This is emphatically the case with the *Arachis hypogæa*, or "ground nut." When the seed is fully formed, and partly mature, the branches which clutch the seed-vessels begin to curve toward the earth; and in process of time the pod disappears, having been forced into the earth by the plant, where it lies buried, there to vegetate at a depth of about one to two inches. This plant, therefore, provides for its perpetuity in a singular manner; the offspring is kept at home, and not suffered to wander vagabond, or the seeds become like other seeds, "as a rolling thing before the whirlwind." The chances of the breeze are, in this case, deprived of their prey. I have watched this curious provision in the *Arachis hypogæa* with much interest. In the *Nasturtium* something similar may be observed: the spiral coils contiguous to the seeds seem concerned in the office of immuring them, which may occasionally be noticed to penetrate a sandy soil. This phenomenon, however, is more apparent in the *Cyclamen*, where the seeds will often disappear about the period of their maturity, the plant having hidden them in the earth, and the coils may be sometimes observed to form a complete plexus or sheath round the seed-pod.

Plants sometimes Water their own Roots.

The most remarkable example of this extraordinary phenomenon, occurs in the Raining or Fountain Tree, or the *Spartium nubigenum?* in Ferro, one of the Canary Islands, forming the only source of water in the whole Island, and at which living stream all are supplied, "themselves, their little ones, and their cattle." The water is dispensed to the inhabitants by the insular authorities. In this case, the atmospheric aqueous vapour is condensed by the branches and foliage, and trickles from them into the excavation at the base of the tree, said to be allied to the *Laurus indica*. Of the same description is the *Cobea pluviosa* of the American Continent, and another in the same hemisphere, of which we have only an imperfect account, but said on the slightest touch to emit a copious shower.

There are other plants, however, which are supplied with a distillatory appara-

tus connected with their organization, for they are true alembics. The stem of a particular kind of Bamboo, and also of a *Cissus*, or wild Vine, have been found charged with limpid and wholesome water, grateful to the weary and thirsty traveller. In these last, it is obvious the liquid is an elaboration of the plant. This, too, is the case with the *Agapanthus umbellatus*, or African Lily, which often distils water from its gracefully pendant leaves; and in one instance this distillation was so copious during the night, as nearly to destroy a work-box, accidentally left beneath its foliage: hence the intention is obviously to enable the plant to water its own roots. It belongs to the parched and sandy desert of Africa. The *Calla æthiopica* is another instance of the same kind: it is a native of the Cape. We almost esteem it as a half-aquatic; and yet it is found a denizen of the desert —its natal soil an arid sand. I am informed, however, that an individual who communicated the fact, and brought a magnificent specimen to this country, which I have seen, has found this plant where the ground around it was as wet as if it had been saturated with a heavy dew or a gentle shower of rain. The *Calla æthiopica*, like its congener, the *Agapanthus umbellatus*, distils water from the tips of its leaves, and in both cases the process takes place during the night.

Not the least singular among the phenomena of the vegetation of the desert, is the existence of *succulent* plants; precisely where we should least of all expect to find them; such as the *Cactuses*, *Mesembryanthemums*, and the *Stapelias;* the last of these being emphatically called "the Vegetable Camel." The curious berry met with by Mr. Campbell, in the desert, full of limpid water, and which some little mice were observed to treasure up in their retreats, will also be remembered, and suggest a train of singular and useful reflections.

But the most curious of all is, certainly, the *Tillandsia*, or Water Withe, of Jamaica, belonging to the curious tribe of *Epiphytes*—dwellers on trees, though they do not live upon their kind, like parasites. The *Tillandsias* are associated in their port and habit with the *Bromelias* and *Bilbergias*. The *Tillandsia* has what may be called a hollow stem; it is, in fact, a tank or cistern, formed by the leaves which overlap each other in an imbricated arrangement, and in ordinary conditions of the atmosphere constitutes an envelope alike impervious to air and moisture. This tank catches and retains the condensed dews—very copious in tropical countries—or the early and latter rains, retaining the supply when that which falls upon the ground is promptly absorbed by the thirsty and porous soil. Here, then, is a living well where insects and birds may slake their thirst, and *quadrumana* and others among the *Scansores* may apply to as containing a *cool* and refreshing beverage. So far there is much to admire in the beneficent provision: but the tale of interest is not half unfolded. In Earl Fitzwilliam's extensive conservatories, at Wentworth House, there were two plants of the *Tillandsia*, and being in different compartments were subjected to varied temperature. In the one, the temperature of the external atmosphere was 71° Fah., and in the other

8 degrees higher. I was surprised, however, as well as delighted to find that the temperature of the water in the "stem" in both cases was 68° Fah. It is obvious, therefore, that this *equable* temperature, of which the plant must necessarily partake, is maintained by the equal ratio of evaporation, which will necessarily correspond with the measure of temperature in the atmospheric medium. It is thus that the plant will possess a medium temperature amid the vicissitudes and transitions of a fluctuating clime; having a remarkable correspondence with that compensation by which the animal machine is enabled to maintain a temperature of 98°, whether traversing the snows of Lapland, or the sands of Nigritia. The overshadowing foliage of the tree, among the branches of which the *Tillandsia* takes up its abode, will contribute to the check of the cooling effects of radiation. There is, however, another fact, which I have *experimentally* ascertained, still more wonderful: as soon as the external air becomes dry and parched, the leaves, previously even air-tight at their junction, *relax and open*, and the water may be seen to trickle down the stem to moisten the roots. The *Tillandsia*, therefore, literally waters its own roots.

Opening and Shutting of Flowers.

At first sight, these phenomena would appear perplexed and somewhat difficult of solution; but, in some cases at least, I have found that the question may be determined by experiments. The characteristic feature of the opening and shutting of the flower, is its dependence on *hygrometry*—the moisture or dryness of the atmosphere. Towards evening, the flowers of the Ranunculus acris and Daisy gradually close and droop. The *Anagallis arvensis* is specially sensible of the coming shower, and multitudes among the numerous tribes of vegetation obey the same law, and must be familiar to all,—for instance, the blossom of *Eschscholtzia californica*. If the common Everlastings, or the flowers of the *Xeranthemum lucidum* or *proligerum*, the *Gnaphalium fœtidum*, or the shrubby *Gnaphaliums* of the Cape, the *Ammobium alatum*, and others be plunged into cold water, they will slowly close; but when immersed into *hot* water, the petals instantaneously collapse. When the moisture evaporates in a dry and warm atmosphere, these flowers will as regularly open—experiments which I have often repeated with all of them; and so far the question seems sufficiently clear, namely, that the opening of the blossom is connected with a warm and dry state of the atmosphere, and its closure with a humid condition of the ambient air.

But "*non facies omnibus una;*" there are not only exceptions, but the cases are numerous. When many plants go to sleep, some there are just *awake;* of this description is the Evening Primrose and its nocturnal associates. The *Cereus grandiflora*, and *Stelis micrantha* are exotics of a kindred character. So that beings are wakeful during the ordinary season of repose, both in the animal and

vegetable kingdom. The physiology of these nocturnal flowers, it is evident, must be of a different character from those that unfold by day and repose at night. We have parallel phenomena which may be adverted to and adduced in illustration; and, as in the cases previously cited, may be made the subject of direct experiment. If an orbicular mass of the *Lycopodium circinale* be introduced into warm water it will unfold. The same thing occurs with the seed-vessel of the Fig-marigold *(Mesembryanthemum)* of the Cape when put in water. In the latter case, the seed-vessel expands, and the seeds are scattered when moistened with the tropical rains, and under circumstances which ensure the germination of the seeds. That curious plant, the Rose of Jericho, *(Hierochuntica anastatica)*, which inhabits the borders of the wilderness or the desert, is constructed with a similar design, and presents analogous phenomena; for the same agency that shuts the flower of the *Xeranthemum*, and closes the imbricated calix of the *Centurea montana*, contrariwise unlocks its tiny branches. Accordingly, when it is introduced into warm water, a little above the junction of the branches with the stem, these branches gradually open,—another feature of the same beneficent arrangement apparent "in the length and breadth" of creation. The blast of the desert uproots the tiny plant, and flings it on the waves of the Nile or the Red Sea—the branches open and scatter the seeds that they previously enclosed on the surface of the stream, where they can alone germinate. In the meanwhile the withered plant is carried towards the Delta of the Nile, or the embouchure of the Red Sea; and having fulfilled its office and provided for the perpetuity of its kind, is engulphed in the ocean. The little seeds, floating hither and thither, bud and begin to grow; the wave at length lands them on the banks of the river, and a friendly breeze wafts them back to the soil of their ancestry, where they take root and spring up under the influence of tropical dews by which they are refreshed every night. I have a specimen of the Rose of Jericho, a great part of a century old, which has not lost its susceptibility of opening when introduced into warm water.

My next communications will embrace the subjects of "The Vital Principle in Plants," "Monphology," and "Spontaneous Production."

J. Murray.

ON THE CIRCULATION IN THE INVERTEBRATA.

By Langston Parker.

All animals possess a series of organs by which the fluids which are the product of digestion are distributed to the various parts of the body, to serve the purposes of nutrition and support. The sum of the actions of these organs is termed circulation; and the aggregate of parts by which it is performed, the vascular system. In the whole animal series the organs of circulation are infinitely varied, bearing a strict relation to the degree the animal holds in the scale of being, to its mode of life, and the number of internal organs it possesses. In the lower animals, we find their bodies everywhere impregnated with fluids which are not contained in distinct canals, but pervade every part. In a higher grade, the fluids are contained in distinct canals; in the course of these canals are situated, in certain classes, organs which receive and propel the circulating fluids, for the purpose of giving them an activity and force of movement not impressed upon them by their mere containing vessels. In vertebrate animals, these organs are termed hearts, and are variable in the four orders of vertebrate animals in their number, their situation, and mode of action. In this paper I shall notice the disposition of the vascular system, and the peculiarities of the circulation in the invertebrate classes of animals; tracing them from the simple Zöophyte through the numerous families of molluscous and articulated animals, which are comprehended in the system of Linneus, in the two grand classes of insects and worms, and by Cuvier in the three classes of articulata,* mollusca,† and radiata.‡

In the zoophytes there is no true circulating system. In the iufusoria, polypes, and the inhabitants of corals and sponges, the uniform gelatinous granular mass of which the body is composed, is universally impregnated with fluids, and the functions of composition and decomposition, in the opinion of Carus, are performed by mere elective attraction and repulsion dependant on organic laws. In the medusæ,§ echinodermata‖, and holothuriæ,¶ a rudimentary class of vessels has been described by Cuvier, which opening from the intestines, pass either towards the organs of respiration, or towards the surface of the body, which in these instances is probably a respiratory organ as the skin is, in some degree, in certain reptiles.

* Animals in which the general envelope of the body is divided, by transverse folds, into a certain number of rings.

† Animals with a soft contractile skin, destitute, as the articulata, of a skeleton.

‡ In which the organs of motion are disposed as radii round a centre.

§ Sea-blubber.

‖ Prickly-skinned zoophytes; from ἐχῖνος, a hedgehog, and δέρμα, the skin.

¶ The Portuguese man of war.

In the acephalous* mollusca we have distinct organs of respiration, in the shape of rudimentary gills, and into these organs the veins returning the blood from the body enter. From the gills the blood is sent to the heart, and thence to the body at large, from whence it is again returned to the gills or organs of respiration. In the ascidiæ there is but one sac, which fulfils the office of a heart; in the teredo navalis there are four: the whole order of acephalous mollusca present great varieties in the number of hearts, as also in their form and position. The teredines alone have red blood, probably owing to the excessive stimulus required by the muscles which move the boring shells. In molluscous animals generally, the circulation is double; the blood passing through the gills, or lungs, or whatever name the respiratory organ may bear, as well as through the body. The passage of the blood through the body is assisted by a muscular heart placed in the course of the blood; the heart is generally single and aortic, that is, the single ventricle sends the blood to the body, after having received it from the organs of respiration: the circulation of fishes, on the contrary, is different, though performed by a single heart, which is termed pulmonary, because it receives the blood from the body and transmits it to the lungs. When the heart is single and sends the blood first to the lungs, it is termed pulmonary; when the fluid is transmitted first to the body, it is termed aortic. The veins in the cephalopodous† orders of mollusca have numerous glandular appendages, which appear to absorb fluids from the abdomen and pass them to the blood.

The annelidæ‡ have an arterial and venous circulation, consisting of a central dorsal vessel, which is the artery, and two lateral vessels, which are veins; there are no hearts placed in the course or centre of the circulation; the movement of the nutritive fluid is extremely slow, and performed either by the power of its containing vessels, or the pressure of the surrounding parts. In these animals the blood is uniformly red but does not exceed in temperature the medium in which they live. In the crustaceæ there is an elongated sac upon the dorsal surface of the body, which is the heart; this organ which receives the blood from the organs of respiration and propels it to the body, approaches in its appearance the dorsal vessel of insects; it is, in fact, merely a dilated vessel, of which the coats are thicker and more powerful than those of the other parts of the circulating system.

In the arachnidæ§ the circulation does not differ materially from the crustaceæ, the function is performed by a dorsal vessel, which is a rudimentary heart sending out blood vessels which are arteries, and receiving others which are veins.

* Mollusca without apparent head, which is concealed under the mantle in the centre of the body.

† In which the organs of motion, feet or tentaculæ, are supported by the head.

‡ Red-blooded worms.

§ The Spider genus, differing from the Insecta in many particulars, and forming the third class of articulated animals in the *Règne Animal*, of Cuvier.

If the back of the silk-worm be attentively examined, we shall observe upon it a dark coloured line continually in a state of oscillatory movement. This organ is analagous to the heart of other animals; and although much discussion has arisen among naturalists, with regard to its nature and use, the researches of Carus have established beyond doubt, that it is the central organ of the circulation, and both sends out and receives fluids. Cuvier considered the dorsal vessel of insects as the mere rudiment or vestige of a heart, and supposed that nutrition was effected by mere imbibition, as in the lower orders of zoophytes. That a distinct passage of fluids from the dorsal vessel does, however, take place, is certain, from the microscopic researches of Carus, which were first made known to the German naturalists in 1826. The first observations of Carus were made upon the larva of the Agrion Puella;* subsequently upon that of the Ephemera Vulgata, and at length upon many insects, both in the larva and imago state. In the first mentioned insect which swims with great velocity by means of three vertical laminæ attached to the caudal extremity of the body, and in which there are at first no traces even of the rudiments of wings, Professor Carus found the blood entering by single globules from the dorsal vessel into the caudal laminæ, passing through them and returning again to the central organ of the circulation. These laminæ are composed of a granular substance (resembling boiled sago) enveloped by folds of the common covering of the body. Into this granular substance the blood passes by single globules, which are not contained in distinct vessels, but form for themselves a passage through the homogeneous structure of the body. The path or channel thus formed in the midst of the granular substance is perfectly transparent; its sides are not strictly defined, nor formed by any thing like the coats of a vessel. This extra vascular circulation in the permanent state in insects, is found to exist in the embryo state, at the first commencement of organization, in many of the higher classes of animals; thus the first appearance of circulation in the incubated egg is the movement of a few red globules at points separate from each other, when, as yet, no vessels are formed.† In the aquatic "*ephemera vulgata*," the circulation is distinctly visible, with the microscope, in the three last segments of the body, in the upper phalanges of the legs, in the head, and in the posterior roots of the antennæ; it consists, as in the Agrion Puella, of two streams, an excurrent and a returning one; the blood passing through the various parts of the granular substance of the body, unconfined in vessels resembling either arteries or veins. In 1827, M. Carus discovered the circulation in the fully-developed insect, and subsequently Ehrenberg and Hemprich, travellers in Africa, have observed similar currents of blood in the wings of a Mantis.

* A species of Dragon-fly.

† For a full and most interesting account of the formation of the ovum in various animals, and the development of its several structures, see Breschet's translation into French of the German work of Baer—*Sur la Formation de l'Œuf.* Paris, 1829.

In reviewing, for a moment, the disposition of the organs of circulation in those classes of invertebrate animals we have noticed, we shall find the confirmation of a law in the formation of the internal organs of animals which has been noticed and promulgated by Serres, Geoffrey-St.-Hilaire, and Meckel; viz., that the various degrees of development which an animal, high in the scale of being, passes through from the first moment of conception to a period of full maturity, correspond to the permanent states of development in the lower grades of the animal series. Thus, in relation to the vascular system, we find at first but one system of vessels in the embryo. This condition of the vascular system resembles the perfect state of these organs in the medusæ and other zoophytes which have but one system of vessels; and the resemblance is the more striking, since in both instances, the vessels are not distinct from the general mass of the body. At a more advanced stage of development, the central organ of the circulation presents a mere dilated oblong canal, hardly possessing muscularity. In this stage we have the analogy with the greater part of the annelidæ, or red-blooded worms, where the heart is a mere dilated tube. In the arachnidæ and some crustaceæ, the heart is a thin elongated sac, from the extremities of which the blood-vessels arise. In the primitive state of the development of the heart in higher animals, there exists but one dilatation, as in the arachnidæ and crustaceæ, when perfect. In a subsequent degree of development, where a second dilatation is produced by the separation of the auricles, or receiving cavities of the heart, from the general system of veins returning the blood, we have the analogy of the embryo state of the higher animals with the perfect formation of the mollusca, fish, and the lowest orders of reptiles.

We shall trace the remaining analogies between these states, when speaking, in a subsequent paper, of the circulation in vertebrate animals. At present we have followed it as far as the invertebrate classes will permit us.

LEECHES.

It is stated by Mr. Gay, in a letter from Chili, that Leeches there inhabit the woods, and never are found in water. He has frequently had his legs wounded by them in traversing the country. Only one aquatic species is known to him at Valdivia, and one at Santiago. Another interesting fact indicated by him, is the tendency of reptiles in these southern regions to become viviparous; an anomaly which Mr. Gay has observed in a great number of Ophidians, Iguanas, and even in one species of Frog.

ON THE NESTS OF BIRDS.

It is stated by a correspondent, at page 68, in alluding to the Blackcapt Fauvet *(Ficedula atricapilla)*, that "touching the nest, or even looking at it, before the eggs are laid, almost invariably causes the birds to desert." I have, however, known several instances to the contrary. Last summer, seeing a bird of this species with a piece of wool between its mandibles, I traced it to the nest, which was situated in a wild, retired hedge, overgrown with brambles, and other shrubs of the Rose family *(Rosaceæ)*. From this time I daily visited the nest, in which the eggs were deposited, one by one, notwithstanding my repeated visits; and I never found the birds absent. The male was on the eggs almost as frequently as his helpmate, and would allow me to come within two or three yards; but on a nearer approach would fly off to a neighbouring elm, with evident signs of impatience.

The same correspondent, at page 75, says—"The nest of the Coot is built in a bed of rushes or irises, in an open spot, several feet from the land, and is never situated, like that of the Gallinule, in a thick tuft of herbage, with a view to concealment, but may easily be discovered at a considerable distance." With this statement I cannot agree. I am well acquainted with the localities of the nests both of the Coot and of the Gallinule, and have found them generally in similar places. I have often found the nest of the Gallinule six or seven feet from the ground, in a bush, and that of the Coot in a similar situation; overhanging the water, but not so high up, and frequently *closely concealed* in the rushes and flags. Neither can I concur in the remark that "the young quit the nest immediately they are hatched." That this is often the case I do not doubt, as Selby, in his *British Ornithology*, states it from his own observation; but I have known them remain in the nest several days.

The most curious instance of eccentric nest building which has fallen under my observation, was that of an Ivy Wren's *(Anorthura troglodytes)* within the nest of a Chimney Swallow *(Hirundo garrula*, Blyth). The Wren's nest was, in all respects, as perfect as usual, with the sole difference of being encrusted by the procreant cradle of the Swallow. I shall be very glad if the readers of *The Naturalist* can bring forward any parallel instances. It is well known that several species of Falcon build in the nests of different species of Crows, and I have also heard of the Garden Tit *(Parus hortensis)* building in the prickly castle of the Common Pye *(Pica varia)*: this latter circumstance is, I believe, very rare.

C. T. Wood.

Campsall Hall, near Doncaster.

ON THE HABITS OF THE RING PIGEON (Columba palumbus, Linn.)

By Neville Wood, Esq.*

Of the situation of the Ring Pigeon in the systematic arrangement, it will be sufficient, on the present occasion, to mention that it belongs to the third order of birds, *Rasores*, to the first family of this order (which, I believe, has not hitherto been divided into its five tribes), *Columbidæ*, and to the typical genus, *Columba*.

This beautiful bird is the largest of the British species, and, being indigenous and extremely abundant in this country, is perfectly familiar to the most superficial observer, under the various names of Wood Pigeon, Ring Dove, Stock Dove, &c.

It is a favourite among individuals who have no personal interest in agriculture, on account of its plaintive melancholy cooing, which sounds so delightful amid the thick groves, in a still summer's evening. But by the farmer it is proscribed as vermin, and destroyed with relentless pertinacity. Although common in every part of England, it abounds most in wooded districts, where it may be seen in flocks of hundreds, feeding during the day in turnip and rape fields, and retiring at night, in immense numbers, to thick and gloomy woods, always preferring those most distant from the habitations of man. It generally retires rather early to roost, most frequently selecting the same spot, which it flies over and around several times before settling on the trees. If disturbed when about to roost, it will fly off to a considerable distance, and return; but if scared away a second or a third time, it will select another wood for that night's repose (especially if the evening be far advanced), where it will sometimes continue for several nights together.

The flight of the Ring Pigeon is straight, rapid, smooth, and lofty, being effected by quickly-repeated strokes of the wings. In rising out of a thicket, however, or when surprised on its nest, its action is extremely heavy and clumsy until it has gained an open space and full command of its volar powers, when it glides along in a beautiful manner. Although well adapted for long-protracted flight, it does not commonly remain long on the wing—usually passing only from field to field, or from wood to wood. Indeed it is only when food becomes scarce in one district, and the species is thus compelled to seek its sustenance by a partial migration to another, that its wings are exercised for any length of time. In autumn and winter it is mostly met with in flocks; but early in the year they disperse in pairs over the country. When a pair of Ring Pigeons is started in a wood, especially if they have a nest, one of them invariably pursues a course diametrically opposite to that of the other; but after flying some little distance, they wheel

* Author of *British Song Birds*, &c., &c.

round, and meet at some well-known rendezvous, where the male often commences his delightful note as soon as he has settled.

This note, if I remember rightly, invariably consists of three strains, and a short note at the end. The whole ditty may be written thus: *coo cōō; coo cōō coo; coo cōō coo, coo coo; cŏŏ.* The stress is laid on the second syllable of each strain, which consists, musically speaking, of but one note. Delightful as the Ring Pigeon's love-song sounds at a distance, it is astonishing how rough and hoarse it becomes on a nearer approach. The Ring Pigeon begins to coo about the middle, or towards the end of February, when the flight of the male is diversified in a most curious manner. This mode of flight ceases as soon as the nest is commenced, or perhaps somewhat before.

The Ring Pigeon begins to build in March, and forms its nest of sticks and twigs, usually selecting the oldest and most brittle for the purpose. The sticks in the interior of the structure are somewhat smaller than those on the exterior. The shape of the nest is that of a platform, placed in the fork of a branch; and though sometimes sufficiently substantial, at other times is so slightly constructed as to allow a practised eye to detect the eggs through the interstices. The nest is generally found near the tops of tall trees, particularly the fir, but I have observed it in nearly all the other common trees and shrubs which grow in sequestered woods. From its naturally shy habits, the Ring Pigeon is rarely known to build near houses; but in places where the feathered tribes are not disturbed, I have met with instances of its breeding in the immediate neighbourhood of the abodes of men. Mr. Waterton pointed out a nest in an elm tree, within a few yards of Walton Hall, wherein both birds were sitting: so exceedingly tame will almost any bird become when unmolested. Last year a pair of Ring Pigeons built their nest in a laurel bush in the gardens at Foston Hall, Derbyshire, and hatched their young, though, for some reason I cannot explain, they deserted their progeny when about ten days old. This bird rears two or three broods in the season.

The eggs are never more than two,* one being laid two or three days after the other; which causes a corresponding difference in their times of hatching. The eggs are oval, but nearly elliptical, of a pure white, and remarkably smooth. The first egg is hatched in sixteen days, the other in nineteen, and hence the reason of one of the young birds being invariably so much larger than the other. They are at first scantily provided with yellow down, but the feathers of the wings soon begin to shoot forth. In about three weeks they are ready to fly; and in Derbyshire the peasants are accustomed, about this period, to tie them to the nest by one leg, in order to allow the parents to feed them until they have become

* The domestic Pigeon (which is descended from the Rock Pigeon, *C. livia*) also lays only two eggs; but almost every extensive breeder of Pigeons must be aware that they will occasionally lay three. Instances of this have fallen under my own notice.

sufficiently large and plump to afford a good Sunday-dinner. They are then what epicures would call "excellent eating," but become very tough and tasteless after a few years have passed over their heads.

Persons little conversant with the habits of birds would climb up to every nest they saw, in order to ascertain whether or not it contained eggs or young; but if the slightest portion of the egg-shell is to be seen under the tree, neither will be found in the nest; should it, however, contain the latter, the droppings of the young birds are mostly to be seen, either outside the nest, or on the ground. After a few days, these become formed into a solid crust, which prevents the young from falling out, at the time when they begin to be restless. When we consider the flat formation of the nest, it becomes evident that without this "wonderful provision of Nature," the young birds would frequently be precipitated to the ground.

The impossibility of taming this bird and of domesticating it, in the manner of the Rock Pigeon, has been often mentioned, but I should imagine this statement has either been copied from other authorities, or the experiment has not been properly tried. Two years ago I reared a male Ring Pigeon from the time when it would have left the nest, always supplying it with green peas, beans, &c., until it was able to feed itself. When full grown, I turned it out and fed it with my other dovecot Pigeons, with which it constantly remained several months, except on one occasion, when it flew off to a considerable distance, but returned, to my surprise after an absence of a few hours. It found some difficulty in keeping up, on the wing, with the tame Pigeons (several of which were tumblers), as wild Pigeons are not accustomed to turn rapidly and frequently in the air. This bird sickened and died after I had possessed it six months, and I have not since had an opportunity of renewing the experiment; but doubt not it would succeed with common care.

The Ring Pigeon is an extremely handsome bird, the metallic hues of the head and neck contrasting finely with the white patches on either side of the neck. The feathers of the tail are considerably spread when the bird rises from the ground. The colours of the Ring Pigeon are so well known, that I shall not fatigue the readers of the *Naturalist* with a recital of them.

THE SWIFTFOOT.

EXTRACT OF A LETTER FROM JAMES WILSON, WOODVILLE, EDINBURGH.

I HAVE derived both pleasure and instruction from the perusal of the first number of *The Naturalist*, which contains some interesting facts accurately stated. From the favourable impression the work has produced upon me, I am

induced to offer an emendatory note to the first article, that on the Swiftfoot (*Cursorius isabellinus*), by Dr. Palmer. The author has followed an excellent plan in joining to his interesting sketch of that beautiful and graceful species a brief notice of the remainder of the genus. He errs, however, in supposing that these are only two in number, viz., the Coromandel Swiftfoot (*C. Asiaticus*) and the double-collared species (*C. bicinctus*). It is true that when M. Temminck, about sixteen years ago, published the second edition of his *Manuel d'Ornithologie*, the three birds above named were all that had been discovered of the genus in question. But several years have elapsed since Mr. Swainson (in his *Zoological Illustrations*, plate 106) figured and described a fourth species, under the name of *C. Temminckii*; and more recently the Dutch ornithologist himself has described a fifth species, under the name of *C. chalcopterus* (*Planches Enlum.*, 268). Both of these are said to be natives of Western Africa. Thus the genus *Cursorius*, though more noted (as its name implies) for its running than its flying powers, occurs in countries not only widely distant from each other, but separated by an intermediate ocean of some thousand miles. In regard to the species which is figured in the first number, it might have been as well to have added, as a synonym, the title of *Cursorius Europæus*, which it bears in Mr. Latham's work (*Index. Orn.*, ii., 751). Dr. Palmer is, however, quite right in adopting, as the specific title, that of *isabellinus*, bestowed by Meyer (in his *Tasschenbuch Deūt.*, ii., 328). The appearance of the bird in question in our division of the globe is entirely casual, and the application of *Europæus* is most inapplicable to a species which never voluntarily abandons the warmer regions of more sunny climes. It has never been known to breed in Europe, and is so rare in Britain that one of the only three recorded captures was purchased, by Mr. Donovan, at the extraordinary price of *eighty-three guineas*. It has been only once taken in France, and once in Austria. Sig. Ranzani makes no mention of its having ever occurred in Italy. In Africa it is said to be more abundant in Abyssinia than elsewhere; and you may judge of the vast extent of its geographical distribution when I inform you that several specimens were received by Professor Jameson, some years ago, from the southern base of the Himmalah Mountains. The geographical relations, then, of the genus *Cursorius*, and its amount of species, I conceive to be as follows:—

1.	*Cursorius isabellinus.*	Africa and Asia: accidental in Europe.
2.	*C. asiaticus.*	Asia and Africa.
3.	*C. bicinctus.*	Africa.
4.	*C. Temminckii.*	Africa.
5.	*C. chalcopterus.*	Africa.

Scarcely anything is known of the habits or natural history, properly so called, of any of these birds.

THE OSCILLARIA PHARAONIS.

[From a Foreign Correspondent].

M. de Bribisson has communicated to the last meeting of the Academical Society of Falaise, an interesting account of a rare and but little known species of Alga—the *Oscillaria Pharaonis*. The coloured liquid formed by its prompt decomposition, presents a remarkable phenomenon, hitherto not sufficiently studied. The water in which this hydrophite has been deposited immediately after its being gathered, assumes a tinge of deep red, either ochreous or blood-coloured, when examined in a deep place or in an opaque vessel: but, on the contrary, if this water is placed between the eye and the light, in a thin diaphanous vessel, the colour assumes a beautiful indigo-blue tinge. A bottle filled with this liquid appears, in the sun, blue on one side and red on the other; thus it may be said that this liquid in decomposing the rays of light, only permits the blue rays to pass, and *reflects* the red only. White paper plunged in this liquid always takes an azure colour, and never a red tinge.

Bovy de St. Vincent, was the first naturalist who has described this singular hydrophite, in the *Dict. classique d' Histoire Naturelle*. He says of the *Oscillaria Pharaonis*, "we are indebted to the learned Mougeot for a knowledge of this singular species, which, in February and March of the year 1825, presented on the Lakes of Neufchatel and Morat, a phenomenon which recalled the idea of one of the plagues of Egypt, by which the waters were changed into blood. De Candolle published some account of this *Oscillaria*, proposing to call it *Oscillaria purpurea*—a name which would have created considerable confusion, since other Oscillaria possess a purple colour. The present species is not itself coloured; but possesses the property of giving out a coloured matter. Its filaments, whose structure has not yet been examined under a microscope, are excessively fine, at first invisible to the naked eye, but become visible by a careful separation in fluid, when they resemble minute undulated tufts, similar to those of the *Orgyrosa*, to which, also, the Pharaonis we examined presents another resemblance, that of being curled and shining, though the colour is quite different. A red tinge is given by it to paper. It appears that this Oscillaria, while living, was of a fine red colour, which, on dessication, passed into shades of lilac, more or less distinct." De Bribisson remarks that the above description would lead us to imagine that the Oscillaria found in France was of a different species, if it were not that St. Vincent had given it from a dried specimen.

This Oscillaria is not of a red colour; its filaments are extremely delicate, being scarcely the hundredth part of a millimeter in diameter. They are long, of a shining blackish-green colour, often as if fasciculated; growing from a mucous base, thick, and yellowish. It grows in considerable tufts, sometimes more than

six inches in length, attached at the bottom of the water to stones or aquatic floating plants: examined under the microscope, these filaments present segments nearly as wide as they are long. After the emission of the colouring matter, the filaments become of a clear green; a portion of the tube is emptied of the endochroma which filled it, forming masses of a certain consistence, often separated at small distances. In the empty portions, no traces of the segments can be distinguished on the external tube.

The singular coloration produced by this Oscillaria takes place almost instantly on its being gathered; and it is impossible to transport any mass of it without their becoming immediately decomposed. If specimens preserving their original colour are required, they must be prepared on mica, or paper, in the water in which they were found at the moment of their being gathered. In all cases, on their becoming dried, it colours paper with blue zones; it also exhales a sharp ammoniacal odour, very different from its congeners.

De Bribisson and Lenormand discovered this Oscillaria in the month of September, 1825, in the River Orne, near Falaise; it reappeared in 1826, since which it was vainly sought for, when again this year it was abundantly found, in the month of July, in the same river.

Specimens have been forwarded to Mr. Duby, while publishing his *Botanicon Gallicum*, mentioning the phenomenon of coloration above stated, which his description does not correctly convey in these words:—*Filamentis: demum lilacinis aquam purpurio et violaceo tingentibus.*

Other Oscillariæ imgart the purple or blue tinge or water on their decomposition, but we have never observed the two shades existing at the same moment, as in the species now described.

Mr. Leclencher has addressed de Blainville on the subject of the *Spirula*. He has succeeded in taking, on the Bar of Senegal, the animal inhabiting that mollusc, in a sufficiently perfect state to enable him, by a comparison with others possessing the mutilated parts, to complete a description of the whole. He has observed that the *Physaliæ* feed commonly upon these animals, which accounts for the number of their shells and the rarity of the animal in a living state. In addition to the description already given by naturalists, Mr. Leclencher adds, that, independent of the lateral lobes which terminate the animal, *two fins* may be distinguished, so placed that only a small portion of the shell is exposed. The eyes appear large, and enclosed in a cartilaginous orbit. The lower part of the neck presents the funnel shape usually seen in cephalopids.

REVIEWS.

A History of the Rarer Species of British Birds. By T. C. Eyton, Esq. Intended as a supplement to the History of British Birds by the late Thomas Bewick. Illustrated with Wood-cuts. Longman and Co., London. Three Parts, 8vo. 1836.

The Ornithologist's Text-Book. Being Reviews of Ornithological Works, with an Appendix containing Discussions on various Topics of Interest. By Neville Wood, Esq. Small 8vo., pp. 232. Parker, London. 1836.

British Song Birds. Being popular Descriptions and Anecdotes of the Choristers of the Groves. By Neville Wood, Esq., &c. Small 8vo., pp. 408. Parker, London. 1836.

If the length and rapidity of the stride be at all commensurate with the stir which the science of Ornithology is, at present, making among us; if the quality of the information which they are destined to impart, bear anything like a fair proportion to the number and costliness of the works that are monthly, weekly, and almost daily, issuing from the press of Britain, the luckless birds will henceforth have but a very sorry time of it. Their domiciles and their haunts will, more than ever, be broken in upon by the reckless hand of the oological plunderer, and the prowling foot of the ornithological spy. The march of intellect will speedily achieve, among the feathered tribes, the work of ruin and dispersion which the march of population has long since begun. The Eagle will be finally driven from her eyrie in the precipice. There will no longer be a wilderness for the Owl, nor marsh for the "booming Bittern." Our hedge-rows will cease to be a place of secure deposit for the bright-blue eggs of the elegant little Dunnock: our eaves, to afford their wonted sanctuary to the faithful and confiding Swallow. Amid the rapidly increasing taste for ornithological pursuits on the one hand, and the daring encroachments of gas and steam and the ceaseless extension of human enterprize and dwellings on the other, our nocturnal and diurnal birds will seek in vain, throughout the land, for their congenial darkness and solitudes: and amid the universal rise of the waters of Science and the spring-tide of advancing population, the dove of Britain will find no spot whereon to rest her weary foot.

In addition to the three new works, whose titles are transcribed at the head of this Article, several others have already been published during the present year; many are in course of publication; and yet more have been announced. Of the works *which have actually appeared* since the commencement of 1836, the *Ra-*

pacious Birds, of Mac Gillivray, and the Second Edition of *the Feathered Tribes of the British Islands*, by Robert Mudie, are principally entitled to attention. The former of these is, more especially, a master-piece of ornithological description and research. We hope to see, ere long, other Orders of our British Birds delineated, and, in the true signification of the word, *illustrated*, by the same powerful, delicate, and experienced hand, and in language of the like commanding eloquence and perspicuity. Mr. Mac Gillivray's wood-cuts, representing the heads of the various species of Birds of prey, are uncommonly spirited and striking: his delineations of the internal structure of the Buzzard and the Owl, admirable studies for the ornithological inquirer, and models for the artist. Would that anything we can say, might induce Mr. Mudie, in the future editions of his deeply interesting work, to substitute for the painted figures, with which it is, at present, infested, some such accurate and impressive sketches of the external configuration, or internal anatomy, of the *Feathered Tribes*, as really adorn, because really illustrating, the felicitous and masterly descriptions of Mr. Mac Gillivray. To this list may be added, although not, strictly speaking, a British publication, the third volume of Audubon's fascinating *Ornithological Biography*.

The more important works, *in progress of publication* during the current year, are the magnificent and yet unrivalled *Birds of Europe* by Mr. Gould; Meyer's *Illustrations of British Birds*, a very respectable, although, assuredly, not a first-rate production; and the accurate and beautifully executed *British Oology*, of our friend, Hewitson. The intellectual and enterprizing Mrs. Perrott has been so rudely,—we had almost said unrighteously—assailed by certain literarary shrikes, in whose crania the organs of combativeness and destructiveness sadly predominate over those of benevolence and attachment to the softer sex, that we really apprehend she must have quitted, in disgust, the field of competition.* The most valuable and interesting periodicals, of which Ornithology constitutes an essential portion, are Partington's *British Cyclopædia of Natural History;* and the masterly *Cyclopædia of Anatomy and Physiology*, by Dr. Todd. The third and fourth numbers of the latter contain an article upon Birds *(Aves)* which must elevate its profound and accomplished author, Mr. Owen, to the first rank in the phalanx of living zoologists. The *Outlines of Comparative Anatomy*, by Dr. Grant—a third Part of which has recently appeared—will be found to supply information, alike luminous, accurate, and minute, upon the structure of the Bird-Class.

A new edition of the valuable *Ornithological Dictionary*, of Colonel Montagu, wherein the original structure will, doubtless, be cleared from the rubbish

* Since this sentence was written, we have received the distressing intelligence of the death of the accomplished and highly-gifted Mrs. Perrott, under circumstances of deep affliction.

and incongruities with which it has been encumbered and defaced by the impotent yet daring hand of Professor Rennie, and extended and adorned by the real discoveries and improvements of modern ornithological science;—a new periodical on the *Smaller British Birds*, by Messrs. Blythe and Fowler, whose names alone constitute a sufficient pledge for the accuracy and value of such a book; and—what is still better than all—a complete systematic work on British Ornithology, corresponding, in form and execution, with the *British Fishes*, of Yarrell, and the *British Quadrupeds*, of Bell,—may be selected as the most promising productions which, during the present year, have been announced for publication. Of the execution of the latter, we cherish the most sanguine expectations: we feel the deepest interest in its character and fate. Instead of the useless, although amusing, and frequently indelicate tail-pieces exhibited in the popular work of Bewick, we earnestly recommend the author of the projected volumes, whoever he be, to introduce cuts illustrative of either the internal or external peculiarities of structure, or the habits, of the individual bird under discussion. Ornithology will never attain the requisite precision to constitute a science until we have accurate delineations of the internal anatomy of almost every species of bird which traverses the desert, haunts the marsh or shore, or floats in air or water. In illustration of our views on this subject, we recur, with peculiar pleasure, to the elaborate and scientific volume of Mr. Mac Gillivray on the *Rapaces*.

The title of Mr. Eyton's supplementary work, to which we, at length, revert, sufficiently indicates its character and objects. The three Parts, of which it consists, exhibit pleasing, well-executed, and generally accurate representations on wood, of more than forty of the rarer species of British Birds. A few of these, however, it should seem, have been given in the last edition* of Bewick's interesting volumes; and consequently ought not to have made their appearance here. The tail-pieces of Mr. Eyton are ordinarily quite as irrelevant to the subject which they follow, and, of course, quite as useless, as those of Bewick; with but a very sorry sprinkling of the spirit and humour which characterize the execution, and, in some measure, expiate the sins, of their predecessors. The whole is terminated by a copious Catalogue, with a tolerably full and correct Synonymy, of British Birds.

Of the two productions of Mr. Neville Wood, both highly valuable and instructive, we greatly prefer the last. It is a delightful volume; full of living por-

* It has generally been believed that the 1826 edition of Bewick's work is the last published. This was long our opinion; and our reiterated inquiries, among the London and provincial biliopoles, served only to confirm the erroneous impression. Another edition, with several additional figures of the rarer or newly-discovered British Birds, it now appears, came out in 1832. This edition, we naturally infer, must have been small, and speedily bought up; as all our efforts to obtain a copy, or even the inspection of one, have, hitherto, been unavailing.

traits of our native Song-birds, evidently traced by the hand of a man of genius and an enthusiast,—an original and an indefatigable observer; and truly refreshing to the spirit of the thorough-bred ornithologist, whom the stale and vapid performances of the hireling compiler have too frequently served only to nauseate and disgust. Deeply do we marvel how an individual, so little advanced in years, as Mr. Neville Wood really is, could have produced a work of which any naturalist, however aged or experienced, might well be proud; and which all, who aspire to the character of a British ornithologist, must possess; and, once possessing, will frequently peruse.

The *Text Book* is, on the whole, an odd and rambling work: yet, like many very odd people and odd things, there is, about it, a spirit of indescribable fascination and allurement. It consists, principally of short Reviews, with occasional extracts from them, of all the more important Ornithological works which have appeared, both in Britain and upon the continent, from the time of the celebrated Willughby, of Middleton, to the present day; and will form an useful guide to the ornithological student in his selection of works of reference and illustration. Mr. Wood's criticisms on the writings and researches of other men, are generally correct, candid, and impartial. Sometimes, however, as in the cases of Professor Rennie and Mrs. Perrott, they are surely uttered in a tone of unmerited and unbecoming asperity: nor, in our opinion, has full justice been done to the exalted genius and labours of our illustrious RAY. On the other hand, Mr. Wood is occasionally lavish of his praises, where, from the worthless and contemptible character of the subject, eulogy is converted into the deepest satire. Unmerited praise, like a strong light thrown upon a crazy edifice, serves only to render more conspicuous the defects of that object which it seeks to illustrate. After all that Mr. Neville Wood has said, or can say, upon the subject, the trumpery work of Lewin on British birds will be trumpery still.

The *Second Part* of the *Text-book*, entitled "Synopses of Systems," contains elucidations of the Ornithological Systems of Willughby, Linneus, Brisson, Latham, Lacépède, Duméril, Meyer, Illiger, Temminck, Cuvier, Blainville, Vieillot, Vigors, Lattreille, Lesson, and Fleming, with the respective periods of their annunciation or development. It would require more time and examination than we can, at present, bestow upon the subject, to discuss their characteristic merits and defects. To the ornithological student, this portion of Mr. Wood's work will prove exceedingly acceptable and instructive. The remnant of the volume, under the head of "*Supplement*" is occupied with "Hints for a new and complete work on General Ornithology; and, as the title-page expresses it, "discussions on various topics of interest."

We cannot terminate these imperfect notices without formally and earnestly recommending an attentive perusal of the *Text-book*, and *Song Birds*, of Mr. Neville Wood to our ornithological readers: and we must add that he, who can

read the animated and glowing descriptions of the Garden Thrush and the Brake Nightingale, contained in the latter, without experiencing those emotions of pure and ineffable delight which the contemplation of the works and the wonders of Creation can alone or best awaken,—without catching a portion of the enthusiasm which inspires the ardent and highly-gifted author, and gives an indescribable charm to the productions of his pen,—has not a heart "instinct with Nature's love;" and most assuredly possesses no real claim to the character of an Ornithologist.

The Naturalist's Library. Conducted by Sir William Jardine, Bart., F.R.S.E., F.L.S., &c. Entomology. Vol. IV. British Moths, Sphinxes, &c. By James Duncan, M. W. S.. pp. 268. Edinburgh, 1836.

"This volume presents to the Public the continuation and completion of the British Lepidoptera, and is confined almost exclusively to the nocturnal portion of these beautiful and interesting objects of Creation; the former volume having embraced the natural history and illustration of the diurnal tribes. It is enriched with seventy-six figures of various species, most of them characteristic of distinct genera, accompanied in many instances with the Chrysalis and Caterpillar, the latter generally placed upon the plant on which it feeds; and they make in all ninety-nine figures. The two volumes are calculated to form a Manual of British Lepidotera, complete in relation to the Diurnal and Crepuscular tribes, and presenting a considerable selection from the Nocturnal; they are illustrated by no fewer than *two hundred and forty-six figures*, drawn, engraved, and coloured from the natural objects with an accuracy which will bear comparison with the best works on the subject. The copiousness of pictoral illustration may be safely asserted to have no parallel, particularly when the small price of Six Shillings per volume is considered, and it could only be accomplished by the great number which are sold of this popular series, and the economy and care practised in every department of its details."

The preceding is an extract from the *Advertisement* prefixed to the fourth volume of *Entomology*, of the Naturalist's Library: and we can conscientiously bear evidence to the accuracy of the statement, and the justice of the eulogy which it conveys. Rarely has it been our lot to peruse a more pleasing and instructive work. It is, moreover, got up in a stile of extraordinary neatness and elegance; and, even in this prolific age of cheap publications, we have seen nothing at all comparable, in moderation of price, with this. The figures of the various insects in their perfect and caterpillar states, are commonly drawn with great accuracy and spirit; and often coloured with equal truth and delicacy. To the justice of our eulogium in the last respect, there are, however, some exceptions. In the large Emerald Moth, *Hipparchus papilionarius*, Fig. 3, Plate xxvii., the "two

rows of whitish spots extending across both wings," and the "obscure crescent-shaped spot of a deeper green than the rest on the disk of each," are not distinctly expressed: and the naturally bright and gay colouring of the Gooseberry Moth, *Abraxas grossulariata*, Fig. 1, Plate xxviii., has been, by no means, successfully imitated. Yet these defects, of which we are surprized to find so small a number, and for the removal of which a little attention in the getting-up of the future editions will suffice, are amply atoned for by the general excellence and beauty of the volume. It is, in fine, a work with which every student of the British *Lepidoptera* should be conversant; and to which even the veteran Entomologist may refer with pleasure and advantage.

The volume is headed by a very nicely engraved Portrait, and a Biographical Memoir, of Maria Sibilla Merian, the celebrated authoress of divers interesting works on Natural History; of which the most important are the *Metamorphosis Insectorum Surinamensium*, Folio; and *Erucarum Ortus, Alimentum et Paradoxa Metamorphosis*, etc., Quarto. She was born at Frankfort, 1647; and closed a life of ardent and unwearied devotion to the cause of natural science, at the age of 70. The countenance of this distinguished lady, as represented in an Engraving prefixed to her work on Caterpillars, strikingly confirms an observation which we have frequently made, that Nature loves to conceal her brightest gems in a disfigured or unsightly casket. By the magic touches of the British artist, however, the unprepossessing visage of Madame Merian has been transformed into a somewhat fair and goodly face. Would to Heaven that the moral delinquencies, which too frequently form the characteristic and the curse of genius, were thus easy of reparation as its personal deformities and defects! The hand and arm of the Lady, however, as delineated in the English portrait, are coarsely and clumsily fashioned; and could never, we confidently assert, have been associated with a head of such fair dimensions, and a brain of such untiring energy, as Madame Merian evidently possessed.

German Periodicals.

We have received the first three Numbers of a Journal, in Quarto, entitled *Isis. Encyclopädische Zeitschrift, vorzüglich für Naturgeschichte, Vorgleichende Anatomie und Physiologie* (The Isis, an Encyclopedian Journal of Natural History, Comparative Anatomy and Physiology) for the year 1836. The *First* and *Second* Numbers contain, each with three illustrative Engravings, a very long and important paper on Physiology, the matter of which it is impossible to condense within any reasonable limits. The *Third* is principally occupied by a Report of the Meeting of Naturalists at Stuttgard on the 18th of September, 1834. It is equally insusceptible of analysis or condensation.

The *Archiv für Naturgeschichte*, of which the first three monthly Numbers

for 1836 have,also,reached us, contains many interesting and important communications on various subjects connected with Natural History. Of those which strike us as most practically useful, we shall render an account in the next Number of the NATURALIST. The work is edited by Dr. Wiegmann; and published at Berlin. It is, at present, only in its second year. The three Numbersbefore us are enriched by eight very delicate, and apparently most accurate engravings.

EXTRACTS FROM THE FOREIGN SCIENTIFIC JOURNALS.

1.—ON THE SILEX OF PLANTS. Mr. G. A. Struves, of Dresden, has recently published a dissertation on the silex found in some species of plants. He assumes as a principle that *lime* is necessary to the animal kingdom, and *silex* to the vegetable; that certain localities are the more abundant in the different species according to the prevailing nature of the soil. Silex being almost insoluble, and not able to penetrate vegetables which are not aquatic, necessarily exists in larger proportions in those species circulating water. Mr. Struves concludes, from his experiments, that the silex discoverable in plants owes its presence to the action of the water absorbed by the plant, that it is not combined either with an acid or an alkali, and so far predominates over the other chemical components as to determine the form of plants.

The following are the numerical results of Struves's analyses:—

	Silex.	*Alum. Salts.*	*Calcareous.*	*Manganese.*
Equisitum hyemale	97,52	1,7	0,69	0,0
Equisitum limosum	94,85	0,99	1,57	1,69
Equisitum arvense	95,48	2,55	1,64	0,0
Spongia lacustris	94,66	1,77	0,99	2,0
Calamus Rhodan?	99,20	0,0	0,54	0,0

We beg leave to observe that the plants above experimented upon all belong to the class *mo*nocotyledon, long known to secrete silex, if we may be allowed the expression; but Mr. Struves appears to think the same circumstance may be traced throughout the vegetable kingdom: in which we cannot concur, it being well known that a very small portion of silex can be detected in the *di*cotyledonous class. We also confess no small astonishment at finding the analysis of a *sponge* classed with vegetables, its animal claim having long since been clearly established. We have placed a query to Calamus Rhodan, not knowing the plant by that name.

2.—Enormous mass of Malachite. In June, 1835, a mass of malachite was discovered in the mines of P. and A. Demidoff, at Nischnei-Tagilsk, in the district of Jekaterinburg, measuring 16,2 feet, *French measure*, in length, 7,5 in width, and 8,6 in heighth; it weighs, therefore, by admeasurement, 350 ponds of Russia, each pond being equal to rather more than 16 kilogrammes, French weight: making this enormous mass upwards of *five tons and a half*, English weight. No cracks or imperfections had been discovered so far as the examination had then been made. The largest block of Malachite previously discovered in Russia weighed 90 ponds: it was discovered in the mines of Furchaminoff, and is now deposited in the museum of the corps of miners, at St. Petersburgh.

3.—M. Engelhart, professor at Dorpt, appears to have been the first person to suggest, from geognostic appearances observable in the mountains of the Oural, that they contained diamonds. From the indications he furnished, the Russian government directed measures to be taken in order to ascertain that fact: they were not, however, attended with success. Count Polié, the proprietor of the land, on which is established gold and platinum works, was more fortunate; and the first Russian diamond was brought to light by his unwearied perseverance, at the period of M. de Humboldt's voyage in Asiatic Russia. The number of these precious stones found, only amounted to thirty-five; and the expense attending their discovery being immensely beyond their intrinsic value, it is more interesting in a scientific, than profitable in a commercial, point of view.

4.—M. Jacquin has given an interesting paper on the pneumasticity of birds, which was read at the French Academy of Sciences, April 25th, 1836. He states that all the shoulder bones have their pneumatic perforations grouped round the scapular extremity, and receive air from the sub-scapular sac: it is transmitted to the bones of the fore-arm by the external cellular tissue, and even by the cavity of the humerus, from whence it is conveyed to the digits. An analagous arrangement exists for the inferior member, in which the cavities are always more extended as the species of bird possesses the greater powers of flight. The cervical vertebræ have numerous small perforations in the channel formed by the transverse apophyses: this conducts the air from the pectoral sac. The subcostal sacs furnish air in a similar manner to the ribs and dorsal vertebræ; and the sacral sacs to the vertebræ so called, and the basin. Air to the sternum is derived from the sternal sac, which sends it to the sternal apophyses of the ribs.

5.—Osmya Bicolor, (Latreille).—Mr. Bobineau Desvoidy, who is well known to the French naturalists, by his interesting researches respecting dipterous insects and Crustacea, particularly those of the neighbourhood of St. Sauveur, in

the department of Yonne, France, has recently furnished some details of the habits of the *Osmya Bicolor* and the *Osmya Helicicola*. These insects are nearly allied to the Bee, but form their nests in the deserted shells of the Snail; he has divided them into two species, the first is only found nidified in the *Helix nemoralis*, and the second most frequently in the *Helix pomatia*. The *O. bicolor*, lays two eggs in each shell, the female egg being always placed uppermost; above these are constructed three or four cells of sand, separated from each other by a membranous partition. The *Osmya helicicola* deposits ten or twelve eggs separated from each other by distinct partitions, each being provided with a magazine of honey; but they do not wall in the different strata, either with sand or any other earthy matter placed above the domicile of their progeny. They sometimes form their nest in the *Helix nemoralis*, in which they lay several eggs, closing the entrance with a thick division formed of minute fragments of leaves, triturated with the salivated excretion of the insect, and arranged in successive layers.

Mr. Desvoidy has also found in the nymphæ of those two species of *Osmya* a parasitical insect, which he, in the first instance, considered an Ichneumon, but has since determined it to be a pupivorous hymenoptera, of the genus *Eulophus*, hitherto undescribed; he has, therefore, named them *Eulophus osmiarum*. These larvæ change into nymphæ without spinning a coccoon, or quitting the place of their birth.

Another insect is found inhabiting the vacant shells of Snails; it is the *Sopyga punctata*: which passes its two stages of metamorphose in the cells of the *Osmya*, and are themselves sometimes tormented by the Ichneumon.

The same entomologist observes that the *Asylus diadema*—a species of insect hitherto only found in France, near Marseilles—is also met with at St. Sauveur, and may be classed with the enemies of the domestic Bee, which they seize with their feet, and bury in holes excavated for that purpose. This appears to be the only instance of dipterous insects being grave-diggers, which renders Mr. Desvoidy's discovery highly interesting. Of several examples of the *Asylus diadema* which this naturalist took in the act of carrying off their prey, all proved, on examination, to be females, and the Bees were doubtless buried to serve as a future provision for the larvæ of its ravisher.

Another interesting fact is mentioned of a species of dipterous insect, the *Conops auripes*, which torments the *Bombus hortorum*, as Mr. Desvoidy imagines, for the purpose of depositing its eggs on the surface, or between the annular segments, of that insect's body. The genus *Conops* are, at present, the only insects described as living *even in* the bodies of other insects which have attained an adult perfect state; other analagous species only living on the larvæ, and still more generally on the nymphæ. Mr. Desvoidy adds that the apodous larva found *in* the body of a *Bombus*, and described by Messrs. Audouin and Lachat, most probably is a species of the genus *Conops*.

Melitæa Dia. (underside).

Argynnis Aglaia. (var.)

MELITÆA DIA.

ORDER.—LEPIDOPTERA. *FAMILY.*—NYMPHALIDÆ.

PURPLE-UNDERWINGED FRITILLARY.

By J. C. Dale, Esq.

This butterfly has, for some time past, held a situation amongst the *doubtful* natives of this kingdom, but has never been well authenticated till the captures made at Sutton Park (?), by Mr. Weaver, of the Museum of Birmingham, about ten or twelve years since.

The following is from Turton, p. 42, A.D. 1806:—

"Papilio Dia, (marked as *British*).—*Wings*, fulvous, spotted with black; lower ones beneath, purple, the base with yellow and silvery spots and an obsolete silvery band in the middle.

"Inhabits Europe. Esp. tab. 16, f. 4.

"*Lower Wings* with a row of six black dots towards the tip, the two middle ones slightly pupillate.

"*Larva*, grey, with alternate rows of white and feruginous spines.

"*Pupa*, yellowish, variegated with black."

Stewart also gives it as British, nearly describes it the same as Turton, and says the caterpillar feeds on the viola (A. D. 1817, 2nd edition).

M. Dia was found in great numbers, on the east coast of Greenland, 71° N., by Mr. Scoresby.

ARGYNNIS AGLAIA, var.

The second figure in the subjoined plate is a variety of *A. Aglaia*, of which Mr. Sowerby gives the following specific characters: "Above, dull orange, with black marks; nineteen silver spots on the lower wing beneath." Sowerby says, "The nineteen silver spots are very constant;" but he had seen no intermediate or other variety, of which there are now several, (one figured by Mr. Curtis, plate 290 of *British Entomology.*) Haworth also speaks of "*Alæ anticæ* lituris 4 nec, 5 costalibus utrinque, quarum 2 nec, 1 compositæ sunt;" but he did not think of the more or less confluence of spots.

The late Dr. Abbot took three specimens of the variety described by Haworth as Charlotta (Caroletta?), near Bedford, nearly all alike, and gave one to Mr. Haworth, and one to Mr. Sowerby, who figured it in his *British Miscellany*, plate 2; I bought the third in his collection, and have procured another taken near Peterborough, which represents on the *reverse* the characters of Charlotta on one

side of the inferior wings, and that of *Aglaia* on the other; thereby *proving* it to be merely a variety: and Haworth mentions "Detecta Femina Olim D. Wilks, at ubi nescio."

Sir P. Walker had specimens in his possession, and I saw some large and fine *Aglaia* in the Isle of Arran, but could not take any. Mr. Bree, of Allesley, has figured *M. Dia*, and also two varieties of *A. Aglaia*, in Loudon, vol. 5, p. 749, fig. 122, as *Adippe?* according to the opinion of *Mr. Stephens;* but in his own (Mr. Bree's) opinion, *Aglaia*. Mr. Curtis has a very fine variety of *Adippe* taken, near Colchester, by Dr. Maclean, but it is very distinct from the above. I once found the larva of *Adippe* in the New Forest, June 1st, 1824. I have seen the suffusion of black spots in some species so powerful as to lose the genuine character so completely as to appear wholly black, instead of fulvous, with black spots (*Selene* for one).

On the APPLICATION of the PRINCIPLES of INDUCTION to the INVESTIGATION of the VEGETABLE KINGDOM, and the INFERENCES in RELATION to NATURAL THEOLOGY.

By Robert Dickson, M.D., F.L.S.

LECTURER ON BOTANY AT ST. GEORGE'S HOSPITAL AND THE SCHOOL OF MEDICINE, WEBB-STREET, LONDON.

The members of the vegetable kingdom claim our regard, by ministering to more of the senses than any other objects of creation. The eye is delighted by their symmetry and elegance, as well as by their varied and brilliant hues—the touch is sometimes pleased by their smoothness or softness—the smell is regaled by their perfume—and the taste gratified by their flavour.

Yet it is not to be denied that, attractive though they be from thus ministering to the external senses of sight, smell, and taste, the degree to which these latter are capable of determining the qualities of plants, is vastly inferior to that of the animals which feed upon them. Animals, may, indeed, commit an error, and eat some poisonous plant; but this is rather to be attributed to their being previously affected with some disease, by which the fine sense of smell has been lost, and the power of discrimination destroyed, than to an original deficiency of instinct: for, as a general rule, animals not only avoid particular plants of a poisonous kind, but whole tribes of plants possessed of noxious qualities. Neither oxen, horses, pigs, sheep, nor goats will eat a single solanaceous plant (Nightshade tribe) ex-

cept potatoes, all of which are more or less poisonous—though they devour readily the grasses, none of which, save one, have any unwholesome properties in a natural and healthy state. Other animals as decidedly avoid one tribe of plants and prefer others, as these just mentioned. In what way, then, is man to be placed in a condition equal, at least, if not superior to the animals over which he rules, in judging of the properties of plants, in respect to their safety or danger? Here, as in other cases, by exerting the intellectual faculties with which he is endowed—those inward senses, the possession and right application of which raise him to an immeasurable height above the beasts of the field. The astronomer foretells with the most unerring certainty, the return of every comet—those bodies which, till later times, were conceived to move through space in such eccentric orbits, as to have the appearance of random or chance visitants to our planetary system. This he effects by observations and calculations which have attained such a degree of accuracy, that it would seem as if the comet appeared in obedience to his will; whereas it only returns to a given point of the heavens in obedience to laws which emanate from the Creator of all things. Now, should any one undertake to foretell or determine what qualities or properties any newly discovered plant would be found to possess, it would seem to many to be presumptuous or paradoxical, and to some, impossible. Yet it is perfectly practicable by an application of the same principles of induction which guide the astronomer. Plants are not constructed at random, or independently of fixed and ascertainable principles. These furnish to the scientific botanist indications of the properties of a plant, not less trustworthy than those which conduct the observer of the heavens to conclusions which, on their first announcement are much more improbable—conclusions referring to masses of matter millions of miles distant from us, while the others relate to objects at our feet or in our hands. If this globe and all which it inherit be the production of the same Creative Being who formed the other planetary orbs, is it likely that different laws would be framed to influence the structure of its organized inhabitants from those which influence the whole? Certainly not. The chemist tells us that the most minute particles—atoms, as he terms them—of unorganized matter, enter into combinations with the particles of other substances in regular and uniform proportion. Aware of this law, he makes all his arrangements in accordance with it, and so accomplishes his objects at a vast saving of materials, and often of time, since he rarely encounters failure or disappointment requiring him to repeat his experiments or renew his operations. He has, besides, a certain index to errors or mistakes in every instance where he perceives a departure from the definite and ascertained proportions. Thus the chemist who investigates the separate particles of matter, and the astronomer who investigates the largest masses of unorganized matter, are alike guided by the power of numbers.

And is it probable that organized matter should be constructed with less re-

gard to number and proportion? Far from it. Though Plato of old called the Creator the Divine Geometrician, modern philosophers have been slow to observe the numberless instances of the operation of his adjusting mind, which all his works display. Indeed it has not been remarked in the animal kingdom till our own day, and the merit of observing it, promulgating, and establishing it is due to Mr. William Macleay, who, though young in years at the time of his discovery, was ripe in the power of penetration and spirit of arrangement. He has demonstrated that the whole animal kingdom is constructed in a series, which form circles of fives, (hence *quinary arrangement* as this is termed), five of the subordinate circles making one primary circle, the amount or number of these primary circles being also five.—(See Macleay, *Horæ Entomologicæ).*

The remark that *five* was a favourite number in nature, was made by Sir Thomas Brown, (see his *Quincunx),* in 1656, and he supported its correctness by numerous instances drawn from the vegetable kingdom. Its applicability to an entire section of that kingdom was not, however, observed or demonstrated till a much later date; and now it is a well-ascertained principle, that, of the three great sections into which plants may be divided, according to their internal structure and mode of growth, each has a predominating number, which is displayed in the portions which constitute the flower (in the vascular or flowering plants), and along with which prevailing number certain properties are invariably found to be conjoined. For instance, the first or lowest section of the vegetable kingdom consists of plants exclusively formed of cellular tissue, (hence called *cellular plants);* the prevailing number of the parts of which is two, or some regular multiple of two, as is best exemplified in the number of the teeth of the peristome of mosses, which are either, 4, 8, 16, 32, or 64. Such plants are remarkable, in general, for their freedom from any very active principle, and consequently scarcely any of them are poisonous: (fungi or mushrooms seem exceptions; but it is doubtful whether these singular productions belong to the vegetable kingdom). Hence though a few of them yield dyeing principles, the greater number of them are only employed as food for man or animals, and may, in most instances be fearlessly partaken of by any one in danger of perishing for want of other kinds of food.

The next section of the vegetable kingdom possesses vessels of different kinds, in addition to the cellular tissue of the former, and are characterized by a particular mode of growth—namely, by additions to the interior, (hence called Endogens), which accounts for the circumference of the stem when once formed, never varying or encreasing in diameter. These plants are at all times distinguishable by the manner in which the veins of the leaf run (*i. e.* always in parallel lines), and have the portions of the flower arranged in threes, or regular multiples of three. (See flowers of Crocus, Hyacinth, Lilies, or Tulips). This section contains plants which are scarcely more active than the former; and having neither bark nor

wood as parts of their structure, are destitute of the peculiar products of these parts. Hence it is mostly for food that such plants are valuable, and their roots (or rather rhizomata) and fruits or seeds are the parts chiefly employed for this purpose—as the arrow-root, the seeds of the cereal grains, wheat, rice, &c., and dates, cocoa-nuts, &c., are examples.

The remaining section of plants comprises those which grow by additions to the exterior (hence called Exogens), and which have the stems conical and branched, and the parts of the flower arranged in fives or regular multiple of five. (See flowers of Marvel of Peru, Pink, Rose, Potentilla, Apple, &c.). In these the leaves have the veins forming a net-work; they possess bark and a perfect woody structure, and consequently all the principles which are either formed or deposited in these. Among such plants are to be found the most active vegetable poisons, sources at once of injury and benefit to man; for while the savage employs them only to destroy his enemies, whether of the brute or human kind, the skilful and benevolent physician converts them into instruments of great, nay, of unspeakable, benefit to his suffering fellow-creatures.

So in the arts: does the dresser of leather need an agent to assist him in tanning, he seeks and finds it only in this section of the vegetable kingdom, as the *astringent* principle he requires is mostly lodged in the bark—as the Oak, the Willow, the Larch, and others which are employed for this purpose attest. Again; are fixed oils required for any of the various purposes to which they can be applied—they are, with one or two exceptions only, to be obtained from this section of the vegetable kingdom. All kinds of gums, of resins, and gum-resins, with scarcely any exceptions, are *exclusively supplied* by this section of plants.

It is unnecessary to add more examples to prove the advantage of proceeding in our examination of the vegetable kingdom, in reference to its uses to mankind, according to principles which have their foundation in the unalterable laws of nature, and therefore furnish the best and most certain guides. It cannot be doubted that the Author of nature intended these external marks and definite numbers, to be indices, or signs of internal properties; and instances might be given where a very slight, and, as some might think, unimportant difference of external structure, furnished a key to an important difference of chemical composition.

That the recognition of these principles will be productive in time of much utility may easily be imagined, but that is not the only or most essential object in noticing them at present; which is to intimate that throughout all nature a balancing, adjusting, and proportioning principle reigns, giving evidence of *the whole* being an emanation from *one* great Creative Being. Attention being once directed to the existence of such proofs, the observer will recognize them everywhere, and they will serve to illustrate to every mind, the wisdom displayed in the crea-

tion of the world by the Supreme Being, who, in the words of the son of Sirach, "created her, and saw her, and *numbered her*."

And thus voices, addressed to the ear of every rational believer, will be heard proceeding, not from the spheres only, but from every object of the visible universe, audibly declaring that "the hand which made them was divine."

THE NATURALIST ABROAD;

Or, DAYS IN THE WOODS AND FIELDS:

INCLUDING INCIDENTAL BOTANICAL AND ENTOMOLOGICAL NOTICES.

By Edwin Lees, F.L.S. & F.E.S.L.

No. I.—The First Day of Summer, and the Libellulidæ.

I have often thought that a carefully constructed contemporaneous calendar of the appearance of birds and insects, and the flowering of wild or naturalized plants, would not only be of great use to the inquiring naturalist, but of extraordinary interest to the general lover of nature's wild scenes. That notices of the kind I allude to are scattered about in various works I am well aware, but they have seldom, if ever, been brought forward together, and their harmonies and associations fully traced. I think a plan of this kind peculiarly adapted for popular illustration; because, if the appearance of any flower synchronizes with the approach of its associate insect, and if the bird on airy wing, as it first meets the sunny gleam, tells us to look for the opening flower in its wonted haunt, then the images called up in the mind present an additional charm, and the various departments of nature's vast domain, instead of being kept isolated, are concatenated together, and one pursuit agreeably relieves another. Much more is effected by this combination of study than when the naturalist is bound down to one department only; for the botanist often unintentionally captures many insects with his flowering herbs, and the entomologist might, in like manner, gather many a botanical rarity while engaged in beating the bushes to replenish his collecting box. As nature herself delights in harmonious associations, so mankind are pleased with the combined array of all that her skill can produce, in the same way that a grand pictorial landscape, while true to the aërial outline of the distant mountains, traces, with the same fidelity, the lichened buttress and wild turret, dark in the cloudy shadow of the foreground.

To complete a plan similar to what I have here indicated would require many years of close and undivided observation to the subject, to say nothing of the active co-operation of others. At present, therefore, it would be immature to present it, but yet I think a few popular sketches might be roughly thrown off as studies which, if incomplete in their filling up, might not be altogether uninteresting, either to the scientific proficient or the enthusiastic and inquiring student of the most pleasing pursuit under the canopy of heaven, whether health, recreation, observation, or deep and close research, be the object in view. I shall, therefore, commence this series of out-door "pencillings by the way" with a sketch of

The First Day of Summer.

A light rain has fallen, and there is a haziness about the distant landscape; but the deep blue hills, half obscured amid the rolling vapours, now throw off their dishabille, and the huge clouds roll lazily about as if uncertain of their next design, and indisposed for any exertion. But there will be no more rain, for the white, starry Chickweed has unfolded its stainless petals, the Swallows and Martins are darting high in the air, and the white Cabbage Butterfly *(Pontia brassicæ)* is careering to and fro.

We will proceed by the river, then, whose red waters now totally obscure the long green tresses and snowy blossoms of the Water Crowfoot *(Ranunculus pantothrix*, Dec.)* that so lately adorned the green shallows. And now that we have a mellowed gleam of sunshine through the light veil of the friendly clouds, what a pleasing scene presents itself to the eye. The rolling river, the green and golden meadows, the trees fresh in their leafy foliage, as if just created, the more distant groves passing into deep shadow, and the distant but noble line of mountain, neither blue nor green, but partaking of both, unscatched as yet by the fierce suns of maturer summer, diversified with rock and dingle, and yet so melting into the aërial distance as if formed of the unsubstantial vapours whose gigantic but evanescent masses overshadow it. But let us view the scene more in detail, while the note of the Cuckoo, whose hoarseness has not yet attacked her, sounds pleasingly upon the ear.

The Hawthorn has shed its snowy loveliness, except here and there, where, in retired recesses, a white bush of beauty, emblematical of lingering joys hoarded up to the last possible moment, still gleams amid the deep shadows of the overbowering elms. The trees have now nearly attained their perfection of leafiness, and rustle their magnificent mantles in stately pride; while the lighter green of

* This elegant plant, whose long stem quivering with the current, sometimes the length of twenty-four feet, appears to me quite distinct from *R. aquatilis*. The latter flowers in April, but *R. pantothrix* seldom before the first week in June, and, evanescent as a vapour, vanishes from the sight with the first rise of the waters.

the waving Poplar, the fresh viridescence of the Ash (whose old, beggarly, last years' tatters are, however, not quite concealed), and the olivaceous hue of the branching Walnut, bear witness to their later emergence into the glories of the scene. In the shrubbery, the Horse Chestnut (*Æsculus hippocastanum*) towers its digitated leaves, where a few of its fading blossoms still linger, though lost in the distance; but its glories are past; and the Laburnum, too, gorgeous in its chains of gold, is also rapidly going out. These, and a host of others, combine in the distant grove that extends itself like a dark wall, gloomy with verdure.

The meadows now claim our attention, where the yellow Ranunculus forms long curls of gold far among the green grass, and this golden tint is finely mellowed and heightened by the intervening red spikes of the tall sheep's sorrel. Here and there, too, the broad white disk of the great Daisy (*Chrysanthemum leucanthemum*) starts up, and the Cat's-ear and Crepis stretch out their yellow floscules in full glory, while the rich pink honeysuckle Clovers form a delightful contrast to the eye, and refresh the olfactory nerves with balmy fragrance. A crowd of minute yellow Trefoils, too, ramify amid the roots of the grass. On the bank of the river, where a minute tink of water descends through the spear grass in the deep trench it has worn for itself in the lapse of years, the Comfrey (*Symphytum officinale*) hangs its deep purple velvet bells, and the pink Lychnis (*L. flos-cuculi*) decorates the same vicinity with its ragged petals that announce the approach of the summer solstice. Here, too, a patch of blue Speedwell (*V. chamædrys*) lingers, and the smaller azure-flowered *Veronica beccabungæ* spreads its lengthened arms into the water itself, whence we have started the Grey Wagtail from its nest. A band of gold stretches along the margin of the river, formed by the specious flowers of the wild Mustard; while the purple disk of a thistle occasionally diversifies it, or the white-powdered *Plantago media* stands conspicuously forth, like a liveried lacquey waiting for orders.

But the clouds are passing away, and the burning gleam of noon flashes upon the brightening scene. The Thrush is no longer heard quavering from amidst the oaks, and the noisy Chaffinch himself gives only an occasional twitter. A still brighter and hotter flash of radiance succeeds, and its energetic power calls forth the transcendant tribes of insects. The great Humble-bee booms in rapidly-shortening circles through the sounding air, and his compatriot, whose tail of red fire dashes along like a spark from a wheel, scarcely booms lower than he: another trumpeter sounds a shriller clangour as he rushes to the nectareous tube of the White Archangel, and a thousand minor buzzers give a voice to the air that steals over the distance with melodious effect. Now, rising over the grass, a host of black and brown Cantharidæ (*C. fusca et livida*), with red abdomens, appear conspicuous, while one of comparatively rarer occurrence, clothed in complete scarlet (*C. cardinalis*, Shaw), seems to take his stand as an officer to command them. These coleopterous insects, generally very numerous at this season

of the year are commonly called *soldiers*, and are often caught and sported with by children. The cockchaffers (*Melolontha vulgaris*) are not so numerous now as they have been, but one carelessly whirs by now and then, and the much smaller *Scarbæus solstitialis* now appears clustering round that half opened half destroyed Burnet-rose. A host of minuter insects, coleopterous and dipterous, animate the solar beams, and when the clouds intercept the bright rays, numbers may be observed resting on the leaves of plants, lurking in the broad shade of the trees, or even asleep in the flower-cups.

The lovely Cowslips, late so beautiful, have all faded away, except that one tall tuft deep in the shade, overshadowed by the Witch-elm and its hop-like clusters; and were not every primrose long ago fled, we might almost imagine that bright brimstone butterfly (*Gonepteryx Rhamni*) was a blossom of one wafted before the playful breeze. The sun gleams now without a veil before him, and a host of azure blue butterflies appear sporting along the topmost spikes of the grass. We are covered with gramineous farina in chasing them, but they rise up opening their blue wings on every side almost as numerous as the thousand Eyebrights (*Euphrasia officinalis*), whose modest beauties, though half hid, we see at every step; and vieing with the cærulean of the woolly-leaved Scorpion-grass.

But what numbers of *Aphides* cover the stems of the plants around us. Let us pause at this dock. Here the *Aphides* are wingless and black, and clothe the topmost stems of the plant like a mantlet of the ancient Romans, presenting nothing but their polished black armour to the attack of the enemy, so closely cling they to the plant. And well have they need; for a squadron of the small red Ants have found them out, and though they cannot carry them off yet they have found a prize which will save them the trouble of foraging for some time. See how they are passing over the *Aphids*, and now stopping and moving their antennæ about. They are regular lawyers, these Ants, and the poor *Aphides* their clients; they have extracted all they can from them already, and are urging them for another fee, nor will they leave them till nothing further is to be obtained. The fact is that the excrement of the *Aphis* being derived from the juice of the plant is very sweet and clammy, and the Ants are so fond of it, that they devour it as fast as it is produced by the *Aphides*, and the supply being insufficient for the demand, though the Ants do not exactly, like the boy in the fable, kill the goose to get all the eggs at once, yet, having devoured all the honey-dew the *Aphides* have manufactured, they tickle and incite them as much as possible to produce more, which they immediately devour. Whatever may be urged in favour of Ants, in general, as an industrious and provident race, but little praise is due to those I am now alluding to, who are evidently idle marauders, escaped from the restraints of legitimate authority, and are here living an idle and luxurious life, depending entirely upon the labours of others. I have often wondered how Ants were enabled to find their way up the labyrinthine passages of tall spinous Thistles,

and the tortuous stems of Brambles, to the positions of the various tribes of *Aphides* which they seem to do with perfect ease. Having once got there, however, they remain fixtures so long as the *Aphides* deposit their clammy sweet, without returning to their nests, as far as my observation goes. Even the large wood Ants *(Formica rufa)* attach themselves in bands in this singular manner wherever any huge Thistle has a colony of *Aphides* upon it; and there, perhaps, intoxicated with the luscious potion, they remain unconscious of any thing around them but the excitement arising from the continued drain from this living and ever-flowing bowl. Even when a plant thus circumstanced is gathered, the Ants seem very reluctant to forsake it, and unless compelled to leave, will still remain upon it, though they are conveyed hundreds of miles from their domicile. It is indeed stated by entomologists that Ants keep flocks of *Aphides* in their nests for the supply of the colony, "milking" them regularly for the use of the inhabitants. That they could keep them alive under ground for any length of time, I should think unlikely, though certainly on one occasion I beheld an army of small black Ants engaged most busily in removing all the *Aphides* from a Raspberry bush in a garden, an operation which they performed with considerable celerity. In general, however, I think they do not remove them from the plants to which they are attached, nor even relieve each other to carry home the delicious spoil, but settle down selfishly to a long luxurious debauch. The Ant, therefore, is not to be considered in the light of an enemy to the *Aphid*, since he not only does him no injury, but hangs upon and literally incites him to further depredations.

But a beautiful picture just opens by the water's edge. Behold where that forest of Club-rush *(Scirpus Sylvaticus)* in the marsh, exhibits its delicate white inflorescence; there the brilliant dark green Dragon Flies *(Agrion virgo)* are fluttering their purple wings. What tints can match with the golden green of the male, or the splendid emerald hue of the female, as it now rests upon the stem of the *Catabrosa aquatica*, or sparkles out in the sunbeams, contrasting with the rosy towering spikes of the great Bistort? Hosts of the *Agrion puella* too, are lightly balancing their fairy forms of the purest tints of sky blue over the cool waters, or resting upon the opening flower of the yellow flag *(Iris pseudacorus)*; while the *Libellula depressa* with its fine slate blue abdomen, is rushing by on rapid wing, whirling against his rival, and chasing his yellow-tailed partner far over field and hedge, till resting for a moment from the fond pursuit on a dry hedge-stick, he seems, as the sun flashes upon his corselet, to be absolutely inhaling and drinking up the beams of light. But still more beauteous than all flutters the blue-green *Agrion virgo*, Fab., not mounting high in air, but softly gliding without an effort among the rushes and equiseti of that silver willowed covert by the river's brink, where the tall yellow Loosestrife is spreading out its golden corymbs. I love to behold them, for they come only with the established summer, and they sport in the most cool and delicious places, where the zephyr from the river

fans the rushes, and the ear is soothed with the murmur of the water. There they rest, hid in the recesses of the water plants. When I see them, the remembrance of *my* past summer days rushes upon me; I think of the time when their purple fluttering wings and green brilliance first met my view, when I saw the world as a paradise created only for enjoyment, and knew not that, drilled by disappointment and commanded by care, I must take my place in the ranks, to fight with the difficulties and troubles which life in its onward progress too soon unfolded to my view.

But excessively beautiful as the Dragon-flies, or *Demoiselles*, as the French call them, confessedly are, and they are a favourite tribe with me, they are rapacious in the extreme, the very eagles of the insect world. They seem to flit along carelessly on easy wing above the flowery cinctured streams, as if bent only on contemplative enjoyment, or rise higher in air apparently to revel in the sunbeams; but should any minuter insects appear in view, they dash upon them with the rapidity of the Falcon, their armed tarsi secures the victim, and their capacious maw soon encloses him from sight. One of our largest species, (*Anax imperator*, Leach), may sometimes be seen in the very hottest blaze of a summer's noon, assuming to himself the sovereignty of an entire pool, round which he wings his superb flight, offering instant battle to any intruder, and keeping the course clear for himself only, with the utmost pertinacity. But although thus matchless in their aerial movements, those whose wings remain horizontal while at rest, when prostrate on earth or in a low situation, have considerable difficulty at once to give sufficient power to the muscles that set them in motion; and I have often observed the great variegated Dragon-fly (*Libellula varia*, Shaw) make many ineffectual efforts before it could rise from its position; hence early in the morning they may be easily captured when found at rest. Once, however, on the wing, nothing can exceed the rapidity of their motion, and their able and diversified gyrations in the air. Now hovering low by the hedge side, a radiant beam glances upon their polished mail, and a jewelled blaze of sapphire and lapis lazuli flashes upon the eye—the next moment lost amid the labyrinthine foliage of the oak, they appear, vanish, and reappear, swift as meteors in the autumnal sky—now they are lost in the wood—again they hurry by with the velocity of an impelled arrow. Thus, in the fury of the chase they sometimes wander very wide from their usual haunts, dash over the recesses of the garden for insects, and are occasionally hurried out to sea. But mark, for a moment, the interesting attitude of that broad-backed yellow Dragon-fly who seems falling into the pool, so close does she approach to the edge of the water. It is the female of *Libellula depressa*. She recovers herself ere she has quite touched the water, and rearing up extends her abdomen and deposits an egg in the translucent element. On she flies repeating the curious process without rest, just touching the water with her abdomen, but never once overbalancing herself, while thus engaged on the wing in effecting the transposition of

her embryo burden to that element from which she herself once emerged, though its chill embrace would now involve her in destruction. Yet how fearlessly, how easily she accomplishes what might have been considered a difficult task ; not timorously clinging to a rush to perform the process, but circumvolitating the pool, depositing her eggs in the progress, and thus giving her offspring ample room and verge enough in the depths below for their future operations. And this bears the unmeaning name of instinct. But is not the *Libellula* while thus making provision for her offspring in an element where she herself would now perish, sensible that she formerly emerged from the water, and that her offspring must there for their allotted time undergo the same processes of development which she passed through, prior to being fitted to sport in air and perform the economy of her mature state? At all events the contemplation of an incident like this is not without a note of instruction in the wide extended field of natural theology.

The beautiful and elegant tribe of *Libellulidæ* were all included by Linnæus in one genus, and, as remarked by Stephens, the Linnean character of one species is so comprehensive that it positively embraces no less than two genera (*Lestes*, Leach, and *Agrion*, Fab.), one containing three, and the other ten, indigenous species in its extensive grasp! and the consequence has been that Latreille and other celebrated entomologists assert that the sexes unite pell-mell together, and that the varieties resulting therefrom are innumerable; whereas, the fact is that these insects are as particular in their amours as any others, and the varieties are equally referrible to their proper species, the male usually, however, differing from the female in colour. This last circumstance has caused some confusion in the naming of species ; and to be accurate in the study of this tribe it is indispensable to observe them when in union. Fabricius subdivided the *Libellulidæ* into three genera, *Libellula*, *Æshna*, and *Agrion*, which have been generally retained by entomologists, though much extended by Dr. Leach. I shall, however, here adhere to the Fabrician arrangement, as sufficient for the present occasion, and perhaps a British example under each may be useful to the young inquirer. All the species of this tribe have two great lateral eyes, and three smaller ones or ocelli, situated on the vertex, antennæ minute and almost concealed, strong corneous mandibles, wings extended horizontally or meeting vertically above the back, reticulated in an admirably delicate manner, and with the tarsi three-jointed. The larvæ and chrysalides inhabit the water till the period of their ultimate metamorphosis, and bear a considerable resemblance in form to the perfect insect, but having only the rudiments of wings. They are remarkable for the singular construction of the piece which replaces the lower lip, covering the mandibles, maxillæ, and almost the whole under part of the head ; it has been compared to, and called by some, a mask. Having completed the initiatory period of their existence, the pupæ issue from the water, climb up the stems of reeds and other aquatic plants, and, divesting themselves of their old skins, prepare for the enjoy-

ment of sporting in another element with appendages previously hidden from view and undeveloped in their beauty.

I. Libellula, *Fabricius*. The individuals of this genus have their wings extended horizontally when at rest. The head is globular, and the eyes very large and approximating. Two ocelli on each side a vesicular elevation on the vertex, and the anterior one much larger. *L. depressa* is a well-known species, generally very common in May and June, dispersed on the margins of ponds all over the country, and hence easy of capture. It never seems to diminish or indeed materially to increase its numbers, though it is recorded by Blumenbach, from Voight's *Neues Magazin*, that in the years 1806 and 1807 they appeared in great crowds in Thuringia and the Hartz. The abdomen of the male is of a fine blue slate colour, which he displays very conspicuously as he shoots along; that of the female is brownish yellow, with yellow spots on each side. Both are remarkable for the elegant black and orange markings at the bases of all the wings. *L. depressa* may be very frequently seen perched upon a dry hedge-stick in the hot sunshine, where he seems to be imbibing the solar rays, and darts off swift as an arrow if disturbed.

L. quadrimaculata, a much rarer species, of a light brown colour, with hairy thorax, is distinguished by two conspicuous brown spots on the costal nerves of each wing, with a broad scorched-like mark at the base of each of the posterior wings. *L. cancellata* is another fine species. *L. vulgatissimus*, brown, with yellow markings, may be met with in June about woods and hedges.

II. Æshna, *Fab.* The *Æshnæ* resemble the *Libellulæ* in the position and bearing of their wings, and in the form of the head, but their two posterior ocelli are placed in a simple transverse elevation, in the form of a carina. M. Van der Hoeven lays some stress upon the cellulæ at the base of the anterior wings, being larger in *Æshnæ* than in *Libellulæ*, and horizontally shaped, instead of inversely triangular; while there is no difference between their anterior and posterior wings, which there always is in the latter. The abdomen is here narrow and elongated. *Æ. varia* is a splendid insect: his size, varied colours, rapacious habits, and rapid flight, justly entitling him to the appellation of an "emperor of the insect world." The thorax is marked with four broad greenish-yellow stripes, and the abdomen is beautifully variegated with green and yellow, on a brown ground. Wings four inches in expansion, iridescent. This species is very partial to the vicinity of woods, dashing with amazing velocity among the ramifications of the trees, while tints of dazzling splendour play on his resplendent armour as he shoots along. This insect flies later than most of his order, probably to catch the evening insects. Mr. Newman has placed the *Libellulidæ* in the centre of his septenary scheme of insect creation, as the type of Nature's perfection of skill and splendour in this division of animated life. "In this group," he observes, "we find the organs of sight, manducation, and locomotion carried to a greater degree of perfection than

we ever met with except in similar centres: like the king of birds, the Dragon-fly is unrivalled among his kind."*

Æ. grandis,† (Lin. and Stephens), ranks here, a noble species, scarcely inferior in size to the preceding: thorax and abdomen auburn brown, with brown glazed wings. *Æ. annulata* (*Cordulegaster annulatus*, Leach) has the thorax jet black with yellow lines and the abdomen brown with a yellow transverse line in the middle, and two yellow spots on the side of each ringlet. I found a dead specimen of this insect lying on the beach at Fishguard, Pembrokeshire, this autumn.

III. Agrion, *Fab.* The Agriones differ from the other Libellulidæ in their wings being elevated when at rest, the head being transversal, and the eyes distant from each other. The ocelli are placed in a triangle, and the abdomen is cylindrical and linear. Perhaps in delicacy of form, silken splendour of attire, and elegance of veiny wing, they excel the other families of a tribe where elegance and splendour is the prevailing characteristic; and hence the appellations of *Virgo*, *Puella*, and *Sponsa* have been poetically applied to them; they have all, however, the predaceous habits of the tribe, but fly less swiftly, with hovering indecision, and vagabondizing mostly in low marshy situations by the sides of streams, ponds, and rivers, often reposing on aquatic plants, are very easily taken. Their larvæ feed in the water, but their bodies are more attenuated than those of their congeners with a long tail.

A. virgo (*Calepteryx virgo*, Leach) we have previously described as of singular beauty. The beep-blue of the thorax and abdomen, relieved by golden-green reflections, forms a splendid object. Wings without a real stigma, yellowish, with a deep purple stain in the centre. This is a social species, numerous squadrons being commonly seen sporting together on the reedy margins of rivers in June and July.

A. puella.—Another social species, very delicate in form, of a lovely blue, and abundant about rural ponds as soon as the spring is firmly established. Under this name Linneus placed, as varieties, several forms, very similar in shape and habit, but differing in colour. He imagined these supposed varieties intermixed with each other, which is not the case; and they now, therefore, are justly named as species. *A. sanguineum*, *A. albicans*, *A. annulare*, *A. zonatus*, *A. rufescens*, &c., are all to be found in wet places and about pools, adding by the

* Newman's *Sphinx Vespiformis*, p. 28.

† The term *grandis* seems to have been applied to several species of the *Libellulidæ*, remarkable for size and beauty; and hence a confusion has arisen difficult to unravel without having the specimens of different authors before us. Linneus, in the last edition of the *Syst. Nat.*, does not mention the colour of the abdomen; and some state it to be brown, and others spotted with green. *L. maculatissima*, of Stephens, was probably alluded to in the latter case.

beauty of their mazarine blue, sanguine green, and white tints, to the charms of those solitary spots, where, seated on the heath beneath the birchen shade, the tired Naturalist, while he rests his wearied frame, marks with pleasure the successive gleams of coloured light, as band after band of these bright creatures flutter about the pink *Polygoni* or sober brown shaggy and wiggy Bulrushes.

A. autumnalis (Lestes autumnalis, Leach) is a species that appears late in the year, with light-brown thorax and abdomen, and membranaceous wings marked with "an oblong-quadrate parallelopiped stigma." Unlike its congeners, its inconspicuous colours render it an object of no attraction, and, coming with the close of summer amidst rains and falling leaves, its manners and habits have been little attended to or regarded. There is still much to be learned respecting this interesting tribe, both as regards their larva and perfect state; and he who would publish a monograph of the British Libellulidæ in English, with accurate figures of the whole, would be rendering a very acceptable service to entomological science, since I can refer to no English publication at present, for a description of all the species, though Mr. Stephens in his splendid work has much enlarged the *Agriones*.

But while we have been thus dilating upon the *Libellulidæ*, the sun shining forth with almost insufferable radiance, warns us that however congenial his heat may be to them, it is too powerful for us, and the shade of yonder oak coppice offers a grateful shelter. A spring over the brook, a crash upon the broad leaves of the *Tussillago*, and we are within it. How deliciously cool; while not a sound breaks the stillness, and not even a vagrant fly molests us. Alone in gloomy quietude *Paris quadrifolia* lurks, with her single sable berry surrounded by the green calyx; and springing up among the dead oak leaves the curious orchideous plant *Listera nidus-avis*, can at a little distance be scarcely distinguished from them, though now opening her singular brown dead-like flowers. On, now then, to inhale the thymy fragrance of the hill top, where the minute flesh-coloured and delicate blossoms of the *Ornithopus perpusillus* couch lowly on the earth, spreading out their curious legumes in imitation of the feet of birds, and where in long trailing spikes the dark purple Milkwort *(Polygala)* spreads out her winged petals, and the blue Argus butterfly wantons among the rising brakes, just unfolding their curled-up fronds. But the Pheasant has just risen with a loud whir from the eggs she was sitting upon, and an alarmed gamekeeper who will know nothing of our "untaxed and undisputed game" is approaching. Perhaps on a future occasion, blue skies and sunny hours may urge us to be "abroad" again, gleaning delight amid the attractions of the woods and fields.

REMARKS ON THE PRESENT NOMENCLATURE OF BRITISH ORNITHOLOGY,

WITH A VIEW TO ITS REVISION AND CORRECTION.

By the Rev. F. Orpen Morris.

There is not, perhaps, any subject connected with ornithology on which so great a variety of opinions is entertained, as its nomenclature; and while all Naturalists admit that the evil should be remedied, there are scarce any two who can agree as to the course to be adopted to effect this object. One probable means of attaining the great end which we all have in view,—a *fixed* and *corrected* nomenclature of our native birds,—would be, by a deputation being appointed to meet together from various parts of the country, either at London, York, or Edinburgh, and consulting *pro* and *con* on the propriety of each name proposed or used—to establish it *finally*, or to erase it by common consent. But there is little probability—perhaps hardly any possibility—of this course being adopted: in the mean time the most reckless and gratuitous changes are prompted by the Naturalist's individual caprice. In briefly stating my own views upon this subject, as an humble individual among the multitude of ornithologists who are arising up all around us, it is far from my wish to cast any slur upon their opinions should I find it necessary to animadvert upon them. I am only desirous of breaking the ice for some one more capable than myself to cross the lake.

There are two classes of names in Natural History—generic and specific, with regard to which a difference of opinion has been, is, or may be entertained. Now, with respect to both of these, I will lay it down, *in limine*, as an absolute rule which is on no account to be deviated from, that, where alteration is *unnecessary*, it is unpardonable to alter; and that no feeling of vanity, whether felt for one's self or one's friend—no insufficient or inadequately explored ground of opinion—ought to have weight to induce any writer to change an already established name, constituted with sufficient reason. With this broad principle all will, probably, agree; but upon it there immediately arises the question, "What is a sufficient ground for alteration?" and this involves a previous question, "What is sufficient to establish a name so that it should not be altered?" Here it is that the difference of opinion begins to extend so widely; for scarcely any two Naturalists are agreed definitively on a single name. It is a singular fact that there is, probably, not a name (I mean among the better known and better investigated species, such, for example, as our British birds) which has not some one synonym at least, and most of them a great number: if, therefore, this mania is not checked, the evil will in time progressively extend to the whole catalogue of nature, and, as if her creatures were not already sufficiently varied and diversified, we shall increase

them to a tenfold number, "proceeding," as Mr. Burchell observes in *The Vicar of Wakefield*, "in a reciprocal duplicate ratio." One writer assigns a species to one genus, another to another, so that, *assuming*, for the sake of argument, that each is right, we shall ultimately have no distinction between genus and species—every species will comprise a genus, every genus will contain but one species; and thus one representative name would answer the purpose of two, with half the trouble and twice the simplicity.

With regard to generic names, Dr. Lindley says, "so impossible is it to construct generic names that will express the peculiarities of the species they represent, that I quite agree with those who think a good *unmeaning* name by far the best that can be constructed." What Dr. Lindley means by "a *good* unmeaning name" it is difficult to say; because, if the name be unmeaning, which he assumes, and in which he considers its excellence to consist, it would be well adapted for its purpose, provided it were not monstrous or ridiculous. If we admit the correctness of his opinion, which I shall discuss presently, the matter, as far as generic names are concerned, is settled at once; but if we leave this a matter of uncertainty or of choice, assuming his proposition as to the impossibility of constructing generic names which shall express the peculiarities of the species, we shall then have a difficulty to encounter with this class of names, which does not meet us with the latter, because then it might be no easy matter to determine whether alteration would be needed or not—in connection, I mean, with the fitness or unfitness of such names.

But it remains to be considered whether it is really better that the generic name should be unmeaning or not: and, first, it is evident that if a name can be selected whose meaning *can* express the peculiarities of the species, such a name is preferable to one which, having no meaning at all, can of course convey no information as to the characteristics of any individual contained under it. That it is possible for such names to be employed is manifest in the cases of genera which contain only one species; because, if a specific name can be chosen which will express the specific difference of that kind, nothing can be more easy than to express the same by some other tautologous word; or, if that is not practicable, it may be accomplished by the one name being expressed by a word of Latin, the other by a word of Greek, derivation. Again, even in the case of genera which contain more, or many more, species than one, I do not see, even here, what is *gained* by using a name which has no meaning; but rather on the contrary it appears to me that *something* is gained if the generic name be capable of expressing even a *part* of the peculiarities of its species; and I am inclined to believe that some generic name might be constructed to express even *all* of them, (without being of any immoderate length) although that is not indispensably necessary; because if part of the peculiarity is expressed by the specific name, and the other part (common, perhaps, to all the species) is expressed by the generic, the whole definition of

the bird may then be conveyed—so far, at least, as it is possible to do so briefly in any two compounded words. It need not be stated, that no generic name should be contradictory of the existing circumstances of any of its species.

But to pass on to the second class of names—the specific. In the first place, the last mentioned postulate is required also in their case, and if modern discoveries should prove an error in any existing name, that is quite sufficient reason for its alteration; at the same time all due deference should be paid to the original composer, and chief of all to Linneus; and if some portion of the original name can be retained by *alteration*, instead of an entirely new one being formed, it would in all cases, I should say, be desirable.

Secondly, the specific name should express, to the fullest possible extent, the peculiar characteristics of the bird; but if a name already existing is unobjectionable in other respects, and has no other fault than that of not conveying so clear a meaning as some other new name, I do not think that a sufficient reason for altering the original one.

Thirdly, the specific name should not be founded on a generic character; if it is, that is quite enough to authorize its alteration.

Fourthly, the same specific name should not be used twice in the same genus, nor indeed twice at all, supposing that to be possible, as I think it is; but this is a point which may admit of some doubt.

Fifthly, they ought to express some peculiarity distinct from that of any other species in the same genus; nor should they be derived from similarity of appearance to some other *species*, but rather from the habitat, food, or general appearance of the kind they represent.

Finally, I would urge that specific and generic names should be classical; and if any one think this a matter of minor importance, I would refer him to either of the classes in zoology, and then to determine whether the *unintelligible* barbarisms which will everywhere offend his eye and ear (if he has been at all used to more orthodox combinations) and the absolute jargon of such semi-græco-latino-anglio forms as there abound, do not call loudly for "reform." What are we to think, for example, of *erythrinus*, *pellucidator*, *torquilla*, *lacteator*, *minutorius*, *pectoratorius*, *hyalinata*, *frondescentiæ*, *nuficapitella*, *hyppolais*, *subbimaculella*, *punctaurella*, etc., etc., all of erroneous construction? names selected at random, belonging to a class which contains thousands of equally offending species, and hundreds which offend ten times more grossly. Unhappily, the evil has taken such extensive root, that a man must possess no ordinary degree of perseverance who would sit down to revise and correct the whole list; but something, it is evident, should be done, and I think the existence of the evil alluded to in any species to be quite a sufficient reason for its alteration. It must be understood as professed, in forming our nomenclatures at all from the Greek and Latin languages, that some propriety should be observed in the formation, and when this is

not attended to, it has not been intentional on the part of the nominator, but has arisen from inability, or carelessness, or from a wish to adopt a similarity of termination. Connected with this subject is the desirableness of a similarity of termination* in the names of the species of a genus, agreeing also, if possible, with the termination of the generic name itself; but I must decline giving my opinion whether this be feasible or not in all cases. As one great means towards effecting a classical uniformity of nomenclature, it appears to me desirable that generic names should be of Greek, and specific names of Latin, origin; this distinction has been already obscurely and insufficiently acted upon, as will appear by reference to any general catalogue, but so inadequately and imperfectly as to form only exceptions to the rule. If the rule of grammatical propriety be not attended to in the first instance, any succeeding writer whose ear may be offended by the improper expression will feel called upon to alter the erroneous name; and this, in very many cases, would cause so great an alteration in the form of the word as to add to the already too numerous list of synonyms. As an example, the first which occurs to me, and, therefore, by no means so strong a one as might be adduced, I will take the generic name of the common Brown Owl, *Aluco auctorum*. Now this word does not occur in the Latin language, but doubtless *Alucus* was intended, which may be found in all dictionaries (whether from the habits of the bird it has anything to do with "*lucus a non lucendo*" is more than I can say): of this I was not aware when I first published my *Guide to an Arrangement of British Birds*, but as soon as I discovered the error I corrected it in the *Supplement*. The English names of our birds remain last to be considered, but for the present I must leave the subject: when I resume it, I will give a synoptical table of British ornithology, formed according to the rules laid down above, as the basis of a second edition of the *Guide*, which I am now preparing.

(To be continued).

ON THE CHELIFER.

It has been generally admitted that the *Chelifer*, a species of small articulated octopod animal, does not spin a filament like their congener, the Spider. Mr. Lucas has, however, established that the *Chelifers* do possess the faculty of secreting a given number of threads, but to a smaller extent than those of the Spider, and under different circumstances of locality; which, doubtless, led to the erroneous opinion hitherto entertained by Naturalists on this subject.

* Above all things, there should be no difference of gender in the several species of a genus.

REMINISCENCES OF THE RHINE;

ORNITHOLOGICAL AND ENTOMOLOGICAL.

THE following notices, made during a recent tour on the Rhine, may not be considered altogether unworthy a place in the pages of *The Naturalist*, conceiving, as I do, that the slightest contributions, detailing facts, may assist others who, with more knowledge, perseverance, and means, may be treading the same paths, and enable them to devote their attention to particular spots in search of those favourite objects which the Naturalist, of whatever class he may be, hails with a delight unknown and incomprehensible to the non-observer of those minuter portions of the living world, who pass them by unheeded and disregarded, as unworthy of a moment's contemplation. The time comprised within the limits of these observations was a period of about six weeks, commencing from the middle of June. When leaving England, I unfortunately omitted to re-provide myself with nippers and insect nets, which I had transferred to the hands of a friend embarking on a distant and arduous expedition—an omission I was unable satisfactorily to supply in any one of the large continental towns through which I passed, and which I the more regret as I was perpetually tantalized with glances at insects which, by the rapidity of their flight, eluded capture, and only left me to guess at their character and identity, without sufficient accuracy to enable me to record them with a certainty of being correct in my opinion. But for this unfortunate deficiency, I have no hesitation in saying, that, from the numbers I occasionally saw, and the rich field of discovery afforded by certain localities, I might have added to my stock an hundred fold, and not thought it necessary to apologize for the brief reminiscences I have now in my power to bestow.

I shall commence my list of birds with the Moor Buzzard, *(Falco æruginosus)*. I can only speak positively to one specimen, seen through a telescope, as it rested immoveably, perched on the dead branch of a tree in rather a wild and open part of the country near Wiesbaden. I had watched its motions for some time as it slowly and sluggishly skimmed over the adjacent field and marsh grounds, and I have reason to suspect that some other birds of the Hawk tribe, which I had occasionally noticed soaring high in the air, were of this species, as the males, during the breeding season, which might be considered as scarcely passed, are said to elevate themselves to considerable heights, and remain suspended on the wing for a length of time.

The Kite, *(Falco milvus)*. I can well remember the time, in my boyhood, when two, three, or even more of these large and graceful birds might be seen almost any day winging their wide circles, and rising or descending in spiral flights; but the race, in England, seems rapidly to approach extinction—whether from the increased vigilance of game-keepers, increase of population, or other

unknown causes, I leave for the determination of abler Naturalists. It was, therefore, with a sort of friendly feeling, associated with years long gone by, that I again hailed the appearance of these birds—abundant as once in my own land—soaring above me when in the valleys, or below me as I looked down on that splendid view which bursts upon the sight from the battlements of the Attenschloss, or old castle of Baden Baden. In the latter case, when their airy forms, lightened up by the rays of a continental sun of which England is doomed never to know the brilliancy, were relieved by contrast with the dark shades of the pine-forest beneath, every graceful motion might be observed, the almost invisible quivering of the wing, the varied rudder-like guidance of the lengthy forkened tail—now lateral, now perpendicular—and the keen, penetrating eye, as the pirate of the woods floated slowly by on a level with the castle rock. From their numbers, it would appear that the *gardes de chasse* of the Grand Duke allowed them to exist unmolested.

The Eagle Owl, *(Strix bubo)*. The only specimen I saw was an unfortunate captive, imprisoned in a wicker cage, in the most inappropriate situation imaginable for a solitary and hermit-like tenant of the forest and the wilderness. There he stood erect, with his bright, brilliant, glaring, golden eyes—now half-opening, now closing—then, shaded by the intervention of his nictitating membrane, exposed to the full light of the noon sun, with the additional reflection of the wide sheet of waters of the Rhine immediately before him. But this, perhaps, he counted the most insignificant of the daily evils he was doomed to suffer; for his prison was within a yard or so of a public garden, filling up a vacant angle between the entrance and the front door of one of the most crowded and noisy hotels in Cologne—inviting, by its juxta position to the public path, a visit from every passer by, man, woman, or child; the former suffocating, and offending his nice sense of smell, by clouds of smoke from countless and ever-puffing cigars—the second deafening his ears by an incessant Babel of unknown tongues—and the third, in addition to cries and ejaculations, poking and annoying him with sticks or any other assailing materials within their reach: the garden, moreover, overflowing from morning till night with visitors of all nations and descriptions, for whose amusement (most assuredly not for the Eagle Owl's) a loud military band was employed morning and evening, and, when required, at intermediate times, to exercise their vacation.

It was said to have been taken in the neighbourhood, but the exact locality I could not ascertain. Poor bird! How differently situated from the last I had noticed of his species on the Continent. At midnight, in one of the wildest gorges and dark forests of the Pyrenees, impinging on the dreary flanks of the Maladitta, I was roused from a reverie by a startling and unearthly shriek. It was the cry of the Eagle Owl, and I shall never forget it.

Butcher Bird, *(Lanius excubitor)*. Never having seen this species alive and

at liberty in England, I was at first rather at a loss to ascertain the name of a bird which allowed me frequently to approach within a few yards, as it sat on the projecting twig of a bush in the vallies of the hilly district of Baden Baden. I can testify to the power assigned to it by some Naturalists, of varying its notes, or rather imitating those of other birds. Not exactly, indeed; for my first acquaintance with the Butcher bird was occasioned by hearing notes not entirely familiar to me, though much resembling those of the Stonechat. Following the sound, I soon discovered the utterer, and while listening, to my surprise, the original notes were discarded and others adopted of a softer and more melodious character, never, however, prolonged to any thing like a continuous song. Its grave ash coloured garb with its peculiar black patch on the cheek, soon convinced me that my unknown friend was the Butcher bird, that petty tyrant of its neighbourhood, carrying on incessant warfare and wanton waste of life amongst the small fry of the passerine order, and whose war-cry was wont to set a host of minor warblers to flight. When contemplating the plump, comfortable, tame-looking bird before me, its placid look and mild demeanour beaming, as far as externals might be depended on, with benevolence and good will to every songster of the grove, I could scarcely persuade myself that its character had not been grossly libelled, and that such a picture of *bonhomie* was not, in truth, the friend and guardian of his lesser feathered brethren. But that his tender mercies were cruel was a fact too firmly established to admit of doubt; and as he flitted away to a distant spray, I was left alone to meditate on the truth of the adage, applicable to birds as well as men, *nimium ne crede colori.*

The Golden Oriole, *(Oriolus Galbula).* I might for a moment have had my doubts as to the specific identity of the last mentioned bird, but here there can be neither error nor hesitation. On the least observing, this concentrated essence of golden plumage obtrudes itself; and who that has ever once seen this passing meteor of brightness, even on the wing, can doubt of its being the Golden Oriole. I saw but one in a state of freedom; its presence adding one more item towards perfection in the lovely entrance of the valley leading to the mineral springs of Tonestein, and the solitary lake and convent in the circuitous route between Brühl and Andernach. I could not find that they were common anywhere; if, indeed, plentifully distributed over the country, they ought to be much oftener seen, as they are in the habit of frequenting orchards or gardens; being, like our Jays, sad thieves when the ripened cherry-trees tempt them to become purloiners. I suspect, however, that they are locally gregarious; for a French Naturalist once assured me that, in his roamings through the forests of his district, months often passed without his falling in with a single bird; whereas, at other times, not limited to particular seasons, he occasionally found them in comparative abundance. In the public market at Cologne I saw a pair of young ones in nearly full plumage, for which I was asked the moderate sum of three shillings. Had my steps been bending downwards on the Rhine, instead of upwards with a long journey before

me, assuredly these two birds should at this moment have formed a part and parcel of my domestic establishment, and you, Mr. Editor, might have haply been gratified with a more minute detail of the habits of this beautiful portion of the feathered creation.

Storks, *(Ciconia)*. Who that has traversed Holland, Belgium, &c., has has not exclaimed, as they first caught sight of these birds, "Look at the Storks!" as one or two, statue-like, motionless as marble, balanced on a single slender leg, presented themselves to view, perched on the summit of a picturesque chimney top, like a grotesque colume whose capital was an overhanging bush of thorns and twigs. There they stand, with the addition, if later in the season, of some two, three, or four queer-looking, puffy, amorphous-looking things by them, which, but for projecting beaks ever and anon gaping and shutting with a sort of clacking sound, might be taken for an accumulation of cotton fluffs. Should only one of these immoveable sentinels be on its post, the spectator will do well to continue on the watch; for in a very few minutes his attention will be drawn to the arrival of a partner in the nursery proceedings of the chimney top, slowly and gracefully gliding through the air, and taking position within neck's reach of the puff-bodied offspring. Pausing for a moment, the fresh comer's neck is stretched forth, and the head bent at a right angle, so as to place the beak in a perpendicular position between the mandibles of one of the expectant candidates for the produce of the parental craw. Another moment's pause, and then the perpendicular beak, opening with a sort of spasmodic jerk, disgorges the result of its forage in their fens and marshes, with unerring aim, down the throat of the recipient young one, which, with quivering extacy, gulps down the semi-digested mass of frogs, minnows, or other gelatinous materials provided for the repast; which being finished, all the parties concerned resume, for a time, their motionless and noiseless attitude. They look the pictures of meditation; and who shall say that those grave heads are not dwelling on subjects surpassing man's understanding? There is one who has given them a power of thought and discrimination unpossessed and unintelligible to us, by which, with a truth which sets the skill of the most experienced navigator at defiance, the Stork learneth its appointed time, and when and how to wend its way to other regions destined to be its residence for the remainder of the year. Were these feathered philosophers allowed utterance but for an hour, how much might they disclose of the instinctive machinery whereby the Creator provides for the well-being of all his living works! and with what admiration should we be made partakers of this additional development of the expansive agency of Omnipotence!

I shall conclude my few ornithological remarks by alluding to the small number of birds, generally speaking, usually met with on the continent. These observations have been forced upon me repeatedly in the many excursions I have, at various times, made in all directions. Magpies, Jays, and even Crows, are, in

many districts, almost rarities, for miles and miles may be often passed without seeing one. The lesser birds are, also, in like manner, comparatively scarce; Sparrows, which, whether in London streets or our rural lanes, meet us at every step, are by no means plentiful on the other side the water; but in many parts, and I may instance Baden and environs in particular, Chaffinches appear not only to occupy their place, but assume their bold character. For one Sparrow I have counted twenty or more Chaffinches; and those who, like myself, may have preferred breakfasting under the shady trees in the beautiful grounds adjacent to the castle at Heidelberg to the common room of the hotels in the town below, will bear me out in testifying to the boldness of the *Motacilla cœlebs*. I have seen them repeatedly not only contend with each other for the crumbs within a yard of my feet, but even perch on the table and carry off the pieces of bread I placed within their reach.

Before finally dismissing the subject of birds, I cannot help referring to the admirable collection in the museums at Leyden and Bonn—but more especially the former—both excellent in all respects. I must, however, confine myself to the case in point, and refer to the unrivalled collection of ornithological skeletons, set up and prepared in the most perfect manner; and I am induced to allude to it more particularly, with a hope that this highly important branch of Natural History may be more attended to in our own museums. The comparative anatomy of birds is in itself a subject of the highest interest on every account, and is entitled, I should venture, with all deference, to assert, to at least as much, if not more, attention than the outward form and garb; and yet in our own country there is scarcely a museum where the slightest is paid. Probably the difficulty of preparing skeletons may have acted as an obstacle. I am perfectly aware of the nicety required and the disappointments that too frequently ensue; and perhaps, Mr. Editor, I cannot do better than to entreat you to call upon your friends and readers, who are competent to the task, to afford, through the medium of the pages of *The Naturalist*, the best modes of making these preparations. What an invaluable addition would it be to our practical knowledge, if chemistry could point out any corrosive substance which would rapidly decompose the flesh without destroying the ligatures by which the bones are held together!

[*To be continued.*]

OBSERVATIONS ON THE BRITISH SPECIES OF MYOSOTIS.

By Robert J. N. Streeten, M. D.

In the *Species Plantarum* of Linneus four species of the genus *Myosotis* are enumerated. Two of these are now referred to *Echinospermum;* of the remaining two, the *Myosotis scorpioides* is the only one with which we are, at present, concerned. Under this name the immortal founder of systematic botany—for until his time the science was little more than a *rudis indigestaque moles*, a confused mass of observations beyond the powers of the most retentive memory to retain—appears to have included several of the now recognized species, three of which he indeed characterizes as varieties. Of these varieties the first, α, is the *Myosotis arvensis* of the Swedish botanists and of Hooker's *British Flora;* the second, β, is the *M. palustris* of modern authors, the true Forget-me-not; and the third, γ, is the *M. versicolor* of Lehman and others. Our countryman, Ray, had already recognized these varieties, and Dillenius had added another, the *Myosotis scorpioides latifolia hirsuta (M. sylvatica* of Hooker's *British Flora)*, of which he gives a figure. This last, however, appears to have been first admitted as a distinct species of the flora of this country by Sir James Smith, in his *English Flora*, under the name of *M. intermedia*, although he erroneously refers the plant of Dillenius to his *M. sylvatica*, which is the *M. arvensis* of the *British Flora;* Hudson had previously admitted it as a variety of *M. scorpioides* in his *Flora Anglica*, in addition to those described in the *Species Plantarum*. Sir James Smith and Sir William J. Hooker have not only recognized the preceding as species but have admitted three new ones—the *M. alpestris* of Schmidt, the *M. cæspitosa* of Schultz (?) and the *M. collina* of Hoffman; which last is the *M. arvensis* of the *English Flora*, although with some erroneous synonyms. To these may, perhaps, be added the *M. repens* of Don, which is admitted as a distinct species by some foreign botanists, although it has hitherto been considered, by British authors, as a variety merely of *M. palustris*.

Having made these preliminary observations, I proceed now to give the characters of the genus and species, with such remarks as may be required for their further elucidation.

Myosotis, *Linn.*—Scorpion Grass.

Linnean Class, *Pentandria*—Order, *Monogynia*.

Natural Order, *Borragineæ*, Jussieu.

Gen. Char.—*Calyx* five-cleft or five-toothed. *Corolla* salver-shaped, with a short tube; the lobes obtuse, emarginate; the mouth half-closed, with short rounded scales. *Nuts* smooth, perforated at the base.

1. *M. palustris*, "Kiphoff," *(Great Water Scorpion Grass. Forget-me-not).* Calyx with straight appressed bristles; when in fruit campanulate, with short, broad, spreading teeth, shorter than the divergent pedicels. Limb of the corolla flat, longer than the tube. Pubescence of the stem spreading. Racemes leafless.

M. palustris, *Eng. Bot.*, t. 1973; With., ed. 3, v. ii., p. 225; Smith, *Engl. Fl.*, v. i., p. 249; Borr. in Hook. *Br. Fl.*, ed. 3, p. 101. *M. scorpioides*, β, Linn., *Sp. Plant.*, p. 188. *M. scorpioides*, δ, Huds., p. 78. *M. scorpioides palustris*, Raii *Syn.*, p. 229.

Ditches and sides of rivers; common. Perennial; flowers from June to September. *Roots* long and creeping. *Herb* bright green. *Stems* from twelve to eighteen inches high, ascending, branched, leafy, clothed with short, spreading, bristly hairs. *Leaves* sessile, elliptic-oblong, rough, with appressed bristles. *Flowers* in long leafless clusters, very beautiful, of a bright blue colour and enamelled appearance. This is the true Forget-me-not; the *Vergiss me nicht* of the Germans. The elegance and enamelled brilliancy of its soft blue flowers has rendered this little plant a general favourite, and drawn to it the attention of the poet and the moralist. The legend to which it owes its popular name is not generally known, and may, therefore, not be unacceptable here. A young German maiden, walking with her lover by the side of a brook or stream, whose sparkling waters were rolling rapidly along its course, observed the flowers on the opposite bank. Attracted by their beauty, she expressed a wish for them; when the young man instantly plunged into the stream, the deceitful clearness of whose waters disguised the depth. He with difficulty reached the opposite bank so as to obtain the flowers, but was immediately carried away by the force of the current. Hastily throwing them to his beloved, and exclaiming "*Vergiss me nicht! Vergiss me nicht!*"—Forget-me-not! Forget-me-not!—he sunk to rise no more. The memory of the unfortunate youth, and the faithfulness of the disconsolate girl, have ever since been preserved in the name of the flowers, and the Forget-me-not has, from this period, been considered as the emblem of constancy and truth—of friendship and love. The following lines, expressive of this emblematical signification, are a nearly literal translation of a stanza in a very beautiful poem called *Die Sprache der Blumen*, or the language of flowers:

"Anxious and care-worn is thy lot?
Behold yon floweret in the murmuring stream,
Friendly, and light, and blue, its star-like gleam:
Love names it the Forget-me-not.
Would'st thou thy life not waste in sorrow vain,
With holy hands the truth thou wilt retain."†

† From the German of Schreiber.

2. *M. repens*, Don, MSS., *(Creeping Scorpion Grass)*. *M. palustris*, β, Hook., *Scot.*, p. 67.

I am unable to give the character of this plant, as I have had no opportunity of seeing specimens, or of consulting a description; the short, broad teeth of the calyx are, however, so constant in *M. palustris*, and the value of the characters derived from the calyx in this genus so generally admitted, that we can scarcely refuse to adopt the suggestions which have been thrown out respecting this plant, without, at the same time, invalidating almost the only distinctive marks which we have for discriminating the species of *Myosotis* in general. Mr. Borrer observes—"Perhaps *M. repens*, Don, may be specifically distinguished by the deeply-divided calyx (which I pointed out long ago to Sir J. E. Smith) and the copious pubescence of that part. Its racemes are not always, although very often, leafy."—Hook. *Br. Fl.*, ed. 3, p. 101. And in a note it is stated—"Mr. Backhouse observes to me that the bracteas among the pedicels are constant; the laciniæ of the calyx narrower and shorter (?) than in *M. palustris*, full half as long as the calyx, and the whole plant smaller: the calyx is nerved. It flowers earlier by two months in the higher parts of Yorkshire than *M. palustris* does in the lower." It is found in moist situations in Scotland *(Messrs. G. and D. Don)* and in the higher parts of Yorkshire *(Mr. Backhouse)*.

3. *M. lingulata*, Lehman? *(Lesser Water Scorpion Grass)*. Calyx with straight appressed bristles; when in fruit campanulate, with broad spreading teeth, shorter than the divergent pedicels. Limb of the corolla concave, equalling the tube. Pubescence of the stem appressed. Racemes leafy.

M. lingulata, Lehm., *Asperif.*, p. 110? *M. cæspitosa*, Schultz? Smith, *Engl. Fl.*, v. i., p. 450; *Engl. Bot.*, t. 2661; Borr. in Hook. *Br. Fl.*, ed. 3, p. 102.

Ditches and watery places; common. Annual or biennial; flowers from May to August. *Root* fibrous. *Herb* lax, pale green. *Stems* about a foot high, throwing out fibres from the lower joints, ascending, slender, leafy. *Leaves* shorter and somewhat broader than those of *M. palustris*. *Flowers* smaller. *Calyx* more deeply divided. The specific name *cæspitosa* is so singularly inappropriate that I cannot but suppose there must be some error in quoting Schultz for this plant under that name, although I have not the means of satisfying myself upon this point. At all events, Lehman's name of *M. lingulata*, if, indeed, it applies to the same species, is not only more applicable, but has the claim of priority in respect of publication. I have foreign specimens of a plant which may possibly be the *M. cæspitosa* of Schultz; of which the following are the characters. Calyx with straight appressed bristles. When in fruit campanulate with lanceolate teeth, equalling the recurved pedicels. Limb of the corolla flat, longer than the tube. Pubescence of the stem appressed. Racemes leafless. The habit is that of *M. palustris* but the whole plant is much smaller, my specimens being

from two to four inches high. *Root* of several long fibres. *Stems* erect, apparently tufted. The *flowers* are equal in size and beauty to those of *M. palustris*, but the pedicels are recurved and rather shorter than the calyx which is nearly half five-cleft and its segments narrower and deeper than those of *M. palustris*.

4. *M. alpestris*, Schmidt, *(Rock Scorpion Grass.)* Calyx with straight bristles, the lowermost incurved, deeply five-cleft, when in fruit campanulate, straight, shorter than the slightly spreading pedicels. Limb of the corolla flat, longer than the tube. Root-leaves on long stalks. Racemes leafless.

M. alpestris, Hook. *Scot.*, p. 66.; Smith, *Engl. Fl.*, v. 1., p. 252.; Borr. in Hook., *Br. Fl.*, p. 102. *M. rupicola*, *Engl. Bot.*, t. 2559.

Highlands of Scotland, on the Breadalbane range. Perennial; flowers in July and August. *Root* fibrous. *Stems* from four to six inches high, leafy, clothed with spreading hairs. *Flowers* large, of a brilliant blue, as beautiful as those of *M. palustris*.

5. *M. sylvatica*, Hoffm., *(Wood Scorpion Grass)*. Calyx with spreading hooked bristles, deeply five-cleft, when in fruit ovate with closely converging teeth, shorter than the divergent pedicels. Limb of the corolla flat, longer than the tube. Root-leaves on short dilated stalks. Racemes leafless.

M. sylvatica, Hook. *Scot.*, p. 66. Borr. in Hook. *Br. Fl.*, ed. 3, p. 103. *M. intermedia*, Smith, *Engl. Fl.*, v. 1, p. 250, (excl. syn.) *M. scorpioides*, γ, Huds., p. 78. *M. scorpioides latifolia hirsuta*, Dill. in Raii *Syn.*, p. 229. t. 9., f. 2.

Dry shady places; Essex and Kent, *Dillenius*; Norfolk, *Rev. R. B. Francis;* woods; North of England; and Lowlands of Scotland, *Sir W. J. Hooker*. Perennial; flowers in June and July. *Herb* of a dull green and covered with lax hairs. *Leaves* oblong, broader than those of *M. arvensis*. *Flowers* nearly as large as those of *M. palustris*. Mr. Borrer observes, various authors and cultivators pronounce this plant perennial, (Fries says "perennans," Wahlenberg "subperennans,") whilst the following species *(M. arvensis*, Hoffm.) is indubitably annual, between which and the present individual I can point out no other distinctive characters more satisfactory than the somewhat more deeply divided calyx of *M. sylvatica*, its shorter and less remarkably hooked bristles, the broader and flatter corolla, and the greater size of the whole plant." (Hooker's *British Flora*, ed. 3., p. 103.) Sir J. Smith, in the *English Flora*, has strangely confounded the synonyms of these two plants and certainly misapplied that of Dillenius to his *M. sylvatica*, which is *M. arvensis* of the *British Flora*, but there is no ambiguity either in the description of his *M. intermedia* or in the character which he assigns to it. They have obviously been drawn up from this plant, *M. sylvatica*, and there can be no hesitation, therefore, in referring *M. intermedia* of the *English Flora* here. I am inclined to think that this species is by no means common.

6. *M. arvensis*, Hoffm., *(Field Scorpion Grass)*. Calyx with spreading hooked bristles, half five-cleft, when in fruit ovate with closely converging teeth, shorter than the divergent pedicels. Limb of the corolla concave, equalling the tube. Racemes with a leaf at the base.

M. arvensis, Hook. *Scot.*, p. 67, (excl. syn.) ; *Engl. Bot.*, t. 2629 ; Borr. in Hook. *Brit. Fl.*, ed. 3, p. 103. *M. sylvatica*, Smith, *Engl. Fl.*, v. i., p. 251, (excl. syn.) ? *M. scorpioides*, *α*, Linn., *Sp. Plant.*, p. 188 ; Huds. p. 78. *M. scorpioides hirsuta*, Raii *Syn.*, p. 229.

In fields, gardens, cultivated places, hedge-banks, &c. Very common. Annual ; flowers from May to September. *Root* fibrous. *Herb* of a rather pale green, clothed with lax, spreading, soft hairs. *Stems* from 12 or 18 inches to 2 feet high, branched above, leafy. *Leaves* oblong, the lower ones and root-leaves on dilated stalks. *Racemes* terminal, usually with a leaf at the base, and axillary, the terminal raceme forked, frequently with one flower situated exactly in the axil of the fork. *Flowers* smaller than in any of the preceding. This is, according to Fries, the "ipsissimam *M. arvensem*, Linn.;" and, as Mr. Borrer observes, "the only one usually found in cultivated fields." Sir J. Smith's *M. arvensis* is probably the *M. collina*, Hoffm. ; although he appears to have had very indistinct ideas respecting this species, as well as the present. Indeed it is difficult to decide what his *M. sylvatica* may have been, and the description would seem to have been drawn up partly from this and partly from the preceding. Withering's *M. arvensis* refers especially to the present species, but includes, also, the preceding and *M. versicolor*, and probably, also, the *M. collina* of the *British Flora*. The *M. arvensis* is certainly the most common of our British species, and abounds along the borders of cornfields, under hedge-rows, &c., attracting attention by its long clusters of pretty blue star-like flowers, which, although neither so conspicuous nor so elegant as those of the true Forget-me-not, are yet sufficiently so to deserve the notice of the admirer of Flora's treasures. A fairy bouquet of jewels of no ordinary beauty may be formed from these sapphire-like flowerets, in conjunction with the small pink or amathystine rosettes of *Geranium molle* or *Arenaria rubra*, the pure-white pearly stars of many rays of *Stellaria graminea*, and the little golden Maltese crosses of *Galium cruciatum*.

7. *M. collina*, Hoffm., *(Early Scorpion Grass)*. Calyx with spreading hooked bristles, when in fruit ventricose open, equalling the recurved pedicels. Limb of the corolla concave, shorter than the tube. Raceme usually with one remote flower near the base.

M. collina, Borr. in Hook. *Br. Fl.*, ed. 3, p. 103. *M. arvensis*, *Engl. Bot.*, t. 2558 ; Smith, *Eng. Fl.*, v. i., p. 252, (excl. syn.).

Sandy banks, walls, and dry places. Not common. Near Edinburgh, *Dr. Greville ;* near Hagley, Worcestershire. Annual ; flowers April and May. *Stems* from two to six inches high, clothed, as well as the leaves, with open silky

pubescence. *Flowers* blue, very small, in simple racemes; the lowermost flower usually remote, near the base of the raceme; sometimes, though rarely, in the axil of the leaf from which it springs. Its flower-stalks are remarkably recurved when in fruit, in my specimens. It is probable that this species, in consequence of its early flowering and fugacious nature, may frequently escape notice; but I am convinced that it is not a common plant, as the above station on a sand-bank near Hagley, is the only one in which I have hitherto detected it. The smaller varieties of *M. arvensis* are probably sometimes confounded with this species; and judging from the list of synonymes in the *English Flora* attached to the *M. arvensis* of its lamented author, which is really this plant, Sir James Smith does not appear to have been exempt from this error.

8. *M. versicolor*, Lehm., *(Yellow and Blue Scorpion Grass)*. Calyx with spreading hooked bristles, when in fruit oblong, longer than the almost erect pedicels. Limb of the corolla concave, shorter than the exserted tube.

M. versicolor, *Eng. Bot.*, t. 2558; Hook. *Scot.*, p. 67; Smith, *Eng. Fl.*, v. i., p. 253; Borr. in Hook. *Br. Fl.*, ed. 3, p. 104. *M. scorpioides*, β, Huds., p. 78. *M. scorpioides*, γ, Linn., *Sp. Plant.*, p. 189. *M. scorpioides hirta minor*, Raii *Syn.*, p. 229.

Dry sandy fields and pastures, on walls, in wet meadows, &c. Common. Annual; flowers from April to June. *Root* fibrous. *Stem* four to six inches high, branching from the base, clothed with lax whitish hairs, leafy. *Flowers* upon long-stalked racemes, changing colour from yellow to blue as the spirally-curved summit of the stalk is unfolded. The *calyx* is very deeply cleft, more than three-fourths of its length, and by no means closed when in fruit, as stated in the *British Flora*. The succession of blue and yellow flowers is a very curious fact, and one which deserves more investigation than it has yet received; as the change of colour from yellow to blue is not easily accounted for. There can, however, be little doubt that it really occurs, as an attentive examination of the flowers shews that the upper or younger ones, as Mr. Borrer has remarked, are always yellow, while the lower or older ones are as constantly blue. This plant attains a considerable elevation: I have found it growing luxuriantly on the North Hill, Malvern, near the summit, (which is about 1400 feet above the level of the sea), and also on the top of Ankerdyne Hill. But, notwithstanding the high authority of the authors of the *English* and *British Floras*, I am disposed to think that it is not generally of very common occurrence. It is certainly not frequent in the neighbourhood of Worcester; and the late Mr. Purton, in his excellent *Midland Flora*, marks it as rare, giving only the habitat on the Malvern Hills, where I have myself found it.

The various colours of the flowers and other parts of plants have been supposed to be owing to variations in the degree of oxydation. Light obviously exerts great influence in developing colours: thus the leaves of plants

may be blanched by excluding them from this agent. Lettuces, endive, celery, kale, and other vegetables, are prepared for the table by preventing the access of light, as in the operations of tying up the leaves, earthing the roots, or covering the whole plant with opaque earthen pots. The bleached pallid appearance of greenhouse plants which have been kept in situations where the light has not been sufficiently admitted, arises, also, from the same cause; while the brilliancy and intensity of the colours of flowers in tropical and alpine countries is owing to the intensity of the light and the clearness of the atmosphere in such situations. Exposure to light, therefore, tends to develop the colours of plants; but in what way the effect is produced is not so evident. Whether it arises from any chemical change in the state of oxydation, or from any physical variation in the optical properties of the vegetable tissues from their more vigorous growth and nutrition when under the stimulus of this powerful and pervading influence, does not seem clear. The green parts of plants, especially the leaves, exhale oxygen, as is well known, on exposure to the light of the sun; while the coloured parts, such as the flowers, more frequently exhale hydrogen and azote. By the action of alkalies, also, the red colour of many flowers becomes, in succession, blue, green, and ultimately even yellow—a change which may possibly be owing to their acting as deoxydizing principles. The change in the blossoms of the *Myosotis versicolor* is from yellow to blue, and ultimately to faded purple or red—that is under exposure to the light, which, as it induces the exhalation of hydrogen and azote from the coloured parts, tends, therefore to the accumulation of oxygen in the same parts, the yellow passes successively into blue and a faded purple or pink. I have, however, never observed any approach to the intermediate stage of green between the yellow and the blue flowerets of *M. versicolor*. The investigation of the causes to which the colours of flowers are owing is very important, both in relation to vegetable physiology and to optics; and this little plant seems well calculated, when submitted to judicious experiments, to afford valuable information to the inquirer into these interesting arcana of natural and physical science.

Boa Constrictors.—A recent traveller in South America, journeying from Lima to Vara, in the Brazils, observed that the inhabitants of the latter place take great pleasure in rearing the *Boa Constrictor (quere* Python Tigris); and that Mr. Smith, the North American consul, possesses several for the purpose of destroying Rats, with which those parts are terribly infested. These creatures sometimes attain the length of eighteen feet, and the colours of their skin are brilliant beyond description, particularly after moulting. They have never been known to injure any one, and even exhibit local attachment to places and persons.

PHOSPHORESCENT APPEARANCE OF THE SEA.

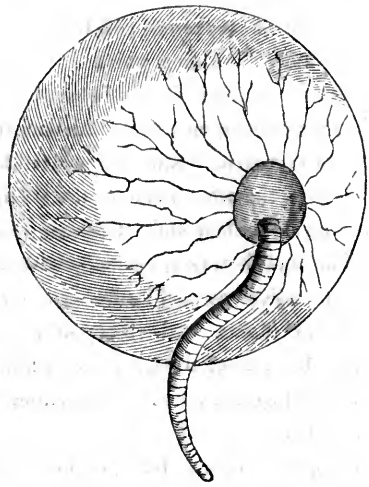
By C. Dubois, F. G. S.

At certain seasons of the year particularly, the sea presents, at night, a luminous appearance—small sparks being, as it were, constantly emitted in quick succession, similar to an electrical series. Naturalists have long been undetermined as to the precise cause of this pleasing phenomenon; but their explanations are sometimes contradictory, and often doubtful. By some it was ascribed to electricity or magnetism; by others to the putrescent state of vegetable or animal matter floating on the surface of the water; others, much nearer the truth, attributed the phosphorescent appearance of the sea to myriads of luminous animalculæ; and there is nothing to prevent the conclusion that these different opinions have, when united, explained the principal features of the phenomenon; but the error lies in exclusively ascribing it to either.

The luminosity of the sea is evidently due, in many instances, to the presence of excessively numerous animalculæ, possessing the property of throwing out small bright sparks while they are alive and in a state of activity: it may, also, occur that the vegetable and animal rejectimenta exhibit a phosphorescent light; other simple mucous substances, incapable of definition, may do the like; and various mysterious chemical combinations may also contribute to the same effect: but, generally speaking, the luminous brilliancy of the sea is most frequently occasioned by marine animalia. Animal phosphorescence is either general or particular: in the latter case, it is produced by animals of a greater or smaller structure, and not numerous in a circumscribed space: these are polypi, radiata, medusæ, pyrsomæ, biphoræ, and some species of fishes, &c. The general phosphorescence of the sea—which always extends over a far greater limit—must, therefore, be attributed to myriads of microscopic animals. Péron, Eschscholtz, Quoy, Gaimard, Mertens, Surriray, Lesson, and many other distinguished Naturalists, have described these animals, and observed that they lose their luminous property after death, or in consequence of a loss of activity. In hot and tempestuous weather, these animals are most abundantly seen, and their phosphorescence more considerable. It is easy to convince ourselves that to their existence the luminous appearance of the sea, in certain situations, can alone be attributed; since a quantity of water exhibits light in a receptacle, so long as it contains living animals of that species, and it ceases to be so if they are deprived of life by the insertion of a tin wire into the water.

In the ocean, and on the French coasts, the animal producing this phenomenon is named, by M. Surriray, *Noctiluca miliaris;* and we here give its portrait, immensely magnified, since its natural size does not exceed 1-1000th of an inch.

It belongs to a group of the *actinozoaria*, or radiated animals; and De Blainville places it in the *Diphydæ*.

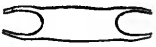


The *Noctiluca miliaris*, here figured, is of a globular form, to which is attached a peduncle or tail-like appendage; and its interior exhibits, through the pellicle, numerous radiating vessels emanating from an ellipitical centre, placed nearer to one side of the circle than the other. During life, these appear to dilate and expand; and the phosphorescent property lies in them, but is only exhibited during a state of activity, when their motion is too rapid to be observed, resembling a quick pulsation. The whole globular mass being propelled in every direction by a jerking motion of the pedunculated stem, the extreme difficulty of catching sight of one of these little restless creatures in a humour to be minutely examined, prevents a more detailed description; but we beg leave to call the attention of Naturalists so situated as to have frequent opportunities of investigating their structure, in order to elucidate more clearly the singular natural phenomenon produced by this wonderful Marine Illumination Company.

A Correspondent is desirous of ascertaining the best existing catalogues in the various departments of Natural History. He wishes to know from what works, whether professedly catalogues or not, the most comprehensive lists may be obtained of the different classes of animated nature, by adding which together, the amount of the grand total might be roughly guessed at—as far, at least, as our present confessedly scanty knowledge of the hosts by which we are surrounded would allow us.

OVA OF THE SKATE-FISH.

HAVING discovered that a peculiar-looking substance, apparently the seed of some kind of sea-weed, was, in fact, the egg of the Skate-fish, I was induced to examine the same more minutely: in doing which I made the following observations:—

This egg is of a pale sea-green colour, becoming darker with age; in form it is a quadrangle, having at each corner long tuberous projections running parallel to each other from the narrow side of the shell, thus:  These horn-like tubes are open at their ends, through which the sea-water is admitted. The shell is tough, elastic, and extremely difficult to open—indeed not easily with the assistance of a knife—and very liable to shrink when laid to dry, unless it is first filled with sand. They differ much in size, depending, I am inclined to believe, on the size of the fish. On some shells I have observed sea-weed growing—an interesting fact, as it shows either the rapidity with which sea-weed will spring up, or the length of time before the fish is perfect; perhaps both, for one fish, which appeared on the verge of breaking the shell, I kept for examination, and it was one month before it assumed a perfect state.

As it would be tedious to mention the state of perfection the fish was found in, I will confine myself to the following observations:—

On opening the shell, a substance, having motion, is found, but so little formed as scarcely to be ascertained what it is. It is an embryo fish, attached by a tough sinuous substance* (rather difficult to cut in two) to the upper surface of something of the size and shape of a Sparrow's egg. Though in its earliest stage a person may conjecture what it is, yet, from its shapeless appearance, no one can speak with any certainty. It has a pale, watery appearance, and moves its tail with difficulty, as though it was a piece of sinew—a motion it possesses before it is spawned.† The pale colour becomes red, until it has the appearance of raw flesh, owing to the skin being transparent; it afterwards has the outward resemblance of a full-grown Skate.

The egg is covered with innumerable blood-vessels branching from one main trunk, which takes its rise from underneath the sinew by which the fish is attached to it, and running in parallel directions down the sides, are ultimately united to another large blood-vessel which runs into the same place from which the former main trunk sprung. From this I am inclined to suppose that the former is an artery conveying the nutritious blood through the egg; having performed that

* This substance I had to cut with a penknife.

† This statement appears correct; for one of these fish (in its earliest stage), having died, was cut from the egg to examine the latter, and then put aside: it soon dried up and became perfectly flat.

function, it is afterwards carried back by the latter to the place from which it sprung, where, after undergoing some process, it becomes nutritious, and again passes through the artery for the supply of the egg, &c. As the fish increases in size the egg decreases, the blood-vessels at length disappear, and the egg is ultimately reduced to the size of a pea, when it seems drawn up in the middle, and at length disappears, it being absorbed by that stomach which had been gradually forming from its humour. This stomach bears such a close resemblance to the colour of the egg, that, when half-formed, there at first sight appears to be two eggs.

On this egg being pricked, a liquid flows out having the appearance of humour; on examining the outward covering after pressing out the liquor, the blood vessels appear to be inclosed in it. If the liquor is suffered to dry it will form a soft gluey substance, similar to that of the yolk of a Fowl's egg.

It appears that the liquor from this egg supports and nourishes the fish in its embryo state, and afterwards performs one of the principal functions of its existence; probably the same function as the yolk of a Fowl's egg, *i. e.*, to assisting the chicken forming in its shell, and ultimately form the entrails.

One fish taken from the shell in an early stage of its existence lived but a few hours. Another, probably advanced three or four days, and a third, apparently about to break its shell in about as many days, lived and came to perfection a month or five weeks after, the eye, though closed, being capable of motion all the time.*

It would, therefore, seem that life, or rather motion, commences at an early period of its embryo state; and probably about the time, or a little before, the egg is absorbed, the fish is perfect in all its parts, and capable of seeking its own nourishment; and when the egg is entirely absorbed hunger compels it to force its way out of the shell in search of food.†

A.

* The eye, when formed, appears inclined to open, but is prevented by long, narrow slips of skin-like eye-lashes, but united at their ends.

† From the number of sea-shells left by the tides about this time, it appears the ova come to perfection about the time shell-fish cast their shells; so that during this early stage of their existence providence directs they shall meet with food to support them in their state of weakness.

THE TURNIP FLY (ATHALIA SPINARUM).

SOME of your readers may not possibly be subscribers to Mr. Curtis's invaluable *British Entomology;* in which case they will not have seen the useful information his last number contains relative to the Turnip Fly, that pest of farmers. Respecting this insect there is so little known, even among those who are in other respects well-informed, that I strongly recommend an attentive perusal of Mr. Curtis's interesting description. It is not the fly itself that is the author of the damage, at least not in his winged state; he is, "*ut dicam,*" comparatively innocent: but it is his former self—if I may be excused the Hibernicism—to which he is now "unlike, Oh, how unlike!" that causes all the mischief. Having emerged from his "durance vile" he displays a fine yellow body; but when he was a grovelling worm of the earth he was clad in sable robes—in mourning, if you will forgive the flight, for the destruction and havoc he was spreading all around him. Then he was confined to the turnip fields; and if the farmers had only possessed the information which Mr. Curtis has now given, they might have learned a simple and most easy method of getting rid of their countless enemies. If a hurdle is drawn lightly over the field it will brush them off the leaves, and once on the ground they are in their graves; they cannot make their way over the soil, or ever again ascend the stalk. But now that they are invested with wings they roam wherever their fancy leads them, having first probably deposited their eggs on the turnips, which is the only food on which their larvæ can live, as they will not even touch the swedes. Whether the perfect insect affects any particular plant does not appear to be satisfactorily ascertained; possibly not. Having been so long confined, in the larvæ state, to one kind of food (from its incapacity to search for any other), it now probably seeks for a greater variety of delicacies than formerly fell to his lot to enjoy. The winged insect appears as early as March, and is visible to the middle of October; the larvæ continue to the same time from about the middle of August. Ducks are particularly fond of the caterpillar, which is most plentiful the beginning of September, and if turned into the fields will eat them with avidity. The larvæ abound much more in some localities than others, but are said to have been more abundant this summer than they have been for the last thirty years. In very many fields the leaves of the turnips have withered and turned yellow; in some instances causing the entire destruction of the root, in others producing an unhealthy appearance. This occurred previous to the plants having attained their full growth, and they did not afterwards make much advance in size; the blight was upon them, and they looked as if they had been scorched by the hot wind of the desert. Some farmers attributed this destruction to the black caterpillar of which I have been speaking, though I think they are mistaken, as they only eat the fresh leaves, and would find no sustenance in the withered ones; but the secret, in my opinion, is, that the season which is favourable to the

appearance of the insect, and draws it forth from its long captivity, is uncongenial to the growth of the plant, which consequently fades or dies. Other agriculturists attribute the destruction to the *larvæ* of a plague of flies with which several parts of this county have lately been visited; but this I consider an erroneous supposition.

FRANCIS ORPEN MORRIS.

ON THE NESTS OF BIRDS.

IN the last number of *The Naturalist* an intelligent correspondent at Campsall Hall, gives an account of a most curious instance of eccentric nest-building, viz., "a Wren's nest in that of the Chimney Swallow," and invites the readers of *The Naturalist* to bring forward any parallel instances. I regret that he omitted to state in what situation the nest of the Swallow was built, as these delightful summer visitors will sometimes indulge a freak and choose a place of all others, to our ideas, the most unlikely. The handles of a pair of garden shears, the Owl and Conch Shell in White's *Selborne*, are convincing proofs. I now comply with Mr. C. T. Wood's wishes, by stating the following facts. In the spring of 1832, I was agreeably surprised to see a pair of Chimney Swallows busied in making their nest within a small shed in my garden, closed on three sides, but open to the east, at eight feet from the ground. In this nest they had two broods. In 1833 the nest was usurped by a pair of Wrens, and the Swallows, on their arrival, finding it so, made another nest on the opposite side, in which four eggs were deposited; I had then the satisfaction of shewing to my friends the nests of my pets, at twenty inches distance only from each other. A violent gale of wind in the night, during the Swallow's incubation, damaged the thatched roof of the shed, and in the morning I saw the nest hanging by a portion of the thatch, with the eggs remaining in it. I had it replaced immediately as well as I could, but it would not do; and from that time I lost the pleasing company of my Swallows. The other nest remains, and the Wrens have this year hatched their young in it, being the fourth of their occupation. I have hitherto taken out their old nest in autumn, to prevent the accumulation of insects, but have not done it at present, as I think of removing the shed. I shall be much gratified if my feathered favourites continue their domicile on my premises.

J. CLAYTON.

Fishbourne, near Chichester,
Oct. 13th, 1836.

ORNITHOLOGICAL NOTES.

HAVING been much interested by a singular instance of parental affection and sagacity of a Chaffinch (*Fringilla spiza*), I have thought that the anecdote might not be unacceptable to the readers of *The Naturalist*, for whom I accordingly transcribe it:—"This day week, I think it was, (says Mr. Maceroni, in a letter dated June 16,) it blew almost a gale of wind. A Chaffinch's nest, placed near the top of a high Common Escule, (*Esculus vulgaris,*)* in the front of the house, was damaged, and one of the young, nearly able to fly, fell to the ground, which I caught. It was old enough to eat of its own accord; and I kept it perched on a hen coop until this morning, when it contrived to get into the roof of a barn, and whilst I was attempting to get it down, surrounded at the time by four or five children, who were, of course, making a great outcry lest the little orphan should be lost, the mother flew down from the other side of the house, and without the least hesitation, seized her little one by the leg and carried it off to the top of the high tree from which it had fallen a week before. I regard this as rather a curious circumstance; the power of wing in the old bird being not the least remarkable of its interesting features."—The following somewhat similar instance of sagacity is related by Wilson of the Ruffed Grous (*Tetrao umbellus*):—"The young leave the nest as soon as hatched, and are directed by the cluck of the mother, very much in the manner of the Common Fowl (*Gallus variabilis*). On being surprised she exhibits all the distress and affectionate manœuvres of the Common Colin (*Colinia vulgaris*, Nuttal; *Perdix virginiana* of Latham), and of most [many] other birds, to lead you away from the spot. I once started a female Ruffed Grous with a single young one, seemingly only a few days old; there might have been more, but I observed only this one. The mother fluttered before me for a moment; but, suddenly darting towards the young one, seized it in her bill, and flew off along the surface through the woods with great steadiness and rapidity till she was beyond my sight, leaving me in great surprise at the incident." If I mistake not, Audubon mentions a parallel case of an American species of Nightjar. Other birds, as the wild Ring Duck (*Anas boschas*, Lin.), the Tufted Woodard (*Dendronessa spansa*, Sw.), and the Common Gallinule (*Gallinula chloropus*, Will.), must also occasionally carry their young in their bills, as they are all known to build more or less frequently many feet high in trees, &c. It is said that the Common Rusticol (*Rusticolla vulgaris*, Vieill.), has been seen to transfer its young by flight.

Turning from young birds to nests, I shall here notice an assertion made by a

* The trees in the Escule family (*Esculaceæ*) are vulgarly confounded under the name Horse Chesnut: they have, however, no affinity with the Chesnut (*Castanea*), which is in the Hazel family (*Corylaceæ*), which, among other genera, contains the greatest glories of the British forest, the Oak and the Beech.

writer in the *Analyst*, concerning the nidification of the Rose Muflin (*Afedula rosea*).* In an amusing article on this species, in No. IV., vol 1, p. 258, the writer refers to the assertion made by Selby and Mudie, that the nest is sometimes found with *two* openings, and proceeds to disprove this by reasoning. I am happy to be able to bring forward an instance proving the truth of the assertion, as stated by the former of the two eminent Ornithologists just mentioned :—"In one of your former letters (says Selby) you ask if I ever saw the nest of the Longtailed Tit furnished with two holes or entrances; two such instances I have met with in my own plantations; and in each, when the bird was sitting upon her eggs or callow young, the tip of the tail generally protruded beyond the upper or rather hinder orifice. One of these nests was kept for some time, but the access of moths obliged me to consign it to the flames." This interesting fact is an additional instance to the many already on record, of the danger of reasoning from mere negative evidence or preconceived notions, instead of from actual observation; the former is a foundation of sand, the latter of rock.

I shall conclude this miscellaneous communication by expressing my pleasure at seeing the zeal and success with which the principles of ornithological nomenclature, as explained in Nos. XII. and XIV. of *The Analyst*, have been brought into practice in *The Naturalist:* and I hope that the barbarous and unscientific mode of naming birds adopted by Bewick, and other authors of the old school, with all errors of science, however high the authority to uphold them, will sooner or later be buried in oblivion. And, let me ask, is it not quite as easy and much more satisfactory to call the *Accentor modularis*, Hedge Dunnock than Hedge Sparrow, the *Merula vulgaris*, Garden Ouzel instead of Black Bird, and the *Sylvia melodia* Yellow Treeling instead of Yellow Wren?†

There never has been, and perhaps never will be, a new discovery, without exciting at the outset some degree of opposition, arising sometimes from ignorance, prejudice, self-interest, and indifference. The present subject seems, however, to have pretty nearly overcome all these obstacles; and although (as Bell truly says in his beautiful work on British Quadrupeds, p. 146,) often much underrated, terminology now receives its due share of attention. Agreeing, as I do, with a zoological writer of the present day in the opinion that "incalculable benefit

* Longtailed Tit, and *Parus caudatus* of old writers.

† I perceive, at page 34, that Mr. Blyth objects to the generic name, Treeling, which I have adopted for the genus *Silvia*, and proposes "Pettychaps," which Yorkshiremen, when they hear, generally turn into *Prettychaps*. This name is not euphoneous enough for so handsome and familiar a bird. If adopted at all, it should be Pettychap, (See Shaw's *Gen. Zool.*), similar to Redwing, Longshank, Thicknee, which we do not call Redwings, Longshanks, Thicknees. According to Rennie, (see *Quarterly Journal of Agriculture*, No. 33, p. 43), these birds are called, in Scotland, *Busket Leddy*, on account of their elegant appearance.

will accrue to the science of Natural History in general, from dispassionate discussions on the true principles of nomenclature," I hope that Mr. Blyth will soon redeem his promise at p. 34, and "take the subject in hand" himself.

The *British Song Birds*, lately published, is, I believe, the first English work in which the principles have been, not only acknowledged, but *acted on*. Most of the names are unexceptionable, though there are two or three oversights—as *Phœnicura* for *Ruticilla*, and Brakehopper for Locustel. The English names of the genera should, also, have preceded the Latin, instead of coming after: for, in an English book, the English names are the most important.

C. T. Wood.

Campsall Hall, near Doncaster.

[Several of our Correspondents entertain views widely opposed to each other on the disputed point of a reform in the nomenclature of British Ornithology. We submit their communications on this subject to the readers of *The Naturalist*, in the hope that suggestions may be elicited in the discussion which will prove interesting to Ornithologists.—Eds.]

ON THE RING PIGEON.

I find Mr. Neville Wood rather sanguine in his hopes of domesticating the Ring Pigeon. I have known many attempts at it, which all failed. I never could learn that any one of the birds, though taken from the nest and reared up to an age when it might be expected, were ever heard to coo. It is a well-known fact that a bird of this species taken, with its fellow (which soon died), from the nest, was brought to a farm in the neighbourhood of Chichester, where every facility confinement could afford was given it to mate with a common Pigeon, without success. At eight years of age, it being proved to have consumed as many peas as would have brought the sum of ten pounds in the market, an order for its decapitation was given forthwith.

J. C.

REVIEW.

German Periodical.

Wiegman, *Archiv. für Naturgeschichte.* Zweiter Jahrgany, 1, 2, und 3er, Heft.

We now proceed to redeem the promise given in our last number to extract what appears to be most interesting in the above work, and at the same time to give a general idea of its contents.

The first paper of the first part is an elaborate monagraph by Opatowski, *De familia fungorum Boletoideorum*, three species of which he separates and forms by them two new genera, which are characterized. The remainder, containing the typical genus Boletus, he divides into sections and subsectionsaccording to the structure of their tube. The species are described very fully, and the synonyms carefully introduced.

We have next *Contributions to the History of the Hymenoptera*, by Chr. Drewson and F. Boie. This paper will necessarily be appreciated by the Entomologist from the glimpses it gives into the history of a tribe of insects of which we as yet possess but a very imperfect knowledge. The time has at length arrived that due attention commences to be paid to the pupivorus Hymenoptera, which from the exceedingly important function they perform in the economy of nature, and the powerful influence they exercise over all the other orders of insects, certainly have not merited the almost gross neglect they have experienced until within these few years. Gravenhorst's labours, in conjunction with those of his worthy associate, Nees von Esenbeck, have reduced to something like systematic order the chaos in which these insects had been left by all their predecessors; but even their works require revisal. Here we have the more important portion of the history of a few recorded, which exhibits them in the exercise of their prescribed functions, and this with the exception of some scattered observations in the works of Gravenhorst, Nees, and Curtis, in the papers of Haliday and Walker, and in the pamphlet of Bouché, is all we as yet know of their "private history." We present our compatriot entomologists with the substance of this paper in the hope that it may induce those who possess the opportunity, or who happen to catch such evanescent facts to record them; and we invite them to do so, for our pages will be always open to their use. It is almost only hence that we can expect to attain a more natural arrangement of this extensive host than it has been possible hitherto to construct.

The following facts we find here recorded:—

Ichneumon sicarius, Grav. Both sexes from the pupæ of *Lithosia rubricollis.*

Ichneumon fossorius, Müller. The female, on the 15th of September, from the pupa of *Noctua Typhæ*.

——— *oratorius*. The male, in summer, from the pupa of *Noctua festiva*.

——— *saturatorius*. Female from the pupa of *Noctua phragmitidis*.

They here remark the curious fact of the Ichneumon and the Moth being developed at the same time, but that the caterpillar of the latter is only to be seen nine months later; they, therefore, suggest that the eggs of the Ichneumon are probably deposited near those of the Moth, and that the larvæ of the former subsequently work their way into the body of the caterpillar, or that there is a second brood of the Ichneumon. The latter is certainly the most plausible supposition, and it is not improbable that the Ichneumon is not confined to the caterpillar of one moth, as we shall observe under *Pimpla rufata*, and that thus the exigency is met.

Ichneumon lineator, Fab. Male, on the 4th of June, from the pupa of *Geometra elutata*.

——— *monitorius*, Panz. Male and female, from the middle of June to the end of July, from the pupæ of *Noctua pronuba*, and but one parasite to each.

——— *ambulatorius*, Fab. On the 13th of July, from a pupa of *Noctua polyodon*.

——— *vadatorius*. Female, on the 10th of June, from the pupa of *Noctua pronuba*.

——— *culpatorius*. On the 20th of June, from the pupa of *Noctua cucubali*, which had over-wintered; in this the wings were tinged with a dark cloud: and on the 29th of August, from a pupa of the unknown caterpillar of a *Noctua*, which had changed on the 29th of the same month, in which the wings were silaceous.

This difference of colour in the wings arose probably from the different quality of the food of the larva, a fact analagous to which we observe in many of the lepidoptera, which feed on two different plants, and producing a similar effect in the colour of the imago.

Mesoleptus limitarius, Grav. Upon *Nematus ventricosa*, of Klug, which feeds upon the currant.

——— *exornatus*, Grav. Upon a new *Nematus* described in both sexes but without a name, which feeds upon *Pinus abies*.

Tryphon exstirpatorius, Grav. Upon a *Nematus* (the *Tenthredo Betulæ* of Fállen), which feeds upon a willow.

Trogus alboguttatus, Grav. The male from the pupa of *Noctua pudibunda*, on the 15th of June, and the female on the 8th of July.

——— *flavatorius*. The male and female, in June and July, from the pupæ of *Sphinx Salicis*.

Lissanota murina, Grav. The male, on the 23rd of April, from the pupa of *Noctua gothica*, and the female, on the 7th of May, from the same.

Bassus ornatus, Grav. The male from caterpillars of *Noctua Chenopodii* found on *Salsola kali* on the sea shore, in September, the parasite making its way out before the caterpillar could fully change into the pupa. Each appeared to be destroyed by only one, and some of the ichneumons formed even an earthy envelope like that contracted by the moth.

Pimpla rufata, Grav. In the autumn from pupæ of *Vanessa Urticæ*, and in the summer from pupæ of *Sphinx Ligustri* which had over-wintered.

Exetastes clavator, Fab., and *E. osculatorius*, Grav. From the very similar pupæ formed by larvæ which had fed upon caterpillars of *Noctua oleracea*.

Campoplex difformis, Grav. Female, in June, from the pupa of *Tortrix Ameriana*.

——— *pugillator*. On the 24th of May from the pupa of *Geometra obscurata*, and on the fifth of June from the pupa of *Noctua marginata* and that of *Geometra brumata*.

These, they think, may also be specifically or sub-specifically different.

Campoplex capricornis. Males and females in number from larvæ which had preyed gregariously upon immature caterpillars of *Noctua typhæ*, which they deserted in June, enveloping and transferring themselves within the leaves of plants.

Paniscus glaucopterus, Grav. From the pseudo caterpillar of *Cimbex femorata*.

——— *testaceus*, Grav. From the pupa of *Cerura vinula*; the females were found to be developed later than the males.

Anomolon flaveolatum, Grav. From pupæ of *Noctua batis*.

Ophion obscurus. Female on the 24th of July, from the pupa of *Noctua leporina*.

——— *luteus*. Male and female on the 10th of June, and the female on the 20th of August, from the pupæ of *Noctua Cucubali*, *Noctua Absynthii*, and *Noctua innartri*.

The authors suggest that these Ichneumons may be specifically different, although not apparently so, founding their supposition upon the development from different insects; but we have already seen, under *Pimpla rufata*, that this is not universal.

Chelonus irrorator. On the 10th of June, from the pupa of *Noctua psi*, which had over-wintered. This has been, but incorrectly, considered a British insect.

The doubts of the authors as to the specific identity of apparently identical species developed from different insects, cannot be admitted. It is no more than

analogous to the fact of many of the Lepidoptera feeding upon different plants. We cannot, it is true, yet trace it to any known law; but it is not enveloped in greater obscurity than the other well-known circumstance, also corroborated in some of the above observations, of several species, and even genera, of parasites feeding upon the same insect. The most extraordinary instance adduced above are those of *Mesoleptus*, *Tryphon*, and *Paniscus* feeding upon *Tenthredinidæ*. Could some parasite be found to infest *Athalia spinarum*, the agriculturist might then hope for a permanent check to one of his greatest enemies; but we are sadly afraid that the mere acumen of Entomologists will never elaborate an effective remedy for the devastation amongst turnips until nature lends her help by the abundant propagation of a destructor of the destroyer in the shape of an insect parasite.

The authors, also, partially characterize a new genus *(Gravenhorstia)* for the reception of a new insect, allied to the *Ophions*, developed in May from the pupa of *Bombyx Trifolii:* as this moth is common with us, the Ichneumon may also be found, and we therefore give the characters.

GRAVENHORSTIA.—*Boie.*

Head with four impressions on the face beneath the antennæ, placed in pairs, the two upper ones half-moon shaped, and between them a small tubercle. *Antenna* of the length of the abdomen. *Scutellum* very convex, triangular or subquadrangular. *Wings* short. No *cell*. *Posterior legs* long; tarsi incrassate. *Abdomen* petiolated, as long again as the thorax, laterally compressed, enlarging towards the apex. *Ovipositor* scarcely exserted.

G. picta, B.—Black. *Face and orbits of the eyes* yellow; tubercle of the face, black. *Antennæ* reddish yellow, the two first and fourth joints black above. *Thorax* very convex, punctured, opaque, pubescent, with twelve yellow spots, of which two large triangular ones on the prothorax, one on each side, two smaller ones in stripes before and beneath the wings on each side, and the six others as large as the first beneath the coxæ, which are very shiny. *Scutellum* also yellow. *Wings* yellowish with brown stigma. The anterior and intermediate *legs* of a brownish yellow; and the posterior pair, with the femora and apex of the tibiæ, brown. The *Abdomen* shining, with seven broad yellow bands placed on the margins of the segments. *Length* from eight to ten lines; females larger than the males. *Habits* resemble those of *Ophion*.

The next article is a *Systematic Investigation of the Family of the Bostrichidæ*, by Dr. Erichson, a name which ensures the value of the monograph from being so advantageously known as that of the author of the genera *Dyticeorum*, an inaugural Dissertation, and the Paper upon the *Histeroides* of the Berlin

Royal Collection published in Klug's *Annals of Entomology*. Our space does not permit us, at the present moment, to give an abstract of its contents; but we propose returning to the subject in a future number.

We have next "Extracts from the Observations of Swedish Naturalists," by C. R. A. Krassow, containing a multiplicity of short notices deeply interesting to the northern Europea nzoologist; but the remaining paper is a monograph of the genus *Rhinolophus*, amongst the bats, by Temminck, whose investigations have led him to conclude that the two warts above the os pubis, which are not present in the female of one year old, barely incipient in the second year, and only fully developed in the third year, are not nipples, but appendages for the secretion of a fat offensive substance. He reduces Dr. Horsfield's seven Javanese species to three, and introduces, as new, three from Java, one from Africa, two from Amboina, and one from Japan, thus encreasing the number of the species to seventeen, exclusive of three very doubtful ones.

The most interesting paper in the second number is from the novelty of its subject, that by Lichtenstein, containing his observations upon living Cephalopoda, made during a short visit to the coast of the north of France in September, 1835. Here, for his and his companion's entertainment, the fishing fête called the Pougliè-che, was celebrated, his friends remarking that Meckel (the comparative anatomist), had upon his visit in the year 1824, considered the sight of such a vast multitude of living animals thus drawn in the fullest animation from the recesses of the deep and exposed to examination, as one of the greatest rewards of his whole excursion, and which Lichtenstein corroborates. It was in the vicinity of Montpellier, upon the coast between Cette and Agde, that the party under the guidance of Professor Dugès and Dr. Fage, passed the night that they might witness at day break the interesting sight. Three large nets, each 120 toises long, had been cast the preceeding evening at a considerable distance from the coast, and were drawn in by a multitude of poor country people, chiefly consisting of old men, women and children, attracted by the hopes of participating in the capture. The tumult of the swimmers exhibited itself even at a distance upon the gradual contraction of the bag of the nets, each of which brought from ten to twelve hundred weight of fishes, sepias, crustacea, and alcyonia, to the shore. The fishes consisted chiefly of the usual species abundant at this period, of Sparus, Clupea, Mullus, and Mugil; amongst which there were occasional individuals of Squalus Ferox, Syngnathus Hippocampus, and Raja Oxyrhynchus. But the Sepias from their size, multitude, and remarkable conduct attracted the chief attention. There were more than two hundred individuals of the genera *Heledon*, *Sepia*, and *Loligo*. Each species exhibited motions which were as remarkable in themselves from their novelty as in their difference from each other. The *Heledones* cast headlong out of the net, endeavoured to escape from the mass, and actively exerting themselves, crept towards the sea; the majority of the *Sepias* had a half swal-

lowed fish sticking in their bill, and made a noise something like the sneezing of a man. The *Loligos* leaped up higher than any of the fishes, and with a tolerably well determined direction towards the water, so that several of them were lucky enough to escape.

The *Heledones* always cast themselves with facility upon their ventral side; they then spread out equally their eight arms, four upon the right and four upon the left, thus distending their broad connecting membrane: the anterior ones stretched their points far forward, clinging even to the sand with certainty; the points of the following pairs alternated, in regular succession, upwards and downwards, the suckers fixing themselves on each descent, and drawing the body after them. The average speed in fresh specimens was about seven feet a minute; the motion was constant, without interruption, like that of snails. When they approached nearer to the water, and got upon the flattened and moist sand, there was a very perceptible increase of speed; and as soon as they came to the descent of the shore they raised their heads, the forehead arched itself between the glittering eyes, an active motion was observable in the previously tranquil sack-shaped body; the incisions of the mantle, by a repeated rapid opening and shutting, drew air into the bag until the body resembled an expanded bladder, and, raising this suddenly, and casting it forward, the creature rolled the last three feet of its journey to the water with a speed which it was impossible to intercept, in case the flowing of the waves accidentally came to its assistance.

The motions of the *Sepias* were totally different. We have already noticed their sneezing noise; this ceased when they were left dry, but was resumed upon the influx of water. Their arms, which, with the exception of their two raptorial arms, are but short, were incapable of removing them from the spot, and even the head maintained its fixed position towards the bag. Upon their increasing exhaustion, they ejected a quantity of a thick, scentless, inky liquid, after which they died. This, between the fingers, felt more fat than clammy, but perfectly dissolved, both in salt and fresh water, without presenting an appearance of fat upon the surface. Soap would not remove the stains upon linen, when once dried. The juice of the *Heledones* was quite as black but not so thick, and much less in proportion; besides which, it differed by having a decidedly musky smell. Unfortunately, during his inspection of the preceding, the *Loligos* had all died; they were from about eight to ten inches long, and varying from three to four pounds in weight. They did not, like the *Sepias*, eject their fluid upon dying, but upon dissection cellular bags were found filled with it near the liver; it was much less in quantity, less deeply coloured, but of a similar consistency to that in the *Sepias*.

There are some interesting observations, by the same author, upon *Syngnathus hippocampus*, which, with other notices, we must reserve for our next number, as our space, at present, is exhausted.

EXTRACTS FROM FOREIGN SCIENTIFIC JOURNALS.

1.—Mr. M. A. Lefebvre, in a memoir contributed to the Entomological Society of France, mentions having observed, while travelling in various parts of Egypt, particularly in an excursion to the Oasis of Bahrych, an orthopterous insect, which lives in the sands perfectly destitute of vegetation. He examined several species, each differently coloured according to the nature of the soil, which they so exactly resembled that it was difficult to perceive them. What, therefore, is the nourishment of animals like these, organized to exist upon living prey? They are found in localities in which no herbivorous insect could exist, and Mr. Lefebvre has never discovered the slightest vestige of vegetable or animal matter with them. On the other hand, their elytræ and wings, being ill adapted to flight, prevent the idea of their migrating like Crickets. Are they, then, reduced to subsist upon the prey conveyed to them occasionally by the winds? or do they live by devouring each other? These are the questions which he has not been able to resolve, notwithstanding his most patient and minute observations of this singular insect. He has named it *Eremiaphiles*, from its peculiar habitat: some species have already been figured in the great work on Egypt, but without descriptions. Lefebvre has added several others, one particularly remarkable in the articulations of the tarsi, which are *four* in number on the anterior feet, and *three* on the two other pairs. This fact is extremely important, and offers a new objection to the classification of entomology by the tarsi, which has also been shaken by several analagous facts, and must ultimately be abandoned, notwithstanding its convenience. The above observations have induced Lefebvre to constitute of this species a new genus, which other general characters tend to induce. We regret extremely that we are not, at this moment, able to give a more detailed description of this extraordinary paradox in entomology.

2.—On the Appearance or Disappearance of Plants in certain Localities.—Mr. Weinmann, inspector of the Imperial Gardens of Pawlowsk, in Russia, enumerates several striking instances of the above singular circumstance, which hitherto appears quite inexplicable, or not observed by Botanists in general. He states, among other occurrences of a similar nature, that during an uncommon season of drought, a lake in the environs of Pawlowsk became dried up, and its basin was shortly clothed with vegetation, but instead of the *Juncus effusus*, *J. lampoocarpus*, *J. tusonius* and others of that family, which previously grew abundantly on its banks and sides, the dessicated bottom of the lake produced nothing but the *Scirpus acicularis*, a plant unknown altogether in that locality. When the severe frost destroyed vegetation the *Scirpus acicularis* totally disappeared, and has not again vegetated on this spot.

Some other plants which were common in the environs of this city eight years

since, such as the *Turritis glabra*, the *Chenopodium hybridum*, and the *Triticum pennatum*, no longer are to be found there. The *Carex microstachyra* was abundantly found eighteen years since in the environs of Pawlowsk, but has now totally disappeared.

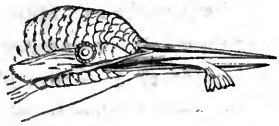
Mr. Weinmann enumerates the following plants as no longer existing:—*Lynosurus cristatus*, *Illatine hydrapepa*, *Barbula rigida*, *Fontinelis foliata*, *Anthoceros punctatus*, and *Drabæ luteæ*. It would be highly interesting, if analagous facts are known in this country, that some of our able contributors would favour us with their observations on this extraordinary phenomenon.

3.—Mr. Corda, of Prague, has made some discoveries of animalculæ living in innumerable societies, near the hot springs of Carlsbad, in Germany: they are all of singular and novel forms. The presence of these myriads has often inspired a repugnance to invalids drinking the waters: he recognised forty-two new species. Mr. Ehrenburg has pursued similar researches, and added eight other well characterisedspecies, mostly unknown; he calls them—*Navicula striatula* (of Purpin), *N. umbonata*, *N. hippocampus* and *striata* (these two are also found in the Baltic Sea), *Trustulea appendiculata* (Agarh), *Navicula quadricostata*, *N. arcus*, *Monas violacea*. These four last species inhabited the Carlsbad water, and are found no where else.

4.—Mr. P. E. Botta, the travelling Naturalist of the Paris Museum, writes from Tor that he will shortly forward to France the collection he has already formed: he is about to explore a portion of Egypt and Arabia, and is now directing his steps towards Djidda and Mocalla, where he will embark for the Yémen. The information he had acquired respecting these countries, so rich in objects of Natural History, induce us to hope that he will be able to proceed so far into the interior as to collect a rich harvest of specimens hitherto but very imperfectly known, from the appalling difficulties which attend European travellers in those expeditions. The experience, knowledge, and zeal of this young Naturalist, who has already traversed many points of Africa, and completed a voyage round the world, render it likely that science will be immensely enriched by his present researches.

ALCEDO ISPIDA.

FAMILY.—SYNDACTYLI. *GENUS.*—ALCEDO.



THE KINGFISHER.

By Robert Mudie.

Generic Characters.—Bill long, straight, angular in the section, thick at the base, rarely depressed, trenchant in the tomia, and pointed at the tip. Nostrils basal, lateral, pierced obliquely, and nearly closed by a naked membrane. Feet short, placed far backward, tarsi rather stout and rounded, a portion of the tibiæ bare of feathers. Four toes, the hind one enlarged at its base, the external and middle front ones of equal length, and united as far as the second joint, the inner shorter, and united to the first joint. Tail very short and rounded. Wings of mean length, rather broad, hollow, and rounded, the third quill being the longest.

The species of *Alcedo* are rather numerous, and there are some differences in the form of the bill and the structure of the feet. Some have an enlargement on the middle part of the lower mandible; others have the bill a little curved, and are less aquatic in their habits than the others. These last have the toes united to the third and second joints, and the inner one little more than rudimental. The greater number of the genus are found only in tropical and other warm countries, but there is one which inhabits Europe as well as Asia and Africa. That one is

The Common Kingfisher *(Alcedo ispida)*, of which we have annexed a figure, drawn and coloured after nature, in that attitude which the bird assumes when it has captured a small fish, which it can swallow entire without quitting the wing. This figure will give a notion of the shape and colours of the bird, and thus spare us the tediousness of verbal description; and both the form and the colours are so unique that, once known, the Kingfisher is never forgotten.

The Kingfisher is a resident British bird, and pretty widely dispersed over those parts which are suited to its habits; but it is no where very abundant, and it is rarely seen in proportion to its actual numbers. Its haunts are the rich and shaded banks of streams and rivulets, being seldom seen where the ground is open and bare, and never running on the sand-banks or beaches. The foot is not adapted for walking on the ground, both on account of the backward articulation and of the peculiar structure of the toes. This is the case with all syndactylic feet: they amount, in fact, to little more than a foot of two toes, one to the front and the

other to the rear; and these toes are articulated to the tarsus on the same plane, while the union at the base of the front ones, and the enlargement at that of the hind, form a base of considerable extent. The foot is thus a resting foot—a passive foot, as it were—and not an active one. The backward articulation accords well with this use of the foot; for when the bird rests on its feet, the axis of the body is much elevated forwards, and the weight, by that means, is concentrated upon the feet, which gives greater stability with the same extent of base than if the axis of the body were horizontal. The shortness of the tarsus further contributes to the same purpose, and the strength of that part of the leg is calculated for enabling the bird to bear its standing position for a long time. The syndactylic foot, ill-formed as it appears to be for active purposes, is the very model of a foot in its way; and whether we examine its own structure, or the manner in which its position concentrates the weight of the bird, we cannot help noticing that, among all the variously formed feet of the feathered race, this is the one best calculated for enabling the owner to erect the wing and yet keep vigilant watch for its prey. Of all syndactylic birds, the Kingfishers are the most aquatic in their feeding, and the shortest and roundest winged; and, therefore, we might be prepared to find this foot in the greatest perfection in them.

And the habit is beautifully true to the structure. For in those warm and stilly days when not a breath of wind rustles the foliage or breaks the glassy surface of the brook, the Kingfisher may be observed sitting, for hours together, upon some withered branch or water-encircled stone, until a fish comes within the range of its vision. Then off it darts, with the rapidity of an arrow and the radiance of a meteor, and seldom misses its aim. If the fish is small it is swallowed during the flight, but if it is too large for that purpose, (and the bird in consequence of the breadth and hollowness of its wings can rise, even from amidst the water, with a larger fish than one would be apt to suppose), then the bird betakes itself to some rock, stone, or firm portion of the bank, where it speedily kills the fish by hewing into the skull with its strong and powerful bill. After this, the trenchant edges of the same instrument may soon divide the fish into such portions as can be swallowed, and the feast is then over. As is the case with almost, if not quite, all birds that can bear abstinence for a long time, the Kingfisher is very voracious when food can be obtained; and it seems to be a pretty general law that birds which feed on fish eat more than those which feed on most other animal substances.

Though the Kingfisher often plunges fairly into the water after its prey, its plumage is not wetted or ruffled. Beautiful as its colours are, its plumage partakes much of the nature of that of the aquatic birds properly so called, which launch themselves upon the water, or dive and duck through its substance. We have already said that it brings the connection of the syndactylic birds down to the water, were the chain appears to be taken up by the Terns among web-footed

birds; and as it holds nearly the same place among those birds which feed over fresh waters upon the wing, as the Auks and Puffins do among those that swim and dive, so there is no small resemblance in some parts of the economy. It builds in holes of the banks, which holes it excavates for itself. The foot is, indeed, a very efficient digging foot, much better than if the tarsus were larger, and the toes more produced and free. The eggs are, however, more numerous than those of the sea-birds, which the Kingfisher resembles in its breeding places and some other of its habits. They vary from four to eight, usually of a pure white colour; and as the birds do not walk on the sludgy surfaces the eggs are not soiled by their feet, as is the case with those of many lake and river birds. It is said that the Kingfishers are very prone to take possession of the holes of the small aquatic mammalia and trim them for nesting places; and some allege that these avenge the ejectment by eating the eggs of the birds. This last is not, however, very practicable, as the eggs are seldom, if ever, without one of the birds upon them; and if the birds are able to take possession, they are, of course, able to keep it. It is true that the number of birds that are seen bears but a small proportion to that of the eggs; and we know that, in most cases, the numbers of the eggs of birds bear a proportion to the enemies or other casualties to which they are subject. But we have no certain knowledge of the enemies of the Kingfishers, or of the casualties that may destroy them, either in the young or the adult state. It has been said that the eggs are frequently addled or the unfledged young drowned, by the floods of the streams in the banks of which the nests are placed; but the time when these birds breed is that at which floods are the least frequent. The probability is that the cold of winter, and the impossibility of finding food when the streams are sealed up by the frosts of that season, are the real causes of the comparatively limited numbers of these birds in the colder latitudes. This is, in so far, rendered probable by the fact that, even in those places where they are most likely to be found, Kingfishers are less frequently seen in the summer than in the winter. In summer they ascend the streams, near their sources, especially if these are in rich and wooded plains, because at this period and in such situations the smaller fishes are usually numerous; but toward the close of the season the small fishes descend, and when winter fairly sets in, the birds are driven to the broad waters, where they are not only obliged to be more on the wing for their food, but are also more easily seen, from the leaves having fallen.

It is probable also that, notwithstanding the compactness of their plumage, the Kingfishers are more susceptible to the weather than almost any other of our resident birds. The fact of the single species in Europe, and the great number of species (as many as between sixty and seventy, leaving out the less aquatic ones, which make eight to ten more) that are found in tropical countries, would go far to establish this supposition. But there is a physiological argument which is at once more conclusive and more important. In all cases in nature there is an adaptation

of the preyer to the prey, which brings them to inhabit the same places, and to be abroad at the same times. Now fresh-water fishes, especially those that frequent the smaller streams, which are liable to be acted on by the weather to their whole depth, are known to be so exceedingly sensitive that the presence or absence of the sun, or the shifting of the wind from one point to another, will send them all quiescent to the bottom of the stream or bring them in activity near to the surface, according as the change is the one way or the other.

Now, in order to adapt them for the capture of prey so sensitive, it is necessary that the birds themselves should be acutely sensitive to the same changes; and thus they who have had the best opportunities for observing state, that, when the weather renders the fishes quiescent, the Kingfisher takes its station upon a stump or a stone, where it "bides its time" in the patient manner that has been described. But, on the other hand, when the state of the weather puts the fishes on the alert, and makes the smaller ones sport near the surface of the water, the Kingfishers betake themselves to the air, and dart abroad over the surface with extraordinary rapidity, considering the shortness of their wings.

At those times, however, they are solitary in their feeding, and so many as two are never seen in close company or very near to each other. Even the males and females have no sort of intercourse or recognition of each other, except in the pairing season, and then they are cryptogamous as well as monogamous, and do not appear at the same time. Their feeding grounds are also often at a considerable distance from their nesting places; and they are generally in more retired situations, because when they meet, the nuptial cave affords concealment. There is no formal building in the nest, but it often contains a considerable quantity of fish bones, which, in all probability, the birds discharge in castings. At this time both birds repose in the nest-hole during the night, but as they arrive and depart with great celerity, they are seldom seen, and the nest is not often found. The rearing of the brood is long and laborious, as the young do not quit the nest until they are so far fledged as to be able to make their way, and find their own food, over the waters. When they arrive at this state the whole family separate, never, in all probability, to meet again. In fact, notwithstanding the exquisite colours and brilliant gloss of their plumage, Kingfishers are solitary, and, in a sentimental point of view, dismal birds; their cry is harsh and unmusical, and their nesting places are offensively filthy. Brilliant plumage does not appear, indeed, to be an indication of any quality of birds which renders them valuable or even interesting to man, but it is probable that it, in some way, renders them more susceptible to atmospheric and solar action. We may have another opportunity of adverting to this curious point.

ON THE NATURE AND USES OF THE PRIMÆVAL VEGETATION OF THE EARTH.

By Robert Dickson, M.D., F.L.S.

In a former article (p. 146) we made some remarks on the geometrical principles which had been observed in the construction of the members of the leading divisions of the vegetable kingdom, and on the inferences which might be thence drawn respecting the Deity and his works. If we turn our attention to the principle which regulates the distribution of plants over the surface of the globe, and assigns to each country its precise and peculiar kind of vegetation, we shall not find it less worthy of our consideration, or less fraught with lessons of wisdom and proofs of benevolence. The prevailing or predominating species of plants which form the vegetable covering of the earth, give to each country its characteristic aspect, determine the nature of the wild animals and insects which frequent it or live there, and, as Humboldt justly remarks, "produce the most important effects upon the social state of the people, the nature of their manners, and the degree of developement of the arts of industry."

Let any one be conveyed from Britain to some island in a tropical latitude, and at the first glance he will perceive that he is surrounded by vegetable forms very different in appearance and structure from those of his native land. Instead of the Oaks, the Ashes, the Elms, and the Sycamores, with their enormous stems and wide-spreading branches, sometimes covering nearly a quarter of an acre, he will strain his eyes in looking upwards at the leaf-crowned summit of some slender branchless stem that seems to pierce the sky. Perchance he may recognize forms akin to the Ferns of his own country, but surpassing them in size and variety as much as the lakes of America and the mountains of India surpass in vastness and height those of Europe.

Again, let him be conveyed to the polar regions: there he will find a few trees —such as Firs and Birches of a dwarfish size—braving the rigors of these climes, but an utter absence of those shrubs and flowers of larger growth, which make our woods and lawns so gay and fragrant; the flowers to be there met with being such as are never seen in Britain, save on the summits of our loftiest mountains.

If the individual be possessed of an inquiring and reflecting spirit, he will soon discover that the most general and influential of the causes which occasion these different and opposite phenomena, is temperature; and might be led to imagine that if some convulsion of nature were to effect a change in the temperature of Britain, he might see its surface clothed with the vegetation of the tropics, if that change consisted in an elevation of temperature; or, if the reverse, he might see the alpine vegetation descend from the mountains and inhabit the plains, or mi-

grate from the north, and displace the tender occupants of the soil, as the hardy hordes of Scandinavia displaced the effeminate rulers of Italy and Gaul.

Now, this is no groundless speculation, or imaginary occurrence: for once a vegetation similar to that of the tropics flourished where Britain now stands; though the forests of which it consisted were never seen by human eye, and the convulsions by which it was destroyed involved not, in their tremendous desolation, one being of that race which now inhabits it, and to render it fit for which, many a mighty commotion took place, and many an instance of creative power testified the provident and benevolent intentions of their Almighty Author. It was by means of these forests that the atmosphere was rendered suitable for the respiration of the higher animals, such as quadrupeds and man,—and by their submersion those reservoirs of carbonaceous matter—coals—were secreted for the use of future ages.

The primary, the universal function of vegetables appears to be the elimination or formation of carbon, whatever secondary or temporary uses they may answer; and the primæval vegetation of the world flourished under circumstances highly favourable to their fulfilling this end. Indeed, so far as we can ascertain, there was no other object in view in their early formation; and hence they attained a size even unknown in the tropics in the present day. How perfectly they accomplished this object, the remains of them, existing under the surface of the earth at various depths, and in various states and degrees of preservation, sufficiently attest. A careful examination of the external form and internal structure of those which have retained their original constitution, or even of those which have undergone an alteration, and had the whole of their natural elements removed and siliceous particles substituted in their place, enables us to conjecture with tolerable accuracy the particular tribes of plants which grew in those remote antediluvian ages. (See Lindley and Hutton's *Fossil Flora of Great Britain*, the work of Mr. Witham, papers by Mr. Nicol in Jameson's *Journal*, and Brongniart's *Histoire des Vegetaux Fossiles.)* The greater number of those which are discovered in the most ancient coal formations belong to the vascular cryptogamia, comprising the Ferns, Horse-tails, &c., but of a size far surpassing any now growing; and among the more recent coal measures are found Ferns, Palms, Cactuses, Cycases, and Pines or Firs. The land on which these grew, by alterations in the level of the surfaces,—whether by upheaving of volcanic masses, forming islands or continents, and causing displacement of the waters of the ocean, or by a sinking of their place of growth, from earthquakes or other convulsions,—became submerged, and the pressure of the sandy deposits above them, aided by the superincumbent water, and the slow action of time, converted the vegetable structures into those great elements of utility—coals, which are so extensively wrought in this country, to which they are justly considered of more value than all its gold mines to Peru.

Had they, when submerged, remained for ever in that situation, they would

have been alike unknown and unserviceable to man, but subsequent commotions brought them again near the surface, which, after acquiring a fresh vegetable coating, suffered another depression and subjection to the compressing powers, to be at last consigned to their present position, the most favourable for their beneficial employment that could well be conceived.

What infinite occasion have we to admire the beneficence of the all-directing Providence, evidence of whose guiding of the storm is not wanting amid even the most terrible convulsions of nature; for, when the framework of this globe appears ready to loosen and dissolve itself, and all the elements seem to blend themselves in disordered and confused mixture, yet order and design become manifest in the result. But for this regulating, this controuling power, by what computation of chances, equal indeed to infinity to one, could we have had our coal-strata and iron-ore occurring in the same district, in so many instances, as we find them in Britain? If the comforts and interests of the present inhabitants of the earth were thus prospectively provided for, so long anterior to the occurrence of their wants, is it probable that the interests or comforts of future ages will be neglected by the omniscient, the omnipotent, and the eternal Creator? These observations are here introduced because some, forgetting the attributes of Him, to whom they owe every sense, every faculty, and every gratification of these which they enjoy, have indulged in fears or doubts for the welfare of the future occupants of the globe, and supposed if the present coal-measures were exhausted, none would be accessible to them. Now, without speculating on the unascertainable point, whether or not the future inhabitants of the globe shall require coals, we may, by observing what is taking place in both the old and new worlds, perceive provision making for a store of this material. When we consider the almost boundless forests of America, India, and other tropical countries, occupying stations rarely trod by the foot of man, we might be tempted to think they were of no use, but were mere cumberers of the ground. Yet, independent of the great influence which they exert over the humidity, the temperature and climate of the regions where they flourish, being the grand sources of the mighty rivers, which debouche at an astonishing distance from their origin, much of the wood which grows along the banks of these gigantic streams, is annually borne down towards their mouths, and either arrested there, forming temporary islands, or carried forward, and ultimately precipitated to the bottom of the ocean. This process goes on to an extent of which few have any adequate idea; and what is every year so transported by the currents of the Mississipi, the Ganges, and the McKenzie rivers, surpasses the belief of most Europeans. At the outlet of these rivers immense rafts are seen waiting the moment when they shall be hurried onward to the deep, or sunk at once where they now float. At one of the outlets of the Mississipi a raft of this sort was observed ten miles in length, two hundred and twenty yards wide, and eight feet deep. The successive layers of these spread over the lower surface of the ocean

must form beds of great depth ; and to the quantity of woody matter derived from this source, we must add the vast flora of the ocean itself, which extends to its remotest bounds, though varying in size and abundance, being most profuse and gigantic in tropical latitudes. Nowhere is it wanting, even on the shores of the polar ocean sea-weeds grow ; along our own coast they are varied in form and considerable in size ; yet falling far short of the huge productions of the equatorial seas. Many of those on the coast of Britain are thirty feet long, yet those of the Pacific attain a length of from 500 to 1500 feet : and, moreover, they grow with an astonishing rapidity in all, but especially in tropical latitudes. Their numbers are also great ; so that even on the shores of the Orkney islands, they obstruct the passage of boats ; and in the Gulf-stream they are so abundant as to prove a serious impediment to the sailing of ships ; and we read that they opposed such a barrier to the progress of the vessels of Columbus as to cause the ignorant and superstitious sailors to regard them as an obstacle interposed by heaven to the prosecution of what they considered an impious voyage. The periodical detachment of these from their place of growth, or decay of them on the spot of their birth, must furnish annually an incalculable quantity of vegetable detritus, which, added to the former, must furnish a provision of coal of a very ample kind. It may be objected that we have no sufficient reason to infer that all this woody and vegetable structure will ever be changed into coal : but the observations and experiments of modern botanists, geologists, and chemists are quite sufficient to warrant this conclusion. The woody texture of even the most compact mass of coal from the oldest coal-measures can be demonstrated ; the distinct forms often found in the coal seams, point out the particular tribe or genus of plant, which have been so submerged and compressed ; the more recent coal formations retain so much of the woody structure as to be termed wood-coal, or *lignite* ; and the transformation of trees, even of whole forests into peat or bog, which we see take place so extensively, indicates the first step in the process ; for pressure, heat, and time, with an admixture of bitumen, are all that are required to change peat into coal ; as the observations and experiments of Dr. McCulloch amply prove (*Geology*, vol. 2, p. 319). The requisite heat and pressure being provided by the vast body of the ocean, time is effecting the necessary changes on the wood thus preserved at the bottom of the sea, now, as afore-time ; and it only waits the action of the volcanic forces to upheave it, and bring it near the surface, where it will be accessible and useful. These forces are held in check now, till a necessity shall arise for them to spring into action, the result of which will not be less favourable to the interests of the distant and unborn inhabitants of the earth, than those of old were to ours.

Such speculations are any thing but idle, hurtful, or tending to narrow our views of God and *his* providence. For what more convincing proof could we have of the *economy* of nature, than in thus gathering up the fragments of her works, that nothing may be lost, and storing them away for the use of millions, yet un-

born, who will be enriched and benefited by these "treasures of the deep?" And how must it increase our conceptions of the greatness and goodness of that Being, who has created us with faculties, which not only allow us to judge of what occurs in our own time, and under our own immediate observation, but enable us to dart a penetrating glance "through the dark depths of time" past, and thence draw comforting and satisfactory inferences for the events of futurity?

Some have thought that it was the necessary consequence of these investigations to give a sceptical tendency to the mind; but such a consequence is neither natural nor necessary. Have we not the example of some of the greatest men the world has ever seen, and who have given their attention to the most elevated speculations which could engage the powers of the human mind, testifying to the contrary? Did not Keppler and Newton, when they ceased from their lofty studies, which made us acquainted with the beautiful laws of number and harmony, which retain in their places the immense orbs that circle through space; did not they, when they returned, as it were, from "walking on the battlements of heaven, and beholding the glories that were around them," record in language the most devout, their homage and profound sense of the perfections, the wisdom, the benevolence, and power of that Being, whose almighty fiat first called into existence those stupendous masses, and whose nice adjustments of them alone prevents them rushing into collision, which would be attended with such a shock, and disturbance to the whole system, that, compared with it, the most tremendous earthquake which has ever happened to our planet, would be but as the trembling of the most delicate balance before its final quiescence. The works of Newton are well known in this country, those of Keppler less so than they deserve; he who stated his conviction of the triumph of the truth in these words, "The day will soon break when pious simplicity will be ashamed of its blind superstition,—when men will recognise truth in the book of nature, as well as in the Holy Scriptures, and rejoice in the two revelations;" also concluded his labours with the following modest apostrophe: "I give thee thanks, Lord and Creator, that thou hast given me joy through thy creation, for I have been ravished with the works of thy hands. I have revealed unto mankind the glory of thy works as far as my limited spirit could conceive thy infinitude. Should I have brought forward anything that is unworthy of Thee, or have sought my own fame, be graciously pleased to forgive it me."

We hope, then, it will be believed, in anything we may say on geology, or other branches of science, in connection with natural theology, that it is far, very far from our intention to weaken the reliance of our readers on the doctrines of revealed religion, or to raise doubts we could not satisfy—doubts which, if carried into action, could only be productive of misery and misfortune.

REMINISCENCES OF THE RHINE;

ORNITHOLOGICAL AND ENTOMOLOGICAL.

[*Continued from page* 168.]

Respecting insects, I must repeat my inability to give any thing like a detailed account, proportionate to the number coming under my casual or permanent observation. My nippers, as I have already said, were disposed of to a friend on leaving England, and the absence of good collections in my own neighbourhood, or books with plates of insects not indigenous in this country, precluded my noting down with accuracy, the names of many which I either saw or captured. With this explanation, by way of preface, proceed we to enumerate some few of those which can be ascertained, not of every day occurrence in Great Britain.

Swallow-tailed Butterfly *(Papilio machaon)*. Though rare in England, being chiefly confined to the fen counties of the eastern coast, it is by no means so on the Continent, and I was rather surprized to meet with but one specimen, namely at St. Goar on the Rhine. Borne on a smart breeze, the beautiful insect had crossed the river and passed me with the rapidity of lightning; but, pursuing its course by the eye, I observed an extensive patch of dark mud, bloating under the rays of a hot sun, which I rightly conceived might prove too strong a temptation for the airy traveller, whose habits are little in accordance with its cleanly and courtly drapery, preferring to revel on the decomposing putrefaction of a moist dunghill, to sucking the nectar of roses, of which it seems so much better qualified by its dress and elegance of demeanour to partake. Though rapid on the wing, when once settled, and in the full enjoyment of its beverage of filth, it may be approached without much difficulty. I was right in my conclusion; on the mass of black mud it had tarried, to sip the essence of a large drain which emptied itself on the shore; it became my prisoner, and is now in my cabinet.

Black-veined White Butterfly *(Pieris cratægi)*. Donovan calls this one of the rarest species of the white tribe of butterflies found in Britain, but like many other insects, I believe its scarcity to be periodical, plentiful in one season, and then totally disappearing, for possibly several years to come. Though plain, and with few attractions to the ignorant observer, its transparent wings, and peculiar fashion of flight, are sure to draw the attention of a Naturalist to an insect, which assumes so foreign an address. My specimen was taken at Baden.

Pale-clouded Yellow Butterfly *(Colias hyale)*. This is another pretty insect, rarely found with us, but common enough in various parts of the Continent. I have found it in nearly all localities; very abundant in the warm emerald meadows in the vallies of the Pyrenees, and by no means rare in those at Baden, where its gaudy golden plumage is sure to attract notice.

Marble Butterfly *(Hipparchia galathea)*. The character which this insect bears for partial localities in this country, is equally true of it on the Continent. For miles and miles I have traversed districts without seeing a specimen, and then fallen in with spots absolutely swarming with them. It would seem from this, that the Marble Butterfly is less inclined to wander beyond the limits of its birth-place than many others of its family; it might be wished that the migrations of the lepidopterous tribes, and indeed of several others, were a little more attended to by Naturalists. For that many wander, and some do actually migrate, or expatriate themselves, is a matter beyond all doubt. I have myself seen instances of almost all our common butterflies, far away on the wide sea, out of sight of land in calm or moderate weather, when there was no reason to suppose that their marine perigrinations were occasioned by off-shore storms. It is difficult to point out the various domiciles of this insect on the banks of the Rhine; but he who explores the many delightful vallies and meadows in the environs of Baden, will assuredly bear testimony to the number, and partiality for particular spots, alluded to in the above remarks.

The Purple Emperor *(Apatiura iris)*. Oh! for my absent nippers, was the involuntary exclamation, as, in a hot sunny glade, in one of those romantic pathways cut in the hill sides, looking downwards on the busy bustling crowd of idlers grouped near the Courshaus at Ems, one of these purple paragons of beauty, after gliding with motionless wings, as if supported on a sun-beam, settled on the ground a few paces before me. To gaze in silence in the presence of the royal insect was all that it permitted; for, on advancing, albeit with tread most cautious, his emperorship darted off, with a velocity scarcely allowing the eye to follow his airy flight, until high above a neighbouring oak tree, he again besported himself on motionless wing, gliding or wheeling spirally aloft, in the full enjoyment of his liberty, as if conscious that he was beyond the research of entomological curiosity and contact.

Camberwell Beauty *(Vanessa antiopa)*. There is a passage in *Foster's Essays*, which I have never read (and often and often have I referred to it) without a deep conviction of its truth and beauty. "Places and things which have an association with any of the events or feelings of past life will greatly assist the recollection of them. A man of strong associations finds memoirs of himself already written on the places where he has conversed with happiness or misery. If an old man wished to animate, for a moment, the languid and faded ideas which he retains of his youth, he might walk with his crutch across the green where he once played with companions, who are now probably laid to repose in another spot not far off. An aged saint may meet again some of the affecting ideas of his early piety, in the place where he first thought it happy to pray. A walk in a meadow, the sight of a bank of flowers, perhaps even of some one flower, a landscape with the tints of autumn, the descent into a valley, the brow of a mountain, the house where a friend has been met, or has resided, or has died, have often pro-

duced a much more lively recollection of our past feelings, and of the objects and events which caused them, than the most perfect description could have done ; and we have lingered a considerable time for the pensive luxury of thus resuming, if I may so express it, the departed state of our minds. How much there is in a thousand spots of the earth that is invisible and silent to all but the conscious individual."

It was on a summer evening, of early life, when little more than a child, in rambling through a wood on a holiday, my attention was drawn to a spray on which rested a Camberwell Beauty. I had never seen such perfection before. My eye rested on the rich dark velvety wings, fringed with ermine white, relieved by an inner border of metallic blue spots, like bracelets of *lapis lazuli*. At this moment I could mark the very spot in the forest where this vision was revealed, and well do I remember the thrill of delight with which I captured and carried off my prize in triumph, to exhibit before a little knot of schoolfellows. I can see their uplifted hands, I can hear their exclamations of surprise, as they beheld the splendid captive. I can recall their features and their forms as if now living, though every individual among them has long since been called away, and now possibly familiarized with greater things than it is permitted man's philosophy to dream of here. But to me, trifling as this little incident may appear to many, the results through life have neither been unimportant, useless, or uninfluential ; for it is to it I stand indebted for many a happy hour. That " poor insect" awakened a taste which has never slumbered ; and the cultivation of natural history has been my solace in times and seasons, when the mind required something to fall back upon, apart from the business and pursuits of the world. It so happened that from the time I have alluded to until a few summers ago, in one of the mountain passes of the Pyrenees, I had never met with a single living specimen of *Vanessa antiopa*, when, on a lovely day, on a spray the very counterpart of that of the days of my childhood, I saw the expanded wings of this insect, and the days of "auld lang syne," which first introduced it to my notice, came across my mind vivid and clear as though but of yesterday. This summer, again (and not unfrequently) I fell in with this associate of early years. Children, indeed, may they be called of the sun. In the hot and sultry hours of noonday, they would flit by, rendering it almost impossible to watch their course ; if in these flights two or three met in the glade, they paused in their speed, and, fluttering together, so busied themselves in their conflict of rivalry or affection, I know not which, that I more than once caught two at a time, and after admiring them, in gratitude for the benefit I had received at their hands, sent them forth once again to enjoy their summer revelries. At other times (I particularly recollect one occasion), in a wood on the summit of the Drackenfels, when the wind was rather keen, I found numbers resting on the backs of trees, in a state of stupor ; they made no attempts to escape, and when thrown into the air their wings barely opened, or flapping feebly, eased their fall, or enabled them to seek repose on the stem of the nearest tree.

The White Admiral *(Limenitis camilla)*. Nearly as abundant, and in situations similar to the preceding, and more easily taken, even in the heat of the day; for, although their flight when on the wing is rapid in the extreme, they seem to be so absorbed, when in contact with the nectaries of the bramble blossom, as to forget all but the immediate luxury of suction. Nothing can be more interesting than to observe the contrast of the upper and under wings, as they slowly shut and open on the flower: a person not conversant with this peculiarity would have a difficulty in persuading himself that the insect with the closed and opened wings was one and the same.

Silver-washed Fritillary *(Argynnis paphia)*. With the exception of the splendid Swallow-tailed Machaon, none of the above insects so prominently catch the eye of the passing traveller as this species of the Fritillaria. Its size, its gaudy bright bay or chesnut colour, chequered with black spots and streaks on the upper, contrasted with the metallic lustre of the silvery iridescent tinge of the under, side of its lower wings, cannot fail of striking the attention of the dullest observer. In the heat of the day, on almost every hedge-side few or more may be seen. But, to contemplate them in perfection, let me recommend the Entomologist who passes through Carlsruhe, to tarry awhile and expose himself to the burning rays of a July sun, on the bare, exposed, widely extended, and almost boundless gravel esplanade in front of the Ducal residence. No hint will be necessary to induce him to seek, if not shelter, at least variety, in addition to their grateful though almost overpowering fragrance, within the lengthened lines of orange trees all in richest and healthiest bloom, and there will he have an opportunity of seeing what the Paphia really is when under the influence of sunbeams which seem to awaken every nerve, and muscle, and passion into action, in the full enjoyment of the odoriferous banquet provided by these balmy blossoms. Not by twos or threes, but by almost hundreds, I saw them, now hovering, now reposing on the orange flowers. Bishop Heber, in a beautiful passage on the sum of happiness enjoyed by the lower classes of creation, speaks of the flying fish as leaping from the water, not as is generally supposed, from apprehension of danger, but "apparently in the gladness of their hearts, and in order to enjoy the sunshine and the temporary change of element." "Those writers (he adds) who described the life of these animals as a constant succession of alarms, and rendered miserable by fear, have never seen them in their mirth, or considered those natural feelings of health and hilarity which seems to lead all creatures to exert, in mere lightness of heart, whatever bodily powers the Creator has given them."* I was never more struck with the force of this remark than on the day I witnessed the countless assemblage of the silver Fritillaries on the orange blossoms before the palace of Carlsruhe. There was a quivering sense of delight in every motion. So intoxicated

* Heber's *Journal*, vol. 1, p. xxiii.

were they with the luscious juices pumped up by their deeply inserted proboscis, that they might be approached, and even captured with little address or difficulty; and it was delightful to see the smart, healthy, and invigorated percussion of their wings against each other, and hear the clacking sound, which like a clapping of hands, might be considered as indicative of the pure and unalloyed pleasure these humble retainers at the bounteous table of nature were privileged to enjoy without measure or reserve.

The Black Hair-streak (*Thecla pruni*). One of our ablest writers, Mr. Curtis, tells us that this insect was almost totally unknown to the Entomologists of Great Britain until lately. When in Yorkshire, a year or two ago, according to his account, and near Ripley, according to Mr. Stephens, it was taken in abundance; the hedges of the latter locality being enlivened by myriads hovering over flowers and bramble blossom, in one particular spot, while other hedges at no great distance were perfectly free, though the brambles were in plenty. My own evidence will go with these authorities towards the establishment of the fact of the partial locality and occasional profusion of these elegant little butterflies. In England I had never seen one living, and it was not till I arrived at Ems, and was ascending the hill, in a glade of which I saw the purple Emperor above-mentioned, that I met with a single specimen; the first I saw arrested my steps, and I watched it for a minute or two, with that indescribable satisfaction known only to the Naturalist, be he botanist, ornithologist, or entomologist; but the pleasure of novelty was soon satiated, by finding that my little friend was but the *avant courier* of a host, billetted over a region of underwood, a few paces in advance. When settled, they close their wings and display to the utmost advantage the bright orange border and caudal appendage to the lower wing, and allow themselves to be captured without much difficulty. In subsequent rambles I not unfrequently found them, but never in such abundance as in this place.

And here I should close my lepidopteral remarks were it not that I would express my regret and inability to describe one other species of *Papilio* which came under my observation in only one particular spot, half-way down the long hill leading into the valley of Ems, on the road from Ehrenbreitstein. Once or twice, like little meteors, an insect had glanced by, more resembling some I had seen as belonging to tropical climates than natives of Europe. At last a pair happened to meet, and while fluttering together, I was fortunate to capture one, which was, much to my mortification, rubbed to pieces before I could secure it in a safe position. I have in vain looked through the plates of Godart's extensive work on *Continental Lepidoptera*, and hitherto have had no opportunity of consulting other works or cabinets, to ascertain the name of certainly the most beautiful as well as rarest of the *Papilio* tribe I met with during my excursion.

Yellow Beetle (*Trichius fasciatus*, Don., p. 140). Rare in this country, though less so on the western than eastern coasts, according to Stephens, who

gives Swansea as the place of the most abundant locality. It is, however, very common on the Continent, and almost always to be found in the heat of the day on umbelliferous plants. It is a remarkably comfortable-looking insect; its head, thorax, and shoulders, well-covered with a thick down of tawny hairs, give it the appearance of a dull Scotch Terrier; for it never evinces any signs of activity, scarcely moving even a limb, apparently quite satisfied to slumber away its life unmolested in its umbelliferous bed of flowers.

Attelabres, or *Clenis apiarius*.—Said to be taken near Manchester, and has been found in Coombe Wood and Dorking; but, like the preceding, though rare in England, it is of frequent occurrence on the Continent. I met with several specimens. Its bright red, contrasted with the metallic blue of the elytra, renders it very conspicuous.

Carabus auratus.—A rare British species, or rather was supposed to be so—recent search having found it to be even common on certain heaths. Its locality on the Continent is in sandy places, where it may be seen occasionally darting off at full speed like a locomotive emerald from beneath its covertine of a bush or tuft of long grass. It is related of this, or its cousin-germain *Calosoma sycophanta*, that one of the most celebrated French Naturalists was indebted to it for his life. During the Peninsular war, as an officer of cavalry, when under fire, he saw one of these splendid beetles running on the ground, immediately jumping off his charger, and when in the very act of securing his prize in the folds of his foraging cap, a round shot struck his horse, and would inevitable have deprived the rider also of life or limb but for this fortunate circumstance.

Musk Beetle (*Cerambyx moschatus*).—Few insects even of the tropical regions can rival this most beautiful beetle when arrayed in its bright, vivid, granulated, green colouring; for, singularly enough, the specimens vary so strangely, not only in tint but size, that, but for distinctive marks, they might be considered almost as belonging to different families. The specimen I captured on the continent, and the only one, was in the dark road, overshadowed by the dusky foliage of those enormous Pines which form the forest surrounding the Alten Schloss, or the Castle of Baden. Had it been of the comparatively dull colour of those I have met with in England it might have escaped unnoticed, but its effulgent green actually glittered on the ground and betrayed its presence.

(To be continued).

ON BOTANICAL TERMS.

The names of the order, tribe, family, section, and domus, all end uniformly in zoology, namely, in *ores*, *es*, *idæ*, *inæ*, and *ites*; and the advantages of this plan are self-evident. Botany has at length, though tardily, participated in these advantages; and the honour of having introduced these endings belongs to Lindley, who first developed his ideas on the subject in his *Key to Structural Botany*, published in 1835. Plants, like birds, are there divided into five orders, namely, Exogens (*Exogenæ*), Gymnospermens (*Gymnospermenæ*), Endogens (*Endogenæ*), Rhizanthens (*Rhizanthenæ*), and Acrogens (*Acrogenæ*). These are divided into tribes, as Monopetalæ, Apetalæ, &c. These, again, are divided into groups, which terminate in *osæ*; and each of these are divided into families, the names of which are formed by adding *aceæ* to the root of the typical genus. I have, however, thought that *acæ* would be preferable. The inconvenience of the former is not so apparent in the shorter names, as that of the Rose family (*Rosaceæ*), or Pine family (*Pinaceæ*), but in some of the longer names, as that of the Willow-wort family (*Epilobiaceæ*), the Fig-wort family (*Scrofulariaceæ*), *Polypodiaceæ*, *Plantaginaceæ*, &c., we should feel relief from the omission of a vowel. It would be far less convenient to call the Willet family *Silviadeæ* than *Silviadæ*, or the Finch family *Fringillideæ* than *Fringillidæ*; and if this is acknowledged in zoology why not, also, in botany? Several persons who are willing to adopt the improved nomenclature complain of its inconvenience; and certainly I do not see why any unnecessary difficulties should be thrown in the way of any one. These remarks may not be without their utility, and therefore I submit them to the botanical readers of *The Naturalist*, which, like every other equally promising Naturalist, has my hearty good wishes.

C. T. W.

FOOD OF THE HEDGE COALHOOD (Pyrrhula vulgaris, *Tem.*)

With me the Bullfinches (your Hedge Coalhood) are very destructive, particularly to the Plum trees, Apples, Medlars, &c. It is the blossom-buds that are chiefly preferred. I have dissected dozens of these birds, and have never found any remains of insects in the crop or stomach. They are here very numerous, being fostered by the extensive plantations I have made; and I am obliged (reluctantly I must say) to make war on them every spring.

P. J. Selby.

A BOTANICAL TOUR IN HEREFORDSHIRE, MONMOUTHSHIRE, AND SOUTH WALES;

WITH INCIDENTAL NOTICES OF THE SCENERY, ANTIQUITIES, &c.

By Edwin Lees, F.L.S. & F.E.S.L.

Any observations that may tend more completely to elucidate the Botany of Great Britain, and accumulate materials for a correct geographical distribution of its plants, cannot but be regarded with interest by the inquisitive Naturalist, as additional links in the scientific chain. This applies, too, more particularly to the district I have just cursorily examined, which appears most unaccountably to have been greatly neglected by botanical observers, if we except Mr. Dillwyn, who, in the first edition of the *Botanist's Guide through England and Wales*, has recorded the stations of many plants in Glamorganshire. Respecting the vegetation of the other South Welch counties, little seems to be known; for my friend, Mr. Hewett Cottrell Watson, in his recent and excellent *New Botanist's Guide to the Localities of the rarer Plants of Britain*, has left Radnorshire an entire blank; stating that the *Old Botanist's Guide* contained localities for three cryptogamic plants *only* in that county, and that "not any other stations" were known to him. And while he has only given thirteen plants to Monmouthshire, four of which were communicated by myself, he remarks, under Pembrokeshire—"For this and other counties of South Wales, I have to regret the very incomplete lists it is in my power to give. Indeed, there is, probably, no other part of Britain, in which *half-a-dozen counties together are so little known botanically.* It is much to be wished that some botanical tourist would diligently explore them." This, I think, must be allowed to furnish me with a very sufficient text for illustration and remark; and having occasion for a little mental and bodily renovation, I resolved that while I inhaled the sea breezes on the one hand, I would, if possible, scent out some plants on the other.

Now, then, for the detail of operations. I will first, however, mention, that, to prevent trouble and render my researches more accessible, when any plant noticed by me is unrecorded by Mr. Cottrell Watson, as located in that vicinity, I shall prefix an asterisk to it.

I entered Herefordshire by the pass through the sienitic chain of Malvern Hills, at the northern base of the massive serrated Herefordshire Beacon. Having before, in Loudon's *Magazine of Natural History*, vol. iii., in Hastings's *Illustrations of the Natural History of Worcestershire*, and in Mr. Watson's *New Botanist's Guide*, detailed all the plants of the Malvern Hills that I was acquainted with, I here refer to those publications for the Malvern plants, and hasten upon new ground. As a lover of justice to fellow-labourers in the same

field with myself, which I trust I ever shall be, not "damning with faint praise," or damning with no praise at all, too often practised by envious and unworthy rivalry to the prejudice of science, I cannot here avoid referring to the list of Malvern Plants published by Mr. Addison, of Malvern, and appended to his admirable article on the Medical Topography of Malvern in vol. iv. of *The Transactions of the Provincial Medical and Surgical Association.* As I fear that article will scarcely penetrate beyond professional hands, from the nature of the volume in which it is placed, I shall here subjoin those plants found by Mr. Addison and not noticed by myself. I, of course, exclude the Mosses and Lichens—of which Mr. Addison has produced a copious list—as too numerous to copy, and being excluded from Mr. Watson's book, as not conducive to the purpose I have in view.

"*Viola hirta.*—In a lane at Colwall [Herefordshire] abundantly, Cowleigh Park, &c."

"*Campanula latifolia.*—In a coppice below the Chalybeate Spa." This is, however, very rare in the vicinity of Malvern, a thousand and one excursions there never having exhibited it to me. I had the pleasure to see it in Mr. A.'s *herbarium.*

"*Bupleurum tenuissimum.*—At Barnard's Green, on the right of the road below Garford Court." One of the most remarkable of Mr. Addison's discoveries. From Mr. Watson's *Guide* it appears that, excepting near St. Vincent's Rocks, Bristol, this is the only station for this very rare plant on the western side of Britain.

"*Torilis infesta.*—Corn-fields below Great Malvern."

"*Luciola Forsteri.*—In a coppice near the Well House."

"*Saxifraga tridactylites.*—On the walls and the roofs of cottages." Very common when it once becomes social upon the walls of man, but rare under other circumstances.

"*Reseda lutea.*—By the sides of the road, common." Mr. Addison's accuracy is not to be suspected, or I should have imagined some mistake. Mr. Watson has not recorded it as found in Herefordshire or in any part of South Wales. As far as I have noticed it is uncommon.

"*Nepeta cataria.*—Near the turnpike, by the entrance to Eastnor Castle," Herefordshire.

"*Mentha Pulegium.*—On the common by the road-side at Barnard's Green."

"*Geranium phæum.*—By the side of a watery lane beyond the Hales-end, Cradley," Herefordshire.

"*Vicia angustifolia.*—Near the Well House."

"*Hypericum dubium.*—Frequent about Malvern."

"*Epipactis latifolia.*—In Cowleigh Park, and other places."

"*Euphorbia Characias.*"—This occurs in Mr. Addison's list *without any*

assigned habitat, and is, therefore, I fear, not to be depended upon, having possibly crept in erroneously. Should this not be the case, it would be gratifying to have further particulars respecting it, as there is only one certain locality known in England for this plant, and that is in Needwood Forest, Staffordshire. I have in vain examined the Spurges at Malvern, with the hope of finding it.

" *Scolopendrium Ceterach.*—On a walk, and on the Abbey Church, Great Malvern." This is a very rare fern in Worcestershire, and as it does not grow on the Malvern Hills, it must have been introduced at the Abbey.

Having taken the liberty of making these observations on Mr. Addison's list of plants, and inviting the same animadversion on my own, I now proceed with my enumeration. Immediately on passing the Malvern chain, a broad belt of grauwacke limestone, forming part of the " silurian system" of Mr. Murchison, fills up the intervening country to Ledbury, where the lime is extensively quarried. I dismounted to examine the country, and the following plants occurred :—

**Rosa micrantha.*—In various tall, drooping bushes on the grauwacke by the side of a rill in the valley beyond the station for the *Galanthus nivalis.* The smaller flowers and more delicate habit of this plant distinguish it from the common Sweet Briar, and the fruit is characteristic ; yet vigorous young shoots put on a considerable resemblance to *R. rubiginosa.* I met also with a *variety*, forming a low bush with very delicate *smooth* leaves, doubly serrated, but without glands, except minute ones in the serratures. Scent cowslip-like ; prickles rather numerous, scattered, strait, or deflexed, and aggregated in threes, fours, or fives, under the stipules. No flowers.

Rosa rubiginosa.—Who is there that is not familiar with the grateful smell of Sweet Briar hedges, and will not hail with joy this favourite of the garden in a wild station? Gathered in the valley north of the Ledbury road, and between Ledbury and Bromsberrow.

* *Rosa Forsteri.*—This species (or variety of *canina*, as considered by some botanists) is only placed as occurring in four counties by Mr. Watson, and one of these is Worcestershire. I now met with it in Herefordshire, and doubt not it will be found of general occurrence. The very hairy midrib of the leaves easily distinguishes it, although the extremely short peduncles offer another character perhaps variable.

* *Rosa systyla.*—This rose seems a comparatively scarce one, and is certainly so in this district, where it has very rarely occurred to me. It seems confined to the south, according to Mr. Watson, who has it only in seven counties, all of them southern, except Worcestershire. It is possible that this species may be passed as a variety of *R. canina*, though the prominent styles offer a distinguishing mark ; but the fact is, they do not appear at all conspicuous till the petals and stamens have disappeared, when they appear very remarkable ; but the flowers having then vanished, the plant has lost its attractions, except to a scrutinizing eye. I found

it in a hedge on the Bromsberrow-road from Ledbury, just beyond a public house called The Pye's Nest.

Prenanthes muralis and *Sedum telephium* occurred upon the grauwacke rock in the valley below the Beacon, and *Carex axillaris* and *Stellaria uliginosa* in a marshy spot near.

Several battered specimens of the Yew *(Taxus baccata)* presented themselves on the side of the road leading to Ledbury, and some very fine aged ones adorn the Ridgeway, an ancient raised road leading to Earl Somers' mansion of Eastnor Castle. Here, also, I noticed some fine specimens of the Juniper *(Juniperus communis)* growing among a thicket of brambles. **Viburnum lantana* and **Clematis vitalba* appeared growing upon the limestone within a mile of the town of Ledbury.

The vicinity of Ledbury, blocked up with various detached limestone eminences on its eastern side, and overlooking the great extension of the old red sandstone, backed by the solemn Black Mountains, presents rather an attractive focus to the botanist, which is increased by the prevalence of deep woods along the sides and bases of the hills, and the variety of soil, the new red sandstone appearing at the distance of three miles only on the Bromsberrow road. I, therefore, paused here for the remainder of the day. In the churchyard is a very fine, lofty, spreading Wytch Elm *(Ulmus montana)*, and avenues of Lime *(Tilia Europæa)* enfilade the paths. The Red Currant *(*Ribes rubrum)* was growing as an epiphyte upon them. It is curious that an analagous circumstance is recorded with respect to the great Lime-tree at Neustadt ander Linde, Germany, where Gooseberries grown in the hollows of the tree there are sold to curious visitors.†

On a limestone hill, north of the church, I found the beautiful *Vicia sylvatica* "canopying Titania's bower,"‡ and *Epipactis latifolia* occurred sparingly.

Between Ledbury and Bromsberrow I noticed *Campanula patula*, **C. Trachelium*, and *Hypericum androsæmum*. *Acer campestre* was very abundant in the hedges, one old specimen being seven feet in circumference.

In passing along a narrow lane in my way towards Bromsberrow Church, I came upon an open space at a spot called Brownsend, where stood a most magnificent specimen of the **Tilia parvifolia*, rivalling in growth and spread of bough any Oak or other veteran of the forest. It was not until after close examination that I could be satisfied that it was a lime of this species, though in flower: certainly the finest I ever saw. At a yard from the ground the trunk measured fifteen feet in circumference; heighth full eighty feet. Although the *T. parvifolia* is certainly indigenous in the country about the base of the grauwacke heights, I conceive this identical specimen to have been planted, not only from its central position, but from its vicinity to an old farm house. Some noble old spe-

† Loudon's *Arboretum Britannicum.* ‡ Sir Walter Scott.

cimens of **Tilia grandifolia*, of singular growth and large dimensions—drawings of which I exhibited at a meeting of the Linnean Society—stand in a meadow in the vicinity. Close to the church wall I also noticed a fine growing Oak towering high in air; seventeen feet six inches in girth at a yard from the ground. I was much pleased to perceive that some friend of the Dryads—alas! too often now ruthlessly neglected—inhabited this quarter; for at the fork of the tree, where it divaricated into two vast arms, a piece of lead had been placed and so adjusted as to carry off the moisture from, and prevent its decaying, the trunk of the tree.

From Ledbury to Hereford, and thence to Abergavenny, is a mass of old red sandstone, offering few features of interest either geological or botanical, till Monmouthshire is entered upon. The Wye itself is not very attractive at Hereford; and though the sombre massive cathedral and several singular, grotesque timber buildings in that last English city claim the attention of the antiquary, they do not, at present, further concern me in my vegetable explorations. As far as my observation extended, there appeared no difference in the plants to mark the old red sandstone from the new: perhaps the *Roses* are less abundant and luxuriant, *R. arvensis* rather predominating. It is somewhat curious that **R. villosa* in abundance is a distinguishing character in the Welch flora. In Worcestershire this is a rare species; it is of more frequent occurrence in Herefordshire: for I observed it in considerable plenty along the hedge between the second and third miles from Hereford; but in Wales itself, as in the vicinity of Brecon and in the vale of Neath, its deep pink flowers covering whole thickets in the greatest profusion, offer an enchanting spectacle to the commonest observer.

Between Ledbury and Hereford I observed *Orchis maculata* very plentiful in the meadows, and the fragrant *Gymnadenia Conopsea* sparingly. The latter, though stated by Mr. Watson to occur in all our floras, except that of Devon, is certainly a local plant, though overspreading whole fields where the soil is congenial to it.

At Trelew, between Hereford and Pont Rilas, is an Elm *(Ulmus campestris)* of great height and magnificence. I omitted to take its dimensions, but was informed that it was two hundred and seventy years old. It stands close to an old farm house by the road side, and was probably planted when the house was erected. I heard something relative to this structure having been formerly inhabited by a family of consequence; but a mist has here risen upon my memory, which my memorandum book fails to clear up. The Elm seems to have advanced no farther in this direction; and taking leave of the "elmy granges," so characteristic of England, I in reality entered South Wales at "Monmouth Cap," although still in England by act of parliament.*

* Monmouthshire was made an English county, by act of parliament, in the reign of Henry VIII.; Welsh is nevertheless very frequently spoken by the country people.

Crossing the Monnow, which runs by the side of the road for a considerable distance till lost in a dingle of the sullen Black Mountains, a pleasing scene presents itself. On the left the heights rise up thickly covered with wood, while extensive green meadows spread below, through which the shallow river brawls hoarsely over its stony bed, seen at intervals through the dense foliage of oaks that overshadow it, while here and there a funereal plume of yew increases the gloomy solemnity. Beyond, appear the terminating defiles of the mountains, whose dark parallel masses envelop each other in deep shadow as the traveller journies in apparent review past their huge flanks. Immense quantities of the *Petasites vulgaris* cover the banks and bed of the Monnow with their enormous leaves. I observed, also, by the road side, a large *Salix alba*, which, wreathed to its summit with Ivy, presented a singular aspect, with its silvery leaves in contrast with the dark-green Ivy which, like an insidious serpent, had sprung upon and was overpowering it within its multifarious folds. Although the Ivy seems to have no choice, but will mount up any tree within its influence, the *Salices* seem, in general, less liable to its attacks ; and hence, when triumphant, upon a large specimen of the *alba* especially, the picture it presents is rather remarkable.

As I approached Llanvihangel, the singular hill, called the Skirrid Vawr, towered on the left of the road, presenting, in its contour, the remarkable appearance of a couchant beast of prey with an offspring at its feet. The fact is, that this lofty mass of old red sandstone has undergone the phenomenon termed a landslip, at some former period, a huge mass having been precipitated from the summit to the base of the hill, and a steep precipice and yawning gap now intervene between the two masses. To add to the picturesque effect, the young one, if the fallen rock may be so termed, is now luxuriantly overgrown with wood. This circumstance has been seized upon by superstition to impart a "holy" character to the hill, it having been imagined that the rock was "rent" at the crucifixion of our Saviour, and it bears the appellation of "The Holy Mountain" to this day among the people of the neighbourhood. The foundations of a chapel, dedicated to St. Michael, may still be traced upon the hill, which merits a visit from the geologist, though not upon this account. It might be curious to inquire whether, in fact, this landslip of the Skirrid Vawr, to which I have alluded, was not really co-incident with the celebrated journey of Marclay Hill, in Herefordshire, noticed by the old chroniclers, and which is another member of the "old red" strata. This might tend to prove a later shaking of this part of the island than geologists have hitherto admitted.

Llanvihangel House is surrounded with avenues of the Scotch Fir *(Pinus sylvestris)* finer and more magnificent than I have anywhere else seen, of considerable altitude and great spread of bough. I measured one of the largest between the road and the house, which was eleven feet in circumference at a height as high as I could reach to measure, and rising up to the spread of the boughs above fifty feet, nearly of the same magnitude of bole.

At Llanvihangel Pentre I noticed in a field the **Colchicum autumnale* in fruit in great profusion; and on my remarking it to an individual residing near, he informed me that, in the spring of the present year, seven cows were poisoned in that meadow by feeding upon the plant, and that he himself saw them lying dead in the field. He stated that they belonged to a farmer of the name of Watkins, who lived in the parish, and was imprudent enough to turn them into this meadow in the early spring, after a winter's feeding on hay. Greedy, in consequence, after green food, they devoured the *Colchicum*, and were all found dead the next morning! This insidious plant, whose purple flowers in the autumn are its only recommendation, should be destroyed without mercy by the farmer wherever it presents itself. I do not think, however, unless under the circumstances stated, that cattle would, in general, prefer to eat it; and as its leaves and fruit only appear in the spring and early summer, it is innoxious when it adorns, as it does profusely in Worcestershire, the short green aftermath.

As I passed through the valley between the Skirrid Vawr and Sugar Loaf Hills, I noticed the **Sanguisorba officinalis* in considerable abundance, in the meadows on both sides of the road.

On alighting at Abergavenny, though evening was rapidly approaching, I hastened on with the intention of ascending the Sugar Loaf forthwith, but getting almost inextricably involved in the dense mass of wood that covers the buttresses of the mountain, I found it impossible to get farther than the Derry; add to which, as I emerged from a thicket into a water-course, and caught the purple peak of the hill still far distant, it became involved in cloud, and a copious shower soaking the long grass and pouring from the bushes, was an addendum to the excursion not calculated upon or provided for. I therefore leaped one of the stony water-courses, and made my best way to a practicable path. In my passage I encountered some curiously contorted dwarf Beech trees (*Fagus sylvatica*), though planted I have no doubt; for though, according to Mr. Watson's *Geographical Distribution of British Plants*, it would appear that the Beech held rank in all our floras, I have never yet met with it in the midland counties or South Wales in a situation where its claims as a truly indigenous species could be considered indisputable.

The late Mr. Purton, of Alcester, who was justly honoured by Sir J. E. Smith with the appellation of "accurate," has recorded in his *Midland Flora* the occurrence of *Melampyrum sylvaticum* in "the woods at the foot of the Sugar Loaf, in great plenty."* After an attentive examination of the woods "at the foot of the Sugar Loaf," I am, however, fully persuaded that the plant there occurring "in great plenty" is not the real *M. sylvatica*, but a variety of *M. pratense*, with entire floral leaves, the β. of Dr. Hooker's *British Flora*, and the *M. montanum* of

* Purton's *Midland Flora*, vol. ii., p. 751.

Dr. Johnston's *Flora of Berwick-upon-Tweed.* This at all events was the only *Melampyrum* that I could find, and it was very plentiful in the woods of the Derry. As the trivial name *pratense* is so very uncharacteristic, and the plant is an invariable attendant upon hilly woods, if Dr. Johnston's plant cannot stand as a new species, the name *montana* substituted for *pratense* would be advantageous, and prevent those errors to which all botanists are liable, especially if the plant be named from a casual inspection only, in combination with the habitat presumed from the name.

As I descended the hill through the woody outlets, the magnificent Blorenge mountain, robed in the deepest purple, gleamed at intervals as I caught it through the watery cloud; and the last tinge of sunset was lost in the rising mists that began to overshadow the romantic valley of the Usk. The Bat and the Eve-jar, issuing from their retreats, passed rapidly among the thick foliage, and I emerged, at last, into a deep hollow-way leading to Abergavenny. **Hypericum dubium,* and **Lepidium Smithii,* in great profusion, occurred in the fields bordering upon the Derry Wood.

[*To be continued.*]

REMARKS ON THE PRESENT NOMENCLATURE OF BRITISH ORNITHOLOGY,

WITH A VIEW TO ITS REVISION AND CORRECTION.

By the Rev. F. Orpen Morris.

[*Continued from page* 160.]

Before proceeding with my observations on the English nomenclature of our British Birds, I must supply the omission of an exception to the second rule I laid down, with regard to specific names, that is, that "the specific name should express, to the fullest possible extent, the peculiar characteristics of the bird." There are many species named after individuals, either after those who have discovered them, or, by those who have done so, in honour of some friend or illustrious observer of nature, and their name evidently cannot express *any* of the characteristics of the species they represent. Now, it is scarcely necessary to stipulate that such names as these should be only exceptions to the general rule, as the greater portion of animated nature has already received a nomenclature in every

class. In the second part of the above rule, I contend that no name *which is not faulty*, should be changed, even for one more comprehensive; and this, the very nature of *nomina adulatoria** would prevent; still I maintain that it is fair and legitimate that such names as these should, on proper occasions, be allowed. I am borne out in this proposition by the opinion of Mr. Westwood, in a clever paper of his, which, singularly enough, appeared in Loudon's *Magazine of Natural History*, contemporaneously with mine upon nearly the same subject. As one reason against changing such names, he mentions "the injustice done thereby to the original describer of the species, whose name is thus supplanted:" and, further, he says with truth, "the custom of forming specific names from the name of the captor or possessor of a new species, although condemned as a fault by a recent anonymous writer, has been sanctioned by every Naturalist since the days of Linneus—it is an honourable testimony of the opinion of fellow labourers." I must confess that I may appear to be not altogether an uninterested advocate of this practice, even "*in prospectu*" (vide, also, Curtis's *British Entomology*, No. 110, p. 441); but, nevertheless, I have always maintained the same opinion, and I have read as yet no arguments likely to induce me to change it; "nor think it not immodesty" that, for the present, I agree on this point with Mr. Westwood, and I am glad to find that it is not the only one connected with the general subject I am investigating in which our views coincide.

But I must proceed, "*unde a quo abi redeo*," and I will commence my observations with candidly stating my opinion that it will be a happy day for nomenclature when English names are totally abolished. It may be all very well for unscientific persons to retain, *pro tempore*, the local names, which are most of them varied in different parts of the country: thus the Missel Thrush, for instance, of one place, is the Stormcock of another: but we hope the rapid progression of knowledge, which has of late years taken place, will continue to be yet more extensively, if not universally, diffused, and render it quite as easy for those who possess even a small stock of erudition, to call a bird, or an insect, or a plant by its scientific and Latin name, as by its vulgar one. Here we need not speculate: we have only to look at what has already taken place. We are speaking now of birds; but let us argue *more philosophorum* "from like to like." Have not the *coleoptera* almost exclusively Latin names, not one in a hundred being degraded by a vulgar, or what might, with more propriety of language than the word is usually connected with, be called a "trivial" name?†

* With regard to the mode of forming these names, the Latinity of the middle ages, as Mr. Westwood observes, must be employed; but this is so evident, that I am surprised at his having thought it necessary to argue this question, or mention it at all.

† As I am chiefly speaking of *British* birds, it would be hardly fair to use the argument which might be derived from considering the countless number of foreign species, which might, perhaps not quite with equal justice, but certainly with some shew of reason, demand

What impediments can arise, for example, in consequence of *Prionus coriarius*, or *Philonthus impressicollis*, or *Emus hirtus*, having no other than Latin names, beside the thousands of other British insects which have no names except those of Latin or Greek composition? Nay, more; how very few are there even of those which have English names that are *called by them* generally by collectors, throughout the country: take the very first that occurs in Curtis's *Guide to an Arrangement of British Insects*, the lovely genus *Cicindela*: "*ex uno disce omnes.*" The *Cicindelæ* are anglicised Sparklers; but are they ever so called even in common entomological parlance? Why, then, should we find a difficulty or make one with birds which scarcely exists in the case of insects, and almost still less with plants? Is it not quite as easy to speak of the *Oriolus galbula* as of the *Golden Oriole?* to point to a *Hirundo riparia* as to a *Sand Martin?* or to say that we have shot a *Phalaropus* as a *Phalarope?* I have a great respect for antiquity, which my former arguments will sufficiently prove; but in the cause of science all things subordinate to it should give place, and we must make a sacrifice even of our prejudices and associations in her behalf. Why should we create a difficulty with one class or one genus of the same class which does not exist in another? In many, even in by far the greater number, we have no prejudices to contend with, no English names to remove; and, even among birds, the more recently discovered ones have either no English names, or, if they have, the use of them is scarcely ever called into exercise: take for example the *Anthus Ricardi*, which is much more frequently so called, even by those who are not conversant with Latin, than "*Richards' Lark*," and the *Cursorius isabellinus* than the Cream-coloured Swiftfoot. With what are more properly called the indigenous birds, the difficulty in the way is the universal diffusion of their English names, given to them before science had yet assigned Latin names to them; with more modern discoveries this is not the case, and, therefore, the same difficulty does not exist. Then, again, the original birds, if I may use the term, have shorter, more vernacular, and unmeaning names; but when we come to more recently discovered or less generally distributed species, then we find longer, more descriptive, and more modern names. Of the former, take as examples the Robin, the Throstle, Dunnock, Gull, Cormorant, &c., of the latter, the Olivaceous Gallinule, Whitewinged Crossbill, Funereal Owl, and Whitebellied Swift; but this, I am willing to admit, is partially accounted for by the necessity of the discrimination of diverse species, modern discoveries pointing them out, though formerly, perhaps, all comprehended under one common name. But if, for the present, we are to retain English names at all, we ought, in the first place, to alter them as little as possible, "*nomina trivilia nunquam absque summa necessitate mutanda sunt;*"

from us English names for themselves as well as our more favoured native birds, especially when the former are now almost as extensively diffused, in a preserved state, in this country, as the latter in a living state.

because, as I have before observed, they are of little or no use to the scientific Naturalist, and their use to others will be done away with if they are to be changed incessantly, and transposed backwards and forwards, thus rendering confusion only worse confounded, no doubt with the best intentions. Under these circumstances I advocate the retention of such English names as either have no meaning (at all events none which persons in general would detect), for instance, Guillemot, Auk, and Eagle; or if they have a meaning let it be as nearly as possible a literal translation of the Greek or Latin name. In cases where a bird has been properly removed to one genus from another, or to a new genus, the classical name being changed, it is also right that the English name should undergo a transmutation, but the original name should be reserved for the original or most typical genus. Mr. C. T. Wood seems inclined to act upon this principle, and he is quite right in doing so; but as he has also written upon the subject of nomenclature, I will take this opportunity of expressing my opinion of the way in which, in some other matters, he has worked out and developed his own *theses*.

He is very unfortunate in one of his interrogations: "what a much more lively expression of the birds" he asks, "do the following specific names convey?" (than the original ones):*—"Rosecoloured *Amzel*:" may I ask what *expression* this latter word conveys, unless some latent and recondite one, of which, I am sure, most persons, in common with myself, are ignorant: the same observation applies to Honey *Pern*, Furze *Whinling*, *Sibilous Brakehopper*, *Common Longtail*, &c. &c.; to which the "Rose *Muflin* is added;" "Afedula *Sonans*," of Mr. Wood in one place, "Afedula *Rosea*," in another. "This," he tells us, "is the Long-tailed Tit of authors;" and really, the information is not thrown away, for I am not ashamed to confess that without it, I should have been utterly at a loss even to guess what bird was intended. Allow me also to inquire of Mr. C. T. Wood, the meaning and derivation of the word *Afedula*. Is *Aphedula* intended, from Aphides perhaps being preyed on by the bird? I am inclined to *conjecture* this to be the case, from Mr. Wood's saying elsewhere, that Phasianus ought to be spelled Fasianus, and Sylvia, Silvia. I hope, however, he will not be offended at my telling him very plainly that here he is quite in error—at least, if *he* is right, Eton and Oxford are far wide of the mark, for they teach a very different orthography, and so also does Pliny, the illustrious patriarch of natural history, who may be supposed to be an authority for the orthography of his own language; being one of the most elegant writers in it whose works have come down to us, and with which I may profess some little acquaintance, having taken up a portion of them for examination at Oxford, for the first time in that university. The above instances which I have given of Mr. C. Wood's alterations in nomenclature, are some of them gratuitous; but even with regard to those which

* I write from memory, and am, therefore, liable to some trifling inaccuracy.

are not, does he seriously imagine or expect that they will ever come into general circulation, or that their cacophony will be endured? I do assure him that they never will.

One word on the name troglod*y*tes, which Mr. Wood says should be written troglod*i*tes, but which error I must also prevent from being perpetuated. The word originally was the name of a people, and given to them from their custom of inhabiting subterranean dwellings, τρωγλη a den, and δύνω to enter. Mr. C. T. Wood says that the name is engaged for a genus of *Mammals*. He commits the same error in the word *Nicticorax*, &c. &c. as every classical scholar must admit.

I cordially agree with Mr. Wood, that it is to be *regretted* that *unnecessary* changes have been made in scientific works by Naturalists of high repute, as, in addition to the confusion produced, an example is thereby set which may be, and *is*, prejudicial to the interests of science; and it is on this very account that I must, in conclusion, take some notice of the favourable opinion he gives in the last number of *The Naturalist*, of Mr. Neville Wood's book, which, he says, has two or three errors, such as *Phœnicura* for *Ruticilla*, and *Brakehopper* for *Locustel*. To the first of these appellations, I suppose Mr. C. Wood objects as being of Greek derivation, for in Loudon's *Magazine*, *loco citato*, he says, that he objects to Greek* words being employed at all in ornithological nomenclature; but as he gives no reason for this objection, we have yet to learn their ground of offence. As, however, I have avowed myself an advocate for their use, I shall feel thankful for any arguments adduced on the other side; and if I deem them sufficient, I will lose no time in giving my assent. Having nothing at heart in these remarks but the advantage and interest of ornithology as a branch of science, I trust that Mr. C. T. Wood will receive my strictures in the spirit in which they are given; remembering his own quotation from Mr. Blyth as to the good that will result from dispassionate discussion of the principles of nomenclature.†

I must reserve the synoptical list of British birds, which I propose giving, for a future number; and in the mean time will conclude this paper by stating that the idea of the conclave of Naturalists, to decide on the retention or discarding of names, is not my own, but was suggested some time ago by my friend, Mr. H. E. Strickland—a fact I omitted to mention in my last communication.

* "I abjure the practice of mixing Greek words and Latin together, *canusini more bilinguis*, in the compounded names of genera or species: it is equally useless and absurd."

† Mr. C. T. Wood, in speaking of *nomina adulatoria*, says that Mr. Lansdown Guilding's opinion entirely accords with his own, and quotes Mr. Guilding, where he says that such names should never be applied to *genera*. But Mr. Wood is speaking of *specific* names, and seems to suppose that Mr. Guilding's words bear him out in what he says about *them*. Here there appears to be some mistake; certainly, however, I agree with both, that the names in question should not be applied to *genera*. I think the instances of their being so used, are comparatively rare.

[*To be concluded in our next.*]

REMARKABLE INSTANCES OF NIDIFICATION.

The instance recorded by me, in a former number, of the eccentric nidification of a Wren (*Anorthura*) having elicited a singular parallel from another Correspondent (see page 181), I shall give a few more occurrences of a similar nature and equally interesting. I may here state; in reply to that Correspondent, that the nest of the Chimney Swallow (*Hirundo garrula*, Blyth), appropriated too unceremoniously by the noisy little Wren, was built in an outhouse, and it was so constructed that the feathered tenants could only just enter by the space left between the upper part of the front wall of the nest and the ceiling of the shed.

In the hall of my former residence, Chimney Swallows attempted to build in the upper corners of the walls, for several years successively, making use of the ceiling instead of laboriously constructing the costly dome of the Rose Muflin (*Mecistura rosea*).* So unweariedly did these nature-taught architects ply their hod and mortar that they contrived to advance far in their "temples not made with *hands*" before much attention had been attracted by their journeys backwards and forwards. The vigilant eyes of the house-maids—a class of persons, by the bye, who are most of them *destructives*—were speedily directed towards the procreant cradles of my little favourites, and they were destroyed. Nothing daunted, the Swallows renewed their attempts at establishing their in-door colony, working like so many masons; but it was all labour in vain. I would willingly have marked the lintels of the entrances, that the destroyer might pass by; but the unlucky Swallows were apt to get into a sky-light, which proved as fatal to them as was Doubting Castle of Giant Despair, in the *Pilgrim's Progress*, to the unfortunate mortals who entered in thereat. I, therefore, had the door closed till the mania was over.

I have noticed several other rather strange choices of places for building manifested by birds; and as the feathered bipeds have no *Architectural Magazine*, their choice of a site may be determined by caprice rather than by fixed principles. I refer the reader to page 513 of the *Field Naturalist's Magazine* for a very remarkable instance of attachment to its nest manifested by a Garden Willet (*Sylvia melodia*, Blyth). I have known a similar instance of attachment to home in the Noisy Willet (*Sylvia loquax*, Herbert); and though the nest in this instance was certainly not "made a complete ruin by a flock of Ducks," yet it was sufficiently damaged to afford abundant apology for desertion. I have witnessed the nests of the Common Redstart (*Ruticilla luscinia*), the Robin Redbreast (*Rubecula familiaris*), and several other common birds, in extraordinary situations, which, at some future time, I may probably describe.

C. T. Wood.

* Longtailed Tit and *Parus caudatus* of old authors: Leach has very properly constituted a new genus for the reception of this species and its congeners. The *Muscicapa luctuosa* of old authors I propose to call the Pied Collet (*Aphedula luctuosa*).

NOTES OF A BOTANIST.

(*Continued from page* 124).

Peculiarities of Form in the Structure of the Blossom.

Amidst the endless diversity discoverable in the forms of the blossom, we find some unusual singularities, and these striking deviations, we may rest assured, have their peculiar design in the beneficent arrangements of a prospective Providence. The Fly, Bee, Wasp, and Butterfly Orchises—the flowers of the *Oncidium papilio*, and those of the *Peristeria elata*, not to name myriads more of remarkable epiphytes, adorned with blossoms as exquisitely beautiful as they are singularly curious—all have a specific purpose to fulfil in the economy of creation. Not the least remarkable among blossoms are the flowers of the *Aristolochia*: those of the *A. trifida* have a prolonged lip, which, from its slender form, might be truly called "a hair lip." A proper inspection of the distribution of the blossoms will unveil the design of this curious conduit. The flower is a true condenser of the aqueous vapour that settles on it; and, on the principles of radiation, the structure and the colour will facilitate the deposition of dew, while the elongated lip as duly transmits the stream to the roots of the plant. Many plants, at the period of inflorescence, require an unusual supply of water; such as the *Heydychium flavum*, and others.

The *Kaulfussia amelloides* presents a singular feature in its individual petals: they are rolled up, or curled like a lady's tresses, and *temperature* seems to be intimately connected with the phenomenon; nor is it unlikely that moisture has something to do with it, *cold* being the result of its evaporation. I found that the flower of the *K. amelloides*, when pressed in contact with a heated metallic plate, instantly unrolled its petals, which were as suddenly coiled up again on transferring the disc of the flower to the surface of cold water. On the other hand, the flowers of the *Mesembryanthemum*, on their approach to the source of heat, inflected their petals inwards towards the centre.

Maturation of Seeds.

In a former section, it will be remembered, I adverted to the natural *ventilation* of seeds, and incidentally mentioned some interesting provisions made for this purpose. To secure their *maturation*, we find *insulation* and *uniformity of temperature* not unfrequently essential conditions, and these are accordingly stipulated for in the physiology of plants. A continental writer has, in a recent number of the *Magazine of Natural History*, favoured us with some crude and

undigested experiments made on the *Arachis hypogœa*, or "ground nut;" and his conclusions are, as might be expected, meagre and unsatisfactory: namely, that darkness *may* be necessary to perfect the maturity of the pod, and that it *may* further absorb "something" from the earth, and this "something" *may* be water. To those who have attended to the phenomena of this extraordinary plant, the *true cause* is evidently to secure the *uniformity of temperature* maintained by *terrestrial warmth*. The temperature of the *earth* and the *air* are very different: that of the former will remain comparatively uniform during the night, whereas the latter will be subject to incessant vicissitudes. It is thus that, in a medium of uniform temperature, immature seeds may be ripened; and in this manner have I matured the green fruit of the *Bannana:* a thousand proofs might be adduced in verification. The *Colchicum autumnale* ripens its seed-vessel and contents below the surface of the ground, and if circumstances do not permit the *cyclamen* to bury its seeds for the same purpose, it is interesting to observe how carefully it coils the stalk round the vessel, so as effectually to conceal it; not merely to shroud it in darkness, but to preserve externally the uniformity of temperature maintained by the plant.

On the same principle are similar phenomena developed in aquatic vegetation. The *Ranunculus aquatica* matures its seeds below the surface, the *Valisneria spiralis* retracts its seed-vessels to the bottom of the river, and the *Nelumbium*, *Nymphea*, and *Nuphar* withdraw their seed-vessels from the surface, to escape from the effects of radiation, and take advantage of a medium comparatively unchangeable and free from those alterations to which the aërial medium is constantly subject. Sometimes bags or bladders of air fulfil the purpose of insulation, as in the seed-vessels of the *Passiflora cerulea* and *Colutea frutescens;* at other times, *silk* and *cotton* are the means employed; examples are supplied in the *Asclepias Syriaca*, *Gossypium herbaceum*, and "Silk-cotton Tree." We have an evident proof that this is the intention, or at least the inference amounts to probability, in the fact that we meet with the same provision in denizens of the desert, between the tropics, as in arctic and antarctic lands; thus, the seeds of the *Stapelia* are enveloped in a silky down, as well as those of the Lilliputian Willows, on the shores of West Greenland.

The Economy of Bulbs.

Under this section it is not my intention to enter upon a description of the various structures presented by bulbs, or the different offices or functions they are destined to fulfil. My task, at present, will be confined to the provisions in their economy to meet extraordinary contingencies. The distillatory function of the *Calla Æthiopica* and *Agapanthus umbellatus* will be remembered; but the *change of place* or position is not less remarkable. While plants generally

remain fixed to the spot, and their roots radiate in every direction, and extend far and wide, as purveyors in search of food, there are others that are truly *locomotive;* the Orchis and Monkshood move laterally from their original position—a phenomenon still more remarkable in the *Arum dracunculus.* In these the motion is *superficial;* but some Cape bulbs display a feature equally curious. Some of the *Ixias* form their future bulbs *below* the original or parent bulbs, so that they *sink deeper* into the sand; a most wise and beautiful provision; when it is considered that they are constantly subject to denudation from the moving sands and the blasts of the desert. This is the case, too, with the *Antholyzas,* and even the *Anomatheca cruenta.*

(To be continued).

INSTANCES OF CURIOUS VARIETIES OF BIRDS.

One of the mostremarkable varieties of plumage in the feathered race that ever fell under my observation, was a Cuckoo entirely white. I regret that I know nothing of its history, or even where it was shot; but it is still in the possession of Mr. Reid, Animal Preserver, of Doncaster, where I saw it. I have known two or three instances of white Jays, one of a white Jackdaw Crow, one of an entirely white Hedge Coalhood (or Hedge Alp, as it might be named), and several of partially white Garden Ouzels, *(Merula vulgaris).* The distribution of the black and white is generally pretty much the same in the varieties of the last-mentioned species. In my collection is a variety of the Garden Ouzel, a female, which was about to lay when it was shot. "I have a female Whin Linnet *(Linaria cannabina),*" writes Mr. Blyth, "which I purchased last year, having a very little white; it has moulted this season, and has now become at least one-third white, its bill and feet also losing their colour. Next autumn I expect it will turn entirely white." A Rook was recently shot by the keeper to John Silvester, Esq., of the Grove, near Ashbourn, the head, feet, and bill of which are nearly white, and the primary feathers of the wing are perfectly white."

N. W.

Campsall Hall,
Nov. 2, 1836.

REVIEWS.

The Natural History and Classification of Birds. By William Swainson, A.C.G., F.R.S.L.S. Vol. I., being vol. LXXXIII. of Lardner's *Cabinet Cyclopædia.* pp. 365. London: Longman & Co.

THE savage who first placed upon his head a flaming feather from the plumage of the Toucan, as little considered the importance of an investigation into the structure and habits of birds as he who, in the present day, runs over the pages of the richly illustrated works arrayed in all the splendours of art the zoological draughtsman can bestow, and fondly fancies himself an ornithologist. It is not now the pastime of turning over plates or drawings that will constitute any one an ornithologist; it must not be concealed that deep and attentive study is required to fully comprehend all the details of the science, and that there are difficulties in scientific arrangement and classification sufficient to blunt the edge of the ardour of the most enthusiastic. Mr. Swainson not unadvisedly, then, intimates that no "Introduction to Modern Ornithology," calculated for the present state of science, yet exists, and proposes to supply the deficiency in the present work, which he has arranged in three departments: Part I.—On the structure and natural history of birds in general: Part II.—On the bibliography, nomenclature, and preservation of birds: Part III.—On the natural history and relations of the different orders, tribes, and families of birds.

On these topics Mr. Swainson dilates with the practised hand of a master; he has been an observer in the cabinet and the field, and it would be injustice not to admit that, with much information on the external anatomy of birds, the volume combines some very agreeable writing. In short, it is what we always must approve—scientific information imparted in a pleasing manner. For the present, we must defer our examination of Mr. Swainson's classification till the appearance of the second volume, particularly as it proceeds no farther than the insessorial order; and as he states it to be "the result of the last six years' study," it will be most advantageous to discuss its merits when placed before us entire and complete. We shall now, therefore, assume to ourselves the privilege of a "raptorial" bird, and shall pounce down without ceremony upon whatever appears to deserve our notice, and meets our exploring eye within Mr. Swainson's preserve. We feel obliged, however, to take exception to the somewhat lordly manner with which Mr. Swainson delivers his *dicta ex cathedra,* and his almost total neglect of his contemporaries, unless they have been concerned in the manufacture of splendid quartos or folios, or it is their goodfortune "in courts to shine." Thus,

while the most unqualified praise is bestowed upon the Prince of Musignano, for his additions to Wilson's *Birds*, which are "exceedingly scarce volumes," and were never "offered for sale;" poor Bewick, whose admirable figures of British Birds gave an impetus to the study of native ornithology never before effected by the most splendid *Planches Enluminées*—is cursorily passed by as not to be "forgotten," and Mudie's volumes are unmentioned. There is also an unfairness in obviously alluding to a person without mentioning his name, a littleness that every candid mind must disclaim. Why, then, is Audubon's controversy with Waterton, about the sense of smell in the Vulture noticed, but Waterton's name avoided? "Amateurs," it is stated at p. 211, have often visited Demerara, "whose sole object seems to have been that of procuring perfect skins: as to the habits of the birds themselves, their structure, or their classic names, we know almost as little about them as if they never existed." This passage obviously alludes to Mr. Waterton's well known *Wanderings*, where it has always struck us that the neglect of scientific names was to be deplored. But at the same time, is no idea of the glorious productions of that splendid region obtained from the *Wanderings*? We surely *see* the Coutinghas and the Humming-birds, if we cannot classify them, and the measured note of the Bell-bird rings even now upon our ears from the depths of the humid forests. At all events, to condemn an author by implication, and yet ingeniously avoid naming either him or his work, appears to us an act of injustice, which, whether proceeding from friend or foe, we will ever honestly expose. As to the Prince of Musignano, we cannot consider that author the greatest benefactor of mankind who publishes works, however admirable, which are unattainable except to a favoured few, who shew them as they would shew a wild animal they were afraid to lose, within the inclosure of a brazen lattice.

But let us touch upon more pleasing matters with respect to "the butterflies of vertebrated animals," as Mr. Swainson somewhat strangely denominates birds. Following up this idea, we presume it is suggested that birds with concealed crests, that can be shut or expanded at pleasure, use them as decoys for their insectivorous prey. As this is a new idea, and deserves investigation, we present Mr. Swainson's observations on the subject in his own words, and it will give an idea of his powers of reasoning:—

"These crests are generally either of a bright yellow, red, or golden colour; sometimes, though very rarely, white. If the feathers of the crown, which are not conspicuously elongated, are laid perfectly smooth, the crest does not appear, although its presence is sometimes indicated by a slight streak of the same colour. When the bird, however, is excited, the central feathers of the crown suddenly expand, radiate almost in a circle, and display what is often a most beautiful and striking ornament. The bright colours of the crest, in fact, are only at the roots of the feather, which are all tipt with the ordinary colour of the plumage; so that when these are expanded they are no inapt representation of the *opening petals of*

a Marigold, or some beautiful little syngenesious flower ; the predominant colour of that class, no less than of the crests that represent them, being different shades of yellow. Now, it is a circumstance no less singular than remarkable, in conjunction with what we shall presently state, that of between fifty and sixty birds possessing this sort of crest, every one is purely insectivorous, that is, living entirely upon insects, which are caught, not by hunting, but are seized only on their near approach. We have frequently had occasion to advert to the fact that all the tyrant flycatchers of Brazil never pursue their prey, or go out in search of it, by wandering about from tree to tree, like other birds. They take their station on a particular branch, and there patiently wait, like a Spider on its web, for such insects as come within range of a sudden dart. It is to this family of birds that the crests we have been describing are almost entirely restricted. We have frequently seen the *Bentevi* of Brazil, the most familiar as well as common species in that country, open and shut his fine yellow crest when merely occupied in watching for insects. This fact, joined with the considerations already mentioned, has more than once suggested to us the idea that these flower-like ornaments are occasionally used as snares to attract the attention of insects, so as to bring them within reach of being captured by a sudden dart."

This is curious and interesting, but Mr. Swainson omits to state what might, perhaps, throw a greater light on the subject—the trees principally frequented by these flycatchers, and the colour of *their* flowers. We should know this before we positively decide that the insects mistake the gold-coloured crests for flowers, particularly as *syngenesious* flowers, to which the crests are compared, do not grow upon trees, nor do trees produce them. We had marked various interesting passages for quotation on the sight, tongue, feet, and voice of birds, strikingly illustrative of the harmony perceptible in every department of nature, and the association of one tribe of beings with another ; but as we may have another opportunity to dilate on these subjects we proceed to notice the second division of Mr. Swainson's work, because suggestions arise there that we may not have a legitimate opportunity of remarking upon again. We would just mention, *en passant*, the observation that " the powers of voice are certainly greater in birds, when their size is considered, than in any other class of animals, or even in *man*. This fact is established by experience and by comparative anatomy : we know that the crowing of a Cock may be heard at a far greater distance than the shout of a man, even had he the lungs of a Stentor ; and it may be even questioned whether the same remark may not be applicable to the full and sonorous warbling of the Thrush."

Mr. Swainson's remarks on the progress of ornithological science are very judicious, and deserve the particular attention of the student. His observations on ornithological bibliography are also deserving of notice, though here, we conceive, he has fallen into an error. On the very point where information would have been desirable he fails to give it, merely remarking that, " in regard to European

ornithology, *it is needless* to enumerate the very many works that have been published, in one shape or other, on the birds of the different kingdoms." It is true that he presents us with a long "list of the chief geographic ornithological works, arranged under the five zoological provinces," and intimates his wish to enumerate "such works only as are *absolutely essential* to an ornithological student, or are eminently beautiful in their execution." The "ornithological student," however, that Mr. Swainson has in his eye, must be some "Prince Maximilian" or the "Prince of Musignano;" since none but princes are likely to obtain one quarter of the expensive works he has enumerated. We have no objection to know that, by an outlay of about three hundred and fifty pounds, we may possess some of the most splendid works on "illustrative ornithology;" but this golden Tantalian cup may glance in the eyes of the poor student, but must glitter in vain. We think, therefore, that Mr. Swainson should have condescended to recommend a few standard works which any one could readily purchase for five or ten pounds. As he has not done so, we at once say that the beginner may be very well satisfied with Bewick's *British Birds*, Mudie's *Birds*, Bechstein's *Cage Birds*, Neville Wood's *British Song Birds*, and Selby's *Illustrations of British Ornithology*, if his pocket will allow, for the price of the latter is fourteen pounds: as the letter-press of Selby may, however, be had separately for a guinea, the plates may be dispensed with *pro tempore*. The first edition of Montagu's *Ornithological Dictionary* obtained if practicable, and certainly Mr. Swainson's publications in the *Cabinet Cyclopædia*. Of course, *The Naturalist* will be examined each month, as it is indipensable for the student to possess a periodical on his favourite pursuit. Now this really is to the purpose; and Temminck and Gould may follow when *gold* sufficient can be found; but the *Planches Enluminées* (forty-eight pounds), Le Vaillant's *Birds of Paradise*, &c. (thirty-two pounds), and others, recommended by Mr. Swainson, seem to us out of the question, except for splendid libraries.

Mr. Swainson has entered at some length upon the "laws of nomenclature," with regard to birds. This subject, however, claims, and must have, distinct notice, which would be out of place here. Just, though severe, reproaches are thrown out against the "wholesale coinage of complimentary names which now begin to crowd every page of our catalogues, almost to the exclusion of those by which the species can, in some degree, be made known. Surely there are other ways of expressing our thanks or gratitude to those who assist our labours, than by this very cheap mode of cancelling the obligation. This prostitution of what was once a scientific honour, but which is now within the reach of almost every one, however ignorant of science, or merely following it as a trade." We have always thought that the *crowd* of names now proposed as carelessly as a "how-d'ye-do?" must eventually be obliterated—common sense demands it; for if "John Jones" is sent up into the air as a Kite under the name of *Jonesii*, what is to distinguish

some other "John Jones," who is fortunate enough to find another bird, and anxiously emulates the flight of his namesake? In fact, at the present moment, names occur in scientific nomenclature, which it is a disputed point whom they were intended to commemorate—like tombs from which the original occupiers have been expelled, to accommodate another race that in its turn has passed into obscurity and oblivion. The philosopher will be careless about transient distinctions, which will vainly attempt to confer eminence where it does not already exist. Mr. Swainson is less happy in his objections to the reform in our ornithological vernacular nomenclature, which has been so vehemently insisted upon by several able writers in *The Analyst*. We shall not here touch upon a contest into which we have hitherto refrained to enter; but we think when Mr. Swainson says that "the question has been discussed in some *recent periodicals*," surely with the word *Analyst* in his mouth, he might have suffered it to drop from his pen. This petty *extinguishing* system we shall always notice and reprobate, especially as Mr. Swainson takes abundant care to quote himself, *not without acknowledgement.*

We think the observations of Mr. Swainson at p. 274, on the fitting up of Museums, particularly well timed, and recommend them to the notice of the officers of all the newly established Natural History Societies. This is an epoch in the scientific history of our country, and much depends upon the manner in which the arrangements will be made in the new Museums. The collections now making will be permanent or perishable, according to the plans now entered upon. At Shrewsbury, Worcester, Warwick, Nottingham, and other places, Museums of Natural History are forming, and their arrangement ought only to be entrusted to zealous, experienced, and competent persons. If opinionated conceit be suffered to prevail over zealous activity, hard-earned knowledge, and careful experience—if effect be preferred to taste, and utility sacrificed to variety, splendour and show may indeed triumph over science, but the tide-time having been irretrievably lost, posterity will have to re-commence a labour that might have been saved, amidst faded splendour, destroyed specimens, and broken relics. Looking at the past, and casting a wakeful eye into the future, we give this friendly warning to all, and refer them to Mr. Swainson's useful details for further information.

The Naturalist's Library.—Ornithology. Conducted by Sir William Jardine, Bart., F.R.S.E., F.L.S., &c. Six vols. foolscap 8vo., illustrated with numerous coloured plates and wood-cuts. Edinburgh: W. H. Lizars. 1833—6.

This is unquestionably the golden age of Natural History, and perhaps of ornithology more than of any other branch of it. We do not lose sight of the just and daily increasing claims of geology; but, important and fascinating as that study is, eminent as are its indefatigable professors, and surprizing as are the productions of their unwearied exertions, we cannot feel positively assured of being

on safe ground; and the mist and obscurity is still so palpable that the assurances of the very best guides fail to convince us that the ground is not shaking around us, or that the hypothetical causeway we are trusting to may not in reality at last deposit us in some unfathomable gulf, instead of safely landing us on the "old" or "new red," as the case may be. Ornithology, on the other hand, has passed through its incubationary processes in safety; we feel no doubt as to the science that stands arrayed before us in full plumage—we see the museum display to our charmed eyes the assiduous labours of collectors from every region of the globe —the feathered choristers of the groves are themselves in our view in the green wood—and volume after volume wings its flight, decorated by the pencil of the best artists, and illustrated by the commentaries of scientific research, to convey their histories and their economy before the whole world.

But when we call this the golden age of ornithology we are not only referring to the magnificent productions of an Audubon or a Gould. *Planches Enluminées* and *Birds of Paradise* have long ago graced the libraries of the prince and the noble; and it may be seen, on reference to the pages of Mr. Swainson in the *Cabinet Cyclopædia*, how easily three hundred and fifty pounds might be laid out in illustrated works on ornithology recommended by that gentleman. But these are luxuries not to be thought of by the student, and perhaps regarded only with wishful eyes by many a practical naturalist. It remained for the present age to produce a series of illustrations alike correct in a scientific view, interesting as works of art, and, from their moderate price, within the reach of every member of the social community. This is exemplified in the beautiful work now before us.

We shall now proceed to an examination of the *Naturalist's Library* seriatim. The two first volumes embrace the *Trochilidæ*, or Humming Birds, with memoirs of Linneus and Pennant. The preceding account of the distribution and economy of this richly decorated tribe is extremely interesting. The delineations of the birds are, in general, very good, though the colouring seems to us, in many instances, dull, and inadequate to express the jewelled splendour of the originals. But we have in our eye the Humming Birds of Bullock as they once glittered in their effulgence before us, and more recently that magnificent case of Leadbetter's, on which the sun seldom shines, but the effect of which, when traversed by a beam of light, can rarely be paralleled. The third volume contains the Gallinaceous Birds, with a memoir of Aristotle. Here the artist is evidently more at home; the colouring is improved, and the figures are seen to greater advantage before a freely-etched, picturesque, but uncoloured, background. *Gallus Sonneratii* (female), *Phasianus torquatus*, *Phasianus veneratus*, and *Tragopan Hastingsii*, are particularly good. The fourth volume contains the Game Birds, with a memoir of Sir Thomas Stamford Raffles. A few of the plates seem rather coarse, but, on the other hand, the British Grouse are admirably delineated from the pencil of Selby himself. The fifth volume embraces the Pigeons, with a memoir

of Pliny. Here, somewhat unaccountably, the Turtle Dove is omitted. The sixth volume, the last as yet published, contains the natural history of the *Psittacidæ*, or Parrots, and is undoubtedly altogether the best of the series, the figures being drawn by Lear, well known by his abilities as a zoological draughtsman, and the descriptions by P. J. Selby, Esq.

The very sight of the Parrots, favourites of the cage in Europe, from their first introduction by the followers of Alexander, recall a hundred "pretty Polls" to our recollection, while the grating shrieks from the Parrot-room of the Zoological Gardens, still resounding in our ears, remind us that till they have borrowed a little of the vernacular idiom of mankind, though their plumage might vie with angels, that their voice, like that of the Peacock, can only be compared to a fiend's. As the power of imitating the intonations of the human voice, and even repeating long sentences so singularly developed by this family, is possessed by only a few other birds of the *Sturnidæ* and *Corvidæ conirostres*, we should have been pleased to have seen this curious subject more dilated upon, especially with regard to the construction of the tongue, and the wild habits of the birds. It is, however, merely cursorily alluded to. "The power of imitating the human voice, and learning to articulate a variety of words and sentences, is not possessed by all the species, but is principally confined to the short and even-tailed Parrots, in which the tongue is large, broad, and fleshy at the tip." The subject is indeed again slightly brought forward in the *History of the Ash-coloured Parrot, (Psittacus erythacus*, Lin.) of which Mr. Lear has given a resemblance so faithful and accurate, that we can almost swear to the sly old rascal. As this bird is so well known, the following extract may be interesting :—"Many of our readers will recognise an old and amusing acquaintance in the characteristic figure of this well-known species ; not, indeed, conspicuous for that variety and brilliancy of plumage which distinguishes the great majority of this tribe, but remarkable for its docility and mimicry, the faculty it possesses of imitating the human voice, as well as any other sound, its never ceasing garrulity, and its clear and distinct articulation. In most of these particulars it surpasses the rest of its congeners ; on which account it has always been held in high estimation by the bird-fancier and lover of living curiosities. This we learn from the large sums that have at all times been offered and given for highly-gifted or well-taught individuals. Even as early as A. D. 1500, we read of a Parrot at Rome, supposed to be of this species, for which 100 gold pieces were given by a Cardinal. Its merits, however, appear to have been of a kind well calculated at that period to create an unusual degree of astonishment, and a feeling of the marvellous, as it had learned to repeat with clearness, and without hesitation, the whole of the Apostles' creed. Willughby, also, in his old and excellent work on Ornithology, mentions the high prices brought by Parrots of various species in Holland, and other parts of the continent. To enumerate the various anecdotes related of this bird, would not only occupy more space than the nature of our

work will allow, but would, in a great measure, be only repeating what has already so frequently been told in the works and compilations of other writers. We shall only observe, that in many of the marvellous stories recorded of Parrots, particularly all such as relate to answers seemingly appropriate and consequent to questions put to them, and which some authors would almost seem to imply were dictated by intelligence, or that the birds really understood the import of what was asked, are merely the result, under accidental and fortunate circumstances, of what had previously been taught them by frequent repetition, to articulate by rote." —pp. 106—7.

To the latter part of this dictum we cannot altogether subscribe, feeling confident that in various instances, Parrots have "intelligence" enough to understand, if not the exact meaning of the words they utter, the *subject* to which they refer. We know an old lady, whose feet were so excessively tender, as almost to preclude her from walking, and hence she always went abroad in her Bath chair. She had a favourite Parrot, who when the tea equipage was placed upon the table, was invariably taken out of his cage by the footman, and placed on the board, as a proper accompaniment to the antiquated china. Poll, no doubt an attentive observer, had long perceived there was "something rotten in the state of Denmark," and hence, whenever his mistress failed to dole out what he considered his fair ration, he would, in a threatening manner, exclaim—"*Peck your toes, Madam.*" As he sometimes flew down from his position to put this threat into execution, the old lady, to avoid the assault upon her toes, indulged him with a further allowance, which, of course, only led to increased insolence on his part, and the threat of "*Peck your toes, Madam,*" was still oftener reiterated. At length, one day Poll having cried "Wolf," as he thought, without that attention being paid to the subject which it demanded, proceeded to suit the action to the word with such effect, that the old lady was compelled to scream loudly for help; Poll having administered a dose of toe-pecking that put her in dreadful pain for some days. This was too much to be borne, and the culprit received sentence of transportation. The footman was directed to sell or give him away,—and what afterwards became of of him, we never learned. Now, though in this case we think it highly probable, that the mischievous threat had been taught the bird by the servants, yet Poll must have seen the effect it produced in occasionally increasing his allowance, though, doubtless, he did not calculate upon the final *dénouement.* But we must not allow old Grey-pate to detain our attention any longer. We have referred to his figure as admirably executed, and the singular crested *Plyctolophus Leadbeateri,* and the beautiful *Platycercus palliceps,* are also charmingly done. The background landscapes are certainly a set-off to the picture; and though omitted in the plates of the Pigeons, will, we trust, in future be adhered to. The vignettes to each volume are very tasteful—the last particularly so, representing the tri-colour crested and love Parrots, by Stewart.

On the whole, we cheerfully give the meed of approbation to this beautiful, scientific, and moderate-priced series of ornithological illustrations, and hope to be able to welcome it, as its future volumes appear, with undiminished favour, to its termination. Nevertheless, in some respects, we think there might be a little improvement. The manners and habits of the birds, when known, might be more enlarged upon than they now are, many being very short and meagre. Ample space might be found for this in the curtailment, if not entire omission, of the biographies. Raffles and Bewick, indeed, we might submit to, and the portrait and memoir of the latter prefixed to the Parrots is interesting. But then Bewick had nothing to do with Parrots; and to have to wade through a hundred and twelve pages of a memoir of Aristotle, and eighty-two of Pliny, prefixed to accounts of the gallinaceous birds, is more than we could venture on; we have not had *pluck* to attempt it, and our copies remain uncut on these particulars. In fact, this savours rather too much of the "make-weight" system, and in future we hope will rather be honoured in the "*breach*" than in the observance. This we conceive not to be the place for long biographies, especially those of the eyeless ancients, whom we know where to find if we want them; though perhaps a pithy sketch of, and a look at, such bird-*lovers* (not *fanciers*) as Bewick, Wilson, or Audubon, is not to be objected to. We should, however, be sorry to say a word disparaging to so interesting and spirited an undertaking as this is, requiring, of course, an extensive sale to remunerate its projectors; we only wish its useful and attractive powers to be developed to the utmost possible degree.

EXTRACTS FROM FOREIGN SCIENTIFIC JOURNALS.

Entomological.

Abstract of Dr. Erichson's Systematic Distribution of the Bostrichidæ, (Bark Beetles).

(From Wiegmann's "Archiv für Naturgeschichte," 1stes. heft, 1836.*)*

The *Bostrichidæ* constitute a portion of Latreille's *Xylophaga;* but as this group consists of very heterogeneous materials, they have less affinity with any other genus of that tribe than with the *Curculios. Cis,* however, from the structure of its mouth, may be allied to the *Bostrichidæ,* but from which it still widely differs by its tetramerous tarsi. The apparent affinity of *Apate* with the *Bostri-*

chidæ is deceptive, for although they are pentamerous, yet the concealed joint is the first, and not, as in the *Bostrichidæ*, the fourth. This is also the case in some genera of the *Cleridæ*; I, therefore, consider that the most natural situation of *Apate* is between this family and the *Anobia*, notwithstanding their resemblance to *Bostrichus*. This appears to be confirmed by the discovery by Professor Ratzeburg (who, as he has informed me, was long struck by the remarkable similarity of the holes bored by *Apate* and the *Anobia*) of the larva of *Apate*, which in contradistinction to the footless larvæ of the *Bostrichi*, very much resembles those of the *Anobia*.

The *Bostrichidæ* may be divided into three very natural groups, characterized by the proportions of the head and thorax. In the first, the thorax is generally narrowed anteriorly, and encompasses the posterior portion of the head, leaving, however, the greater portion of it free, and for the reception of which there is a more or less considerable concavity beneath in front of the anterior coxæ. The head is anteriorly elongated into a short thick rostrum. In the second group the globose head is wholly retractile within the thorax, which arches itself like a capuchin over it, forming a deep emargination, beneath which, however, it is always even in the middle distinctly margined. The third group, lastly, which contains but one genus, has the thorax neither emarginate nor impressed beneath, and a free head frequently wider than the thorax.

Group I.—Hylesines.

Head exserted, the rostrum short, thick, and advanced. The antennæ (excepting *Phloeotribus*) inserted at the sides of the rostrum. Thorax beneath anteriorly emarginate, with an impression (often obsolete) for the reception of the head. The third joint of the tarsus generally emarginate or bilobate.

Genus I.—Hylastes, *Erichs.* The funiculus of the antennæ seven-jointed; the knob four-jointed, orbiculate, compressed; the tibiæ externally denticulated. This genus contains, 1. *Hylastes ater*, Payk., which is the *Hylesinus piniperda* of Fabricius, as the type, with nine other species. But it is further separated into two divisions, viz.:—A. The mesosternum truncated anteriorly; the third joint of the tarsus cordate, not dilatated: and B. The mesosternum conical and prominent; the third joint of the tarsus dilatated and bilobate.

Genus II.—Hylurgus, *Latr.* The funiculus of the antennæ six-jointed, the club quadriannulate, subglobose; the tibiæ externally denticulated. The only known species is the *H. ligniperda*, Latr.

Genus III.—Dendroctonus, *Erichs.* The funiculus of the antennæ five-jointed, the knob quadriannulate, suborbiculate and compressed. The tibiæ externally denticulated. The type of this is the *Bostr. micans* of Kugelan, frequently mistaken for the *Hyles. ligniperda*, Fab.; besides which it contains, 2., *Scol. terebrans*, Oliv., 3., *Dermestes piniperda*, Lin., and two others.

Genus IV.—Phloeotrupes, *Erichs.* The funiculus of the antennæ six-jointed, the knob quadriannulate, orbiculate and compressed. The tibiæ externally convex, muricate, and internally concave. This contains two Brazilian species, both new.

Genus V.—Phloeoborus, *Erichs.* The funiculus of the antennæ six-jointed, the knob quadriannulate, oblong, acuminate. The tibiæ compressed externally, denticulated. Contains three Brazilian species, all new.

Genus VI.—Hylesinus, *Fab.* The funiculus of the antennæ seven-jointed, the knob quadriannulate, oblong, acuminate. The apex of the tibiæ compressed externally, denticulate. The type is the *H. crenatus* of Fabricius.

Genus VII.—Phloeotribus, *Latr.* The antennæ inserted in the front of the face, the funiculus five-jointed, the clava trilamellate. The tibiæ compressed, externally denticulated. The type and only known species is the *P. Oleæ*, Lat.

Genus VIII.—Diamerus, *Erichs.* The funiculus of the antennæ six-jointed, the knob solid, suboval, compressed. The tibiæ compressed, externally obsoletely denticulated. The only species known is the *Hylesinus hispidus*, Klug, from Madagascar.

Genus IX.—Polygraphus, *Erichs.* The funiculus of the antennæ four-jointed, the knob solid, suboval, acuminate. The tibiæ externallydenticulated. Comprising also but one species, the *Hylesinus pubescens*, Fab.

Genus X.—Eccoptogoster, *Herbst.* The funiculus of the antennæ six-jointed, the knob solid, compressed, suboval. The tibiæ compressed, entire, with the apex uncinate. Here range 1. *E. destructor*, Oliv., which lives in the Birch; 2. *E. scolytus*, Herbst., which is destructive to Elms;* 3. *E. pygmæus*, Fab.; 4. *E. intricatus*, Koch., which is the *E. pygmæus* of Gyllenhal: it lives in Oaks; 5. *E. multistriatus*, Marsham; 6. *E. minutus*, Panz.

Genus XI.—Camptocerus, *Lat.* The funiculus of the antennæ seven-jointed, the knob solid, compressed, suborbiculate. The tibiæ entire, their apex uncinate. The species of this genus are confined to South America, and consist of the following, described by Fabricius:—1. *Hylesinus æneipennis;* 2. *Hyl. fasciatus;* 3. *Hyl. gibbus;* 4. *Hyl. suturalis;* 5. *Hyl. niger.*

* Some mistake appears to exist with regard to the species so destructive to the Elms in the vicinity of the metropolis, which must be this, and not the *E. destructor*, as supposed by our entomologists. The insect is committing ravages to a great extent, and unless some timely check be devised, it is to be feared that, in the course of a few years, not a single Elm will exist near London. The remedy already suggested is, that trees which are found to be infected should be immediately cut down and barked; and it is supposed to be erroneous that only diseased trees are attacked: further observation has shewn that it is the male which prepares the tree for the reception of the female by boring holes in the bark. It has been supposed that the mortality occasioned in these trees was owing to their striking the root into the blue London clay, and thus becoming poisoned; but that this is incorrect is proved by young as well as old trees being subject to the calamity.—Ed.

Group II.—True Bostrichii.

The head globose, retractile within the thorax. The antennæ inserted at the sides of the head, between the base of the mandibles and the eyes. The thorax produced anteriorly above the head. The anterior coxæ always approximate. All the joints of the tarsi simple.

Genus XII.—Xyloterus, *Erichs.* The funiculus of the antennæ four-jointed, the knob solid, the labium parallelopiped. Here belong the 1. *Dermestes domesticus,* Lin.; 2. *Bostr. lineatus,* Oliv.; 3. *Bostr.* 5. *lineatus,* Adams, *Ann. de la Soc. Imp. des Natur. de Moscou.*

Genus XIII.—Crypturgus, *Erichs.* The funiculus of the antennæ two-jointed, the knob solid, the labium parallelopiped. The two following species are widely dispersed:—1. *Bostr. cinereus,* Herbst.; 2. *Bostr. pusillus,* Gyllenhal.

Genus XIV.—Hypothenemus, *Westwood.* The funiculus of the antennæ three-jointed, the knob obsoletely annulated, the labium slightly narrowed towards the base. The only species known is the *H. eruditus,* West., *Trans. of the Entom. Soc. of London,* part i., page 34, plate 7, figure 1. The author remarks that there is evidently some mistake in the figure of the *ligula,* for it does not exist in any of the *Bostrichidæ,* as figured by Mr. Westwood.

Genus XV.—Cryphalus, *Erichs.* The funiculus of the antennæ four-jointed, the knob four-jointed, the labium oblong, scarcely narrowed towards the base. The *Apate Tiliæ* and *Apate Fagi* of Fabricius come here, as also the *Bostrichus asperatus* of Gyllenhal.

Genus XVI.—Hypoborus, *Erichs.* The funiculus of the antennæ five-jointed, the knob quadriannulate, the labium subovate. A small species common in the south of France and Portugal, and indicated as *Bostr. fici* by Dejean, forms the type of this genus, by the name of *H. ficus:* it is three quarters of a line long.

Genus XVII.—Bostrichus, *Fab.* The funiculus of the antennæ five-jointed, the knob quadriannulate and tunicate, the labium triangular. The type of this genus, which is very rich in species, is the *Dermestes typographus* of Linné. Very few exotic species are known, but the very wide dispersion of some is remarkable, for instance, the *Bostr. ferrugineus,* Fab., is found in all parts of America, as well as in Madagascar.

Genus XVIII.—Amphicranus, *Erichs.* The funiculus of the antennæ two-jointed, the knob sub-solid, the labium triangular. The only known and beautiful species is a native of Brazil; a solitary specimen of it is in the Berlin Royal Museum; its specific character is *A. thoracicus. Niger, nitidus, capite thoraceque sanguineis, elytris subtiliter punctatis, apice oblique truncatis, unidentatis*—length, three and a half lines.

Genus XIX.—Corthylus, *Erichs.* The funiculus of the antennæ one-jointed, the knob quadriannulate, the labium triangular. Here come 1. *Bostr. compressicornis,* Fab., 2. *Bostr. fasciatus,* Say.

Group III.—Platypus, *Hbt.*

Head exserted; thorax cylindrical, impressed laterally for the reception of the legs; the tibiæ short, the anterior externally convex, transversely porcate; the tarsi slender, the first joint very long. The genus *Platypus* is the only one belonging to this group, and is widely distributed over almost the whole earth. The difference of the sexes is frequently striking. The male is generally to be distinguished by the larger size of the first joint of the antennæ, and the female by the dentate apex of the elytra.

We purpose in our next number giving an abstract of Mannerheim's paper on the *Staphylinidæ*, which, from its not being generally accessible to the English entomologist, may proveacceptable.

Botanical.

Edible Fucus.—The Philippines yield a great proportion of the large quantities of edible bird's nests which are consumed in China, as well as now also in Europe. At present, we will merely draw attention to the edible sea-plants found upon the coasts of the Philippine islands, as well as upon those of the Bashees, the islands of the empire of Japan, the Moluccas, &c., and which serve both as articles of export and food. In the markets of Macao and Canton large chests of this dried fucus are to be found, imported from Japan. The species which supports this branch of commerce is the *Sphærococcus cartilagineus*, var. *cetaceus*, Ag., which is extremely abundant in India, and which, eaten by the Salangane (*Hirundo (Cypselus) esculenta*, Lin.), is thence used for the construction of her nest; for the substance, which has become a jelly in her stomach, is rejected, and with this she forms her nest. These celebrated Indian bird's nests, which, in their original state, are soiled with feathers and dirt, are conveyed to China, where there are large establishments for the purpose of cleansing them, for which particular instruments are employed; and yet they are scarcely ought else than the relaxed *Sphærococcus cartilagineus*. In their preparation, however, such a variety of condiments are used that they may justly claim a high rank amongst the epicurean dishes of the Chinese. The Japanese have long been acquainted with this plant, and artificially prepare the substance of the nests. The fucus, after being previously powdered, is boiled into a thick jelly, which they then pour out in long strings like Macaroni, and which is known in commerce as *Dschinschan*, called by the Dutch *Ager-ager*. The Chinese eat the bird's nests, both the real and the artificial, as sauce to their meat. The Europeans resident in China prefer them prepared in the shape of a jelly, and to which the *Dschinschan* is excellently adapted; for one boiling is sufficient to transform the dried substance into a jelly,

which is then made palatable with wine or the juices of fruits. The dried *Dschinschan* can also be cut into small pieces and thrown into hot soup, where, in the space of a minute, it dissolves, and thus resembles transparent Macaroni.

We have enlarged upon this subject because latterly much has been said about the *Carraghean*, which is nothing else than the dried *Sphærococcus crispus*, which is found in large quantities on the western and northern shores of England, and which, doubtless, possesses the same qualities as the *Sphærococcus cartilagineus*, var. *cetaceus*. We can, however, by no means imagine that the jelly obtained from it possesses any other but a highly nutritive quality, which is, at the same time, not at all oppressive to the digestive organs.—Meyen, in Wiegmann's *Archiv*.

Paraguay Tea.—Rengger, in his *Travels in Paraguay*, confirms the statement of Aug. St. Hilaire, that the Tea of Paragua and the Paraguay Tea are the produce of one and the same plant. The differences of taste are caused by the modes of preparation and preservation. The plant which produces it is the *Ilex Paraguariensis* of St. Hilaire; it resembles the Pomegranate tree in form and in the shape of its leaves, yet, when full grown, it is considerably larger and thicker. The elliptical leaves are directed upwards, and its small white blossoms hang in bunches. The smaller twigs are cut off and baked over a slow fire, and then broken up by stamping, that the tea may be more closely compressed; it is then packed in square leathern bags, which are called *zurrones* or *tercios*, and containing eight arrobas. The finest kind of Paraguay Tea consists exclusively of the leaves of the tree, which, after being roasted, are coarsely pounded in a wooden mortar, and is called *Caa mini*. The common sort, which, besides the leaves, contains also the smaller twigs, is called *hierba de palos;* and there are several surreptitious or mixed kinds. This tea, which is usually called *hierba* in Spanish, must be only coarsely powdered, else it loses both smell and taste, and the mouth, in drinking it, is filled with the dust. Nor must it be over-roasted, on account of the resin it contains; and the dealers have a ready test for this by taking a little in their hands and slightly blowing it, when, if the greater quantity flies off, they condemn it. This tea loses its flavour in a couple of years, even if the tercios be compressed as hard as stones, but where exposed to the air this naturally takes place much earlier. When it becomes old and strong it can only be used as a colouring matter for dying black tints. This *hierba*, or tea, passed current formerly in Paraguay as money, and its commerce consequently was but a system of barter.

Thea communis.—The discovery of the tea plant in Upper Assam promises to become of considerable importance to British commerce. That it was cultivated in Ava, the Birman Empire, as well as the eastern frontiers of Thibet, has been

long known, but its existence in Upper Assam, within the dominions of the East India Company, and spread over a district of hundreds of miles, gives promise of its being cultivated upon an extensive scale : indeed, extensive plantations have been already formed in the mountains of Camun in Sirmare, and Gurwhal between the upper Jumna and the Ganges.

Zoological.

Crustacea.—We find that Mr. J. F. Brandt has published at Moscow, a *Conspectus Monographiæ Crustaceorum Oniscidorum*. He divides them into two tribes, the *Ligies* and the *Oniscinées*. The first tribe forms two genera, *Ligia* and *Ligidium*. The second tribe is separated into two sections, the *Porcellionées* and the *Armadillins*. The first are divided into *Hexarthrica*, containing the genera *Trichoniscus*, and *Platyarthrus*, and *Schizarthrica*, containing the genera *Porcellio*, *Oniscus*, and *Philoscia*. The second section of the *Oniscinées*, viz., the *Armadillins* are divided into the *Armadillidies* and the *Cubaridés*. The first contains only the genus *Armadillidium*. The second are again subdivided into *Monoexocha*, containing the genera *Cubaris* and *Armadillo*, and the second subdivision, the *Diplorexocha*, contains the single genus *Diplorexochus*.—Hermes.

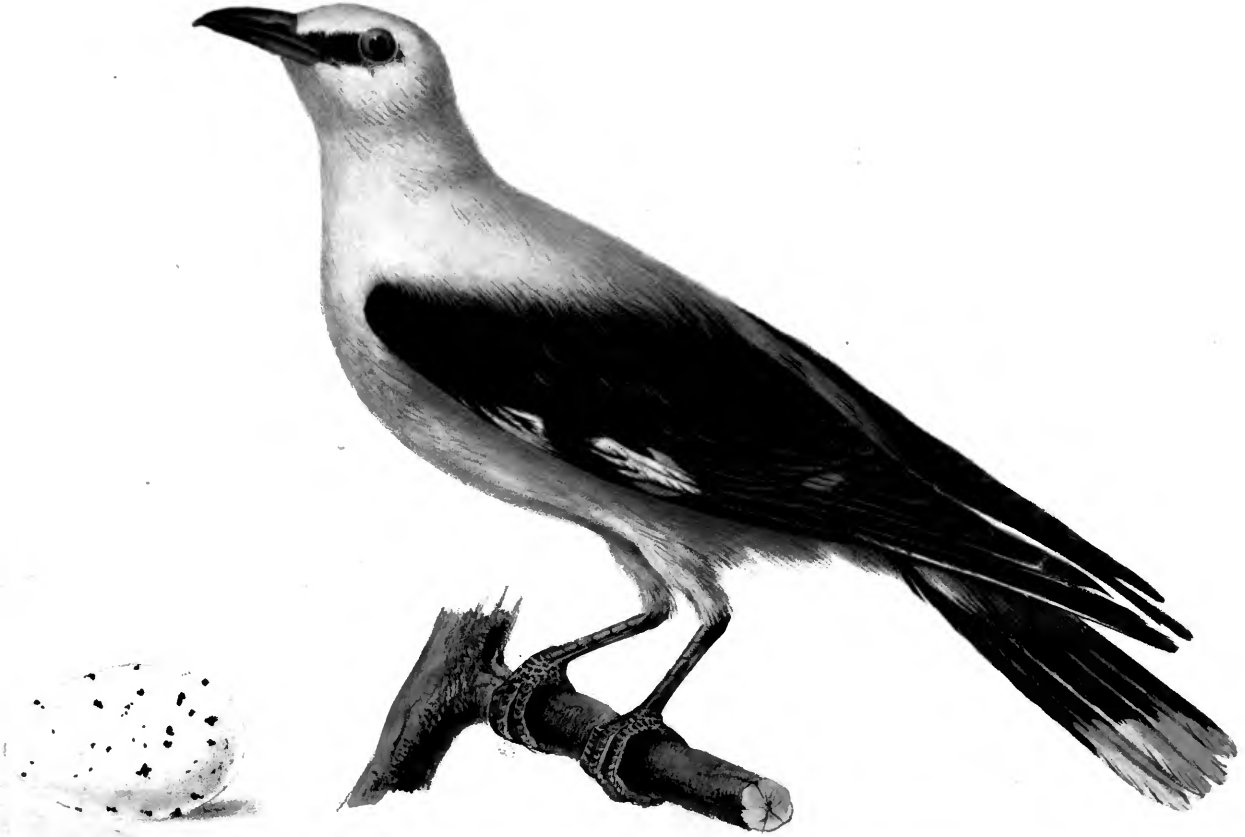
The Gossamer.—A pupil of the Academy at Metz has written to the Academy of Sciences, stating that he has detected that the film which floats so abundantly in the air on fine days in the Autumn, is produced by Spiders. M. Coulier, however, says that he has discovered that they are produced by an *Acarus* described by Geoffroy, and that, besides, the remains of this creature are ordinarily found attached to these white and tenacious filaments. Latreille constructed the genus *Gamasus* of this *Acarus*, and in fact it is frequently found spreading wide tissues over trees, but it can scarcely be supposed that these filaments are exclusively produced by the *Acarus*. Ray, Lister, and the majority of English Entomologists, since their time, ascribe it to a Spider, whose proceedings have been often watched.

Geological.

Amber.—M. Aycke,* who for many years has farmed the collecting of Amber in Prussia, and who consequently has had the opportunity of inspecting it in large quantities, conveys much interesting information upon the subject, in the

* *Fragmente Zur Naturgeschichte des Bernsteins*, Danzig, 1835, 8vo.

work noticed below, whence we abstract the following account.—The opinion now generally entertained is that Amber is a fossil resin, and that the trees which produced it were coniferous, and belonged to extinct species of the genus *Pinus*. M. Aycke observes that Amber, as found in its native beds, has evidently been deposited by violent causes, floods, &c. The best proof of which is produced both in the manner in which the Amber is deposited, as also in the pieces of rubbed wood found intermixed with it, and which are more or less transformed into carbon. The lumps of wood usually found in the vicinity of Amber, all belong to the *Coniferæ*, and Mr. Aycke has even discovered some in which the Amber was still to be found lying between the concentric yearly layers, and which were thereby forcibly separated from each other. In the summer of 1835, a small deposit of Amber was found a few feet beneath the surface, in the Thiergarten at Berlin; but there it was deposited in a pure sand, and the pieces were not of an uniform colour. Some pieces of wood which were found with the Amber, M. Meyen had the opportunity to examine, and the results were, that the microscope distinctly showed that the large pieces of wood transformed into carbon, evidently belonged to the genus *Pinus*. A smaller piece, almost entirely carbonized, is rubbed into a nearly globular shape on one side, and a third piece, two inches and a half long, appears to be the scale of a Pine-apple of very considerable dimensions. Besides these pieces of strongly carbonized wood, a small piece was found in a very excellent state of preservation, belonging to some amentaceous tree, but extremely difficult to determine of what genus. Near Brandenburg, a deposit of Amber has, also, been found, which appears to yield large pieces in considerable quantities. M. Aycke gives us very precise information upon the discovery of Amber in connection with roots, which might easily mislead to the supposition that this Amber had been secreted by their encompassing and enclosing fibres. He notes his astonishment at finding these roots in their natural upright position with their fibres directed downwards, still fresh and flexible as when living, and that there was not the least trace of carbonization to be found in them; but in the strata above there were no stems or larger ramifications of these roots; and indeed roots are but seldom found therein of the thickness of a quill, for they generally consist of fasciculated fibres forcibly rent asunder, and which, as in the *Coniferæ*, branch off in the finest and most delicate ramifications. These fibres of roots, not only encompass considerable pieces of Amber, but frequently their capillary ramifications hang firmly attached to them. M. Aycke observed that these roots do not, by any means, belong to the *Coniferæ;* and M. Meyen, by the kindness of Alex. V. Humboldt, obtained some for examination, and microscopic investigation proved that they were *dicotyledonous*. It was not possible to detect that they had secreted the Amber; but the very opposite opinion is entertained by M. Meyen.—Wiegmann's *Archiv*.



Golden Oriole (Oriolus Galbula)

ORIOLUS GALBULA.

FAMILY.—DENTIROSTRES. *GENUS.*—ORIOLUS.

THE GOLDEN ORIOLE.

By William Mac Gillivray, A.M., F.R.S.E., M.W.S., &c.

The Golden Oriole, which by Temminck is classed among the omnivorous birds, and by Cuvier is referred to the Dentirostral Family of the Order *Passeres* or *Insessores*, belongs to a genus formerly of great extent, but by modern ornithologists reduced to a small group, of which the species present the following characters:—

Bill rather long, stout, nearly straight, rather broad at the base, compressed. Upper mandible having the dorsal outline slightly arched, the ridge narrow, the sides flat and sloping at the base, slightly convex and more inclined towards the end, the edges sharp, with a slight notch close to the small, slightly deflected tip. Lower mandible with the angle moderately long and narrow, the sides nearly erect, the edges sharp, the dorsal outline nearly straight. Mouth of moderate width. Tongue slender, emarginate and papillate at the base, thin and horny toward the tip, which is bifid. Nostrils oblong, bare in the anterior part of the large nasal membrane, which is feathered. Eyes of moderate size; eyelids feathered.

Head oblong, moderately large, the forehead slightly rounded. Neck rather short. Body ovate, compact. Legs rather strong, short: tarsus short, compressed, covered anteriorly with seven large scutella, posteriorly with two plates united at a very acute angle, and several transverse rugæ below. Toes of moderate size, covered above with a few large scutella, papillate beneath; the first stout, of about the same length as the second; the fourth a little longer, and united at the base to the third, which is considerably longer. Claws of moderate length, arched, compressed, laterally grooved, acute; that of the hind toe much stronger.

Plumage generally blended, the feathers oblong and rounded. Short bristles at the base of the bill. Wings rather long, of seventeen quills; first primary very short, being scarcely more than a third of the length of the third, which is longest; second shorter than fourth; secondaries of moderate length, broad, and rounded. Tail rather long, straight, slightly rounded, of twelve rather broad, rounded feathers.

In the systems of Linnæus and Latham the genus *Oriolus* was composed of a number of species having very little affinity to each other, having been placed together, as it would seem, more on account of a kind of agreement in the colours of their plumage than from a similarity in the form of the bill, or in their habits. The genus thus constituted has, however, been broken up by Daudin, Vieillot, and others, into several genera, so that at present it contains only those species, all belonging to the old continent, which bear a strong resemblance in form to the Golden Oriole.

This beautiful bird is about the size of the Blackbird (*Turdus merula*), which it also resembles in form, although its tail and feet are considerably shorter, and its wings proportionally longer. Indeed, its resemblance to many of the Thrushes is such that several authors have named it the Golden Thrush. It is very intimately allied to two or three Indian and Chinese species, which resemble it, not only in form, but also in colour, although characteristic differences are apparent. As it agrees in every particular with the generic character given above, it is unnecessary, in describing it, to repeat the details already presented.

The male has the plumage blended, the feathers being oblong, with disunited barbs, those on the fore part of the head short. The wings, when closed, reach to within an inch of the end of the tail, which is nearly even at the end. The bill is of a light brownish-red colour; the iris, according to Temminck and Montagu, red; the feet blueish-grey; the claws of the same colour as the bill. The plumage is generally of a rich and pure gold colour. Between the bill and the eye is an oblong black spot or band. The wings are black, but the smaller coverts are yellow, as are the margins of the wing, the tips of the primary coverts, and the tips of all the quills, except the two outer; while the external margins of the quills are yellowish-white, those of the two outer excepted. The two middle tail-feathers are greenish-yellow at the base, brownish-black in the rest of their extent, except the extreme tips, which are yellow; all the rest are black, with the extremities bright yellow, the space of that colour gradually enlarging on the outer feathers.

Length to end of tail 9½ inches; wing from flexure 6 and 2-12ths; tail 3 and 3-12ths; bill along the ridge 1 and 1-12th, along the edge of the lower mandible 1 and 3-12ths; tarsus 1; first toe ½, its claw 5-12ths; second toe ½, its claw 3½-12ths; third toe 9-12ths, its claw 5-12ths; fourth toe 8-12ths, its claw 4-12ths.

The female is somewhat less than the male. The bill and feet are similarly coloured. The plumage of the upper parts is yellowish-green, the forehead lighter, and the upper tail-coverts greenish-yellow. The fore part of the neck is pale greenish-grey, its sides greenish-yellow; the breast white, the sides and lower tail-coverts yellow; the throat marked with longitudinal pale-brown lines, the breast with larger lines of a brownish-black tint. The wings are brown, their

edge greenish-yellow; the tips of the quills, excepting the outer, and the primary coverts, pale-yellow. The tail is dark brown, the terminal yellow spot on the feathers of much less extent than in the male.

Length to end of tail 9 and 2-12ths; wing from flexure 6; tail 3 and 3-12ths; bill 1 and 1-12th.

The young, in its first plumage, is of a dusky yellowish-grey tint above, each feather having the central part greyish-brown; the lower parts yellowish-white, each feather with a central brown line; the sides and lower tail-coverts bright yellow; the wings and tail brown, marked with yellow as in the adult. The male is easily distinguished from the female by its lighter colour.

The species most nearly allied to the Golden Oriole *(Oriolus galbula)* are the Yellow Oriole *(O. aureus)*, the Chinese Oriole *(O. Chinensis)*, and the Blackheaded Oriole *(O. melanocephalus)*. Whether the first of these be really distinct I can scarcely venture to affirm. It is somewhat smaller, its wings are proportionally shorter, its bill larger, but the colouring is precisely similar, only there is a small black spot behind the eye, in addition to the black local space of the Common or Golden Oriole.

This latter—the only species of the genus that is ever seen in Europe—arrives in France and Italy toward the end of April. It is not uncommon in many parts of Germany, but is rare in the northern countries, and in England is not a regular visitant, a few individuals only having been seen there at long intervals; so that with us it ranks merely as an accidental straggler. It is said to prefer low, wooded districts, and to resort chiefly to the margins of forests, residing among the lower branches of the large trees, or in the thickets. Its food consists chiefly of insects and larvæ, but as the season advances it feeds also on berries, and occasionally visits the gardens and orchards, where it manifests a partiality to cherries.

Its nest is described by authors as of an oblong form, shaped like a purse, having its aperture above, and suspended from a forked branch, some say at the top, others at the lower part of a tree. It is composed externally of long straws neatly interwoven, internally of mosses and lichens, with a lining of grass, and sometimes wool. The eggs are four or five, of a regular oval form, smooth, white, with a few brownish-black spots, sometimes intermixed with paler markings. The young continue with their parents after they come abroad, and the families do not unite at the period of their departure, which takes place about the end of August.

The young are said to be difficult to rear, and not to thrive in captivity, otherwise, creatures so beautiful would, no doubt, be great favourites as cage birds, although their natural notes are loud and shrill, and their song deficient in melody.

I have not met with any account of the digestive organs of this species, nor, indeed, with any tolerable description of its manners. Judging from its external appearance, its organization is probably similar to that of the Thrushes, which have a narrow œsophagus, a rather powerful gizzard, lined with a horny rugous

membrane, and an intestine of moderate length, with very small cœcal appendages. The form of the wings and tail shews that the flight must be powerful and sustained, similar to that of the Redwing and the Fieldfare; and the feet, although fitted for hopping on the ground as well as for gliding among branches, are, perhaps, better adapted for the latter purpose.

Although the Golden Oriole has occurred in several counties in England, and in a few instances in Ireland, no authentic case of its occurrence in Scotland has been recorded, at least to my knowledge. The birds in the museum of the University of Edinburgh, mentioned by Mr. Selby as having furnished subjects for his drawings, and as having been shot on the Pentland Hills, were brought from France by the late Mr. Wilson, janitor to that university.

REMINISCENCES OF THE RHINE;

ORNITHOLOGICAL AND ENTOMOLOGICAL.

(Concluded from page 207*).*

Cerambyx Textor.—With its long horns, scrambling and out-stretched legs, large size, and dark-black colour, the uninitiated observer would start with disgust, exclaiming, "what a frightful creature!" if an Entomologist exultingly presented him with this fine insect. And so it is, to those who judge of these and some other similar tenantry of the insect world, under the weight of early associations or prejudices: but to the Entomologist, its apparent deformities assume a different aspect; and in each limb, articulation, and joint, and specific character, clearly and strongly developed as they are, he pronounces it to be one of the most attractive specimens of insect perfection. With such feelings I welcomed the slow march and dignified attitude of one of these fine *Cerambyces* emerging from the sod on the side of a pathway near Aix-la-Chapelle. I secured him, as well as circumstances would permit, in folds of paper, but in the course of the following night he escaped to undergo, doubtless, the melancholy fate of being disposed of like a common Black Beetle by the thoughtless chambermaid, who might find him perambulating my bed-room floor next morning.

Green Locust *(Gryllus viridissima).*—I found only one specimen of this conspicuous insect, on the stem of a Willow, near Strasbourg. I confined it in a tin box with two or three other insects, one of which was a *Carabris* of some size; when, to my astonishment, on opening the box on the following day, I found

only the locust, who had devoured the whole of his companions, with the exception of a few tarsi and remnants of limbs and antennæ. This is not the first instance I have known of the voracious appetite and extraordinary ventral capacity of these insects, which are usually supposed to live only on vegetable food.

Lygæus apterus.—One of the wingless bug family, a pretty attractive insect, with its party-coloured elytra, black and red. On the gravelly esplanade before alluded to at Carlsruhe they actually swarmed; hundreds and thousands were in rapid motion, particularly on those parts which were fresh turned up by the rakes or scufflers.

In addition to the above, to which, I believe, I have affixed correct appellatives, some others were taken which I can only refer to generally. In the forests of Germany, one species of the genus *Scaritidæ*—formerly, in the simpler days of entomological science, known and classed with the *Carabidæ*, or Beetle tribe—was not uncommon. A stout, well-conditioned Beetle, about an inch long, with globular, projecting eyes, broad thorax, on which the head seemed to be indented or inlaid without any intermediary cervicular process, with bony jaws fitted for all purposes of laceration of food or personal defence. I never met with one of these stout little fellows fearlessly preparing for resistance when under the restraint of an entomological finger and thumb, without comparing them with those squab, short-bodied, square-built, broad-shouldered, hard-featured, immoveable-eyed sort of people, of the genus *humanus*, so common in the world. I feel confident that your readers will recall, in a moment, a dozen such to their recollection; men full of health and vigour, of iron muscle and nerve, ready and willing to fight their way through the world unaffected by times or circumstances under which more pliant characters would quail; men who, if they shook you by the hand, would make every joint crackle under their hearty grasp, and who, if invited to dinner, would swallow an entire first course, without fear of indigestion or inconvenience.

It may not be irrelevant to insert, in an article on entomological notices, some information respecting the destructive powers of those minute insects, the *Bostricidæ*, on the forests of Germany, received from M. Warnkynck, a very intelligent Inspecteur des Chasses, resident at Klorter, near Rippoldsau, in the middle of the Black Forest. On looking over his collection, he pointed out the following as most injurious :—

Bostrichus lineatus.		Stephens' *Catalogue*, p.	148, *linearis* ?	Most destructive of all.
B.	*typographicus.*	ditto	145	Very bad.
B.	*villosus.*	ditto	144	
B.	*calcographicus* or *laricis.*	ditto	145	
B.	*curiaderis.*			On the White Pines.
B.	*pinastri.*	Found near Carlsruhe.		On the *Pinus sylvestris.*

With one other reference I shall conclude, and perhaps I could not select a more appropriate one, recalling as it does the closing in of those delightful continental evenings when, after the setting of a sun in glory and splendour unknown in our hazy and turbid atmosphere, the dews have fallen and left the world in darkness, the still air glowing with radiant warmth unaccompanied with damps and chills, rendering it so treacherous a temptation for enjoyment in less favoured climates. I allude to the Fire Flies *(Lampyris Italica ?)*, which, availing themselves of this sweet time of night, now light their phosphorescent lamps and flit before the traveller like twinkling stars. There is something mysterious and unearthly in their silent flight; slowly sailing in suitable harmony with the quiescence of the time of night, bursting into brilliancy, as it were, from vacancy, and then as suddenly vanishing into nothingness. Not an evening passed after a sultry day in the districts of the Upper Rhine, from Brühl and Andernach up to Baden, when these lovely, ghost-like insects might not be seen. The Germans call them by a name implying the lamp of the dead, and a more appropriate one could not be applied; for we might well conceive that, if the spirits of departed beings were allowed to revisit this nether world, they would gleam and flit before us with that gliding, solemn, silent motion, peculiar to the Fire Flies of Germany.

E. S.

NOTES ON THE MONTHS.

JANUARY.

" THERE 's beauty all around our paths, if but our watchful eyes
Can trace it 'midst familiar things and through their lowly guise;
We may find it in the winter boughs as they cross the cold blue sky,
While soft on icy pool and stream their pencilled shadows lie;
When we look upon their tracery by the fairy frost-work bound;
When the flitting Redbreast shakes a shower of crystals to the ground."

MRS. HEMANS.

THE observation of the natural appearances of the year during each of its revolving months, is an occupation suited to every rank and age, and is productive of the purest and most exquisite enjoyment of mind, as well as of the most salutary influence upon the body. Yet this source of gratification and improvement

is too generally neglected, either from a wrong bias being early given to the mind, or from other defects of education. Scarcely has the infant mind begun to look abroad and survey the face of nature, ere his seniors turn the attention of the youthful inquirer to man's productions and his occupations, and bestow upon him only such an education as will fit him to follow in the path themselves have trod. Now, while we aim at rendering the mind of youth a rich store-house of whatever is most excellent among the productions of human genius, we should likewise aim at making it a mirror fitted to reflect whatever is most lovely in nature. For this purpose a careful examination of the processes of nature throughout the different seasons of the year should enter into our general systems of education. In January the suitableness of the arrangements adopted both by the animal and vegetable kingdom to the existing conditions of the atmosphere might be pointed out.

The earth itself undergoes a temporary but extensive change on its surface, the colour of which, at other times, is either green or brownish-black—a colour much more favourable to the escape of the heat which the earth had received from the suns of the preceding summer than white. The great humidity of the air, also, in December and January, contributes to abstract much of the heat from the earth, which is hindered from receiving any from the now distant sun by the foggy state of the atmosphere. The retention of the remaining heat is, therefore, a most desirable object; to effect which, so soon as the temperature falls below a certain given point, the surface of the earth has its colour changed to white, by which the radiating power is greatly altered and reduced. In the northern parts of Britain, the colour of the fur of the Hare and the plumage of the Ptarmigan become white, for a similar reason. The fur of those animals which cannot change their colour becomes finer and thicker, which then serves better to guard them against the cold. This renders the furs of animals of northern countries more suitable as a protection for man when they have been killed in winter.

A certain temperature is necessary for vegetables to retain their vital principle; hence those which are of a large size, such as shrubs and trees, which do not *die down* to the ground like herbaceous plants, become coated with hoar-frost; so that their surface is universally rendered white, and their internal warmth retained, by the same means, and for the same reason, as that of the earth. The winter landscape is, therefore, not without its attractions, either that of novelty, arising from the suddenness with which the change above mentioned takes place, or of the more enduring feeling of interest which will spring from an inquiry into the causes and objects of these changes. A walk in dry, frosty weather, when suitable clothing is worn, is at once healthful and pleasant, and may be rendered productive of lasting happiness and enjoyment, by having the attention directed to the numerous proofs, with which every situation and season abounds, of the continued operation of those nicely-balanced laws which had their origin and have their maintenance in the mind and will of the Great Architect of the Universe.

DISPERSION OF PLANTS.

[From a Correspondent].

From a memoir read to the Botanical Society of London on Thursday, the 17th of November, on Local Botany, it appears that two-thirds of the British species grow within about twenty-five miles of the metropolis; also that five-sixths of the British genera and nine-tenths of the British natural orders are found within these bounds; that the greater part of the British plants are to be found in the continental floras of Europe; that upwards of 300 grow in the United States of America; that the flora of a part of Hindostan, by Wight and Arnott, containing about 2800 species, comprises not more than 30 British species; and among the 6000 plants of tropical America there is not one dicotyledonous species, and only a very few monocotyledonous species. It appears that the genera common to this country and the Indian flora above cited are 120, being four times the amount of common species; and that the genera common to England and the equinoctial flora of America are 270. The author farther states that one-half the British species, and above two-thirds of the British genera, grow in any parish of moderate extent; also that he collected, classified, and described 670 vascular species growing on Hampstead Heath and in the woods and fields adjoining; that latterly he has gathered about 900 species of the same kind (vascular) within twelve miles of Croydon, and has reason to believe that many more exist in that district.

Dr. Murray, an acute observer and excellent botanist, author of a valuable work on the wild plants of the north and east of Scotland, entitled *The Northern Flora*, some years ago published in Jameson's *Philosophical Journal*, a paper, in which he states that "a great proportion of Scottish plants are found in the Valley of Alford;" and, again, that "the mass of Scottish species grow in the environs of Paris." It farther appears that the extent of Great Britain, from the Channel Islands to the extremity of the Mainland in Shetland, is equal to the extent of that part of continental Europe from the Gulf of Venice to the north end of the Peninsula of Jutland; but the number of species in these parts of Europe is more than double the number found in Great Britain and Ireland, although the average temperature of this country is about equal to that of Mid Europe; and, with the exception of Switzerland and part of Hungary, the range of elevation is greater: from which it would seem that the comparative deficiency of species here is, in some degree at least, to be attributed to our insular situation.

NOTICES OF THE CAPTURES OF INSECTS;

WITH CURSORY OBSERVATIONS THEREON.

By J. C. Dale, Esq.

(Continued from page 13.)

Coleoptera.—*Carabus auratus.*—Two specimens of this fine and rare insect were taken at the same time with the *C. intricatus*, by Mr. Bluett, of Taunton, (to whom I am indebted for a specimen), at Shobroke, between Crediton and Exeter.

Omaloplia ruricola.—I have taken another specimen of this insect at Lulworth, this year, as well as the variety called *varia*, which is nearly black.

Anomala Frishii.—I formerly took this insect in abundance at Mount Misery, near Christchurch, Hants, amongst which there was a single specimen of the green variety, the *A. Julii.* Subsequently, I took a solitary individual of *A. Frishii*, near Parley, inland; and I have this year received, from the latter place, four specimens of the variety *A. Julii*, as well as an intermediate variety, but not a single one of the *A. Frishii.*

Aphanisticus pusillus.—I took this insect on the 20th of May of the present year, both at Lulworth and Glanvilles Wootton, by brushing grass.

Sibinia arenaria.—I found this in abundance at Black Gang Chine and Freshwater Bay, in the Isle of Wight, also, this year. The first pair I possessed were presented to me by Mr. Kirby, who, in company with Mr. Spence, captured them near Exmouth, in Devonshire.

Sibinia primita ?—I have found this in plenty at Lulworth, and a single specimen at West Hurne.

Galeruca rustica.—The only locality on record for this insect, is Whittlesea Mere. I, however, took one, two or three years ago, at Plumley Wood, Dorset.*

Cryptocephalus bipustulatus.—I have taken at Knighton Heath, near Dorchester.

Cryptocephalus Moræi.—One specimen of this I found with the last, a second at Glanvilles Wootton, and some others at Charmouth.

Neuroptera.—*Hemerobius fimbriatus.*—This insect, which is figured by Curtis, appears to be identical with the *H. hirtus* of the Linnean cabinet.

Strepsiptera.—*Stylops Kirbii.*—On the 12th of May, this year, I saw two individuals flying together amongst some brambles. One I was lucky enough to

* It also occurs in the Woods of Kent.—Eds.

catch, and a second the day following: a third I found dead in a cobweb at the entrance of a Bees' nest, and two others, very much mutilated, also in a cobweb.

HYMENOPTERA.—*Zarœa fasciata.*—I took this insect, for the first time, at Middlemarsh Common, this year.

Banchus Farrani, (Curtis, pl. 588.)—Two specimens of this insect I took twelve years ago, on Parley Heath.

Bracon denigrator.—I took this insect, which is figured by Curtis, pl. 69, near the Copse, at Parley Heath.

Tengyra Sanvitali.—This, which is *thought* to be the male of *Methoca Ichneumonides*, I took a specimen of at Durdle Door, near West Lulworth, on a thistle, on the 15th of July, 1835; and I took two more on the 11th of July this year, one of which I gave to my friend, Mr. Curtis, who seemed surprised at the capture, and did not previously possess a British specimen; but he had taken three or four of the *Methoca*, at Ramsdown, Hants, as well as at Black Gang Chine, Isle of Wight, where the Rev. Mr. Rudd also took it, and to both of whom I am indebted for specimens.*

Hedychrum ardens, and *Chrysis succincta.*—I took these in company, at Durdle Door, near Lulworth, which appears to be an excellent locality for choice insects; for, three or four years ago, I captured there, in the space of a week or ten days, twenty or thirty species new to my cabinet, amongst which were *Halictophagus Curtisii*, figured by Mr. Curtis in his *British Entomology*, pl. 433, *Hesperia Actæon*, (*Brit. Ent.*, pl. 442), *Encyrtus pulchellus*, Curt., and minute Hymenoptera of the genera *Eulophus*, *Ceraphron*, *Mymar*, *Rogas*, *Chelonus*, *Aphidius*, &c., in profusion.

Cerceris ornata.—This I took last year, at Black Gang Chine, in August, as also,

Cœlioxys Vectis, (Curt. *Brit. Ent.*, pl. 349).

Osmia Tunensis.—It appears from the MSS. of the late Captain Blomer, that he bred this insect from the shell of a species of *Helix*; and I possess a memorandum of *Osmia atricapilla* having been also found in a *Helix*.†

* There is not the least doubt of the *Tengyra* being the male of the *Methoca*, for M. Wesmael, of Brussels, has repeatedly taken them *in copulâ*. The *Tengyra* was introduced to the British Fauna, by our friend, Mr. Shuckard, in 1833, who captured two specimens at Hampstead, as well as many of the *Methoca*; and he informs us that he has taken a single specimen of the *Tengyra*, in August, this year, at Birch Wood, in Kent.—EDS.

† The specific name of the last *Osmia* should be *xanthomelana*, it being the *Megachile xanthomelana* of Kirby, standing as such both in his *Monographia* and in his cabinet, which is remarkable, as it is evidently a true *Osmia*. It is a question, worthy of determination, which is the true instinct of the creature?—whether to form a nest of clay for itself, as it is shown to do by the observations and specimen presented by Mr. Waterhouse to the Entomological Society; or to adapt the vacant shell of a Snail to the purpose? We incline for the former; yet, possibly, it may only build for itself in case of not finding a suitable

LEPIDOPTERA.—*Vanessa C. album.*—I observed this insect here on April 22, this year, for the first time since October, 1816, when, and prior, it was always in great profusion in the autumn.

Thecla pruni.—I found at Monk's Wood, Huntingdonshire, as, also,

Thecla W. album, in a wood at the same place, separated merely by a turnpike road from the former, but each seemed confined to its own wood.

Lycæna Corydon.—I took this insect last year, on a heath in the New Forest.

Lycæna agestis.—I took a specimen of the variety of this insect, which resembles the *L. salmacis*, on the 5th of August, near Lyme Regis, where Messrs. Queckett and Paul took two others, also, in the beginning of August: all three were females.

Acherontia atropos—I am informed by Mr. B. Morris, that he found, in September, 1835, at Charmouth, a larva of this insect, similar to the figure of it in Fuessly's *Archives*, and like the one observed by Captain Blomer, which I mentioned in my paper, in the 1st number of the present publication.*

Agrotis nebulosa.—But two or three specimens of this insect were known until captured this season by Mr. Raddon, on the Burrows of Appledore, Devonshire.

Catocola promissa.—I found the wings of this insect at Glanvilles Wootton, on the 13th of July, this year, and this is the first indication I have observed of its existence here.

Catocola Fraxini.—I possess a specimen of this which was taken at Cranborne, Dorsetshire, about fifty or sixty years ago.

Charissa pullaria.—On the 5th of August, this year, I took this insect, both typical and varying from dull white to a pale black, and so much resembling a variety of *C. obscuraria*, that I feel convinced these, as well as the *C. dilucidaria* and *C. serotinaria* are all varieties of one and the same species.

Siona dealbata.—On the 27th and 29th of June of the present year, I took a couple of specimens at the Caundle Holts, and it was taken at Langport, in abundance, by Messrs. Queckett, Paul, and Serrell.

Scopula ferrugalis.—I took on the 2nd and 8th of November, 1828. The late Captain Blomer found it, also, in November: but Samouelle gives June as the time of its appearance.

Scopula longipedalis.—The late Captain Blomer took this at Teignmouth, Devon; and I have taken lately a couple of specimens at Lulworth and Torquay.

place for forming its nest—such as the shell of a Snail. We also know that this species will form its cells amongst heaps of Oyster-shells or accumulations of garden rubbish. Robineau Desvoidy, and other French Entomologists, have observed similar habits in species of *Osmia*, whence one is named *Osmia helices*.—EDS.

* This is a variety produced, probably, by disease, or the infestation of a *Trogus*.—EDS.

Geometra degenerata.—I saw this insect on the 20th of June, and captured it on the 12th of July, this year, amongst brambles, near Rufus' Castle, Isle of Portland, and observed two or three more.

Geometra sinuata.—Taken, in June, 1829, by the late Captain Blomer, at Ugbroke Park, Devon, and at Langport, by Mr. Queckett, in July, this year.

Geometra berberata.—I took a specimen at Glanvilles Wootton, on the 26th of May, 1823. There is one in the Linnean cabinet, taken at Maiden Bradley, Wilts, by Lord William Seymour, on a ticket attached to which is written "unknown to Jones."

Geometra tristata.—This insect, which has been taken in Devonshire, by the late Captain Blomer and Mr. Cocks, I captured near Ambleside, in Westmoreland, on the 26th of June, 1827.

Crambus, n. sp.?—A specimen, allied to the *C. pascuellus*, but distinct from it, I took on Parley Heath, in August, 1835, when collecting in company with the Rev. G. T. Rudd; and I find Mr. Raddon has another exactly like it, which he took in Bewdley Forest, Worcestershire, and I observed a fine specimen very nearly allied, in the cabinet of Sir Patrick Walker.

Pterophorus monodactylus.—This I took in June, 1836, near Liver Frome, Dorset, and at Stafford.

Laria fascelina.—Dr. Abbot observes that a specimen of this insect remained in the pupa state thirty-four days, a second twenty-eight days, and a third twenty-seven days.

Laria pudibunda.—I find from Dr. Abbot, also, that he took the larva of this in June, which went into the pupa in July, and produced the moth in October. I once bred one as early as February 19, in the year 1828, and, in the year 1819, as late as June 14.

Eriogaster lanestris.—The late Captain Blomer bred a specimen of this insect, July 15, 1827; whereas its usual times of appearance are February, March, and April. I have observed that the cocoon of this species is so hard that it is extremely difficult to cut, excepting a few days prior to the insect's transformation, when it readily opens at the end where the head of the moth is situated. What causes this difference? I have also observed a very small hole in the cocoon, which is probably for the admission of air.*

Eriogaster populi.—I have bred this insect as early as October; this was in 1821: and in 1831, as late as December 19.

* There was a discussion at the October meeting of the Entomological Society, which bears upon the subject of the escape of moths from the cocoon, when it seemed to be the general opinion that the insect secretes a liquid which acts as a menstruum upon the gum, or silk, which constitutes the cocoon: in fact, it was stated that this liquid has been observed to be ejected by the mouth.—Eds.

Noctua atriplicis.—I possess a specimen taken at Stilton, or at Whittlesea Mere.

Diptera.—*Scatophaga scybalaria.*—This insect, which is figured by Curtis, has been taken in the Isle of Man, by the late Captain Blomer, and in Ireland, by Mr. Haliday.

Hemiptera.—*Cicada Anglica.*—This insect, which is figured by Curtis, in pl. 392, is considered as synonymous with the *C. hæmatodes* of Linné. The specimen labelled *C. hæmatodes* in the Linnean cabinet is very similar, but has no red on the thorax. On the ticket attached to it is written "*hæmatodes* of the German Naturalists, Br. Clark," but this is somewhat doubtful.

Fulgora Europœa—This insect is figured by Donovan, who says it was found in Wales, by Hudson and Yeats, but it is now doubted as being British. This was also the case with the *Chrysomela cerealis*, which had formerly been taken by Hudson also, but was likewise doubted; but many specimens have been captured latterly, on Snowdon and other mountains in Wales, thus confirming Hudson's previous discovery: and this being the case, we may certainly expect that the *Fulgora* will come to light.

Naucoris æstivalis.—This insect, I understand, has been taken by Weaver, of Birmingham, in Sutton Park. I have not seen it.

MR. SWAINSON'S REMARKS ON VERNACULAR NOMENCLATURE EXAMINED.

By Charles Thorold Wood, Esq.

Now that nomenclature is receiving, on all sides, that consideration which, till lately, has been so unaccountably denied it, we may expect that ere long some fixed principles will be adopted, by which the path of those who now grope their way in outer darkness may be rendered smooth and easy, and that it will be entirely cleared of those perplexities which are so annoying to the student and the amateur. I propose, in this paper, to examine the objections to improvements in the vernacular nomenclature of birds, as set forth by Mr. Swainson, which, if left unanswered, might have considerable influence in retarding terminological reform.

In an excellent review of *The Classification of Birds*, in the last No. of *The Naturalist*, the reviewer observes, that Mr. Swainson has not been happy in his objections to a reform in nomenclature: and agreeing as I do in this remark, I shall now proceed to prove it. Mr. Swainson prefaces his observations as follows:

"Nomenclature," he observes, "divides itself into two branches, for all animals with which the bulk of mankind are familiar, have two names; one being the scientific, the other the vernacular." Our author's remarks on the first being, for the most part, sound and judicious, I shall pass on to the second, with which Mr. S. does not appear to be so conversant—probably from having paid less attention to them. "Trivial, or vernacular names," says Mr. S., "cannot be said to come within the range of scientific nomenclature, because they are *not intended* for those who study Natural History as a science, but merely for the mass of mankind." Thus, it seems, according to our author, that those who have not the leisure, or the ability, or the inclination to study Natural History as a science, are to be condemned to learn erroneous names and, consequently, to imbibe incorrect ideas: in short, that the benefits of a correct nomenclature are to be confined to the learned few; while the "mass of mankind" are on no account to participate in them! I should rather have said, that correct names were doubly essential to the many, as they have not the means of rectifying the erroneous impressions that must unavoidably result from them. "Vernacular names vary," continues Mr. S., "in different periods, and not only in every language, but in every province. To attempt, therefore, to have a uniform standard of the *English* names of birds, is as hopeless, as we venture to think it would be useless." To say that *because* erroneous names are now in common use, *therefore* it is hopeless that we shall ever be able to supplant them by correct appellations, is surely not very reasonable: as well might we say, that, because many errors prevail, it is unlikely that they will ever give way to truth. That a reform would be "useless" is Mr. Swainson's opinion: I shall now proceed to examine how far he has succeeded in proving this.

"First," he states, "there can be no doubt that vulgar errors in the naming of birds are very general. The Goatsucker *(Caprimulgus)* does not suck Goats; the Hedge Sparrow *(Accentor)* is not a real Sparrow; the Tit-mouse *(Parus)* is a bird, and no quadruped; the Tit Lark is a Warbler; the Long-tailed *Mag* is no Mag Pye; and in this manner we might object, and reasonably, to one-third of the English names now in use." It is well known that most of our commoner British species have, as has been remarked of the Common Dipper, "as many names as would suffice for a tolerably well-stocked aviary;" and this is the case with each of the birds above-mentioned. Among this multiplicity, it would be strange indeed, if not one good appellation could be found: but instead of seeking for the most appropriate, our author has here, in every instance, singled out the *worst,* on which plan we might not only object to *one* third, but also to *three* thirds of the English names. The *Caprimulgus Europæus* of Linneus, being known by the name *Nightjar* in one part of Britain, and by that of *Goatsucker* in another, surely we may be allowed to select the appropriate one and reject the other, even supposing that it was wrong to *coin* an appropriate name. There are many parts of Britain in which the name Goatsucker is not

only never used, but also where it is entirely unknown: why, then, should we persist in attempting to diffuse a name conveying an idea which we ourselves allow to be erroneous?

The same remarks will apply to the other names. Thus, in my intercourse with the peasantry, I have found the appropriate name, Dunnoc, to be quite as common as the erroneous one Hedge Sparrow: indeed, I am quite surprised Mr. Swainson should advocate the latter, which has long ago been abandoned by all writers on the British Fauna. Tit-*mouse* is, also, generally abandoned in all our works, from the magnificent production of Gould on *The Birds of Europe*, to Miss Taylor's little volume, *The Boy and the Birds*. From what quarter Mr. S. obtained the strange name Longtailed *Mag*, I really cannot tell; but if it *is* in use in any part of the island, why should our author be at pains to bring into notice obscure names, at the expense of the appropriate names in more general use? I have been accustomed to hear this bird called by the name Longtailed Tit, but as it has lately been removed from the genus Tit, Mr. Blyth has proposed the very appropriate name, Rose Mufflin. Mr. S. tells us that the "Tit Lark is a warbler." What does he mean by this? Does he mean to say that it is a songster? or does he intend to denote some particular genus? And if the latter *which* genus is intended? For the name Warbler has, at various times, been used to denote the Willet *(Silvia)*, the Fauvet *(Ficedula)*, the Kinglet *(Regulus)*, the Whinlin *(Melizophilus)*, &c., &c.; but, at all events, Mr. S. is wrong, for the *Anthus pratensis* is in the genus *Pipit*. If Mr. S. makes such mistakes as these with regard to *British* birds, how can his readers rely on his authority as to *foreign* species? "Some few of these," continues Mr. S., "in systematic works upon our native Ornithology, where the most expressive English names are inserted, may be altered. The Goatsucker may be called the *Nightjar;* the Hedge Sparrow, *Flitwing*, which will be rather better than Shufflewing; and so on." There is, however, no "*alteration*" in writing Nightjar, instead of Goatsucker; this is merely a *choice* between two names equally well known; but as these names are only intended for the "mass of mankind," it is of course of little importance which we adopt; indeed it may be doubted whether the erroneous name is not to be preferred! With regard to the *Accentor modularis*, why should Mr. S. be at the pains to invent a new name, when there is one quite unobjectionable in common use? I shall not pretend to answer this question; but at all events I may assert that his proposing the new name, Flitwing, would have the effect of frightening those averse to innovations, which the adoption of Dunnoc would not.

The next sentence is founded on the erroneous idea that the new names can be disseminated in a day or a week, and I shall therefore pass it over, with the remark that the reformed nomenclature must first be adopted by authors, and all the rest will follow easily; especially as the taste for works on Natural History is yearly

becoming stronger. Mr. Swainson continues—"Admitting that appropriate English names should be used, who is to invent them?" I answer that there would be but little need for exerting the inventive faculties; for, as I said before, there are very few European or American* birds which have not at least one good name. "Once attempt to destroy the received nomenclature," observes Mr. S., "and every field naturalist, every tyro of Ornithology will contend for the name he likes best. The Longtailed Tit, for instance, has the following names by which it is known in different counties:—Huckmuck, Bottle Tom, Longtailed Mag, Longtailed Capon, and Mumruffin. The Yellow *Wren*, which in fact is not a *Wren*, but a *Silvia (Silvia melodia)*, is called also Willow Wren, Ground Wren, and Ground Huckmuck. A choice must be made from these, and by whom?" Nothing is more easy than to *make* difficulties, and allege them in excuse of our refusing to do that which we know would be *right*, though are *unwilling* to perform. But true greatness is shown by *overcoming*, and not by giving way to, difficulties. With regard to the Longtailed Tit, I do not see why we should trouble ourselves by trying to displace that established name, unless indeed we agree to remove it to a new genus, in which case Muflin is at hand, without there being any necessity for raking up unheard of names from every corner of the island. If it were necessary to do this, a volume might soon be filled with such names as Captain, Proud-tailor, &c. &c., which are in use in different parts. With regard to the *Silvia melodia*, "Song Willet" is the most appropriate name I have heard applied to it, and Sibilous Willet for the *Silvia sibilans*. The name Wren belongs to *Anorthura*, of which there are only two European species. "Whatever reforms, therefore," continues Mr. S., "which experienced amateurs will admit, must be few and judicious, giving in general the generic or family name to the species; calling, for instance, all the ordinary species of the *Silviadæ*, Warblers; except, indeed, those few groups which are already distinguished by a separate vernacular name, as the Redstarts, Wagtails, Robins, and Chats." Wheatear, Reedling, Nightingale, Tit, Muflin, Dunnoc, and Pipit, he might and *should* have added, so that of the fourteen genera of the Willet family described by Selby in his *British Ornithology*, *eleven* are popularly known by distinctive names, and of the ten British genera in the Finch family, *nine* are popularly known by distinctive names. The fourteen genera in the Duck family are in that work described under as many vernacular generic names, and I might multiply instances to the end of the chapter, were it necessary: every one of course has the *Feathered Tribes* and the *British Ornithology*, and those works will bear out my assertions. It thus appears that Mr. Swainson's plan—not the one he opposes—would be productive of most alteration if carried through-

* It must be understood that I use the term America in the same sense as Audubon, namely, for the Continent to the north of the Isthmus of Panama; calling the southern Continent Columbia.

out. That able zoologist lays it down as a rule that, "if a principle is good, its advantages will be more and more apparent the more it is followed in detail." Suppose we test this principle by his own rule: we should then call the Blue Tit, Blue Warbler; the Grey Wagtail, Grey Warbler; the Rock Dunlin, Rock Snipe; the Mute Swan, Mute Duck; and so on throughout.

"The *Silvia regulus*," continues Mr. Swainson, "being at the head of this family, should, more especially, be termed a Warbler, *par excellence;* that is, if the same rule is to guide us both in scientific and in vernacular nomenclature. By this plan some sort of connection will be pointed out between the modern subgenera; and we shall not have two birds, actually belonging to the same genus, (like the Yellow and the Goldcrested Warblers), known by two names which have no apparent relation to each other." The first proposition is founded on an erroneous basis; and as the error seems to be very prevalent, it may be as well briefly to expose it. Mr. S. here pronounces the genus *Regulus* to be the typical group of the *Silviadæ* (Willet family), and, in accordance with this idea, he says, that the name *Silvia* should be taken from the Willets (of which there are three British species) and given to the Kinglets, which he would thus deprive of their established name, as, also, he would the Willets, thus creating a double confusion. This is bad enough already; but the plan carries yet other evils in its train; for other naturalists, dissenting from the opinion of Mr. S., may single out another genus as typical. This is actually the case, for Mr. Blyth maintains the Fauvets *(Ficedula)* to be the type of the family; and he, following out Mr. Swainson's plan, would wrest the name *Silvia* from the unhappy Kinglets, which would thus, like other crowned heads, be deprived of their name as soon as they got it. There would yet be a third class, who would contend, with Selby, that the Willets are the true types of the family, (which I take to be the real state of the case), and thus, in one family, there would be continual confusion. And again, suppose some new genus were discovered, which Swainson himself should pronounce to be the type, he would be obliged to re-take the name *Silvia* from the Kinglets, to which he would then restore the old name! I have touched on this subject before; but as it is still in as full force as ever, I have thought it my duty to treat of it more in detail. I have now given my own opinion, fortified by reason; but I can also bring the authority of Mr. Swainson into the field, and turn his own weapons against himself. In that gentleman's work, *On the Classification of Quadrupeds*, he says, at page 378:—"We should gladly have retained the name of *Capridæ* (Goat family) to this group, had we not ascertained that the Goats were an *aberrant*, and not a *typical* genus; these latter groups always giving their name to the family." The family here spoken of Mr. S. calls the "Antilope fafamily, *(Antilopidæ)*." Now this is precisely what I argue for. If the Kinglets are typical, I would call the family the Kinglet family *(Regulidæ)*; if the Fauvets, the Fauvet family *(Ficedulidæ)*; and so on. In another part, Mr. S.

tells us that the name *Todidæ* should give way to *Muscicapidæ*, because the genus *Muscicapa*, and not *Todius*, is typical: then why not be consistent, and act on this principle throughout?

Having thus considered the first proposition, let us scrutinize the second. The *Silvia melodia* and the *Regulus auricapillus*, he tells us, "belong to the same genus." This would lead most naturalists to imagine that Swainson adopted the genera of the old school, which is far from being the case. Either from an affectation of singularity, or from some other unexplained cause, Mr. S. does not use the term, genus, in its usual and proper signification, viz., the lowest groups of species; these he calls sub-genera, and applies the name genus to the groups next above these, for which Selby has very judiciously proposed the name *Domus*, and the termination *ites*. The sub-genera disfigure Mr. Swainson's favourite *Northern Zoology*—a work which would have been improved in many respects had it been half the size and a quarter the price. To this work I refer for a practical illustration of the inconvenience of the sub-genus—a name which should be altogether abandoned—and will now continue our examination.

Mr. Swainson next proceeds to consider the theory that each genus should have a vernacular name peculiar to itself: "In regard to the second proposition," he says, "that each genus and sub-genus in general Ornithology should have a distinct vernacular name, the difficulties are of a much more insuperable nature. It would require the coinage of between 300 and 400 English names for birds of whose manners and habits we know little or nothing: and, after all, what possible use would this accomplish? Is it not sufficient, for instance, to designate the five primary groups of the Parrots (Parrot family) by their present well-known names of Maccaws, Parrots, Cocatoos, Lories, and Parakeets, without breaking these up into twenty-five others, which would make ordinary persons lose sight, in fact, of the groups themselves, in a multiplicity of small distinctions which they never could comprehend, and which would only perplex them? But what should we do with the Woodpeckers, (Woodpecker family)—a group of the same value, and therefore containing as great a number of sub-genera as the Parrots (Parrot family)? Five-and-twenty names, at this rate, must be devised for all the variations of a Woodpecker! and they must be appropriate, for otherwise what is their use?" Mr. S. here takes great pains to refute and show the insuperable difficulties of a proposition of his own making: for, as far as I am aware, he is the first who has proposed to give an English name to every known genus of birds. This would be a very useless scheme; for the majority of these genera are known only to a few scientific ornithologists, and perhaps known only to them as dried skins; whereas, English names are not intended for the scientific few, but for the unscientific many—or, in Mr. Swainson's phrase, for the mass of mankind. Those few genera that *are* known generally, should, of course, be called by their proper English generic and specific names, and the rest, known only to the scientific, will be called

by their Latin names: but in no case should a bird *not* in the genus *Psittacus* be called a Parrot, or *not* in *Lorius* be called a Lory. As the English language extends into all parts of the globe, English names for each of the genera will spring up naturally. It has been calculated that, within a century from this time, the English language will be the native tongue of upwards of three hundred millions of the human race; and when the great continent of America, and the vast island of Australia shall be peopled by descendants of the inhabitants of Britain, surely it will be worth while to coin English names for the accommodation of so respectable a majority of the human race.

"It is only," concludes Mr. S., "when we come to follow a theory, whether in science or in common matters, down to its details, and see how it will *work*, that we can judge of its practicability or of its use. Some few vernacular names, indeed, may be occasionally added, but the construction of our language is not well adapted for this purpose. To attempt expunging a well known vulgar name because it does not happen to express a scientific group, appears equally repugnant to common sense and sound judgment." We have seen how Mr. Swainson's theory (namely, giving the English *family* name to all the genera) has stood his own test; we have assayed it in his own crucible, and have found that what he recommended as gold has turned out to be mere lead: at the same time I fearlessly invite him to try the theory he opposes in the same crucible, and venture to predict that it will come out scathless, even from a furnace seven times heated. I do not understand what Mr. Swainson intends when he speaks of "expunging a well known vulgar name because it does not happen to express a scientific group." Instances should have been given, that all misconception might be avoided. Does he allude to such names as Rook, Kittiwake, and Smew? If so, I should answer that, as these names do not inform us as to the genus to which each respectively belongs, they are necessarily imperfect, and this imperfection might either be avoided by adding the name of the genus, as Rook Crow, Kittiwake Gull, and Smew Merganser, or else descriptive specific names might be substituted, as Barefaced Crow, Gray Gull, Pied Merganser. But, perhaps, he alludes to such names as Gold Finch, Bull Finch, Willow Wren, Tit Mouse, Bank Martin, &c. These names must be either erroneous or correct; if the former, no unprejudiced person can for a moment hesitate as to whether they should be retained or not, but if the latter, there is no need to discuss them. A person ignorant of Natural History would suppose that the above named birds belong to the genera Siskin (*Carduelis*), Alp or Coalhood (*Pyrrula*), Willet (*Silvia*), Mouse (*Mus*), and Martin (*Martes*); and in every instance he would be wrong. Can such a nomenclature be desirable? or, rather, does it not defeat the end for which nomenclature was formed? Yes; and on this account I should recommend all who have the interests of the "mass of mankind" in view to avoid all such names as worse than useless.

I have now, sentence by sentence, shewn the unsoundness of Mr. Swainson's views. That it is *practicable* to carry into execution the plans here advocated may be seen by referring to Number XIV. of that valuable periodical *The Analyst*, and that it is *desirable* to do so I think I have already, in some measure, shewn, and shall, in all probability, do so more fully when I reply to Mr. Morris. That a writer of such true depth, masterly precision, and admirable talent as Mr. Swainson should have so signally failed when he turned aside from the straight and narrow path which leads to truth, is a source of real gratification to those who are anxious for the universal substitution of truth for error; and though the latter may sometimes prevail for a time, like the murky cloud of a summer's day, yet equally transient will be its triumph.

A BOTANICAL TOUR IN HEREFORDSHIRE, MONMOUTHSHIRE, AND SOUTH WALES;

WITH INCIDENTAL NOTICES OF THE SCENERY, ANTIQUITIES, &c.

By Edwin Lees, F.L.S. and F.E.S.L.

(Continued from page 217).

There are two enemies particularly annoying to the practical botanist in his explorations. The first of these is the road-surveyor—maledictions on his head!—who, galloping along on his well-appointed steed, and thoughtfully pausing here and there, has already, in idea, cut through one hill, avoided another, gained a yard in one place, and overcome an angle in another, till the old winding, spreading, sheltered, high-banked way, with its terraced footpath bordered by "Robin-run-i'-the-hedge," "Houndstongue," "Five-fingered grass," "Soapwort," and many an old remembered favourite, can be no longer recognized in the long, dull, mathematical macadamization that has been just laid down according to modern rule, and where no plant but the "cursed Thistle" is likely to vegetate for many a long year.* For not only is the pedestrian brought down from his high but safe

* This is no fancied picture, since I can enumerate at least three remarkable plants which have all disappeared from the vicinity of Worcester within the last few years, occasioned by alterations and improvements on and about the roads. The first is the *Cynoglossum sylvaticum*, recorded by Dr. Nash as met with near "the third milestone on the Pershore road," but now not to be seen within many miles of the spot. The second is *Anthriscus cerefolium*, mentioned by Dr. Stokes as growing, in 1775, in great profusion, just beyond

eminence to a level with every mud-splasher who wilfully dashes along on the very verge of the path, but every green oasis that formerly gladdened the eye is hedged off—every gate, surmounted with a formidable *chevaux-de-frize*, frowns upon the hopeful eye—

"Even the bare-worn common is denied"—

and not a stile remains to offer a meditative lounge, which must now be sought, if at all, within those hallowed recesses where, thanks to legislative wisdom, you perceive you are "*Licensed to be drunk on the premises!*"

But "what 's the use of sighing?" I can have no hope to soften or macadamize the heart of the obdurate road-surveyor. But there is another enemy that I may hope to touch, and that is the botanist himself. Whoever has sought for the rarer plants, as I have done, in the habitats mentioned in "the books," must have often with me have felt the pang of disappointment at finding no traces of the species in the designated localities; and so much did this feeling operate upon the late Mr. Purton that, in his *Midland Flora*, he declared that no plants should appear unless observed by himself or some living authority he could depend upon. But the rapacity of even living collectors is unfortunately proverbial, and it often defeats itself. I have known young enthusiastic botanists, on being taken to the locality of a rare plant, rashly root up every one that could be found; so that either the species in question was actually eradicated there, or at any rate the habitat became "unproductive" for some years to come. There was much good sense in the country dame I have heard of who incessantly and invariably aimed to impress upon all about her the maxim "always keep an egg in the nest:" and this is equally applicable to botanical as to pecuniary affairs. If a rare plant, when found, is indiscriminately gathered, without "leaving an egg in the nest," not only is the next botanist who may come to the spot disappointed, but it may be even imagined, and not altogether unjustly, that the plant in question was never really met with there, while even charity herself is compelled to suggest that "some mistake" must have arisen. Hence my invariable custom is, where more than one plant presents itself, to "leave an egg in the nest;" and I recommend this principle to my brother botanists. Of course, where specimens abound there can be no harm in "making hay while the sun shines;" and I shall now, therefore, without further circumlocution, proceed to my herborizing avocations.

Abergavenny is a good central position to radiate from into the surrounding

the turnpike on the Tewkesbury road; here I observed it for several successive years, till, in 1830, the fiat went forth, the road was widened and altered, and the plant lost. I have now in my *herbarium* a specimen of *Verbascum virgatum* which I gathered in 1828, growing by the side of the Kidderminster road, about two miles from Worcester; I again noticed it the following year, but the strictest search since has been unable to detect it.

districts, tempting alike to the botanist and the lover of picturesque scenery. The sparkling Usk rolls beneath its double bridge, glances on its cumbrous ruined castle seated on a green elevated mound, and, ploughing into the gravel on its pebbly shores, hastens along its beauteous vale to the ocean. Bounding the valley on the west rises the stupendous Blorenge Mountain to the height of 1720 feet, the termination in this direction of that band of mountain limestone that encompasses the South Wales coal-field; clouds ever and anon wreath its summit, while the morning sun lights up the woods at its base, its green sides, and its protruding rocks, leaving the vast punch-bowl hollows of the mountain shadowed in gloomy obscurity. Northward the pyramidal height of the Sugar Loaf and its massive subject buttresses of old red sandstone block up the vale, leaving but a scanty space for the passage of the Usk on the one hand, and shelving off on the other towards the isolated fortress of the Skirrid Vawr, whose terraced ridges and detached promontories form a commanding object eastward; while from thence to the south an undulating woody ridge, capped by the feathery Little Skirrid, extends almost to the very banks of the river.

> "The lucid Usk, the undulating line
> That nature loves; whether with gentle bend
> She slopes the vale, or lifts the gradual hill,
> Winds the free rivulet, or down the bank
> Spreads the wild wood's luxuriant growth, or breaks
> With interrupting heights the even bound
> Of the out-stretched horizon."*

To increase the charm of the scene, the foaming little river Gavenny, to which the town owes its name, rushes from the eminences eastward through richly verdant meadows to increase the liquid resources of the Usk at this place. The beauties of the country around, Crickhowell only six miles northward, Ragland's noted towers eight miles to the south, with the matchless arches of Tintern within the range of a more distant excursion, conspire to tempt the pausing footsteps of the tourist at Abergavenny; but, anxious to press forward while all was bright and gay overhead, I determined to encamp here on my return for a short time. I, therefore, took measures for proceeding to Newport as soon as breakfast was dispatched, and meantime met the first rays of the saffron morn on the dewy banks of the Gavenny and the Usk.

Sambucus ebulus, the Dwarf Elder, I noticed by a spring on the road towards Skenfreth, and observed it in considerable plenty in a hedge not far from the foot of the Derry.

Cotyledon umbilicus appeared in profusion and luxuriance on many old walls in the town and suburbs.

* Sotheby.

Orobanche minor.—On the top of an old garden wall on the road to the little Skirrid, overgrown with Ivy, and in a very rubbishy state.

* *Mentha viridis.*—Plentiful in a watery ditch below the bridge and not far from the Usk.

Rosa arvensis.—In great beauty and abundance, adorning the thickets at the foot of the Derry, and apparently the most common Rose in this vicinity.

* *Salix rosmarinifolia.*—In a marsh overspread with various willows, and overgrown with brambles, reeds, &c., forming a favourite angling haunt for some distance along the Usk, below the castle.

* *S. amygdalina*—Almond-leaved Willow. In the same shady, secluded spot.

Tussilago farfara.—Most abundant on the shores of the Usk.

In proceeding from Abergavenny to Newport, I could not help remarking the greater exuberance of the Common Elder (*Sambucus nigra*), filling the hedges to an extent I never before noticed in any other county than Monmouthshire, and loading the air with its peculiar scent, while its snowy cymes whitened the country far and wide. It is remarkable, however, that in this country it is never found far removed from the works or habitation of man, and never within woods, unless, perhaps, on the site of some abandoned cottage. This suggests the idea of its not being really indigenous, but introduced into Britain at an early period, and very likely by the Romans, who had no less than five principal stations in Monmouthshire, one of which, Caerleon, was the metropolis of the province termed Britannia Secunda; and here the Roman power and jurisdiction was established for more than three centuries.* Dr. Walker thought the Elder was not indigenous to Scotland, justly observing that there existed no old trees, and the only veteran of any bulk that I ever met with was in the vale of Neath, near the Porth-yr-ogof, or Mellte cavern, which I shall have occasion to mention hereafter. Loudon remarks that "it is frequent in Greece, and was formerly much employed in medicine there, as the space it occupies in the works of Theophrastus bears ample testimony."† We can scarcely doubt, therefore, that the fame of its virtues preceded it, and ultimately led to its transportation from Greece, through Italy, to England, where hot "Elder wine" is still considered to be no bad renovator on a cold frosty night, if, indeed, the *cauterizing* potion can make good its passage to the interior—but it requires some effort to do it. The Elder was probably indigenous to Italy, if the account of Pliny is to be depended upon, who says "The shepherds are thoroughly persuaded that the Elder tree growing in a by-place out of the way, and where *the crowing of Cocks from any town cannot be heard*, makes more shrill pipes and louder trumpets than any other."‡ Phillips, in his *Companion for the Orchard*, gravely tells us that "Boerhaave, the celebrated physician of Leyden,

* Evans' and Britton's *Monmouthshire.*

† Loudon's *Arboretum and Fruticetum Britannicum*, p. 1029.

‡ Pliny's *Natural History*, translated by Phil. Holland, M.D.

is said to have held this tree in so great veneration that he seldom passed it without taking off his hat and paying reverence to it." The old Dutch doctor must surely have been a determined toper of Elder wine! what else he could see in the Elder to induce him to doff his cocked hat to it seems impossible to conceive. Phillips omits to state his authority for this story, which, if true, was perhaps connected with some superstition, from which the greatest men have been not always exempt.

At Llanellen, four miles from Abergavenny, we crossed the Usk, and in a hedge-row here **Rosa villosa* appeared with its beautiful deep pink blossoms.

Grammnitis ceterach shewed itself for the first time in this quarter in the interstices of a wall.

Further on, a gigantic old Ash tree, enveloped with Ivy, formed an interesting spectacle. Passed Mamhilade Church, whose cemetery is wrapt in sombre gloom, by eleven large Yew trees, one of which, near the building, is of very large dimensions. A whimsical idea has been taken up by St. Pierre, and rather strangely propagated by Dr. Johnston in his interesting *Flora of Berwick-upon-Tweed*, that Ivy will not grow upon other evergreens.* The futility of such an hypothesis was here very evident, for many of these Yews were densely clothed with Ivy, as well as numerous Firs in the same vicinity. It must be admitted that a gloomier object than a Yew or Fir cloaked in still darker verdure than its own shadowy robe is hardly conceivable; and I was much struck some years ago with one of this description that I met with canopying, in sombre twilight, a dingle near the Wrekin, where a silent streamlet wept through the lurid shade. In Lower Sapey churchyard, Worcestershire, there is also a singular Yew which the Ivy upon it has completely overpowered, surmounted the very topmost branches, and formed a large ivied canopy upon the summit of the tree. I have noticed Portugal Laurels, also, and various species of *Pinus*, robed in Ivy in Witley Park, Worcestershire, and in numerous other places. These Ivy-enveloped evergreens are not disregarded by the birds, who find them very convenient places for nidification; and they are especial favourites with the Stock Dove, where he coos away unseen and undisturbed.

At Llannihangel, two miles from Pontypool, I was much pleased to notice the custom of planting the graves of the rural inhabitants with flowers—an old observance, still piously kept up at present in South Wales. It is not, perhaps, generally known that plants of pungent scent are chosen for this purpose, in preference to more specious and more elegant flowers. Thus, Rosemary, Balm, Old-man, and Tansy are of most frequent occurrence; the latter of which, and some others, are alluded to by Mason, in his fine elegy commemorative of the practice:

* Johnston's *Flora of Berwick-upon-Tweed*, vol. i., p. 209, under *Pinus sylvestris*.

"Full many a flower,
Pansy and *Pink*, with languid beauty smile;
The *Primrose* opening with the twilight hour,
And velvet tufts of fragrant *Chamomile*.

For, more intent the smell than sight to please,
Surviving love selects its vernal race;
Plants that with early perfume feed the breeze,
May best each dank and noxious vapour chase."

The idea seems to be, to render the last sad home of the departed in the cold ground as pleasing as possible, by throwing around it a grateful perfume; and perhaps this may have originally arisen from sanitary motives, the putrid effluvia from the mortal remains being thus neutralized by the agency of the plants, no danger need be feared from a silent communion with the loved object now for ever at rest. A somewhat similar idea seems to have been entertained by Shakspeare, when, in reference to the death of Fidele, he exclaims—

"With fairest flowers, while summer lasts,
I'll *sweeten* thy sad grave."

When the *Pink* is extensively employed for this purpose, as here and in Cadoxton church-yard, near Neath, the most beautiful, as well as elegant, effect is produced. The Rosemary bushes are but gloomy, unsightly objects, and the rank Tansy *(Tanacetum vulgare)*, however beautiful when in its proper place by the river side, adorning the bank with its golden flowers, is here no better than a weed, and sadly out of place. A distinction is to be made between planting the graves with herbs, and strewing them with flowers—the latter only taking place immediately after interment, and being continued only at intervals, till the growing plants put forth their blossoms. One of the most charming spectacles of this kind that I ever saw, was in the church-yard of Trevethin, near Pontypool, in the month of March some years ago, where several children were diligently employed in decorating every grave with the brilliant flowers of the Daffodil, "that comes before the Swallow dares." These, covered with dew-drops, and glistening in the morning rays of a vernal sun, produced a very brilliant effect. That this highly poetical custom has been handed down from antiquity, and was practised by the Romans and Romanized Britons in these very parts, no doubt whatever can exist. When Martyn, in his notes to the 5th eclogue of Virgil, under the words "*Spargite humum foliis*," says, that "it was a custom among the ancients to scatter leaves and flowers on the ground, in honour of eminent persons, and some traces of this custom remain among us at present," he doubtless alludes to the subject under consideration, as *the ground was to be spread with leaves* in honour of

Daphnis, and a monument raised to his memory. This original heathen custom was found not inappropriate to christianity, and is alluded to by several of the fathers, though St. Ambrose seems to imply a disregard to, or disinclination for, the practice. "*I will not*," he says in his funeral oration on Valentinian, "*sprinkle his grave with flowers*, but pour on his spirit the odour of Christ; *let others scatter baskets of flowers*. Christ is our Lily; with this I will consecrate his relics." One curious circumstance struck me in this church-yard, which, whether accidental or the work of art, affected me considerably. A wild Rose bush *(R. canina)* had taken its position, as an epiphyte, upon the sole Yew in the cemetery, from whence its pink flowers depended in long waving tresses in beautiful profusion. It seemed to me an emblem of struggling genius and virtue, surmounting the most unfavourable circumstances, and flourishing in despite of the baleful and poisonous influence of the envy and malice that hoped to overshadow and destroy it. Or it might be considered emblematical of those unexpected joys which often irradiate the horizon of life when only clouds seem rolling around; or here, in particular, it might symbolize the delightful hours we once enjoyed in the company of those endeared to our hearts, and embalmed in our recollections; but whom we can never again engage in delightful association till the mournful Yew has waved its branches over us. Such thoughts and reminiscences of departed joys are truly, indeed, like the fragrant Rose flowering upon the dark Yew.

> "Long, long be my heart with such memories fill'd,
> Like the vase in which *Roses* have once been distill'd;
> You may break, you may ruin, the vase if you will—
> But the *scent of the roses* will hang round it still."

The dark, dirty, and uninviting town of Pontypool, next presented itself to view, where there is nothing to attract a naturalist, unless he pursues his course to the hills and mountains beyond, which was not now my intention. The torrent that brawls along its stony bed at this place, bears the name of the Avon Lwid, or *Grey river*, from the circumstance of its waters, in rainy weather, pouring down in a *milk-white* flood. This is rather a curious fact, and arises, as I had formerly an opportunity of observing, from the soft breccia composing the hills from which the springs forming the river arise. The waters pouring down the declivities, disintegrate the soft white sandstone, which contains the quartzose and jasperian pebbles as in a cement, and become so loaded with the comminuted arenarian matter, that they appear like streams of milk murmuring amid the green moss and rising copse-wood, till they mingle together amid masses of ironstone to form the foaming "Grey River."

Nothing of any interest occurred between Pontypool and Newport, which latter town we entered by a massive stone bridge across the Usk. The church stands on an eminence out of the town, with some fine Ash trees within its pre-

cincts, and commands a splendid view of the Bristol Channel, the Flat and Steep Holmes, and the opposite coast of Somerset. While waiting for the arrival of the mail to proceed to Swansea, I investigated the environs of the town, which proved, however, rather unproductive.

* *Œnanthe crocata*? I perceived in some quantity in flower, overspreading a marshy spot in a field by the side of the Cardiff road. I afterwards noticed this plant in several other parts of South Wales, where it appears to grow profusely. Since Sir W. J. Hooker introduced the *Œ. apiifolia* of Professor Brotero into the British Flora, from the information of Mr. Banks, of Plymouth, this "Celery-leaved Water Drop-wort" has found its way into six counties, but I cannot help suspecting that here a distinction has been introduced "without a difference." Botanists had taken up a notion (how true I am unable to say) that *Œ. crocata* always abounded in a yellow juice. Hence Mr. Banks, finding a similar plant with "no peculiar juices," is induced to consider it a new species, entirely on that account. Now, certainly, if the existence or non-existence of the supposed "yellow fetid juice" makes the plant before us either *Œ. crocata* or *Œ. apiifolia*, why then my plant is the latter. But the question arises whether this "poisonous yellow juice" is constant in *Œ. crocata*, or whether it really appears at all? I have met with the plants abundantly on the banks of the Teme, Worcestershire, and, though frequently gathering it, never verified the emission of the "orange-coloured, fetid, very poisonous juice," which, according to Sir J. E. Smith, ought to exude from "all parts of the herb when wounded." It is remarkable that Sir W. J. Hooker merely observes "full, *it is said*, of a poisonous yellow juice," and introduces *Œ. apiifolia* "with some hesitation." I cannot conceive the two plants to be essentially different, especially in the absence of any recent witnesses of the emission of yellow fetid juice from the *Œ. crocata*, which very probably, if it appear at all, is only at peculiar seasons, or in very variable quantities. Dr. Woodville, in his account of *Œ. crocata* in the *Medical Botany*,* says not a word about yellow juice, though anxious to warn his readers on account of its poisonous qualities, being by Dr. Poultney "esteemed to be the most deleterious of all the vegetables which this country produces." Brotero's name implies the similarity of his plant to *Celery*, and Woodville states that three French prisoners residing at Pembroke mistook the *Œ. crocata* for *wild celery*, and, presenting it to their comrades, had nearly caused the death of the whole of them, and two actually died from partaking of it. The death of five boys in Ireland from the same circumstance is also recorded. I should fear mischief from the use of the term *apiifolia*, unless it can he satisfactorily shewn that the plant intended is innoxious, and differs in other

* Supplement, quarto edition, p. 143. In the second edition of Withering, under the co-editorship of the late Dr. Stokes, a most acute botanist, the yellow juice of *Œ. crocata* is unnoticed.

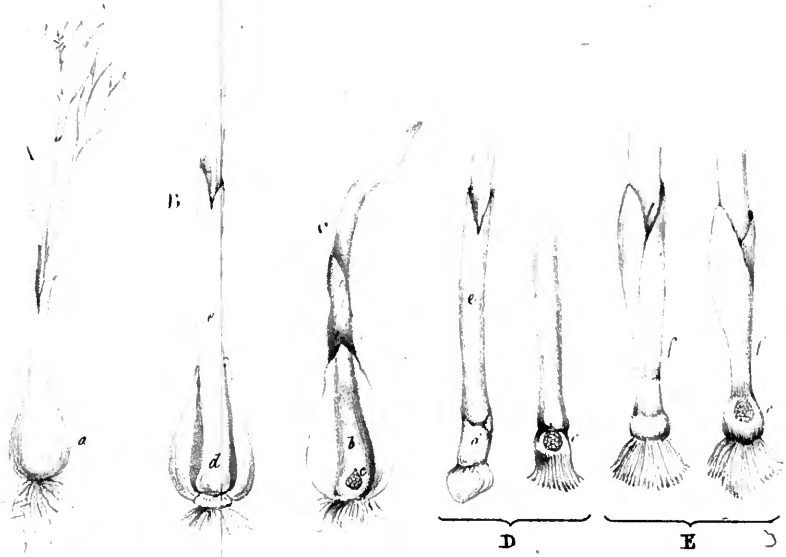
particulars from *crocata*, independent of the emission or non-emission of the yellow or orange-coloured juice. Mr. Watson, with the best intentions, here only increases the difficulty by inquiring, in his *Botanist's Guide*, for *apiifolia* only, and leaving out all mention of *crocata*. No light, however, is thrown upon the subject by any of his correspondents, for three set the plant down without any particular habitat, while even the acute Mr. J. E. Bowman puts a query to his "*apiifolia?*" observing "I found what *I take to be this* on the Menai Strait, above Vayrwl, and in a dingle near Beaumaris.* Since penning the above I have received the second edition of Lindley's *Synopsis*, where, in the Supplement, the following remark occurs, coinciding with the views I have taken. "In the *British Flora*, Dr. Hooker admits, under the name *Œnanthe apiifolia*, of Brotero, a plant resembling *Œ. crocata*, from which it differs, among other things, in having no yellow poisonous juice: but in the third edition of that work the species is abandoned, upon the ground of such juice not being constantly present in *Œ. crocata* itself. Of course, it will not constantly be present in that plant more than in any thing else, inasmuch as the presence of such secretions depend upon seasons and other circumstances; but from what has been said about the supposed *Œ. apiifolia*, we recommend that plant to a new and more diligent investigation: it is said to grow about Plymouth."

On several *Rumices*, growing by the side of the rail-road, I noticed the Dock Æcidium (*Æ. rubellum*, Pers.) in great plenty, displaying its white clustered pseudoperidia in extreme delicacy and beauty. It is not common in fructification in the midland counties, and hence Purton has figured it under the name of *Æ. rumicis*.†

Being anxious to investigate the vicinity of Swansea, I found it expedient to proceed there by mail, which going the whole way to Milford, I found every place but one engaged—that one was unfortunately inside. Little account, therefore, can I give at present of the plants intermediate between Newport and Swansea, except that **Cotyledon umbilicus*, not noticed by Mr. Watson as inhabiting Glamorganshire, appeared very plentiful on almost every rock and wall I could occasionally discern between Cardiff and Briton Ferry. At Cardiff I had an opportunity of walking round the area of the castle, and glancing at its ruined keep; when, as I was about to retire, a porter, in the livery of Lord Bute, would insist upon conducting me into the only lion's den about the place—a square damp dungeon close to the entrance, with a solitary ray of light hardly able to wind its way in through a corner cranny, where he assured me Robert, Duke of Normandy, had been confined for above twenty years! I had forgotten all about Duke Robert, and repented that I had been thus allured by my conductor, and must

* Watson's *New Botanist's Guide to the Localities of the Rarer Plants of Britain*, p. 229.

† Purton, *Midland Flora*, vol. iii., t. 26.



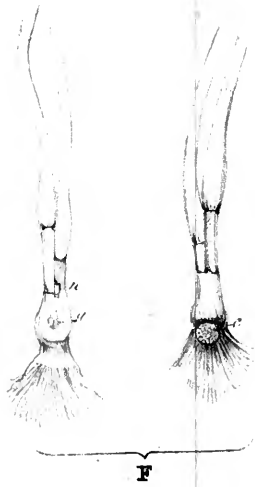
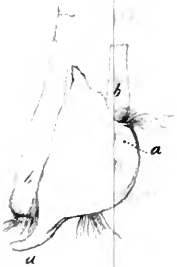
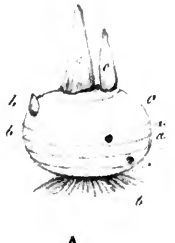


Fig 2.

Fig 3.





surrender the image and superscription of his majesty on such a dismal and wretched pretence as this. If Robert ever had been confined in the dungeon I was ushered into, there was little necessity to put out his eyes, for they would not even have shown him a spider on the wall. I darted hastily off, resumed my seat, and resolved to abandon dungeon explorations, where no sight of plant, no sound of insect, or form of beauty was likely to repay my search.

(To be continued).

ON THE EVIDENCE OF DESIGN OBSERVABLE IN THE VITAL ECONOMY OF THE COLCHICUM AUTUMNALE, (LINN.), OR COMMON MEADOW SAFFRON.*

BY WILLIAM ALLPORT LEIGHTON, ESQ., B.A., F.B.S.E., &c.

The innumerable instances of design, or the adaptation of certain means to a corresponding end, visible in apparently the most insignificant works of nature, merit the attention and claim the admiration of man. In the vegetable world, no less than in other departments of creation, this observation holds in full force, for almost every plant which either displays its beauteous blossoms to gladden and attract the eye, or which merely uprears its minute verdure from the surface of the tempest-riven rock or time-worn ruin, only to lend its aid in forming one of those varied tints which contribute so materially to the picturesque beauty of such situations, will be found, on careful examination, to possess contrivances for the support and reproduction of the particular species which evince the most consummate skill, the most unbounded wisdom.

In the *Colchicum autumnale*, or Meadow Saffron, these provisions are peculiarly worthy our careful attention. This plant is included in the Linnean Class *Hexandria*, and belongs to the Natural Order *Melanthaceæ;* a tribe abounding in a powerfully acrid and poisonous principle, which, under the guidance of experience and judgment, has proved of essential service in medicine. The lower portion of the stem of the *Colchicum autumnale* is swollen into a cormus or solid bulb (see FIG. I, A, *a*),† and lies deeply buried in the earth, invested by the dried

* Read before the Shropshire and North Wales Natural History and Antiquarian Society, November 1, 1836.

† A, the entire plant as it appears in the autumn—B, the young bulb and stem attached to the parent bulb—C, the parent bulb, (the young bulb being removed), showing the groove and the attaching fibres—D, exterior and interior views of the young plant detach-

and partially decomposed leaves and spathas of preceding years. In a groove *(b)* on one side of this bulb, at a point a little above the life-knot, or part from which the true roots depend, and connected with it by a bundle of horizontal fibres *(c)*, is attached a smaller bulb *(d)*, which, during the summer months, absorbs its chief nourishment from the parent bulb, gradually swelling and enlarging, and, so soon as the first chilly winds of autumn have breathed over the earth, elongating its summit, and protruding through the soil a long tubular spatha or sheath *(e)*, which envelopes the entire bulb, stem, and roots. In this sheath lie two or more perfectly formed flowers, each consisting of an elongated tube crowned with a purple limb of six petals, and also the rudiments of one or two other blossoms. On removing the membranous sheath, we perceive at the base of the floral tube, immediately above the young roots, a few rudimentary leaves *(f)* closely encircling the slightly swollen bulb. On stripping off these leaves, a small bud or germ *(g)*, destined to become the bulb of a succeeding year, appears attached to that side of the young bulb which is farthest from the parent bulb of the present year. On entirely removing the leaves, and opening the elongated tube of the flower, we discover that to the three inner divisions of its perianth are attached six stamens *(k)* surrounding three linear stigmas *(i)*, whose filaments are continued down the floral tube to its base, where they communicate with a three-celled germen or ovary *(h)* containing the ovules or undeveloped seeds. No sooner have the anthers performed their office of fertilization on the stigmas than the corolla fades, withers, and dies off; the young bulb becomes swollen, its roots burst through their membranous covering, and protrude downwards. Throughout the winter it absorbs, through the lateral attaching fibres, the greater portion of the parent bulb, the surplus of which subsequently decomposes. The nutriment thus stored up remains dormant during the winter months, and until the first warming breezes of spring again stimulate into motion the vital juices, when the hitherto buried germen, protected from frost or accident by its several coats, is pushed upwards to the surface, the fully developed capsule *(l)*, surrounded by shining green leaves, displays itself, and, on becoming fully matured, opens its inflated cells *(m)*, scattering the seeds over the earth. The leaves also, in their turn,

ed from the parent bulb—E, exterior and interior views of the young plant, divested of the spatha, and showing the undeveloped leaves—F, exterior and interior views of the young plant, showing the floral tubes, the reserve blossom, and the embryonic germ—G, the floral tube opened, showing the positions of the anthers, pistils, &c.—H, the pistils divested from the floral tubes, exhibiting their connections with germen and bulb—I, the appearance of the plant in the spring.

a, the cormus, or solid bulb—*b*, the groove in which the young plant lies—*c*, the bundle of lateral attaching fibres—*d*, the young bulb—*e*, the spatha—*f*, the young leaves—*g*, the embryonic bulb—*h*, the germen—*i*, the stigmas—*k*, the anthers—*l*, the developed germen —*m*, the fully ripened capsule—*n*, the reserve blossom—*o*, transverse section of the germen, *h*.

now wither away, and the embryo germ or bud is, by a similar process, carried forward to maturity.

In using the term "*solid bulb*," in the above description, I would wish it to be clearly understood that I only avail myself of the common botanical phrase expressive of the peculiar kind of bulb of this and similar plants; for I am fully convinced, by observations which I have recently made, that no such thing as a *solid bulb, strictly speaking*, exists in nature. Every bulb is, in fact, a bud, in which the stem enveloped in the leaves is, like the cylindrical tubes of a closed telescope, depressed into the plane of its axis. The scales or tunics of which *every* bulb consists are, in reality, so many leaves modified and swollen by excess of nutritive matter, and many of them bearing in their axils smaller bulbs, the undeveloped buds of future plants. This is abundantly evident from a mere inspection of the Crocus bulb (Fig. 2, A)* usually cited as an example of the solid bulb, but which in reality consists of the base of the stem much swollen, enveloped by a series of swollen and modified leaves closely agglutinated and concentrically overlapping each other (Fig. 2, *a*), and supporting in their axils a series of embryonic bulbs or buds (Fig. 2, *b*) spirally arranged. On tracing these concentric leaves throughout the bulb to its summit, it will be found that the shoot or shoots (Fig. 2, *c*) destined to produce flowers, &c., in the present year, are one or more of these embryonic bulbs more highly developed than the rest. In these shoots, also, the same concentric arrangement of the leaves will be found to exist. The bulb of the *Colchicum autumnale* (Fig. 3),† usually adduced as another instance of this form of bulb, is of a similar construction, though at first view very different. The stem in this case is excessively and immoderately swollen, the enveloping leaves so firmly agglutinated as to be only distinguishable in a thickened scale or protrusion (Fig. 3, *a*) immediately below the young bulb (Fig. 3, *b*), which maintains its proper place in the axil; and in those instances in which a second embryonic bulb occurs, this is invariably in such a situation that a line drawn from the first embryonic bulb to it will form a portion of a spiral. This, in short, is the mode of growth we might naturally expect in these plants, belonging as they do to the great natural class of Monocotyledons—a growth perfectly analogous, although performed in a shorter period, to that of the Palms, and other tropical tribes of this class.

The benevolent Paley adduces the unusual periods of the autumnal flowering and vernal ripening of the seeds of the *Colchicum autumnale*, as an apt illustration of his doctrine of compensation. No apology may be deemed necessary for repeating his exquisite and well-remembered words:—"I have pitied," he says,

* A, bulb of the Crocus—*a*, the leaves swollen into concentric scales—*b*, the embryonic bulbs in the axils of the leaves—*c*, the embryonic bulbs developed into flowering shoots.

† A, bulb of the *Colchicum*—*a*, the leaves swollen into thickened scales or protrusions—*b*, the young bulbs and stems in the axils of the leaves.

"this poor plant a thousand times. Its blossom rises out of the ground in the most forlorn condition possible; without a sheath, a fence, a calyx, or even a leaf to protect it; and that not in spring, not to be visited by summer suns, but under all the disadvantages of the declining year. When we come, however, to look more closely into the structure of this plant, we find that, instead of its being neglected, nature has gone out of her course to provide for its security, and to make up to it for all its defects. The seed-vessel, which in other plants is situated within the cup of the flower, or just beneath it, in this plant lies ten or twelve inches under ground within the bulbous root. The tube of the flower, which is seldom more than a few tenths of an inch long, in this plant extends down to the root. The styles always reach the seed-vessel; but it is in this, by an elongation unknown to any other plant. All these singularities contribute to one end. In the autumn nothing is done above ground but the business of impregnation. The maturation of the impregnated seed, which in other plants proceeds within a capsule, exposed together with the rest of the flower to the open air, is here carried on, and during the whole winter within the heart of the earth. Seeds, though perfected, would be unable to vegetate at this depth in the earth. A second admirable provision is therefore made to raise them above the surface; the germ grows up in the spring, upon a fruit stalk, accompanied with leaves. The seeds now, in common with those of other plants, have the benefit of the summer, and are sown upon the surface."

From the outline here exhibited of the vital economy and peculiar structure of this plant, it is conceived, that, without overstraining the subject, the argument may be carried some steps further, and that we may reasonably infer that there is design in the mode of its flowering; in the provision made for its reproduction, in case of the germen remaining unfertilized; and also, in the relative position of the embryonic germ or bulb.

First.—There is evidence of design in the mode of flowering. The delicate flowers expanding their petals, as the harbingers of winter, without the protection of leaves or other envelope, exposed to the ungenial influence of a changeful season, when scarcely any other plant ventures to blossom, run many risks of being prevented from attaining their destined end, either from the nipping keenness of early frosts, the rude and crushing tread of cattle feeding on the pasturage in which they grow, or the playful and innocent wantonness of heedless childhood cropping the showy blossoms to deck their baby-toys. Nature here, therefore, steps in and provides a remedy. For, unlike most other plants, this does not expand all its blossoms at the same time, but reserves, as it were, a portion, to be resorted to only in cases of necessity. Should injury overtake it in its prime of beauty, a second flower is provided, which, supplied with nutriment from the parent-bulb, is pushed forward and takes the place of its unfortunate predecessor. Should this also be destroyed, a third floret (FIG. 1, *n*) is often visible at the base of the other two,

which, absorbing the requisite nutriment, becomes developed, expands its petals to the genial though feeble sunshine, and thus, at length, effects the fertilization of the ovules.

Secondly.—There is evidence of design manifested in the provision made for the continuance of the individual. Should it so happen that all the blossoms were successively cut off, and the very existence of the plant apparently threatened with destruction, that Beneficent Power, whose fiat first called it into existence, here diminishes not his protecting care. The nutriment, destined for the complete development and perfection of the inflorescence and germen, being no longer wanted for those purposes, is diverted to the enlargement of the young bulb of the present year, on which, safely cradled amid the tender leaves, reposes the embryonic germ, *(g)*, which in its turn, also receives the invigorating influences of its parent, and in due time proceeds to its destination.

Lastly.—There is full evidence of design in the relative positions of this embryonic germ and the parent bulb. As before shown, this germ always appears on the side of the bulb of the present year, which is farthest removed from the parent bulb. It is a well-known fact, (no matter as regards our present argument, whether attributable to exhaustion, excretion, or any other cause,) that the soil in which any particular plant has vegetated, becomes less adapted for the immediately subsequent growth of other individuals of the same species. Now, had the embryo bulb been attached to the side *next* the parent bulb, there is a probability that it would either have entirely perished, or, at all events, have become of a weak and sickly habit, in consequence of the inability of vegetating in a suitable and unexhausted soil, or from having its vital powers destroyed or impaired by the heat necessarily evolved during the decomposition of the parent-bulb. And this, in fact, really does take place, for in some strong bulbs which have been examined, a second embryonic germ occasionally occurs on the side in immediate contact with the parent bulb, as well as one on the opposite side. This, however, so far as has been observed, is seldom or never developed beyond the first stage of growth; the vital activity being in all probability checked by one or other of the causes above assigned.

These are no visionary speculations, but plain and simple facts, clear and demonstrable to all. They are in themselves eloquent: they require no index to point out to us that "Great Workmaster" to whom they would lead our thoughts; nor need they, it is humbly hoped, any stimulus to excite in our hearts feelings of gratitude and adoration.

* This must, however, be understood with some latitude; for in very strong bulbs the second embryonic bulb does often become fully developed: but in this case its position will be found to be, not in immediate contact with the parent bulb, but rather on one side.

ST. JAMES'S ORNITHOLOGICAL SOCIETY.

We have received a prospectus of this society, the object of which is stated to be the "forming a collection of water-birds in the garden of St. James's Park; and its operations will subsequently be extended to other parks, if the funds of the society be found sufficient." As naturalists, every project of this nature has our sincere wishes for its success, and perhaps, as the moderate subscription of one pound is all that is required, some of our readers may be pleased to take the opportunity of assisting an institution which will doubtless afford facilities for "observations upon the variations and periodical change of plumage, which are so interesting to naturalists." The names of Yarrell, Swainson, Mudie, and Jesse, so well known in the scientific world, are a pledge that some useful purpose is designed by, and will be obtained from, the "Ornithological Society." But if purposes of show only were intended we should still advocate the plan as a probable means of raising the standard of taste among the lower orders in London, who may now, perhaps, for the first time observe the members of the feathered tribes without the mischievous wish to pelt them being gratified. Much has been done by the present age in this respect, and all we want is to see the principle carried out to its fullest extent, so that animals may be seen, admired, and examined, without the insane wish to bait, torture, or injure them. The birds in St. James's Park will have this advantage, that they will be "open to the view of all classes of the people" every day, and thus even the poor mechanic and his family, shut out from light and almost hope for a dreary week, may, in the intervals of public worship on Sundays, solace their eyes with a sight which no philanthropist would wish them to be deprived of. Living specimens, we perceive, of any of the rarer swans, geese, ducks, divers, grebes, waders, &c., will be very acceptable to the society, to whom we can only say "Go on and prosper."

REVIEW.

Sacred Philosophy of the Seasons; illustrating the Perfections of God in the Phenomena of the Year. Part I.: Winter. By the Rev. Henry Duncan, D.D. Edinburgh. 1836.

The author of this work furnishes a beautiful instance of one who is "not weary in well-doing," but who has been continually "going about doing good." After devoting many years in the earlier part of his life to ensure to the poorer classes of his countrymen the benefits of habits of prudence and economy, by

means of Saving Banks, he now comes forward to confer upon the minds of his countrymen of every rank a boon of equal, if not greater value. He desires to engender in them a habit of viewing all the natural occurrences of the year as evidences of the being and attributes of an Omnipotent and Benevolent Deity. He wisely coincides in opinion with Dr. Paley, that "if one train of thinking be more desirable than another, it is that which regards the phenomena of Nature with a constant reference to a Supreme Intelligent Author."

It has been well said by an elegant American writer, that "the study of Nature, like the contemplations of religion, is 'for ever rising with the rising mind.' Nature opens to Genius that immense horizon, in which, to the end of time, it may exercise its strength, and at every step behold the boundary receding to a greater distance." But how much greater the pleasures and advantages when the study of Nature and the contemplations of religion are united! To express this, we must call in the aid of the poet:—

"There is a lofty thrilling joy—
The bounded powers of speech it spurns—
Which lightens in the raptured eye,
And in the swelling bosom burns:
'Tis that ineffable delight,
When, like the glorious lord of day,
The soul, exulting in its might,
Speeds through the realms of thought away.

"When soaring, limitless, afar,
Wide through the universe it strays,
Till not the feeblest twinkling star
On Night's swart brow escapes its gaze.
But higher far its strong wing soars
In loftier and sublimer flight,
When in rapt trances it adores
The very God of Life and Light!"

Nor is it in connexion with natural religion alone, that the amiable author treats his subject: the bearings of it upon revealed religion are equally pointed out, in a manner as creditable to his liberality of mind as to his piety. The following extract will exemplify our meaning:—

"Would we read the book of Nature aright, and see God in his creation, we must have recourse to the book of Revelation; for these two great volumes, written by the same hand and for a similar purpose, cast a strong light upon each other. As the book of Nature, by the visible impress of Divinity stamped upon it, is fitted to prepare us for the more glorious display of the divine perfections contained in the book of Revelation—so is this latter the truest and safest guide to the profitable perusal of the former. In the Bible, the great productions and

aspects of Nature are always mentioned in connection with the glory of God: they are introduced often in strains of the boldest poetry, to teach the infinite power and goodness of Jehovah. We there find the noblest descriptions of natural objects ever penned; and one great moral runs through them all. Every masterly picture of the grand or the beautiful in Nature is but a delineation of God's wondrous attributes. It is, therefore, a positive duty, sublimely taught us both by precept and example, to cherish a sense of the infinite skill and bounty displayed in the creation. We should associate, with all that attracts the eye by its beauty or excites our admiration by its delicate structure, the liveliest expressions of adoration and gratitude. Every survey of natural scenery, every examination of even the smallest of God's works, should be to us a devotional exercise. To a mind accustomed to consecrate all its perceptions of beauty and design to the inward worship of God, every mountain and field, every leaf and flower, teems with instruction. The lustrous wing of the ephemeral insect, as well as the noblest animal form, affords food for the loftiest admiration. The man of true piety and refined feeling enjoys the beauties of Nature with the keenest relish; for Nature is but a pictured volume, in which he reads the character of the Divinity. Every object that meets his eye—be it vast or minute, simple or complex—suggests the most exalted conceptions of Him

> " Who gives its lustre to an insect's wing,
> And wheels his throne upon the rolling worlds."—pp. 169—170.

In respect to the scientific details, they are gleaned from the best authorities, generally from very recent ones. The Bridgewater Treatises have supplied much of the materials; and, indeed, as far as natural phenomena are concerned, whatever was available for his purpose in these bulky and expensive volumes has, by our author, been brought together and placed within the limits of the purse, as well as the time, of ordinary readers. When completed it will form an excellent epitome of these treatises, and be more in accordance with what we are persuaded was the intention of the noble testator than the plan adopted by those who undertook to give effect to his will. The author says, modestly, " The most important and animating views of the Creator and His operations, in reference to the seasons, are found scattered through many publications, which it has been the agreeable task of the writer to combine in a new series and render generally accessible. In doing this he has frequently quoted the precise words of the various authors from whom he has borrowed his facts. He has no ambition to acquire fame as an original writer; his more humble, but perhaps not less useful, aim being to instruct and edify those who may not be in possession of many works on Natural Theology, by rendering them acquainted with the discoveries which have been made by others in the most interesting of all sciences."—Preface, iii.

In a few instances we have noted slight inaccuracies, such as, p. 121, the spadisc of the *Arum cordifolium* is stated to exhibit a rise of 250° above the surrounding temperature—a thing obviously impossible. P. 215, the traveller in America after whom the river was named was *Alexander* (not George) McKenzie. P. 107, newly-distilled dew should be newly-*deposited* dew.

In discussing the seeming imperfections in the physical government of the universe, the author has recourse to the doctrine of the philosophic poet, which alone can obtain the acquiescence of reflecting and good men :—

"'Tis but a part we see, and not the whole;"

and still more in the moral

"All partial evil, universal good."

"Nor must we forget that the schemes of the self-existent are notbounded by time but embrace eternity. In the present world, the moral government of God is only begun. That may appear imperfect and disordered of which we only see a part, when, if the whole were displayed and understood, every minute particular, and the united result of the whole, would be found to be the perfection of wisdom."—p. 105.

We had marked many other passages for quotation which our limits will not permit us to adduce; we can only quote one, and must content ourselves with stating that we eagerly long for the subsequent parts, as we consider it the most delightful—we may truly say fascinating—work it has been our lot to meet with for a very long time. We give this particular passage because it is new as well as strikingly true, and will serve to shew how much the world has lost in the conversations and casual observations of Burns not having been preserved by some discriminating person. Indeed, there is great reason to believe that the best sentiments of that remarkable man have perished.

"While yet a school-boy, I enjoyed an opportunity of hearing, in my father's manse, a conversation between the poet Burns and another poet, my near relation, the amiable Blacklock. The subject was the fidelity of the Dog. Burns took up the question with all the ardour and kindly feeling with which the conversation of that extraordinary man was so remarkably embued. The anecdotes by which it was illustrated have long escaped my memory; but there was one sentiment expressed by Burns, with his own characteristic enthusiasm, which, as it threw a new light into my mind, I shall never forget. 'Man,' said he, 'is the god of the Dog: he knows no other; he can understand no other. And see how he worships him!—with what reverence he crouches at his feet—with what love he fawns upon him—with what dependence he looks up to him—and with what cheerful alacrity

he obeys him. His whole soul is wrapped up in his god; all the powers and faculties of his nature are devoted to his service; and these powers and faculties are ennobled by the intercourse. Divines tell us that it ought just to be so with the Christian; but the Dog puts the Christian to shame.' The truth of these remarks, which forcibly struck me at the time, have since been verified by experience; and often have events occurred which, while they reminded me that 'Man is the god of the Dog,' have forced from me the humiliating confession that 'the Dog puts the Christian to shame.' "—p. 308.

When the author shall have treated of the respective seasons which complete the cycle of the year, he may appropriately sum up his arguments and case in the words of a young, but most promising, poet:—

"Cyril had learned to worship and obey
The God whose mercy gave each passing day:
Nature beamed forth in smiles and happy glee;
All else rejoiced, and wherefore should not he?
Earth was his temple, and the boundless sky,
Glitt'ring with gem-like stars, its canopy;
His books the hills and valleys; and his prayers
A hush of holy peace, as eloquent as theirs.
"Who that hath wandered in the beauteous hour
When dusky twilight shares with night her power—
When weeping dews the thirsty valleys fill—
And mists are rolling down each darkened hill—
When birds are hushed—when toil and labour cease—
When heaven and earth are universal peace—
And, though no sound pervade the solemn air,
The very silence is replete with prayer;
Breathing from flood, and field, and mountains rude,
The voiceless orisons of gratitude;—
Who that hath felt this hour's deep eloquence—
Who that hath life's most ordinary sense—
Who that can move, think, feel, or understand—
Can doubt the power of an Almighty Hand?
Go, read the stones upon the rugged hill;
Go, list the music of the singing rill;
Go, learn from ocean, forest, field, and flower,
The infinite wisdom of Eternal Power.
All have their language and alike upraise,
In one continual round, Jehovah's praise.*

* *Cyril;* a Poem. By George Wilson, Leeds. 1835.

EXTRACTS FROM FOREIGN SCIENTIFIC JOURNALS.

Geological.

Upon Fossil Infusoria, by C. G. Ehrenberg.

M. C. Fischer, the proprietor of the manufactory of porcelain at Pirkenhammer, near Carlsbad, has observed that the substance resembling siliceous concrete *(Kieselguhr)*, which occurs in the peat bogs near Franzensbad, in Bohemia, "consists almost exclusively of the cases of several species of *Naviculæ*, and appears to be the fire-proof remains of the (in parts) intensely heated bottom of the ocean."

Together with this information M. Fischer sent me a piece of the siliceous mass about 2″ long, 1″ broad, and $\frac{3}{4}$″ high, as well as some specimens of the peat, intreating me to ascertain the animal and to publish the result. Microscopic inspection immediately confirmed the discovery of M. Fischer, that the siliceous concrete *(Kieselguhr)* of Franzensbad consisted almost exclusively of very well preserved *Naviculæ*, with which some *Bacillariæ* were intermixed, and the perfect transparency of their siliceous cases and their freedom from all organic matter, renders it probable that an unusually intense heat had purified them and amassed them together. It is not likely that they should have originated at the bottom of the sea, for the majority of the animals both in form and the relative numbers of their striæ correspond very accurately with those of the *Nav. viridis*, which is found in all the fresh water about Berlin as well as elsewhere. In the specimens of peat I could also recognise *Naviculæ*, yet they were generally different, although still existing species, fewer in relative proportion, and the prevailing forms very dissimilar.

Original specimens of the siliceous concrete *(Kieselguhr)* of the Isle of France, and of Santa Fiora, in Tuscany, which were analyzed by Klaproth, shewed that they likewise consisted almost exclusively of the envelopes of Infusoria of several genera of *Bacillariæ*, yet sometimes of the same, and almost all still living, species, in conjunction with rare siliceous spicula of fresh and sea-water sponges, without any intervenient binding material. This, therefore, is an additional confirmation of Kützing's discovery that the cases of the *Bacillariæ* consist of silica.

I myself discovered, several years ago, that the ochraceous slimy substance, which sometimes covers the bottom of marshy brooks and moats, and which appears to have been considered as a deposit of the oxyde of iron, is a very delicate *Bacillaria*, which at a red heat becomes red like the oxyde of iron, and is very ferruginous, but which does not lose its form either by a red heat or upon being treated with acids, and consequently possesses a siliceous case most approaching to that of the genus *Gaillonella*. I therefore figured it last year, as *Gaillonella ferruginea* in plate 10 of my *Infusorien Codex*, which will now soon appear. All the ochre

encompassing bog-iron ore exhibits the same siliceous filiments as a deposit after the extraction of the iron. The above circumstances make it probable that the *G. ferruginea* played an important part in the formation of bog-iron, either by the direct amount of its own iron, or by the attraction of all in its vicinity.

The following are the fossil species of *Infusoria* which I have detected in the above-named substances :—

1. In the siliceous concrete *(Kieselguhr)* of Franzensbad :—1, *Navicula viridis* of very different sizes, the largest 1-9th‴ forming the major part of the mass ; 2, *N. gibba ;* 3, *N. fulva ;* 4, *N. Librile ;* 5, *N. striatula ;* 6, *N. viridula*— (the last two are salt-water animals, all the first are inhabitants of fresh water) ; 7, *Gomphonema paradoxum ;* 8, *G. clavatum ;* 9, *Gaillonella varians ?* All fresh-water animals, and none to be distinguished from the living species.

2. In the peat of Franzensbad :—1, *Navicula granulata* is the most numerous, and was hitherto unknown ; 2, *Nav. viridis,* rare ; 3, *Baccillaria vulgaris ?* 4, *Gomphonema paradoxum ;* 5, *Cocconeïs undulata.* All living animals, the last found in the salt-water of the Baltic.

3. In the mountain flour *(Bergmehl)* of Santa Fiora :—1, *Synedra capitata,* forming the chief mass, an hitherto unknown form ; 2, *S. ulna ;* 3, *Navicula Librile ;* 4, *N. gibba ;* 5, *N. viridis ;* 6, *N. capitata ;* 7, *N. zebra ;* 8, *N. phœnicenteron ;* 9, *N. inequalis,* all still living in fresh water ; 10, *N. viridula,* found still in salt-water ; 11, *N. granulata ;* 12, *N. follis,* unknown species. 13, *Gomphonema clavatum* ; 14, *G. paradoxum ;* 15, *G. acuminatum,* all still found in fresh water ; 16, *Cocconema cymbiforme,* a still existing fresh-water animal ; 17, *Cocconeïs undulata,* still found in salt water ; 18, *Gaillonella italica,* n. sp. ; 19, the siliceous spicula of a *Spongia* or *Spongilla.*

4. Klaproth's siliceous concrete *(Kieselguhr)* from the Isle of France exhibited :—1, *Bacillaria vulgaris ?* constituting the chief mass, and is still found every where in salt water ; 2, *B. major,* an unknown species ; 3, *Navic. gibba,* still living both in fresh and salt water ; 4, *Navic. alia sp.* undetermined ; 5, *N. bifrous.* All these animals are not so well preserved as those in the former rocks, and appear, with the exception of the latter, to be salt-water animals.

The majority of these fossil *Infusoria* are still found living near Berlin, and in the waters of the Baltic near Wismar. The majority are so well preserved that they may be closely inspected. Thus, for instance, it is not only possible to count the number of the ribs, but also the six apertures of the case of *Navicula viridis,* the four apertures of *Gaillonella,* the two apertures of *Gomphonema,* &c. The rock of the Isle of France only, appears to contain a preponderance of salt-water animals. The few hitherto unknown forms may be considered very appropriately as still existing, although yet undiscovered animals. What is most striking is the preponderance of individual species which thereby characterize the different rocks,

for instance, the *Navic. viridis* in the siliceous concrete *(Kieselguhr)* of Franzensbad, *Bacillaria vulgaris* in that of the Isle of France, and *Synedra capitata* in the pulverulent silica *(Bergmehl)* of Santa Fiora. The still existing ones are more mixed, and live only about, and on plants upon which they feed.

The foliaceous triopoli of shops *(Blättertripel)* likewise showed that its mass equally consisted of *Infusoria*. The polishing slate of Bilin in Bohemia, which forms entire beds, I have discovered to consist almost exclusively of *Infusoria* which may be ascribed to the genus *Gaillonella (G. distans) Podosphenia nana*, n. sp. *Navic. scalprum?* and *Bacillaria vulgaris*, (the last are still living, salt-water animalculæ) present themselves only occasionally, the first alone is sometimes in equal abundance with the *Gaillonella*. There are found in the same polishing slate, the impressions of plants and an extinct species of fish, the *Leuciscus papyraceus* of Bronn, according to Agassiz. In the adhesive slate of *Menilmontant* I found only the doubtful traces of the altered *Gaillonella distans*. An individual of this species, which forms almost without any connecting substance the polishing slate, is 1-200‴ larger, many are smaller, and one cubic inch of this stone contains 41,000,000,000 (!! Eds.) of these animals.

Entomological.

Abstract of Count Mannerheim's Paper on the Family of the Coleoptera Brachelytra.

(From Oken's "Isis," 1836. Heft 5).

Brachelytra, *Latr. (Microptera, Grav.)*

Antennæ thickened towards the apex, often moniliform, rarely serrate or clavate, and the clava never perfoliate or lamellate; the body generally elongate, narrow; elytra abbreviated, large in the majority, small in a few, and in very many covering one-half of the abdomen; the anus furnished with retractile vesicles.

A. Labrum emarginate.—Tribe I. *Staphylinides.*

B. Labrum entire.

α. Tarsi pentamerous.

1. All the joints of the palpi distinct.

1. Antennæ inserted in front of the eyes.

* Legs simple.—Tribe IV. *Omalides.*

** Legs spinose.—Tribe V. *Tachinides.*

2. Antennæ inserted opposite the inner margin of the eyes.—Tribe VI. *Aleocharides*.

ii. The last joint of the palpi concealed.—Tribe II. *Stenides*.

ε. Tarsi trimerous or tetramerous.—Tribe III. *Oxytelides*.

Tribe I. Staphylinides (*Fissilabra*).

The antennæ inserted either in front or between the eyes; labrum emarginate; the palpi short, filiform, all the joints distinct; the head separated from the thorax by a distinct neck; the abdomen, when alive, stretched lengthwise; the legs generally spinose; the tarsi pentamerous.

i. Labial palpi securiform.

a. The maxillary palpi filiform; the antennæ short, increasing towards the apex, with the six last joints dilated and compressed; the mandibles porrect, very forcipate, and about as long as the head.

Genus I.—Oxyporus, *Fab.* rufus, maxillosus, Schoenherrii, Mannerheimii. 4.

b. The maxillary palpi securiform; the antennæ longer, filiform, much shorter than the head, not porrect.

Genus II.—Astrapæus, *Lat.* Ulmi. 1.

ii. All the palpi filiform.

a. Antennæ inserted between the eyes, behind the mandibles and labrum.

1. The anterior tarsi dilated, either in both sexes or only in the males.

α. The thorax much wider than the elytra, orbicular, anteriorly sub-truncated, laterally much widened; the fourth to the tenth joints of the antennæ internally produced, serrate, the terminal one narrower and sub-acuminate.

Genus III.—Velleius, *Leach.* Dilatatus. 1.

β. Thorax semi-orbiculato-quadrate.

a. Antennæ short, the five terminal joints broader, transverse, the last obliquely truncated above and sub-foreolate; the head and thorax smooth.

Genus IV.—Creophilus, *Kirby.* Maxillosus, variegatus. 2.

b. The antennæ, with the six last joints, shorter, sub-transverse, the terminal one obliquely truncated and sub-emarginate.

Genus V.—Emus, *Leach.* hirtus, nebulosus, speciosus, chrysocephalus, pubescens, murinus, inauratus. 7.

γ. Thorax longer than broad, rounded behind; the fourth to the tenth joints of the antennæ equal and lenticular.

a. The collar much narrower than the head.

* The last joint of the antennæ laterally obliquely truncated, sub-emarginate.

Genus VI.—Staphylinus, *Auct.* Chrysocomus, erythropterus, castanopterus, stercorarius, dauricus, erythropennis, bimaculatus, lutarius, cinnamopterus, badius, æneocephalus, chalcocephalus, æneicollis, olens, azurescens, cyaneus, similis, morio, sub-punctatus, uralensis, prælongus, erythropus, brunnipes, splendens, laminatus, tristis, fuliginosus, molochinus, variabilis, scitus, lævigatus, impressus, rufocinctus, picipes, maurus, maurorufus, præcox, attenuatus, boops, subuliformis, æneus, nitidus, cærulcipennis, decorus, cyanicornis, politus, fuscipennis, lucens, atratus, carbonarius, rigidicornis, cephalotes, varius, marginatus, fimetarius, sordidus, sub-fuscus, albipes, fuscus, nitidulus, discoideus, vernalis, ventralis, quisquiliarius, ochropus, ebeninus, immundus, sanguinolentus, dimidiatus, bipustulatus, opacus, agilis, varians, irregularis, fulvipes, micans, virgo, punctus, multipunctatus, cinerescens. 80.

** The last joint of the antennæ entire.

Genus VII.—Cafius, *Leach.* xanthomelana, nanus, splendidulus, pumilus, aterrimus, nigritulus. 6.

b. The collar swollen, scarcely narrower than the head.

Genus VIII.—Physetops. tartaricus.

2. The anterior tarsi simple in both sexes.

Genus IX.—Gyrohypnus, *Kirby (Xantholinus*, Dahl.) Longiceps, ochraceus, batychrus, punctulatus, parumguttatus, lentus, tricolor, pyropterus, fulminans, pilicornis, nigriceps, alternans, parvulus, linearis, melanocephalus, procerulus, planatus. 17.

B. Antennæ inserted in front of the eyes, in a process of the head, behind the labrum, at the inner base of the mandibles.

1. The collar narrow; the head large, petiolated, posteriorly truncated.

Genus X.—Eulissus, *Mann.* chalybæus. 1.

2. The collar swollen, scarcely to be distinguished from the head.

Genus XI.—Platyprosopus, *Mann. (Metopius).* elongatus. 1.

c. Antennæ inserted in front of the eyes, beyond the labrum, at the base of the mandibles.

1. Bodily slightly convex; the thorax linear, quadrangular.

α. The antennæ not geniculated; the last joint of the tarsi longer than the preceding.

Genus XII.—Lathrobium, *Grav.* elongatum, fulvipenne, rufipenne, punctulatum, multipunctum, brunnipes, lineare, minutum, quadratum, terminatum. 10.

β. The antennæ geniculated; the first joint of the tarsi longer than the following.

Genus XIII.—Cryptobium, *Mann.* fracticorne. 1.

2. The body depressed; the thorax trapeziform; the last joint of the tarsi longer than the preceding.

Genus XIV.—Achenium, *Leach.* Depressum. 1

Tribe II.—Stenides (*Longipalpi*, Lat.)

The antennæ inserted either between or in front of the eyes; the labrum truncated, transverse; the maxillary palpi almost as long as the head, the last joint subulate, withdrawn, and concealed; the head with a distinct neck; the abdomen, in the living insect, generally stretched lengthwise; the legs simple; the tarsi pentamerous.

1. The antennæ inserted before the eyes, thickened towards the apex.

A. The fourth joint of the tarsi bifid.

Genus I.—Pæderus, *Auct.* morio, littoralis, riparius, ruficollis, longiusculus, extensus, angustatus. 7.

B. The fourth joint of the tarsi entire.

Genus II.—Rugilus, *Leach* (*Stilicus*, Latr.) orbiculatus, lævigatus, fusculus, bicolor, castaneus, rubricollis. 6.

II. The antennæ inserted in front of the eyes and thickened suddenly at the apex.

Genus III.—Eristhetus (*Evæsthetus*, Grav.). scaber.

III. The antennæ inserted between the eyes and thickened suddenly at the apex.

A. The ligula obsolete; the anus with two setæ.

Genus IV.—Dianous, *Leach.* cærulescens. 1.

B. The ligula extended. The anus without setæ.

Genus V.—Stenus, *Latr.* bipustulatus, maurus, juno, ater, boops, cicindeoides, oculatus, tarsalis, binotatus, bifoveolatus, buphthalmus, canaliculatus, niger, nigritulus, geniculatus, proboscideus, pallipes, argus, fuscipes, opticus, carbonarius, circularis. 22.

Tribe III.—Oxytelides (*Denticrura*, Latr.)

The antennæ inserted in front of the eyes, beneath an elevated and prominent margin of the head. The labrum transverse and entire. The palpi shorter than the head, the joints distinct and the terminal one subulate. The head with a distinct neck. The abdomen in the living insect only partially stretched lengthwise. The anterior tibiæ only compressed, and generally externally denticulato-pectinated. The tarsi trimerous or tetramerous.

1. The four anterior tibiæ denticulato-pectinated.

A. All the tibiæ entire.

Genus I.—Bledius, *Leach.*, (*Siagona*, *Prognatha*, Latr.) tricornis, taurus, unicornis, elongatus, fracticornis, castaneipennis, atricapillus, pallipes, femoralis, talpa, arenarius. 11.

B. The two or four anterior tibiæ externally excised.

α. The posterior tibiæ likewise denticulato-pectinated. The body short, much broader in front.

Genus II.—Platysthetus, *Mann.* cornutus, morsetans, nodifrons. 3.

β. The posterior tibiæ simple. The body elongate, sublinear.

Genus III.—Oxytelus, *Grav.* carinatus, piceus, longicornis, sculpturatus, depressus, Americanus, nitidulus, pusillus, cælatus. 9.

II. All the tibiæ simple.

Genus IV.—Trogophlæus, *Mann.* corticinus. 1.

Tribe IV.—Omalides (*Depressa*, Latr.).

The antennæ inserted in front of the eyes, beneath an elevated and prominent margin of the head. The labrum transverse entire. The palpi short, with distinct joints, the last minute, conico-acuminate. The head with a distinct neck. The abdomen, in the living insect, flat; the legs simple; the tarsi pentamerous.

I. The last joint of the tarsi elongate; the rest collectively generally equal.

A. The four anterior tarsi dilated and spongy.

Genus I.—Phloeocharis, *Mann.* Subtilissima. 1.

B. All the tarsi simple.

1. The penultimate joint of the maxillary palpi dilated, the terminal one small and subulated.

Genus II. Tænosoma, *Mann.* gracile, pusillum. 2.

2. The terminal joint of the maxillary palpi conical and subacuminate.

α. Antennæ thickened towards the extremity.

a. The body short; the thorax short, transverse, not narrower behind; the elytra covering the major portion of the abdomen.

Genus III.—Omalium, *Grav.* boreale, consimile, rotundicolle, piceum, assimile, inflatum, pygmæum, sibiricum, quadrum, fimetarium, tectum, ranunculi, lapponicum, ophthalmicum, sorbi, depressum. 16.

b. The body oblong; the thorax short, transverse, somewhat narrowed posteriorly; the abdomen generally twice as long as the elytra.

Genus IV.—Anthobium, *Mann.* rivulare, cæsum, oxyacanthæ, exiguum, pusillum, planum, viburni, florale, nigrum, Gyllenhalli, salicis, salicinum, brunneum, deplanatum, striatum. 15.

β. The antennæ filiform; the body oblong; the thorax, both before and behind, narrowed and rounded.

Genus V.—Acidota, *Kirby.* rufa, cruentata, crenata. 3.

II. The last joint of the tarsi either as long, or a little longer, than the preceding.

A. The last joint of the maxillary palpi sub-acuminate, slightly less than the preceding; the antennæ filiform.

Genus VI.—Lesteva, *Latr.* (*Anthophagus*, Grav.). dichroa, testacea, caraboides, angusticollis, lapponica, alpina, plagiata, globulicollis, longipes, obscura, longula, pubescens. 12.

B. The maxillary palpi subulate, the penultimate joint incrassated, the apical slender, aciculate.

Genus VII.—Proteinus, *Latr.* brachypterus, minutus. 2.

C. The maxillary palpi subulate, the second joint much the largest. The antennæ clavate, the 10th and 11th joints forming a large globose knob.

Genus VIII.—Micropeplus, *Latr.* porcatus, staphylinoides. 2.

Tribe V.—Tachinides (*Microcephala*, Lat.)

The antennæ inserted in front of the eyes, but never beneath a prominent or elevated margin of the head; the labrum rotundate; the palpi short, the terminal joint subulate or acuminate; the head much narrower than the thorax and inserted in it as far as the eyes; the abdomen, in the living insect, inclined; the legs spinose; the tarsi pentamerous.

I. The body globose, narrowed posteriorly; the abdomen almost entirely withdrawn beneath the elytra; the palpi filiform, acuminate.

Genus I.—Hypocyphtus, *Schüp* (*Cypha*, Kirby). longicornis lævius-culus.

II. The body broad, narrowed posteriorly.

A. The palpi subulate, with the terminal joint small, aciculate; the segments of the abdomen entire.

Genus II.—Tachyporus, *Grav.* saginatus, chrysomelinus, marginatus, abdominalis, nigripes, obtusus, ruficollis, pusillus, nitidulus, pubescens, cellaris, bipunctatus, pedicularius. 13.

B. The palpi filiform, the terminal joint acuminate and longer than the preceding one; the segments of the abdomen emarginate in both sexes.

Genus III.—Tachinus, *Grav.* fimbriatus, subterraneus, bipustulatus, humeralis, laticollis, dubius, rufipes, pullus, intermedius, fimetarius, marginellus, collaris, silphoides. 13.

III. The body elongate, sub-attenuate on both sides.

A. The palpi subulate, the terminal joint small and aciculate.

Genus IV.—Mycetoporus, *Mann.* lepidus, splendidus, pallidulus, longulus, punctus. 5.

B. The palpi filiform, the terminal joint the longest and acuminate.

Genus V.—Bolitobius, *Leach.* formosus, cingulatus, analis, cernuus, striatus, lunulatus, atricapillus, pulchellus, trimaculatus, pygmæus. 10.

Tribe VI.—Aleocharides.

The antennæ inserted between the eyes, opposite their internal margin, but not beneath the lateral margins of the head; the labrum entire, truncated; the terminal joint of the maxillary palpi conical or subulate; the head either concealed or with a distinct neck; the abdomen, in the living insect, extended lengthwise; the legs unarmed or spinose in a very few; the tarsi pentamerous.

I. The maxillary palpi elongate, the terminal joint conical and acute.

A. The antennæ incrassated in the middle, with the first joint slightly the largest.

Genus I.—Dinarda, *Leach.* dentata. 1.

B. The antennæ slender towards the extremity, subsetaceous, the first joint very robust, the apex emarginate.

Genus II.—Lomechusa, *Grav.* strumosa, paradoxa, emarginata. 3.

II. The maxillary palpi short, the terminal joint subulate.

A. The antennæ filiform, not geniculated, the joints equal; the mouth forming a rostrum; the four anterior tibiæ spinose.

Genus III.—Gymnusa, *Karsten.* brevicollis, dubia. 2.

B. The antennæ geniculated at the base, thickened towards the extremity; the mouth not rostrated; the tibiæ hirsute or pubescent, not spinose.

1. The head more or less withdrawn beneath the thorax; the body posteriorly more or less attenuate; the anterior angles of the thorax muchdepressed.

α. The antennæ short, more or less thickened in the middle, the third joint more than twice as long as the second; the body generally robust; the thorax convex, narrower than the elytra; the elytra often very short; the legs hirsute; the first joint of the tarsi slightly the longest.

Genus IV.—Aleochara, *Auct.* fuscipes, tristis, bipunctata, intricata, carnivora, mærens, hæmorrhoidalis, lanuginosa, villosa, fumata, lævigata, brevipennis, pulla, nitida, bilineata, morion, exigua. 17.

β. The antennæ short, slightly thickened towards the extremity, all the joints equal, the terminal one only the largest and oblongo-ovate; the body elongate and tapering; the thorax broader than the elytra, laterally rotundate and deflexed; the legs pubescent, the joints of the tarsi equal.

Genus V.—Sphenoma, *Mann.* abdominale. 1.

γ. The antennæ somewhat longer, slightly thickened towards the apex, the second and third joints nearly equal; the body narrowed posteriorly; the elytra of about the width of the thorax; the legs pubescent, the first joint of the tarsi a little longer than the following.

Genus VI.—Oxypoda, *Mann.* ruficornis, lividipennis, melanaria, opaca, umbrata, pellucida, lateralis, alternans, procerula, sericata, cingulata, obtuscata. 12.

2. The head more or less exserted; the body scarcely narrowed posteriorly; the thorax generally rotundate, with the angles scarcely deflexed; the legs pubescent.

α. The five terminal joints of the antennæ suddenly thickened.

a. The body convex, narrowed anteriorly; the first joint of the tarsi a little the longest.

Genus VII.—Microcera, *Mann.* inflata. 1.

b. The body sub-depressed, not narrowed; the tarsi slender, the joints sub-equal.

Genus VIII.—Oligota, *Mann.* pusillima. 1.

β. The antennæ, with the two basal joints, robust, sub-globose, the remainder setose.

Genus IX.—Trichophya, *Mann.* pilicornis. 1.

γ. The antennæ more or less distinctly thickened towards the apex.

a. The head sub-sessile, not broader than the base of the thorax.

* The thorax of the width of the head; the body flat, linear; the antennæ moniliform; the last joint of the tarsi about equal to the rest collectively.

Genus X.—Homalota, *Mann.* plana. 1.

** The thorax transverse, globose, broader than the head, posteriorly reflexed and marginate; the body short, depressed, but revolved into a globe when frightened; the joints of the tarsi equal.

Genus XI.—Gyrophæna, *Mann.* nitidula, nana, affinis, polita. 4.

*** The thorax broader than the head, rounded laterally; the body in the majority subdepressed, posteriorly sublinear; the first joint of the tarsi longer than the next following.

Genus XII.—Bolitochara, *Mann.* Collaris, lunulata, prolixa, carbonaria, circellaris, inquinalis, teres, annularis, analis, reptans, hæmorrhoa, crassicornis, longiuscula, sericans, luridipennis, castanoptera, socialis, nigritula, axillaris, atramentaria, aterrima, excavata, bifoveolata, linearis, angustula, atra, elongatula, oblonga, complana, terminalis, exilis, quisquiliarum, planiuscula, depressiuscula, compressa, tenella, evanescens, humeralis, limbata, funesta, depressa, flavipes, cinnamomea, pumilio, atrata, boleti, suturalis, pulchella, elegantula, longicornis, validicornis, fungi, agaricola, fuscula, parvula, pallidula, impressifrons. 57.

**** The thorax elongate, of about the width of the head, scarcely rounded laterally; the body elongate; the abdomen somewhat dilated posteriorly; the first joint of the tarsi, especially of the posterior legs, much longer than the next following.

Genus XIII.—Drusilla, *Leach.* canaliculata, exarata. 2.

b. The head exserted, always broader than the base of the thorax.

* The base and apex of the thorax of equal width; the base of the elytra not folded; the joints of the tarsi equal.

Genus XIV.—Calodera, *Mann.* nigrita, protensa, testacea. 3.

** The apex of the thorax broadest; the base of the elytra not folded; the first joint of the tarsi longer than that next following.

Genus XV.—Falagria, *Leach.* sulcata, obscura, nigra, picea. 4.

*** The apex of the thorax narrow, stipitate; the base of the elytra folded. The joints of the tarsi equal.

Genus XVI.—Autalia, *Leach.* rivularis, impressa. 2.

INDEX.

END OF VOL. I.

THE NATURALIST;

ILLUSTRATIVE OF THE

Animal, Vegetable, and Mineral Kingdoms,

(TO BE CONTINUED MONTHLY),

WITH ENGRAVINGS BY EMINENT ARTISTS.

EDITED

BY NEVILLE WOOD, ESQUIRE.

Vol. II. April—December.

LONDON:
WHITTAKER AND CO., AVE-MARIA-LANE.
1837.

TO

EDWIN LEES,

Fellow of the Linnean Society, Member of the Entomological Society of London, &c. &c.,

IN ACKNOWLEDGMENT OF

THE MANY VALUABLE PAPERS WITH WHICH

HE HAS ENRICHED THIS WORK,

AND AS A SLIGHT RETURN FOR THE KIND INTEREST HE HAS EVER EXPRESSED IN IT,

The Second Volume

IS AFFECTIONATELY INSCRIBED,

BY

THE EDITOR.

THE NATURALIST.

ON THE LEMURIDÆ, OR FAMILY OF LEMURS.

In an interesting paper by Mr. Ogilby, in the *Zoological Proceedings*, for March, 1836, our readers will find an able review of the Quadrumanous and Pedimanous groups of *Mammalia*, and of the natural affinities which subsist between them. The merit of fairly distinguishing between the two groups, is certainly due to Mr. Ogilby; but he is not alone in his distinction, founded upon the characters presented by the heads and feet, between the Monkeys of the old and new continents. It is a distinction to which the writer of the present article has long since alluded; and Azara observed, that all the five fingers of many of the American Monkeys originated on the same line with each other, the thumb being destitute of the power of antagonizing with the rest, an observation overlooked by all naturalists, or regarded as an error, till pointed out and justified by this talented writer. In the conclusion of the paper referred to, Mr. O. proposed a new order, under the title *Cheiropoda*, in which shall be included all mammalia possessed of hands, whether those hands be on the anterior or the posterior extremities, or equally on both. The subjoined table is an abstract of the proposed arrangement:—

Class MAMMALIA.

Order Cheiropoda; or Mammalia with opposite thumbs.

1. On the anterior extremities only ..... Bimana.

Example—Man.

2. On both anterior and posterior extremities... Quadrumana.

Sect. 1. With anthropoid teeth.

Monkeys of the old World.

Sect. 2. With abnormal Teeth.

Lemuridæ (Lemur Family.)

3. On the posterior extremities only ..... Pedimana.

Sect. 1. With anthropoid teeth.

Monkeys of the new World.

Sect. 2. With rodent teeth.

Cheiromys (Aye-aye).

Sect. 3. With abnormal teeth.

Didelphidæ (Opossum Family).

It is with the *Lemuridæ* that we are at present concerned; and our object in the introduction of the preceding sketch, is to shew the relative situation of the family, with regard to the groups around it. Agreeing with the *old world Simiæ*, in the possession of true hands, and hand-like feet, it differs from them materially in the character of dentition, a point to which we shall more fully revert hereafter. While, however, the quadrumanous structure of the limbs, on the one hand, approximates the Lemurs to the *Simiæ* of the old world, the dental characters of the *pedimanous Simiæ* of the new world throws them, in turn, into the closest affinity with the *quadrumanous Simiæ*, an affinity strengthened by a general coincidence of anatomical structure, and of habits and instincts. What the Lemurs are to the *old world monkeys*, that the *Didelphidæ* are to the monkeys of the new world, and, in this sense, the *Lemuridæ* and the *Didelphidæ*, are the analogues of each other. Setting aside that singular and imperfectly-understood animal, the *Cheiromys* (of which the only specimen in Europe is that in the Paris museum), an anomalous creature approaching in some characters the *Pedimana*, in others the rodents, and apparently constituting a new type in the organization of the mammiferous kingdom—let us attempt a brief analysis of the *Quadrumana* and *Pedimana*, as arranged by Mr. OGILBY, in order to clear up the subject before us.

In the first place, then, the *Simiæ* of the old world have anthropoid teeth; that is, the general and outstanding characters of their dentition are such as obtain in the dentition of man; and they have opposable thumbs, both on the hands and on the feet. To this rule there is, however, a very remarkable exception; the genus *Colobus*, peculiar to Africa, is destitute of an externally developed thumb, and in this respect it agrees with the genus *Ateles* (Spider-monkeys) of South America. But it may be further observed, that in none of the old world *Simiæ* is the thumb, opposable as it may be, developed as we see it in the human hand. Indeed, in the Indian Orang (*Pithecus Satyrus*) it is very short, and, unless the fingers be bent down to meet it, cannot be used as their opponent. It is also short in the genus *Semnopithecus*, but is most developed, as far as our personal observations go, in the Baboons (*Cynocephalus*) of Africa.

If we turn from the old world *Simiæ*, to those of the New, we find that, while yet retaining the anthropoid teeth, the thumbs are not at all opposable to the fingers; they are, where present, invariably on the same plane. The feet have toes, as in the *Simiæ* of Asia and Africa, in which latter group, indeed, the *hind thumbs* are more truly such, than are the analagous parts in the hands. In the *Simiæ* of the old world, the tail is often wanting, often short, and never prehensile. But, *per contra*, as if to atone for the imperfection of the thumb, the tail in the pedimanous *Simiæ* is very frequently an admirable organ of prehension, as in the thumb-less Spider-monkeys, serving the purpose of an additional limb; or it is semi-prehensile, as in the Squirrel-monkey; while in others it is long and bushy.

Now, with regard to the Lemurs, they depart from the Monkeys of *both worlds*, in dental characters; but in quadrumanous structure, they approach those of the old. As in these, however, so among the Lemurs, are the thumbs of the feet the most perfectly developed. In many species the tail is wanting; in some it is short, in none is it a truly prehensile organ. If we turn from the Lemurs to the *Didelphidæ*, in which family we include *Didelphis* and *Phalangista*, as the types of their respective forms, we see animals of arboreal habits, with an abnormal dentary system, and omnivorous appetites, destitute of a thumb on the forehands, but having this organ largely developed on the hind feet, and furnished with a truly prehensile tail. It may be objected, that the Opossums and Phalangers do not form a natural family. But we incline to the views of Mr. OGILBY, who contends for a "gradual and uninterrupted transition from the naked-prehensile-tailed Opossums of South America, through the equally naked-tailed *Couscous*, *Balantia*, of the Indian islands, to the *Phalangers*." And here we cannot but observe, that the prehensile power of the tail, constituting it an organ of importance in the economy of the animal, is almost exclusively confined to *pedimanous Mammalia*. To this rule there are only the following exceptions, as far as we know, among the whole range of the mammiferous kingdom; viz:—the Kinkajou (*Cercoleptes*) the Coendou (*Synetheres*), the Tamandua (*Myrmecophaga Tamandua*), in which it is partially prehensile, and the little Two-toed Anteater (*Myrmecophaga didactylia*, LINN.), in which it is completely so.

To this it may be added, that with a prehensile tail, there is associated in every instance a certain slowness and cautiousness of movement, devoid of the *brusquerie* and easy alertness so remarkable in all the *Quadrumana*, except in a group among the Lemurs (*Loris*), comprehending a limited number of species, whose actions are slow, and whose limbs possess a peculiar arterial arrangement, connected with a surprising tenacity of grasp, and the power of long-continued muscular strain, in one unaltered attitude. It will appear, then, from what we have said, that the *Cheiropoda* present double analogues, the Monkeys of the old world forming a parallel group to those of the new, and the *Lemuridæ*, a parallel group to the *Didelphidæ*—the quadrumanous Lemurs bearing the same relationship to the quadrumanous *Simiæ*, as do the pedimanous *Didelphidæ* to the pedimanous *Simiæ*. Having thus far attempted to shew the situation and natural affinities of the *Lemuridæ*, we shall now proceed to a closer investigation of this curious and interesting family, which consists of several genera, distinguished from each other by various characters, which we shall detail as we pass along in our review.

The term *Lemur*, first adopted by LINNÆUS (from the Latin *Lemures*, signi-

fying ghosts or spirits), was applied originally to the Slow-paced Loris, in reference to its nocturnal habits, and has since been extended to the whole of the family, of which it is the type.

The *Lemuridæ* are distinguished as a natural group, by the following characters:—The body is long and slender, the head is pointed, and somewhat Fox-like, the nostrils have a sinuous opening, terminating a sharp naked muzzle, somewhat prominent; the eyes are large, and of a nocturnal character. The ears in some are small, and more or less concealed in the fur, in others large, membranous, and naked. The limbs are long, especially the posterior pair, which usually exceed the anterior.---The *fore* hands have a true thumb, and the index finger is often abbreviated. The feet or *hind hands* have a large thumb, greatly expanded at the tip; the index finger (of the hind hand) is slender, and armed with a long, subulate, and somewhat curved, claw. The nails of the other fingers, like those of the forehands, are flat and rounded. The body is covered with full, soft, woolly fur. The tail varies, being wanting or reduced to a mere tubercle in some, while in others it is long, and more or less bushy, but not prehensile.—On looking at the skull, which bears a very distinct resemblance to that of the Monkey, we find the orbits obliquely lateral, surrounded with a perfect margin, but opening within into the temporal fossa, which latter is not the case in Monkeys, the internal walls of the orbit being complete, as in man. The occipital foramen has a posterior situation, as in the Dog, so that the head is in no degree balanced upon the spinal column, but depends from it altogether. The upper incisors, four in number, are placed literally in pairs, with an intermediate space in front, in which are received, to a certain degree, the points of the incisors of the lower jaw. These are six in number, laterally compressed, arranged side by side closely together, not in a vertical position, but projecting obliquely forwards, and converging to a point. In some species the two outermost incisors of the upper jaw are very small, and often lost, so that naturalists have regarded their number in such species to be but two; whereas it is in reality four. The canines are long, recurved, and compressed with a posterior cutting edge, and a sharp point. The false molars are pointed; the true molars are crowned with sharp conical tubercles, and interlock with each other,—reminding us very strongly of those of the *Insectivora*. In conformity with this dentition, the *Lemuridæ* feed upon a mixed diet of animal and vegetable substances. They are, however, as a whole, more frugivorous than carnivorous, giving preference to fruits, roots, and the like. Eggs, insects, and small birds, are pursued by the slow, cautious *Loris* with great perseverance; but if we may judge from specimens in captivity, the true Lemurs (Makis or Macaucos) seldom make living animals their prey. Their bite is severe.

The *Lemuridæ* are all arboreal; they tenant the depths of the forest, and sleep during the day; the twilight of evening or the obscurity of night, while

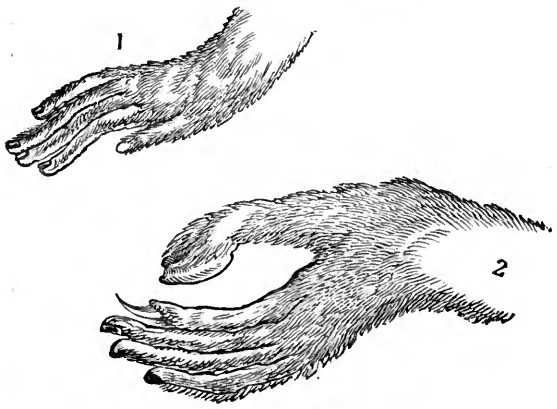
rendering their forms indistinct among the the dark foliage of the trees, and thus serving as a friendly veil, rouses them from their repose, and invites them to sweep along through the woods in quest of food. They are, in fact, essentially nocturnal or crepuscular. They sleep perched on branches, with the head buried between the arms, in the fur of the chest; and with the tail wound round the body, thus appearing like balls of fur.

Active and at home among the trees, they are far less so on the ground, to which they rarely resort. When there, they move along obliquely, in a sort of canter or succession of bounds, applying the whole of the hands and feet, as do plantigrade animals, to the level surface over which they traverse, but from which they are ever anxious to escape.

Having thus sketched the general characters and habits of the family, we shall next proceed to a consideration of the several genera into which it is subdivided.

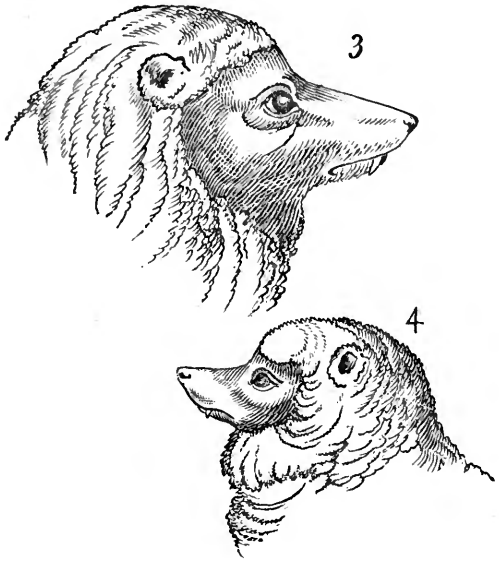
Genus *Lemur*.—Gen. Char. :—Head long and triangular, muzzle pointed; eyes moderate and oblique; ears short and hairy; tail very long and bushy. The hinder limbs longer than the anterior, the tibia and the femur being of equal length.—

Incisors $\frac{4}{6}$, canines $\frac{1.1}{1.1}$, molars on each side $\frac{6}{5}$. The incisors above are small; below long, compressed, pointed, and in close array, projecting almost horizontally; the outermost on each side is the largest; they form altogether a sort of spoon or scooping instrument. The canines above are large, sharp, compressed, with a posterior cutting edge; those of the lower jaw are smaller, and fit into a space between the upper canine and first false molar. Of the molars on each side above, the two first are false; simple and acutely conical; the true molars have each three pointed tubercles on their crown. The last molar is small. False molars below, two; true molars three, the last being small. *Mammæ*, two, pectoral. In the annexed sketch we give profiles of a hand and foot, and of the head, of one of this genus, in order to render the characters intelligible.



1, *hand*; 2, *foot of the Lemur.*

The true Lemurs are all natives of Madagascar, where they supply the place of the *Simiæ*, so abundant on the adjacent shores of the African continent. This circumstance, connected with others in reference to the indigenous mammalia of Madagascar, stamps the island with peculiar interest in the consideration of the



3 *and* 4, *heads of Lemurs.*

naturalist. It is not because Madagascar is separated from the mainland of Africa that it is destitute of *Simiæ*, for Borneo, Java, and Sumatra, under similar circumstances with regard to the mainland of India, produce the Orang and several other species of Gibbons and Monkeys; and, were we to judge by analogy, we might reasonably expect to find monkeys in this wooded and torrid island. But as these are not indigenous in Madagascar, so, on the other hand, none of the restricted genus *Lemur*, or of other immediately allied genera, (*Perodicticus*, *Indris*, &c.), are natives of Africa.—In fact, the mammalia of Madagascar are, in a great measure, exclusively its own. We say in a great measure, because we find, for example, the *Pteropine Bats* spread throughout a vast range of geographical latitude; including the islands Bourbon, Mauritius, and Madagascar, from India and its islands, to Africa. In most instances, however, the mammalia of Madagascar, and especially the Lemurs, as we have said, are generically peculiar to it.

In their native woods, these singular and beautiful animals live in troops, but unless sought for in the recesses of the forest, are seldom seen during the day. They are incommoded by a strong light, and the pupil of the eye is transverse, dilating in proportion to the advance of welcome twilight. At this time, and throughout the night, they are all active and alert, bounding from branch to branch, with unequalled ease and gracefulness. There is a peculiar sweeping elegance in their movements, and the leaps they take, as if without effort, are perfectly astonishing.—Their usual voice is a low inward grunt, but they often break forth into a hoarse abrupt roar, producing a startling effect. This roar, uttered by one, is a signal to others, and a chorus of horrid discords resounds through the stilly forest. The roar of the Ruffed Lemur is peculiarly deep and sonorous.

In captivity, with care and attention, the Lemur bears our climate well; but they are impatient of cold, as might be inferred from their soft thick fur, which they need even in their own region. They are fond of sitting perched on the

fender before a fire, and in this situation will spread their hands, half close their eyes, and testify unequivocal satisfaction. During the day they sleep in a ball-like figure on their perch, and if two be in a cage together, they sit close to one another, with their tails wrapped (Boa-like) round each other's body, so as to make one round ball, from which, on being disturbed, two heads suddenly make their appearance. Their temper is gentle, and they are pleased with being noticed, delighting to have their heads scratched or rubbed, for which purpose they will press them to the bars of their cage, and continue so to do as long as thus gratified. Their intelligence is, however, far more limited than that of the Monkeys, nor have they the prying, mischievous, petulant disposition of those animals, so that they may be trusted, with due precautions, in a room at liberty. When presented with food, they usually take it in their hands, but not always, for we have seen them feed upon soft bread without holding it; they lap fluid like a Dog. In size the Lemurs equal a Cat, and some are longer; when in motion their tail is elevated in a sigmoid form, and not trailed after them.

Of the restricted genus *Lemur*, the following are the species:—

1.—The Ruffed Lemur (*Lemur Macaco*, Linn.)—The fur is varied with large patches of black, on a pure white ground; the hands and feet are black, and a full white ruff surrounds the face.—In Mus. Zool. Soc.

2.—The Black Lemur (*Lemur niger*, Geoff.)—This rare species was first described by Edwards, in his *Gleanings*, under the title of "Black Macauco," figured from a living specimen, in 1775. It remained a doubtful species till the accession of an individual to the menagerie of the Zoological Society, in 1833. It is noticed in the *Proceedings* for that year, p. 68.—In Mus. Zool. Soc.

3.—Redfronted Lemur (*Lemur rufifrons*, Bennett), a new species described by Mr. Bennett, in the *Proceedings of the Zoological Society*, in 1833, p. 106, from a specimen in the menagerie. General colour dark grey; a rufous patch occupies the forehead, with a longitudinal streak of black down the centre, expanding over the nose; limbs, under parts, and tail, tinged with rufous.—In Mus. Zool. Soc.

4.—Red Lemur (*Lemur ruber*, Péron).—This species was first discovered by Commerson, who saw and figured the animal in 1763. MM. Péron and Le Sueur, who accompanied the celebrated expedition under Capt. Baudin, brought a skin to Paris; and ten years afterwards a living individual was brought there, from which F. Cuvier took his figure. A living specimen existed some time since at Exeter Change, and another was in the menagerie of the Zool Soc. in the year 1830.—It is described and figured in the *Garden and Menagerie delineated.* Colour bright rufous, hands, tail, and belly black; and a large oval patch of white occupies the back of the neck.—In Mus. Zool. Soc.

5.—Black-fronted Lemur (*Lemur nigrifrons*, GEOFF.)—M. GEOFFROY considers this species to be identical with an animal termed by PETIVER *Simia sciurus*.—In Mus. Zool. Soc.

6.—White-fronted Lemur (*Lemur albifrons*, GEOFF.)—First described by M. GEOFFROY ST. HILAIRE, and afterwards figured by AUDEBERT, in his *Histoire Naturelle des Singes et des Makis*.—In Mus. Zool. Soc.

7.—White-handed Lemur (*Lemur albimanus*, GEOFF.)—Described first by M. GEOFFROY, and figured by AUDEBERT.—In Mus. Zool. Soc.

8.—Mongooz Lemur (*Lemur mongos*, LINN.)—First described as the *Mongous*, by EDWARDS, in his *Gleanings*. In Mus. Zool. Soc.

9.—Brown Lemur (*Lemur fulvus*, GEOFF.)—Grand Mongous, BUFFON, *Supp.* 7, p. 118, fig. 133.

10.—Anjouan Lemur (*Lemur Anjuanensis*, GEOFF.)—From the island of Anjouan, near the coast of Madagascar.—Much doubt exists as to the genuineness of this species. F. CUVIER regards it as the female of the White-fronted Lemur.—We have never seen a specimen.

11.—Collared Lemur (*Lemur collaris*, GEOFF.)—First described by GEOFFROY ST. HILAIRE.—In Mus. Zool. Soc.

12.—Ring-tailed Lemur (*Lemur Catta*, LINN.)—In Mus. Zool. Soc. *Mococo* of BUFFON.

13.—Rufous Lemur (*Lemur rufus*, AUDEB.)—Golden red above, pale yellow beneath; circumference of the head white; a longitudinal stripe of black from the occiput to the muzzle. *Maki roux* of AUDEBERT, with a figure.

Leaving the genus *Lemur*, as restricted by modern naturalists, *Indris* of LACÉPÈDE (*Lichanotus*, ILLIG.), presents itself, as in close alliance with that which we have just left. Agreeing with *Lemur* in all its essential characters, the genus *Indris* is distinguished by a difference in the details of the dental formula, the incisors being four above and four below; molars four above on each side, and five below. The hinder limbs are extremely long; the head is broad, the muzzle short, and the hands are long. To this it may be added, that the tail is reduced to a mere tubercle; such, at least, is the case in the only genuine species of this form with which we are acquainted, viz., the *Indri* (*Indris brevicaudatus*, GEOFF.; *Lemur Indri*, LINN.) It is true that a second species, the Long-tailed Indri (*Maki bourre* of SONNERAT; *Maki fauve*, BUFF.; *Lemur laniger*, GMEL.; and *Indris Longicaudatus*, GEOFF:) is described in addition to the preceding, but only, as it would seem, on the authority of SONNERAT. CUVIER, in the last edition of his *Règne Animal*, does not admit it in the genus *Indris*, observing that it has need of revision; as it respects ourselves, we are inclined to consider it as identical with an animal described in the *Zoological Proceedings*, as *Propithecus diadema*, BENN., or at least as an immediate ally. We cannot, however, help

confessing, that the necessity of separating the genus *Propithecus* from that of *Indris* is very problematical; nor should we do so, were it not for the great authority of the talented naturalist, now, alas! no more, who instituted it.

Setting aside, for the present, a consideration of the Long-tailed Indri, we may observe, that the Short-tailed Indri (*I. brevicaudatus*), like the rest of the genuine Lemurs, is a native of Madagascar, where it is said to be frequently trained by the natives for the chase, or rather, perhaps, for taking birds, but of its history little is correctly known. The word *Indri* is said to signify, in the Madagascar language, a "Man of the Woods."—Of all the Lemurs, it is the most *anthropoid* in appearance, owing to the size and form of the head, the developement of the hinder extremities, and the absence of a tail. In length it exceeds three feet; its general colour is blackish-brown, with the exception of the muzzle, abdomen, and inside of the arms and thighs, which are inclined to grey, and of the crupper, which is white, and covered with thick woolly fur; the hair on the other parts of the body is silky, long, and abundant. A unique specimen brought by SONNERAT, exists in the museum at Paris. The genus *Propithecus*, to which we have just adverted, was characterized from a fine specimen of a *Lemuridous* animal, presented by C. TELFAIR, Esq., to the Zoological Society. The generic characters are as follows:—Muzzle shorter than in the Lemurs generally; ears short, rounded, and concealed in the fur. Hind limbs far exceeding the anterior pair in length. Index finger abbreviated. Tail long and well furred. Incisors, as in the Indri $\frac{4}{4}$. Molars, number not ascertained, the two first on each side above bicuspid, the third elongated with two tubercles on its outer edge, the fourth, as the third. The first molar below with a single point, the second and third presenting several tubercles.

Species.—Diadem Propithecus (*Propithecus diadema*, BENN.)—"The face is nearly naked, with short blackish hairs about the lips, and equally short yellowish white hairs in front of the eyes. Above the eyes, the long, silky, waved, and thickly set hairs, which cover the body, commence by a band of yellowish white crossing the front, and passing beneath the ears to the throat. This is succeeded by black, extending over the back of the head and neck, but becoming freely intermingled with white on the shoulders and sides, the white gradually increasing backwards, so as to render the loins only slightly grizzled with black. At the root of the tail the colour is fulvous, which gradually disappears until the extreme half of the tail is white, with a slight tinge of yellow. The outer side of the anterior limbs, at the upper part, is of the slaty-grey of the sides, below which it is pale fulvous; the hands are black, with the exception of tufts of long fulvous hairs at the extremities of the thumb and fingers, extending beyond and covering the nails. The outer sides of the hinder limbs, after receiving a tinge of fulvous from the colour surrounding the root of the tail, are of a paler fulvous

than the anterior limbs. This becomes much deeper on the hands (hinder), which are fulvous, except on the fingers, where there is a very considerable intermixture of black, the terminal tufts, equally long with those of the anterior hands, being as in them fulvous. The under surface is white throughout, with the exception of the hinder part of the throat, where it is of the same colour with the sides of the body. The hairs are generally long, silky, waved, erect, and glossy. On the crupper, they are shorter and more dense, offering a sort of *woolly resistance*. On the tail, they have the general character of those of the body, but are considerably shorter."

Length of the head and body, 1ft. 9 in.; of the tail 1ft. 5in.

"The *external* characters, by which *Propithecus* is distinguished from *Lemur*, are its shorter muzzle, terminated by more approximate nostrils, the upper margin of which appears to be slightly lobulated; its rounded ears; the marked disproportion in length between its hinder and anterior extremities; the greater length of its hands, especially of the anterior; the shortness of its anterior thumb, which is also placed much farther back; the marked abbreviation of the anterior index; the development and power of the hinder shank, which is nearly an equal opponent to the whole of the fingers; and the comparative shortness of the hairs by which the tail is covered."—Habitat Madagascar, where it is stated to be rare. Of its history nothing is known. In Mus. Zool. Soc.

Now, if we compare the description of the Long-tailed Indri, with that just given of the Diadem Propithecus, we shall not fail to perceive the resemblance, notwithstanding some points of variation, and an inferiority in size. Length of head and body about 15 inches. The body has a stout appearance, from the thickness of the fur; the head is less elongated than in the Short-tailed Indri; the forehead is broad; the eyes large, the ears short and concealed under the fur, which is of a deep yellow or fulvous; thumb of the hinder hands large and strong, with a broad nail, thin and flat; first toe united at the base to the thumb, by a black membrane. Fur soft and woolly; general colour yellow; under surface generally, and inside of limbs, dull white tinged with yellow; crupper, around the root of the tail, white. A black mark covers the nose and part of the face, terminating in a point on the forehead; hind feet covered with mingled grey and yellow hairs; fingers and nails black.—*Vide* Desmarest, and Geoffroy in *Annales du Muséum*, xix., p. 158.—The chief differences between this animal and the preceding, it will be seen, consist in the inferiority in size of the latter, in the arrangement of black on the face, and the presumed absence of this colour on the back of the neck and shoulders, together with the absence to the white band across the forehead, bounding anteriorly a black cap. Still, in the general yellow tint pervading the limbs and body, in the shortness of the ears, the abbreviation of the muzzle, and in the quality of the fur, the coincidence is remarkable; inso-

much, that we cannot avoid believing, that if not identically the same, at all events they are intimately related; but as we have never seen the *Indris longicaudatus* of GEOFFROY, it would be unsafe to hazard any positive opinion.

The true Lemurs appear to be restricted to the genera,—*Lemur* (as the type), *Indris* and *Propithecus*; the two latter depart, as we have seen, in some points, and especially in their dental formula, from the normal group. In the genus *Lemur*, the incisors of the upper jaw are dilated at their cutting edges; but in *Propithecus* this dilitation is carried out to a greater extent, so as to approximate them in form to those of the Monkey. With respect to the position of the canine teeth, there is a peculiarity in the Lemurs which demands notice. If we examine the teeth of a Monkey, we see that the canines of the lower jaw, when the mouth is closed, advance and fit in before those of the upper jaw; and this position of the canines, with relationship to each other, is the general rule. It obtains throughout the *Carnivora*; we see it in the Hog, and the Horse, of which the male has tusks in both jaws. It is in fact a standard rule.—If, however, we turn to the Lemurs, we find a remarkable exception. In the genus *Lemur*, the canines of the lower jaw close behind and to the inside of the posterior edge of those of the upper, the anterior margin of the former (that is the lower canines) wearing against the latter. From this circumstance, GEOFFROY ST. HILAIRE has been induced to consider the two *outer incisors* of the lower jaw, which are larger than the intermediate ones, as the *true canines*. This idea, however, will not stand the test of scrutiny. For the outer incisors of the lower jaw have neither the form, the position, nor the use of canines; whereas, though they do close behind their antagonists, the canines of the lower jaw have the true figure and use of such teeth. Moreover, in the genera *Indris* and *Propithecus*, in which the upper incisors are four, and not six, the canines of the lower jaw also close behind those of the upper; and if they are not to be considered in the light of genuine canines, what are?—for the incisors here are only four. In the skull of a little Lemuridous animal *(Microceleus murinus)* now before us, which closely resembles the Lemur in dentition, the point of the lower canines (which advance obliquely forwards) bears completely against the inner side of the upper incisors, but still rather behind them, the body of the lower canines filling a space between the canines of the upper jaw and the succeeding false molar.

We find, then, this arrangement of the canines obtaining through the whole of the Lemuridous family, till we come to that strangely aberrant form, the Flying Lemur or Galiopithecus *(Galeopithecus)*, an animal constituting the type of a distinct group, in which canines are altogether wanting. We cannot avoid observing, that M. F. CUVIER, in his work entitled *Des Dents des Mammifères considerés*, characterizes lemuridous animals as having six incisors above and six below, the reciprocal position of the teeth being as in Monkeys. We

do not know the specimen from which he has taken his figures and description; but the Potto of BOSMAN; (*Perodicticus Geoffroyi*, BENNETT; *Lemur Potto*, GMEL.; *Nycticebus Potto*, GEOFFR.) has only four incisors above; and the reciprocal position of the canines is as in the Lemur.—See *Zool. Proceed.* for 1831, p: 109.—The specimen of *Perodicticus Geoffroyi* is in the Mus. Zool. Soc., and, being preserved in spirits, its dentition is easily examined.

Confining ourselves still to Madagascar, a new genus now demands our notice;—it is that termed *Cheirogaleus* by GEOFFROY, from Χειρ, a hand, and Γαλῆ or Γαλεη, a Cat. This genus was first established on three drawings by COMMERSON, in a paper in the *Annales du Muséum*, Vol. 19, p 171. GEOFF. ST. HILAIRE there observes, that the animals made known by these drawings "have, like Cats, the head round, the nose and muzzle short, the lips furnished with whiskers, the eyes large, projecting, and set near together, and the ears short and oval. Their tail is long, bushy, regularly cylindrical, naturally folded, or rolled sometimes on itself, sometimes around the body."—In conjunction with these traits, the general characters are those of the *Lemuridæ*. Notwithstanding the authority of GEOFFROY ST. HILAIRE, and the drawing of COMMERSON, noted for his great accuracy, the genus *Cheirogaleus* long remained doubtful. Recently, however, an animal belonging to this group has been brought alive to Paris, from Madagascar, by Admiral MILIUS, which, as GEOFFROY says, justifies him in the establishment of the genus upon the few data left by COMMERSON.—It would seem that the animals of this group were not unknown to FLACCOURT, who observes, that he noticed in the neighbourhood of Mangobay a kind of Lemur of small size, grey, and with a very blunt muzzle. Compared with the Lemurs, the species of *Cheirogaleus* are of a stouter and shorter colour; the general outline of form is the same, but it is as if the long slender figure of the Lemurs was contracted and gathered up together; the head is large, the eye open, the upper lips are thick, and cover those beneath; so that it seems as if these animals, Lemurs in truth, had borrowed some traits from the feline group.

Of the species ascribed to this genus, three rest on the authority of COMMERSON. These are the *Ch: major*, 11 inches in length; the *Ch. medius*, 8½ inches long; and the *Ch: minor*, 7 inches long. The individual brought home by Admiral MILIUS, forms, according to GEOFFROY, a fourth species. This animal is described and figured by F. CUVIER, under the name of *Maki-nain*, to which he has given the name of *Ch: Milii*. It is upwards of a foot in length; greyish rufous above, greyish white beneath; a circle of white surrounds the eyes; the muzzle is naked and blackish. In habits, these animals are decidedly nocturnal; and their activity is surprising. The specimen at Paris is described as traversing its cage, as if on wings, and taking perpendicular leaps of five or six feet in height.

In looking at the drawings of COMMERSON, as published by GEOFFROY, and in reading his account of the *Ch: Milii*, we cannot but be struck with the close affinity between these animals and those of the genus *Microcebus*. Indeed we cannot help suspecting, that the latter species belongs to this genus; for, be it observed that COMMERSON gives his three species of *Cheirogaleus* as having the nails on the fingers both of the anterior and posterior hands elongated and claw-like.—It is true, that GEOFFROY says, that in this point COMMERSON has committed an error; but surely if we are to trust to one part of his drawing, we are to place confidence in the whole; and it is only because the nails are not found to be so constructed in the *Ch: Milii*, that he regards COMMERSON as wrong.—We have not, indeed, had an opportunity of seeing the specimen on which GEOFFROY has founded his latter species; but we have carefully examined (and one anatomically) two species of the genus *Microcebus*, respecting which we feel on safer grounds than with regard to *Cheirogaleus*.—To this genus we propose to turn our attention in the next number of the *Naturalist*.

DESCRIPTION OF THE MUSCULAR APPARATUS OF THE WINGS OF BIRDS.

BY WILLIAM MACGILLIVRAY, A. M., F. R. S. E., M. W. S., &c.,

Conservator of the Royal College of Surgeons in Edinburgh.

THE frame work of the wing is composed of a series of bones attached by a loose joint to the solid apparatus of the scapula and clavicles, and folding up by hinges into three pieces, the *humerus* or *brachium*, the *cubitus*, and the *hand*, so as, when not in use, to be conveniently disposed of by the side of the body. The first bone, the *os humeri*, brachial bone, or bone of the arm, is articulated by a rounded surface to a corresponding cavity formed between the coracoid bone, or posterior clavicle, and the scapula, in such a manner as to allow great freedom of motion. When at rest, this bone is directed backwards, more or less parallel to the spine. Its distal extremity forms, with the proximal extremity of the cubital bones, the ulna and radius, an oblique hinge-like joint, which allows the cubitus to be folded up parallel to the brachium, and nearly in the same plane. The third portion, the hand, on the contrary, is jointed so as to fold under the cubitus in a perpendicular plane. These solid parts are moved upon each other, and upon the scapula, by a complicated muscular apparatus; and the arm, thus

constructed, is converted into an instrument of flight, by having appended to its posterior edge a large lamina or plate, composed of a series of strong, elastic feathers, named quills, and varying in firmness, form, length, and relative proportion, according to the kind of flight necessary for the species. When about to be employed, the parts which in a state of rest were folded up, are stretched out so as to unfold the feathers somewhat in the manner of a fan, and form a horizontally expanded lamina, which, being alternately raised and forcibly pulled down, furnishes a lever, whereby the body is elevated into the air; when, with repeated strokes, by which the wing is alternately drawn upwards, forwards, and inwards, and then more forcibly outwards, downwards, and backwards, the bird advances, directing its course by the tail, but more especially by a difference in the action of the two wings.

The wood-cuts represent the wing of a Domestic Pigeon, *Columba livia*, deprived of all its feathers, excepting the quills, and viewed, first from above, Fig. 1; then from beneath, Fig. 2. In these figures, *a* is a portion of the body; *b*, *c*, the humerus or brachium; *c*, *d*, the cubitus or antibrachium; *d*, *f*, the hand, composed of *d*, *e*, the carpus and metacarpus; *g*, the pollex or outer finger, and *e*, *f*, the other fingers. The ten quills attached to the hand, from *d* to *f*, are the primary quills; those attached to the cubitus, from *c* to *d*, are the secondary quills. They are arranged, as is observed, in two distinct sets. Those on the first finger, *g*, are named alular quills. Besides these, there are large feathers, not, however, so strong, attached to the skin along the edge of the humerus, *b*, *c*; but these, which are named tertiary quills, have been removed. Now, the order of nomenclature, if numerical, ought to have commenced at the part nearest the body: those on the first point or brachium, ought obviously to have been named primary; those on the second, secondary; and those on the third, tertiary. A decidedly preferable mode, however, is to name the quills according to their relations:— brachial, cubital, and digital; those on the first finger alular. Besides the feathers, there is represented the muscular apparatus of the wings, as seen after the skin has been removed. The muscles to be described are;—1st. Those inserted into the scapula; 2ndly, Those inserted in the brachial bone; 3rdly, those inserted into the bones of the hand. In the figures the same muscles bear the same numbers.

1. *Muscles inserted into the Scapula.*

1. The first muscle is the *trapezius*, which, arising from the spines of the last cervical, and all the dorsal vertebræ, excepting the last two, is inserted into the dorsal edge of the scapula, and the extremity of the furcula. Its action is to draw the scapula towards the spine, and to fix it during flight.

Under this are the *rhomboideus*, which passes from the spines of some of the anterior dorsal vertebræ, to the dorsal edge of the scapula; and the levator sca-

Fig. 1

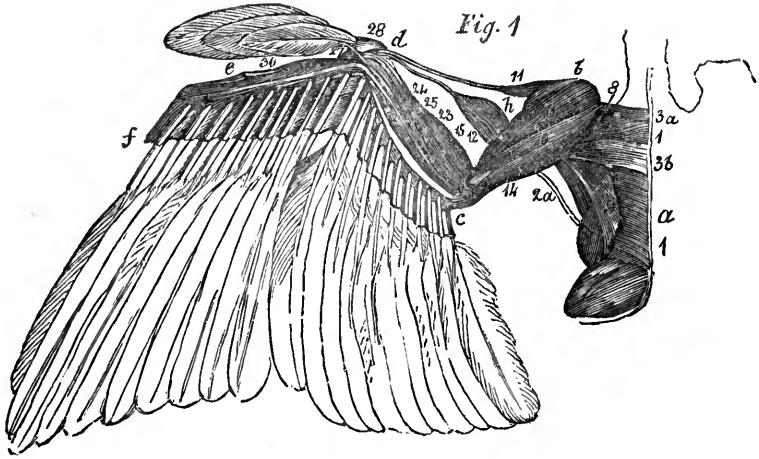


Fig. 2.

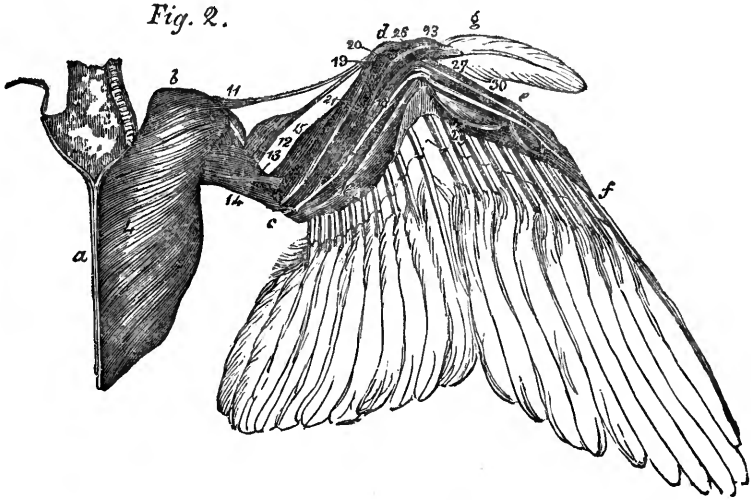
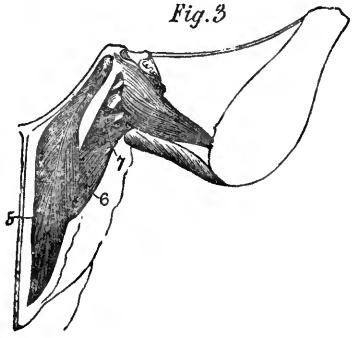


Fig. 3



pulæ, which, arising from the transverse process of the last cervical vertebra, and a few of the anterior ribs, is inserted into the dorsal edge of the scapula, which it pulls upwards and forwards.

2. The *serratus magnus anticus* arises by digitations from the last four ribs, excepting two, and is inserted into the extremity of the scapula. A slender slip, 2 *a*, separates from it to be inserted into the skin of the posterior edge of the brachium.

There is also a *serratus parvus anticus* or *costo scapulari*, which arises in like manner from the first two ribs, and is inserted into the anterior part of the lower edge of the scapula.

2. *Muscles inserted into the humeral or brachial bone :—*

3. The two superficial slips seen on the back are analogous to the *latissimus dorsi* in man. They arise from the spinous processes of the last cervical, and some of the anterior dorsal vertebræ. The first, 3 *a*, is inserted into the coracoid bone, the other, 3 *b*, into the middle of the linea aspera or dorsal ridge of the humerus, which it draws toward the back. The other muscles which arise from the trunk to be inserted into the humerus are situated in front.

4. *Pectoralis major*, Fig. 2.—Arises from the whole length of the crest of the sternum, from its posterior and lateral margins, from the ribs, and from the outer edge of the furcula, forming a triangular mass of vast size, sometimes exceeding in bulk all the other muscles of the body together. Its fibres run obliquely forwards and outwards, pass over the shoulder-joint, and are inserted fleshy into the anterior or upper crest of the head of the humerus, and by a flat tendon where they cross the insertion of the next muscle. Its action has not been correctly described. Its anterior part raises the humerus, and brings it forward; its middle part brings the wing downwards; and its posterior portion brings the humerus backward, close to the body. Its combined action is powerfully to depress the wing, and bring its anterior edge downward, by which the quills are obliquely raised.

5. Under the great pectoral muscle, is seen in Fig. 3, the *pectoralis medius*. It arises, properly speaking, over the other, from the whole length of the under surface of the sternum, and the upper half of its crest, and from the fore edge of the coracoid bone, and the membrane between it and the furcula. The fibres converge into a central tendon, extending its whole length, which passes forwards between the coracoid bone and the furcula, curves round the joint, and is inserted upon the upper tubercle or crest of the humerus, close to the insertion of the pectoralis major, and anterior to it. Although this muscle is similar in its origin to the pectoralis major, its action, owing to the direction of its tendon, is the reverse of that muscle, as it elevates the humerus and brings it forward.

6. The *pectoralis minor* is a small muscle which arises from the lower two-thirds of the outer edge of the coracoid bone and the anterior margin of the sternum, under the articulation of the ribs, forms a small round tendon, which passes outwards and forwards, and is inserted into a prominent internal tubercle of the humerus, which it pulls downwards and backwards.

7. Above and before the pectoralis minor is a small muscle, arising from the upper part of the coracoid bone, and a strong fascia extended from its base to its extremity above, passing obliquely upwards, and being inserted anteriorly to the pectoralis minor: Its action is to draw the humerus directly downwards.

The muscles which arise from the scapula to be inserted into the humerus are the following:—

8. The *supra spinatus*, Fig. 1, arises from the fore part of the scapula, and is inserted into the posterior or inner crest of the humerus, externally of the tendon of the pectoralis minor.

9. The *infra spinatus* arises from the outer surface of the scapula, as far a its extremity, and is inserted into the same prominence as the last. These two muscles draw the humerus backward.

The *subscapularis* arises from the fore part of the inner or under surface of the scapula, and is inserted into the same protuberance.

10. The *deltoides* arises from the fore part of the scapula, and from the top of the coracoid bone, its anterior fibres being in contact with those of the pectoralis major. Its anterior portion is inserted into the outer and back part of the edge of the anterior crest of the humerus, its posterior into that bone, as far as the origin of the supinator radii longus, that is, four-fifths of its length. A thin flap is attached to the skin in the bend of the wing. The deltoid muscle raises the humerus.

Under the deltoid is the *coraco-brachialis*, which arises from the tip of the coracoid bone, and adjoinipng part of the scapula, and is inserted into the proximal part of the crest of the humerus. Its action is to pull the humerus forward and upward.

The muscles inserted into the cubitus or fore-arm, come next in order; but it may be proper here to describe a very curious apparatus existing in the bend of the wing anteriorly, between the shoulder and wrist joints, *b* and *d*. At that part, the edge of the wing is formed by a fold of the skin enclosing an elastic substance, and edged with an elastic tendon or fibre, which has at its commencement at the shoulder-joint a small muscle detached from the pectoralis major.

11. This muscle, named the *tensor plicæ alæ*, or stretcher of the fold of the wing, has its terminal insertion in the prominence at the base of the metacarpal bone at *d*. Another smaller slip comes off behind from the anterior ridge of the

humerus, and immediately forms a very slender tendon which passes along the humerus to the radius.

About the middle of the fold, at *h*, is a dense mass of cellular tissue, to which is attached a thin flap from the deltoid muscle, seen in the figures at *h*.

12. Besides which, there is a thin muscle arising from an aponeurotic base from the lower part of the deltoid near its insertion, attached to the cellular mass at *h*, and sending off from its lower edge, a very slender tendon, inserted along with that of the tensor plicæ. This muscle may be named the *retractor plicæ*.

3. *Muscles inserted into the cubitus:—*

The muscles which move the fore-arm on the arm are two, a flexor and an extensor.

13. *Flexor cubiti*, or *biceps flexor*, arises tendinous from the upper extremity of the coracoid bone, passes, flat, under the insertion of the pectoralis major, and also from the flat surface and edge of the inferior crest of the humerus, runs along the anterior and inferior face of that bone, and is inserted, by a short tendon, into the radius, and by a more slender slip into the ulna, between the supinator radii longus, and the pronator radii teres. Its action is to bend the cubitus on the humerus.

14. *Extensor cubiti* arises from the anterior extremity of the scapula, from the head of the humerus, by another distinct origin from the lower ridge of that bone, and from the greater part of its posterior edge, or linea aspera, and is inserted by two tendons into the olecranon, or upper extremity of the ulna. Its action is to extend the cubitus, and raise it a little.

4. *Muscles inserted into the hand:—*

As these muscles are numerous, it may be expedient to describe them in the order in which they are seen in the two views.

In Fig. 2, representing the lower surface of the wing, are observed the following muscles:—

15. *Extensor metacarpi radialis longior*, or *supinator radii longus*, the muscle seen on the fore edge of the cubitus, arises from the outer condyle of the humerus, runs along the anterior edge of the fore-arm, and terminates in a slender tendon, which is inserted into the protuberance on the head of the radial metacarpal bone, anterior to the first digit. Its action is to bend the arm, and extend the hand, or bring it into a straight line with the cubitus. The insertion of the biceps cubiti, 13, is between the head of this muscle and that of the pronator teres, 21.

16. Of the muscles that arise from the inner condyle, the first or most external is the *flexor carpi ulnaris*, which comes off by a tendon from the lowest part of the condyle, passes along the inner and posterior side of the ulna, in contact with

the bases of the cubital quills, and on the anterior side with the palmaris longus, 17, and is inserted by a short tendon into the projecting point of the ulnar carpal bone, analogous to the os pisiforme. Its action is to bend the hand, or bring it back towards the fore-arm.

17. The *palmaris longus* arises from the inner condyle of the humerus, immediately above the flexor carpi ulnaris, 16, and covering the flexor carpi radialis, 19, runs superficially over the flexor digitorum, 18, and is inserted partly into the base of the posterior carpal bone, partly into the fascia which covers the lower surface of the metacarpus, partly into the ulnar carpal bone, and sends a slender tendon along the radial metacarpal bone and the first phalanx, to be inserted into the base of the second phalanx. Its action is to bend or adduct the hand, and at the same time extend the digit.

18. The *flexor digitorum* is a small muscle arising under the palmaris longus from the inferior and posterior surface of the ulna, along four-fifths of its length, the upper-fifth excepted. Its fibres pass obliquely forwards, and it sends off a very long tendon, running anterior and parallel to that of the palmaris longus, and having a similar insertion. Another tendon also passes to be inserted into the base of the radial metacarpal bone, under that of the supinator radii longus.

19. The *flexor carpi radialis* arises from the inner condyle, immediately below the origin of the pronator radii teres, 21, and concealed by the palmaris longus, 17. Its fibres pass obliquely forwards along the lower and posterior edge of the radius, in contact anteriorly with the pronator radii teres, and posteriorly with the flexor digitorum, 18. It is inserted fleshy along the posterior edge of the radius. Its action is to draw the arm obliquely downwards and forwards.

20. Under these muscles is a shorter one, which arises from the posterior edge and lower surface of the ulna, for two-thirds of its length, and forms a short strong tendon, which passes over the wrist joint, to be inserted into the base of the radial matacarpal bone. Its use is to assist in extending the hand.

A thin fleshy muscle extends obliquely forwards from the outer edge of the ulna in nearly its whole length, to be inserted along two-thirds of the lower surface of the radius. It is a pronator of the radius, which, though fixed when the wing is extended, has considerable motion when bent, in which case it tends to elevate the hand. This muscle is analogous to the *pronator radii quadratus.*

21. The most anterior muscle of those that come from the inner or posterior part of the lower extremity of the humerus, is the *pronator radii teres.* It arises from the upper part of the inner condyle of the humerus, at a considerable distance up the arm, by a tendinous origin, passes obliquely outwards, in contact, first, with the insertion of the biceps flexor cubiti, then, on the same or anterior side of the fore-arm, with the extensor carpi radialis longior, 15, and on the other side with the flexor carpi radialis, 19; and is inserted into two-thirds of

the length of the radius. Its action is to bend the fore-arm obliquely downwards and inwards.

The small muscles on the hand may be described afterwards. Let us now turn to the upper surface of the cubitus, seen in Fig. 1.

The most external muscle of which a portion is seen along and behind the ulna, is the *flexor carpi ulnaris*, 16, already described.

22. The next muscle is the *extensor carpi ulnaris*, which arises from the lower extremity of the outer condyle of the humerus, runs along the middle of the fore-arm, with the ulna immediately behind, and terminates in a long slender tendon, which passes over a pulley at the extremity of the ulna, and is inserted into the posterior edge of the radial metacarpal bone. Its action is to extend the hand, and, when extended, to bring it upwards. It is not by any means an adductor of the hand, as stated in various books.

23. *Extensor primi digiti*, arises from the outer condyle of the humerus, runs along the fore-arm, parallel and anterior to the last, and forms a very slender tendon, which, passing over that of the next muscle, goes to be inserted into the base of the bone of the first finger, which it draws upwards and backwards.

24. *Extensor digitorum* arises from the outer condyle of the humerus, and from the anterior edge of the ulna, and the posterior edge of the radius; its tendon passes over the wrist joint, and runs along the radial metacarpal bone, to be inserted into the last phalanx. Sometimes several slips are given off by this tendon. It pulls the hand or pinion upwards and outwards.

25. *Extensor carpi radialis brevis* arises also from the inner condyle, and from nearly the whole length of the inner edge of the radius, and is inserted by a slender tendon into the prominence at the base of the metacarpal bone, near that of the extensor carpi radialis longior, 15, already described, which is the muscle on the anterior edge of the fore-arm.

There now remain the small muscles on the hand.

The first finger, *g*, has three muscles.

26—*Flexor primi digiti* arises from the base of the radial metacarpal bone, and is inserted into that of the first finger, which it draws downwards.

27—*Adductor primi digiti* arises from the metacarpal bone, and is inserted along the inner or posterior edge of that of the first finger, which it draws towards the next.

28.—*Abductor primi digiti* arises from the insertion of the tendon of the supinator radii longus, 15, and draws the first finger outwards from the second.

29.—*Abductor digiti majoris* arises from the whole length of the outer edge of the radial metacarpal bone, and is inserted into the base of the first phalanx, which it draws forward.

30.—*Adductor digiti* arises from the ulnar carpal bone, and the whole length of

the ulnar metacarpal, and is inserted into the edge of the third or little finger, which is so firmly attached to the second as to have no independent motion. The action of this muscle, therefore, is to draw the fingers backwards.

31.—*Supinator* or *extensor digiti* fills up the space between the two metacarpal bones, and is inserted fleshy into the base of the first phalanx, and by a tendon into that of the second. It pulls the second finger upwards and backwards.

By this complex apparatus, then, the wings are made to perform all those powerful, delicate, and varied motions, necessary for ordinary flight, for escape, pursuit, and the numberless inflexions used every day by birds in their usual avocations. These motions will be better understood by inspecting the figure than by following a laboured description, and still better by dissecting the wing of a Pigeon, or any other bird of moderate size.

The flight of birds has not been hitherto described further than in the vague and general manner in which it is treated in anatomical works, and in the descriptions of ornithologists. It exhibits, however, a vast variety of modifications, some of which I shall endeavour to describe in a future communication, to which the present will answer as a basis.

NOTES ON THE AMARÆ.

By Peter Rylands, Esq.

In many cases it is a very difficult matter to decide correctly the rank of individual specimens of insects, extraordinary varieties may so often be mistaken for species. These can only be tested by examining a number of individuals of the species, and should there be found specimens which vary in such a manner as to form a connecting link between the supposed species and the established one, the true value of the former is at once understood. An example of this may be found in the genus *Pontia*. If you examine a true *P. metra*, and a true *P. rapæ*, the appearances greatly favour the supposition that they are distinct species; but should you meet with specimens in which the characters of *P. rapæ* and *metra* are so blended and united, as to create a doubt to which species they belong, you would instantly decide that the one was a variety of the other. In like manner, and for the same reason, *Pontia Chariclea* must rank merely as a variety of *P. Brassicæ*. Thus, also, many naturalists are of opinion that *Hipparchia polydama* is a distinct species, whereas it is merely an extraordinary variety of *H. Davus*. I am led to this conclusion from having taken, last summer, on Woolston Moss, near here, where *H. Davus* is abundant, a specimen which exhibited characters both of the *Davus* and *polydama*.

Perhaps the species of no other genus are so liable to mistakes similar to the above, as those of *Amara*. Not only are they very similar in their general aspect, but each species is subject to considerable variety in colour. Being influenced by these considerations, and believing it highly probable that some species might have escaped detection through the general similarity of the whole, during the last season I undertook a complete revision of those species which I could meet with in this neighbourhood, the results of which I beg to lay before the reader. Another motive for writing this paper, is the conviction, that many beneficial results would accrue from placing within the reach of every entomologist, a good description of the species belonging to difficult groups, such as the one under consideration; and I feel persuaded, that many will purchase *the Naturalist*, who are not able to procure the expensive volumes of STEPHENS and other authors.

Genus *Amara*, BONELLI, &c.

*Pal.** external, maxillary, and labial, with the two last joints equal, the terminal oval, truncate, the third clavate: *labr.* quadrate, slightly emarginate: *mand.* short, denticulated at the base: *ment.* emarginate with a bifid lobe: *ant.* linear, the three first joints and base of the fourth naked, the latter not much shorter than the third; *hd.* ovate; *thx.* broad, anteriorly narrowed, posteriorly as broad as the elytra, to which throughout its width it is closely applied; body depressed; *elyt.* slightly emarginate at the tip; second striæ abbreviated, in some cases absent; wings ample; anterior *tar.* of the males with three dilated joints.

The species hybernate beneath stones, grass, mosses, &c., and on hot days in spring and summer may frequently be seen basking in the sun.

Species 1. *Amara acuminata*, STURM.

Syn.—Amara ærata, KIRBY, MSS.—STEPH. *Mandibulata*, pl. vii., fig. 6.—*Carabus acuminatus*, PAYKUE.

Sp. Char.—Hd. smooth, impunctate; thx. short, with an abbreviated dorsal channel, and on each side at the base, with two foveæ; the inner deep, impunctate, the outer minute and near the angles; elyt. striated, the striæ impunctate, with a continuous series of impressions on the margin; pal. and legs black; tar. reddish; ant. dusky, the three basal joints rufescent, slightly tinged with dusky at the tips. Colour above, variable; generally coppery. Length 5—6 lines.

This species is far from uncommon on Woolston Moss, near Warrington. Also taken, according to Mr. STEPHENS, at Hertford; near London; Reche chalk pits, Cambridgeshire; Barham, Suffolk; Arbrook, Scotland; and Ashdown Copse, Wilts.

* I have used the following abbreviations:—*Pal.* for palpi; *labr.* labrum; *mand.* mandibles; *ment.* mentum; *hd.* head; *thx.* thorax; *elyt.* elytra; *fem.* femora; *tib.* tibiæ; *tar.* tarsi; *ant.* antennæ; and *cil.* for ciliæ.

Sp. 2. *Amara lata*, STURM.

Syn.—A: ingenua, DUFTSCHMID.—*A: lata*, STEPH. *Mand.* 1. p. 128.

Sp. Char.—Deep brassy black; hd. impunctate, with a very obsolete impression on each side between the eyes; thx. smooth, with a slight dorsal channel, and on each side at the base with two sub-punctate impressions, of which the inner one is the largest, and somewhat remote from the base; elyt. delicately striated, the striæ impunctate, with a continuous series of impressions on the margin; legs black, with rufous cil. and tarsi; ant. with the basal joints, and base of the fourth rufescent, the rest black; pal. pitchy; length 4—5 lines.

Var. a.—A. eurynota, ILLIGER.—Destitute of the impressions before the eyes.

Common in the vicinity of Warrington, also taken near London, Bottisham, Southend, and at Kimpton, near Andover. I have examined a number of specimens of *lata* and *eurynota*, and feel confident, from reasons similar to those given at the commencement, that the latter is merely a variety of *A. lata*.

Sp. 3. *Amara similata*, STEPHENS.

Syn.—Harpalus similatus, GYLLENHAL; *A similata*, STEPH. *Mand*, 1. *p.* 128.

Sp. Char.—Smaller and more oblong than the preceding; head impunctate; thx. with two small scarcely punctate foveæ on each side at the base, the inner deepest; elyt. striated, the three basal joints rufous. Length 4—4½ lines.

Rare about Warrington, but, according to STEPHENS, more frequent near London, Bottisham, Kimpton, &c.

Sp. 4. *Amara Linnæi*, RYLANDS.

Syn:—Carabus vulgaris, LINN. *Syst. Nat.*;—BERKENHOUT *Syn.*; MART. *Col.* pl. 37; *A. obsoleta*, STURM; *A. vulgaris*, STEPH. *Mand.* 1. *p.* 128; *A. Linnæi*, RYL. MSS.

Sp. Char:—Bright coppery; head with an obsolete foveola on each side between the eyes; thx. rather convex, with two deep scarcely punctate foveæ on each side at the base, the inner one oblong, and deepest, the outer oblique: elyt. striated, the striæ obsoletely punctulate; legs black, with ferruginous cil. and claws; ant. with the basal joint ferruginous, or pitchy. Length 3½ lines.

It is a law of nomenclature, which is supported by most naturalists, * that no animal should derive its specific name from the rarity or commonness of the species; the reason for this is obvious; many animals which are frequent in one country or district, are rare in another, and *vice versâ*. An example of this is

* It is a rule, we fear, advocated rather in theory than in practice.—ED.

before us. Were we to denominate the commonest of the species of *Amara*, taken in this district, *vulgaris*, that appellation would fall upon *A. trivialis*; the true *vulgaris* of authors being far from common here. This is a sufficient reason, I trust, for altering the specific name, and as this species may exclusively be termed the *Amara of Linnæus*, the one I have substituted will, I hope, meet the views of other naturalists. Mr. STEPHENS gives the measurement of this species 4—4½ lines. This, however, appears, from the specimens I have examined, much above the true size. It averages 3½ lin., and is seldom, if ever, found to exceed 4 lin.

Sp. 5. *Amara puncticollis*, RYLANDS.

Sp. Char:—Above bright coppery, or greenish brass; head with an impression on each side between the eyes; thx. with two large and deeply punctated foveæ on each side at the base, the intervening space also punctulate; elyt. punctato-striated; body beneath black; legs dark ferruginous; ant. dusky, with three basal joints, rufous. Length 3½ lin.

Very evidently distinct from the other species of this genus. Rare near Warrington.

Sp. 6. *Amara trivialis*, STURM.

Syn.—*Carabus trivialis*, DUFTSCHMID; *A. trivialis*, STEPH. *Mand.* 1. p. 129.

Sp. Char.—More oblong than the preceding species; above greenish brass; head smooth; thx. with a delicate dorsal channel, and an abbreviated transverse impression, terminating on each side in a deep impunctate fovea; elyt. striated, the striæ obsoletely punctulate; legs pitchy, with the rib testaceous at the base. Length 3½—4 lin.

Var. A.—With the tib. pitchy.

Var. B.—The upper surface deep blue, with the margins of the elyt. of a rich metallic blue.

Very abundant near Warrington.—Var. B. is rare.

Sp. 7. *Amara nitida*, STURM.

Syn.—*A. nitida*, STEPH. *Mand.* 1. p. 129.

Sp. Char.—Allied to *A. trivialis*, but evidently distinct. Oblong; bright greenish brass, or glossy green; head impunctate; thx. with a delicate line down the centre, and a deep linear impression on each side at the base; elyt. rather depressed, with punctulate striæ; body beneath, and fem. deep black; tib. and tar. ferruginous; pal. and three basal joints of the ant. rufous. Length 3½ lin.

Rare near Warrington; also taken near London, and in Norfolk.

Sp. 8. *Amara lævis*, STURM.

Syn.—*A. lævis*, STEPH. *Mand.* 1. p. 130.

Sp. Char.—Broad, depressed; bright brassy green; thx. with a slight dorsal

channel, an obsolete transverse impression, and true punctulate foveæ on each side at the base, the outer one very obsolete; elyt. with punctulate striæ; legs entirely ferruginous; ant. and palp. with the basal joints testaceous. Length 3—3½ lin.

Rare near Warrington; "near London, and in Dorsetshire."—STEPHENS.

Sp. 9. *Amara elegans*, RYLANDS.

Sp. Char.—Slightly convex; shining brassy green; thx. with two punctuate striæ on each side at the base of the dorsal channel, the outer one rarely obsolete; elyt. striated, the striæ punctulate; fem. and tib. rufous; ant. with the three basal joints and base of the fourth rufescent, the rest fuscous; basal joint of the pal. ferruginous. Length 3—3½ lin.

Closely allied to *A. lævis*, but is distinguished by the absence of the transverse impression on the thorax; the colour of the tarsi, &c. Not uncommon near Warrington.

Sp. 10. *Amara cursor*, STURM.

Syn.—A. cursor, STEPH., *Mand.* 1. p. 130.

Sp. Char.—Shining bronzed green; thx. with a slight dorsal line, the base with an abbreviated obsolete linear impression on each side near the margin; the rest of the surface impunctate; elyt. rather strongly punctate, striated, ferruginous. Length 3—3½ lin.

Rare, near Warrington. "Common in the Metropolitan district."—J. F. STEPHENS, Esq. "Rare, near Bottisham."—Rev. L. JENYNS.

Bewsey House, Warrington.

(To be continued.)

AN EXPLANATION OF THE LATIN NAMES OF BRITISH BIRDS.

To the Editor of the Naturalist.

SIR,

I have often heard regretted the want of some explanation of the Latinized names of the British birds, which are of course unintelligible to persons who have not had a classical education; the derivations of many of the names being, moreover, so arbitrary as to be doubtful, obscure, or even wholly unknown to the initiated.

The above will, I hope, appear a sufficient reason for the following attempt at a translation into English of such of the names of the British birds as are of Latin or Greek derivation; and with the wish that this may be of service and interest to some of your readers, I forward it for insertion in your pages, in case it should seem to you likely to be of use, and to meet with the approbation of your sub-

scribers. Those of the names of which I have not been able to discover the meaning—if indeed there be any *meaning* in them—I have left *in statu quo*, and shall be glad if any of your correspondents can supply my lack of knowledge.—The Latin names are mostly from my *Guide to an Arrangement of British Birds.**

I am, Sir, &c.

FRANCIS ORPEN MORRIS.

Accipiter. [From *accipio*, to take or receive.—ED.] Hawk.

——— *Fringillarius.—Fringilla*, a Finch. Finches and other small birds being generally the prey of this species of Hawk. Sparrow Hawk.

Astur.—Qui est ex Asturia. One from Asturia, Castile, in Spain, the supposed original habitat of this bird. Gossak.

——— *palumbarius.—Palumba*, a Dove, often preyed on by this species. Rock Gossak.

Pernis. Περνης (incorrectly written for Πτερνις) a rapacious bird, supposed to be the Honey buzzard. Pern.

——— *apivorus.—Apis*, a Bee, and *voro*, to devour. Honey Pern.

Buteo. Buzzard.

——— *lagopus.* Λαγως, a Hare, and Πους, a foot. Rough-legged Buzzard.

——— *vulgaris.* Common. Common Buzzard.

Pandion.

——— *haliaetus.* αλς, the sea and αιετον, an Eagle. White-headed Osprey.

Aquila. [Supposed to be from *aquilus*, dark, sunburnt.—ED.] Eagle.

——— *albicilla.—Alba*, white, and *cilla*, a tail. White-tailed Eagle.

——— *chrysaëtus.* Χρυσος gold, and αιετον, an Eagle. Golden Eagle.

Falco. [From *falco*, to cut, or prune, with a hook.—ED.] Falcon.

——— *Islandicus.* Of or belonging to Iceland.

——— *peregrinus.* A foreigner, stranger, or alien. Peregrine Falcon.

——— *subbuteo.* A diminutive of *Buteo*, the Buzzard. Hobby Falcon.

——— *rufipes.* Red-footed, *rufus*, red, and *pes*, a foot. Orange-legged Falcon.

——— *æsalon.* A bird supposed to be the Merlin of the ancients. Merlin Falcon.

——— *tinnunculus.* Supposed to be the Kestril of old authors. Kestril Falcon.

Milvus. Kite.

——— *regalis.* Royal. Cinereous Kite.

Circus.—Κιρκος, a species of Hawk, supposed to be of this kind; perhaps from its beating the ground *in circles;* another meaning of the word Κιρκος. Harrier.

* We have added the English names, in order that the species may be recognised by all.—ED.

Circus, cineraceus. Grey, cinereous. Ash-coloured Harrier.
——— *æruginosus.* Rusty, rust-coloured. Marsh Harrier.
——— *cyaneus.* Azure, or ash-coloured. Hen Harrier.
Otus. Ους, ωτος, an ear. Madge.
—— *brachyotus.* Βραχυς short, and ους, ωτος, an ear. Short-eared Madge.
—— *auritus.* Eared, from *auris*, an ear. Long-eared Madge.
Scops. Σκωψ, a kind of Owl, supposed to be the present species. Scops.
—— *Aldrovandi.* So called after ALDROVANDUS, the celebrated naturalist. Common Scops.
Bubo. [From *Bufo*, a Toad, on which the bird feeds.—ED.] Toadeater.
—— *maximus.* Largest or greatest. Great Toadeater.
Strix. A kind of Owl supposed to be the *S. flammea.* Owl.
—— *nyctea.—Nix*, snow; from the colour of the bird. Snowy Owl.
Alucus. ———?
—— *flammeus.* Fiery, flame-like, yellow. Barn Owl.
—— *stridulus.* Noisy, harsh, dissonant, clamourous. Tawny Owl.
Noctua. A night Bird. Nightling.
——— *passerina.* Derived from *Passer*, a Sparrow. Spotted Nightling.
Corvus. A bird of the Crow kind. Crow. From the size of the bird.
——— *corax.* Κοραξ, a Raven. Raven Crow.
——— *corone.* Κορωνη, a Carrion Crow. Carrion Crow.
——— *frugilegus. Fruges*, fruit, *i. e.* grain; and *lego*, to gather. Rook Crow.
——— *cornix.* A bird supposed to be the Hooded Crow of the olden times. Hooded Crow.
——— *monedula.* From *moneo*, to warn, as in augury. Jack-daw Crow.
Pica. Magpie.
——— *caudata.* Tailed, having a long tail; *cauda*, a tail. Common Magpie.
Glandarius. Glans, glandis, an acorn, the food of the Jay. Jay.
——— *vulgaris.* Common. Common Jay.
Nucifraga. Nux, nucis, a nut, and *frango*, to break. Nutcracker.
——— *caryocatactes.* Καρια nuts, and Κατακτημι to destroy. Spotted Nutcracker.
Pyrrhocorax. Πυρρος red, and Κοραξ a Crow. Chough.
——— *rufipes.* Red-footed. Red-legged Chough.
Oriolus. [From the French *or*, gold, in allusion to the yellow colour of the bird.—ED.] Oriole.
——— *galbula.* The Latin name of a bird, supposed to be the Oriole. Golden Oriole.
Sturnus. [Perhaps from *Astrum* a star; our *Starling* is certainly derived from *star*.—ED.] A Starling or Stare. Starling.

Sturnus vulgaris. Common Spotted Starling.

Pastor. Literally a shepherd; but how this can apply to a bird, I at present know not. Amzel.

——— *roseus.* Roseate or rose-coloured. Rose-coloured Amzel.

Bombycilla. *Bombyx*, silk, and *cilla*, a tail. Waxwing. Silktail.

——— *garrula.* Noisy, chattering. Bohemian Waxwing.

Lanius. A Butcher. Shrike.

——— *excubitor.* A Sentinel. Grey Shrike.

——— *collurio.* Redbacked Shrike.

——— *rufus.* Red. Wood Shrike.

Parus. [From *parvus*, little.—Ed.] Tit.

—— *biarmicus.* [Two-barbed; from the whiskers on each side of the bill. —Ed.] Bearded Tit.

—— *caudatus.* *Cauda*, a tail. Longtailed Tit.

—— *palustris.* Of or belonging to marshes. Marsh-Tit.

—— *ater.* Black. Coal Tit.

—— *cristatus.* Crested. Crested Tit.

—— *cæruleus.* Blue or azure-coloured. Blue Tit.

—— *major.* Greater or larger. Garden Tit.

Regulus. A diminutive of *Rex*, a king, from this bird having a crest or crown of gold colour. Kinglet.

——— *cristatus.* Crested. Golden-crowned Kinglet.

Picus. [From Πεικω to peck.—Ed.] Woodpecker.

——— *martius.* "*Martia Picus avis*" (supposed to be this bird) is spoken of in Ovid; derived from Mars, the heathen god of war. Perhaps from the upright attitude of the bird, and the blows it gives the trees. Black Woodpecker.

——— *viridis.* Green. Green Woodpecker.

——— *major.* Greater or larger. Barred Woodpecker.

——— *medius.* Middle (in point of size).

——— *minor.* Lesser. Pied Woodpecker.

——— *villosus.* Hairy. Hairy Woodpecker.

Sitta. Σιττη supposed to have been the Nuthatch. Nuthatch.

—— *Europæa.* European. European Nuthatch.

Yunx. Wryneck.

—— *torquilla.* From *torqueo*, to turn or twist, as the Wryneck does its neck. Zigzag Wryneck.

Certhia. Creper.

——— *familiaris.* Common or familiar. Hazel Creeper.

Upupa. Hoopoe.

Upupa, epops. Εποψ, a Hoopoe. Marsh Hoopoe.

Merops. The Latin name of a bird that eats Bees. Bee-eater.

——— *apiaster.* *Apiastrum*, an herb that Bees delight in; the name should perhaps be *apiastri.* Yellow-throated Bee-eater.

Alcedo. The Halcyon or Kingfisher. Kingfisher.

——— *ispida.* *Hispidus*, rough, as with wet. [Or perhaps from *piscis*, a fish.—Ed.] Common Kingfisher.

Cinclus. Κιγκλος, a bird which has the habit of moving its tail, supposed to be the Dipper. Dipper.

——— *aquaticus.* That haunts or delights in water. Bank Dipper.

Loxia. Λοξος, oblique, crooked (as to its bill). Crossbill.

——— *curvirostra.* Having a curved bill. Common Crossbill.

——— *pityopsittacus.* Πιτυς-υος, a Pine tree, and ψιττακος, a Parrot.

Pyrrhula. Πυρ, fire, from the colour of the bird. Alp.

— ——— *vulgaris.* Common. Hedge Alp.

——— *enucleator.* *Enucleo*, to take out a kernel. Pine Alp.

Fringilla. [From *frango*, to break or crush (seeds).—Ed.] Finch.

——— *coccothraustes.* Κοκκος, a berry, and θραυω to break. Haw Finch.

——— *chloris.* *Chloris*, a green bird, such as the present Green Finch.

Passer. Sparrow.

——— *domesticus.* Domestic. House Sparrow.

——— *montanus.* Of or belonging to mountains. Tree Sparrow.

——— *montifringilla?** *Mons montis*, a mountain, and *Fringilla*, a Finch. Mountain Sparrow.

———? *cælebs.* A Bachelor.

Carduelis. [From *Carduus*, a Thistle.—Ed.]

——— *spinus.* [*Spinus*, a Sloe, or Blackthorn.—Ed.] Green Siskin.

——— *communis.* Common. Common Siskin.

Linaria. *Linarium*, a Flax field, which the Linnets prey upon. Linnet.

Linota. Λινον, Flax or Hemp-seed; of which these birds are fond. Brown Linnet.

——— *rubra.* Ruddy, red. Redpoll Linnet.

——— *montana.* Of or belonging to mountains. Mountain Linnet.

Emberiza. Bunting.

——— *nivalis.* Snowy. Snow Bunting.

——— *hortulana.* Of or belonging to Gardens. Ortolan Bunting.

——— *schæniclus.* σχοινος, a Rush. Reed Bunting.

——— *cirlus.* Cirl Bunting.

* Vide the Preface to the Guide to an *Arrangement of British Birds*, by the Rev. F. O. Morris.

Emberiza. chlorocephala. Χλωρος, green, and κεφαλη a head. Greenheaded Bunting.

——— *citrinella. Citrinus*, of a citron colour. Yellow Bunting.

——— *miliaria. Milium*, Millet, on which this bird feeds. Corn Bunting.

Alauda. [Perhaps from *a* or *ab* from, and *laudo*, to praise.—Ed.] Lark.

——— *arvensis.* Of or belonging to fields. Sky Lark.

——— *arborea.* Of or belonging to woods or trees. Wood Lark.

Anthus. Latin name of a bird supposed to be of this genus. Pipit.

——— *rupestris.* Of or belonging to rocks. Rock Pipit.

——— *pratensis.* Of or belonging to meadows. Meadow Pipit.

——— *arboreus.* Of or belonging to trees. Tree Pipit.

——— *Richardi.* So named after Mr. Richards. Richard's Pipit.

Turdus. Thrush.

——— *musicus.* Musical. Garden Thrush.

——— *viscivorus.* That feeds on Misseltoe. *Viscus* the Misseltoe, and *voro* to devour. Missel Thrush.

——— *Iliacus.* Trojan; coming perhaps from Asia-Minor, or it may be derived some way from *Ilex*, the Holm Oak. Redwing Thrush.

——— *pilaris.* Fieldfare Thrush.

Merula. [*Mera*, alone, solitary.—Ed.] Ouzel.

——— *vulgaris.* Common. Garden Ouzel.

——— *torquata.* Having a ring, ringed. Ring Ouzel.

Muscicapa. Musca, a Fly, and *capio* to catch. Flycatcher.

——— *luctuosa.* Mourning, from its being all in black and white. Pied Flycatcher.

——— *grisola.* Of a sober grey colour. Grey Flycatcher.

Motacilla. Moveo to move, and *cilla* a tail. Wagtail.

——— *flava.* Yellow. Yellow Wagtail.

——— *boarula.* [*Boarius*, appertaining to Oxen.—Ed]. Grey Wagtail.

——— *alba.* White. Pied Wagtail.

Anorthura. ανω upwards, ορω to raise, and ουρα the tail. Wren.

——— *troglodytes.* The name of a people said to live in caves of the earth. Ivy Wren.

Saxicola. Saxa, rocks, and *colo* to inhabit. Chat.

——— *œnanthe.* οινανθα, the name of a bird supposed to be the Wheatear. Fallow Chat.

——— *rubetra.* [From *Rubeta* a Toad, on account of the white streak over the eye.—Ed.]

——— *Rubus* a Bramble, and *colo* to inhabit. Stone Chat.

(To be continued in our next.)

A CATALOGUE, AND REMARKS ON THE MEDICINAL AND POISONOUS PLANTS, FOUND PRINCIPALLY IN THE NEIGHBOURHOOD OF YORK.

Of the general divisions of the science of Botany, few are more interesting, none certainly more useful, than that which treats of the properties, medical and culinary, of the varied and enchanting products of Flora; affording, as they do, some of the most common necessaries of life, as well as those agents which, under the hand of the chemist and pharmacopolist, form an important feature in the present Materia Medica.

In speaking, then, of the advantages attending the study of Medical Botany, it will scarcely be necessary to remind the readers of the *Naturalist*, that, to use the language of Professor Henslow, "the old and by-gone sneer of *cui bono*, by which the naturalist was formerly taunted, now offers no serious impediment in the way of those who are willing to inquire for themselves;" and now that so many opportunities are afforded by the publication of such works as those of Woodville, and the more modern ones of Stephenson and Churchill, there can only be wanting an interest in it, to render this subject, to a certain degree at least, universally regarded by the lovers of Botany.

With respect to the locality which is the subject of this communication, it may be remarked, that few counties possess more charms for the admirers of Nature, than Yorkshire; and this pre-eminence may perhaps be attributed, not so much to its situation and extent, as to the diversified nature of its surface and soil; embracing, as it does, such wild and romantic scenery, surpassed perhaps only by the Highlands of Scotland, together with extensive plains of rich pasture-land and limestone tracts, and the varied appearances presented by the coal and other formations, together with sand and marsh districts; the whole bounded on one side by the sea—the German Ocean. With such advantages, it may seem remarkable, that no complete and *exclusively* Local Catalogue has yet appeared of its botanical treasures; this deficiency will, however, soon be supplied, a work being *in prospectu* by an able and distinguished practical botanist,* who is in every respect calculated to fulfil satisfactorily his important task. But until this is accomplished, it is thought that a catalogue, with a few remarks on the medical and poisonous plants found principally in the neighbourhood of York, may not be altogether devoid of interest even to the general reader.

The Plants are arranged according to the Linnæan system, as at once the plainest and most generally understood; and their number is regulated with regard to the *commoner* herbs by Stephenson and Churchill's work; many formerly employed and recorded in the days of Gerarde, and even Woodville,

* Mr. Baines, sub-curator of the Museum of the Yorkshire Philosophical Society.

having now fallen into disuse. The *Poisonous* plants *not* used medicinally, are marked thus*.

Valeriana officinalis; root. Ditches and banks of rivers, &c. York. Antispasmodic tonic.

**Anagallis arvensis.* Fields at Langwith and Overton, near York.

Menyanthes trifoliata; herb. Meadow between Clifton and the Ouse; Askham Bogs, near York. The difficulty of its cultivation generally, can be the only reason for this beautiful plant not having a place in every garden; and few people there are, who have not at some time seen and admired its elegant thyrsus of white flowers, tinged externally with pink, and fringed with white filaments within. In the North East of Yorkshire it has long been a favorite remedy with the poor, as a tonic.

Erythræa centaurium; herb. At Langwith, and other dry pastures about York. It is allied to the Gentians, and possesses properties similar to the last.

Hyoscyamus niger; leaves. Near Clifton, and at Overton, near York. Narcotic.

Solanum dulcamara; twigs. Hedges, &c. York. Diuretic sudorific.

Convolvulus sepium; roots, cathartic. Hedges, &c.

York has been generally given as a locality for the *Sphinx convolvuli*, and its appearance may be attributed, perhaps, to the prevalence of this species of *Convolvulus* in the neighbourhood.

Rhamnus catharticus; berries, cathartic. Askham Bogs, near York. This shrub occurs but sparingly at this locality, although the other British species of *Rhamnus (R. Frangula)* is here, as in the other places about York, very abundant.

Viola odorata; flowers, laxative. Hedge banks and pastures.

**Œnanthe phellandrium.* Langwith; Overton; Askham Bogs. The Fine-leaved Water Hemlock is particularly abundant at the above localities, and at Askham Bogs forms a green net-work over the ditches, where it grows along with *Ranunculus lingua*, in July.

**Æthusa cynapium.* Gardens and cornfields, York.

Fœniculum vulgare; root diuretic, seed carminative. Under York Bar walls, naturalized.

Daucus carota; seed, carminative. Heslington Fields, near York.

Conium maculatum; leaves. Hedge banks, &c. Narcotic.

Ulmus campestris? inner bark. Hedges. Tonic, alterative, diuretic.

Sambucus nigra; flowers, diaphoretic; berries aperient; bark purgative. Hedges, &c., York. This tree is common here, as in most localities; the *Sambucus ebulus*, or Danewort, is not found in the immediate vicinity; I have gathered it at Thorp Arch.

Linum usitatissimum; seeds, oil of, emollient. Langwith, naturalized; where it has probably been cultivated, as in other places about York.

Linum cartharticum; herb. Dry pastures, &c. Purgative.

Acorus calamus; root. Fish-ponds at Heslington; probably, however, planted there. Aromatic.

Rumex hydrolapathum. Askham Bogs. Here this noble Dock attains several feet in height, and its leaves are sometimes two feet or more in length. The root is employed medicinally, as an astringent, preparations of iron showing it to contain a certain quantity of tannin.

Rumex acetosa; leaves, Pastures, &c. In the meadows near the Mount, York, there are, in Summer, great quantities of the Green Forester *(Ino statices)* sporting about, and settling on the tops of the long grass, the larvæ of which feed upon the Sorrel growing there. This insect is found, too, at Overton Wood. Refrigerant.

Colchicum autumnale; bulb and seeds. Clifton, Middlethorpe, and Fulford Ings, abundant. This beautiful, and in Yorkshire by no means very uncommon plant, has of late years obtained great celebrity as a remedy for rheumatism, and is believed to have been a principal ingredient in the famous *Eau Médicinale.* Narcotic, diuretic, cathartic.

Polygonum bistorta; root: Clifton and Fulford Ings. In Clifton Ings this plant often attains the height of between two and three feet, although it is much smaller in the last mentioned locality. Powerfully astringent; tonic.

* *Paris quadrifolia.* Langwith. I have gathered this plant at Thorp-Arch Woods, and in two woods near Doncaster. It is not uncommon in Yorkshire, and its numerous varieties do not seem to have been much noticed by authors. In my Herbarium are specimens with five and six leaves in the whorl; one with only three petals and calyx leaves, and five stamina. The variety with five leaves is far from being rare at the Doncaster localities.

Oxalis acetosella; leaves, refrigerant. Overton Wood, Langwith, &c.

Lythrum salicaria; root, astringent, tonic. Knavesmire Wood, Heslington.

Rosa canina. Hedges, &c. Pulp, cooling.

Tormentilla officinalis; root. Dry pastures and heathy places, frequent. Astringent.

Geum urbanum; root, febrifuge, tonic. Hedge-banks, Clifton, &c., near York.

Papaver rhœas; petals. Corn fields. Slightly anodyne.

**Chelidonium majus.* Near the Bar walls, Clifton, &c.

Ranunculus acris; root, rubefacient, epispatic. This and the other poisonous species of the genus, viz. *R. flammula,* **R. bulbosus,* **R. arvensis,* *and* **R. sceleratus,* are all found, in their usual habitats, near York.

Mentha piperita ; herb. Brick-Kilns at Dring-houses, near York (naturalized). Peppermint is extensively cultivated here for medicinal purposes. Stomachic, carminitive.

Origanum vulgare ; herb. Thorp-Arch Woods. Stomachic errhine.

Digitalis purpurea ; leaves. Langwith. This stately and elegant plant is very common in some parts of Yorkshire, as at Doncaster, and may be considered as the most important British contribution to the Materia Medica. It is a very powerful medicine, and was first brought into general notice by WITHERING, who wrote a small 8vo. work upon it. Sedative, diuretic.

Cochlearia officinalis ; herb. Hob Moor, near York. Antiscorbutic.

Cytisus scoparius ; tops. Middlethorpe, Langwith, &c. Diuretic.

Lactuca virosa ; leaves. Thorp-Arch. Narcotic.

Leontodon taraxacum. Meadows and pastures. Root. Diuretic, resolvent, aperient.

Artemisia absynthium. Near villages, &c.; not in the immediate neighbourhood of York. It is a fact worthy of notice, that notwithstanding the severity of the weather during the autumn of 1836, the Common Southernwood *(Artemisia abrotanum)* was in full bloom at the end of September and beginning of October, in a small cottage garden at Clifton, near York.

Tussilago farfara ; leaves. Brick-kilns, Heworth, Hobmoor, &c. This pest to the farmers is not so common in the neighbourhood of York as it is in many places. As yet no means seem to have been adopted or discovered for effectually eradicating it. Demulcent, expectorant.

Solidago virgaurea ; herb. Thorp-Arch Woods. Vulnerary.

Inula helenium ; root. Field near Overton Wood. I was so fortunate as to discover this locality in a botanizing excursion, about a year and a half ago ; the habitat is in a place far removed from any dwelling, and appears to be a truly wild one for the plant. Stimulant, diuretic, expectorant.

**Bryonia dioica.* Hedges, &c.

Quercus robur ; bark, astringent and tonic. Hedges. At Overton Wood, *Thecla quercus*, the Purple Hairstreak, the caterpillar of which feeds upon the Oak, is abundant.

Humulus lupulus ; narcotic and diuretic. Fulford, &c. The female catkins.

**Mercurialis perennis.* Side of the road beyond Acomb. This plant has occasioned accidents, from its being gathered for *Chenopodium Bonus-Henricus*, Mercury Goosefoot; it flowers, however, early in the year while the latter does not till the end of summer.

Doncaster, March 10, 1837.

SENSE OF SMELL IN CARRION BIRDS.

By the Rev. F. Orpen Morris, B. A.

A circumstance which lately came under my observation, will, I think, set at rest the long-agitated question, whether carrion birds are directed to their food by the sense of sight or the sense of smell. The day on which the recent heavy fall of snow commenced, which has lain on the ground so long, a mare, in a field of mine, slipped a foal. The snow storm coming on, it was entirely forgotten, and remained in the same place where it lay, without being removed, so that it was soon completely covered, and hidden by the fleecy fall, which clothed the earth as it were with a mantle; and the old proverb, "out of sight, out of mind," was verified; for the circumstance above alluded to was soon dismissed from recollection. It was recalled, however, by my seeing, one afternoon, two or three hungry Crows, their appetites sharpened by the long frost, perambulating the spot, and appearing to have found a meal. They were most polite to one another this first day that I saw them; for only one at a time presumed to approach the banquet; the others standing a few yards off, quietly and patiently awaited their turn, and as soon as each had helped himself to his first course, his companions one by one advanced, and having each seen his predecessor carve for himself, came in for his own share. The next day this punctilious etiquette was not observed, for all the comers, in number four or five, partook of the feast together, and having simultaneously taken dinner, flew away in company, satisfied with their good luck. At least they ought to have been; for I heard of many other birds, who either sunk under the "pelting of the pitiless storm," or fell victims to the starvation to which the stopping of their usual supplies of food subjected them.

With regard to the incident mentioned above, there are, I well know, two semi-extenuating circumstances which may be alleged. The one, that in frosty weather the olfactory and other organs of men and animals are rendered more acute and discriminating than is the case in dull and heavy weather, when all the senses and faculties are deadened, and oftentimes even fail of being able adequately to perform their accustomed functions. The other, that the air is also at the same time thinner; therefore more conductive of both smells and sounds, than at other times; putrefaction is indeed checked or retarded by frost, but where it has already taken place, the decomposed particles find their way more easily through the rarified medium, than when it contains heavier atoms, which, by their bulk, more retard the transmission of the former. Still, the object of attraction being, as I have mentioned, hid from the sight altogether, it matters little to the actual fact, of the birds being directed to their food by the sense of smell alone, whether that took place under circumstances more favourable than ordinary or not.

I have read the discussion carried on on this subject by Mr. WATERTON, in LOUDON'S *Magazine of Natural History;* I was always of opinion that Mr. WATERTON was right, and I am now confirmed in that opinion. Certainly, in the case in question, the Crows must have been directed to their food by the sense of smell alone, no part of the carcass being visible to the sight. The conclusion is obvious.—Q. E. D.

Jan. 1, 1837.

HABITS OF THE FITCHET WEASEL (*Mustela putorius*, LINN.)

THE habits of few of our native animals are less known than those of the Fitchet Weasel. The shy dispositions and secluded residences of the Weasel family generally render it difficult to observe minutely on their manners and characters; whilst, also, by many of those persons whose situations give them opportunities of making observations upon them, they are looked upon as enemies, and persecuted "to the death." The farmer may sometimes permit the little red Weasel to find a home in the stack-yard or barn, from the enmity it bears to the Rat; yet, should his dame have a poultry-yard, the tenure of the Weasel will be, at best, but insecure. That foe to all *vermin*, the gamekeeper, pursues the race with unmitigating vengeance, and mankind generally look upon them as ugly and loathsome.

With the naturalist, however, they are a more favoured race; and to him the Weasel, as it gambols and skips before him, bending its limber body into many a graceful curve, cannot but be a pleasing and interesting object.

The Fitchet is the largest and most ferocious of this family. It is very seldom seen during the day, keeping then closely to its den. Sometimes, however, it may be found in a shallow hole basking in the sun, and I remember once disturbing one that had taken up its abode amongst some newly-cut grass; but yet they are rarely found to expose themselves so much during daylight.

The time when this animal pursues its labours and its recreations is in the silent hour of night; then it is abroad, and the ground over which it will travel in the course of ten or twelve hours, shows that it is not a loiterer. Six, seven, or eight miles are not uncommon distances for it to traverse in its nightly perambulations; and I have sometimes known them go still more. When it is the resident of a Rabbit-warren, it may, perhaps, not wander so far from home.

In the spring of the year I have found that they stray to the greatest distances, probably on account of the sexual propensity being then most active. A person informs me he once followed one for upwards of ten miles, not in-

cluding many digressions it had made from its more direct path. This was about the end of March. In some of the northern counties of England, the Fitchet is a grand object of chace amongst those who may not "try at higher game," and indeed by many who are above this order of sportsmen, Fitchet-hunting is esteemed excellent sport. It is from having joined in such a pursuit, that I can speak positively with regard to the great distances they will travel in a night.

The Fitchet is said to have a change of residence for Summer and Winter; inhabiting during the fine months the wild moors and secluded woods, and coming in the cold season to the farm-yards and barns of the husbandman. From what I have been able to observe, I do not think that so general a migration takes place as is supposed, but that where it has a haunt, it resides somewhere near to it both winter and summer.

One reason why it may be considered to take up its abode about farm-houses during the winter-season, may be, that then its presence is sooner noticed, from the traces it leaves upon the snow. Nor do I think that it ever has a regular lodging in stack-yards or barns. I have never found it so, but have often traced it from some distance to such places, and always found it return to the spot whence it came. In the summer season it has probably no occasion to seek food in such places, that being then more easily procured about the fields in open weather. I have often thought that this animal is more plentiful than it would seem to be, did we judge from the few that are generally seen. In one part of Northumberland, a few years ago, upwards of forty were killed during one winter, within a space of eight or ten miles diameter, by hunting them with terriers, and by one or two individuals. More might have been destroyed which I did not hear of.

Bewick says, that this animal during the winter has a mode of procuring subsistence which has hitherto escaped the observation of naturalists, and which, though singular, he can vouch for the truth of. In a severe storm, one of these animals was traced in the snow from the side of a rivulet to its hole, at some distance from the stream. As it was observed to have made frequent trips, and as other marks were seen which could not easily be accounted for, it was thought worthy of greater attention. Its hole was accordingly examined, the Fitchet taken, and eleven fine Eels were discovered to be the fruit of its nocturnal excursions. He observes, that "it may be a matter of curious investigation for future naturalists, to enquire by what art this wily animal finds its booty, so apparently difficult to obtain." I have often traced the Fitchet along the edges of streams and rivulets, and anxiously endeavoured to witness a repetition of this fact, mentioned by Bewick; but though I have examined many holes, from which Fitchets have been taken, I have never

seen in them the remains of Eels or any other kinds of fish; and I should be inclined to think that Eels are not a very common dish with the species. The skins and bones of Field Mice, the limbs of Frogs, and the feathers of birds, are the remains generally met with in their holes.

In some parts of England, a kind of old-fashioned fence, formed of stones loosely thrown together, is frequently met with; in such places the Fitchet loves to take up his abode, probably from their being more airy than holes burrowed in earth, and also giving more room.

It is astonishing with what ferocity this animal fights when attacked, and the Terrier that can overcome him, is considered a valuable animal. When he gets hold of his foe, he only relinquishes it in death. While travelling one summer amongst the mountains on the Scottish borders, I met with a person, famous as a breeder of those Terriers celebrated by Sir WALTER SCOTT, in the novel of *Guy Mannering*, as "Peppers and Mustards." He showed me skins of the *Fitchet* and *Tod*,* as trophies of the chase, which he considered to speak sufficiently for the character of his Dogs. It is surprising to what perfection some of these Dogs are trained to hunt the Fitchet. I knew one that would not follow the scent of any other animal, and have seen a Common Weasel cross his path, when he has been hunting the scent of a Fitchet, without his taking the least notice of it.

Professor RENNIE gives an interesting account of a tame animal of this species. It appears to have been perfectly domesticated, and to have shown much affection and attachment to the family to which it belonged. The Fitchet, by BUFFON and some other naturalists, has been considered as incapable of being tamed above a certain degree. If, however, the memoirs of "Follette," (the animal spoken of by RENNIE) be authentic, they prove that at least one of the race was so far tamed, as not to be surpassed in exhibiting marks of fondness to its keepers even by the faithful Dog.

W. R. SCOTT.

PERIOD OF THE ARRIVAL OF BIRDS OF PASSAGE.

By EDWARD BLYTH.

ALL migratory birds arrive very gradually, and in fact come over at several distinct periods, on nights when the moon enlightens their course. Even at the present time, only about half the Blackcapt Fauvets (*Ficedula atricapilla*) have arrived in this neighbourhood. Thus we perceive that our birds of passage arrive in separate sets, which are divided by periods of non-arrival, *i. e.*, when there is no moon. The Fallow Chat, Bank Swallow, earlier Wrynecks, Dark-

* Fox.

legged Warblers (*Sylvia loquax*), Blackcapt Fauvets, and Willow Warblers, arrive at the first, or perhaps at the first and second comings; for a few of one or two of these generally precede the appearance of all these kinds. At the next batch come the rest of the species enumerated, together with most of the Locustells, Cuckoos, Redstarts, and Nightingales, many of the Chimney, and some of the Window, Swallows, the earlier Whitethroated and Whitebreasted Fauvets, Sedge and Marsh Reedlings, Whin Chats, and perhaps, an early Garden Fauvet or two. Then at the following coming, along with the remainder of the above, arrive the Wood Warbler, the Grey Flycatcher, and the Swift; and another period intervenes ere the Nightjar arrives. There indeed appear to be alternate fortnights of arrival and non-arrival, corresponding with the age of the moon, the migration being also secondarily subordinate to the state of the weather, being promoted by a southerly breeze, and much retarded by gales from the opposite direction. These will be found to be about the usual periods, selecting the medium week, which may form the fortnight, according to circumstances, with the week preceding, or following it; namely, first week in April, Blackcapt Fauvet, Darklegged Warbler, Fallow Chat, Bank Swallow, Willow Warbler, Wryneck; second week, to the 15th :—Cuckoo, Nightingale; third week, to the 29th :—Garden Fauvet, Wood Warbler; 13th of May :—remainder of the small birds.

Tooting, Surrey, April 21, 1836.

CORRESPONDENCE.

PAPILIO PODALIRIUS A BRITISH INSECT.

To the Editor of the Naturalist.

Respected Friend,—Having noticed a good deal of dissension respecting the genuineness of ***Papilio podalirius*** as a British insect, I take this opportunity of announcing, through the medium of your Journal, that I myself possess a pair which I believe to be British. I met with them under the following circumstances:— Happening to be at Portsmouth, the summer before last, for the first time, I enquired, as is my usual practice on going to a town before unvisited by me, for collectors of Natural History specimens. I soon found one, and among the collection was a pair of the above-named species. The owner assured me they were British, that they were caught by a person she employed in the neighbourhood, and that she set them up herself. As it would not be worth her while to have imposed upon me in this instance, and especially as she did not seem aware of the value of the specimens, I feel no doubt but they were really British.

She could not at the time exactly inform me where they were taken; but, on my return to Portsmouth about a fortnight afterwards, she told me she had learned, from the captor, that they were obtained in the New Forest.—From what I have said, I feel justified in considering myself the fortunate possessor of specimens of British *P. podalirius*.—I am, respectfully, thy friend,

THOMAS ALLIS,
Curator of the York Phil. Soc.

York, 2*nd Month* 21, 1837.

[We have much pleasure in inserting the above communication from our amiable and respected correspondent, setting at rest, as in our opinion it does, the point in dispute relative to the *Papilio podalirius*.—ED.]

PROCEEDINGS OF SCIENTIFIC SOCIETIES.

ST. JAMES'S ORNITHOLOGICAL SOCIETY.

WE are happy to be able to state, that this Society—which we mentioned in a number—is in a flourishing state, and that the list of members, already long, is fast increasing. The collection of water birds in the park is very interesting. A few weeks ago, one of those beautiful birds, the Smew Merganser (*Mergus albellus*) was turned in, and delightful it was to observe its agility in the water, and wonderful success in fishing; but, alas! it had not been there three days, before some blackguard killed it with a stone. It was found dead, with its skull indented. Such acts of wanton destructiveness must be very discouraging to the Society, and we hope means will be taken to prevent their recurrence.

ROYAL ASIATIC SOCIETY.

March 4.—The Right Hon. C. W. WILLIAM WYNN, M. P., President, in the chair.—A paper by Colonel SYKES, "On the Origin of the popular belief in the Upas, or Poison Tree of Java," was read. The romantic story of this wonderful tree, which spreads its baneful influence many miles round, and the near approach to which is almost certain death—with the details of condemned criminals sent to the tree to collect its poisonous juices, and pardon to the few who might escape its malignant emanations—have been for many years before the public. The discovery of the real Upas tree very much lowered the interest of the tale, and the whole was set down to the imagination of the Dutch physician who first circulated the account. But a visit made in 1830 to the Poison Valley of Java, by Mr. LOUDON, whose account has been published, has restored much of the interest of the original story, though still much must be referred to exaggeration. The noxious exhalations—the rapid extinction of life in the animals directly submitted

to their influence—the number of skeletons seen lying about the valley, bleached to the whiteness of ivory—go far to furnish foundation for a dreadful tale: and such are the actual scenes visited and described by Mr. Loudon. This gentleman is inclined to impute the poisonous nature of the air in the valley rather to vegetable miasmata than to the emission of carbonic acid gas from the ground. Col. Sykes is of a different opinion, and assigned his reasons.

HORTICULTURAL SOCIETY.

Amongst the plants exhibited at a meeting of this Society, of the 7th of March, were the following:—Splendid specimens of *Dendrobium fimbriatum D. Pieradi, and D. pulchellum*, from Messrs. Loddiges; a new species of *Callistemon*, from W. Harrison, Esq.; *Ipomæa Horsfalliæ*, &c., from Mrs. Lawrence; *Andromeda floribunda*, &c., from Mr. Glenny; and a *Rhododendron Russellianum*, from Mr. Gaines. Messrs. Loddiges obtained the Society's large silver medal, and the other exhibitors respectively the silver Knightian medal. Many other beautiful plants were exhibited; and the usual distribution of grafts of esteemed and new varieties of fruit took place.—The following is the statement of the extreme conditions of the barometer and thermometer, and the amount of rain observed in the Society's garden since the 21st of February:—

Barom. Highest, March 1.	30.431.
Lowest, Feb. 23.	29.324.
Thermom. Highest, Feb. 21.	54° Fahr.
Lowest, Feb. 25.	28°
Total amount of rain	0.21 in.

LINNÆAN SOCIETY.

Feb. 21.—A. B. Lambert, Esq., V.P. in the chair.—Mr. Iliff exhibited part of an Oak tree, which had been blown down during the late hurricane at Windsor Forest, and which, upon being split, was found to be carved in the interior, with the letters "W. B. 1670." This singular circumstance was ascribed to the growth of a new layer of alburnum in the part where the old wood had been cut out, which was subsequently formed into wood. The Chairman exhibited the leaves and flowers of a new species of Tamarisk, collected by Lieutenant Wellsted in Mount Sinai. The Secretary read a communication from Lieutenant W. on the Manna, Dragon's-blood, and Socotrine Aloe of Commerce. The author found the true Manna tree, *Tamariscus mannifera*, growing plentifully in Egypt, Nubia, and Mount Sinai, but only yielding manna in the latter locality; from which circumstance, as well as from its being produced by various vegetables, as several species of Oak, *Fraxinus*, and the shrub Gavan, he concludes that it is not a vegetable educt, but the deposition of an insect of the genus *Coccus*. It is collected by the natives early in the morning, and about 700 lb. weight is generally procured during one season. The tree which yields the Dragon's-blood *(Sanguis draconis)* grows on limestone rocks to the height of eighteen feet, and

from three to five feet in circumference; and although it exudes spontaneously, the natives make large punctures in the tree, in order to obtain it in greater quantities. The tree which yields the Socotrine Aloes, thrives only in barren spots; the island of Socotra being most thickly studded with them, from which 202 tons were exported in 1813. The commencement of a paper from Mr. LUSBOROUGH was next read, "On the importance and practicability of adopting a more correct and systematic method in describing and arranging the genera of Grasses."

March 7.—A. B. LAMBERT, Esq., in the chair.—The Chairman exhibited a stalk of the Cow-tree, from Sir WILLIAM SYMONDS, which was nine feet four inches long, the circumference, at eighteen inches from the root, being 5¼ inches, and in two other parts 3¾ inches. It has been known, by Lord LAUDERDALE, to grow to the height of twelve feet six inches, and is frequently found but little inferior in size. He also read a description of the Courie (*Dalhara Australis*), an immense tree, being in one instance forty-two feet ten inches in circumference, at a height of eight feet from the ground, and sometimes growing to sixty-four feet, clear of the branches. A communication was read from Mr. BENNETT, being "Botanical Notices made during a late excursion to the South Seas." These were,—1. The South-sea Arrowroot, growing generally in the Polynesian Islands, and some few in China, but more particularly in the Georgian and Society Islands. The plant is herbaceous, not exceeding five feet in height, the root being broad, and in three divisions. Its more favourable habitat is on the hills near the sea-coast, where it flourishes amongst rank herbage. The root is ground with a rude instrument formed of the husks of Cocoa-nuts, or rubbed against the rough and strong tubercles of the skin of a fish of the Ray kind, when it is collected in water and washed. 2. The Nankin Cotton, from which this celebrated fabric derives its colour. 3. The Mountain Plaintain (*Musa speciosa*), growing in the groves to a considerable extent, each tree bearing only one cluster of fruit, and that but once, when it decays. 4. *Casuarina aquacetafolia*, one of the numerous iron roots of Europeans, the specific gravity of which being greater than that of sea-water, is hence used in making wooden anchors. 5. South-sea Chesnut, a lofty and umbrageous tree, the fruit of which is pulpy and fibrous, and the kernel dense, but when roasted making good food; and 6. *Irum hæmophyllum*, a valuable timber and furniture tree, which is much used in the construction of churches and houses of Assembly.—*Athenæum.*

ZOOLOGICAL SOCIETY.

Jan. 10.—W. B. SCOTT, Esq., in the chair. Mr. REID described several *Mammalia* presented to the Society by Mr. DARWIN, who accompanied the surveying ship Beagle, as naturalist to the expedition. The collection obtained by Mr.

DARWIN includes 80 species, while the birds consist of 450 specimens, including 150 species, some of them obtained from the Gallapagos Islands, and stated by Mr. GOULD to be entirely new forms in this country. Mr. GOULD also described two species of Quail, from Australia, where five kinds are at present known; likewise, two specimens of *Hæmapodii*.—The Secretary read a communication from Mr. BENNETT, "on the luminosity and phosphorescence of the sea," the writer being of opinion, that this phenomenon is produced by *Mollusca*, and other animals, as well as by a highly charged electrical state of the water.

ENTOMOLOGICAL SOCIETY.

Jan. 2.—The Rev. F. W. HOPE, F. R. S., in the chair.—Mr. RUDDER, of Bristol, exhibited numerous specimens of North American insects obtained from Turpentine, and several insects found in gum cepal and gum animi, the latter being obtained by dissolving the gum in exotic oil of Lavender, and solution of ammonia. The President complimented Mr. RUDDER upon his labours, and expressed his belief, that a complete collection of the insects of North America might be obtained from this source. The following memoirs were also read:—1. Descriptions of new species of Australian *Halticæ*, by Mr. WATERHOUSE, one of the species being identical with the English Turnip Fly. 2. Description of the nest of the West-Indian Trap-deer (*Cteniza nidulans*), by Mr. SELLS. 3. Some observations on *Agoum paradoxum*, by Mr. WESTWOOD.

BOTANICAL SOCIETY.

Jan. 5. J. E. GRAY, Esq., F. R. S., in the chair. A paper was read by the Curator, Mr. COOPER, "On the distribution of the localities of plants in Battersea Fields." The plants were characterised under the following heads: 1. those found in meadows and pastures; 2. in cultivated fields; 3, in Osier grounds; 4, on commons; 5, in ponds and ditches; and 6, in market gardens. So numerous are the indigenous plants of Battersea Fields, that of 104 natural orders described in LINDLEY'S *British Flora* (1st edit.) 61 were found in this locality.

Jan. 19. Mr. W. H. WHITE, in the chair. Dr. MACINTYRE read a paper—"On the plants to be met with on Warley Common, near Brentwood." Among them were the following:—*Aspidium dilatatum*, *A. angulare*, *A. lobatum*, *A. trichiomanes*, and *Asplenium nigrum*.

EXTRACTS FROM THE FOREIGN PERIODICALS.

Zoology.

1. On the genera *Dipus* and *Gerbillus*.—A paper was read before the *Académie des Sciences* of Paris on the 29th of August, 1836, on the above interesting and hitherto somewhat obscure genera, by M. F. Cuvier, who has long turned his particular attention to the *Rodentia*. The Jerboas (*Dipus*) are remarkable for the length of the posterior extremities, by the three toes on the feet, which alone touch the ground, either in jumping or walking, and which are only articulated to one metatarsal bone,—by a large head, a short muzzle, large eyes, a long tail, &c. These animals are, however, divided into several sections, according to the absence or the number of the rudimentary toes on the hind feet. M. Lichtenstein ranges them in three divisions:—1. those with three toes, normally situated on the hind legs; 2, those having, in addition, another rudimentary toe; 3, those with two rudimentary toes. The inspection of the heads of several species of the first division, says F. Cuvier, has convinced him, that these animals are not only distinguished from those which have five toes on the hind feet by the number of toes, but also by the form of the molar teeth, and by the structure of the head. Thus while in these, the molars are numerously and irregularly indented, in the others there is but one indentation on each side of those teeth; and other differences, characteristic of the divisions, might be named.—The species with three posterior toes, are remarkable for the size of the head, a peculiarity resulting from the unusual development of various parts mentioned by M. Cuvier. In the kinds with five toes, on the contrary, the head is considerably smaller, all the parts of the ears lying in a small compass, and those forming the zygomatic arch being linear, thus presenting narrow surfaces for the insertion of the various muscles. From these observations, M. Cuvier determined that the Jerboas with three toes ought to be separated from those having five; the former he proposes leaving in *Dipus*, and removes the latter to *Allactaga*.—M. Cuvier remarks, that the Gerbils (*Gerbillus*) have no connexion with the Jerboas, but that they approach nearer to the Dormouse and the Rat. The memoir concludes with an account of a new species, *Allactaga arundinis*, which appears to have been known to Shaw, but which has never been well described. The paper was accompanied by numerous figures, one representing Burton's Gerbil; and nine known species were ascertained to belong to the genus.

2. Observations on a species of Fox, inhabiting the Desert of Sahara.—M. Bodichon placed before the *Académie* some details relative to an animal having the appearance and habits of a Dog, but which he believes to appertain to the genus Fox, *Vulpes*. We present Mons. B.'s remarks without comment:—The cranium is flattened above; the head is long; the ears are high in the head, as in the Jackal, and long; neck slender and lengthened; the

hinder part higher than in front; the legs longer and the body thinner than in the common Fox. The hair is of a tawny colour on the upper parts, grey underneath; the throat, lips, and tip of the tail, are pure white.—This animal exhales no fetid odour. It lives in considerable herds, amounting sometimes to fifty individuals, which hunt in company, attacking Gazelles, Sheep, and Calves. So, at least, observes M. Bodichon, the Arabs tell me; I have never myself seen more than six or seven together. It is not found in mountainous countries, so that the French possessions known by the name of *Massif d'Algar* are deprived of it. It sometimes occurs in the plain of Metidja, more frequently behind the first chain of the Atlas; but the desert of Sahara is its favourite habitat, and there it is seen in immense numbers.—On the flat grounds they are a match for the Jackals, which cannot approach them with impunity; in the mountains, on the contrary, they carefully avoid the Jackals.—*Translated and abridged from the "Annales des Sciences Naturelles," Sept.* 1836.

3. On Parasitic Larvæ.—A paper on this subject was laid before the *Académie des Sciences*, in July 1836, by M. L. Dufour. One circumstance related in it deserves especial attention. It is an instance of parasitism the singularity of which is calculated to excite the curiosity of the physiologist, and is furnished by a larva supposed to be of the order *Diptera*, living in the abdominal cavity of *Andrena aterrima*, a hymenopterous insect. It is sometime since M. Dufour described a larva (that of *Ocyptera bicolor*), which imparts to the Pentatome, of which it is a parasite, a cavity appropriated exclusively by itself, and which becomes the only aperture whereby the air can reach its respiratory apparatus. This anatomical usurpation is certainly remarkable. But it is quite another thing with the parasite larva of *Andrena*. This larva lodges itself in the great tracheal vessel at the base of the abdominal cavity of hymenopterous insects. It is fixed there by means of two similar tracheal tubes, both ramifying into its body. This double trachea is furnished by the large bladder of which it is the continuation.—This unusual case of parasitism, this example of two insects of widely different genera—one grafted upon the other, by the most important organic apparatus, that of the circulation—constitutes a fact hitherto unheard-of in the annals of science; and M. Dufour observes, that nothing at all analogous to it is known, except the utero-fœtal circulation of the larger animals—and even between these two phenomena there exists an immense difference.—*Bibliothèque Universelle de Geneve.*

4.—Notes on Viviparous Serpents.—One of my friends, says Mr. Samuel Woodruff, having killed a large water serpent (*Coluber sipedon*, Less.) came to inform me that it was full of young. On opening its body, I found in its stomach two moderate sized Toads, and several insects and larvæ. Distinct from the stomach and the other viscera, but contiguous, and only separated by a thin

membrane, there was a cylindrical body, seven inches in length, and about one inch thick. This organ was white, and of a mammillary structure, porous, and resembling a cellular sponge. With gentle pressure it emitted a milky fluid. On the outside of this organ, I observed heads of young Serpents about an inch in length. They were so small and tender, that in extracting them from their cells, I crushed several; but I succeeded in getting out a few, measuring from three to six inches in length, and of the thickness of a knitting-needle. The Serpent was killed with a pointed stake, which passed across the body, bruising part of the organ containing the young. These latter were also injured, so that I could not ascertain their exact number; but there were between ten and twenty. They had evidently never left their mother's body, nor were they capable of feeding on anything but liquids, and even that not of their own accord. I therefore concluded that the mammillary organ was the place in or near which they commenced their existence, and which, at a certain stage of their growth, supplied them with nourishment. The following fact tends to confirm this opinion:—Several years afterwards I examined a number of young Serpents of a different genus, and found them much larger, and considerably stronger and more lively than those taken from the body of the water serpent.—*Dr. Silliman's American Journal, vol.* xxiv.

5.—The True Cause of the Sound produced by Insects in Flying.—It is generally believed, both by men of science and by the vulgar, that the "buzzing" of insects in flight is caused by the vibration of their wings. Dr. Hermann Burmeister, in a paper on this subject published in the *Annalen der Physik und Chemie*, combats that notion, and states, that it is really produced by the contact of the air with certain air or respiration holes in the thorax, the sound being assisted and modified by the motion of the wings, and being produced much in the same manner as the notes of a flute. The Doctor proves that the wings alone cannot be looked to as the cause of the humming, by its being still heard when the wings are entirely removed, and the insect is held by the legs; and he demonstrates that the above-mentioned air-holes are the true *whistles*—for to such they may be compared—by the fact, that when those tubes are filled with gum, and the insect flies away, the sound is no longer heard. True, the animal can only survive this operation a short time, from the impossibility of breathing; but Dr. Burmeister considers that the experiment satisfactorily points out the truth of his views. In these opinions—*facts* we might call them—Dr. B. is opposed by M. Silbermann, and supported by MM. Dumeril, Schelver, and Chabrier.—Those who desire a more minute account of Dr. Burmeister's discovery, are referred to the German work, *Annalen der Physik und Chemie,* vol. xxxviii., or to the translation of the Professor's paper, in Taylor's *Scientific Memoirs*, vol. i. p. 377.

BOTANY.

6.—Synopsis of the Jungermanniæ of Germany and the neighbouring Countries.—Although many important works have been written on the *Hepaticæ* since the publication of the present volume by Mons. T. P. Ekart, amongst others that of Nees d'Esenbeck on the *Hepaticæ* of Europe, the above *Synopsis* is not on that account the less indispensable to those engaged in the study of this portion of cryptogamic plants. His excellent figures, extracted from Sir W. J. Hooker's Monograph, will prove of great use in the study of these plants, the extreme minuteness of which renders them so difficult to understand. It also contains good descriptions, and a carefully selected synonymy of the *Jungermanniæ* found in Germany, the British Isles, Switzerland, France, and Europe in general. The author suspects, and not without reason, that those species of a genus which, from their smallness, easily escape observation, may one day be included in the German flora. One hundred and five *Jungermanniæ*, or nearly the whole of the European species, are described.—The classification, as usual, is determined according to the shape and situation of the leaves, the absence or presence of stipulæ, &c. The part of the work treating of this subject, by M. Nees, in which the system is based upon the organs of fructification, has not been published, so that M. Ekart has not had the advantage of the labours of that learned botanist in this particular. The new method of dividing and classing the *Jungermanniæ*, contemplated by M. Nees, although more philosophic and satisfactory, inasmuch as it depends on more important characters, will require much time and many new observations to establish it. It has, moreover, this great inconvenience—especially great to beginners—that it cannot dispense with an examination of the floral parts in plants in which it is very rare to find them. The figures accompanying M. Ekart's work, represent, highly magnified, nearly all the known species, and are, above all praise, beautiful and correct.

GEOLOGY.

7. *On the Fossil Flora of Silesia.*—M. Goppert has solicited the aid of his countrymen in an account he intends drawing up of the petrifications of Silesia. But the specimens he in a short time received from every part of the district were so numerous, that he was obliged materially to enlarge the field of his labours. Instead of a mere description of the fossil roots discovered in Silesia, he has undertaken a monograph of this family, of which the Silesian roots have only served as a commencement of his researches. The number of roots described in this work—including about one-third of the fossil plants known—is 268; of which 96 are found in the coal strata of Silesia, 91 in England, 49 in France, 32 in Bohemia, 63 in the rest of Germany, 2 in Scandinavia, 4 in the East Indies, and 2 in New Holland. Only 212 kinds were before known; but M. G.'s work has increased this number by one-fourth, of which 50 are peculiar to Silesia.—*Bib. Univers. de Gen., Nov.* 1836.

REVIEWS OF NEW PUBLICATIONS.

A Synopsis of the Birds of Australia and the adjacent Islands. By JOHN GOULD, F.L.S., &c. Part 1. London: published by the author, 20, Broad Street, Golden Square. Jan. 1837.

HAVING elsewhere repeatedly been called upon to speak in terms of the highest admiration of the valuable and splendid works of Mr. GOULD—especially his *Birds of Europe*—we are well nigh at a loss to know how to express our opinion of the commencement of his new work, now before us. However, we will do our best to convey to our readers an idea of its plan and aim, and of the manner in which they are executed.—A figure, natural size, of the head of each bird is given, with, occasionally, the rest of the body supplied in outline, and in some cases we have the tarsi and wings. The letter-press consists of descriptions, in Latin and English, of the species, with synonyms, &c., and the habitat. These accounts are short but pithy, and will at once serve to point out to the student the species to which the Australian birds which may happen to be in his collection belong, and will supply the requisite information relative to birds before unknown to him. We could have wished to have heard some particulars of the habits of our feathered friends in Australia; but of these, we fear, too little is at present known to furnish much matter of interest or importance.—With regard to the plates, they leave nothing for us to desire. For accuracy and vigour of delineation, we consider them unrivalled; and on the score of beauty, we verily believe this work would prove no mean ornament on the lady's drawing-room table. They are executed with the practised hand of a master; and we particularly admire the representations of the genus *Malurus*, where the heads are finished as usual, and the rest of the bodies sketched in a light and excellent style. The colours, too, are as judiciously and accurately laid on as we could desire, and Mr. GOULD has not failed even where the tints are most brilliant and difficult to obtain the freshness and vividness of Nature. The first part of the *Birds of Australia* includes forty-five species, and each succeeding publication—to appear quarterly—will contain about the same number, the whole to be completed in from six to eight parts. We hope to receive this excellent work regularly, and shall in that case take an early opportunity of announcing its progress.

Contribution to a Natural and Economical History of the Coco-nut Tree. By HENRY MARSHALL, Deputy-Inspector General of Army Hospitals. 8vo. p.p. 32. Edinburgh: John Stark. 1836.

THIS unpretending pamphlet, appearing in almost too modest an attire, is rich in the store of interesting facts it has collected together; and Mr. MARSHALL, combining his own observations in Ceylon with the remarks of various authors

from an early period, merits high praise for the skilful elucidation of the subject he has taken in hand. Indeed, for the future every modern account of the Coco-nut might be greatly enriched from the facts set down in the work before us, a few of which, to gratify curiosity (for we are persuaded they are not much known), we shall record.

The Coco-tree *(Cocos nucifera)* belongs to the *Monœcia Hexandria* of the Linnæan system, and to the natural order *Palniæ*. The stem rises to the height of from 60 to 100 feet, crowned with 12 or 14 gracefully drooping fronds, from 10 to 15 feet long, from 3 to 4 in width, and finely pinnated. The flowers are included in a large spathe; they are spicate axillary, with a few female flowers at the base of each spike, those above being male. The fruit is clustered about the size of a man's head, requiring nearly twelve months to become completely ripe. The kernel *(Endosperm)* is white, and hollow, containing about a pint of whey-coloured liquor, often improperly called "milk" in England, the real milk being quite different. The nut, originally trilocular, has one hole at the base, closed with a black membrane, and two external depressions, resembling holes, "which gives it the appearance of the head of a Monkey." The embryo is situated immediately under the membrane that covers the hole in the shell, through which the germinating shoot projects, while the water and kernel of the interior supply nourishment to the embryo and its rootlets.

The Maldivian Islands appear to have been the birth-place of the Coco-nut tree, from whence it has been distributed abundantly throughout the tropics. It thrives best in the vicinity of the sea, and may be watered with salt or fresh water. Some of the Malay isles, it is alleged, would be uninhabitable without this Palm, from their want of fresh water. The inhabitants give Coco-nut whey to their cattle, and never use any other beverage themselves. The fruit requires a mean temperature of 72° FAHR., to bring it to perfection. Plantations of Coco-nuts are called topes, and some very large ones exist in India. One is mentioned by BUCHANAN, 18 miles in length, and from one to a quarter of a mile in width. In Ceylon 10,000,000 Coco trees were estimated in 1813, to be growing on the S. W. coast only. The lands which are occupied with this plant alone, yield a settled income to the owners, without much labour.

The Coco-nut tree blossoms and bears fruit at five or six years of age, continues to grow for 30 years, bears fruit until 60 years, and dies at 90 or 100. The following curious list of its products and economical uses we have collected from Mr. MARSHALL'S "contribution" to its history. The roots are chewed as a substitute for the areca-nut—a cloth-like net-work, called *matulla*, is obtained from the base of the fronds—the unexpanded leaf-bud is much prized as an article of diet—the leaves are manufactured into baskets, mats, carpets, sails, tents, &c.—the dried fronds form torches—the petiole is made into oars, brushes,

&c.—the spathe forms aprons and petticoats—the pulp of the young nut forms a vegetable blanc-mange, and 100 sorts of sweetmeats are made in India from the kernel—the "milk" or emulsion (prepared from a pressure of the grated kernel, and a little hot water) is used as extensively as cow's milk is employed with us, and also for curries, &c.—Sugar, toddy, and arrack are prepared from the sweet juice of the flower-stalk, in which case the trees are prevented from fruiting—Vinegar and yeast are prepared from the toddy, which is also medicinally used as an aperient—a decoction of the root is "a very useful remedy in intermittent fevers"—the *matulla* forms a lint for wounds, bruises, and Leech-bites—the flower-juice is recommended as a demulcent, and the whey-like fluid in the young nut is considered as an excellent cosmetic for the fair-sex—finally, the oil prepared from the kernels, either by decoction or expression, is used for innumerable purposes,—forms soap and candles, and by great pressing is separated into a pure limpid oil called elaine, and an unctuous solid substance, stearine, now manufactured under a patent at an establishment near Vauxhall Bridge, London. Besides all this, the fibrous covering of the husk of the nut is made into a substance called Coir, much used for stuffing mattresses, cushions, &c., and highly esteemed as a superior material for cordage. The shells themselves, as may be easily imagined, are made into cups, and a host of other ornamental trinkets. In 1825, Ceylon alone exported 6,933,552 nuts, chiefly to the continent of India, which were valued at £7,561, or little more than a farthing each. In the London market the price of Coco-nuts is from 10*s.* to £1 10*s.* per 120, subject to a duty of 1*s.* when imported from a British possession.

We should like to see monographs of other trees executed in as interesting a way as that employed to so good a purpose by Mr. Marshall with the Coco-nut. We know nothing so well adapted to excite general attention to the study of vegetables, and to remove the senseless and captious sneer, so often raised against the quiet labours of the unassuming botanist, that his time is wasted in no higher object than counting sepals, stamens, and pistils;—as if because a man was observed unlocking a door, he should be represented as a trifler playing with a lock and key, by some casual wanderer who did not wait to see him enter the building whose door he was unlocking.

A History of British Quadrupeds. By Thomas Bell, F.R.S., F.L.S., Prof. of Zool. in King's Coll. Lond. London: Van Voorst, Paternoster Row. Part viii. March, 1837.

With increasing pleasure we hail the appearance of each succeeding number of this elegant and valuable publication, which combines neatness of "getting up" with accuracy of scientific and popular information. The names of the authors employed on the whole series, at once place the work beyond the suspicion of its

being a mere book-making speculation, and that, in these mercenary days, is no small recommendation. At the same time, from the exceeding usefulness of such a series, and from the admirable manner in which it has hitherto been conducted, we hope and trust, that it has proved a source of profit to the enterprising publisher. The present number contains the conclusion of the Hare family *(Leporiæ)*, the Hog family *(Suidæ)* and the commencement of the Horse family *(Equidæ)*, including altogether seven species. We had marked several passages for insertion; but notwithstanding the increase of letter-press in our current number, regret our inability to find room for them.

The Ornithological Guide; discussing some interesting points in Ornithology. By CHARLES THOROLD WOOD, jun., Esq. London: Whittaker & Co. 1837. sm. 8vo.

THE principal contents of the *Ornithological Guide* are, a chapter on vernacular and scientific nomenclature, notices of books, and a catalogue of British birds for labelling cabinets. The first part we sincerely recommend to the perusal not only of the ornithologist, but of naturalists in general. We consider the rules there laid down with regard to nomenclature, for the most part, sound and practical, and we doubt not but natural science would be greatly benefitted by their general adoption. We think, however, that the opinions on this subject expressed by HUGH E. STRICKLAND, Esq., might have been couched in gentler terms. Mr. S. appears to us to have the worst of the argument; but, unless he has a heart of steel—and, until credibly assured that this is actually the case, we do not feel inclined to believe it—the views promulgated by that gentleman, in *the Analyst*, might surely have been discussed in a more philosophical manner. We shall make no extracts from this portion of the book, as we wish our readers to peruse the whole of it themselves.

Of the second chapter we cannot speak in favourable terms; independently of the style in which the critical notices are written, they could be of little use, only about fifty works being included, and no inconsiderable number of important publications being passed over without the slightest allusion.*

In the third division—the list of native birds for labelling cabinets—we are happy to be enabled to renew our commendation. The author has here had an admirable opportunity of carrying his theory into practice; and, with a few unimportant exceptions, we think he has succeeded remarkably well. But why will Mr. C. T. WOOD draw upon himself the deserved ridicule of the naturalist by introducing his absurd method of orthography? In conclusion, we may observe that

* In the Editor's *Ornithologist's Text-Book*, about three times as many works are noticed as in the *Ornithological Guide;* in the former work the preface acknowledges the unavoidable imperfection of that portion of the book; in the latter, no kind of apology or excuse is offered.

this *Guide* contains many hints well worth attention; but, notwithstanding the date of the preface, it does not appear to have been written with that care and accuracy so necessary in a scientific treatise.

The Naturalist's Library. Conducted by Sir W. JARDINE, Bart., F. R. S. E., F. L. S., &c. *Mammalia*, Vol. VI. *Ordinary Cetacea or Whales.* Edinburgh: Lizars; Highley, London; Curry, Dublin. 1837.

HERE we have an extremely well-written account of a most interesting but somewhat obscure race of animals, illustrated by the usual ample number of coloured plates, and at the same extraordinarily low price as heretofore. The volume opens witha biographical sketch of LACÉPÈDE, or *M. le Comte de* LACÉPÈDE, as his countrymen would doubtless wish him to be styled.—The *Cetacea* have ever been wrapped in much obscurity, the accounts of species resting for the most part on the confused accounts of mariners, or the drawings of unscientific persons. The valuable works of SCORESBY and others have greatly contributed towards the elucidation of the *Cetacea*, but much yet remains to be done. The present volume places the subject in as clear a point of view as it will at present admit of, and contains much that will instruct the naturalist as well as interest the less scientific reader.

PERIODICALS.

The Magazine of Zoology and Botany. Conducted by Sir WM. JARDINE, Bart. P. J. SELBY, Esq., and Dr. JOHNSTON. Edinburgh: Lizars; Highley, London, No. v. Feb. 1837.

THIS is an invaluable journal; but we fear that the public is yet scarcely prepared for it; and that it will be supported rather by the *names* of its Editors and contributors, than by the real interest it will impart to the generality of readers. The perusal of the present number has given us sincere pleasure; and we hope so excellent a magazine will maintain its ground.

The Analyst; a Quarterly Journal of Science, Literature, Natural History, and the Fine Arts. Edited by W. HOLL, F. G. S., and NEVILLE WOOD, Esq., &c. London: Simpkin and Marshall. No. xix. Jan. 1837.

EACH No. of *the Analyst* contains much matter of interest to the naturalist, under the various heads of "Original Communications," "Correspondence," "Proceedings of Provincial Societies," "Miscellaneous Communications," "Extracts from the Foreign Journals," and "Reviews," concluding with a meteorological report for the preceding quarter. It is not for us to pronounce any opinion on the merits of this periodical, but of course we are expected to take some notice of every work, bearing on Natural History, that may be sent us.

CHAPTER OF MISCELLANIES.

ZOOLOGY.

THE BRAKE NIGHTINGALE *(Philomela luscinia)* BREEDING IN CONFINEMENT.—A bird-catcher in this town had a pair of Nightingales that bred while in his possession, during the summer of 1833. They were captured the previous summer. The female laid five eggs, which were all hatched. Three of the young birds were reared; and although the male died previously, still the female did not relax her attentions to her offspring. This is the only instance I have known of the Nightingale breeding in confinement.—J. D. SALMON. *Thetford, Norfolk, Feb.* 6, 1836.

DEPARTURE OF THE CHIMNEY SWALLOW *(Hirundo rustica)* IN 1836.—At the end of September, 1836, the greater number of Chimney Swallows had winged their course over the sea; but we observed several individuals of the species in the neighbourhood of Doncaster on the evening of Oct. 3rd. Most of them were in so weak a state as to be scarce able to support themselves on the wing; as they were not young birds, and as the weather was mild, we cannot at present adduce a satisfactory reason for so strange a circumstance.—ED.

THE PEEWIT LAPWING *(Vanellus cristatus)*.—Lapwings have now congregated in large flocks upon our fields, on their passage to the south, or to the sea-coasts, where food, during winter, can be obtained.—JAMES STUART MENTEATH, *Closeburn Hall, Dumfriesshire, Oct.* 25, 1836.

ANECDOTE OF A SHETLAND PONY.—I was some time since passing rather late in the evening, through one of the streets in the immediate neighbourhood of London, and observed two men walking briskly along, with a beautiful little pony trotting by their side, without either bridle or halter. Presently one of the men, who seemed on the best possible terms with his little steed, passed his arm round its body, and lifting it with ease from the ground, carried it for some distance; then setting it down, he threw one leg over its back, and half rode, half walked, with his feet touching the ground on either side. After a short time he again carried the horse a short distance; and at length coming to a large gin-shop carried it up the steps and disappeared with it at the door. Whether he made it partake of his cheer, I know not.—BELL'S *Hist. of British Quadrupeds*, p. 374.

A Robin Redbreast (*Rubecula familiaris*) with the Mandibles of the Bill crossed.—A curious specimen of the Robin Redbreast has lately fallen into my possession, with the mandibles of the bill slightly crossing each other, in the manner of those of the Crossbills (*Crucirostra*). In the plumage there is nothing remarkable. I doubt not, that in time the deformity would have increased, and perhaps eventually have prevented the poor bird from obtaining its food, for which purpose it requires a bill formed as Nature forms it for the rest of the species. A bill adapted only for procuring another kind of food (such, for instance, as the Crossbills subsist on), would be worse than useless; and the above-mentioned Robin Redbreast would have been starved to death, as not unfrequently has been the lot of birds whose bills have, from some unknown cause, grown to an unnatural size or shape. No birds appear more subject to these deformities than the Starlings, at least as far as my knowledge goes.—The curious specimen I have here noticed has been preserved by Mr. Hugh Reid, of this town, whom I have no hesitation in pronouncing to be unrivalled in his art, and to be excelled by no preserver of birds in the united kingdom.—F. O. Morris, *Doncaster, March* 18, 1837.

The Birds of Scotland in the Winter of 1836-7.—It is strange, that although the winter has been unusually severe in this part of the country, scarcely a single rare bird has made its appearance here. We have snow at present on the ground, and I can find nothing better than Fieldfare and Redwing Thrushes, and such-like. To-day, however, I shot two Reed Buntings, and saw a Grey Wagtail, of both which species it is very seldom that an individual is seen here in winter.—W. MacGillivray, 16, *Minto Street, Newington, Edinburgh, March* 15, 1837.—

Capture of the Jer Falcon (*Falco Islandicus*) near York.—A fine adult specimen of the Jer Falcon, one of the rarest of the British *Falconidæ*, was shot at Storthwaite, a few miles from this city, on the 15th instant, and is now in my possession. It is shot in each wing, but not wounded in the body. Like most birds of the family when captured, it sulked and entirely refused all food for the first four days; it now begins to eat a little, but will only feed on fresh killed birds. I am in hopes its life will be preserved.—Thomas Allis, *York, 2d Month* 21; 1837.

Singular Locality for the Common Conger (*Conger vulgaris*, Cuv.)—A little mine has lately been set on foot at Newlyn, near Penzance; and not being able to open their adit on the course of the lode, in consequence of a fish-cellar over it, the miners were compelled to drive in another direction to come on the lode, when they found a cavity in the earth about 18 feet in length, with water a

foot deep, in which were discovered a number of Common Congers (Conger Eel, *Anguilla conger*, of the older authors), although there appears to have been no inlet or outlet for the water. It is supposed, that a mine was worked on the spot about 150 years since; but how the fish got there is unexplained, as it is upwards of 70 feet from high-water mark. The fish are mostly eight or nine inches long; but there are said to be some large ones in the same place.

Distribution of the Corn Bunting (*Emberiza miliaria*) in Britain.—In the 18th number of the *Analyst*, Mr. Hewitson has mentioned the Corn Bunting as extremely rare in the north of England; it is here pretty generally dispersed, and in winter associates in large flocks, particularly towards the northern districts. I found it common in summer in the northern-most part of Scotland—Sutherlandshire—where several pairs might be seen in a small piece of meadow ground.—P. J. Selby, *Twizell House, Northumberland.*

Early Signing Birds.—Many of our native choristers have commenced their lays unusually early this season. On Feb. 1, we heard the monotonous ditty of the Coal Tit, and the sweet but desultory notes of the Missel Thrush had resounded from the leafless groves some time previous. On the 10th—a remarkably fine day—the vernal and joyous song of the Garden Thrush was first heard. On the 13th, the Sky Lark, Hedge Dunnock, Yellow Bunting, and Chaff Finch added their notes to the general harmony. The several strains of all these birds (besides that of the Robin Redbreast, which sings throughout the year) were distinguished on the following day.—Ed.

Distribution of the Goldencrowned Kinglet (*Regulus auricapillus*) in England.—I believe, that in some parts of Yorkshire the Goldencrowned Kinglet is comparatively scarce. I know no district where it is so common as in Derbyshire.—W. C. Hewitson, *Chesterfield, Derbyshire, Oct.* 10, 1836.—[We can confirm the above statement from our own observation; but both in Yorkshire and Derbyshire the species is more abundant in winter than in summer, considerable additions being made to their numbers about the end of October; these strangers disappear in February, when the song of the resident males is first heard.—Ed.]

Partial Migration of the Sky Lark (*Alauda arvensis*, Linn.)—If I remember rightly,—for I have not a copy of the work by me—Mr. Neville Wood, in the *British Song Birds*, speaks of the Sky Larks congregating in flocks, and migrating in winter to the south. In Northumberland I believe they do not remain, or at least I never saw them at that time, and I have explored a considerable part of that county at all seasons. When I came here, I was much

struck by the flocks that remained about us in winter, and the havoc made amongst them by the pseudo-sportsmen of Doncaster. I fear Larks are held delicacies further north than Dunstable.—W. R. S. *Doncaster, March* 7, 1837

Notes on the Duck Family *(Anatidæ)*.—Some years ago I had the pleasure of keeping a great variety of wild fowl. I found I could not long preserve the Shoveller in good health, and even the Redheaded Pochards *(Fuligula ferina)* did not survive a second summer, although they had a beautiful stream of water constantly running through their inclosure. At the time of moulting there is great danger of losing the birds if they happen to be suddenly disturbed, for at this period they are able to fly, notwithstanding their being pinioned. One of my male Teals escaped from the inclosure in the moulting season, when it had lost the quill feathers from the wing not pinioned. After being absent during the summer, nearly six months, it returned, and remained with me through the winter. In the spring I was obliged to shorten its pinion.—When the birds are just caught, it is astonishing what a small piece cut off from one wing will effectually prevent their flying; but after they had once moulted, I always found it necessary again to shorten the pinion.—With the exception of a pair of Shieldrakes—which one season brought forth four young ones, and these all died in a fortnight—none of my Ducks ever laid an egg, which was the principal object of my keeping them. The Wigeons, Teals, Garganys, Gadwalls, and wild Common Ducks, always paired at the approach of spring, and continued so through the summer; still they never offered to make any nests, although there were plenty of materials for the purpose, and the spot was perfectly retired.—A pair of *tame* Common Ducks, which I kept with the wild fowl, hatched a lot of half-bred wild Ducks, with, apparently, no admixture of any other species.—J. D. Salmon, *Thetford, Norfolk, March* 10, 1837. [We thank our correspondents for the above communications; and shall be happy to receive contributions of a similar character, on the other departments of Zoology.—Ed.]

BOTANY.

Rare Flowering Plants found near Doncaster.—The following are some of the rarer early flowering plants found near Doncaster:—Yellow Figwort, *Scrophularia vernalis*, April and May; Yellow Star-of-Bethlehem, *Ornithogalum luteum*, April; Wild Tulip, *Tulipa sylvestris*, April; Green Hellebore, *Helleborus viridis*, April and May; Stinking Hellebore, *H. fœtidus*, March and April.—W. R. S. *March* 7, 1837.

GEOLOGY.

ANALYSIS OF A MINERAL SUBSTANCE FROM A CALCAREOUS ROCK NEAR GHASNI, IN INDIA.—This mineral is a clammy, semi-transparent mass, of a brown colour, containing fragments of flint, and particles of a deep brown or black hue. The smell is slightly nauseous, the taste acrid. It dissolves with difficulty in water. Calcareous fragments, and a coarse black powder, resembling half decomposed excrements of birds, remain on the filtre. This singular substance is supposed to be the product of the sojourn of some kind of bird in a calcareous cavern communicating with the fissure whence it was obtained; the decomposition of the excrements of these birds undoubtedly forming the nitrates of soda and lime which it contained.

OBITUARY.

JOHN LATHAM, M. D., F. R. S., F. L. S., F. A. S., celebrated over the whole civilized world for his ornithological works, expired Feb. 4, 1837, at the very advanced age of 97. He was born, June 27, 1740, at Eltham, in Kent, and was the son of JOHN LATHAM, a surgeon and apothecary of that place. The degree of M.D. was, unsolicited, conferred upon him by a foreign university, in 1795. In 1796 he retired from his professional duties with a handsome fortune, his fame as a medical man having been very considerable. He had enjoyed a leisure of upwards of 20 years in affluence, when a series of calamities left him almost destitute at the age of eighty; at this time he retired with his second wife to the house of his son-in-law, W. N. WICKHAM, Esq., at Winchester, where he remained till his death. In his eighty-second year this indefatigable man commenced his *General History of Birds* (his other works being the *Gen. Syn.* and *Ind. Orn.*), 10 vols. 4to., in the hopes of deriving pecuniary advantage from its publication. In 1835 he, for the first time, began to feel the failure of his sight. Infirmities gradually increased on him; but he was still an active and cheerful man, taking his daily walk alone, and scorning the assistance of an arm. Four days before his death he exhibited unusual vivacity; this was followed by a failure of understanding, and he fell into a deep sleep, in which he expired without a pang. Dr. LATHAM was the founder of the Linnæan Society; and although only known to the world as an ornithologist, was greatly attached to antiquarian pursuits.—An interesting memoir of this amiable and excellent man will be published in *The Analyst*, No. xx., for July, 1837, to which we beg to refer our readers for further particulars.

THE NATURALIST.

ON THE IMPROPRIETY OF PLACING THE COLUMBIDÆ IN THE ORDER RASORES.

By Thomas Allis,
Curator of the York Philosophical Society.

Recent as well as more ancient authors differ in their classification of the *Columbidæ*; some placing them in the order *Rasores*, others separating them from it, and some even including the *Struthionidæ* in the *Rasores*. Of this number is Mr. Selby, certainly no mean authority. He says, in the *Naturalist's Library*, "The Pigeons or family of *Columbidæ** are now, in accordance with their true affinities, admitted into the order of the *Rasores*, or Gallinaceous Birds, of which they form one of the five great groups or divisions, the other four being represented by *Pavonidæ*, *Tetraonidæ*, *Struthionidæ*, and *Cracidæ*. In this order they constitute what is termed an aberrant family (considering the *Pavonidæ* and *Tetraonidæ* as the typical groups); and from the affinity that several of the members composing it shew to the *Insessores* or Perching Birds, they become the medium by which the necessary connexion between the Rasorial and Insessorial birds is supported; such indeed appears to have been nearly the view taken of this interesting group by the earlier systematists, whose classification was not always conducted on those philosophical views which guide the naturalists of the present day; as we find the *Columbidæ* arranged alternately among the Insessorial and Gallinaceous birds, or sometimes as an intermediate order separate from both.—An investigation of their habits and economy, both external and internal, shewing the close approximation that some species make to the typical *Rasores*, is, however, sufficient to prove, that their affinity to the true Gallinaceous birds is much stronger than that which connects them with the *Insessores*, though the latter is sufficiently so to support the requisite connexion between the two orders."

Thus far Selby. According to Cuvier, the *Columbidæ* is considered as the last family of the Gallinaceous order. A writer in Partington's Cyclopedia takes a different view of the subject, and considers them as a distinct order; I coincide with him in this respect, though I do not agree with him in all the facts on which that opinion is founded; he says:—"The poultry tribe are, we believe, without a single exception, polygamous." I thought every one had known that the Partridge was monogamous; and I believe the whole of the *Cracidæ* (which are

* It should be, "the Pigeon family or *Columbidæ*."—Ed.

truly Gallinaceous) are also monogamous.—Again, he says,—"No doubt there is some similarity in the sterna, but it is confined to the posterior angles, and consists in there being two notches in each." Now I deny that there is any thing that can be fairly called similarity between the sterna; the Gallinaceous birds have two deep notches or emarginations extending from the posterior edge of the sternum more than two-thirds of its length. But few of the *Columbidæ* have two notches, and where that is the case, the external one extends little more than half the length of the sternum, and the internal one not more than the eighth part of its length; but in most of the *Columbidæ* two small holes or foramina supply the place of the internal notches.

I think that each family ought to possess several distinct points of resemblance, in habits of life, functions, external appearance, and internal structure, with every other family of the same group, or at least with the typical genera of that group, which no other group of birds possesses in common with them; that each genus should consist of birds similar in their general habits, appearance, and structure, but constantly differing from each other in some one character; and that this constant difference in some one particular constitutes a species. When there is no general resemblance through the whole of the families, but only a similarity in a few particulars between some of the extreme species of each family, they ought not to be included in the same order, this connection between the extremes of the different families, clearly pointing out that they should be considered as distinct consecutive orders.

I will now enumerate the points of difference and agreement between what I consider the true Gallinaceous birds (*i. e.* the *Pavonidæ*, *Tetraonidæ*, and *Cracidæ* of SELBY) and the *Columbidæ*.

In my comparison between the *Columbidæ* and *Rasores*, I do not include SELBY'S *Geophilus*. This genus is little known. It appears to bear a much nearer resemblance to the *Rasores* than any other of the Pigeon family, particularly as regards the number of eggs; the young being able to see at birth; being hatched on the ground, and running as soon as hatched; but I think all these points of resemblance afford no reason why all the Pigeons should be classed with the Rasores; but that they only prove a connecting link to exist between them.

Pigeons—with the exception of the Rock Pigeon—build their nests in trees. The *Rasores*—with the exception of some species of *Cracidæ*—uniformly make their nests on the ground.

Pigeons never lay more than two eggs.—The Gallinaceous birds always lay more than two.

Pigeons are blind at birth, and remain so several days.—The Gallinaceous birds see at birth.

Pigeons remain several weeks in the nest after they are hatched, and until

fully fledged.—Gallinaceous birds (I believe without exception) run from the nest as soon as hatched.

Pigeons, for the first few weeks after they are hatched, are invariably supplied with food regurgitated from the crops of their parents; and in the early stages of their existence the food is always in a soft or pulpy state, so as to render it easy of digestion.—Gallinaceous birds always pick their own food as soon as they run from the shell.

Pigeons are uniformly monogamous, and the male bird takes a share in incubation.—Gallinaceous birds are, generally speaking, polygamous, and the male never takes any part in incubation.

Pigeons are strictly vegetable feeders.—Gallinaceous birds, in their early days, are fond of and require insect or other animal food.

The mode of fighting and courtship, the voice and gait, are characteristically different in the *Columbidæ* and the *Rasores*. The feathers of the two classes are of a different texture,—so much so as to afford ground for the old wives of Yorkshire to assert, that the sick cannot die on a pillow of Pigeons' feathers.

We now come to the difference of structure; and here I would observe, that when a particular organ or part is greatly developed in any one species or group of an order, the same is generally more or less developed (though frequently only rudimentarily) in the whole of the order, the particular degree of development depending on the peculiar habits and necessities of the species individually.

I have by me skeletons of three genera and five distinct species of Pigeons; and of thirteen species of true Gallinaceous birds, among which are some of each of the three families, *Pavonidæ*, *Tetraonidæ*, and *Cracidæ*.

It is evident, at the first glance, that they form two perfectly distinct and well-defined groups. Here follow the distinctions:—

The Pigeons have a long, slender bill, the nasal aperture forming a narrow slit, and running nearly to the extremity of the bill. (I have no skeleton of the hard-billed fruit-eating Pigeon, which would probably present some modification of this form.)—Gallinaceous birds have the bill strong, short, and arched, with the nasal aperture short and oval.

Pigeons uniformly possess a furcula, terminating at the extremity of the fork, without any appendage.—Gallinaceous birds always have a bony process or appendage at the extremity of the fork of the furcula, similar to what we see in the Domestic Fowl, but varying in some degree in the different genera and species in size and form.

Pigeons may be called long-winged birds; having the extremity, or what may be termed the hand bones of the wings, uniformly of greater length collectively than the humerus; but these bones are much more developed in the powerful-winged Pigeons, than in the Turtles and Ground Doves.—Gallinaceous birds have,

without exception, short wings, the hand bones, collectively, being shorter than the humerus.

The sternum of Pigeons has one moderately deep notch or emargination on its exterior edge, and one shallow one, or in many instances only a small hole pierced near the posterior edge.—The sterna of all Gallinaceous birds have two very deep emarginations on each side.

The keel in Pigeons is very much rounded off at its anterior extremity, is of great depth, and extends as far forwards as the anterior point of the sterna.—In Gallinaceous birds the keel approaches much nearer to a straight line, is of less proportional depth, and terminating generally in a point; though the *Cracidæ* certainly have the keel more resembling that of the Pigeon, than the other classes. The keel seldom exceeds two-thirds the length of the sternum; in some instances it is not much more than half the length, and it never reaches nearly to its anterior extremity.

In Pigeons the hind toe is placed at the bottom of the tarsus, on a level with the front toes, as obtains in the *Insessores*, and the front toes have no connecting membrane.—Gallinaceous birds (I believe), with the single exception of the Guan, have the hind toe situated higher than the front toes, which are always united by a membrane.

The *Columbidæ* have the heart proportionably larger than the *Rasores*.—Cuvier says, when speaking of the intestines of birds:—"Birds generally have two cæca, which insert themselves on each side of the intestinal canal; in omnivorous and graminivorous birds, they are usually long and of great size." Here I think he speaks rather too generally. I have examined several species and some genera of the *Columbidæ*, which are peculiarly graminivorous; most of them entirely want the cæca; and where they exist, they are so small as to be nearly microscopic.

In all the *Rasores* which I have examined, the cæca are considerably developed; in the Red Grouse these organs are very large,—affording a wise and seasonable provision for those privations to which the birds are subjected during periods of continuous snow.

I have no intestines of the Curasow, the Guan, or the Crowned Pigeon; but as the two former approach the other *Rasores* so nearly in the form of their skeletons, I assume that their cæca and crops would follow the same type; and as the skeleton of the Crowned Pigeon so nearly resembles that of the typical *Columbidæ*, I presume that, like them, it will want the cæca.—I regret not having preserved the intestines of these birds; but when I began preparing skeletons of birds, I was so occupied with the bony structure, that I attended to no other trait of their anatomy. Such, I believe, is often the case on taking up a new subject; we know not what is likely to be useful, and often throw away

opportunities of gaining information which are not easily recovered. It is only as the mind becomes familiar with one subject, that it is prepared to see the different bearings of those that are related to it, and to appropriate them to its use. When I commenced the pursuit, I had read nothing whatever on the subject, and had no one to direct my labour. I was not even aware, that some birds had cæca and others none, that the sclerotic membrane of their eye was furnished with, and supported by, a ring of bony plates, or any other of the facts of comparative anatomy. But to return.

I now come to the points of agreement between the *Rasores* and the *Columbidæ*. Here I find myself quite at fault, and shall be glad of the friendly assistance of my readers; for I find a total absence of that kind of resemblance, either in habit, function, form, or internal structure, which I think ought invariably to accompany the different families of one order. Indeed the only points of similarity I can discover betweeen them, are, that the one is principally and the other entirely a vegetable feeder; and that they each have a membranous crop as well as a cartilaginous one, and a gizzard; even these are shared by several other families of birds, and the membranous crop of the *Rasores* and the *Columbidæ* differs in shape; in the former it is globular, in the latter composed of two lobes.

Pavonidæ and *Tetraonidæ* are said by Selby to constitute the typical forms of the *Rasores; Cracidæ*, *Struthionidæ*, and *Columbidæ*, to be aberrant families of the same group. To shew in how unequal a degree they are entitled to the term aberrant, I would observe, that out of 17 distinct points of agreement existing between the *Pavonidæ* and the *Tetraonidæ*, the *Crucidæ* agree with them in fourteen, the *Struthionidæ* in seven, and the *Columbidæ* in only one.

To make the order *Rasores* consist of these five families, appears to me very incongruous, and to arise more from a desire of adapting them to the exigences of a preconceived theory, than from any natural affinities observable between them. A circle* composed of families differing so greatly in the amount of their aberrations, presents, according to my ideas, chasms so extensive and frightful between the different families of which it is composed, as not at all to accord with the beautiful order of Nature; whereas, if placed in separate orders, we find the extreme species running into each other, and forming one harmonious whole, which cannot be contemplated without feelings of admiration and delight.

* I have written the preceding observations without being aware of the views of the Editor of *The Naturalist* on Systematic Zoology, and of course without wishing to hurt the feelings of any one. I have, in fact, given my own candid opinion on the subject.—T. A.——[This is precisely what we should wish all our Correspondents to do. Although we would by no means have our readers suppose that Mr. Allis has, in the above paper, demolished the quinary or circular theory, yet we consider his remarks well worth the attention of the quinary systematist.—Ed.]

THE NATURALIST ABROAD;

OR, DAYS IN THE WOODS AND FIELDS;

INCLUDING INCIDENTAL BOTANICAL AND ENTOMOLOGICAL NOTICES.

By Edwin Lees, F. L S., and F. E. S. L.

No. II.

The morning Lark has not yet heralded the day; all is obscure in the misty mantle that envelops sleeping Nature, and the river rolls its dark noiseless current, irradiated only by the scanty gleam of a solitary planet. As I penetrate among the groves and glens, an overpowering stillness seems to prevail, broken only at long intervals by the distant bark of the watch-Dog, or the crowing of the vigilant Chanticleer. But a distant harmony now sweeps its cadence through the air, rising and blending with the breeze that wafts sighing through the bushes. It comes like the memory of departed years, for it is a pleasing sound that will ere long cease its intonation in these vales. It is the bells on the teams of Herefordshire, that sound far in the silence of the morning, and which once warned approaching vehicles that there was no passing each other through the deep hollow-ways and water-courses then forming the roads. Custom continues the old bells that have descended from horse to horse and harness to harness, ever since the old timber-mansion rose beside its Yew-tree; but the roads have become wider, the narrow defiles are now abandoned to the *Marchantiæ* and the Ferns,—the old tenant is succeeded by a modern "agriculturist," who knows not bells,and the harmonious jingle will soon tell the tale of other times no more!

We have imperceptibly got across the fields to the brink of the river, and here, beneath a Willow, a Bat is taking his early breakfast. It is not our little friend of the barn and out-house, fluttering to and fro like a parachute, nor yet is it the swift darter of evening snapping his wing as he hurries over the water, for this seems confined to one spot, where he works away with persevering industry round and round the tree, in the dubious twilight, though the glimpse we obtain of him is scarcely sufficient to distinguish him satisfactorily. A brilliant saffron tint now spreads along the brightening east, the stars are rapidly fading away, various Moths dash along for their last career in the cool air, the solemn Heron steals silently, flagging his wings to a deeper recess among the bulrushes, and a cloud of Rooks make the air resound with their repeated cawings, as they slowly fly over us beyond the upland woods.

It is now quite light, and all along the borders of the wood before us innumerable Roses bend their snowy dew-covered petals, while the devious course of the river is marked far along the vale, by a cloud of rolling steam that hides the current foaming here and there among the stones in the shallows. We have gained the summit of the hill through a host of dewy Mosses and sleeping *Cisti*, just as the golden disk of the expected sun peers proudly over the long dark rampart of eastern heights. The chirping birds hail his rising, and the Cuckoo vainly attempts to continue the melodious notes that in the vernal hours brought news from Paradise! But it is useless, one *cuc* and a hoarse cough, announces too plainly that advancing summer directs an inforcement of the "silent system" from the feathered throng. And we are silent, as we gaze with gratitude on the wide landscape now revealed beneath the resplendent gleam of the monarch of day. Beauty is retiring before utility, for the wants of man must be supplied as well as his eyes charmed. The orchards are all faded into dullness, but the green fruit hidden beneath the leaves is swelling into maturity; the corn fields are rising into flowering vigour, but the mower whets his scythe, and the flowers and grasses in the wide golden-tinged meadows, lie withering in the morning beams. The fragrance now borne upon the breeze is of the most exquisite kind; the balsamic odours wafted from the flowering Bean-field, mix with the scent of the aromatic hay, and the profusion of fragrance rising from the empurpled meads of Honeysuckle Clovers, forms a luxurious olfactory treat, which they only can fully understand who have waded knee-deep in the dewy grass, leaped from stone to stone over the rapid brook, or, in search of Nature's beauties, dashed in the gloom of twilight through boggy meadows, or deep entangled underwood. There is a Humble Bee's (*Bombus terrestris*) nest in the bank close by, and one by one the huge hairy insects emerge from the entrance, shake their wings, and with a solemn boom fly off to their desultory labours. How often have I chased them in early life, confined them under broken panes of glass with Dandelions, or exclaimed with SHAKSPEARE,—"Monsieur Cowweb, good Monsieur, get your weapons in your hand, and kill me a *red-nipt Humble-Bee*, on the top of a Thistle; and, good Monsieur, bring me *the honey-bag*!"——a commission my thoughtless companions were but too eager to execute. Loudest of the insect buzzers, his boom heard far in the air, and compared by ST. PIERRE to a fire-coal among the bushes, is still always listened to with pleasure, as a pledge of confirmed summer, bright sunny days, and short nights.

Here is an old grotesque Oak, on whose withered Stags-horn arms five hundred winters have spent their rage in vain; it stands as it would ever stand, still partially decked in verdure, still rooted with power to resist an ordinary hurricane, but nevertheless it displays the ensigns of ruin. The Polypody

(*P. vulgare**) has mounted upon its trunk, the Pipewort (*Fistulina hepatica*) oozes its red, liver-like lobes from its orifices, and a colony of Black Ants (*Formica fuliginosa*) are excavating its anterior into countless hollow galleries and chambers. These sable Ants will occasionally honeycomb the floors of houses in a most singular manner; leaving a dark extensive series of labyrinthal work, that from its burnt sooty appearance might be supposed cumbrous and heavy, but which, when taken up, feels exceedingly light, as I have ascertained in several instances. From a fragment of this manufactured pasteboard (for such it almost is), thus worked up by the Ants, and taken from the floor of a house, curiously enough, a Death's-head Hawk-moth (*Acherontia atropos*), once emerged, as I noticed, in a small glass-case where it had been placed. But we are now on the edge of the woodland, whose solitary glades and retired recesses invite us to refreshment, shelter, and repose. Within its gloom all is still, the soothing note of the Ring Pigeon alone being heard; but the thicket is yellow with the Cow-wheat (*Melampyrum pratense*) and the Purple Bilberry (*Vaccinium myrtillus*) spreads far and wide beneath the bushes, while here and there the golden Broom still presents a radiant object amidst the close forest trees.

We are in one of those rocky woods, whose romantic covertures so frequently adorn the bold acclivities bounding the deep valley of the green chrystal Teme. On one side we see the river splashing down the hollows of the stony wier, adorned with purple tufts of *Arundo phragmites*, the bright yellow Willow-herb (*Lysimachia vulgaris*), and the tall rank masses of the *Œnanthe crocata*; on the other a deep rocky defile extends before us, dark with verdure, along whose gulleys a rill gushes deep amidst the underwood, which takes its rise far up in the dark recesses of rock, to which superstition has assigned a name of demoniac dread.† But while we yet loiter by the stilly pool before us, edged by an array of grenadier-like *Typhæ*, and diversified by the elegant bending *Carex pseudo-cyperus*, a brown bird has shot past us to the wier, and disappeared behind the stones. It mustbe the Dipper (*Cinclus aquaticus*, FLEMING. A cautious step among the Willows brings us in full view of him. He trills a faint quavering note, now runs into the water, overhead reckless he goes, in and out, and now turns suspiciously round, preening his wing, then at it again, dashing under the water, careless of a wet coat, and now he is off behind that mass of rock. We have roused him again, and there springs his mate from that grassy islet, but both shoot away up the stream, and are lost behind yon spreading Wytch Elm, that covers half the river with its mossy

* It was the *Polypody of the Oak* that was formerly held in such estcem for medical virtues, probably arising from its comparative rarity on that tree.

† The "Devil's Den."

arms, and which some future flood must overwhelm in the waters. As we return up the weir, the Sandpiper (*Tringa hypoleucos*) circles over the water, uttering his shrill cry, and returning ever and anon on rapid wing; while around that herd of cattle silently standing near the plashy marsh, a friendly party of Swallows are chasing the winged swarms that annoy the poor animals, and rapidly clearing their vicinity of the nuisance. Conscious of the benefits conferred upon them, the Cows move not their heads, though the birds dash before their faces as closely as it is possible to do without touching them; and below, a band of Pied Wagtails (*Motacilla maculosa*) are as busily engaged with the ground insects beneath their feet.

We have penetrated into the grove, and the trees shroud us in their shade, while before us, with shrill cry, the Spotted Woodpecker darts away, just showing his crimson crest, and the Squirrel stops, inquiringly, covered with his bushy tail. The hum of noon now resounds, even amidst the shade, through every part of the wood. Wherever a vagrant ray of light can pierce, a thousand insects attend it, and dance incessantly in its radiance. It creeps on and quivers beneath that thicket of blooming wild Roses, overhanging a deep, dark, glassy reach of the rivulet,—in a moment a joyous band of *Gyrinidæ*, as if called up into electric existence by its presence, whirl about and dodge each other with unceasing celerity upon the radiant chrystal. A sullen *Bombus muscorum* murmurs as he slowly enters, and is half buried in a white archangel blossom, while troops of bright dipterous insects poise on humming wing, over the brilliant golden St. John's Worts, the green *Musca Cæsar*, and his congeners hurry briskly, buzzing as they go, and a troop of Wasps, angrily threatening, occupy every flower of the red, open-mouthed *Scrophularia aquatica*. But around that flowering Lime-tree (*Tilia parvifolia*) the combined insect concert is at its height. There hundreds of Bees, coming and going, raise a murmur of sounds heard far over the landscape, while the delicious fragrance, scented out from afar, causes, so long as day-light lasts, a continued thoroughfare through the air to the tree.

By degrees the glen assumes a gloomier aspect, the light breaks in only at intervals, the plash of water sounds among the nodding pendulous *Carices* (*C. pendula*) the hum has become fainter, and we are in the thickest and deepest part of the wood;—here, emulating the description of THOMSON—

> "Still let me pierce into the midnight depth
> Of yonder grove, of wildest largest growth,
> That forming high in air a woodland quire
> Nods o'er the mount beneath."

It is one of the felicities of the botanist and entomologist to be led, by his ardent devotion to his favourite pursuit, into scenes like these. Who comes here? none else, unless it be the unobservant woodman, with his vulgar axe

and bill to desecrate the dryads. Perhaps in the nutting season, or when the blackberries are ripe, "children in the wood" may truantize away a happy fearful holiday here. September may show the sportive 'squire eager for the slaughter of the "birds" once a-year, but happily not here now. But who wanders hither to find emotions and pleasures which no one can deny bring the contemplative mind nearer to the deity? Alas! none. Though while here forgetful of life's cares and woes, there is a taste of Paradise for all who will seek it. Look at the delicate Wood Vetch (*Vicia sylvatica*), festooning every tree with its blue-streaked flowers of transcendent beauty and delicacy; look at those Fritillary Butterflies as they hurry past, whose mosaic markings, and the pearly lustre of whose under-wings, are matchless in elegance; behold those bright *Campanulas*, blue as the bright cærulean, just visible through the net-work of branches before us, and with devotion in our hearts, and praise upon our lips, who would not wish to be a constant dweller in the wilderness? Well, thank God for this glance into the vestibule of his temple; for if envy, malice, and detraction's corrosive influence is excluded here, if reflection on these minor works of creative wisdom induce the highest and sublimest feelings, what may we not hope when, in a superior scene, injustice, error, and ignorance shall be banished for ever? But I must digress no further. An opening suddenly appears in the wood, and from its deepest solitude and gloom, we emerge into noontide irradiance, and the warmth of light and joy. The field before us swarms with the Green Forester (*Ino Statices*, Leach) covering the flowering grass in all directions, but seen only in the field close by, for beyond we totally lose it; though where the Broom spreads its scattered bushes, the beautiful Six-spot Burnet (*Anthrocera filipendulæ*) opens its gorgeous green wings to the blaze of day.

The Hop-yard just before us next invites attention, and for a moment we will inspect the plants, now mounted to some height upon the poles, and see the condition they present from the attacks of the "fly." The "fly" is a technical term given by the Hop-growers to the Aphis of the Hop (*A. humili*), which sometimes infests the plants to such a degree as entirely to prevent a crop, by drinking up the juices required to bring them to perfection. Hence it has been observed, that this apparently insignificant insect is capable of abstracting £453,000 per annum from the treasury of Britain, such a large sum having been once deficient from the usual duty paid to government upon Hops.* In all probability, however, certain peculiarities in the season, when that occurred, combined with the ravages of the Fly to destroy the Hops, and many years may roll away before such a circumstance again happens; but undoubtedly some plantations suffer in a greater or less degree from the Hop Aphis every year.

* Rusticus in *Entomological Magazine.*

Many expedients have been tried for destroying the Fly, or eluding its ravages, but hitherto without much success; though a plan proposed and acted upon by Mr. Eyton,* of using iron props for the Hops, instead of poles, is said to have been beneficial to a considerable extent. Planters, however, living close to woodland districts, where poles are abundant, will, I imagine, resort to the iron system in very few instances; hence I am led to suggest the use of poles *stripped of their bark*, as of course the cleaner they are, the less liable will they be to harbour insects, as they now do in the crannies of the bark. But perhaps, under every precaution employed, the Aphides will come; for certain it is that soon after May commences, troops are seen *on the wing* about the Hop-grounds, and shortly spread themselves over the plants, where producing a young progeny, these latter, as has been well-ascertained, after ingulphing their rostra into the leaves, and commencing the pumping-up process, rapidly increase in size, and, without any sexual intercourse, give birth to others, who proceed in the same manner to the end of the season, when winged ones are at last produced. These take their flight, pair, and are seen no more till the following spring, when the same process re-commences. From this sketch it may easily be conceived, that something more than a "moral check" is required to stop the consequences of this extraordinary fecundity; and though, to a certain, extent it is very probable the Aphis may not be injurious,† yet if that boundary is *overstepped*, ruin and destruction is the result. Here, however, a beautiful little family of coleopterous insects, the *Coccinellidæ*, step in to perform their useful services, and keep the Aphides from overstepping the limits assigned them.

If we now turn our attention to the Hop-leaves, clammy as they are, and many of them swarming with Aphides, we shall perceive several circular patches of yellow. If we examine closely, these will be seen to be eggs, and that they are those of the *Coccinellæ* will be evident, for there is a female of *C. quadripuncta* depositing her eggs, which she does very curiously and regularly, advancing and retracting her ovipositor till she has completed her yellow circle. But if we look about, numbers of *C. septempunctata*, the Common Ladybird, and *C. bipunctata*, are busy with their nuptial festivities, and all will soon be prepared for a mortal exterminating war upon the Aphides. We shall now turn our attention to the larva of *C. septempunctata*, already hatched, active, and, small as his frame may appear, with all the murderous ferocity of the Wolf in his composition! He is of a dusky blue colour, with four double orange-coloured spots on the segments of the body, and two on the thorax. He has six legs, and, moving swiftly along, seizes without compunction upon his helpless prey, devouring them upon the spot, till he has cleared the leaf, when he proceeds to another, with the pride of a

* Report of the Proceedings of the Entomological Society of London.

† I am of this opinion because almost every tree and plant has its peculiar Aphis.

conqueror, to continue his insatiable ravages. At length Nature demands an armistice; its back swells, and becomes of a duller colour; it turns itself round and round on the leaf it occupies, restless and uneasy, and at length fixes itself by the tail, remains quiescent for some time, and assumes the chrysalis state. In ten days,* forth steps a lovely insect, and claims our notice as the well-known Ladybird. First, its soft elytra are of a fine yellow, without any spots; then seven faint specks appear upon the shells, which by degrees become deeper and brighter, and the usual red hue is finally assumed. It is not indeed on the Hop only that the *Coccinellæ* attack the *Aphides*; for some years ago I remember to have observed a bed of Nettles covered with hundreds of the *C. septempunctata*, in the larva, chrysalis, and perfect states. The nettles had been literally loaded with Aphides, which the Ladybirds had nearly cleared away. The chrysalids vary considerably in hue, some being of a bright orange with black spots, others darker, with black patches, and some so very dusky as to appear almost black. When the perfect insects emerge, they are at first of a light orange colour, till the sun gives them their rich red tint. The larva of *C. bipunctata* is of a dusky brown, with black longitudinal stripes down the body, and three light orange spots arranged in a triangular manner just below the thorax; some, however, appear with the body covered with small black spots, and four black spots at the corners of the thorax. The chrysalis resembles the larva in colour, the ground being dusky white, with marks of black and brown. When touched, the head of the chrysalis suddenly springs up and falls back again. Although the members of the *Coccinellidæ* seem very sociable in their perfect state, and intermarry with each other, it is far otherwise in the larva state, for woe then to the hapless wretch who comes within reach of a stronger cousin's fangs—a death-clutch is his inevitable portion! It is thus evidently the Hop planter's interest to encourage the increase of the *Coccinellæ*, and, what is not often the case with farmers, I have in general found that to this benefit at least their eyes are pretty well open, and the Ladybirds are preserved.

A great number of *C. bipunctata* took the liberty, last winter, of quartering themselves in clusters upon the ceiling of my parlour, hall, and study, where I suffered them to stay till genial spring summoned them off. Though I thus cheerfully gave them the rites of hospitality, not one has returned this winter. It is the way of the world!

To say nothing of their utility, the *Coccinellidæ* must be allowed on all hands to be a pretty and most interesting tribe. Endeared to us even by the absurd rhymes of childhood, we are open to their real claims in riper years, and look

* This was the exact time taken by a larva I bred in confinement; but perhaps some little variation may occur.

upon them with pleasure, if not respect. Spotted and marked in a variety of ways, black on a red ground, red on a black, black on yellow, with from two to almost countless spots, or marked as with Egyptian hieroglyphics in every form and shape, they are elegant and pleasing. STEPHENS has enumerated thirty species as natives of Britain, and probably careful research might detect many more.

I must here just allude to another enemy of the Aphides, which shows them no mercy, though it acts in a somewhat different way from the Ladybird. This is a minute Ichneumon, whose operations are well deserving attention, and I have several times observed it. Sometime ago, putting some Rose-leaves covered with Aphides under a glass, I found I had enclosed a small Ichneumon, whose manœuvres I therefore inspected. He felt about with his antennæ, and the Aphides manifested much alarm at his presence by the movements of their bodies; at length, approaching one of them, it suddenly bent its abdomen between its legs, and immediately protruding its ovipositor, left an egg glued to the body of the insect; thus it did with several, and it was very curious to observe the proceeding. This egg produces a little white grub, which devours the body of the insect to which it is attached, and then seizes upon the Aphides around it, till it has arrived at its full growth.

But we must resume our progress, and lo! the *Vanessa C. album*, the Butterfly of the ground, starts before us, flying where that long streak of rosy purple, on the brow of the limestone height, points out the habitat of the beautiful *Onobrychis sativa*; and, scattered amid the rocky hollows by the side of the wood, the bright Pyramidal Orchis *(O. pyramidalis)*, both purple and white, blooms luxuriantly, while the delicate and sprightly Marbled Butterfly *(Hipparchia Galathea)* plays about the clustered flowers. Here, for the present, we rest upon the mossy turf, fanned by the breeze of the hill, while rocks feathered with wood, solitary glens, groves, heaths, and woodlands, rise in view, in long succession, terminated in the far distance by the dark, solemn, Cambrian mountains.

PAPILIO PODALIRIUS.

IN the last number of *the Naturalist*, I perceive Mr. ALLIS has recorded some observations on the above insect. In a conversation with me a short time ago, the point chiefly dwelt upon by Mr. A. was the fact, of the person who sold him the specimens having professed herself, at first, unable to tell where they were captured. She did not then expect to see him again; but, in the interval before the second interview, made the inquiry, the result of which Mr. ALLIS has stated.

This seems strongly corroborative of the veracity of the woman, and appears to establish, beyond question, the occurrence of this noble insect in Britain—that is, for those who have entertained any doubt of the fact, which no one of any candour could, after the appearance, about a year ago, of the figure and description of it in Mr. CURTIS's splendid work, *British Entomology*.

April 1, 1837. F. O. MORRIS.

AN EXPLANATION OF THE LATIN NAMES OF BRITISH BIRDS.

BY THE REV. F. ORPEN MORRIS, B. A.,

Honorary Member of the Ashmolean Society, &c., &c.

(Continued from p. 29.)

Sylvia. From *sylva* a wood. Warbler.

——— *Tithys.* Tithys Warbler.

——— *Phœnicurus.* φοινιξ purple or red, and ουρα a tail. Redtail Warbler.

——— *Provencalis.* That belongs to Provence of France. Dartford Warbler.

——— *rubecula.* *Rubeo,* to be red, from the colour of the breast. Redbreast Warbler.

——— *luscinia.* [From *lugens,* mournful, and *cano,* to sing.—ED.] Nightingale.

——— *cinerea.* Grey, ash coloured. Whitethroat Warbler.

——— *sibilatrix.* A hisser. Wood Warbler.

——— *hortensis.* That inhabits gardens. Garden Warbler.

——— *sylviella.* A diminutive of *sylvia.* Whitebreast Warbler.

——— *atricapilla.* *Ater,* black, *capillus,* the hair of the head. Blackcapt Warbler.

——— *hypolais.* Υπο λαας under stones, where it seeks for Worms. Or, from which its voice seems to come? Hedge Warbler.

Salicaria. [From *Salix,* Willow.—ED.] Reedling.

——— *locustella.* A diminutive of *Locusta,* a Locust. From its chirping note. Grasshopper Reedling.

——— *arundinacea.* That inhabits Reeds. Marsh Reedling.

——— *phragmites.* Sedge. Sedge Reedling.

Accentor. A singer, chaunter, or warbler. Dunnock.

——— *modularis.* Melodious. Hedge Dunnock.

——— *Alpinus.* Alpine. Alpine Dunnock.

Hirundo. A Swallow.

——— *riparia.* That belongs to banks. Bank Swallow.

Hirundo. urbica. That belongs to cities or houses. Martin Swallow.
——— *rustica.* That belongs to the country. Chimney Swallow.
Cypselus. [Κυψελις, a basket; probably with allusion to the nest.—Ed.] Swift.
——— *Alpinus.* Alpine. Alpine Swift.
——— *murarius.* From *murus* a wall, to which it has a facility of clinging. Wall Swift.
Caprimulgus. Caper a Goat, and *mulgeo* to milk. Nightjar.
—— *Europæus.* European. European Nightjar.
Cuculus. [From the well-known note of the bird.—Ed.] Cuckoo.
——— *canorus.* Musical. Grey Cuckoo.
Columba. Pigeon.
——— *migratoria.* Passenger or migratory. Passenger Pigeon.
——— *palumbus.* A Dove. Ring Pigeon.
——— *œnas.* Burrowing Pigeon.
——— *livia. A livido colore,* from its livid colour. Rock Pigeon.
——— *turtur.* A Dove. Turtle Pigeon.
Phasianus. [From the river Phasis, whence the Pheasant was first imported to Europe.—Ed.] Pheasant.
——— *Colchicus.* From *Colchis,* whence the bird was first brought to Europe. Common Pheasant.
Perdix. A Partridge.
——— *cinerea.* Grey, ash-coloured, cinereous. Grey Partridge.
——— *rufa.* Red. Red-legged Partridge.
Coturnix. A Quail.
——— *major.* Greater, larger. Common Quail.
Lagopus. Λαγως a Hare, and πους a foot, having soft feathers down to the foot. Ptarmigan.
——— *vulgaris.* Common. White Ptarmigan.
——— *Scoticus.* Scotch. Red Ptarmigan.
Tetrao. A bird supposed to be the present. Grous.
——— *tetrix.* Black Grous.
——— *urogallus.* Gallus a cock, and ουρος a mountain. Capercail Grous.
Otis. A bird so called from the long feathers near its ears (ωτις); supposed, therefore, to be the Bustard. Bustard.
—— *tetrax.* Little Bustard.
—— *tarda.* Slow,—rather a strange designation for so swift a bird. Turnip Bustard.
Œdicnemus. Οιδεω to swell, and κνημος a thigh. Thick-knee.
——— *crepitans.* From its creaking note. Stone Thick-knee.

Vanellus. From its *fan-like* wings, another meaning of the word *Vanellus.* Lapwing.

——— *cristatus.* Crested. Peewit Lapwing.

Squatarola. Squatarole.

——— *cinerea.* Ash-coloured, cinereous. Grey Squatarole.

Charadrius. A bird supposed to be the Dotterel Plover. Plover.

——— *pluvialis.* Rainy. Golden Plover.

——— *morinellus.* Μωραινω to be silly, the bird being so foolish as to imitate the motions of the fowler. Dotterel Plover.

Charadrius hiaticula. Ringed Plover.

——— *Cantianus.* Kentish. Kentish Plover.

Cursorius. *Curro*, to run. Swiftfoot.

——— *isabellinus.* so called from its *isabel* colour. Cream-coloured Swiftfoot.

Arenaria. *Arena* the sand. Sanderling.

——— *calidris.* Common Sanderling.

Glareola. *Glarea*, sand, shingle, which this bird frequents. Pratincole.

——— *torquata.* Having a ring (round its neck). Collared Pratincole.

Strepsilas. στρεφω to turn (as it does the stones). Turnstone.

——— *collaris.* *Collare*, a collar. Common Turnstone.

Hæmatopus. αμα blood, οπς the face, or countenance. Oystercatcher.

——— *ostralegus.* Ostræa, Oysters, and *lego*, to collect. Common Oyster-catcher.

Himantopus. A long-legged bird supposed to be the present. Stilt.

——— *melanopterus.* Μελας black, and πτερον a wing. Black-winged Stilt.

Machetes. Μαχομαι to fight, from its quarrelsome disposition. Ruff.

——— *pugnax.* Quarrelsome, pugnacious. Common Ruff.

Tringa. Tringa.

——— *cinerea.* Ash-coloured, cinereous.

——— *maritima.* That frequents the sea shore. Purple Tringa.

——— *subarquata.* Diminutive of *arquatus*, arched, or curved, as is the bill of this bird. Curlew Tringa.

——— *Temminckii.* Temminck's, named after him. Temminck's Tringa.

——— *variabilis.* Variable (in appearance, in winter and summer.) Dunlin Tringa.

——— *pusilla.* Very small. Minute Tringa.

Totanus. Sandpiper.

——— *fuscus.* Dark. Dark brown. Dusky Sandpiper.

Totanus. hypoleucos. Υπο under or beneath, and λευκος white. Common Sandpiper.

——— *macularia.* *Macula* a spot. Spotted Sandpiper.

——— *glareola.* *Glarea* sand, pebbles, shingle, which these birds frequent.

——— *ochropus.* Ωχρος yellowish-green, and Πους, a foot. Greenshank Sandpiper.

——— *glottis.* [Γλωττα a tongue; having a long tongue.—Ed.] Green Sandpiper.

——— *calidris.* Redshank Sandpiper.

Limosa. Limus, mud, which this bird frequents. Godwit.

——— *rufa.* Red. Red Godwit.

——— *melanura.* Μελας black, and ουρα a tail. Blacktailed Godwit.

Avocetta. Avocet.

——— *recurvirostra.* Having the bill bent backwards. Scooping Avocet.

Scolopax. Σκολοπαξ a Woodcock. Snipe.

——— *Sabini.* So named after Captain Sabine. Sabine's Snipe.

——— *grisea.* Dark grey.

——— *gallinula.* [A diminutive term, signifying the small size of the bird.—Ed.] Jack Snipe.

——— *gallinago.* [Same as *gallinula.*—Ed.] Common Snipe.

——— *major.* Greater or larger. Great Snipe.

——— *rusticola.* An inhabitant of the country. Wood Snipe.

Numenius. Curlew.

——— *phæopus.* φαιος, dark, and οψ, the countenance. Wimbrel Curlew.

——— *arquata.* Arched, curved (its bill being so). Common Curlew.

Ibis. Ibis.

—— *falcinellus.* *Falcula*, a crooked hook, or talon. Glossy Ibis.

Platalea. [Signifies broad or wide, with regard to the bill.—Ed.] Spoonbill.

——— *leucorodia.* Λευκος white [and ροδεος red.—Ed.] White Spoonbill.

Grus. Crane.

—— *cinerea.* Ash-coloured, cinereous. Common Crane.

Ciconia. Stork.

——— *alba.* White. White Stork.

——— *nigra.* Black. Black Stork.

Botaurus. Compound of Bους a Bull, and *Taurus* a Bull, whose bellowing its note was supposed to resemble. Bittern.

——— *stellaris.* *Stella* a star; spotted, starred. Common Bittern.

——— *Mohoko.* A proper name. American Bittern.

——— *minutus.* Small, minute. Little Bittern.

Nycticorax. Νυξ the night, and κοραξ a Raven. Nighthern.
——— *Europæus.* European. Common Nighthern.
Ardea. [*Arduus*, high, lofty, with allusion to flight.—ED.] Heron.
——— *garzetta.* Egret Heron.
——— *alba.* White. White Heron.
——— *russata.* *Russeus*, flesh or buff-coloured. Buff-backed Heron.
——— *purpurea.* Purple. Purple Heron.
——— *cinerea.* Cinereous, ash-coloured. Common Heron.
——— *ralloides.* Resembling a Rail. Squacco Heron.
——— *aquatica.* That frequents the water. Aquatic.
Crex. Κρεξ. A Crake. Crake.
—— *pratensis.* Of or belonging to Meadows. Meadow Crake.
—— *porzana.* Spotted Crake.
Gallinula. Gallinule.
——— *pusilla.* Very small. Little Gallinule.
——— *Foljambei.* So called after Mr. FOLJAMBE. Foljambe's Gallinule.
——— *chloropus.* Χλωρος green, and πους a foot. Common Gallinule.
Fulica. [*Fuligo*, blackness.—ED.] Coot.
——— *atra.* Black. Common Coot.
Phalaropus. φαλαξις a sea bird, supposed to be the same as our Phalarope. Phalarope.
——— *hyperboreus.* Northern: Red Phalarope.
——— *lobatus.* having lobed or semipalmated feet. Grey Phalarope.
Podiceps. *Pes*, a foot, and *capio*, to catch. Halt, lame, limping, as this bird appears when on the land, out of its proper element. Grebe.
——— *minor.* Lesser. Little Grebe.
——— *rubricollis.* Having a red neck. Rednecked Grebe.
——— *cornutus.* Horned. Horned Grebe.
——— *auritus.* Eared. Eared Grebe.
——— *cristatus.* Crested. Crested Grebe.
Uria. A bird supposed to be the present. Guillemot.
—— *troile.* Foolish Guillemot.
—— *grylle.* Γρυλλη, a grunting sort of note, which this bird has. Black Guillemot.
—— *alle.* Αλλη, another, a different one, a second.
Colymbus. Κολυμβαω, to dive. Diver.
——— *septentrionalis.* Northern. Red-throated Diver.
——— *glacialis.* Belonging to the icy regions. Northern Diver.
——— *arcticus.* Arctic. Black-throated Diver.

Alca. Auk.

—— *torda.* Corrupted from *tarda*, slow? the bird being very unwieldly in its make, and slow in its motion. Razorbill Auk.

—— *impennis.* Wingless. Great Auk.

Mormon. Μορμω, a hobgoblin, a bugbear. Puffin.

——— *fratercula.* Common Puffin.

Sula. From Συλαω to rob, as the Gannet was supposed to rob other birds of prey. Gannet.

—— *alba.* White. Solan Gannet.

Carbo. *Carbo*, a coal? So called from its dingy appearance? Cormorant.

——— *cormoranus.* A coined word for the Cormorant.

——— *graculus.* Noisy, shrieking.

——— *cristatus.* Crested. Crested Cormorant.

Lestris. Λῃστρις, predatory. Skua.

——— *cataractes.* Καταρρακτης, a cataract or torrent. This bird darts down on its prey with the force of a torrent.

——— *parasiticus.* Parasitic; the notion which gave rise to this name is exploded. Arctic Skua.

——— *pomarinus.* Pomarine Skua.

Larus. Λαρος, a Sea-mew or Sea Gull. Gull.

——— *glaucus.* Glaucous. Glaucous Gull.

——— *marinus.* Of or belonging to the sea. Black-backed Gull.

——— *fuscus.* Dark, brown, dingy. Fuscous Gull.

——— *tridactylus.* Three-toed. Kittiwake Gull.

——— *ridibundus.* Inclined to laugh (i. e. its note). Black-headed Gull.

——— *capistratus.* Head-stalled, haltered.

——— *minutus.* Small, little, minute. Little Gull.

Sterna. Tern.

——— *Anglica.* English. Gull-billed Tern.

——— *arctica.* Arctic. Arctic Tern.

——— *hirundo.* A Swallow, which bird it in some particulars resembles.

——— *Cantiaca.* Kentish. Sandwich Tern.

——— *Dougalli.* Of or belonging to DUGALD? [Discovered by Dr. MACDOUGAL.—ED.] Roseate Tern.

——— *fissipes.* Cloven-footed. Black Tern.

——— *minuta.* Small, minute. Little Tern.

——— *Caspia.* Caspian. Caspian Tern.

Thalassidroma. Θαλασσα, the sea, and τρεχω, δεδρομα, to run. From its way of seeming to run on the tops of the waves. Petrel.

——— *pelagica.* Of or belonging to the sea. Stormy Petrel.

Thalassidroma Bullockii. So called after Mr. BULLOCK. Forktail Petrel.

Puffinus. Shearwater.

——— *cinereus.* Ash-coloured, cinereous. Grey Shearwater.

——— *Anglorum.* Of the English (coasts). Manks Shearwater.

Procellaria. Procella, a storm, which the Fulmar is erroneously supposed by sailors to forerun. Fulmar.

——— *glacialis.* Belonging to the icy regions. Northern Fulmar.

Mergus. Mergo, to dive. Merganser.

——— *cucullatus.* Hooded. Hooded Merganser.

——— *albellus. Albus*, white. Smew Merganser.

——— *serrator. Serra*, a saw, from the notched appearance of its bill. Red-breasted Merganser.

——— *merganser.* Compounded of *mergus*, and *Anser*, a Goose. Common Merganser.

Cygnus. Swan.

——— *ferus.* Wild, savage. Whistling Swan.

——— A Swan.

——— *Bewickii.* So named after the immortal BEWICK. Bewick's Swan.

Anser. Goose.

——— *ruficollis.* Red-necked. Red-breasted Goose.

——— *ferus.* Wild, savage. Bean Goose.

——— *albifrons.* White-fronted. White-fronted Goose.

——— *brenta.* A name coined for the Brent Goose. Brent Goose.

——— *Bernicla.* A coined word for the Bernacle Goose. Bernacle Goose.

Somateria. Σωμα a body, and εριον, wool or down. Eider.

——— *mollissima.* Most soft. Common Eider.

——— *spectabilis.* Handsome, worthy to be admired. King Eider.

Chauliodus. Χαυλιοδους, having prominent teeth? The name, in my opinion, would be more appropriate to the Shoveller. Gadwall.

——— *strepera.* Noisy, clamourous. Common Gadwall.

Tadorna. Shieldrake.

——— *rutila.* Ruddy, ferruginous. Ruddy Shieldrake.

——— *vulpanser.* [*Vulpes*, a Fox, and *Anser*, a Goose; from the Fox-colour on the breast.—ED.] Common Shieldrake.

Anas. Duck.

——— *boschas.* [*Bosco*, a wood; from the partiality of the bird to wooded islands.—ED.] Common Duck.

Spathulea. Spathula, a spatula, which surgeons use; shaped somewhat like the bill of this bird. Shoveller.

——— *clypeata.* Armed with a shield. Common Shoveller.

Fuligula. *Fuligo*, soot; so called from its dark-coloured breast. Pochard.
——— *nyroca.* Nyroca Pochard.
——— *marila.* Scaup Pochard.
——— *ferina.* Adjective derived from *ferus* wild. Red-headed Pochard.
——— *cristata.* Crested. Tufted Pochard.
Oidemia. Οιδεω, *tumesco*, so called from the protuberance at the base of the bill in this genus. Scoter.
——— *perspicillata.* Surf Scoter.
——— *fusca.* Dark, brown, dingy. Velvet Scoter.
——— *nigra.* Black. Black Scoter.
Mareca. Wigeon.
——— *fistularis.* *Fistula*, a pipe. This name is derived from the note of the bird resembling that instrument. Common Widgeon.
Querquedula. A bird supposed to be the Teal. Teal.
——— *glocitans.* *Glocio*, to cluck or quack. Bimaculated Teal.
——— *circia.* Gargany Teal.
——— *crecca.* Common Teal.
Dafila. Hareld.
——— *caudata.* Tailed, having a long tail. Long-tailed Herald.
Clangula. *Clango*, to clang or cry, like a Goose or Crane. "Like a Crane or Swallow, so did I *chatter*." Garrot.
——— *histrionica.* Harlequin Garrot.
——— *vulgaris.* Common. Golden-eyed Garrot.

Lendal, York, Jan. 10, 1836.

A Supplement and additional remarks will be added in the next number.

THE CHARMS OF A NATURAL AVIARY.

By Edward Blyth.

I have lately been revelling in the delights of a place consisting of that pleasing admixture of trees and bushes, of furze-brakes and forest, which of all others is perhaps most interesting to the naturalist. It is a truly charming spot, and close to my residence. With the exception of the Reedlings and the Pied Fly-catcher, every migratory songster we possess was within hearing. A Nightingale was warbling exquisitely over my head, and was so familiar as to surprise me; a Garden Fauvet was straining to out-sing him on the next tree. The Blackcapt Fauvet and Willow Warbler chirped and twittered perpetually in an almost contiguous clump of trees, where also was heard the Cuckoo cry, and the *peep, peep,*

peep, of the Wryneck. Close at hand were two Redstarts, and Whin Chats, Whitethroated Fauvets, and Locustells, among the bushes. Here also the Garden Ouzel warbled full and melodious, while the Thrush's delightful note everywhere resounded, with the Missel Thrush also in the distance. Every one of these species I noticed, and one too in addition (besides Redbreasts, Dunnocks, Wrens, &c.) which, as it has been the subject of much error, I shall mention more particularly; this is the White-breasted Fauvet (*Ficedula garrula*), of which I noticed as many as nine different individuals, two only in the bushes, all the remainder in trees, some at a considerable height; and I three or four times observed them utter their loud shivering concluding cry, while flying from one tree to another. I never knew this species so plentiful as it appears to be this season, as is in fact the case with the rest of our migratory birds.

At the same place I tried yesterday to entrap a Locustell, but ineffectually, though I hired a man to attend the trap the greater part of the day; and I myself watched it early in the morning, for two or three hours. This bird opens its mouth in a remarkable manner while trilling, an action which I find, by the assistance of a pocket telescope, imparts a perceptible vibration to the whole body. The Locustells are certainly not so shy as is supposed, nor do they appear to trouble themselves much about concealment, being generally rather conspicuous when uttering their cry. Here they are very far from being uncommon. I have no reason to suspect that it is a double-moulting bird, as the Pipits are. I have never known it utter its cry on the wing, but still would not venture to dispute the fact, as I think it *probable*, from analogy with the brake birds.

Montagu says, very correctly, of the Locustell, that "it is not a plentiful species," which is quite true as compared with the Fauvets; at the same I entirely differ from Sweet, who says that it is extremely rare near London. I think I could obtain about two dozen specimens annually, within a circle of five miles from this place; and am pretty certain that four or five pair breed in three localities, diverging less than half that distance. I have been watching them much this season with my telescope, to ascertain whether they run or hop,* though as yet in vain. The other day one remained some time on a bare piece of ground just before me, but, unfortunately, I did not perceive it before it flew up. The wild and beautiful spot alluded to in the former part of these notes, has already afforded me much amusement and instruction, and I still anticipate passing many delightful hours in a place so admirably adapted for ornithological observation.

Tooting, Surrey, May 14, 1836.

* Mr. Hoy informs me he has repeatedly seen it *running*, and he is of opinion that it never progresses otherwise on the ground.—E. B. *April* 1, 1837.

LEICESTERSHIRE FLORA.

By the Rev. Andrew Bloxam.

I beg to send, for insertion in *The Naturalist*, the result of my botanical excursions in Leicestershire, the south-western half of the county chiefly having been explored. The catalogue contains about seven hundred species.

Class I. *Hippuris vulgaris*. River Soar, near Ayleston, pond at Staunton Harold; near Shenton.

Class II. *Ligustrum vulgare*. In hedges, common.—*Veronica serpyllifolia*. Com. —*V. scutellata*. Grooby Pool; between Newbold Verdun and Desford; in a pond on the left of the road, between Cadeby and Sutton.—*V. anagallis*.—*V. Beccabunga*. —*V. officinalis*. Not uncommon.—*V. montana*. Woods in Charnwood Forest.— *V. Charmædrys*.—*V. hederæfolia*.—*V. agrestis*.—*V. polita*. In gardens and cultivated fields, with the foregoing; not rare.—*V. arvensis*.—*Pinguicula vulgaris*. Formerly at Grooby Pool, and Pocket-gate, near Loughborough, found now but sparingly in Charnwood Forest.—*Utricularia vulgaris*. Canal, near Congerstone. *Lycopus Europæus*. Very common in watery ditches.—*Salvia verbenaca*. On rocks about Croft village.—*Circæa luetiana*. Charnwood Forest woods.—*Fraxinus excelsior*.—*Lemna trisulca*. About Congerstone.—*L. minor*.—*L. polyrrhiza*. Pond at Kirkby Mallory; ponds near Enderby.—*L. gibba*. Ponds at Congerstone.—*Anthoxanthum odoratum*.

Class III.—*Valeriana dioica*.—*V. officinalis*.—*Fedia olitoria*. Near Ayleston. —*F. dentata*. Near Braunstone.—*Iris pseudacorus*.—*Scirpus lacustris*.—*S. setaceus*. Charnwood Forest. Near Mount Bosworth.—*S. sylvaticus*. Near Kirby ruins; Sheet-hedges Wood, near Grooby Pool; Mount Bosworth, near Congerstone; not rare in the county.—*Eleocharis palustris*.—*E. acicularis*. Banks of Grooby Pool.—*E. fluitans*. Charnwood Forest.—*Eriophorum pubescens*. Near Loughborough.—*E. angustifolium*. Grooby Pool.—*Nardus stricta*. Charnwood Forest; about Congerstone.—*Alopecurus pratensis*.—*A. agrestis*. Not rare. —*A. geniculatus*.—*Phalaris Canariensis*. Near Zouch Mill.—*P. arundinacea*. —*Phleum pratense*.—*Milium effusum*. Nailstone Wigs; between Mount Bosworth and Sutton.—*Calamagrostis epigejos*. In Martinshaw; abundant in Bosworth Park, and at the Ambien Wood.—*Agrostis canina*.—*A. vulgaris*.—*A. alba*. *A. var. pumila*. In Sibson Gorse cover.—*Catabrosa aquatica*.—*Aira cristata*. Croft Hill.—*A. cæspitosa*.—*A. flexuosa*. Charnwood Forest; near Braunston.— *A. caryophyllea*. Near Newtown Unthank.—*A. præcox*. Croft Hill.—*Melica uniflora*. Charnwood Forest; Ratby Woods; near Mount Bosworth.—*M. cærulea*. Charnwood Forest.—*Holcus mollis*. Near Newbold Verdun.—*H. lanatus*.—*Arrhenatherum avenaceum*.—*Poa aquatica*.—*P. fluitans*.—*P. trivialis*.—

P. pratensis.—*P. annua.*—*P. distans.* Under canal bridges near Congerstone.—*Triodia decumbens.* Charnwood Forest; near Kirby Firth. Congerstone pastures.—*Briza media.*—*Dactylis glomerata.*—*Cynosurus cristatus.*—*Festuca ovina.* Charnwood Forest; Sibson Gorse Cover.—*F. Duriuscula.*—*F. bromoides.* Charnwood Forest.—*F. myurus.* Charnwood Forest.—*F. loliacea.* Near Braunston.—*F. pratensis.*—*F. elatior.* Between Braunston and Enderby.—*Bromus giganteus.* Near Braunston.—*B. asper.* Near Braunston. *B. sterilis.* Near Braunston.—*B. secalinus.* Cornfield near Glenfield.—*B. mollis.*—*B. racemosus.*—*Avena fatua.* Near Glenfield.—*A. strigosa.* Near Glenfield.—*A. pubescens.* Braunston Church-yard.—*A. flavescens.*—*Arundo phragmites.*—*Hordeum murinum.*—*H. pratense.* Meadows at Braunston.—*Triticum caninum.*—*T. repens.* At Bilston, near Congerstone.—*Brachypodium sylvaticum.*—*Lolium perenne.*—*Montia fontana.* Grooby Pool; pond near Nailston Wigs.

Class IV. *Dipsacus sylvestris.*—*D. pilosus.* Between Barwell and Hinckley, near Garendon.—*Knautia arvensis.* Near Leicester; Dunston Basset; Newbold Verdun.—*Scabiosa succisa.*—*S. columbaria.* Dare Hills, near Liecester.—*Galium verum.*—*G. cruciatum.*—*G. palustre.*—*G. saxatile.* Charwood Forest. Mount Bosworth Park.—*G. mollugo.* Near Enderby.—*G. aparine.*—*Asperula odorata.* Charnwood Forest pastures, Mount Bosworth.—*Sherardia arvensis.*—*Plantago major.*—*P. media.*—*P. lanceolata.*—*P. coronopus.* Croft.—*Cornus sanguinea.*—*Parietaria officinalis.* Wall at Bosworth; ditto at Orton-upon-the-Hill.—*Alchemilla vulgaris.*—*A. arvensis.*—*Sanguisorba officinalis.* Very common in meadows.—*Ilex aquifolium.*—*Potamogeton densus.* Near Glenfield; Mount Bosworth; Hinckley.—*P. pectinatus.*—*P. pusillus.* Pond near Bosworth Park.—*P. gramineus.* Ditch in the Frog-hole, Grooby Pool.—*P. zosterœfolius.* Canal at Congerstone and Mount Bosworth; River Sence near Congerstone.—*P. crispus.* Pond between Congerstone and Shakerstone.—*P. perfoliatus.*—*P. lucens.*—*P. natans.*—*Sagina procumbens.*—*S. apetala.* Congerstone.—*Mœnchia erecta.* Banks of Grooby Pool; Croft Hill.

Class. V. *Echium vulgare.* Cornfield near Mount Bosworth; Gracedieu.—*Pulmonaria officinalis.* Near Gopsal; Gracedieu Wood.—*Lithospermum officinale.* Near Glenfield.—*L. arvense.* Near Carlton and Congerstone-field.—*Symphytum officinale.* Braunston; Congerstone; Snarestone.—*Lycopsis arvensis.*—*Anchusa officinalis.* Near Congerstone.—*Myosotis palustris.*—*M. cæspitosa.*—*M. arvensis.* Near Shenton.—*M. versicolor.*—*Cynoglossum officinale.* Near Braunston.—*Anagallis arvensis.*—*A. cærulea.* Kirkby.—*A. tenella.* Grooby Pool.—*Lysimachia nemorum.*—*L. nummularia.*—*L. vulgaris.* Sparingly on the Loughborough and Leicester Canal.—*Primula vulgaris.*—*P. elatior.*—*P. veris.*—*Hottonia palustris.* Near Cavendish Bridge.—*Menyanthes trifoliata.* Grooby Pool, near Elmsthorpe.—*Erythræa centaurium.*—*Datura stramonium.* Dunghill near

Braunston.—*Hyoscyamus niger.* Bradgate Park; Congerstone Church-Yard.—*Atropa belladonna.* Gracedieu Ruins.—*Solanum dulcamara.*—*S. nigrum.* Manure heap at Grooby.—*Verbascum thapsus.* Breedon Hill.—*V. nigrum.* Glenfield Village.—*Convolvulus arvensis.*—*C. sepium.*—*Samolus Valerandi.* Congerstone.—*Jasione montana.* Charnwood Forest, between Newbold Verdun and Kirkby.—*Campanula rotundifolia.*—*C. patula.* At Wilson, near Melbourne: Breddon Wood.—*C. latifolia.* Charnwood Forest, various places; between Measham and Ashby; near Mount Bosworth.—*Lonicera periclymenum.*—*Rhamnus catharticus.* Congerstone; Shakerstone.—*R. frangula.* Near Braunston.—*Euonymus Europæus.* Between Desford and Ratby.—*Viola odorata.*—*V. palustris.* Beacon and Bardon Hills.—*V. canina.*—*V. tricolor.*—*V. flavicornis.* Charnwood Forest.—*Ribes rubrum.* Wood near Grooby Pool.—*R. grossularia.*—*R. alpinum.* In plantations at Gospal and Braunston.—*Hedera helix.*—*Hydrocotyle vulgaris.* Grooby Pool; Charnwood Forest; near Newbold Verdun, and Osbaston.—*Sanicula Europæa.*—*Apium graveolens.* Tur Langton Village; Bilston, opposite Mr. Neale's.—*Petroselinum sativum.* Near the Aqueduct, Shenton.—*Helosciadium nodiflorum.*—*H. repens.*—*Sison amomum.* Congerstone.—*Ægopodium podagraria.*—*Carum carui.* Near Ashby.—*Bunium flexuosum.*—*Pimpinella magna.* Common in several places.—*P. saxifraga.*—*Sium angustifolium.* River Soar, various places; River Sence, at Congerstone.—*Œnanthe fistulosa.*—*Œ. peucedanifolia.* Grooby Pool; near Glenfield.—*Œ. pimpinelloides.* Ashby Canal, near Congerstone; abundant in a ditch on the right of the road below Sutton Wharf.—*Œ. phellandrium.* River Soar.—*Æthusa cynapium.*—*Silaus pratensis.* Common in Meadows.—*Angelica slyvestris.*—*Pastinaca sativa.* Not rare; about Congerstone.—*Heracleum sphondylium.*—*Daucus carota.*—*Torilis anthriscus.*—*T. nodosa.* Breedon Hill; Congerstone; Ayleston; Sutton.—*Scandix pecten.*—*Anthriscus sylvestris.*—*Chærophyllum temulentum.*—*Conium maculatum.*—*Chenopodium polyspermum.* Grooby Pool; Mount Bosworth; Congerstone.—*C. bonus-henricus.* Common about villages.—*C. rubrum.* On dung heaps.—*C. album.*—*Ulmus suberosa.*—*U. glabra.*—*U. montana.*—*U. major.*—*U. campestris.* All the above species of this genus are found in the neighbourhood of Congerstone, and other parts of the county.—*Viburnum opulus.* In hedges; rather common.—*Sambucus ebulus.* Near Cadeby, by the side of the Hinckley Road.—*S. nigra.*—*Staphylea pinnata.* (Planted.) Braunston and Gopsal Shrubberies.—*Parnassia palustris.* Grooby Pool; near Elmsthorpe; between the Ambien Wood and Sutton Wharf.—*Linum usitatissimum.* Meadow near Braunston, adjoining footpath; probably from seed dropped.—*L. catharticum.*—*Myosurus minimus.* Mr. Babington's garden at Thrinkstone.

Class. VII. *Berberis vulgaris.* In a hedge between Kirby Muxloe and

Newtown Unthank.—*Peplis portula.* Charnwood Forest; in a small pond on the right of a lane between Cadeby Toll-gate and Cadeby.—*Galanthus nivalis.* Bradgate Ruins.—*Narcissus pseudonarcissus.* Bradgate Ruins.—*Convallaria majalis.* Martinshaw; Buddon; Gracedieu; and other Forest Woods.—*Allium vineale.* Bank below the Floodgates; Grooby Pool; near Thrinkstone, opposite Mr. Babington's.—*A. ursinum.* Charnwood Forest Woods, especially Street-Hedges, between Cadeby and Bosworth.—*Hyacinthus non-scriptus.*—*Fritillaria meleagris.* Meadow near Worthington.—*Acorus calamus.* River Soar; near Kegworth.—*Juncus glaucus.*—*J. effusus.*—*J. conglomeratus.*—*J. obtusifolius.* Common in the canal and ponds about Congerstone.—*J. compressus.* Braunston village; Grooby Pool; Canal near Congerstone.—*J. bufonius.*—*J. squarrosus.* Charnwood Forest.—*J. acutiflorus.*—*J. lampocarpus.*—*J. uliginosus.* Charnwood Forest.—*Luzula sylvatica.* Gracedieu; Street-hedges, and other Charnwood Forest Woods.—*L. pilosa.* Street-hedges; near Bosworth; at Kirkby Mallory.—*L. campestris.*—*Rumex hydrolapathum.* Ponds at Shakerstone.—*R. crispus.*—*R. pratensis?* Congerstone pastures.—*R. sanguineus.*—*R. acutus.*—*R. obtusifolius.*—*R. maritimus.* Grooby Pool; pond in the Old Park at Mount Bosworth.—*R. acetosa.*—*R. acetosella.*—*Triglochin palustre.* Not uncommon.—*Colchicum autumnale.* Soar meadows, near Cavendish Bridge.

Class VIII.—*Acer campestre.*—*A. pseudo-platanus.*—*Erica tetralis.* Charnwood Forest.—*E. cinerea.* Charnwood Forest.—*Calluna vulgaris.*—*Vaccinium myrtyllus.* Charnwood Forest; Nailstone Wigs.—*Epilobium hirsutum.*—*E. parviflorum.*—*E. montanum.*—*E. roseum.* Rail-road below Desford.—*E. tetragonum.* Grooby Pool; Congerstone.—*E. palustre.* Grooby Pool; Congerstone.—*Daphne laureola.* Street-hedges Wood.—*Polygonum bistorta.* Meadow near the Church, Newtown Linford.—*P. aviculare.*—*P. convolvulus.*—*P. amphibium.*—*P. persicaria.*—*P. lapathifolium.*—*P. hydropiper.*—*Paris quadrifolia.* Grooby, Gracedieu and Gopsal Woods.—*Adoxa moschatellina.* Outwoods about Loughborough.—*Elatine hexandra.* Pond near Thrinkstone; Mount Babington.

Class. IX.—*Butomus umbellatus.*

Class. X.—*Scleranthus annuus.* Rocks about Grooby Pool.—*Chrysoplenium alternifolium.* Alder dingle by the Mill, Grooby Pool.—*C. oppositifolium.* Ditto; also near Newbold Verdun.—*Saxifraga granulata.*—*S. tridactylites.*—*Dianthus deltoides.* Rocky knoll near Grooby; Croft Hill.—*Silene inflata.* Road-side, between Leicester and Lutterworth; rare in the county.—*Stellaria media.*—*S. holostea.*—*S. graminea.*—*S. uliginosa.*—*S. glauca.* Grooby Pool.—*Arenaria trinervis.*—*A. serpyllifolia.* Gracedieu Ruins; Croft Hill, near the summit.—*A. rubra.* On gravelly roads.—*Cotyledon umbilicus.* Swithland Slate-pits.—*Sedum acre.* On walls.—*S. reflexum.* On walls.—*Oxalis acetosella.*

—*Agrostemma githago.*—*Lychnis dioica.*—*L. vespertina.*—*L. flosculi.*—*Cerastium vulgatum.*—*C. viscosum.*—*C. semidecandrum.* Near Grooby Pool.—*C. aquaticum.*—*Spergula arvensis.*—*S. nodosa.* Grooby Pool; Ashby Canal, near Shakerstone.

Class XI.—*Lythrum salicaria.* River Soar; River Sence, at Congerstone.—*L. hyssopifolium.* Pond on the boundary edge of the county, between Calke and Melbourne.—*Agrimonia eupatoria.*—*Reseda luteola.* Rare.—*Sempervivum tectorum.*

Class XII.—*Prunus institia.* Congerstone.—*P. spinosa.*—*P. padus.* Plantations at Gopsal and Braunston, probably planted.—*P. cerasus.* About Mount Bosworth.—*Cratægus oxyacantha.*—*Pyrus communis.* A few old trees in hedges in the neighbourhood of Mount Bosworth.—*P. aucuparia.* Woods.—*P. malus.*—*Spiræa filipendula.* Near Braunston; on Bosworth Field; not common.—*S. ulmaria.*—*Rosa spinosissima.* Rocky knoll, near Grooby.—*R. tomentosa.* Near Congerstone.—*R. rubiginosa.* Between Mount Bosworth and Newbold Verdun; also between Congerstone and Barton.—*R. arvensis.*—*R. canina.*—*Rubus idæus.* Charnwood Forest; Braunston; not rare.—*R. fruticosus.*—*R. Kœhleri.* Near Shakerstone.—*R. corylifolius.*—*R. cæsius.*—*R. ? leucostachys.* Near Kirby Muxloe.—*Fragaria vesca.*—*Potentilla anserina.*—*P. argentea.* Near Grooby Pool, on rocks below the great Floodgates.—*P. reptans.*—*P. fragariastrum.*—*Tormentilla officinalis.*—*Geum urbanum.*—*G. rivale.* Near Thrinkstone; plentiful in the pastures at Mount Bosworth.

(To be concluded in our next number.)

SOME ACCOUNT OF TRIPHÆNA FIMBRIA.

By the Rev. F. Orpen Morris, B. A., &c.

Mr. Curtis, the celebrated author of that truly national work, *British Entomology*, in a letter lately received, expresses a wish to learn any particulars I may be able to afford him respecting the capture of that lovely insect, *Triphæna fimbria*, some specimens of which, captured last year, I had forwarded to him and other friends. I embrace the medium which the pages of *the Naturalist* afford for replying to his enquiries. *Triphæna fimbria* has always been considered a scarce and valuable species, though most cabinets contain specimens. Mr. Stephens, in his *Illustrations*, calls it "unquestionably rare in Britain." My friend, Mr. Dale, who has been collecting diligently all his life, had only, I think, three very indifferent specimens when I last saw his noble collection. The

year 1836, however, appears to have been singularly favourable to the appearance of this insect, affording another example of those extraordinary, and never yet sufficiently accounted for, irregular periodical appearance of certain species, favoured, no doubt, by some atmospheric influence of which our senses allow us no perception. The neighbourhood of Doncaster has, however, in most years produced some individuals of the species in question; indeed, as it was only last year that the proper method of procuring them, which I am about to relate, was discovered, it is very probable, that more might have been obtained, if they had been sought in what the experience of the past summer has proved to be the proper manner. The locality in which they have been usually and chiefly taken in this neighbourhood, is "Sandall Beat," on the north-side of the race-course. The first living specimen I saw was in Melton Wood, near here; it was beaten out of a young Ash-tree, by the person who was with me. He did not see it at first, until I pointed it out flying down into a corn field close at hand, and he immediately recognised it as *fimbria*, having taken the species before, though I at that time did not know it, but only remarked it as an usual Moth. Subsequently he found the specimen in the corn-field, and the following day I went to Sandall Beat, as being the best known locality, in quest of more, and was so fortunate as to procure four specimens; nor shall I soon forget the pleasure with which I beheld the first specimens secured, and in fine preservation. I did not hear of any more specimens being taken at Melton Wood, and very few others appeared to frequent the Ash, nearly all being procured from the Oaks. In all, I procured eighty-nine, and many hundreds were taken by other collectors, though nearly all in Sandall Beat. Most of mine were captured by my servant, or by a gamekeeper who lives near the wood; of the latter I bought many, and he, seeing the demand the insects were in, thought it a good opportunity of turning his wanderings in the woods to some account.

In former years, the noon was considered the best time for taking *Triphæna fimbria*, as they occasionally fly then, particularly on sunny days; but their flight is then very rapid and wild, and by the tops of the trees, generally in a straight line for a considerable distance. When on the wing, they much resemble the commoner species, *innuba* and *pronuba*, on which account I have no doubt they have often been mistaken. The best time to get them (and if I had discovered this in time, which I now make known to others, I could, I doubt not, have procured five times as many as I did), is in a very heavy, dull, or foggy day, or even when it is raining fast. Then they will not fly off at all, when the trees are shaken, or kicked, which is the way to get them out or down, but fall down, either close by the tree, or slanting off to a little distance from it. The heavier the atmosphere, the more apparently lifeless they fall down, and if it is finer farther off, generally flying quite away when the sun shines brightly.

They are difficult to discover when in the grass, the colour of which at that time of the year much resembles theirs.

The large trees cannot be shaken, and the insects seem to frequent rather the lesser trees (especially Oaks) which are easily shaken; they generally appear to have one tenant, and some have three or four. The overseers of the "Woods and Forests," as I afterwards heard, made sad complaints about the injury to the bark of the young wood from the kicks of the sturdy entomologists, who were there most hours of the day. I once went myself, at four o'clock in the morning, being unable to spare any other time for the purpose, and I think the earlier hours to be favourable for capturing the insects, which appear to be more sleepy or dull before the sun has risen, and enlivened them. I have heard, from many quarters, that besides the numbers taken here, a great many others appeared last year in various parts of the country, and in the letter above alluded to, Mr. Curtis informs me, that a friend of his had had two hundred caterpillars feeding since last year's brood, and that he possesses two himself.

Nothing can exceed the beauty of this lovely insect when first taken. The superior wings vary, in different individuals, from dark brown to cream-coloured, with intermediate shades of a greenish hue. My specimens were very fine, so much so, that Mr. Curtis asked in his letter if they had been bred, with a view to the treatment of the larvæ in his possession. Mine, however, were all taken in the perfect state; and were killed instantaneously, without any injury to them as specimens for the cabinet, by compression of the thorax. I was very happy in being able to supply my friends with series of this interesting insect.

NOTES ON THE LARIDÆ.

By Beverley R. Morris.

During the autumn of 1836 immense flocks of the Gull family visited the Dorset coast, being engaged in the pursuit of the Sprats and Mackarel which then approached the shore. Among them I noticed the following species:—

Blackbacked Gull, *Larus marinus*.—Adults of this species are at all times tolerably common in Dorsetshire; but at this season they were in great numbers, though not so abundant as several other species. The young birds were exceedingly numerous. The keenness of its eye almost precludes the possibility of obtaining perfect specimens, though the young may often be procured. This accounts for adults being so rare in collections.

Fuscous Gull, *Larus fuscus*.—The Fuscous Gull, which had previously been

very rare with us, I now noticed in great abundance. On the wing it is, I think, more graceful than any other of the genus with which I am acquainted. The intensity of the slate-colour on the back, seems to vary considerably in different individuals; at least no two of those that came under my own observation were alike. I speak, of course, only of adult birds, of which I had several in my possession, with frequent opportunities of observing others. Does this proceed from age or sex, or from both?—On shooting one of these birds, I noticed that the tips of all the quill feathers were wanting. These, I at first thought, might have been cut off by the shot, so cleanly and evenly were they removed. That, however, appeared too extraordinary, and, remembering a remark of Mr. BLYTH's in the second number of your magazine, I came to the conclusion that they were thrown off naturally. Mr. B., however, if I mistake not, speaks of *feathers generally*, as losing "their extreme terminal edgings in spring and summer." I examined three or four other specimens, with the view of attending to this particular, and found them all similarly defective, in the *quill feathers alone*. These birds had, however, probably moulted, as it was about the 10th of October. I examined other species of Gull, but found all their wing feathers complete.

Herring Gull, *Larus argentatus*.—This beautiful bird is at all times one of our commonest species, and is easily recognised, by the silvery whiteness of its back. It is in fact only a gigantic Common Gull; and though, as its English name implies, an enemy to the Herrings, it certainly seems to have no objection to Sprats or Mackarel, when there are enough for them.

Common Gull, *Larus canus*.—Though called common, it is very rare with us, so much so, that in the vast flocks of Gulls I had opportunities of inspecting, I noticed, comparatively, but few specimens.

Kittiwake Gull, *Larus rissa*.—Great numbers both of the old and young of this very pretty little Gull were also with us. The absence of its fourth toe (there being only a small warty protuberance in place of one), at once prevents this bird being confounded with any other species. It is at all times found there (on the Dorset coasts) in considerable numbers. MONTAGU says, that it is very rare on the southern coast; this is remarkable, unless the observation made above on the Fuscous Gull applies also to the present species.

Blackheaded Gull, *Larus ridibundus*.—The Blackheaded Gull is also very numerous, both in the adult and young state, in which latter it is not unlike the Kittiwake. It remains with us the whole year.

Arctic Skua, *Lestris parasiticus*.—I think I also observed this bird, but am not certain. As far as I could judge from looking at it through a glass, it agreed with the descriptions usually given of the species. Its continued attacks on the Gulls first led me to notice it. Besides these there were immature birds innu-

merable; indeed for one adult, I should think there were at least five or six young individuals.

Manks Shearwater, ***Puffinus Anglorum.***—The Manks Shearwater visited us in considerable numbers at the same time, but did not associate with the Gulls. Its flight, which is very peculiar, is best described by its name, Shearwater. It is not unlike the *dipping* flight (for I know no better name for it) of the Woodpecker, but the dip is much longer. Its food appears to be dead animal matter, and as it is always in excellent condition, I suppose it finds it in abundance. Though its feet are webbed, and placed in a very favourable position to assist its progression under water, I think it never dives; for when only slightly wounded, and endeavouring to escape, it makes no attempt at diving. I have, moreover, watched it when feeding, some hundreds of times at least, and never saw it go beneath the surface; it merely touches it, and then rises again. The general opinion is, I believe, in favour of its diving partially. It is an excellent swimmer.

March 13, 1837.

CORRESPONDENCE.

To the Editor of the Naturalist.

Sir,—I have to make the following corrections to my last paper (Vol. I. p. 249); how the errors occurred, I am at a loss to know:—"***Crambus***, n. sp. on Parley Heath, is *sylvellus* of Hubner, and new to Britain." The reference to Donovan about the *Fulgora* is not quite correct, as I have lately discovered, by turning to his work. I have also procured Yeats's *Institutions,* which he quotes. Yeats says:—"Two different species have been caught in this country, one by the author of that useful and elegant work, *Flora Anglica* (Mr. Hudson), the other by my friend Mr. Gray." Wales is omitted; but I think it likely to be correct, as Hudson collected much there. I have a *Tortrix excavana*, with all the markings of *emargana;* and, were it not for the colour, I should pronounce it that species. I have one of *Littorana* with a red splash, closely resembling *tricolorana*, with the black spots very large, &c. I also possess an *irrorana*, with the black spots of *littorana*. These I think are hybrids, if those species are actual species.

I am, Sir, yours, &c.,

April 6, 1837. J. C. Dale.

Notice of the Discovery of a New Insect, *Acosmetia Morrisii*,—Dale's MSS.

To the Editor of the Naturalist.

Sir,—I have great pleasure in forwarding for your pages a description of a species of *Acosmetia*, which I believe to be entirely new to entomologists. My kind friend, Mr. Dale, has been so good as to name it after me, as the discoverer of the insect. The following is the general description:—pale straw colour, approaching to silvery white, the upper part of the wings very faintly streaked with narrow brown lines, diverging (from an obscure black dot?) towards the margin, which is of the same colour with the rest of the wings, from which they are hardly distinguishable; the under wings underneath are divided transversely by a faint waved brown line, and the margins clouded with the same colour. The insect is an inch and half a line in width from tip to tip, and is not thick bodied, though belonging rather to that class than to the thin-bodied. The first specimens I took were met with several years ago, near Charmouth, Dorsetshire, beyond a lime-kiln on the cliff on the east side of the little river Char. I believe individuals may be taken there every year, though they certainly are not common. They rise up from the grass, and fly well and straight, on being disturbed in the day-time, somewhat after the manner of the *Plusia gamma* (when not flying voluntarily), and are rather difficult to capture. They seem to be lie among the long grass, to which they assimilate in colour. I do not remember the exact time of their appearance, but it is about the middle of summer, and they remain "out" a considerable time. Mr. Dale has also taken specimens at the same locality.

Francis Orpen Morris.

April 4, 1837.

CHAPTER OF CRITICISM.

To the Editor of the Naturalist.

Sir,—When your readers hear that I am about to place before you a few hints on the conducting of a periodical, they may well marvel at my boldness in addressing them to the *Commander-in-Chief* of two excellent Journals—the one quarterly, the other monthly—who must of course possess no small experience in such matters. Still, though I cannot boast of being at the helm of even a weekly magazine, yet a subaltern may often be enabled to throw out suggestions at least worthy the consideration of his officer; and with this view I propose to you, Mr. Editor, one or two alterations and additions which may perhaps tend to improve the character of *the Naturalist*. First, then, I would recommend the introduction of a chapter dedicated to what Loudon, in the better days of the

Magazine of Natural History, termed "Retrospective Criticism," wherein any correspondent might comment on whatever he had reason to find fault with in the communications of writers in previous numbers. It is obviously of importance that no erroneous or imperfect statements should pass unnoticed; but at the same time it is to be hoped, that the discussions and criticisms will be carried on with due attention to courtesy, and that everything verging on personality will be scrupulously avoided.

It cannot be denied, that the 7th number of *the Naturalist* is a great improvement on the previous publications of the work; and I think your subscribers have every reason to be satisfied with the numerous alterations and additions effected in the plan of the magazine. The method of dividing the No. into several chapters—as "Original Communications," "Correspondence," &c. &c., is excellent; and the publication of several pages of shorter communications will doubtless be the means of pleasing a very large majority of readers. Many who would not take the trouble of reading such an article as that "On the *Lemuridæ*," (however ably written) in the last number, would find an interest in the "Extracts from Foreign Journals," "Chapter of Miscellanies," &c. With regard to the latter section, I would say, that it could scarcely be too long. If judiciously selected, the subjects would prove of equal interest to the scientific naturalist and the general reader. The "Reviews," I think, ought never to extend to a great length. In a work like *the Naturalist*, they ought merely to give an idea of the plan of the books, and of the manner in which that plan is carried into execution. With the reviews in your last number, I have no fault to find; except that, by a mistake of the printer (in the notice of the *Ornithological Guide*) poor Mr. Strickland was charged with a fault evidently belonging to the author of the book under notice. The word "couched" should be "combatted."

In concluding these brief and perhaps worthless notes (if they serve as a commencement of the "Retrospective Criticism," I shall not regret that I wrote them), I will only observe that, under your able leadership, I feel assured *The Naturalist* will long flourish in its career of amusement and instruction; and as you have kindly undertaken to cater for the benefit of us naturalists through so excellent a medium, I trust the charge will continue in your hands through many a volume and many a year. With my best apologies for having occupied so much of your space with these desultory observations, I have the honour to be, Sir,

Yours, respectfully,

H. E. H.

DISTRIBUTION OF THE CORN BUNTING IN ENGLAND.

To the Editor of the Naturalist.

SIR,—In every ornithological work which has fallen under my notice, your *Song Birds* excepted, the Corn Bunting (*Emberiza miliaria*) is boldly stated to be extremely common throughout Britain. Now I have travelled a good deal in this country, and have found the bird very much scarcer, and far less generally known, than the Yellow Bunting, which, indeed, appears to abound and superabound in every part of our island. In many of the midland and northern counties of England, the Corn Bunting may undoubtedly be called a rare species, and it is probably nowhere very common. In Derbyshire, Yorkshire, Northumberland, &c., I have passed days and weeks without observing a single individual, and I have seldom been able to find the nest in those counties. It has been the custom, ever since Ornithology became a science, to consider the Corn Bunting a common bird in England, and therefore, probably, little trouble has been taken to ascertain the truth of the assertion, relative to a species supposed to be so abundant; and, to casual observation, many brown birds might pass for the Bunting. In some parts of Scotland, I should be inclined to say that it was of more frequent occurrence than in England. I invite the attention of our ornithologists to the subject, and should be glad if correspondents in different parts of the country would favour us with their observations on this point, through the medium of *the Naturalist*.

Yours, very truly,

Bristol, April 16, 1837. CHARLES LIVERPOOL, M. D.

PROCEEDINGS OF NATURAL HISTORY SOCIETIES.

BOTANICAL SOCIETY.

March 16.—J. E. GRAY, Esq., F. R. S., President, in the Chair. Various donations were announced; among others, that of a new Moss found on a Moor near Malkham Farm, Yorkshire, by Mr. R. LEYLAND, and named by him *Cinclidium styrzicum;* an extensive series of French plants, from Mr. G. E. DENNES, said to have formed a part of the collection of the celebrated botanist M. J. J. ROUSSEAU; and some plants from Port Mahon, near Minorca.—A paper by Mr. J. REYNOLDS was then read, on the plants of China, being translated from a French memoir. The curious property of the China Rose changing colour twice a day,

from purple to white, from the loss of a peculiar ammoniacal principle, was first alluded to; 2. *Clusium;* 3. a plant analogous to Sago, having a farinaceous pulp, which is commonly employed by the natives as an article of food, and is known by the name of "Quanglang;" 4. *Clavaria*, which grows only upon insects.—Some instances were then adduced, showing the ardour which actuates the labouring classes, in various parts of the country, in the study of Botany.

ZOOLOGICAL SOCIETY.

March 14.—Mr. W. Sells read a paper on the *Vultur aura*, a species inhabiting Jamaica, where it is known by the name of "John Crow." It feeds on carrion; and its services in clearing the country of putrid substances are so highly valued by the legislature, that for every individual destroyed, a fine of £5 is imposed. Some recent dissections, by Mr. Owen, led to several interesting comparative observations on this bird and the Goose and Turkey; the difference consisting in the distribution of the olfactory nerves, and the superior size of the true olfactory in *V. aura*, the latter arising from two oval ganglions, which is not the case in the Common Turkey.—Mr. Reid gave a description of a new species belonging to the order *Rodentia*, nearly allied to the genus *Ctenomys*, but differing in the great breadth of its incisors.—Mr. Darwin read a paper on the *Rhea Americana*, and the newly described species. Its progress through the water is slow, only a small portion of the body appearing above the surface, and the neck being extended forward. The males are said to perform the office of incubation, and rear the offspring. Several females lay in one nest, the number of eggs deposited by each amounting, according to Azara, to sixty or seventy. He then alluded to the *Avestris petise*, which is very common about $1\frac{1}{2}^{\circ}$ south of the Rio Negro. *Rhea Americana* inhabits La Plata, as far as a little south of the Rio Negro, lat. 41, *Avestris petise* taking its place in South Patagonia.—Mr. Gould described a species of *Rhea* from Patagonia, brought over by Mr. Darwin, distinguished from *R. Americana* by being one-fifth smaller, by the bill being shorter than the head, the tarsi reticulated in front, instead of being protected, as in the Common Ostrich, by large transverse plates, and by being feathered below the knee. The wings, moreover, are more thickly plumed, and the feathers margined with white.

March 28.—Dr. Bostock in the chair.—Mr. Bennett read part of a paper "On the Natural History and Habits of the Spermaceti Whale."—A communication, from the Rev. Mr. Lowe, on the fishes found in Madeira, was read, accompanied with a copious synonymy.—Also a paper from Mr. Jones, relative to the close branchial fissure, or external gills, of the Tadpole.

HORTICULTURAL SOCIETY.

March 21.—Some fine specimens of *Ixora coccinea*, *Berberis aquifolium*, *Dendrobium aggregatum*, *Euphorbia jacquiniflora*, *Nemophila insignis*, &c., were exhibited. Amongst the varieties of the Apple was noticed the *Melo di Carlo*, or Finale Apple, so highly esteemed in Italy, but which cannot be successfully cultivated in this country; at least the attempts which have hitherto been made have failed.

The exhibitions, at the Society's gardens, for the present year, will take place on May 13, June 10, and July 8.

ENTOMOLOGICAL SOCIETY.

April 3.—The Rev. F. W. Hope, F. R.S., in the chair.—Some specimens of exotic insects were exhibited by Lord Prudhoe; amongst others, the queen of the workers of the White Ant.—The Secretary then alluded to the condition of some of the pictures in the National Gallery, which have been much injured by insects, and read an extract from the Parliamentary Reports upon the subject. Several members rose to suggest remedies for the extermination of these little pests, and we certainly think it would be both interesting and useful to make trial of some of them. The Secretary further cautioned agriculturists against the employment of a powder recently advertised, and which professes to prevent the Turnip-seed from being attacked by "the Fly," and which, from the recent discoveries relative to the habits of that insect, is entirely inefficaceous.—Mr. Raddon exhibited some lepidopterous larvæ, found in considerable numbers in a Wheat-stack near Bristol, in which they had caused much damage, by devouring the grain.—A paper was read "On the economy of one of the species of the family *Cynipidæ*, residing in the flat circular galls on the under side of Oak leaves," and which have been mistaken for Fungi. Also, "On insects and the larvæ of insects found in the human body," by the Chairman, illustrated by figures of species obtained from the human body, and by a series of tables, to elucidate the different cases of scolechiasis, canthariasis, and myasis. This paper was the subject of an interesting discussion, by the author, Messrs. Bell, Owen, Bracy Clark, Dr. Blundell, and others.—Nor ought we to pass unnoticed the donations of books and insects to the society's collection, the latter including specimens of the beautiful *Chiasognathus Grantii*, from Cheloe, the gift of C. Darwin, Esq.

GEOLOGICAL SOCIETY.

March 22.—The Rev. W. Whewell, Pres., in the chair.—The commencement of a paper was read by Mr. Roy, "On the supposed ancient state of the North American Continent, especially on the extent of an inland sea, by which a

great portion of its surface is conjectured to have been covered; and on the evidences of progressive drainage of the waters."

April 5.—Mr. GREENOUGH, V. P., in the chair.—Mr. ROY's paper was concluded.—The next paper was "On the Geology and neighbourhood of Smyrna," by HUGH E. STRICKLAND, Esq. The vicinity of Smyrna consists of limestone, and greenish slates, containing Hippurites, lacustrine limestone, marls, and trachytic rocks. The Hippurite limestone and schist form considerable tracts, both to the north and south of the bay of Smyrna, constituting Mounts Sipylus, Tartali, and Corax. In some localities it consists of grey limestone, more or less associated with black and greenish schists, but in others it is composed almost solely of the latter. The lacustrine deposits constitute an extensive table land, ranging south from Smyrna, and to the north of the bay—the southern base of Mount Sipylus. Mr. STRICKLAND is of opinion, that they were accumulated in a basin, bounded principally by the hills of hippurite limestone. The table land is composed chiefly of white or yellowish limestone, sometimes resembling chalk, at other times the compact, secondary limestone of the Ionian Islands, and contains nodules and layers of black flint, with *quartz resinite*. White and greenish marls are interstratified with the limestone and extensive beds of gravel, especially towards the margin of the basin. The beds are generally horizontal, but in some places, when near the trachyte, they are inclined. The shells found by the author belonged entirely to fresh-water genera, but in the deposit at the foot of Mount Sipylus he discovered a rich store of vegetable remains, in the highest state of preservation, and consisting of leaves of about twelve species, which belonged to the genera *Laurus*, *Nerium*, *Olea*, *Salix*, *Quercus*, and *Tamarix*.—*Trachyte*. This volcanic rock Mr. S. ascertained to be more recent than the lacustrine deposits, because, in the plain of Pedikeui, it overlies the fresh-water limestone; and because no pebbles of it occur in the alternating beds of gravel. The trachyte is principally porphyritic and homogeneous; but it sometimes contains numerous angular blocks and fragments of black porphyritic trachyte, much harder than the general body of the rock; and near the ford of the Meles it contains a mass of quartzose conglomerate. In some localities the trachyte splits into slabs, from a foot to an inch thick, and the cross fracture exhibits stripes of various colours, parallel to the planes of cleavage. These layers are occasionally accumulated to the thickness of 100 feet, and are traceable laterally for as many yards.—The paper concluded with some general observations on the changes produced in the features of the country by the eruption of the trachyte, and the drainage of the lake in which the lacustrine formations were deposited.

For the above succinct report of Mr. STRCIKLAND's interesting paper, we are

indebted to *the Athenæum*, our own correspondent not having transmitted us any particulars relative to the memoir.—A letter from Mr.R. W. Fox, of Falmouth, to Sir Charles Lemon, Bart., was read, on the mechanical deposits in mineral veins. Also extracts from two letters on the earthquake in Syria, in January, addressed by the King's Consul-General at Beyrout, to Lord Palmerston, and communicated by J. Backhouse, Esq., and the Hon. W. T. H. F. Strangways, Under Secretaries of State. "At Damascus, four minarets and several houses were thrown down; and at Acre, part of the walls and some buildings. Saffet was entirely destroyed, and nearly all the population, amounting to between 4,000 and 5,000, had perished. The ground, near the city, was rent into fearful chasms, and up to the last accounts shocks were felt daily. Tiberiad was also entirely overthrown, except the baths, and the lake rose and swept away many of the inhabitants." The despatch contains a list of 39 villages which had been totally destroyed, and six partially; and Mr. Moore (his Majesty's Consul-General) says, it had been ascertained that the earthquake was felt on a line of five hundred miles in length by ninety in breadth. It was also perceived in the island of Cyprus.

ST. JAMES'S ORNITHOLOGICAL SOCIETY.

We have been favoured with a copy of the plan and rules of this society, which appear to us so excellent, that we shall present them without comment.

Title.—The Ornithological Society of London.

Management.—A Council with the usual Officers.

Honorary Members.—Limited to five. Eminent scientific ornithologists, or liberal Patrons of the Society. Elected by the Council.

Ordinary Members.—Elected by ballot. Gentlemen will subscribe, annually, two guineas; ladies, one guinea. Entrance fee for gentlemen, two guineas; for ladies, one guinea. Members of the St. James's Ornithological Society will have the option of being Original Members of the Ornithological Society of London, at the annual subscription of one guinea.

Foreign Members.—Elected by ballot. Eminent foreign ornithologists.

Foreign Correspondents.—Elected by the council. Residents abroad, desirous of assisting the Society; exempt from all pecuniary contribution.

The objects of the Society are to be attained by the exhibition of living birds; the propagation and dispersion of the domesticated races; a museum; library; periodical meetings; ornithological lectures; the publication of ornithological works—scientific and *practical;* prize shews.

Living Specimens.—The Rasorial genera, and their types, will be particularly attended to, as being most beautiful and attractive, pre-eminently domestic, and practically useful.

The hardy birds will be gratuitously exhibited in the Parks; those for which buildings are required will be seen by the public on payment of a small admission fee.

The Duplicates.—Birds and eggs will be distributed among the Members.

The Museum.—The specimens will be accurately named according to the natural system; and so arranged as to convey to the student, through the eye alone, a general and accurate knowledge of the affinities and analogies of birds, and to exhibit examples of the different organizations which are known to accompany different habits and modes of life. The museum will include stuffed birds, bird-skins, skeletons, and parts of birds, nests, and eggs, and will be open, without restriction, to scientific persons and artists.

Library.—The library will contain, ultimately, every ornithological work of merit; British and foreign ornithological periodicals will be taken in, and circulated among such of the members as subscribe an additional half-guinea for this advantage.

Periodical Meetings or Conversaziones will be held for the exhibition of living and dead specimens, drawings, books, nests, &c.—for reading ornithological papers, and for oral observations.

Lectures.—Competent ornithologists will be invited to deliver lectures.

Publications.—The Society will publish, or patronize the publication of, a general ornithological work at an accessible price: the proceedings will be published concisely and cheaply; and the Society will collect and publish all the information they can obtain as to the best modes of rearing foreign birds adapted for the park, the preserve, the poultry-yard, and the aviary.

Prizes.—A prize of the value of £15 or £20 will be given annually for the best paper on Systematic Ornithology, in elucidation of the power, wisdom, and goodness of God. Another, of the value of £10, for the breeding of foreign birds: and a third, of the value of £5, for the best method of keeping alive in this country such foreign birds as will not breed.

Application will be made to Government for a locality for the Society's museum, library, and housed collections: if the application be successful, the museum will be freely open to the public three days a week.

The ordinary funds, arising from subscriptions and entrance fees, will in the first instance be applied solely to the construction of aviaries, and the purchase, rearing, and breeding of birds: and an extraordinary fund will be raised by the creation of 100 shares of £25 each (to be paid, if desired, in two half-yearly instalments) which will be applied exclusively to the purchase of books, specimens, and cabinets, to lay a broad and solid foundation for a worthy museum and library. The property thus acquired will be vested in the shareholders;

and will not, unless specially conveyed by donation, form part of the general property, until the funds shall be sufficient to pay off the shareholders.

The duplicates will, at first, be distributed among the shareholders only, and, in addition to the ordinary privileges of personal admission to housed collections, museum, library, and meetings, they will be entitled to give a certain number of free admissions daily to strangers.

EXTRACTS FROM THE FOREIGN PERIODICALS.

Zoology.

1. The Chigger Flea (*Pulex penetrans*).—M. Dugès, of Montpellier, has lately published an interesting account of this insect in the *Annales des Sciences naturelles*. In writing his former memoir on the genus *Pulex*, in the same Journal, he knew nothing with certainty of the above species; reduced to accounts which could be of little value, and deceived by a caudal appendage which is probably nothing more than the penis of the male, he expected it would form a genus by itself. Actual observations made upon specimens preserved in spirits, have, however, convinced him, that this insect only differs from the rest of the genus in slight particulars, and especially in its habits, which would not warrant the formation of a new genus. After noting some particulars relative to the Fleas which infest the clothes of the bathers on the shores of the Mediterranean in such numbers, and after extracting some observations on *P. penetrans*, from M. Aug. de St. Hilaire's *Voyage au Brésil*, we find some further remarks on the latter insect. The author ascertained, that the Chigger Flea settles between the epidermis and the cuticle, by cutting through the latter. It proceeds then by increasing the small hole which the animal has already made in the skin, and this may be done without the person on whom the insect operates feeling any pain, or losing even the smallest quantity of blood. The insects generally lodge themselves under the nails; M. Saltzmann has had them on the soles of the feet and the palms of the hands. In the specimens preserved in spirits, M. D. did not find the rings of the abdomen which pass through the hole in the epidermis, protruding from the skin, and making the vermicular motion spoken of by M. de St. Hilaire. Perhaps the latter only takes place at the period immediately following the incision of the insect. In the individuals examined by M. D., the abdomen appeared entirely membranous; but in the region of the anus corresponding to the opening of the epidermis under which the animal was lodged, an orifice, surrounded by plates, was found. This circumstance con-

vinced M. Dugès, that it is not excess of food, but numerous eggs, which cause the insect to remain so long in its cell. Are these eggs—which are distinct and numerous—hatched under the skin? Are they laid there? That seems impossible; and if they are dropped from the side of the anus, it would only be to fall outside. Possibly, it is true, the mother may die before laying, and the little vermiform larvæ may produce an ulcerous abscess in the part; they would then be no longer able to breed, in consequence of the injuries they are supposed to cause. Animals infested by this insect are unable to get rid of it, and yet the effects of such attacks are seldom serious.—The legs do not differ much from those of the Common Flea (*P. irritans*), but the thorax has no comb, nor membranous or villous fringe. The head bears considerable resemblance in shape to that of *P. irritans*, and is likewise destitute of spines; the eye is large; antennæ lenticular, oval, keeled; the sucker is comparatively large, and M. D. mentions some particulars relative to this organ which, for want of space, we must omit.—The jaws are short, and only differ from those of the Common Flea by the first and second articulations being nearly of equal length. The chief distinctions appear to lie in the formation of the antennæ, the lips, and the palpæ, and although these are amply sufficient to characterise the species, we think, with M. Dugès, that the insect above described has no claims to rank in a separate genus, but must still retain its name of *Pulex penetrans*.

2. Organs of Sensation of *Pentastoma tænioides*.—A remarkably well developed nervous system exists in this reptile, as indeed Cuvier has already pointed out. When the back of the animal is cut open, and the brown strings forming the ovary are taken away, the intestinal canal is exposed to view; when again this is extracted, we find under the œsophagus a long, thin, white ganglion —the cerebral ganglion—situated above the sexual apparatus. This ganglion sends out on all sides fine threads, amongst which are especially observed, from their size, the two which pass to the anterior extremity of the body; they supply several very slender threads to the œsophagus, and terminate in the lateral cavities of the mouth, or at the holes containing the fangs. The ganglion moreover transmits, to the posterior portion of the body, two nerves which extend along the openings of the cells formed by the passages in the leaflets described in a former part of this paper; they are attached to the walls of the abdomen. These nerves present neither swellings nor points of union with one another; their course is not in a straight line, but slightly tortuous, so that each nervous filament penetrates, with a flexure, into the openings before mentioned.—Thus it will be perceived, that the nervous system of this intestinal worm is distinguished from that of *Amphistoma subtriquetrum*, by the latter possessing, under the œsophagus, two ganglions communicating with each other by means of a nervous cord, and by the

two filaments which proceed from these ganglions reuniting after a short distance, whilst they send forth other threads. But the nervous system of these two worms has nevertheless this in common, that the situation of the ganglion in *Pentastoma* entirely corresponds with that of *Amphistoma*, and that they both transmit two filaments extending from each side along the abdominal cavity. —*From an elaborate paper on P. tænioides, by* Mons. C. E. Miram.

3. On Antediluvian Blattæ.—A paper was published in the *Annales de la Société Entomologique de France*, for 1836, by Dr. Berendt, on antediluvian *Blattæ*, Orthopterous insects. The author has turned his attention to the species of *Blatta* frequently found in yellow amber with other insects. They are more commonly in the larva than in the perfect state. Still their characters are sufficiently obvious to determine the species. The author is of opinion, that the in sectsfound in yellow amber are not identical with, but only analogous to, the living species, and that, in this respect, the general law among geologists applies to fossil insects. He has figured seven species of *Blatta*, only two of which are winged, the others being younger, and some very small. There are doubtless more species, but it is difficult to determine whether the differences observed are to be accounted specific, or whether they belong to age or sex.

4. The Leeches and Reptiles of Chili.—It is a remarkable fact that the Leeches of Chili are all terrestrial, living in the woods, and never in water. M. Gay assures us, that he could not make a botanical excursion without having his legs bitten by these blood-suckers. They crawl upon plants, along trunks of trees, and ascend shrubs, but never approach marshes or rivers; the only one which M. Gay accidentally discovered in these latter habitats, is a very small kind of Branchiobolelle, which has the singular habit of living in the pulmonary cavity of the *Auricula Dombeii*. M. Gay had previously discovered, in the environs of Santiago, another Leech of the same genus, which lives under the branchiæ of a species of Lobster. (The Leeches of Chili, in their sylvan manners, resemble the Leeches of Ceylon.)

A fact not less interesting is this; in these western regions the reptiles have a tendency to become viviparous. The greater number of those which M. Gay dissected, afforded him proofs of this assertion. Not only the harmless Snake of Valdivia brings forth living young, but likewise all the pretty Inguanians allied to the genus *Leposoma* of Spix, and which, from the beauty of the colours, M. Gay provisionally calls *Chrysosaurus*. Even those species which are oviparous at Santiago are here viviparous. The Batricians furnish some examples of the same fact, although in general they are all oviparous. However, a genus allied to the *Rhinella* of Fitzinger, consisting of several agreeably coloured species, is constantly viviparous, and consequently adds to the proofs of a fact the more

remarkable that all the examples of it are found collected within a radius of two or three leagues only.

5. *Spirula Peronii.*—It is a rare thing to find this common shell with its animal, a fact which, according to MM. Robert and Leclenchet, is in some measure explained by their having discovered that it is the prey and common food of the *Physalix*, which swarm in the same equatorial seas. The figures hitherto published of the *Spirula* are incorrect; it is a cephalopode which approaches remarkably in form to the shell-less *Loligo sepiola*, having the shell almost entirely imbedded in the posterior part of the body, where there are two natatory expansions of the cloak. The eye is proportionally very large, and without a lid. —*Annales des Sciences Naturelles; as translated in the Mag. of Zool. and Bot., Vol.* i., *p.* 414.

6. *Parmacella*, Cuvier.—MM. Webb and Vanbeneden have attentively examined the American mollusca, reputed to belong to this genus, in the rich collection of the late Baron de Férussac, and the result is, the establishment of a new genus *(Peltella)* for their reception, the organic differences between them and those of the old continent being so considerable as to justify their separation. This division, besides, has the advantage of fixing in a precise manner the geographical distribution of the two genera. The *Parmacellæ* belong more particularly to North Africa, one species only having been met with at the western extremity of Europe, and in one of the warmest regions of the Iberian Peninsula. We may then presume, that when the *Limacidæ* of North Africa are better known, the group to which the *Pharmacellæ* belong, will present a series of species similarly conformed, and replacing in those climates the Slugs of our temperate regions. The European species is minutely described and figured in a late No. of Guérin's *Magazin de Zoologie.* It was found on the hills of Alcantara, behind Lisbon, feeding on the young shoots of *Cochlearia acaulis*, and is characterized as follows:—*Parmacella Valenciennii,* corpore toto fulvo, reticulatim ruguso; concha scutello obvoluta, tenui, diaphana, fragilissima; spiræ rudimento instructa, basi motaria amditu sinuata.—Webb and Vanbeneden in *Mag. de Zoologie.*

BOTANY.

7. Reproduction of Algæ.—The eighth volume of the *Société de Physique et d'Histoire Naturelle de Geneve,* contains a paper read Dec. 17, 1835, by M. Duby, on the propagation of the species of *Ceramium.* Highly important conclusions have resulted from this memoir (the greater part of the materials of which were furnished by M. Crouan, a naturalist of Brest), regarding the physiology of the *Algæ,* and especially of *Ceramium.* They may be reduced to the following:—

1. The development of the reproductive organs of *Ceramium* takes place without any rupture of the envelop, but by extension of the tissue. The inferior system, commencing from the root, is first developed.

2. Whatever be the mode of fructification, and notwithstanding some apparent or actual differences presented by the reproductive organs, the results are precisely the same, that is, the reproductive organs formed by those of fructification, even though the latter differ greatly, produce equally the parent plant, and in the same manner.

3. Wherever there is agglomeration and condensation of colored matter, there is formed a germ which reproduces the parent plant, sometimes even before it is detached.

4. Lastly, under certain circumstances, it is not even necessary that there be agglomeration of coloring matter, the head being able, by its separation from the parent stock, by a slip, to act as a conceptacle or organ destined to prepare the reproductive parts, put forth radicles, and renew the species.

This paper, of which we have given a brief summary, is accompanied by two plates, illustrating the developments of the reproductive apparatus of several species of *Ceramium*, and fully justifying the views of the author.—*Bibliothèque Universelle de Genève.*

GEOLOGY.

8. On some Interesting Phenomena relative to *Ananchites* and *Spatangus*.—The royal mineralogical museum of Berlin contains two fossil specimens of *Ananchites sulcatus*, Goldf., similar to that described and represented by Walch in Knorr's work on petrifications. The quartzose, cellular, and remarkably regular structure of the interior of this fossil—whence it was named, by old authors, after the cells of the Honey Bee—is explained by another series of petrified echinites in the same collection. The surprising regularity of these latter, precisely the same in a number of specimens, clearly points out, that on each blade of the shell of the echinites is a crystal of calcareous spar, of which the axis is perpendicular to the blade, and the base occupies its whole surface; all the crystals seem ranged in a straight line with the greatest regularity, diminishing in size towards the top of the echinite, and increasing at top, all their axes converging to the interior of the shell. This influence of the echinites upon the calcareous spar which crystallizes in their interior, excites just surprise by its regularity. The form of the crystals is rhomboidal.

An echinite analogous to these is the *Spatangus coranguinum*, in which, on the contrary, it is on the exterior surface of the shell that each blade has been

covered with similar crystals of calcareous spar, but the crystals in the specimens in the Berlin museum are considerably injured.

From a comparison of the first series of these phenomena—that is, of the Honey-Bee Echinites—with the second, it evidently results, that the quartzy cells on the interior of the *Ananchites*, converted into silex, are but the envelops of analogous crystallizations of calcareous spar, formed on the interior surface of their blades, and destroyed later. It is, therefore, a confirmation of the nature of the impressions, provided we keep in mind how much the elongated hexagonal form of the blades modifies the shape of the crystals of calcareous spar, and to what extent the faces of the rhomboidal crystals can vary. The structure of quartz is an equal confirmation; it is perfectly adapted to serve as the envelop of a similar cellular formation.—*Karsten's Archiv für Mineralogie.*

CHAPTER OF MISCELLANIES.

ZOOLOGY.

On the Backwardness of the present Spring.—What a dismal spring we have had! I fear much that it will be the destruction of many of our feathered friends. All seems to be with them at a stand-still. The Missel Thrush is as full of song as it was a month ago, and I do not think any bird, except the Rook, has yet begun to breed. I observed the other day (April 3), during a most pitiless storm of snow and a strong wind, a Swallow and a Sand Martin hawking for Flies, in the neighbourhood of a wier of the river Derwent. They seemed much exhausted from contending with the storm, and frequently rested on the margin.—W. C. Hewitson. *Derby, April* 13, 1837. [Up to this day (April 20) not a single Spring visitant has made its appearance in the north of England.—Ed.]

Plumage of the Warblers *(Sylvia).*—I have no doubt but the Willow and Dark-legged Warblers *(Sylvia melodia* and *S. loquax,)* acquire their yellow or second plumage by moulting, but in what manner does this color afterwards disappear? by a change of plumage, or by a gradual change of color in the feathers themselves? From a series of specimens in my possession, I have reason to suspect the latter, but I should very much like to know from direct observation. Have you ever seen the Wood Warbler in yellow plumage? I am inclined to believe it never acquires this hue.—Edward Blyth, *in a letter to the Editor, dated Tooting, Aug.* 25, 1835.

The Wanton Destruction of Swallows.—If you have a convenient opportunity, I pray you to enter your protest against that abominable practice of shooting Swallows, which is a more serious offence than may at first appear. I often hear the remark made that "we have fewer Swallows than usual"; may not this be owing to their wanton destruction? The Swifts, more especially, appear to be diminishing everywhere, to my no small regret, as they are charming creatures to my mind, and I love their harsh scream perhaps almost as well as I do the melody of the Nightingale. I was forcibly struck with the comparative scarcity of these birds during a little tour I made last May, through parts of Oxfordshire, Berkshire, Buckinghamshire, and Northamptonshire. There is a beautiful passage relating to the Swifts in the *Journal of a Naturalist*, the perusal of which I recommend to your readers.—W. T. Bree, *Allesley Rectory, Warwickshire, Oct.* 31, 1835.

Early Nidification of the Robin Redbreast (*Rubecula familiaris*, Blyth).—The first nest we found this year was that of a Robin Redbreast, in the hole of a wall in an outhouse. It was commenced on the 15th of March, when the ground had been covered with snow several days. The structure was soon completed, but no egg was laid till the 28th, when there was a considerable improvement in the weather. Notwithstanding a heavy fall of snow on the 29th, another egg was deposited; and the nest now contains four eggs. The first day we discovered the nest, the parent birds fearlessly flew within a few inches of our head, when we approached the hole, but they afterwards became much more shy and wary, and now never suffer themselves to be seen near the spot.—Ed.

Hipparchia blandina.—Five specimens were captured about the 21st of August, 1836, at the foot of Whernside, in Craven, Yorkshire, by Abraham Clapham, Esq., a pair of which were presented by him to the museum of the Leeds Philosophical and Literary Society, and one to Mr. Henry Denny.—*Magazine of Zoology and Botany, No.* v., *Feb.* 1837.

An Instance of the Attachment of the Sky Lark to its Offspring.—The other day some mowers actually shaved off the upper part of the nest of a Sky-Lark without injuring the female, which was sitting on her young; still she did not fly away, and the mowers levelled the grass all round without her taking further notice of their proceedings. A young friend of mine, son of the owner of the crop, witnessed all this, and about an hour afterwards went to see if she was safe, when, to his great surprise, he found that she had actually constructed a dome of dry grass over the nest during the interval, leaving an aperture on one side for ingress and egress. My friend immediately hastened to inform me of the circumstance, and I was about to follow him to the spot, but, on his return, he found that some ruffian had, in the mean time, torn open the nest, and made off

with the young ones. How disheartening it is for the naturalist to be so continually annoyed by these callous bird-nesters. I was in hopes, when the brood had left the nest, to have preserved the latter as a most interesting specimen; but, alas! all is, as usual, frustrated. I should add, that the intention of the parents was, obviously, to have preserved their young from the scorching heat of the sun.—Edward Blyth; *Tooting, Surry, July* 4, 1836.

The Italian Glowworm.—The Italian Glow-worm appears to be different from ours, for, according to M. Carrara, it has a bag or sack full of air, reaching from the mouth to the abdomen. By means of this the phosphorescent matter is put in contact with the atmosphere, without the aid of the respiratory organs. It is used at the pleasure of the insect, and causes a combustion of the phosphorus, which renders its light bright and sparkling, while that of our Glow-worm is dull and steady.

The Burrowing of the Mole.—In a memoir communicated to the Society of Natural Sciences at Neufchâtel, a curious fact is stated respecting the Mole. As it burrows under ground it always turns its back to the sun, proceeding from east to west in the morning, and west to east in the evening.

A New Species of Oniscus.—A new species of Woodlouse (*Oniscus*, Linn.) abounds in Cuba, the characters of which have been determined by M. Guérin. This naturalist, suspecting that they might not be similar to the European species, although reported as such, procured several from that island, and found that they differ in the form of the head and antennæ, and more especially in the six anterior feet, which are furnished underneath with brushes of spines, club-shaped at the end, which serve to fix them upon polished and perpendicular surfaces; hence their frequent occurrence in the houses of the Havanna.—*Athenæum.*

The Spring Oatear (*Budytes verna*) in Norfolk.—The few pairs of Spring Oatears (or "Green Wagtails") that visit this neighbourhood, resort to the immediate sides of the river, which is bordered by grass lands and uncultivated wastes; it is only in this locality that they are to be seen. I have repeatedly noticed them running upon the weeds on the surface of the water, catching insects, &c.—I have found its nest among the Ling (*Calluna vulgaris*), which grows close to the water. The old birds express considerable anxiety when you approach within the vicinity of their nest, hovering with their peculiar undulating motion whilst on the wing over your head, or alighting upon a bank or any other convenience on the ground, at the same time incessantly uttering their note of alarm.—J. D. Salmon, *Thetford, Norfolk, July* 28, 1836.

The Common Crossbill (*Crucirostra vulgaris*).—The Crossbills are still with us, and I saw one yesterday. About a week ago, I shot a male and female. The former repeatedly made use of a cry I never before heard, and which, I presume, was the love note of the species.—Prideaux J. Selby, *Twizell House, Northumberland, May* 19, 1836.

The Yellow-nosed Albatross a British Bird.—On November, 1836, a beautiful specimen of the Yellow-nosed Albatross (*Diomedea chlororhynchus*, Lath.) was observed sailing above the river Trent, at Stockwith, near Gainsborough, and was shot nearly opposite the Chesterfield canal basin. Thus, according to the rule generally agreed on by naturalists, this bird may now be included in the British fauna. There are four species of Albatross; the *Diomedea exulans*, or Common Albatross (and not the Yellow-nosed species, as erroneously supposed by the newspapers) being the largest.—*Analyst*, *No.* XIX., *April*, 1837.

The Song of the Sky Lark.—In walking out in some fields, near here, towards the close of October, I was surprised to see great numbers of Sky Larks flying about over the fields on every side. I may almost say in flocks, the greater number of them *singing* all the while. They neither soared very high, nor remained so long in the air as they are wont to do in spring. I had not heard the song of this bird for several weeks previously, and it is worthy of remark that the day was rather cold and windy. In autumn the Sky Lark often rises perpendicularly into the air, and then descends in a slanting direction, performing all the other spring manœuvres, without singing, but occasionally giving a twitter, as if congratulating itself on the progress it is making. The same may be said of the Wood Lark at that season. If you consider the above worth inserting in your "Chapter of Miscellanies"—by no means the least interesting portion of *the Naturalist*—it is perfectly at your service.—Charles Liverpool, M.D., *Bristol*, *March* 23, 1837.

Chace of the Wild Boar.—The chase of the Wild Boar has always been considered as a sport presenting the highest interest and excitement; and it is certainly one of the most dangerous. The old males are preferred to those of a less advanced age, as being less swift in their flight, both on account of their greater obesity, and the confidence they feel in their own strength; they are also less dangerous, as their tusks are much more curved, and are thus less capable of inflicting severe and well-directed wounds. When once at bay, the Boar becomes indiscriminately furious. He turns on his persecutors, and strikes at the nearest, often ripping open the belly of a Horse or a Dog; and the hunter is himself in no little jeopardy if he be on foot, or his Horse have thus been disabled.

At the period when Britain was covered with forests, the Wild Boar was found in them as a native, and probably once in some considerable numbers. About the year 940, the laws of Hoel Dha direct that it shall be lawful for the chief of his huntsmen to chase the Boar of the wood, from the 5th of the Ides of Nov. (9th), until the Calends of December (1st).—Cap. xxi. s. 14. In the next century the numbers had perhaps begun to diminish, since a forest law of William I, established in A.D. 1087, ordained that any who were found guilty of killing the Stag, the Roebuck, or the *Wild Boar*, should have their eyes put out; and sometimes the penalty appears to have been a painful death. It appears, indeed, that Charles the First, turned out some old swine in the New Forest for the pur-

pose of restoring the breed to that royal hunting-ground; but they were all of them destroyed during the civil war. A similar attempt has, I believe, been lately made in Bere Wood, in Dorsetshire; but one of the Boars having injured a valuable Horse belonging to the worthy Nimrod who exhibited this specimen of sporting epicurism, he caused them to be destroyed.—Bell's *History of British Quadrupeds*, p. 360.

Disposition of the Robin Redbreast (*Rubecula familiaris*, Blyth.)—Although the Robin Redbreast is a most pugnacious creature, yet it is far from being destitute of attachment to its kind. One that we caught and caged in November, 1835, was for several weeks constantly attended by its mate, which seems to prove that this bird pairs for life. When any one approached the cage, the male departed very unwillingly, and, if wholly excluded from the room in which the prisoner was confined, it would utter the most unceasing and piteous wailings. After some time, however, the visits became gradually less frequent, and at length ceased altogether.—Ed.

Period of arrival of the Garden Fauvet (*Ficedula hortensis*).—I have noticed, for many seasons past, that although some Garden Fauvets (or "Garden Warblers") always arrive about the close of April, we continue to receive a constant accession to their numbers till the beginning of June. I particularly observed this last year, and now again at the present time; it having been a subject of remark with me, all the spring, that in the delightful wild garden I have already mentioned (p. 77), there were but few visitants of this species; but this morning I saw no less than three, which were singing away merrily.—Edward Blyth, *Tooting, Surrey, June* 9, 1836.

The Song of the Missel Thrush (*Turdus viscivorus*, Linn.).—I have lately heard the song of the Missel Thrush; its notes are not much unlike those of the Garden Ouzel (*Merula vulgaris*, Ray), but neither so varied nor so mellow. I now find that I have repeatedly heard this bird, but had always supposed it to be the Garden Ouzel. I cannot be mistaken in this circumstance, having approached several birds sufficiently near clearly to identify them. The top of a Fir tree is a favourite place for uttering its song.—J. D. Salmon, *Thetford, Norfolk, June* 6, 1836.

Preservation of Zoological Specimens.—I have often noticed, with regret, both in public and private museums, in this country, that the damp was making fearful inroads among the zoological specimens; and, as I learned, while in France, some time since, a most simple and efficacious remedy for that evil, I beg to submit it to you for the benefit of your readers and the public. A glazed flower-pan, of the size of a dessert plate, placed in the cases, at intervals of eight or ten feet, and filled with quicklime, will rapidly imbibe all damps, and will only require renewing when it is found that the lime is completely saturated.—As a preven-

tive to moth in museums, I have seen used, and have used myself with great effect, the *huile de pétrole*, put into glass vessels like shallow finger-glasses; and four or five in a case of 20 feet long, will produce so powerful an effluvium,* that it is necessary to have as many watch-glasses, with small portions of musk in them, to make it bearable. But this, in good *air-tight* cases, is of little consequence.—*Magazine of Natural History, New Series, No. IV., April*, 1837.

Instance of the Missel Thrush singing on the Wing.—Instances of this bird having been known to sing while flying have from time to time been recorded. The circumstance is certainly not one of common occurrence, though we have noticed it more than once. A few days ago one flew from a tree close to where we were standing, singing all the while, and we listened to the notes until they were at length lost in the distance. We never met with a more remarkable instance of the fact than this; as the bird in most cases only utters its strain while flying from one lofty tree to another close at hand.—Ed.

Hawking with the Golden Eagle.—The following remarkable fact is, we believe, without a precedent in the annals of hawking:—Captain Green, of Buckden, in Huntingdonshire, has now in his possession a splendid specimen of the Golden Eagle, which he has himself trained to take Hares and Rabbits.—When the difficulty even of handling a bird of the size and strength of the Golden Eagle is considered, the performance of Captain Green must be deemed extraordinary. Hawks are carried on the fist of the falconer, but this would be impracticable with a bird of this size and weight; recourse was therefore had to a very ingenious invention, as a substitute for the fist.—*Doncaster Gazette*, Nov. 11, 1836. [What the "ingenious invention" was, we are not informed.—Ed.]

Entomological Bibliography.—A zealous entomologist, M. Perchéron, who has been much inconvenienced in his studies by having to seek for information scattered through various works in the forms of monographs, treatises, memoirs, notices, &c., is about to publish a catalogue raisonné of all the entomological works now known, in order to facilitate the researches of future students.

The Darklegged Warbler (*Sylvia loquax*, Herbert).—The first migratory bird we noticed in the north of England this year, was a Darklegged Warbler. We observed one individual flying briskly about a wet ditch, on the morning of April 21, very lively, but apparently hungry. It first settled on the hedge above, then descended upon the bank, or darted down upon a slender twig close to the water, a drop of which it would occasionally sip. It was extremely tame, and evidently looked upon us as friendly to the feathered race. Sometimes it would

* This we consider a great drawback to the introduction into common use of the *huile de pétrole*.—Ed.

dart up into the air after an insect, and often approached within a few feet of where we were standing. Although we watched it and followed it up the stream nearly a quarter of an hour, we could not discover that it had a companion, there being no other birds about the place, except a pair of Longtailed Tits and a few Chaff Finches. The only note the Warbler uttered was low and short. We watched the motions of the beautiful little creature with peculiar delight, as being the first harbinger of an unusually late spring; and when, in returning home, a severe and protracted hail-storm overtook us, we remembered the lovely green and yellow Warbler we had left alone amongst the leafless bushes with a pang.—Ed.

Habits of the Sand Pigeon (*Columba arenea*, Salmon).—I have lately been asked if I can suggest a better name than *Stock* or *Wood* Pigeon for the *Columba œnas* of authors; the provincial name in this district is *Sand* Pigeon, which I cannot but consider fully as appropriate as *Bank* Swallow, applied in consequence of the situation the bird selects for nidification. Those who live in woody districts, however, might object to this specific designation, as the bird would then, in all probability, breed in woods, but of this I am not certain. I am inclined to suspect that the species is very local in its distribution in this county during the breeding season, and that it is only towards its autumnal migration that it is seen in very great numbers in the woodlands. I have known an instance of its breeding in the top-most branches of the Scotch Fir, in a similar manner to the Ring Pigeon (*Columba palumbus*), which is a true arboreal species, and might with greater propriety be called Wood Pigeon. Indeed the latter is given by Selby as a provincial name, by which, also, it is always known in this county. If it be found necessary to make any alteration in the nomenclature of the British Pigeons, I should be disposed to name them thus:—Wood Pigeon, *Columba palumbus;* Sand Pigeon, *C. arenea;* Rock Pigeon, *C. livia*.—J. D. Salmon, *Thetford, Norfolk, Dec.* 3, 1836.

Organization of the Common Cuckoo (*Cuculus canorus*, Linn.).—Mr. J. L. Levison, of Doncaster, informs us that he considers the extraordinary habits of the Cuckoo, as regards propagation, to result rather from a deficiency in the organ of Constructiveness, than from any want of Philoprogenitiveness, which latter propensity he states to be amply developed in this interesting bird. The habits of the species certainly tend to confirm this view of the matter; for it has been observed that the Cuckoo frequently returns to the nest in which it has deposited its egg; and the anxiety of the bird to obtain a proper place for the reception of its egg, is decidedly considerable. On the other hand, that the Cuckoo has never made the remotest attempt at building a nest, is an incontrovertible fact. Mr. Levison's observations on the development of the head of the Cuckoo, were alluded to by that gentleman in a conversation with his friend the late Dr.

Spurzheim, and were communicated to us during a visit we had the pleasure of paying Mr. L. some time since.—Ed.

BOTANY.

Œnothera speciosa.—This species has been cultivated several years in Europe as an ornamental plant, but it is a new fact that it secretes at the bottom of its corolla a sweet liquid, which is glutinous enough to retain prisoners several species of *Sphinx*, especially those which frequent the Vine, the Bindweed, and the Milk Thistle.

Agaricus cochleatus, Eng. Fl. V. II. p. 69.—"Inverary" is the only recorded station for this rare Agaric in Scotland. It may therefore be worth while to mention, that I gathered it in great perfection, on November 17, 1836, in the plantation around Foulden House, Berwickshire.—George Johnston, M. D.

Additions to Cooper's *Flora Metropolitana.*—*Silene olites.*—This uncommon plant, in the vicinity of London, was discovered in Charlton Chalk-pit, Kent, last summer, by Miss S. Berkeley, from whom I possess specimens.—*Crocus aureus.*—I also found this not very uncommon species, in Charlton Wood, in company with Messrs. Chatterley and Lee, who also met with it in Battersea Fields. The locality in Charlton Wood is rather complicated. This species is not mentioned in Lindley's *Synopsis.*—Daniel Cooper.—*Magazine of Zoology and Botany, Vol. I., p.* 495—6.

Addition to the paper on the Medicinal Plants of Yorkshire.—I take this opportunity of inserting an unintentional omission, as well as of correcting a slight error which occurred in the paper on the Medicinal and Poisonous Plants of Yorkshire, in the last No. of *the Naturalist.* After *Artemisia asynthium*, insert the Common Tansy, *Tanacetum vulgare.* Herb; aromatic, &c. Banks of the Ouse, above and below York.—An old herbarist who lived at York, and whose death was announced in the papers a few months ago, informed me that, with an assistant, he on one occasion went up the Ouse in a boat, and as he proceeded cut the Tansy, which grew in profusion on the banks for some miles. He returned the following day, and on bringing them home, found, if I remember rightly, that the produce of his day's work amounted to about 70 stone in weight. —Under the head of *Menyanthes trifoliata*, "North East" has been accidentally inserted for North West, of Yorkshire.—E. *Doncaster, April* 20, 1837.

REVIEWS OF NEW PUBLICATIONS.

The Naturalist's Library. Conducted by Sir WILLIAM JARDINE, Bart., F.R.S.E., F.L.S., &c. Ornithology. Vol. VII. *Birds of Western Africa.* By WILLIAM SWAINSON, Esq., A. C. G., F. R. S., M. W. S., &c. Edinburgh: W. H. Lizars; Highley, London; Curry, Jun. and Co., Dublin. 1837. Foolscap 8vo.

WE conclude that our readers, one and all, are as well acquainted with the name and talents of the author of the volume before us, as they are with the scope and objects of the *Naturalist's Library*. Mr. SWAINSON is, in fact, without any flattery, at the head of the zoological school in this country, and he is favourably known as a scientific zoologist wherever the study of Natural History is cultivated. We have only to refer to his splendid *Zoological Illustrations*, or to the ornithological volume of the *Fauna Boreali Americana*, to be fully assured of his capability to investigate, in the most satisfactory manner, and on the highest philosophical principles, the natural affinities existing throughout the animal kingdom. Not less admirable for their perspicuity and accuracy are the minor details of those splendid publications; and the plates, executed by the author, are scarcely to be surpassed. Individuals who had only witnessed Mr. SWAINSON's talents in works like those of which we have been speaking, might well be inclined to doubt the prudence of engaging him to take any part in a popular zoological series, similar to the *Naturalist's Library*. But such an objection could never be raised by any one who had perused our author's beautiful, philosophic, and highly interesting volumes, in Dr. LARDNER's *Cabinet Cyclopedia*. Besides, no one need consider it a disgrace to be the author of a volume or volumes of Sir WILLIAM JARDINE's useful and widely-circulated *Library*, seeing that the Editor has studied to make it practically valuable and interesting to the professed naturalist, as well as entertaining to all classes of readers, and that he has engaged some of the most eminent authors in the publication. Mr. SWAINSON has, in short, the talents requisite to enable him to write in almost every style (on subjects connected with Natural History) equally well; and although he has, of course, by no means employed the full extent of his powers in the *Birds of Western Africa*, yet the volume is replete with original observations. But we must not much longer indulge in this strain of general commendation. The book contains thirty-four plates, engraved by LIZARS from drawings by the author. We question whether the *Naturalist's Library* ever appeared to such great advantage, in this respect, as in the volume before us. The illustrations of the Parrot and Pigeon families (*Psittacidæ* and *Columbidæ*) were, it is true, admirable, but, on the whole, they would scarcely bear comparison with the plates in the

last volume. We have seen some drawings by Mr. SWAINSON which we greatly prefer to any of the plates in his then published works; we suspected, as indeed we have elsewhere noticed, that the failing of the latter lay in the engraving; and the plates in the present volume (beautifully engraved by LIZARS) confirm us in that opinion. We shall now proceed to quote from the introduction; and when our readers are informed that, had it not been for the increase of letter-press in our current number, we should not have been enabled to extract so freely from our author's pages, we feel assured they will not be disposed to regret the omission of the woodcuts, in lieu of which the additional pages are given:—

"Of all the zoological provinces into which our globe is divided, Africa is the most unexplored. The land thirsty and desolate—the people savage and idolatrous—the climate burning and pestilential; we trace all that can impede and resist civilization, and the prosecution of research. The interior of Africa is like the fabled Upas-tree of Java; and of nearly all those adventurous spirits, who have set out to gather its fruits, nothing remains but their whitened bones. The Zoology of Africa is even less known than its Geography. Its coasts, at least throughout its circumference, have been traced out by navigators; but the Natural History of only two or three insignificant parts, when compared to the whole, has been investigated; while of the vast regions intervening between these distant spots, we know little or nothing. The Ornithology of Egypt was well explored in the direction of the march of the French army, by the inimitable SAVIGNY, and those learned men who accompanied it; RUPPELL has brought some striking novelties from Nubia, and recently from Abyssinia; while some of the birds of the latter country, collected and sent to England by the late Mr. SALT, have been imperfectly mentioned.* These, in short, are the only gleanings that have been made in the vast extent of three-fourths of this wide-spreading continent; for even the shores bordering upon the Mediterranean, and the fertile and well-wooded provinces of Asia Minor, have been quite neglected, notwithstanding the interest they possess in determining the limits of the three regions which there meet, namely, Europe, Africa, and Asia. It is only in the southern extremity, long inhabited by Europeans, that anything effective has been yet accomplished. The name of LE VAILLANT takes the lead in this quarter, and the six splendid volumes that he has given to the world, record how great was the success that attended his exertions in our favourite science. Yet, notwithstanding his numerous discoveries, many thers remained to be made; and the three zoologists who subsequently chose this field for their exertions, LICHTENSTEIN, BURCHELL, and SMITH, added materially to our list of S. African birds. The latter naturalist, more especially, has already transmitted to this country many new and interesting species."—p. 92.

From the above observations, our readers will perceive that Mr. SWAINSON's task is far from an easy one. He has had but but little to guide him save his own researches. This volume is, therefore, in a great measure, original, and certainly it is not the worse for that. Our author then proceeds to impart an idea of the Ornithology of North Africa, by giving a rapid and masterly sketch of that of the northern and southern extremities. We extract the following paragraphs, as interesting and valuable in themselves, and as furnishing some idea of

* "Unfortunately nearly all these species have been mixed up with the old genera, so that they become as useless to modern science as if they had not been discovered."

the lucid and excellent manner in which our author conveys his instruction to his readers:—

"The numerical results, which will be given in a subsequent table, will bear us out in the assertion, that the Western Ornithology is fully as different from the Northern, as this latter is from the southern. There are, nevertheless, many points of resemblance between the birds of Senegal and those of the southern districts, which serve to connect them without diminishing those peculiar features which each possess. This union is effected by the migratory species of Western Africa, several of which annually take their flight southward, and return to Senegal after a temporary residence on the plains of Southern Africa. This fact was conjectured by Le Vaillant, and it is fully confirmed by our own investigations, drawn from the specimens that have been recently imported from Senegal and Senegambia. Hitherto this fact only regards the splendid genus *Lamprotornis*, which may be called the African Starlings; but future information will, no doubt, show us, that a southern migration takes place in other instances. It may be questioned, however, whether any of the Senegal birds go northward, excepting those more peculiar to the banks of the Gambia, which are likewise found in Britain, and the two or three species of perchers formerly noticed as extending to Northern Africa and Central Europe.* Adanson asserts, that our House Swallow is the same as that of Senegal; but we have no means of judging the accuracy of the statement.

"The first peculiarity that strikes us in contemplating the Ornithology of Senegal, is the great preponderance of richly-coloured birds. Now this circumstance may be accounted for in two ways. Either it is the result of commercial speculation among the dealers, who imagine that such birds will find a better market in Europe than those of a more homely plumage; or it is a real peculiarity, and therefore arising from natural laws. We believe this latter to be the true reason. In the following pages we shall have to describe a very considerable number of plain coloured species, which would certainly not have been transmitted with the more attractive sorts, had not *variety* been consulted by the dealers, in what they call their 'assortment,' as much as *beauty*. In the second place, this splendour of plumage is in unison with that law, which renders the productions of Nature more rich and luxuriant, whether in growth or colours, in proportion as the countries they inhabit approximate the equinoctial line. This we find in the splendid variety of birds on the opposite coast of America, and in those far more magnificent races which inhabit the torrid islands of the Indian Ocean. The forests of Parra contain the most splendid of all the Brazilian birds, while it will be remembered that the whole of the Paradise birds are restricted to New Guinea, and the little isles of Aro and Banda in the Malayan seas.

* * * * * * * * * * * *

"Senegal appears the chief metropolis of the Widah Finches, the males of which, during the breeding season, are decorated with very long feathers in their tail; out of this species four are natives of this country,—while the splendid *Lamprotorni*, although dispersed as far as the Cape, appear to make Senegal their true place of residence. The Sun-birds are certainly more abundant here than in the south, while their range appears not to extend so far as the Barbary coast: they represent the Humming-birds of the New World, and seem, like them, to congregate most in those countries which are the hottest. The distribution of these charming birds, in a longitudinal direction, extends only to the Cape, but is spread laterally to India and its islands; they disappear very suddenly towards the limits of Northern Africa, since only one species appears to have been met with by Ruppell."—p. 100.

But as our extracts from the introduction have already exceeded all reasonable extent, and as we can but ill spare room for lengthened quotations, we must pass

* *Merops Europæus.*

on to a brief consideration of the descriptions and plates contained in this interesting volume. Although the present volume is only the commencement of the *Birds of Western Africa*, it contains about ninety species, many of them now for the first time described, and above thirty species being figured. Some of the descriptions are necessarily short and technical, little being as yet known of them but their plumage; but the accounts of others contain highly interesting and valuable observations. To be brief—for brief we must, unfortunately, be—Mr. SWAINSON has gathered together everything that could be collected from the researches of himself and others, and has arranged the whole in a manner which will by no means tend to detract from his fame. Small as is the scale of the plates, we are happy to be enabled to confer upon them unqualified commendation—it were invidious to compare them with the executions in the same line of other artists, living or dead, but we may observe, that, with a few trifling exceptions, they have hitherto perhaps not been surpassed.

The propriety of placing the memoir and portrait of BRUCE, the African Traveller, in the volume of which we have been speaking, may perhaps be questioned, but we believe no one will be inclined to complain of the circumstance, when they have read the life of that indefatigable man, written, we are informed, by ANDREW CRICHTON, Esq., author of the "*History of Arabia.*"

After the extracts we have presented to our readers from the *Birds of Western Africa*, we presume there are few who do not feel a desire to peruse that work, and who, notwithstanding the limits of the series in which Mr. S. writes, do not, with us, look forward with pleasurable anticipations to our author's next volume on the same subject.

British Oology; being Illustrations of the eggs of British Birds, with figures of each species, as far as practicable, drawn and coloured from Nature; accompanied by descriptions of the materials and situation of their nests, number of eggs, &c. By WILLIAM C. HEWITSON. Newcastle-upon-Tyne: Published for the Author, by Currie and Bowman; W. Edwards, London. Nos. xxx. and xxxi. January, 1837.

NOT having hitherto had an opportunity of giving any account of the *British Oology* to our readers, we now at length propose introducing it to them in due form. We have before us a *twin* number, which appears to us fully equal to any of its predecessors. To address any praise of the matter or manner of the work to those who have subscribed to it from the beginning, would be wholly superfluous, and we trust there are not many, calling themseles British ornithologists, who cannot boast of having the *British Oology* on their shelf. True, the price (3s. 6d. a number, published every alternate month) may prove a barrier to

some whose love of science and admiration of the publication would otherwise cause them to procure it; but we think it cannot, on the whole, be called a dear, or even an expensive work. However, be this as it may, the list of subscribers (given in a former number) extends to a considerable length, and we may therefore trust that the intelligent author has not suffered, in a pecuniary point of view, by his undertaking. The plates, it will be perceived, are not published in systematic order; but this is of little consequence, as they can for the most part be arranged, at the conclusion of the work, according to the views in classification of each subscriber.

The number opens with a representation of the egg of the Common Kite (*Milvus vulgaris*, FLEM.); it is not much subject to variety, and therefore only one figure is given, and with that one we have no fault to find. Our author, however, mentions one curious variety, in the possession of the Rev. W. DARWIN FOX, "singularly spotted with minute dots, and waved linear marks."

The next is that of the Darklegged Warbler (*Sylvia loquax*, and not *S. hippolais*, as given by Mr. HEWITSON). Our author has judged right in representing three figures, as the eggs are very much subject to variety. We never saw one of the beautiful dark colour of Fig. 2., a shade between Figs. 1 and 3 being commonest. In 1836 we first heard the note of this bird, as mentioned by Mr. HEWITSON, on the 5th of February, but this year not a single individual was seen in the north of England till towards the close of April, a circumstance easily accounted for by the dreariness of the past season.

Two figures of the egg of the Purple Heron (*Ardea purpurea*, LINN.), differing remarkably in size, but not in colour. The representations are characteristic, but scarcely so well finished as we could have wished.

A couple of sombre-looking eggs of the Black-tailed Godwit (*Limosa melanura*, LEISLER), offering no very remarkable varieties. The extremes have, however, not been figured in Mr. HEWITSON's plate.

We next find a delicately-executed figure of the White Stork's (*Ciconia alba*) egg. The situation of the nest in the towns of Holland and Germany is "upon the tops of towers, churches, and outbuildings, upon many of which boxes are placed for their accommodation. Mr. HOY, who has seen them upon a cart-wheel elevated on the top of a strong pole, for that purpose, says, that they also, though seldom, build in lofty trees."

Lovely representations of the egg of the Hobby Falcon (*Falco subbuteo*), the darker variety being much the commoner of the two.

In the next plate, we regret to find the eggs of two species figured together, which will preclude the possibility of arranging the work, in this particular, according to the views of modern systematists. The species are the Gargany Teal (*Querquedula circia*) and the Common Gadwall (*Chauliodus strepera*). Our author, it is true, includes them both in LINNÆUS's great genus *Anas*; but even

in that case there would, we conceive, be intermediate species. The first figure is best, but both are good.

The number concludes with three excellent representations of the eggs of the Common Ruff (*Machetes pugnax*), which, as every ornithologist knows, are subject to considerable variety, both in shape and colour.

We shall not, at present, say more about the *British Oology*, but may, in conclusion, be permitted to observe, that each number of this beautiful and classical work contains a rich treat for the oologist; and that the subjects and the illustrations are such as must surely be interesting to every one embued with the slightest love of Nature. We believe another double part appears cotemporaneously with this number of *the Naturalist.*

OBITUARY.

The rigours of the past season, and "the influenza" have swept away from the land of the living thousands of individuals whose names are unknown beyond the limited circle of their relations and friends; and thus a single line in the newspapers signalizes the departure from amongst us of beings whose existence first becomes known to us *after* their death. But the influenza appears to have been desirous of proving that it is no respecter of persons. We accordingly find it our melancholy duty to record the demise of several individuals, eminent in Natural Science, whom the world could ill afford to spare. Wm. Elford Leach, M. D., died at Genoa some months ago, of a few days' illness from cholera.—Mons. A. L. de Jussieu expired at Paris, at the advanced age of eighty-nine.—Edward Turner Bennet, Esq., died on the 21st of August, 1836, after a short illness. He is the well known author of the *Tower Menagerie*, and *Menagerie of the Zoological Society*, and published, shortly before his death, an edition of White's *Selborne*. He was an active and efficient office-bearer of the Zoological Society, and edited the Transactions of that body, which will long have reason to deplore his loss.—January 22, 1837, at his residence, Howland Street, London, Dr. Thornton, the celebrated botanist.—January 24, aged 67, Joseph Sabine, Esq., F. R. S., L. S., H. S., Z. S., &c., many years Honorary Secretary to the London Horticultural Society, and a well-known amateur of Botany. Mr. Sabine was brought up to the bar; but shortly after he had begun to practise, he received an appointment under government, at a salary of £600 a-year. This office he held till 1835, when he was put upon the retired allowance of £350 per annum. In 1810, Mr. S. joined the Horticultural Society, of which he was made Honorary Secretary on May 1 of the same year, upon the resignation of R. A. Salisbury, Esq. After Mr. S. ceased to be Hon. Sec., he became an active member of the Zoological Society, and was the means of greatly increasing its collection of ornamental plants, in the Regent's Park.

Erratum.—Page 84, for "usual," read "unusual."

THE NATURALIST.

A BOTANICAL TOUR IN HEREFORDSHIRE, MONMOUTHSHIRE, AND SOUTH WALES,

WITH INCIDENTAL NOTICES OF THE SCENERY, ANTIQUITIES, &c.

By Edwin Lees, F. L. S., F. E. S. L., &c.

(Continued from Vol. I., p. 269.)

Having now reached Swansea, and arrived in the centre of a good sporting district, it may perhaps be as well to give a few hints as to the collecting and preservation of plants for the herbarium. Such hints would have been extremely useful to me some years ago, and would have saved me the destruction of many a fine specimen;—to the young and inexperienced collector, therefore, they may be found of advantage. The value of an herbarium of course depends upon the state of the specimens in it, for if the majority of these are broken, mildewed, injured, or decayed, however rare some of them may be, they exhibit no character to be depended on, and, like a defaced coin or a black silhouette, present a very slight resemblance to the objects they were intended to represent. It is obviously, therefore, of the first importance to preserve plants in as perfect a state as possible. A tin box has been very generally recommended as an indispenable accompaniment to the botanist, and the dimensions of such an appendage are carefully defined by Dr. Withering. For my own part, I have long discarded the tin box, as disagreeable and vexatious. For, to say nothing of the undignified aspect it gives the botanist of a dealer in lollipops, if any quantity of plants should be met with, Thistles and Roses—Ferns and Nymphules ("Water Lilies"), *Carices* and *Orchideæ*, have all to be compressed into the same unmanageable space; and if, at the close of a weary day's ramble, the arrangement of the plants collected is put off till the following day, ten to one but the greater part of the specimens are spoiled, damaged, or entirely useless.

A folio cover, made after the manner of a scrap-book, with cartridge paper leaves, and what binders term "guards," I find by far the most convenient receptacle for the intended gems of the herbarium, whether Ferns, Mosses, tender or herbaceous plants be collected, and this, enclosed in a green leather case, offers no inconvenience in carrying, and conceals all those unsightly culms, stalks, and awns, which, sometimes jutting out from the pockets or buttoned-up coat of a collector, might almost suggest to a non-botanical eye the idea of a walking

Priapus.* One great advantage of this plan is, that the specimens may remain between the cartridge paper uninjured for some days, which, in a wild tract where there is no convenience for arranging them, is an object. But besides the case I have mentioned, I would strenuously recommend a smaller one fitted to an inner pocket, for peculiar rarities, and the more delicate flowers, since every practical collecting botanist well knows, that specimens placed casually in an old memorandum-book in the pocket, where they have remained for some time unthought of, have retained their characters and colours in far greater perfection than many which had undergone sand-baking *secundum artem*, or been shifted day after day from paper to paper, at a vain expense of time and patience. As the sooner a plant can be divested of its juices after gathering the better, whenever time will allow, an hot iron carefully applied upon several thicknesses of paper, will make sure work, and indeed in the Sedums and *Orchideæ* is indispensable. I have specimens of both beautifully retaining their original colours done in this way, but some practice is required in applying the requisite degree of heat, which must be moderate upon the flowers. It is also a good plan, when changing the papers of plants, to heat them as much as they will bear without scorching, before a good fire, laying the plants down quickly upon the heated paper, the result of which process, perseveringly continued, will have the best effect. After all, however, disappointment will often ensue, especially with blue flowers, though I have Campanulas, hastily gathered with rubbish and dry leaves, which, without attention, have retained their beautiful blue tints for years. It must also be borne in mind, that the herbarium itself must not be left to its fate in a damp room, or one in which the genial blaze never appears, for if so, mildew will soon gather, defacing and rendering almost nugatory the incessant labours of former years. But enough of the closet—the practical botanist can only be fully at home "abroad in the meadows," and while a ray of light lingers in the horizon, I must improve it.

Day set o'er Swansea's castled steep, as I entered the Mackworth Arms, but I instantly hurried down to the sandy shores of the bay. The evening was lowering, gloomy clouds hung low upon the ocean, amidst which the Mumbles light

* Though the collecting botanist may not indeed become literally a scare-*crow*, yet he will hardly fail to scare many an *ass*, wondering what he can want with thorns and thistles. I have known some botanists stuff their hats with plants; but then it becomes somewhat awkward to lift up the hat without seeming to have assumed the delphic laurel without leave of Apollo, or at any rate to be preparing to say with Horace—

> "Nunc decet aut viridi nitidum caput impedire myrto,
> Aut flore, terræ quem ferunt solutæ."
> Now verdant myrtle in our shining hair,
> Or earth-born flowers appropriately we wear.

was faintly glimmering, and a long dark wall of tidal waves were tumbling in upon the shore. I scrambled in, on, and about the sand-hills, to some distance on the beach towards Oystermouth, giving up my researches only with actual night, though the small continued falling rain, the dash of the spray, and the spread of the sombre clouds, had long left me solitary on the sands. The following plants were here gathered by me. I place the asterisk as before, to indicate those not noticed in Glamorganshire, or in the county I happen to be itinerating, in Mr. H. C. WATSON's *New Botanist's Guide to the Localities of the rarer Plants of Britain.*

Delphinium Consolida.—Some very beautiful blue and light purple varieties growing in the sand.

**Glaucium luteum.*—Spreading its large yellow petals beautifully among the stones on the barrier of the beach. It is frequent along this coast, from Swansea to Aberystwith, though not noticed by Mr. WATSON as inhabiting South Wales, which shows how little this district has been examined botanically, while North Wales has been gleaned over and over again.

**Cochlearia Armoracia.*—Among rubbish on the shore, north of the pier.

**Cakile maritima.*—Pleasingly displaying its light purple blossoms amongst grass, &c., on the borders of the sand-hills.

**Sinapis tenuifolia.*—Dispersed along the shore, whence probably it has progressed to adjacent walls and old structures, as seen in many parts of South Wales.

**Arenaria peploides.*—I brought some living specimens of this plant home, and attempted its cultivation in a garden, where it lived for many months, and even through a winter; but it never extended itself, and finally disappeared.

**Rosa spinosissima.*—Along the sandy "burrows," as the neutral ground between low and high-water, or rather between the latter and the cultivated ground, is here provincially termed, I found this beautiful Rose, forming dwarf thickets in the utmost profusion. Its lovely white flowers, moist with the dews of evening, and closing up their petals, were visible for some distance, forming the most delightful relief conceivable to the aridity of the shore, on whose naked bosom they sprang, while the profusion of flowers studding their fairy forms, and their delicate odour, rendered them objects peculiarly pleasing to behold. This is, no doubt, the original type of *R. spinosissima*, though inland specimens exceed it so much in size as to seem almost of a different species, but the same profusely spinose stem prevails in all. Though the late Sir J. E. SMITH records, that according to his observation the flower stalks are "quite smooth and naked," yet in these marine specimens the utmost diversity prevailed.

In some, bristly and smooth flower-stalks occurred on the same plant, and frequently a Rose with all its flower-stalks profusely bristly, occurred by the side of one without a single bristly stalk. This Rose seems universally diffused along the sandy shores of England and Wales, as well as in the interior of the country. Mr. WATSON notices it in seventeen counties, from Northumberland to Surrey, and I have traced it along the Welsh coast, from Aberdovey, Merionethshire, to the coast of Glamorganshire southward.

Sedum acre.—In profusion, gilding the sands in many places.

**Eryngium maritimum.*—Plentiful and singularly beautiful among the stones close to the walk along the burrows. The heads of delicate blue flowers, with anthers of the same colour, armed with "a gorgeous ruff of leaves with snowy points," themselves with bright amethystine veins, arrest the attention, even while the tide is pouring in with accumulated rage. This plant must be inserted in the *Botanist's Guide*, as a regular denizen of the sea-side from Aberystwith to Swansea.

**Carduus tenuiflorus.*—Sparingly along the shore.

Convolvulus Soldanella.—In various spots on the sand-banks this flower presented itself very conspicuously, unfolding its large purple bells in the humid twilight.

**Euphorbia paralia.*—On the sand-banks, near the spot where the Oystermouth tram-road crosses a small rivulet running into the sea.

**Carex arenaria.*—Extremely plentiful on almost all the sand-banks along the burrows.

**Ammophila arundinacea.*—Frequent all along the sand-banks.

**Elymus arenarius.*—On the banks with the preceding, but less common. Both these grasses have received great praise for their utility in binding the sand upon the sea-shore, and the lamented Sir. J. E. SMITH says, that this is "perhaps the very best of all plants to resist the force of the sea." But it seems to be overlooked, that they also collect the sand in such considerable banks about them, that when the wind blows from the shore, a deluge of sand is borne inland, rendering the labours of the husbandman abortive, covering roads and green fields, and even showing a high stone-wall to be an ineffectual barrier.

On the following morning I proceeded to Oystermouth, and climbed the carboniferous limestone rocks that here stretch across the peninsula of Gower. The view of the little harbour below, filled with fishing vessels, the expanse of sea beyond, with the distant coasts of Somerset and Devon, and the Mumbles islets and lighthouse on the right, has a very pleasing effect. I found a variety of plants upon these cliffs, and all within a very confined space, upon the sides and sum-

mits of the rocks, suggesting the idea that a great portion of the flora of the west of England may have had its origin from hence. PURTON has remarked incidentally, but without founding any conclusion upon it, that many plants of rare occurrence in the midland counties, are common in South Wales, and I have found this observation to be, in a great measure, correct. Now if, as is generally understood, the red sand-stone, and the strata above it, in the order of deposition, still lay beneath the waters at a period posterior to the elevation of these carboniferous rocks, they must have derived their vegetation when uncovered, from the immigrations of the plants congregated upon this pre-existing dry land. Whether, in fact, the very plants upon the rocks here are really indigenous, or derived from other countries, it may be now indeed difficult at once to say. The origin of plants is a question still undecided, but whether one or many centuries of creation are admitted as the most correct theory, it would be unphilosophical to assume the gratuitous creation of new plants for any newly immerged land, so long as other lands can be proved to have been in existence, from whence vegetation could proceed to clothe the bed of the retiring ocean. For as an old wall left to the elements is attacked and enveloped by the progeny of the plants around it brought by the winds and rains, so in like manner must former newly emerged portions of the earth's surface have received their vegetable colonies from older and pre-existing strata of land. All that is required to constitute fit habitats for nine-tenths of the phenogamous species in the British Flora, is the sandy seashore, salt-marshes, fresh-water pools and bogs, and limestone eminences, all which occur here within a compass of three miles, taking Swansea as the centre. I conclude, then, that the great majority of British plants existed on these limestone hills, while a considerable proportion of England was covered by the sea. They must, however, have sprung up even here subsequent to the destruction of the plants of the coal formation, but whether derived from extraneous sources, or created here *ab origine*, it is difficult, and perhaps impossible, at present to decide. The following plants were all gathered by me upon the carboniferous limestone, between the Mumbles, Caswell Bay, and Oystermouth:—

**Arabis hirsuta.*—Abundant on the walls of Oystermouth Castle, and at other places in the vicinity. Also on the cliffs at Caswell Bay.

**Arabis turrita.*—In the chamber over the Barbican, Oystermouth Castle.

**Cochlearia danica.*—In several of the deserted uncovered apartments of Oystermouth Castle.

**Lepidium Smithii.*—Plentiful about Swansea.

**Brassica campestris.*—Among rubbish near the sea.

Helianthemum canum.—On the rocks opposite the Mumbles Lighthouse, on the mainland.

Hypericum humifusum.—On the hills towards Caswell Bay.

**Silene maritima.*—On the rocks north of the Mumbles.

Linum angustifolium.—In a bushy place, by the spring at Caswell Bay.

Anthyllis vulneraria.—Plentiful on the rocks.

**Asperula cynanchica.*—On the precipitous face of the cliff between Oystermouth and the Mumbles. This plant does not appear to have been previously noticed in Wales, as I find no record of its occurrence in botanical works, and Sir JAMES SMITH says expressly, "abundantly in the chalk countries, but *not in Scotland or Wales.*" My specimens are perfectly similar to those from other places.

Chlora perfoliata.—Rather plentiful on the summit and sides of the cliffs.

Erythræa pulchella.—With the above.

**Statice Armeria.*—In great abundance and beauty, adorning the sloping face of the cliffs with its rosy clusters, down to the very edge of the sea.

**Plantago maritima.*—In numerous hollows of the cliffs.

**Reseda lutea.*—On the side of the road between Oystermouth and Swansea.

Euphorbia portlandica.—I found this beautiful Spurge growing very luxuriantly high up on the cliffs, its leaves and stem, dyed with crimson, presenting a lovely aspect to the eye.

**Carex pauciflora.*—Sparingly by the side of a spring oozing amidst moss and grass from the face of the cliff.

**Briza minor?*—I noticed a small species of *Briza* in one or two places about the summit of the cliffs, but feel rather doubtful whether it be really the *minor*, or a small variety of *media*.

Grammitis ceterach.—This Fern, rather uncommon in the midland counties, here occurred in abundance and luxuriance.

While engaged in exploring the recesses of the cliffs, and anon gazing at the boiling ocean now pouring in upon the rocks, isolating the islets, and thundering upon the shore, a thick mist by slow degrees unconsciously surrounded me, which soon began to dissolve in dripping rain, leaving the unpleasant alternative of sheltering as I best could among the leeward rocks, or threading my way down to Oystermouth by unknown and slippery paths. Finding the rain obdurate in its continuance, I took the latter course, and after gravitating once or twice towards the earth's centre, I felt peculiarly happy in taking shelter in the arms of "the Mermaid," in the village below, where, on a neat sanded floor, in a room hung round with many a gilded frame, after making a cheerful blaze to dry my apparel, and ordering a renovating refreshment, "I took mine ease at my inn."

But rest, ease, and comfort have their termination, and, hunger being satisfied, inaction on a ramble is of all things the most tedious and irksome. As Aquarius therefore denied all truce, I resolved to brave the descending torrents, and, um-

brella in hand, fought my way to the Barbican of Oystermouth Castle. I found one advantage from this aqueous exploration, which is not common in visiting Welch castles—no soul disturbed my reveries, or dissipated my visions of Norman knights, by too plain intimations that the image of WILLIAM the Fourth was more desirable in the eyes of the present generation than that of WILLIAM the First. One of the apartments occupied by the soldiery, in the strongest part of the castle, with its vaulted roof, strong pillars, and deep embayed windows, is very entire, and here I paced to and fro for some time, conjuring up the forms of mailed warriors looking out upon their savage and wildly clamourous besiegers. I gazed long from the apartment over the gateway, but was unable to pierce the fog that hung upon all the surrounding country, and even hid the wide-spreading ocean in its embrace, while no sight of animal or human being, and no sound of animation or melody, disturbed the solemnly falling rain. Gathering, therefore, the *Cochleariæ* now festooning the walls of the baronial apartments, in place of its once figured tapestry, and hastily dashing by the dripping Ivy that covers the exterior walls, I again sought the comforts of the Mermaid, from whence finding I could only return to Swansea in a miscellaneous Sociable, with a host of broad-faced, laughing, Flemish-descended lasses, I fixed myself and my plants, with some little pressure, as I best could, among the black beaver hats and scarlet shawls, and was rumbled and shook along, for the intervening three miles, at a good rattling pace, till the narrow clock-tower and arched parapet of Swansea Castle, rising amidst the modern houses that now almost choak it up, again met my view.

The next morning proved so eminently beautiful, that I could not resist a ramble to the romantic shores of Caswell Bay, climbing its cliffs and gazing upon the long and magnificent swell of ocean, pouring its waves upon the dark undermined rocks. I found it no easy task, however, to mount the rocks northward of the bay, some ill-natured farmer of the land, and perhaps hater of the picturesque-hunting "Saesenach," having so blockaded the path with a formidable barrier of stones to the very verge of the cliff, where besides a *chevaux-de-frize* of thorns had been placed, that it required some patience and determination to surmount the obstacle. A number of Privet-bushes *(Ligustrum vulgare)* crowned the summit of the cliff, where also the white Horehound *(Marrubium vulgare)* was very abundant. The sea-view from hence is very fine, particularly northward, but the bushes and shrubs crouching almost to the very earth, testify the prevailing power and terrific influence of the western gales. Between this spot and Oystermouth, the *Aspidium aculeatum* occurred in great magnitude and luxuriance in a ravine, and a variety of *Sambucus nigra*, with beautifully variegated leaves.

On my return, the bay of Swansea sparkled with the effulgent radiance of departing day, happy groups were loitering upon its shores, and far beyond the long-

extending sands, the romantic hills about Cromlyn, and the distant heights of Somerset and Devon filled up the blue distance, while just over Swansea pier the lower limb of a brilliant rainbow long kept its position with unfading vividity, till all else vanished into twilight gloom.

A NEW SYSTEM OF NOMENCLATURE, ILLUSTRATED BY A LIST OF BRITISH BIRDS.

By the Rev. Francis Orpen Morris, B.A.

In forwarding to you a list of British land birds, formed in accordance with classical rules, I am far from wishing it to be supposed that I expect, or even wish, that it will be universally adopted. It has seemed to me desirable, on accounts before stated, that generic names should be of Greek, and specific names of Latin origin, and also, generally, that classical propriety should be attended to, in the formation of names classically derived. I hereto subjoin a catalogue in which these views are acted upon. There are, however, many names remaining yet to be improved, and these I have marked in italics. There may be others which I have not observed, among the great number of names I have been obliged to accumulate together, and these I should be glad if any of your correspondents would point out. I give the catalogue merely as explanatory of my views, and emendatory, at the same time, I hope, of very many faults in former nomenclatures, and likewise with the view of eliciting the opinions of more able naturalists on the question, whether the grossness of the present errors does not demand correction, and whether, if that be allowed, the rules of classical propriety should not be attended to, in the revision. If not, let the reason be adduced,—though I will before hand state, that I should take no notice of the opinions or criticisms of any whom I may have any reason for supposing to be ignorant of classical knowledge —"*nil moror*"—but any suggestions which the novelty of this nomenclature may perhaps at first call forth from others, being always open to conviction, I shall be far from taking amiss.

Since writing the above, I have observed Mr. Doubleday's new nomenclature of British Ornithology announced, and as it will in all probability supersede the second edition of my *Guide to an Arrangement of British Birds*, which I intended publishing, as before-mentioned, I shall, for the present at all events, content myself with setting forth this exemplification of the principles laid down above, through the medium of your pages. The water birds shall probably form the subject of a future communication.—The erroneous names, already alluded to, will be found chiefly among the double English names. I prefer brief, single, un-

meaning and vernacular ones, if they are to be retained at all, which, *for the present*, they perhaps must be. My generic names are either original Greek ones, or of Greek derivation. In the former case, I have assigned them, as nearly as possible, to the birds supposed to have been originally represented by them.—I have only to add, that it would be very desirable if the same specific name were never to occur twice in any nomenclature.

Æsalon fringillarius,
Sparrow Hawk.
Asterias palumbarius,
Goshawk.
Cerchne pennipes,
Rough-legged Buzzard.
Cerchne Buteo,
Buzzard.
Pernis mellivora,
Honey Pern.
Haliaëtus arundinaceus,
Osprey.
Aëtus pygargus,
Erne.
Aëtus aquila,
Golden Eagle.
Hierax Islandicus,
Jer.
Hierax peregrinus,
Peregrine.
Hierax subbuteo,
Hobby.
Hierax rufipes,
Orange-legged Hobby.
Hierax cæsius,
Merlin.
Hierax tinnunculus
Kestrel.
Ictinus milvus,
Kite.
Nauclerus furcatus,
High-Flier.
Percnopterus albicapillus,
White-headed Swiftwing.
Circus æruginosus,
Harpy.
Circus cyaneus,
Ringtail.
Circus cineraceus,
Harrier.
Ascalaphus auritus,
Long-eared Owl.
Ascalaphus subauritus,
Short-eared Owl.
Scops Aldrovandi,
Aldrovand's Owl.
Byas nobilis,
Eagle Owl.
Syrnium niveum,
Snowy Owl.
Strix funerea,
Funereal Owl.
Nyctimene flammea,
Gillihowlet.
Nyctimene stridula,
Brown Owl.
Glaux Tengmalmi,
Tengmalms' Owl.
Glaux nudipes,
Little Owl.
Corone maxima,
Raven.
Corone cornix,
Crow.

Corone frugilega,
Rook.
Corone cinerea,
Hooded Crow.
Corone monedula,
Jackdaw.
Melanoleuca pica,
Magpie.
Balanephagus garrulus,
Jay.
Caryocatactes nucifraga,
Nutcracker.
Pyrrhocorax docilis,
Chough.
Ampelis garrula,
Roller.
Chloreus oriolus,
Golden Oriole.
Psar variegatus,
Starling.
Probateus roseus,
Rose-coloured Pastor.
Byssura Bohemica,
Silktail.
Creurgus excubitor,
Shrike.
Creurgus Lanius,
Flusher.
Creurgus rufus,
Woodchat.
Calamophilus barbatus,
Bearded Pinnoc.
Ægithalus caudatus,
Mumruffin.
Ægithalus palustris,
Marsh Tit.
Ægithalus ater,
Coal Tit.
Ægithalus cristatus,
Crested Tit.
Ægithalus cæruleus,
Bluecap.
Ægithalus *major*,
Oxeye.
Orchilus cristatus,
Goldcrest.
Orchilus ignicapillus,
Firecrest.
Dryocolaptes martius,
Hewhole.
Dryocolaptes viridis,
Ecle.
Dryocolaptes *minor*,
Hickwall.
Dryocolaptes *major*,
Whitwall.
Sitta *Europæa*,
Nuthatch.
Iunx frutilla,
Wryneck.
Dendrobates familiaris,
Creeper.
Epops upupa,
Hoopoo.
Merops apivora,
Bee-eater.
Halcyon alcedo,
King Fisher.
Cinclus aquaticus,
Dipper.
Loxorynchus curvirostra,
Crossbill.
Loxorynchus cruvirostra,
Parrot Crossbill.
Loxorynchus albipennis,
White-winged Crossbill.
Phrygilus *vulgaris*,
Bullfinch.
Phrygilus *enucleator*,
Pine Bullfinch.

Coccothraustes *vulgaris*,
Grosbec.
Coccothraustes viridescens,
Green Grosbec.
Fringilla Lulensis,
Brambling.
Fringilla cœlebs,
Chaffinch.
Pyrgita domestica,
Sparrow.
Prygita montana,
Mountain Sparrow.
Acanthis elegans,
Siskin.
Acanthis carduelis,
Goldspink.
Linophaga linaria,
Linnet.
Linophaga rubra,
Redpoll.
Linophaga montium,
Twite.
Linophaga canescens,
Hoarypoll.
Plectrophanes nivalis,
Snowflake.
Plectrophanes montana,
Lapland Bunting.
Cynchramus hortorum,
Ortolan.
Cynchramus arundinaceus,
Reed Bunting.
Cynchramus *cirlus*,
Cirl.
Cynchramus *citrinella.*
Yellow Hammer.
Cynchramus miliaria,
Bunting.

Corydalis arvensis,
Lavrock.
Corydalis nemorum,
Woodlark.
Seiren rupestris,
Rock Pipit.
Seiren pratensis,
Tit.
Seiren arborea,
Tree Pipit.
Seiren Ricardi,
Richard's Pipit.
Lamprophonus musicus,
Throstle.
Lamprophonus variegatus,
White's Thrush.
Lamprophonus viscivorus,
Shrite.
Lamprophonus pilaris,
Fieldfare.
Lamprophonus turdus,
Redwing.
Copsicus merula,
Blackbird.
Copsicus torquatus,
Ring-neck.
Myiotheras luctuosus,
Pied Flycatcher.
Myiotheras griseus,
Spotted Flycatcher.
Seisura flava,
Yellow Wagtail.
Seisura neglecta,
Gould's Wagtail.
Seisura cinerea.
Grey Wagtail.
Seisura maculata,
Pied Wagtail.

Anorthura troglodytes*,
Wren.
Œnanthe saxicola,
Wheatear.
Œnanthe rubicola,
Stonechat.
Œnanthe dumeticola,
Whinchat,
Phœnicura *Gibraltariensis*,
Blackstart.
Phœnicura ruticilla,
Redstart.
Phœnicura Suecica,
Bluestart.
Melissophilus Provencalis,
Dartford Warbler.
Erythaca rubecula,
Robin.
Aëdonis luscinia,
Nightingale.
Aëdonis hortensis,
Pettychaps.
Aëdonis garrula,
Babillard.
Aëdonis atricapilla,
Blackcap.
Philomela *acredula*,
Huckmuck.
Philomela ficedula,
Chiff-chaff.
Philomela sibilatrix,
Sylvan.
Hypoläis *arundinacea*.
Reed Fauvet.
Hypoläis *Locustella*.
Grasshopper Warbler.
Philomela modularis,
Dunnock.
Philomela Alpina,
Alpine Warbler.

Chelidon riparia,
Martlet.
Chelidon urbica,
Martin.
Chelidon rustica,
Swallow.
Cypselus *Alpinus*,
White-bellied Swift.
Cypselus murarius,
Swift.
Nyctichelidon *Europœa*.
Night Jar.
Coccyx *Americanus*,
American Cuckoo.
Coccyx canorus,
Cuckoo.
Peristera migratoria,
Migratory Pigeon.
Peristera *torquata*,
Queest.
Peristera *œnas*,
Stock Pigeon.
Peristera *livia*,
Rockier.
Peristera aurita,
Turtle.
Phasianus Colchicus,
Pheasant.
Perdix cinerea,
Partridge.
Perdix rufa,
Guernsey Partridge.
Coturnix *major*,
Quail.
Lagopus Britannicus,
Grouse.
Lagopus mutus,
Ptarmigan.
Tetrix niger,
Black Game.

* I have retained this name as a specific one, though of Greek derivation, it having become Latinized as the name of a people.

Tetrix sylvicola,
Capercail.
Otis tarda,
Bustard.

Otis *parva*,
Little Bustard.
Œdicnemus crepitans,
Thicknee.

NOTES ON THE SPECIES AND VARIETIES OF THE GENUS PONTIA.

By Peter Rylands, Esq.

There may be, perhaps, some who will think that the insects which I purpose to consider in the present paper are so common as to excite no interest, and that no new information can be given respecting them. From persons holding this opinion, I beg entirely to differ. The man who can only see beauty or take interest in a scarce insect, which is merely valuable in his eyes because "rare," has no claim to be considered a true naturalist; he confines himself to closet study, and preserved specimens alone furnish subjects for his investigation and admiration. From the time when, buoyant with youthful vigour and juvenile pleasures, we pursue with cap in hand the sportive Butterfly, until when in riper years we walk leisurely in the fields, contemplating and philosophizing on the works of Nature, the common White Butterfly attracts a considerable share of our attention. We have all admired this insect, as, lazily moving its expansive wings, slowly yet elegantly sailing on the air, it has passed by us. At other times we have been amused by its rapid and dexterous motions, when, entering into a mock fight with a companion, it has described its swift eccentric frolics above our head;—we forget our enmity to the "filthy grub," which destroys so many of the useful products of our garden, when we see it metamorphosed into an emblem of Innocence. This Butterfly, then, is an object of interest—of an interest, too, in which all can participate, as its abundance renders it familiar to every one.

Neither is the subject under consideration exhausted. Naturalists are still undecided as to the number of British species which the group contains, and there are insects of this genus which some are of opinion ought to rank as true species, while others consider them as mere varieties. I trust, therefore, that if the following remarks cast any additional light on the question, they will not be considered useless, or uninteresting.

After the investigation of numbers of *Pontiæ*, I think I am justified in adopting the following arrangement of the species and varieties contained in that genus.

Genus *Pontia*.

Gen. char.—Antennæ long, and slender, consist of seven or eight joints, and

terminate in a compressed obconic club; palpi clothed with scales, and fringed with hairs externally, the terminal joint the longest; anterior wings nearly three-cornered, the apical angle not very acute; the posterior wings rounded; legs alike in both sexes, the claws slightly forked.

Sp. 1, *Pontia brassicæ*.

Syn.—*Pontia brassicæ*, Steph. *Haust.*—Jard. *Nat. Lib. Ent. vol.* 3, *pl.* 7, *fig.* 2.—*Papilio brassicæ*, Linn.—Don. xiii. 29. 446.—Lewin, pl. 25.—Large garden white, Harris.—The Cabbage Butterfly, Renn. *Consp.* p. 3.

Sp. char.—Wings $2\frac{1}{2}$ in., white; first pair above with the tip marked with a black band irregularly jagged on the inner edge; second pair with a black spot near the middle of the anterior edge; underneath with two black spots. The female is distinguished from the male by having, in addition to the spots just mentioned, two others on the disk of the upper wings. The fringe of the wings is yellowish, slightly waved with black.

Var. β. is distinguished from the typical variety by the band on the tip of the wings not being jagged. It is generally rather smaller, but in other respects is not different.

Var. γ. (*P. chariclea*, Stephens) differs from the preceding in the black band at the tip of the wings being paler; the outer margin of the wings is adorned with a yellowish fringe. This variety is generally less than the typical one, averaging $2\frac{1}{4}$ in. I have, however, taken specimens $2\frac{1}{2}$ in. in expanse of wings. Neither does it appear earlier (as some writers assert) than *P. brassicæ*; last year I met with a specimen in August, and have frequently taken it in June.

The caterpillar of *P. brassicæ* is green, having a narrow line of yellow along the back, and another on each side of the belly; the body pretty thickly covered with black tubercular points, each of which has a hair in the centre; feeds on Cabbages, Turnips, &c.

Sp. 2, *Pontia rapæ*.

Syn.—*Pontia rapæ*, Steph. *Haust.*—Jard. *Nat. Lib. Ent.* v. 3, *pl.* 7, *fig.* 3.—*Papilio rapæ*, Linn.—Lewin, pl. 26.—Renn. *Consp.* p. 3.—*Pap. alba media*, Ray.—Small garden white, Harris.

Sp. char.—Closely allied to *P. brassicæ*, but evidently distinct. Wings from $1\frac{3}{4}$ to $2\frac{1}{4}$, white; the primary wings marked very similarly to *P. brassicæ*, with a dusky spot at the tip; the male having a single spot on the disk, and the female two, with an oblong patch behind; the hinder wings with the usual black spot on the anterior border beneath; the anterior wings

have two black spots; the under wings are bright yellowish, sprinkled with very minute black points at the base.

Var. β.—Above, entirely of a light yellowish colour, in some specimens approaching to buff—the black markings as in the typical variety.

Var. γ.—Distinguished from the true *rapæ*, by the spots on the superior wings being very indistinct, and the spots on the tips being paler, with their inner edge less defined.

Var. δ.—Denominated by STEPHENS, who considers it distinct from *P. rapæ*, *P. metra;* differs from the last var. by the spots on the superior wings being entirely obsolete, and the tips are merely shaded by a few dark points. Mr. STEPHENS imagines that the caterpillar of this variety (I cannot call it species) differs from that of the *rapæ—I have reared both varieties from the same cluster of eggs.* This I conceive, together with the fact that Var. γ. so well connects the typical variety and *metra*, will settle the matter at once, by proving that the latter cannot rank higher than a variety of the former. Neither do we find that this variety has a different season of appearing from that of *P. rapæ;* I have taken specimens in June, August, and September, so that it cannot correctly be said to be an early species. In April last year I met with a specimen, but then I took also one of *P. rapæ.*

The caterpillar of this species is light green, with a pale blue along the back, and a whitish streak, somewhat punctured with yellow on each side of the belly; feeds on Cabbages, Turnips, &c.

Sp. 3, *Pontia napi.*

Syn.—Pont. napi. STEPH. *Haust.*—JARD. *Brit. Butterflies, pl.* 9, *fig.* 1.—*Papilio napi*, LINN.—LEWIN, *pl.* 27.—DONOVAN, viii. 23, *pl.* 280, *fig.* 1.—Green vein'd white, HARRIS. The Navew, RENN., *Consp.* p. 3.

Sp. char.—Easily distinguished from the preceding species by the distinct greenish veins, branching over the disk of the under surface of the wings. Above, the tips of the primary wings dusky, and in the male there is a round black spot in the middle, not very remote from the upper margin; the female has two such spots on the upper wings. Expanse from 17 to 22 lines.

This species is subject to very considerable variety in its marking: I shall only particularize two varieties, which I think have erroneously been considered as species. There exists a gradual variation of specimens from one variety to the other, which completely connects them.

Var. β.—Rather larger than the typical variety. Differs in the veins being dark

above, and underneath dusky and very broad. Called by Stephens *P. sabellicæ*, and by Wallner *P. bryoniæ*.

Var. γ.—Larger than either of the preceding, and having a black spot on the upper wings, the tips and some triangular patches being of the same colour; the hinder wings rather pale, with the three first nervures, alone, dilated and greenish. Considered by Esper, Stephens, and others a distinct species, and called by them *P. napææ*.

The caterpillar feeds principally on Cabbages, and is of a dull green colour, lighter on the sides, with yellow stigmata, covered with white warts, which are dusky at the tip, and give rise to short tufts of hair.

Bewsey House, Warrington, April 3, 1837.

ORNITHOLOGICAL NOTES.

By Beverley R. Morris.

It is a circumstance worthy of notice, that there were no Terns (*Sternæ*) among the Gulls whose visit to the coast of Dorsetshire I recorded in the last number. I did not see one the whole time the Gulls remained, but as soon as these latter left us, the Terns made their appearance in considerable numbers. Does this arise from any difference in their food? or from the Gulls beating them away? I am inclined to believe that the latter may be the cause.

It is also a curious fact, that birds so readily remark any deviation from the general appearance of their family. This I noticed in the case of a Gull with what appeared to me to be a very long tail, which was attacked on all sides by the other Gulls, whether of the same species as itself or not, I cannot say. On its coming tolerably near to me, I discovered that it had a piece of ribbon or rag attached to its tail. This at once accounted for its being hunted in the way it was. It was not close enough to enable me to be sure of its species, but I think it was the Common Gull (*Larus canus*). I suppose some one had caught it previously, and wished to set his mark on it. About three years ago—I think in 1834—I also remarked a similar fact with respect to a Chimney Swallow (*Hirundo rustica*), with a long piece of twine attached to its foot; the poor bird seemed to be the sport of all the Swallows in the neighbourhood, and as they were then congregating preparatory to migration, it had plenty of enemies. I observed it for two or three days, but what then became of it I had no opportunity of ascertaining.

I may also as well here mention one or two curious instances of nest building,

which present themselves to my recollection. One is that of a House Sparrow (*Passer domesticus*) placing its feather-bed inside an old Magpie's nest in a lofty Elm tree at some distance from any house. When I saw it, the young birds were scarcely fledged. In 1834 I found the nest of a Common Wren (*Anorthura troglodytes*) in a very extraordinary situation. It was hanging by some small rootlets under a projecting ledge, about thirty feet from the bottom of a precipice, so that the slightest breeze would put it in considerable motion, as the roots by which it was suspended were about a foot long. It was not, however, entirely finished inside, the old birds finding it, I suppose, too insecure a cradle for their young. I regret that I did not preserve it. The same year I also found another Wren's nest, which was not lined at all, and yet there were four or five eggs in it, which were warm when I first felt them, shewing that the old birds had made a virtue of necessity. This, I think, is a very unusual occurrence*; at least I do not remember another instance of it. Whether the eggs were hatched or not, I do not know, as I left the place immediately afterwards.

Trinity College, Dublin, April 19, 1837.

ON THE CATERPILLAR OF THE GOAT MOTH.

THE habits of many of the larger *Lepidoptera*, from the comparative ease with which they may for the most part be observed, have pretty generally attracted the attention of those lovers of Nature who, nevertheless, cannot aspire to the title of entomologists; but who, with the example of the justly celebrated WHITE, of Selborne, notice and treasure up the facts which come within their own individual observation, and by adding links to the chain of evidence, establish the statements of former more experienced and able writers on the subject. And thus facts which, taken alone, may not perhaps be important, when applied to their legitimate and true use, viz., that of corroborating former testimony, become not only so, but also contribute greatly to the pleasure of those who, in a field of observation so well explored as the present, cannot hope to add many new ones to the general stock.

The following short account of a singular capability of the Goat Moth (*Cossus ligniperda*) was written principally with the view of corroborating a fact with

* According to our experience the nest of the Wren is not invariably lined with feathers, and this, we conclude, is the lining alluded to by our correspondent. The lining of the structure is, of course, the finishing operation, and in some cases birds are compelled to deposit their eggs previous to the completion of the nest. A remarkable instance of this kind, in which a Thrush laid an egg upon a small quantity of moss on the branch of a Pear tree, has been recorded elsewhere.—ED.

regard to the economy of the insect, related and accompanied by an admirable engraving, in CURTIS's *British Entomology*, a work which, for the accuracy of its engravings and the exactness of their colouring, stands, I think, unrivalled.—During the autumn of 1834, whilst in Suffolk, and engaged in breeding a few larvæ of *Sphingidæ* and other *Lepidoptera*, I procured two fine specimens of the caterpillar of the Goat Moth, which, from their size and general appearance, I judged to be near their time of change into the pupa state. I placed one of them in a large white basin with a small quantity of rotten wood, &c., as it had previously escaped from a drawer in which I had put it *pro tempore*. On my return to the room, after an absence of an hour or two, I found that my prisoner had again made its escape, and was crawling at large on the floor of the apartment; and upon looking into the basin, I discovered on one side of it a zigzag web or ladder, extending from the bottom to the edge, and which had evidently served as the means of its escape from so slippery a prison. As I was not in the room at the time, I had not an opportunity of witnessing its *modus operandi*, which would no doubt have amply rewarded my attention, not only with respect to the arrangement, but also the fixing of its flimsy threads to a wall, at once so ill adapted for adhesion, and the support of its large and heavy body, and this too after I had witnessed several of its ineffectual efforts to escape.

I did not then think of repeating the experiment, either with this or the other caterpillar (which I had lodged more safely), but in a short time both disappeared within the pieces of Willow prepared for them.

Doncaster, *April* 27, 1838. E.

LEICESTERSHIRE FLORA.

By the Rev. ANDREW BLOXAM.

(Continued from p. 83.)

CLASS XIII.—*Papaver argemone.*—*P. dubium.*—*P. rhœas.*—*Chelidonium majus.*—*Helianthemum vulgare.* Near Croft and Enderby.—*Tilia Europœa.* In a lane near Coton.—*T. grandifolia.* In plantations.—*T. parvifolia.* Near the toll-gate between Measham and Ashby.—*Nymphœa alba.* Ponds at Sheepey; Braunston.—*Nuphar lutea.* Common.—*Helleberis fœtidus.* Road-side near Leir, on the way to Ashby parva.—*Aquilegia vulgaris.* Near Mount Bosworth, on the road to Osbaston.—*Thalictrum flavum.* River Soar; near Glenfield; Congerstone.—*Anemone nemorosa.*—*Ranunculus aquatilis.*—*R. hederaceus.*—*R. lingua.* Grooby Pool; Pond on Mr. Hassal's Farm, Glenfield.—*R. flammula.*—*R. ficaria.*—*R. auricomus.*—*R. sceleratus.*—*R. acris.*—*R. repens.*—*R. bul-*

bosus.—R. hirsutus. Leicester road, near Grooby; Congerstone.—*R. parviflorus.* About Kirby Muxloe; Newton, near Congerstone.—*Caltha palustris.*

Class XIV.—*Mentha hirsuta.—M. arvensis.—M. pulegium.* Margin of Grooby Pool.—*Thymus serpyllun.—Origanum vulgare.* In Bradgate Ruins.—*Teucrium scorodonia.* Grooby Woods; not rare.—*Ajuga reptans.—Ballota nigra.—Galeobdolon luteum.* Grooby Woods; near Mount Bosworth.—*Galeopsis ladanum.* Swithland slate-pits.—*G. tetrahit.—Lamium album.—L. purpureum.—L. incisum.* Garden at Braunston Hall.—*L. amplexicaule.* Gardens at Kirkby; Aylestone road near Leicester.—*Betonica officinalis.—Stachys sylvatica.—S. ambigua.* Near Loughborough.—*S. palustris.—S. arvensis.* Near Braunston.—*Nepeta cataria.* Near Enderby and Braunston.—*Glechoma hederacea.—Clinopodium vulgare.—Prunella vulgaris.—Scutellaria galericulata.—S. minor.* Beacon Hill; Charnwood Forest.—*Bartsia odontites.—Euphrasia officinalis.—Rhinanthus cristagalli.—Melampyrum pratense.* Grooby Woods.—*Pedicularis palustris.* Grooby Pool.—*P. sylvatica.* Common in marshy meadows.—*Antirrhinum majus.* Bradgate Ruins.—*Linaria vulgaris.* Near Gracedieu.—*Scrophularia nodosa.—S. aquatica.—Digitalis purpurea.* Charnwood Forest; near Kirkby.

Class XV.—*Coronopus Ruellii.—Capsella bursa-pastoris.—Teesdalia nudicaulis.* Charnwood Forest.—*Lepidium campestre.* Congerstone; rare.—*Draba verna.—Camelina sativa.* Once found in a field at Thrinkstone.—*Alyssum calycirum.* Field near Whitwick, June 1836.—*Cardamine amara.* Grooby Pool; Mount Bosworth; River Sence; Congerstone.—*C. pratensis.—C. hirsuta.—Barbarea vulgaris.—B. præcox.* Old Reservoir, Charnwood Forest.—*Nasturtium officinale.—N. terrestre.—N. amphibium.—Sisymbrium officinale.—S. Sophia.* Near Thurnby.—*S. thalianum.—Erysimum alliaria.—Cheiranthus Cheiri.* Bradgate Ruins.—*Brassica napus.—B. rapa.—Sinapis arvensis.—S. alba.—S. nigra.*

Class XVI.—*Erodium cicutarium.* Grooby Pool; Croft Hill.—*Geranium pratense.—G. lucidum.* Ulvescroft Ruins.—*G. Robertianum.—G. molle.—G. pusillum.* Congerstone Village.—*G. dissectum.—Malva sylvestris.—M. rotundifolia.—G. moschatum.*

Class XVII.—*Corydalis lutea.* Old walls in several Villages.—*C. claviculata.* Summit of Bardon and other Charnwood Forest hills.—*Fumaria officinalis.—Polygala vulgaris.—Ulex Europæus.—U. nanus.* Charnwood Forest.—*Genista tinctoria.—G. anglica.* Charnwood Forest.—*Lathyrus pratensis.—L. sylvestris.* Between Mount Bosworth and Sutton.—*Vicia cracca.—V. sativa.—V. sepium.—U. angustifolia.—Ervum hirsutum.—E. tetraspermum.—Astragalus glycyphyllus,* Near Braunston.—*Ornithopus perpusillus.—Melilotus officinalis.—Trifolium repens.—T. pratense.—T. medium.* Charnwood Forest.—*T. arvense.*

Bank near Grooby Pool.—*T. striatum:* Ayleston road, near Leicester.—*T. fragiferum.* Congerstone.—*T. procumbens.*—*T. filiforme.*—*Lotus corniculatus* —*L. tenuis.* Shakerstone.—*L. major.*—*Medicago sativa.* Near Lutterworth. —*M. lupulina.*

Class XVIII.—*Hypericum quadrangulum.*—*H. perforatum.*—*H. humifusum.*—*H. hirsutum.*—*H. pulchrum.*

Class XIX.—*Tragopogon pratensis.*—*Helminthia echioides.* Near Barrow. —*Picris hieracioides.* Near Glenfield; between Bosworth and Sutton.—*Sonchus arvensis.*—*S. oleraceus.*—*Lactuca virosa.* Gracedieu; near Gopsal; between Twycross and Sibson.—*Prenanthes muralis.* Swithland slate-pits.—*Leontodon taraxacum.*—*Apargia hispida.*—*A. autumnalis.*—*Thrincia hirta.* Near Orton.—*Hieracium pilosella.*—*H. sylvaticum.*—*H. sabaudum.* Street Hedges Wood.—*H. umbellatum.* Twycross; Newbold Verdun.—*Crepus tectorum.*—*Hypochœris radicata.*—*Lapsana communis.*—*Cichoriun intybus.* Leicester road, near Lutterworth.—*Arctium lappa.*—*A. bardana.* Congerstone.—*Serratula tinctoria.* Street-hedges Wood, near Grooby; Newbold Verdun; Congerstone.—*Carduus nutans.* Congerstone.—*C. acanthoides.* Congerstone.—*Cnicus lanceolatus.*—*C. palustris.*—*C. arvensis.*—*C. eriophorus.* Hickley Road, near Leicester.—*C. pratensis.* Near Glenfield; Meadow below Ulvescroft cottage.—*Onopordum acanthium.* Mount Sorrel.—*Carlina vulgaris.* Bardon Hill.—*Bidens tripartita.* Pools about Mount Bosworth.—*B. cernua.* Pools about Mount Bosworth.—*Eupatorium cannabinum.* Grooby Pool; about Mount Bosworth.—*Tanacetum vulgare.* Banks of Glenfield Brook; about Congergerstone.—*Artemisia absinthium.* Road between Lutterworth and Cotesback. —*A. vulgaris.* Mount Bosworth; Grooby.—*Gnaphalium uliginosum.*—*G. minimum.* Grooby Pool.—*G. germanicum.* Congerstone.—*Erigeron acris. Gracedieu.* Between Glenfield and Kirby.—*Tussilago farfara.*—*Petasites vulgaris.* Gracedieu Wood; Congerstone.—*Senecio vulgaris.*—*S. sylvaticus.*—*S. tenuifolius.*—*S. jacobœa.*—*S. aquaticus.*—*Pulicaria dysenterica.*—*Doronicum pardalianches.* Plantation near Gopsal.—*Bellis perennis.*—*Chrysanthemum leucanthemum.*—*C. segetum.*—*Pyrethrum parthenium.*—*P. inodorum.*—*Matricaria chamomilla.*—*Anthemis cotula.*—*Achillœa ptarmica.*—*A. millefolium.*—*Centaurea nigra.*—*C. cyanus.*—*C. scabiosa.* Rawdikes, near Leicester.

Class XX.—*Orchis morio.*—*O. masculá.*—*O. latifolia.* Nailstone Moor; near Kirby Castle.—*O. maculata.*—*Gymnadenia conopsea.*—Nailstone Moor; near Kirby Frith.—*Habenaria bifolia.* Kirkby Wood; Ratby Woods.—*Listera ovata.*—*L. nidus-avis.* Oakley Wood.—*Epipactis latifolia.* Wood near Twycross.—*E. palustris.* Grooby Pool.

Class XXI.—*Euphorbia helioscopia.*—*E. peplis.*—*E. amygdaloides.* Charnwood Forest; Gracedieu Wood.—*Callitriche verna.*—*C. autumnalis.* Charn-

wood Forest.—*Lannichellia palustris.* Near Aylestone; pool at Kirby Frith; pool at Mount Bosworth.—*Typha latifolia.*—*T. angustifolia.*—Pool near Congerstone.—*Sparganium ramosum.*—*S. simplex.*—*Carex pulicaris.* Beacon Hill; plantation at the back of Kirby Frith; Sibson Gorse Cover.—*C. intermedia.* Grooby Pool; Braunston; Congerstone; Mount Bosworth.—*C. muricata.*—*C. divulsa.*—*C. vulpina.*—*C. paniculata.* Spring Wood, near Staunton Harold.—*C. stellulata.* Charnwood Forest.—*C. ovalis.*—*C. remota.*—*C. pendula.* South Wood; beyond Ashby.—*C. strigosa.* Spring Wood, near Staunton Harold.—*C. sylvatica.*—*C. pseudocyperus.* Grooby Pool; Mount Bosworth; in Enderby.—*C. pallescens.* Spring Wood; below Sibson Gorse.—*C. flava.*—Charnwood Forest, near Mount Bosworth.—*C. œderi.* Sibson Gorse.—*C. binervis.* Charnwood Forest; Mount Bosworth; meadows between Congerstone and Shakerstone. *C. præcox.*—*C. pilulifera.* Charnwood Forest; Sibson Gorse Cover.—*C. panicea.*—*C. recurva.*—*C. cæspitosa.*—*C. acuta.*—*C. paludosa.*—*C. riparia.*—*C. vesicaria.* Near Mount Bosworth; near Newtown Unthank.—*C. hirta.*—*C. filiformis.* Beacon Hill; Charnwood Forest.—*Littorella lacustris.* Grooby Pool.—*Alnus glutinosa.*—*Urtica urens.*—*U. dioica.*—*Bryonia dioica.*—*Ceratophyllum demersum.* Carlton Mill pond.—*Myriophyllum spicatum.*—*Sagittaria sagittifolia.*—*Arum maculatum.*—*Poterium sanguisorba.* Croft Hill.—*Quercus robur.*—*Fagus sylvatica.*—*Castanea vulgaris.*—*Betula alba.*—*Carpinus betulus.*—*Corylus avellana.*—*Pinus sylvestris.*—*Salix fragilis.*—*S. vitellina.*—*S. triandra.*—*S. viminalis.*—*S. caprea.*—*S. procumbens.* Charnwood Forest.—*Empetrum nigrum.* Charnwood Forest.—*Viscum album.* Orchard on a farm at Braunston.—*Humulus lupulus.*—*Tamus communis.*—*Populus alba.* - *P. canescens.* *P. tremula.*—*P. nigra.*—*Mercurialis perennis.*—*Taxus baccata.*

Class XXIII.—*Atriplex patula.*—*A. angustifolia.*

Class XXIV.—*Polypodium vulgare.*—*Aspidium lobatum.*—*A. aculeatum.* Kirby Muxloe.—*A. angulare.*—Kirby Muxloe.—*A. filix mas.*—*A. fil. fœmina.*—*Asplenium trichomanes.* Swithland slate-pits.—*A. ruta-muraria.* Bradgate stables; Nailstone church. *A. adiantum-nigrum.* Rocks at Grooby Pool.—*Scolopendrium vulgare.*—*Pteris aquilina.*—*Blechnum boreale.* Charnwood Forest.—*Ophioglossum vulgatum.* Braunston; Mount Bosworth; Gracedieu; Kirby; Congerstone.—*Lycopodium clavatum.* Charnwood Forest.—*L. inundatum.* Charnwood Forest.—*L. annotinum.* Charnwood Forest.—*Equisetum fluviatile.* Charnwood Forest.—*E. arvense.*—*E. sylvaticum.* South Wood.—*E. limosum.*—*E. palustre.*—*E. hyemale.* Gracedieu Wood.—*Chara vulgaris.*—*C. hispida.* Near Mount Bosworth.—*C. Hedurgii.* Pond near Dadlington.

The above localities I know to be correct from my own observation; a few others from information, or specimens sent to me, I can depend upon. The following are taken from published authorities, as Curtis's *Topographical History of Leicestershire* (C.), *the Botanist's Guide*, *&c.*

Rosa micrantha. Near Leicester. *(Midland Flora.)*—*Galium uliginosum.* Loughborough parks.—*C. Witheringii.* Ditto.(C.)—*Symphytum tuberosum.* Loughborough (C).—*Cuscuta Epithymum.* Leicester (C).—*Gentiana campestris.* Glenfield(C). [I never found it there.]—*Galeopsis versicolor* (C).—*Mentha piperita.* Near Leicester (C).—*M. gentilis.* Outwoods (C).—*Thymus calamintha.* Near Leicester (C).—*Limosella aquatica.* Near Ullesthorp (C).—*Antirrhinum cymbalaria.* Near Sorrel Bridge (C).—*Orobanche major.* Widenings (C).—*Cardamine impatiens.* Beacon Hill (C). [I could not find it there.]—*Fumaria capreolata.* Loughborough parks (C).—*Hedysarum onobrychis.* Redhill (C).—*Medicago maculata.* Outwoods (C).—*Carduus tenuiflorus.* Kegworth (C).—*Solidago virgaurea.* Pocket-gate (C.)—*Orchis ustulata.* Near Zouch Mill (C).—*O. viridis.* Near Oakley Wood (C).—*Ophrys apifera.* Red Hill (C).—*Neottia spiralis.* Sheepshead Field (C).—*Epipactis grandiflora.* Near Long Whatten (C).—*E. ensifolia.* Piper Wood? (C).—*Botrychium lunaria.* Near Oakley Wood (C).—*Astragalus hypoglottis.* Outwoods near Loughborough (C).—*Lathyrus palustris.* Below Bardon Hill *(Botanist's Guide).*—*Marrubium vulgare.* Iveshead Hill (C).—*Comarum palustre.* Near Woodhouse.—*Lathyrus nissolia.* Between Murton and Bottesford *(Botanist's Guide).*—*Myriophyllum verticillatum.* River Soar (B G).—*Trifolium glomeratum.* Near Loughborough (B G).—*Leonurus cardiaca.* In Farm-yards (B G).—*Sonchus palustris.* River Soar (B G).—*Lactuca saligna.* Budden Wood (B G).—*Lapsana pusilla.* Burstall Cornfields (B G). *Chlora perfoliata.* About Sproxton (B G).—*Cuscuta europæa.* Near Leicester (B G).—*Delphinium consolida.* Near Loughborough.—*Drosera longifolia.* Charnwood Forest (B G)—*D. rotundifolia.* Charnwood Forest.—*Salix purpurea* (B G).—*S. pentandra* (B G).—*Iris fœtidissima.* Frequent in the north of the county (B G).—*Rhynchospora alla.* Charnwood Forest (B G.)—*Calamagrostis lanceolata.* Buddon Wood (B G).—*Brachypodium pinnatun.* East side of county (B G).

ON THE ORGAN OF SELF-PRESERVATION IN ANIMALS.

By J. Vimont, M. D.*

Self-preservation is an innate sentiment which belongs to all animals. All the functions, in the sense in which the word is daily used, contribute, without doubt, to the preservation of the species; but the expression is here employed in a much more limited sense, namely, to designate a mode of acting of the cerebro-

* Translated from his *Traité de Phrénologie Humaine et Comparée, Phrenological Journal,* No. LI.

nervous system, having all the characteristics of a fundamental faculty. It consists in an impression purely instinctive, which prompts animals to fly or to keep themselves on their guard, when any external circumstances appear to threaten their existence. This faculty is one of those which manifest themselves at an early period in animals. I am disposed to believe, that to it must be ascribed the squalling of the infant when newly born, and the cries which young animals emit when some unexpected object alarms them. It was the sudden disappearance of certain species at the least noise, or at the aspect of an object which they saw for the first time, which led me to entertain the idea that their manner of acting in this case might depend on a fundamental faculty. I had seen Foxes, Rats, Mice, Cats, disappear with the rapidity of lightning, at the unexpected sight of a person, or on hearing an unwonted sound. Whence, said I, can such a mode of action arise? What can cause these animals to apprehend that their life is in danger, since many of them have never experienced anything which can lead them to entertain any dread from these external occurrences? Nevertheless, their first action is to fly.

In the beginning of my enquiries, and for a considerable time, I entertained the opinion that the conduct of these animals might depend on a considerable development of Secretiveness or Cautiousness, but numerous observations destroyed this supposition. Experience demonstrated to me, that animals possessing little Secretiveness and little Cautiousness, allowed nobody to approach them without great difficulty, and had a singular tendency to fly or to preserve themselves. As observations made on individuals of the same species were best adapted for reaching the truth, I devoted myself to the study of the habits of several animals which I reared under my own eyes, and to keeping an exact account of their most remarkable faculties. From 1824 to 1825, I observed with care the conduct and actions of a dozen Rabbits, the offspring of the same mother. I used to set them at liberty twice a week in a garden, and to dedicate two hours to surveying them. One of them struck me more than all the others, by the habit which it had of flying with astonishing rapidity every time I approached it; it would scarcely be believed how frequently I saw it strike the ground suddenly with its paws, probably to give notice to its companions, and then instantly disappear. Nevertheless it was neither more cunning nor more circumspect than the others; it was even one which was seized most easily when I wished to put them into their boxes; I had, on the contrary, great trouble in catching several others, which succeeded in avoiding me by a thousand detours. What, then, I asked myself, can give to this animal the idea of flying with such rapidity? Why, then, is there in this respect so great a difference among twelve animals produced by the same mother, and all under the influence of the same external circumstances? Without doubt all these animals have a

tendency to run away, but all do not fly with the same promptitude. Nevertheless, in reflecting on the conduct of all animals, I saw that this action was general, that in some species it was more striking than in others, and that if it was less apparent in tame animals, the difference was to be attributed to the influence of external circumstances in diminishing the activity of this faculty so as to render it difficult to recognise its manifestations. Let us attempt, for example, to seize in its cage a bird which we have possessed only for a short time, and we shall be astonished at the efforts which it will make to escape; after an interval of time, more or less extensive, this animal, which at first took to flight at the slightest movement, will come and present itself to any person who wishes to take hold of it.

Being nearly certain that there exists in animals an instinctive sentiment or faculty which prompts them to self-preservation, or to shun every thing that threatens their existence, it only remained to determine what might be the cerebral part which was the seat of this feeling.

The examination of the skulls of a great many animals was of no use, because, as has been already remarked, it was necessary that observations should be made first on individuals of the same species. I therefore devoted all my attention to the examination of the skulls of the Rabbits which I had observed with so much care. The skull of the Rabbit which took to flight with such rapidity, compared with the skulls belonging to two others of the same litter which allowed me to approach them readily, did not, at the first inspection, offer anything remarkable to my observation. It was not so with their brains. Viewed on the upper surface, these three brains differed very little, one excepted, in which the cerebellum was more developed. The case was very different when the base of the brain was examined. There was a striking difference in this region, between the brain of the Rabbit which had been the subject of my observations and the other two. In it, the proportion of the brain, A.A., plate lxxvii, fig. 1, (in the *Traite*,) was twice as large as in the other brains.

As I had particular reasons for preserving untouched four of the nine other Rabbits, I could examine only five more brains, and I did not find a single one the size of which, in the part before indicated, equalled that of the Rabbit which fled so fast on my approach.

Immediately after making this observation, I carefully examined the brains of all the animals which I had preserved in spirits of wine, and also their skulls at the situation where this cerebral organ is placed. It was easy to do this on the base of skulls of the very numerous species which composed my collection. It would be difficult to convey an idea of the pleasure I experienced in discovering that all the animals which naturally have a tendency to fly with rapidity at the approach of any one, or by the influence of external circumstances, were precisely

those which presented the highest degree of development, such are the Ape, the Fox, the Badger, the Cat, the Fitchet and Marten Weasels, the Marmot, the Hare. It is enormous in the Stag and Roebuck.

The region of the cranium in which this organ in quadrupeds is lodged, is the lateral sphenoidal fossa. In man its situation is the same. It occupies in the latter all the portion of the sphenoidal bone marked 2 and 3, fig. 6, Pl. xi, *bis;* the anterior half of the cerebral surface of the temporal bone indicated by No. 3, id. pl., fig. 8. Its innermost surface will cover the two anterior thirds of the upper face of the petrous portion of the same bone.

An old gunner, who died in the Val-de-Grâce, was one of the greatest bullies that ever existed, and so regardless of his life, that he exposed it daily in numerous duels. In his skull, presented to me by Dr. GAUBERT, the region before specified is not only very narrow, but has little depth. I have compared this skull with others in my possession, and the difference in extent and depth in this region is well marked. I have not met with the skull of any person who had a propensity to self-destruction without disease of the brain, and therefore cannot speak of the development of the organ in suicides.

I am strongly disposed to believe that the sentiment of fear, which Dr. GALL attributes to want of courage, and which Dr. SPURZHEIM made to depend on cautiousness, may be, on the contrary, an affection of the organ of self-preservation. When a man considers his existence threatened by a body above him, he, by a movement truly instinctive, stoops his head and forms a kind of arch with his back. This movement coincides with the situation of the organ. Persons who feel uneasy on the top of a tower or steeple, crouch down in the same manner. I believe that the disagreeable impression which they then experience is referable to an affection of the organ of self-preservation, and that it is this affection which gives rise to the gesture above described.

I consider that the sphere of action of the faculty is more extensive. It gives a character of egotism to the mind. I have constantly found more egotists among bachelors than among married persons. In France there are more egotists among priests than in any other class of society, which I attribute to the retired life they lead. Contempt of life and generous actions should depend on a small development of the organ, particularly if other faculties are in a sufficient state of development.

[This subject—namely, that of Phrenology—though hitherto little attended to by naturalists, is one of the highest interest and importance; and such is the value and the novelty of Dr. VIMONT's observations, that we feel assured they cannot fail to strike our readers. We are inclined to believe, with Dr. V., that self-preservation is a distinct faculty, but cannot agree with him in the opinion that it embraces Cautiousness.—Dr. COMBE described this organ (which he termed *Vitativeness*) in his brother's *System of Phrenology*, about the same time that

the French physician was prosecuting his researches on the faculty. As these two gentlemen were wholly unaware of each other's proceedings, it is perhaps difficult to say who was the first discoverer of the organ.—Ed.]

ADDENDA TO THE EXPLANATION OF THE LATIN NAMES OF BRITISH BIRDS.

By the Rev. F. Orpen Morris, B. A .

Neophron. *Neophron.*

——— *percnopterus.* Περκνος, same as πεκος black, black-spotted, and πτερον a wing. Egyptian Neophron.

Elanus. "Perhaps from ελαυνω, to chace or drive."—*Catalogue of the Ashmolean Museum.* Elanus.

——— *furcatus.* Forked (as to the tail); *furca*, a fork. Fork-tailed Elanus.

Regulus. (Given in a former paper.) Kinglet.

——— *ignicapillus.* *Ignis* fire, and *capillus* a lock or tuft. Fire-crested Kinglet.

Phœnicura. (Given before.) Redstart.

——— *Suecica.* Swedish. Blue-throated Redstart.

Alauda. (Given before.) Lark.

——— *cornuta.* *Cornu*, a horn. Horned Lark.

Charadrius. (Given before.) Plover.

——— *minor.* Less, or lesser. Little Plover.

Noctua. (Given before.) Nightling.

——— *Tengmalmi.* Named after Tengmalm.

Salicaria. (Given before.) Reedling.

——— *turdoides.* *Turdus*, a Thrush; and ειδος, a likeness. Great Reedling.

Diomedea. [A bird of this name is mentioned by Pliny.—Ed.]

——— *chlororhynchus.* Χλωρος green, and ρυγχος a bill. Yellow-nosed Albatross.

Tringa? Tringa.

Two new species of Tringa are mentioned in a late number of the *Magazine of Natural History*, as having occurred in Britain, but I am at present ignorant of their names.

——— *rufescens.* Verging to red. Buff-breasted Tringa.

——— *pectoralis.* In some way, I suppose, from *pectus*, a breast. Pectoral Tringa.

Linaria. (Given before.) Linnet.
——— *canescens.* Hoary. Mealy Linnet.
Loxia. (Given before.) Crossbill.
——— *leucoptera.* Λευκος white, and πτερον a wing. White-winged Crossbill.
Coccyzus. Κοκκυζω to cry like a Cucoo. Coccyzet.
——— *Americanus.* American. Virginian Coccyzet.
Lagopus. (Given before.) Ptarmigan.
——— *rupestris.* Of or belonging to rocks. Rock Ptarmigan.
Puffinus? Shearwater.
——— *fuliginosus.* *Fuligo*, soot. Dusky Shearwater.
Lestris. (Given before.) Skua.
——— *Richardsonii.* So named after Mr. RICHARDSON. Richardson's Skua.
Larus. (Given before.) Gull.
——— *leucopterus.* Λευκος white, πτερον a wing. Iceland Gull.
Xema? Xeme.
——— *Sabini.* Named after Mr. SABINE. Sabine's Xeme.
Anous. [A, without, νους mind.—ED.] Noddy.
——— *stolida.* Foolish. Black Noddy.
Polysticta. Πολυς much, and στιγμα a spot or brand.
——— *Stelleri.* From a proper name.
Turdus. Thrush.
——— *Whitei.* Named after GILBERT WHITE, of Selborne, having been killed in Hampshire. White's Thrush.
Plectrophanes. Πληκτρον a spur, and φαινω to show. Longspur.
——— *Lapponica.* [Of or belonging to Lapland.—ED.] Lapland Longspur.

In the derivation of the word *schœniculus*, perhaps the latter part of the name may come, by a barbarous derivation, from *colo* to inhabit. The *derivation* of *troglodytes* (the name of a people, applied to the Common Wren, from their similar custom of living in holes of the earth) is from τρωγλη a den or cave, and δυω or δυνω to enter. This was accidentally omitted in the first part of the "Explanation." The *Catalogue of the Ashmolean Museum* gives a different derivation from mine for *Somateria* and *Hæmatopus;* the former from σωμα a body, and τηρεω to preserve, instead of from εριον, wool or down; "*utrum horum mavis accipe;*" the latter from αιμα blood, and πους, instead of from οπς the face. I think this latter is right, but both bill and legs are of the same colour. *Botaurus* it derives from βοη, noise or clamour, and ταυρος a bull, which may, I think, be correct.

The following derivations, also, not discovered by myself, are extracted from the *Ashmolean Catalogue* already alluded to (Oxford, 1836), which has been presented to me since the publication of my last paper:—*Cygnus,* from Κυκνος;

this I had omitted. *Pandion*, "the name of a Greek hero, changed into a bird of prey." (*nisus*, in like manner—though not in my list—from a Cretan king of that name, who was also said to have been transformed into a Hawk.) *Cypselus*, Κυψελος, the Aristotelian name. *Numenius*, νουμηνια the new moon, from the crescented form of the bill. *Phalaropus*, φαλαρα fringes, and πους a foot; I had derived it from φαλαρις, the Greek name of a bird. *Tadorna*, the French name *Tadorne*, latinized.

The following are the names of which I have been unable to discover the meaning:—*Alucus* [*A*, without, *lux, lucis*, light.—Ed.], *Pastor, collurio, Emberiza, Certhia, cirlus, pilaris, Tithys, tetrax, tetrix, Squatarola, hiaticula, Tringa, calidris, Totanus, tinnunculus* [Supposed to be "*à tinnitu vocis.*"—Ed.], *Buteo, Avocetta, garzetta, nyroca, œnas, porzana, troile, Alca, pomarinus, galbula* [From the German *gelb*, yellow.—Ed.], *Sterna, Puffinus, marila, perspicillata, mareca, circia, crecca, dafila.*

Those derivations supplied by the Editor in my former papers which I think it possible may not be correct, are:—*Bubo, Oriolus, Sturnus, Parus, Fringilla, merula, boarula*, rubetra, spinus, biarmicus* (no *derivation* given), *luscinia, Alauda, Cypselus, gallinula, gallinago, Platalea, Ardea, Fulica, boschas.*

[We believe it is tolerably certain, that the derivations we supplied for the following names, are correct:—*Bubo*, from *Bufo* a Toad, on which the bird feeds; *Oriolus*, from *or*, gold; *Parus*, corrupted from *parvus*, little; *Fringilla, frango*, to break or crush (seeds); *merula, mera*, solitary, from the lonely habits of the bird; *boarula, boarius*, appertaining to Oxen; *rubetra, Rubeta*, a Toad, or perhaps from *rubeo* to be red; *spinus*, a slow bush; *biarmicus*, two-barbed, from the whiskers on each side of the bill; *luscinia, lugens*, mournful, *cano* to sing; *Platalea*, has allusion to the breadth of the bill *Ardea, arduus*, high, lofty (*i. e.* the flight); *Fulica, fuligo*, blackness; *boschas, bosco* a wood. With regard to the derivations we ventured to assign to *Sturnus, Alauda, Cypselus, gallinula*, and *gallinago*, we cannot speak so positively.—Ed.]

HABITS OF THE COMMON AVOCET (Avocetta atricapilla).

By Robert Mudie.

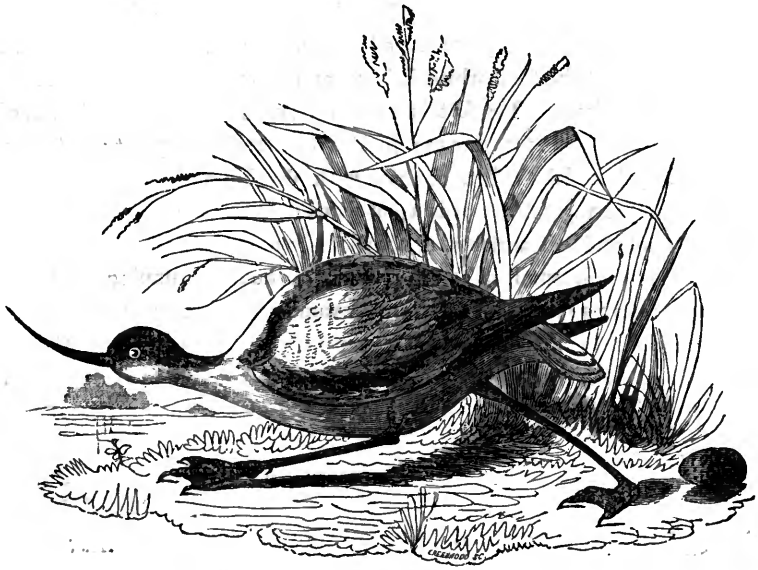
The Avocet is one of the most singular, and perhaps, all things considered, one of the most interesting of British birds. The Avocet is now becoming very local; and in the few situations where it is still found, it is much more rare than it was

* It is the *Yellow* Wagtail, and not the *Grey* species, that keeps about cattle.

in former periods. When far more of the low-lying parts of England were fen and marsh than at the present time, and when the high grounds at the "watershed," in the midland counties—which, being rich in mineral treasures, are now the seat of the most extensive metalliferous manufactures in the world, and the abode of a population, numerous, industrious, and devoted to the cultivation of every science and the improvement of every useful and ingenious art—lay in the state of a comparative wilderness, covered with rough copses and studded with mantling pools; when such was the state of things, many marsh-birds, which are now of but rare occurrence and very local, appeared in many places and in great numbers. I do not mean to say with old GERARD, that Barnacles were actually seen in the act of turning into Solan Geese, in the sedgy pools of Staffordshire; but there certainly were many marsh-birds generally distributed over the country at that period which are now but seldom met with. The Avocet is one of the number; and, on this account, this bird has an interest in the eyes of an Englishman, in addition to that which it possesses in a merely ornithological point of view. It is a memorial of the past—a sort of antiquarian bird—one of those which

"Make former times shake hands with latter,"

and enable us, in some measure, to hold converse with our ancestors, as well as with our cotemporaries.



The Avocet.

In the system of the feathered tribes, the Avocets stand alone, forming not only a well marked genus, but a very distinct family, whether we make their structure or their habits the basis of our judgment. The parts of their structure harmonize with the use which is made of them, in that beautiful manner which is observable throughout the whole animal kingdom, and, indeed, throughout the whole wide and varied field of creation; but still both the structure and the application are peculiar, and such as we do not find in any other bird. Accordingly, the habits of the Avocet are singular, and no other bird can be said to dwell, or rather to feed, in localities of the same kind. It is, in the places where it is found, the last of the land-birds; and, one step beyond it, the feathered inhabitant is fairly launched upon the waters, and

"Rows its state with oary feet."

Besides being a very peculiar bird, the Avocet is a very handsome one. It measures in length about a foot and a half; but when the legs, which are very strong, are stretched out, they increase the length at least six inches more. The tail is short and rounded, and the closed wings extend a little beyond the tip of it. The wings, when expanded, measure about two feet and a half. The bill is curved upwards, and measures about three inches and a half along the curve. When the bird walks, it carries the axis of the body more nearly in an erect than in a horizontal position; but still it is a steady, and even a swift walker, as compared with the entirely web-footed birds which carry the axis of the body in this position. Its feet are, indeed, more than half webbed; for the entire web extends to half the length of the toes, which it joins, and is continued, in straight lines, to the roots of the claws. The foot is peculiar; and almost exactly intermediate between the wading foot properly so called, and the swimming foot; but it is not, as in the case of the lobed feet, or those with divided webs, adapted for acting among the tangled vegetation; it is a foot fitted only for free space, but it is fitted equally for hard and soft surfaces, or occasionally for the waters. By having the hind toe almost rudimental, it agrees both with the swift running birds and the dexterous swimming ones; and when we examine the enlarged pad on the heel, and the symmetry of the toes, it is not easy to imagine a more complete piece of mechanism, or one better adapted to the haunts of the bird, than the foot of the Avocet.

Foot.

Head.

The bird is also very elegant in its form, and of beautiful, but not gaudy colours. All its outlines are curves of the most graceful flexure; and though the legs are stout for the size of the body, and the tibiæ, or thigh bones, remarkably free, so as to allow a large step, yet their insertions fall in well with the outline of the under part of the bird. The plumage is remarkably compact, such as we meet with in birds decidedly aquatic; and the colours are exceedingly pure. They are black and white, variously marked, but never broken into each other; so that their contrast shews to the greatest possible advantage. White, of the most snowy intensity, is the ground or prevailing colour of the whole plumage. The upper part of the head and the nape are deep black, relieved by a row of well-defined white spots backwards from the eye, and sometimes, but not always, with a white spot on the forehead. The scapulars, the bastard wing, a portion of the turn of the wing, and the quills, with their middle coverts, are, in general, also deep black; but the extent of the black is scarcely the same in any two specimens, though it and the white are always of equal purity. The naked parts of the legs, which extend very considerably higher than the tarsal joints, are blackish blue; the bill is black, and the irides of the eyes are hazel. The bill is rather firmer than that of the Snipes and Woodcocks, which, amongst the land-birds, may be considered as bearing the nearest similitude to the Avocet; but there is no doubt that it is an organ of touch. It is covered with a papillous membrane, and copiously supplied both with nerves and with blood-vessels. Its curvature upward, differing from that of any other birds with which we are familiar, has sometimes given occasion to those who are incapable of looking at the use as well as the form, to describe the Avocet as one of "Nature's unfortunates." But Nature has no unfortunates, excepting those human beings who, by their misconduct, make misfortune their own; and when we come to examine the Avocet upon its proper feeding grounds, and to discover that there is food for a bird there which no bill, except one formed like that of the Avocet, could collect, we are as powerfully constrained to admire the perfect adaptation of this bill as of any one organ in the animal kingdom.

I have said that the Avocet is the last bird upon the land; and in truth we can hardly say that its pasture is there. *Nec tellus est, nec mare*,—not the land, not the water, but the debris of the land passing onward, until the reflux of the tidal wave shall fling it back again. When sea-tides or land-floods ebb away, there is a deposit of fresh mud made during the pause of tranquillity, which invariably takes place between the rise and the fall. In this mud there is a countless multitude of small animals in the rudimental or in the mature state. When this mud remains quiescent in the shallows, it becomes the proper pasture of the dabbling Ducks; but it does not always so remain; for water working over a

soft bottom always makes runs; and as the flood ebbs off, those runs flow with a considerable portion of the mud and its animal contents. Those contents, especially if land-produce, and near the sea, would be lost to Nature, were it not that the Avocet is sent to gather them in. It takes its position at the bottom of the run, and, lowering its bill, with the foot on one side advanced, it brings up the other foot and at the same time scoops obliquely across the run with the bill. When the foot which has made the advance is planted, the bill is elevated, so that even the basal part of it inclines upwards, and the food obtained during the stroke is conveyed to the stomach. This requires hardly a moment, and the bill is again depressed; the other foot, which is now in the rear, advances; and the run is scooped obliquely in the opposite direction. Thus it proceeds with stately steps, and scooping right and left alternately, until it has satisfied its appetite. It is no very easy matter to see the Avocet engaged in this way; but those who are in the habit of examining the fenny places which it frequents, can see the marks of the scooping and the footsteps so plainly, as to leave no doubt of the mode of action in the bird.

Avocets breed on the borders of the marshes, and are understood to have four eggs in a hatch, which, as is common with those birds which they most nearly resemble, are placed *quatrefol*, with the small ends to the centre. Generally speaking, they are very shy birds, and their voices are harsh and screaming; but when they have nests, they become apparently familiar, and their scream is a mixture of the querulous and the plaintive. They, in short, play tricks very similar to those of the Lapwing, in order to entice visitors from their nests, but they are not quite such expert flyers.

In Norfolk, and the few other places in which the Avocets are found, they are resident birds; and not very many years ago, they were frequently exhibited for sale, though not abundantly, in Leadenhall-market, which, in London, is the chief place for marsh-birds; but at present not above one or two are to be met with in the course of a whole season.

There is an Avocet, in India, wholly white, except the wings; and an American one has been described, with a purplish mantle on the lower part of the neck; but, in other respects, they do not appear to differ from the Avocet of which a remnant still lingers in this country.

[The Avocet belongs to the fourth order of birds, the Waders (*Grallatores*), and to the third family of that order, namely, the Snipe family, *Scolopacidæ*.—Ed.]

CORRESPONDENCE.

To the Editor of the Naturalist.

SIR,—The following letter, received from Mr. SELBY, in answer to a request for further particulars on the interesting fact which is the subject of it, which I first saw briefly mentioned in the *Naturalist's Library*, will, I am sure, be interesting and valuable to many entomologists. I hope I do not do wrong in sending it with this view for insertion in your pages, which I am induced to venture on from the consideration that the author of the letter would lose no opportunity of furthering the interests of Natural Science, or of any of its votaries.

I am, Sir, your obedient Servant,
F. O. M.

LETTER FROM PRIDEAUX JOHN SELBY, ESQ., F.R.S.E., M.W.S., &c. &c.

Twizell House, April 17, 1837.

SIR,—The success I have met with in the capture of Moths by means of the bechive anointed exteriorly with honey, enables me to recommend it as by far the most effectual mode of taking the *Noctuidæ*, and of the *Geometridæ*, and other smaller species; in short, it is a certain trap for all the nocturnal *Lepidoptera*, except those whose cibariam or jaws are not fully developed. I recommend the common hive, as being light, and easily moved from place to place, and also as imbibing the honey with facility; it moreover retains the odour for a long time, and can be placed upon a forked stick at the most convenient height for taking the insects with the clippers. I set it immediately after sunset, and visit it every half hour till ten or eleven o'clock, during autumn and summer. In winter few of the insects fly after eight or nine o'clock. The Moths are generally so engaged in sucking the honey, as to allow themselves to be easily taken if quietly approached. A candle or lamp is used, but not left standing with the hive.

Heretofore I have not watched it during morning twilight, but intend to do so this season, as many species fly at that time which do not make their appearance in the evening. Last year I took a great many during the few fine evenings we had, and among them many rare species, which I had no expectation of meeting with in this district. On a favourable night in July I have seen the whole exterior of the hive covered with Moths, and have taken eighteen and twenty different species upon it at a time. Anointing the trunks of trees would no doubt have the same effect, but it would require a much greater consumption of honey, as Wasps, Bees, and other insects, would devour every particle during the day.

Inferior honey answers as well as the best, and I find it more attractive than sugar. As soon as the weather becomes mild, you may make the experiment, as *Orthozia pallida*, *O. stabilis*, and *Semiophora gothica*, appear about this time.

I am, Sir,

Your obedient servant,

Rev. F. O. Morris. P. J. Selby.

CHAPTER OF CRITICISM.

Malachius ruficollis, Panz., and M. bipunctatus, Bab.

To the Editor of the Naturalist.

Sir,—I have lately seen a paper by Mr. Babington *again* on these (*or these supposed?*) species; and as I formerly had a little "sparring" with him respecting them, perhaps it will not be thought improper if I offer a remark or two in your *Naturalist* on what has been said. In the *Entomological Magazine*, Vol. IV., p. 365, Mr. B. says, "Panzer's figure, part viii., No. 2, is *M. ruficollis*." In the *Magazine of Natural History*, Vol. VII., p. 378 (not 278, as Mr. B. quotes), he says Panzer's figure, part viii., No. 2, is *Scolytus æneus!* and that part ii., No. 10, is *M. ruficollis (!)*; although I corrected him at p. 524 of the same volume that *M. ruficollis*, Panz., was part ii., No. 8 *(not* 10*) !!* He now tells us, in the *Entomological Magazine*, p. 365, that "Panzer's figure *(Index Entom.*, part viii., No. 2) is *not* his supposed species, but a rather poor representation of the true *ruficollis*. It would appear also to be a male! as it has not the prominent abdomen of the females of this genus." I said at p. 178 of Loudon's magazine (same vol.) that "it was a male" (if a ♀, the prominent part of the abdomen is hidden by elytra), but Mr. Denson (the Editor) transposed my reference to Panzer's "F. 2, pl. 8"—Fauna 2, plate 8—to "pl. 8, fig. 2," thinking *F.* meant figure instead of fauna, and that I had put the "cart before the horse," which occasioned Mr. B.'s criticism on my supposed ignorance of mistaking a *Scolytus* for a *Malachius*, of which he gave a figure, as well as of the other *Malachii* above alluded to.

Mr. B. now informs us that *M. ruficollis* and *bipunctatus* have been seen "in such a situation as to *prove* that they are the sexes of one species."

I suspected, at p. 178 of Loudon's magazine, that this was the case (although I have not, up to this time, even seen *M. bipunctatus*, which I think, from Mr. B.'s acknowledgment of some insects I sent him—every one, with a single exception, new to him—I had reason to expect, and I have only therefore to thank

him for the *figure* in LOUDON), but I do not think it is by any means *proved*, since kindred species, such as *Pontia rapæ* ♀ and *P. napi* ♂ have been found in such situation at large, and not "under glasses" (as Mr. B. mentions), also *P. cardaminis* ♀ with *P. napi* ♂. Mr. HAWORTH likewise mentions (p. 144), "*Spilosoma lubricipeda* and *menthrasti* being united, and suspects *urticæ* to be the produce;" and Mr. SCHUCKARD found an *Osmia* and *Chelostoma*, of two different genera, in company, which shows that some caution is necessary in determining species.

I am, sir, &c.,

JAMES C. DALE.

Glanvilles Wootton, April 25, 1837.

THE SENSE OF SMELL IN CARRION BIRDS.

To the Editor of the Naturalist.

SIR,—My brother's paper on the sense of smell in carrion birds (p. 34) is conclusive as far as regards that species or genus of which it treats; but I think there are probably great modifications of the sense in different birds, as we know to be the case in Dogs. I mean that those birds which live on carrion probably have it much keener than those which catch their prey alive, as all the Hawks, Falcons, &c. I think that Hawks [Query, the *Falconidæ*?—ED.] hold the same place in the feathered race that the Greyhound does among Dogs; and the Crows, Vultures, &c., correspond to Fox-hounds and Harriers, which hunt by the scent.

I am, sir, yours, &c.,

BEVERLEY R. MORRIS.

Dublin, April 19, 1837.

ONE OR TWO CRITICISMS.

To the Editor of the Naturalist.

SIR,—In the *Magazine of Zoology and Botany*, Mr. DUNCAN supplies a paper which professes to give the characters and descriptions of the Dipterous insects indigenous to Britain, intending, I suppose, to mention *all* the species. In the genus *Oxycera*, however, he describes but *six* species, while in Mr. CURTIS's *British Entomology* for January and February 1833, no less than *ten* are included. I am aware that one of these, *Oxycera affinis*, may possibly be only a variety of *O. muscaria;* but even supposing that to be the case, there remain three species of which Mr. DUNCAN takes no notice. Now Mr. DUNCAN either had seen CURTIS's splendid work, or he had not. If he had, I am at a loss to find any excuse for such an omission; if he had not, he ought never to have attempted

the history of any order or class of British insects so far as that invaluable work has proceeded; for it is absolutely necessary to be possessed by every entomologist who wishes to study the subject scientifically or thoroughly. The species described by Mr. DUNCAN are the following:—*Oxycera pulchella*, *O. trilineata*, *O. muscaria*, *O. formosa*, *O. terminata*, and *O. analis*; those which he has omitted are *O. pardalina (?)*, *O. leonina*, *O. Morrisii*, and the *O. affinis*, alluded to above. Are we "*ex uno (genere) discere omnes*," or not?

In the number of the *Magazine of Natural History* for April 1837, my friend Mr. H. E. STRICKLAND propounds some rules for zoological nomenclature which appear to have been rather hastily put together. Rule 1 says, "The Latin nomenclature forms the only legitimate language of Zoology (SWAINSON). Latin names are adopted by naturalists of all nations, and are therefore preferable to any other. Where one language is sufficient for the purpose, all others are superfluous." Rule 10 states, that "names should be taken either from the Latin or Greek languages;" and rule 19, that "generic names should in general be compounded of Greek words, and specific of Latin." This latter rule, though heretofore, as Mr. STRICKLAND also observes, partially and faintly acted upon, was, I believe, first distinctly laid down by me in a late number of *The Naturalist*; yet no mention is made of this, although the names of the authors of the other rules are attached to each. Perhaps, however, Mr. STRICKLAND had not seen the paper alluded to.—In rule 21 it is stated, that specific names may be taken from the size of the species; yet in rule 14 we are told that "the meaning of names should be founded on absolute characters, *not on relative or comparative* ones." Now size is only affected by relation or comparison.—Lastly, rules 6 and 11 appear to me to be coextensive in meaning, though differently expressed. The one is in fact merely a repetition of the other, being tantamount to it. From the former we learn that "a name may be expunged whose meaning is false, as applied to the object or group which it represents." The latter says, that "the meaning of a name must imply some proposition which is true as applied to the object which it represents." The "Rules for Zoological Nomenclature" appear, therefore, to require considerable revision.

I am, sir,

Your obedient servant,

FRANCIS ORPEN MORRIS.

Doncaster, April 4, 1837.

PROCEEDINGS OF NATURAL HISTORY SOCIETIES.

GEOLOGICAL SOCIETY.

April 19.—The Rev. W. Whewell, President, in the chair.—Mr. Owen read a paper on the cranium of a newly discovered extinct animal, of gigantic proportions, which he proved to be related by affinity to the *Pachydermata* and herbivorous *Cetacea;* he, however, further observes, that were its classification determined by dentition, it would belong to the *Rodentia*. Mr. O. names the genus *Toxodon*.—"This cranium forms part of the series of fossils collected by Mr. Darwin in South America. It was found in the Sarandis, a small tributary of the Rio Negro, about 120 miles N.W. from Monte Video, and had been imbedded in the whitish, argillaceous earth which forms the banks of that rivulet. The subsoil of the whole of the surrounding country is granitic, and Mr. Darwin considers the argillaceous covering to be an estuary deposit, accumulated by the river now called the Plata, and at a period when the land was at a lower level with reference to the ocean than it is at present.

"The dimensions of this interesting fossil, the extreme length of the skull being two feet four inches, and the extreme breadth one foot four inches, amply attest that the species to which it belonged attained a magnitude comparable only with some of the gigantic Pachyderms, or the extinct *Megatherium*.—From the structure of the molar teeth and their continuous mode of growth, Mr. Owen shewed that the Toxodon is referable to the *Rodentia;* but that it differs from the existing animals of that order in the number and relative position of the incisors, and in the number and directions of the curvature of the molars. The Toxodon again deviates from the true *Rodentia*, and resembles the Wombat, in the form of the articular cavity of the lower jaw. It differs from the *Rodentia* and resembles the *Pachydermata* in the relative position of the glenoid cavities and zygomatic arches, and in many minor details. In the aspect of the plane of the occipital region of the skull, in the form and position of the occipital condyles, in the transverse extent of the frontal region of the skull, in the aspect of the plane of the bony aperture of the nostrils, and in the thickness and texture of the osseous parietes of the skull, the Toxodon differs from both the *Rodentia* and *Pachydermata*, and manifests an affinity to the Cetaceous order.

"From these instances of aberrant characters in the Toxodon, considered as a gigantic Rodent, and which were described in detail, Mr. Owen pointed out, that although the teeth, from their correspondence with many other important parts of the animal structure, and from the facility of observing them, are highly important and useful zoological characters, yet they are not, in all cases, sufficient alone to determine the order to which a Mammifera belongs; and that upon due consideration it will appear, that dental characters must yield the precedence to those

afforded by the modification of the organs of progressive motion. It may, therefore, be inferred, that those orders in the present received systems of Mammalogy which are founded on characters afforded by the teeth alone, are less natural, and less important groups, than those which are based on modifications of the locomotive extremities; and *à fortiori*, on those which combine such distinctive characters with equally characteristic peculiarities of dentition. At present there is no evidence to determine what was the nature of the extremities of the Toxodon, but Mr. Owen is of opinion, that although it cannot be positively affirmed the genus may not be referable to the *Muticata* of Linnæus, yet, from the development of the nasal cavity, and the frontal sinus, that it is extremely improbable the habits of the species were so strictly aquatic as the entire absence of hinder extremities would occasion.

"In conclusion, he pointed out the interesting fact, that the recent animal most analogous to the Toxodon, combining the characters of a Pachyderm and a Rodent, and, from its aquatic habits, called the Water-hog, or *Hydrochærus*, exists only in South America—the same region in which this gigantic fossil, possessing similar aberrant peculiarities, has been discovered."—*Athenæum.*

NATURAL HISTORY SOCIETY OF ATHENS.

A Society of Natural History appears to have been recently established at Athens. It was addressed, at its first meeting, by M. Nicolaïdes Levadiefs, a medical officer under the Greek government. After pointing out the advantages to be derived from Agriculture, of which the Greeks are now comparatively ignorant, although Sicily was in ancient times the granary of Rome, and after adverting to Holland and England, as proofs of what skill and industry might achieve even with an ungrateful soil, and under comparatively rude climates, M. Levadiefs proceeded as follows:—"The Greeks formerly worked silver mines in Attica and in some of the islands in the Archipelago; but gold came to them through Macedonia and Thrace, from Pannonia and Illyria. Hence the gold coins of ancient Greece are so few, while those of the Macedonian kings are still numerous. The marble quarries of Pentelicus and Paros are too well known to need being mentioned. Chromium has been found in Eubœa; Milos is rich in silver, vitriol, and alum; Siphnas possesses silver ores; Naxos maintains a trade in emery; Santorin is rich in steatite, or soap-stone, which is much sought for, chiefly to make the luting of water-pipes. I shall not say any thing of our numerous mineral springs, the waters of which are so serviceable to suffering humanity. Unfortunately, mines cannot be expected to repay the cost of working them, unless where coals are at hand and in abundance. It shall therefore be the business of the Society of Natural History to prosecute the much-desired examination, as to the nature and quality of the stone-coal discovered at Negro-

pont and at Argos, and to report on the uses to which it may be applied, whether as fuel for domestic purposes, or for the making of gas; whether it be adopted for the use of furnaces, or smithies, or for steam navigation."

HORTICULTURAL SOCIETY.

This Society appears to be in a very flourishing state, and its meetings are very numerously and respectably attended. On the 4th of April were exhibited some fine specimens of Oranges, Limes, Lemons, &c., from the Rev. J. Luscombe, of Coombe Royal, near Kingsbridge, which had ripened with comparatively little protection, and without the aid of artificial heat; some white sugar from Beet, with specimens of the roots from which it was obtained, the *Betterave blanc au sucre*, from Mr. Charlwood; roots of *Stachys palustris*, said to be a delicate vegetable for the table, and being used by some instead of Asparagus; Dowler's seedling Pears from Covent Garden Market, under the name of the "wild seedling;" Keen's seedling Strawberries, from R. W. Eyles, Esq.—Medals were awarded to Mr. Lawrence, Mr. Thompson of Norwood, William Harrison, Esq., R. W. Eyles, Esq., the Rev. J. Luscombe, Mr. J. Green, gardener to Sir E. Antrobus, Bart., Mr. G. Glenny, and J. G. Fuller, Esq., for the plants, fruits, roots, and other specimens exhibited by them.—The meteorological report from March 21 to April 4, was as follows:—

Barom.—Highest, March 27	.....	30.077
——— Lowest, April 3	.....	29.576
Therm.—Highest, April 1	.....	50° Fahr.
——— Lowest, March 23	.....	21° Fahr.

Total amount of rain, 0.27 inches,

April 18.—A communication was read from Mr. W. Perrin, gardener to Richard Harrison, Esq., on his mode of cultivating *Cattleya*. There were exhibited, specimens of *Acacia verticillata*, from Mr. Glenny; *Rhododendron arboreum*, from Messrs. Whitley; a new variety of *Oncidium Carthaginense*, from Messrs. Rollinson; *Azalea Indica pulchra*, from Messrs. Chandler; *Camellia Sieboldi*, from Messrs. Low—all of which obtained medals for the exhibitors; Cucumbers from Mr. Flanagan, gardener to Sir Thomas Hare; golden Harvey Apples from Mr. Forbes, gardener to Henry Pownall, Esq., likewise obtained medals.—The meteorological report from April 4 to April 18, was as follows:—

Barom.—Highest, April 8	.....	30.376
——— Lowest, April 16	.....	29.448
Therm.—Highest, April 15	.....	55° Fahr.
——— Lowest, April 10	.....	23° Fahr.

Total amount of rain, 0.05 inches.

LINNÆAN SOCIETY.

April 18.—A. B. LAMBERT, Esq., V.P., in the chair.—The chairman exhibited specimens of the Calumba root, from the Botanic Garden of the Mauritius, which were sent over by Mr. NEWMAN, in order to ascertain its commercial availabilities as compared with that from Zankebar. A paper was read from R. H. SCHOMBURGK, Esq., of Demerara, descriptive of *Trigonocephalus Guyanensis*, a poisonous Snake, commonly called the "Bushmaster." Like other poisonous Snakes, it retires into the back-woods as cultivation advances, from whence it comes out to injure travellers, death almost invariably following its bite; the teeth are said, we know not how justly, to break off and remain in the wound; this probably, must depend upon circumstances; at least that is the case with many other species. The remedy supposed to be most successful is to apply a common wine-glass, heated, as a cupping-glass, over the injury. When this treatment was adopted sufficiently early after the infliction of the wound, it was, according to the testimony of one medical man, invariably attended with the most happy results, and we are even informed that, under those circumstances, not a single death occurred. The continuation of a paper from the Rev. P. KEITH, "On the evolution of leaves in the bud," was read.

ROYAL GEOGRAPHICAL SOCIETY.

J. R. GOWEN, Esq., in the chair.—After an interesting paper—not, however, bearing upon Natural History—had been read, it was announced, that Dr. ANDREW SMITH, the leader of the expedition for exploring in Southern Africa, had just arrived in London from the Cape of Good Hope, bringing with him a large collection in Natural History, including a new species of Rhinoceros, &c., a splendid set of drawings, and various specimens of the arts and manufactures, illustrating the state of civilization among the different tribes Dr. SMITH had visited in his late journey, of about 3,000 miles.

ZOOLOGICAL SOCIETY.

April 6.—Captain BOWLES, R. N., in the chair.—The report of the Council stated the receipts of the last month to amount to £1,063 6*s.* 6*d.*, and the disbursements to £1,525 7*s.* 11*d.*, being £1,021 16*s.* to the menagerie, £237 1*s.* 11*d.* to the museum, and £86 10*s.* to the general establishment. £6 13*s.* was received from the visitors to the museum, 511 in number, last month. The number of visitors to the gardens were 5,985, from whom £157 19*s.* was received. The specimens in the menagerie are 308 mammalia, 698 birds, and 17 reptiles, making, altogether, 1023.—Various donations to the museum were announced, among which were the body of a Tinnamor, from the Earl of

Derby, and a specimen of *Onychotenthus an Bergii*, from Mr. Waterhouse. Other presents were likewise noticed, from Her Majesty, the Marchioness of Winchester, Sir Herbert Taylor, and others.—Mr. Cox moved, that the Council be recommended to establish lectures on Zoology, and to provide places for the dissection of animals dying at the gardens, in order to increase the utility of the Society. We think the motion an excellent one, and are happy to be enabled to add, that it was carried.

ORNITHOLOGICAL SOCIETY OF LONDON.

The following noblemen and gentlemen have been elected to form a committee of management of this Society:—*President*, the Earl of Liverpool; *Vice Presidents*, the Duke of Bedford, K. G., the Bishop of Norwich, Sir Robert Peel, Bart., M. P., D. C. L., F. R. S., W. Swainson, Esq., A. C. G., F. R. S., &c., N. A. Vigors, Esq., M. P., D. C. L., F. R. S.; *Council*—the Rev. R. W. Browne, B. A., W. G. Chapman, Esq., Harry Chester, Esq., M. P., N. W. R. Colborne, Esq., M. P., J. C. Gowen, Esq., F. G. S., Robert Gordon, Esq., M. P., J. E. Gray, Esq., F. R. S., Mr. W. Holl, F. G. S. (formerly Editor of this Magazine), Capt. Mangles, R. N., F. R. S., W. S. Macleay, Esq., M. A., F. L. S., the Earl of Orkney, the Rev. Cyril Page, Sir John D. Paul, Bart., J. F. Royle, M. D., F. R. S.

There will be a general meeting of the Society on Saturday, the 3rd of June, and until that day candidates may be elected by the council on application to the Secretary.

EXTRACTS FROM THE FOREIGN PERIODICALS.

ZOOLOGY.

1. Observations on the Kangaroos.—The Great Kangaroo (*Macropus major*) does not make use of its tail in leaping; it uses it in walking, but above all when standing still. When excited, the male stands upon the tips of its feet and tail; and it then appears of a prodigious height. When it strikes, it does not rest upon the tail and one foot, but, balancing a few moments upon the tail only, it beats before with the two legs from behind. The *Kanguroo enfumé* of Cuvier never employs its legs for striking; it usually contents itself with menacing with the teeth and a low growling. Dr. Robert Heron has, however, seen it, when attacked by an Emu, fly at the head of the bird; but neither the one nor the other persevered in the combat. When the Great Kangaroo is in

a state of repose, it throws its tail back, but the small species keeps it in front, and between the legs.

2. Monograph of the Arvicules of Liège.—These little animals are involved in considerable obscurity. M. Sélys-Longchamps has endeavoured to disembrangle the history of the Arvicules, and has found five species in Belgium, of which three are already recorded as belonging to France or Germany, and two of them are entirely new. He has not discovered the *Schermaus* met with in the neighbourhood of Strasbourg. The number of Arvicules found in central and western Europe will then be six. The following are the five Belgian species:—

Arvicola fulvus, Desmarest.—Length of the body three inches and two lines; that of the tail, eleven lines; ears almost invisible.

Arvicola amphibius, Desm. (*Mus amphibius*, Linn.)—Length of the body, six inches and three lines; of the tail, three inches and four lines.

Arvicola arvalis, D. S. L. (*Mus arvalis*, Linn.)—Length of the body, three inches and nine lines; of the tail, one inch and one line; ears of moderate size.

Arvicola subterraneus, D. S. L.—Length of the body, two inches and nine lines; ears of moderate size; tail black above, and whitish beneath; eyes very small.

Arvicola rufescens, D. S. L.—Length of the body, two inches and nine lines; of the tail, one inch and four lines and a half; ears rather long; tail black above, and whitish underneath; eyes prominent.

The memoir of M. Sélys-Longchamps is accompanied by four plates, representing *Arvicola fulvus*, *A. arvalis*, *A. rufescens*, and *A. amphibius* of the natural size, and coloured, and the skulls of *A. fulvus* and *A. rufescens*.

3. New Instance of a Shower of Toads.—M. Pontus, a professor of Cahors, has communicated to the *Académie des Sciences de Paris* a recent fact, confirming the truth of the showers of Toads which have already frequently engaged the attention of the Academy.

"In August, 1834," writes M. Pontus, "I was in the diligence from Alby to Toulouse, the weather being fine and clear. Towards four o'clock in the evening, at three leagues from Toulouse, a dense fog suddenly covered the horizon, and loud claps of thunder were heard. This mist burst in upon the road, about 120 yards (60 *toises*) from the place where we were. Two horsemen who were returning from Toulouse, whither we were going, and who were exposed to the storm, were obliged to put on their cloaks; but what was their surprise and alarm when they were assailed by a shower of Toads! They quickened their pace, and pressed on, when they met the vehicle, to relate to us what had happened. I saw small Toads still remaining on their cloaks. When the diligence reached the spot where the mist broke in, we saw the whole road and the fields on both sides covered with Toads, the smallest of which was at least an inch in length,

and the largest about two inches, which led me to suppose that they were one or two months old. There were three or four layers superimposed one upon the other; the horses' feet and the carriage-wheels crushed many thousands. We travelled upon the road, thus covered, at least a quarter of an hour, at the usual pace."—[What would Mr. M'Adam have said to such a road! We hope there were no *ladies* in the diligence!—Ed.]

4. Remarkable Instance of Intelligence in a Dog.—Mons. Alphonse De Candolle has communicated the following observations on the instinct of animals:—Being last October in the neighbourhood of Aiguesmortes, I had occasion to observe a remarkable instance of intelligence in a Dog. The day was hot, and the season unfavourable, by reason of the trade winds so troublesome on the shores of the Mediterranean. After walking several hours in the desert which separates the town of Aiguesmortes from Carmagne, we arrived at a plain where we found, in the midst of a whirlwind, some remains of a shipwreck. Out of three Dogs which had followed our guide, only two had accompanied us to this spot. Their black hair attracted the rays of the sun, and the poor creatures, like ourselves, seemed to find the sand somewhat too warm to be pleasant. I sat down on a mat half buried in the sand. One of the Dogs quickly conceived the idea of establishing itself near me. It nestled close to a horizontal plank, by way of procuring a little shade, but finding this insufficient, it hollowed the sand until it came to the part moistened by the sea. It then stretched itself with delight in this fresh and shady bed. There, said I, is an undoubted instance of reason. Had it been instinct, every animal of the same species, placed in similar circumstances, would have acted alike. But the other Dog, though of the same race, and also weary, knew not what to do; *it writhed in the hot sand.* One of these Dogs evidently remembered that by hollowing the sand-hillocks, a cool and moist part is arrived at, and it applied the reminiscence to this particular case. It may perhaps be said, that the Dog which made no burrow had never been on the plain, and had therefore had no opportunity of ascertaining the coolness of the sand underneath. But this is not probable, since both Dogs had been accustomed to the sea-shore. This, again, is another difference between instinct and reason; instinct acts without previous experience. The Dog of Peccai, the less sagacious of the two, might perhaps one day have learnt to burrow to the cool part of the sand hills.—*Bibliothèque Universelle de Genève.*

5. On the Structure of Teeth.—M. Retzius, in a letter dated September 5, 1836, informs us, that he and M. Purkinje had been occupied nearly at the same time, but unknown to each other, with microscopic investigations on the structure of teeth. The observations of the latter anatomist have been promulgated in the inaugural theses of two of his pupils, MM. Franckel and Raschow; M. Retzius has published his own in the last volume of the Transac-

tions of the Academy of Stockholm.—M. PURKINJE, says the author of the letter, has pushed his researches on enamel further than myself; but I think I have gone further than M. P. with regard to the osseous portion. The two preparations sent with this letter will enable you to verify the accuracy of my results. M. PURKINJE and myself have acknowledged that the osseous substance is chiefly composed of undulating fibres, and of hollow cylindrical canals, which radiate from the centre of the pulp towards the surface; I have ascertained that they almost uniformly ramify without communicating with each other. Under the microscope they resemble vessels filled with a white substance. The same structure is observed in the teeth of all vertebrated animals. Since these observations have been published, I have discovered, that others similar to them have been made by LEUWENHOECK, but no one appears to have noticed them. The preparations which I send are of human teeth, the one a vertical, the other a horizontal slice, and in the middle of the crown. M. PURKINJE and I have found the cortical substance of TENON, surrounding the roots of human teeth. This substance closely resembles bone in structure; it has the same porosities, with undulating canals, but it wants the small blood vessels, the cylindrical tubes, and the radiating canals.

6. THE NATURE OF DARTOID TISSUE.—In a paper read before the *Académie des Sciences*, on the 19th of September, 1836, by M. THOMSON, the author attempts to prove that the dartoid tissue is not a distinct tissue. In certain animals, he observes, as the Stag, the Sheep, the Goat, &c., the dartos so evidently presents the aspect of muscular tissue as to leave no doubt as to its being such. In man, indeed, the resemblance is not so striking, but an attentive examination proves that it exists in all the essential points. In fact, the fibre of the dartos exhibits a slightly rosy tint; it is homogeneous and transparent; cut across, it presents a square section; in short, its characters are those of muscular fibre.

7. ON THE INFLUENCE OF ATMOSPHERIC PRESSURE.—M. DOMBRES FIRMAS, in a memoir read on the same day as the preceding, asserts that man, in a healthy state, can support, without difficulty, the great variations of atmospheric pressure. We are not favored with the facts and reasoning adduced in support of M. FIRMAS' theory.

8. OBSERVATIONS ON THE SPECIFIC CHARACTERS OF THE LARGE CETACEA, OR WHALES.—It is often very difficult, says M. VANBENEDEN, to distinguish between the different species of Whales, without examining fresh specimens, or at least, without a comparison of the crania. Still we find a character equally important in the situation of the ears, although it has not hitherto been noticed, and the application of which would be much more frequent. A voyager would have much less difficulty in referring to the bones of the ear than to the entire cranium, and would obtain, by this means, the specific characters with equal pre-

cision. Soon we shall find, in collections of comparative anatomy, a series of specimens illustrative of the genera and species of this order, similar to the series illustrating the system of dentition in other orders. The genus Rorqual, which is well characterized by external signs, is equally so by those involving the investigation of the ear, and the different species of this genus are so likewise. From it may be obtained precious helps towards the geographical distribution of these animals. Thus, it was not known how far the Mediterranean Rorqual extended to the north; but a bone of the ear, obtained last year by MM. QUOY and GAIMARD, from their voyage to Iceland, proves that this species penetrates much further than was supposed. This character is still more valuable in the determination of fossil species; thus, an ear found by M. VANBENEDEN, in the province of Anvers, has been ascertained to belong to a Rorqual, but to an unknown species of that genus.—*Annales des Sciences Naturelles.*

BOTANY.

9. MANTISSA MUSCORUM AD FLORAM PEDEMONTANUM.—A work of the above title, originally published in the thirty-ninth volume of the Transactions of the Royal Academy of Sciences of Turin, appears to have been reprinted in a separate form, the author being J. DE NOTARIS, M. D. The *Bryologia Mediolanensis*, published in 1834, and of which an account appeared in the *Annales des Sciences Naturelles* (N. S., Vol. II., p: 120), has already given to the world a favorable opinion of the author of this new production, who is destined to complete the bryological portion of the Piedmontese floras hitherto published. This supplement contains 90 Mosses, the majority of which are newly described. Of this number ten are entirely new. M. le Docteur DE NOTARIS has not introduced any diagnostic phrases; we shall merely enumerate the names of the species:—*Pohlia lætevirens, P. cirrhifera, Hypnum concinnum, H.demissum, Fabronia major, Dicranum mixtum, Eucalypta lacera, Grimmia capillata, Anictangium flaccidum, Sphagnum variegatum.*

Among the species already known, which M. DE NOTARIS mentions having found in Piedmont, we recognise *Bryum platyloma*, SCHWÆGR., which is closely allied to *B. capillare*, LINN., and which appears to be principally distinguished by the thickness of the margins of the leaves. It is a new Moss to add to the Bryology of the continent, for, originally a native of Madeira, it had not since been discovered except in Sardinia.

We hope that the author, taking advantage of his position, will one day publish his observations on all the Mosses of Italy, which his acquaintance with the botanists of that beautiful country would give him ample opportunity for doing. The accurate and practised judgment which he has already evinced in his published works, would guarantee his not falling short in this difficult task.

10.—Rhizobotrya, a New Genus of Plants in the German Flora.—Among a great number of *Draba stellata* gathered by Siebold in the Austrian Alps (no more precise indication is given), M. Tausch found a plant which he took to be a new species of *Cochlearia*. On examining the plant more attentively, he was agreeably surprised by discovering a new genus, allied to *Kernera*, Med. The lateral radicule prevents it from ranging in the genus *Eudena*, Humb. and Bonpl., where the radicule is dorsal. He promises to publish a figure of this plant, and gives the name *Rhizobotrya* to the new genus.

M. Tausch adds a complete description of this new plant, and re-arranges the genus *Kernera*, the better to characterize his *Rhizobotrya*.—*Annales des Sciences Naturelles.*

GEOLOGY.

11.—On the Basilosaurus, a New Genus of Saurian Fossil, discovered in America.—The discovery of this species is due to Judge Bree, of Arkansas, who found, in 1834, the first vertebra on the marshy borders of the river Washita. Towards the close of the same year, other vertebræ, fragments of the lower jaw, &c., were discovered at Alabama, thirty miles from Chairbome. Several enormous vertebræ, teeth, ribs, fragments of the shoulder, humerus, tibia, &c., have since been collected, and recently (May, 1835) another skeleton, promising rich fossil remains, has been found. There were near it one of the caudal vertebræ of the *Mosaurus*, or Crocodile of Maëstricht.

All the bones that have been secured, though differing from each other in relative proportions, belong to the same species; the structure of the lower jaw, which is hollow, indicates that it belongs to an extinct genus of Saurians. The comparatively small size of the bones of the extremities prove that the tail was the principal organ of motion; the anterior members ought to have been fins. The series of vertebræ, extending in one specimen to the length of more than 100 English feet, and estimated at upwards of 150 in that of Arkansas, shows that this gigantic animal must have equalled or even surpassed these dimensions, and renders it worthy of the name it has received, *Basilosaurus*, or King of the Saurians.—*Bibliothèque Universelle de Genève.*

REVIEWS OF NEW PUBLICATIONS.

A Nomenclature of British Birds; being a systematic catalogue of all the species hitherto discovered in Britain and Ireland, intended for labelling collections

of British birds and their eggs. By HENRY DOUBLEDAY. London: Westley and Davis. 1836.

IT appears to be becoming the fashion now-a-days to publish lists of British birds, and it certainly cannot be doubted that the object in so doing is a laudable one. But while we admit the use—nay, the importance—of such catalogues, at a time when almost every individual, however slight his claims to the title of a naturalist, deems it requisite to possess a collection, more or less extensive, of native birds, it is at the same time desirable that they should be carefully executed. Now, we rejoice to observe the spread of our favourite science, in whatever way manifested, and are therefore disposed to encorage the young naturalist in collecting specimens for the cabinet, provided always that he has in view the true end of the study of Natural History. We should wish him to classify his specimens, as soon as a sufficient number is obtained, according to the most approved system. But who, the young student may inquire, is to inform us, amidst the conflicting theories of the day, which is really the best classification? While some arrange the whole animal kingdom in *one straight line*—others dispose their groups in *circles*—a third party declares both those methods to be forced and unnatural, and pronounces the *radiating* system to be the true system of Nature—and, amidst the array of facts and reasoning on each side, what am I, a mere tyro in the subject, to do? or how am I to classify my little museum?

We should answer these questions by observing that the cheapest and readiest mode of removing the difficulty, would be to publish a good systematic list of British birds, with a view of labels for cabinets. Three of these have already appeared before the public. The first has, we are well aware, proved highly useful to many collectors; but as it is out of print, or nearly so, and as the author has no intention of republishing it, we need not here further advert to it. The merits and defects of the second, by Mr. C. T. WOOD, we pointed out at p. 50 of our present volume; and the third is now under notice. Mr. DOUBLEDAY, well known for the zeal with which he cultivates Ornithology, has followed the classification and nomenclature of JENYNS. The pamphlet appears to have been carefully compiled, and will, therefore, doubtless, form a useful guide to many; but we decidedly object to the loose method adopted in the English department. Many of our readers will be aware that we advocate the plan of giving an English generic and specific name to each bird, thus rendering the English nomenclature as perfect as the Latin, and consequently rendering the science more easily attained, and less dependent on hard and often foolish terms; and in this view we are supported by many able naturalists. The practicability of carrying the plan into execution has been proved by the publication of the *Ornithological Guide*, and its expediency will, we trust, be one day generally acknowledged.

With regard to Mr. Doubleday's list we have little to say, but it has given us an opportunity of stating our views relative to a subject hitherto undeservedly neglected in this country. We conclude our readers are acquainted with Mr. Jenyns's work, and if so, they are in possession of the nomenclature of Doubleday. It is far otherwise with the catalogue of Mr. C. T. Wood. Though it contains many blemishes, yet the names—supplied in English, French, German, and Latin—have been collected with much care, and, generally, with success. None of the catalogues hitherto published are intended to impart any idea of classification, further than as regards the arrangement of genera and species, and in that they are all equally defective. Defective in our opinion they undoubtedly are, but we have no hesitation in recommending Mr. C. T. Wood's *Ornithological Guide*—notwithstanding the absurd orthography—as by far the best.

We should be very glad if Mr. C. T. Wood, or any one competent to the task, would undertake to publish a similar catalogue of the birds of Europe; and nothing would be more acceptable to the student than a good and carefully compiled list of all the known species.—We have, however, occupied more space than we can well spare, on this subject, and must now conclude.

CHAPTER OF MISCELLANIES.

ZOOLOGY.

Antipathy of Cats to Water.—It is astonishing what an antipathy Cats have to water. Rather an extraordinary instance of this aversion has recently been related to me by a person now living in this town. When a boy he was ordered by his master to carry a Cat that had committed some theft, to the Place Farm (which was anciently the Nunnery), and there to leave her. For this purpose he put poor puss into a bag, and forth-with proceeded to carry the sentence into execution: instead of this, however, as he passed over the bridge on his way, he was induced by the unfortunate Cat—who, not relishing her confinement, had kept up an incessant squalling—to turn her out of the bag over the side of the bridge into the river, where he left her to her fate. A person on passing under the bridge some considerable time afterwards (*not less than three weeks;* my informant says *a month*), found the Cat alive, sitting isolated upon a post under the bridge, but almost reduced to a skeleton. He relieved her from her perilous situation, and she ultimately recovered her health. This circumstance is the more remarkable, as there was nothing except the water that prevented her from leaving her forlorn situation; yet so great was the dread of

water—which was in all probability increased by her recent immersion—that she would sooner have perished than have trusted herself to that element.—J. D. Salmon, *Thetford, Norfolk, April* 22, 1837.

Capture of the Jer Falcon *(Falco Islandicus)* in Yorkshire.—In a former communication (p. 53) I stated that a Jer Falcon had been shot at Storthwaite, near this city. I thought it had been so, as it was shot by one Storthwaite man, and brought to me by another. I now find that it was shot in the adjoining parish of Sutton-upon-Derwent; it is still alive, and seems likely to do well.—Thomas Allis, *York*, 4 *mo.* 26, 1837.

Cunning of the Sparrow Hawk *(Accipiter nisus)*.—A few months ago we observed a female Sparrow Hawk hovering a few yards above the ground, in a stubble-field near Selby bar, and at last alight on the earth, but in such a manner as to lead us to suppose that it was returning to finish its feast upon some unfortunate animal it had previously left there. We immediately made up to the spot, upon which we kept our eyes all the time; but, strange to say, when we arrived there, no bird was to be seen! The probability is, that the Hawk must have made off with its quarry unperceived, by passing along a kind of trench—of which there were several, intersecting the field in various directions—leading into the adjoining enclosure.—The habits of this bird are for the most part bold and open, and the secretive manœuvre noticed above is certainly a remarkable deviation from its usual disposition.—Ed.

Shower of Worms.—An extraordinary phenomenon occurred a short time since in the parish of Bamford-Speke, in Devonshire. During a snow-storm, a large number of black worms, each about three-fourths of an inch in length, fell in the village and the neighbouring fields. They are different from the Turnip-worm, and are altogether unknown to the agriculturists of the neighbourhood.

Mortality among Birds.—The following curious statements rest upon the authority of a Lausanne journal. During the last fortnight great numbers of sick and dead birds, particularly Thrushes, have been found in the fields of Soleure. An inflammation of the spleen is the cause, and the disease is attributed to some acid exhalations from the earth which are said to produce the *grippe*. All the Sparrows and Finches, it is added, have deserted the infected districts; and in several parts of Switzerland domestic animals have been attacked in a similar way.—*Literary Gazette.*

Notes of the Common Cuckoo *(Cuculus canorus*, Linn.).—Have you ever noticed that sometimes the Cuckoo has a trisyllabic note, as if echo answered thus—*cuc coo coo?* I have several times remarked it, especially this year, and believe it is a third note that is uttered. The Cuckoo has been singularly sonorous this year. One awoke me the other day between one and two in the morning in the field close to my house, continuing a long time. Another repeated the

following note, which I took down at the time; it was repeated distinctly several times:—*cuc-cuckle-cuc.* These birds are singing here even now.—Edwin Lees, *Dryadville Cottage, near Worcester, June* 21, 1836.

Nest of the Sibilous Locustell (*Locustella sibilatrix*, C. T. Wood).—Last Tuesday morning I spent four or five hours in endeavouring—though unsuccessfully—to discover the nest of a Locustell, a pair of which birds I observed to frequent an exceedingly thick hedge of Slow and Hawthorn, with a dry ditch before it, tangled every where with thick brambles and dense herbage of various kinds. Yet even there I thought I should have better success than upon a common; I know of another locality where there is a nest, which appears to be comparatively open, considering the general haunts of the species.—Edward Blyth, *June* 30, 1836.

The Cirl Bunting (*Emberiza cirlus*) in Yorkshire.—This bird has hitherto been supposed by British ornithologists to be confined to the warmest parts of this country, and it appears only to have been met with in Devonshire and the adjacent counties. We have, therefore, great pleasure in extending its range so much further north as Campsall, seven miles to the north of Doncaster, a fine female, in excellent condition, having been shot near that place on the 25th of April, 1837. We cannot help thinking that the general similarity in plumage between the Cirl Bunting and our common Yellow Bunting, may have caused the former species to have been occasionally overlooked when individuals have occurred in various parts of this country. Indeed, had the specimen above alluded to happened to have fallen into other hands, it would in all probability have been considered identical with the Yellow species. Still, no one at all practically acquainted with our native Ornithology can for a moment doubt that the Cirl Bunting is with us a very rare and local species.—Ed.

The Fuscous Gull (*Larus fuscus*) near Doncaster.—Yesterday I saw an individual of the Fuscous (or lesser black-backed) Gull cross the Thorne road about a mile from Doncaster, wending its way in a northerly or north-easterly direction. It had probably come from the Humber up the river to Thorne, and thence hither.—F. O. Morris, *Doncaster, April* 3, 1837.

Pieces of Paper found in the Stomach of a Trout.—On Friday, April 14, there were taken from the stomach of a Trout, caught in the river Tay, five pieces of the *Fifeshire Journal.* They appeared to have been but recently swallowed, as they were quite legible when dried.

On pinioning the *Anatidæ* in Confinement.—It is not necessary to pinion the wild fowl after *each* moult. My remarks (p. 55) had reference to the *first* moult after having been pinioned; for as I was anxious not to disfigure the birds more than was necessary, I cut the smallest piece that I thought sufficient to prevent them from flying. But I found from experience that I was obliged again to

shorten the pinion after the first moult, as many of the birds experienced no difficulty in flying just before the primary quill feathers were fully grown up in the wing not pinioned.—J. D. SALMON, *Thetford, Norfolk, April* 22, 1837.

Vanessa urticæ SEEN IN STORMY WEATHER.—We have had very curious weather here lately, with snow and frost constantly. I saw a large river frozen over two or three days ago. Yet, notwithstanding all this, I saw a *Vanessa urticæ* flying. —BEVERLEY R. MORRIS, *Trinity College, Dublin, April* 19, 1837.

THE SIBILOUS BRAKEHOPPER *(Locustella sibilatrix)* IN THE NORTH OF ENGLAND.—It is universally admitted that in England this is a very local bird, and nowhere common. It is known in many parts of the south; in Northumberland, also, it has been noticed by SELBY, and in Scotland by Professor RENNIE; and we feel much satisfaction in recording its appearance in the neighbourhood of Doncaster, an individual having been seen near Campsall on the 4th of May. We shall probably record some further observations on this interesting little bird —the "Grasshopper Lark" of the older authors—in a future number.—ED.

MIGRATORY BIRDS.—To-day I have heard the Cuckoo's note for the first time this year. In the May No. of *The Naturalist* (p.101.) the Editor remarks:—"Up to this day (April 20) not a single spring visitant has made its appearancein the north of England." This, however, is not the case, although no migratory birds may have appeared in the neighbourhood of Mr. NEVILLE WOOD'S residence. On the 18th I was in Craven, on the beautiful banks of the river Wharfe, and there, seventy miles north of Doncaster, Wheatears were in great numbers, flitting from stone-wall to stone-wall, and from heap to heap on the Downs. On the 5th of April I observed some Swallows, and I think one Martin, near the river at the back of Thryberg Park. I have seen Swallows on the wing as late as the 4th of December. With regard to the period of the year at which singing birds find their voice of song, as many correspondents have communicated their observations to this magazine, I may add the following to their notes. Last year (1836) I heard the Blackbird sing while the snow was lying on the ground, on the 8th of February. Also on the same day the charming warble of the Robin. The Thrush I heard on or about the 10th, and also on the 14th. On the 15th there was a universal concert of the feathered tribes around us at that season, the prelude to the approaching spring.—F. O. MORRIS, *May* 4, 1837.—[Since the publication of our last number, we have heard that some of our migratory birds appeared even rather early this spring; but the arrivals of the majority were certainly very unusually retarded by the state of the weather.—We suspect the bird our correspondent mentions having heard on the 8th of February was the Missel Thrush, whose notes closely resemble those of *Merula vulgaris;* we never remember to have heard the latter so early as February, but the Missel Thrush is then always in full song, and is very generally mistaken for the Garden Ouzel.—The Redbreast sings throughout

the year, though we are of opinion that the notes heard in winter are those of young birds.—Ed.]

Expedition to Algeria.—The Academy of Sciences in Paris has united with that of Belles Lettres, in a request to the government to send to Algeria, with the exploring expedition, such persons as shall be capable of, and especially charged with, making geographical and physical observations, and researches in Natural and Historical Science.

Arrivals of Birds.—In looking over my last year's pocket-book, I find that our migratory Warblers arrived here about the 6th of April, but I have this year seen no signs of them. It is rather odd that the young Rooks at this place were hatched on the same day this year as last, namely, on the 8th. The Grey Crows departed last year on the 9th; this year, as far as I can make out, on the 7th. Last year I saw a House Swallow on the 4th, but have not observed any this year.—R. P. Alington, *Swinhope House, Lincolnshire, April* 12, 1837, in a letter to the Rev. F. O. Morris.

Scarcity of the House Sparrow (*Pyrgita domestica*) near Doncaster.—This species, proverbially common, is, strange to say, really rare in this immediate neighbourhood. I am not aware whether this fact has been stated, but I have heard it confirmed by several individuals, and it certainly is so. Small flocks may be seen in farm-yards here and there, but, compared with the numbers in other parts, they may be said to be almost unknown here. Even in the town it is a rare occurrence to see one. How to account for this circumstance I know not. The birds cannot have been all destroyed?—F. O. Morris, *Doncaster, May* 5, 1837.—[We can confirm the above fact from our own observation.—Ed.].

Feathered Miners.—A Garden Ouzel which had built its nest beneath the leaves of a large Brocoli, in the garden of Vernon Wentworth, Esq., of Wentworth Castle, near Barnsley, Yorkshire, and which contained some young ones, was completely buried by the snow which fell so plentifully during last week. The parent bird, however, formed a tunnel beneath the snow, more than two feet in length, through which they gained access to their brood.—*April* 5.

The Common Squirrel (*Sciurus vulgaris*, Linn.).—In no part of England that I have visited do Squirrels appear to be so abundant as in Yorkshire—of course in the wooded districts. They are here exceedingly common, and may be seen in every wood, where the timber is of any growth. In this neighbourhood I have also repeatedly observed them throughout the winter, which militates rather against the received opinion, which is, I believe, that they hybernate.—F. O. Morris, *Doncaster, May* 4, 1837.—[Mr. Bell informs us that the Squirrel remains in a state of almost complete torpidity in winter, but that it may be seen out on fine days.—Ed.]

The Camberwell Beauty (*Vanessa antiopa*).—A locality for this rare and

beautiful insect, hitherto I think unnoticed, has lately come to my knowledge. Specimens have been taken at Rawmarsh, near Rotherham, in this county. It is said to be met with in Pea-fields, the blossoms of which they frequent. There is a river in the valley, where willows abound, which have probably furnished the stragglers. I think it likely that more might be obtained. It is also a good neighbourhood for many other rare insects, as *Zeuzera æsculi*, the two species of *Trochilium*, the Swallow Prominent, &c. &c.—F. O. Morris, *May 5*, 1837.

Method of arranging an Oological Cabinet.—I have lately been engaged in arranging my collection in Oology, but have not yet completed it. I have two cabinets, one for land birds (*Raptores*, *Insessores*, *Rasores*), the other for water birds (*Grallatores*, *Natatores*). There are thirty-two drawers, somewhat similar to those commonly devoted to Entomology, except that they are of different depths, and are divided into small partitions, so that the eggs of each species are kept distinct. The specimens are placed upon moss, as I have found that in gumming them down there is considerable danger of their being destroyed. It is necessary to glaze the cases in order to keep the original markings of the eggs, and to prevent their fading. They must be excluded as much as possible from the open air, otherwise they become very tender by the action of the atmosphere upon the shells. The eggs of the Dartford Warbler and Grasshopper Warbler are still desiderata with me.—J. D. Salmon, *Thetford*, *Norfolk*, *April* 22, 1837, *in a letter to the Editor.*

Little Plover (*Charadrius minor*).—An adult and a young bird of the first autumn of the Little Plover are remarkably well figured in the 11th part of Gould's magnificent work the *Birds of Europe*. Science is indebted to Mr. Henry Doubleday, of Epping, for the addition of this little species to the British Fauna, a specimen having been taken at Shoreham, in Essex. "From the extreme youth of the individual transmitted to us," says Mr. Gould, "it is clear that it must have been bred on the spot; and it is worthy of remark, that the person who kills it affirms that he had long suspected the present bird to be a resident on that part of the coast," having noticed a peculiarity in the note of the species. It is abundant in the south of Germany, as far as Italy, frequenting large lakes and rivers. Mr. Gould positively states, that the American specimens he has examined are specifically different. It resembles the Ring Plover in habits, and constructs its nest, like that bird, among shingles on the water's edge, laying four or five yellowish eggs, blotched with black and brown. The sexes do not differ, but young birds want the black collar. This species is easily distinguished from the Ring Plover by its small size.—Ed.

The Spring of 1837.—The cold weather we have experienced has evidently retarded the arrivals of our summer land birds of passage, with the exception of the Sand Swallow (*Hirundo riparia*), of which I saw three on the 11th, and

even they have not added to their numbers. I have neither seen nor heard a single individual, but as the present week has been more favourable, I do not expect we shall be many days without some arrivals.—J. D. SALMON, *Thetford, Norfolk, April* 22, 1837.

A DOG SUCKLING LAMBS.—Startling as the following facts may appear, the reader may rely on their perfect authenticity:—The farm of Airdrie, parish of Kirkbean, which contains almost every variety of soil, has been for some time in the possession of Mr. R. A. OSWALD, of Auchincruive. The present, as the reader knows, has been a most disastrous lambing season, and although Kirkbean is a mild coast parish, even there the loss of stock has been very great. For a number of weeks the careful shepherds have been as much exposed as his Majesty's mail-guards, when the country is blockaded, feeding weak ewes and picking up deserted lambs, which they carry to their masters, or their own houses, where they are nursed as carefully as orphan children who are reared from necessity on the pan and spoon. A hound noticed what was going forward, and though 14 months have elapsed since she suckled pups, strange to say, milk returned to her in such quantities that she has already been the means of succouring and saving more than sixty woolly nurslings that might otherwise have perished. Night and day she may be seen lying on sheepskins before the kitchen fire, with half-a-dozen lambs around her, distinguishing the weakest from such as are somewhat stronger, and devoting to them the most assiduous attention. Repeatedly, when some of the invalids have got a little round, they have been re-conveyed to the hill side with the view of mothering them, and nearly as often the bitch, when left free, has not only sought out and distinguished her former nurslings, but carried them home again with the greatest care, although the distance is more than a mile. After the servants have retired to rest, Mr. M'CRACKEN, while reading in the parlour, sometimes lifts his candle and visits the kitchen, to see how his woolly family, with their hairy nurse, are getting on. The Lambs, when they see the light, are painfully affected, bleat piteously, and run about the floor; but their guardian soon puts every thing to rights by poking them gently with her nose back to their former position. Although a more remarkable circumstance has rarely, if ever, fallen under our notice, and, though some may affect incredulity, there are witnesses whose testimony proves it to be true to the letter.—*Dumfries Courier.*

DISTINCTIONS BETWEEN THE SANDPIPERS AND THE TRINGAS.—The distinctions between the Sandpipers and the Tringas appear at first sight to be so slight, that it may perhaps be well to notice them here. They are these:—The nasal groove (or furrow extending from the nostril, towards the tip of the bill) is not near so long in proportion in the Sandpipers as it is in the Tringas; indeed generally it is actually longer in the latter than in the former. There is also another con-

sideration which must not be overlooked, and which I believe to be a very excellent distinctive character. It is, that the feet of the Sandpipers are webbed to a certain extent, while those of the Tringas are not so at all; this, probably, is on account of their wading more than the latter, which only approach the margin of the water, while the the Sandpipers run fairly into it in search of food. This is another instance of the perfect adaptation of animals to their mode of living; as we may suppose that the muddy places generally frequented by these birds are softer before the water has run off than afterwards, and therefore the partial waders require a more expanded foot than those whose habits do not lead them further than the margin of the water.—Beverley R. Morris, *Trinity College, Dublin, May* 10, 1837.

The Note of the Corn Crake *(Crex pratensis)*.—I have this day heard the note of the Corn Crake. I thought I heard him two days ago, namely, on the 11th, and I have now no doubt that I did. Mr. Bree says (p. 102) that he likes the harsh scream of the Swift almost as well as the melody of the Nightingale. I entertain a similar sentiment with respect to the Corn Crake, whose creaking voice I love to hear even better than the Thrush's—to my mind the finest songster of the grove. The Corn Crake is associated with my earliest recollections. Where I once lived it was abundant—I can now hear its note. I used always to consider it a bird of mystery, and I never hear it without the most delightful pleasure.—F. Orpen Morris, *Doncaster, May* 13, 1837.

BOTANY.

The British Species of Nuts.—Only one species of Nut is described by botanists as indigenous to Britain. Is not the Filbert a distinct species, and equally indigenous? I should be glad if any of your correspondents could inform me on this point.—F. Orpen Morris, *Doncaster, May* 5, 1837.

Veronica, its Derivation, and how pronounced?—I should be glad if any of your correspondents can inform me the proper method of pronouncing the name *Veronica*, which I have seen accentuated in two different ways. If its derivation were known, perhaps that might throw some light on the matter.—T. B. Hall, *Woodside, Liverpool, May* 15, 1837.

GEOLOGY.

Singular Fact regarding the Road from Shoreditch to Newington.—It is a singular fact that the first mile of the road from Shoreditch to Newington has been for some time past repaired with the black porphyry stone brought from China as ballast in the tea-ships, and that the next half mile has been repaired with granite from Bombay.

Geological Construction of Asia Minor.—M. Texier, in his summary

of the geological construction of Asia Minor, describes the Black Sea, of which it has hitherto been supposed that, in consequence of some violent shock, its waters opened a passage for themselves, and in so doing caused the deluge of Samothracia; but on examining the two sides of the Bosphorus, M. Texier says they are of such different strata that they never can have been united. The European side is composed entirely of trachyte and analogous rocks, and the Asiatic of transition limestone. The trachytes have a blue ground with white crystals, and extend in a width of several leagues as far as Belgrade and Kila. If the Bosphorus diminishes, as reported, it is probably owing to the effusion of the trachytic rocks on the European side.

Silex.—M. Turpin has submitted the silex sent from Berlin by M. Ehrenberg, to microscopic observation. The magnifying power amounted to 260, and this gentleman found, that the semi-opal of Berlin is a conglomerate of a number of silicious particles and fragments of organic remains, the colour of which varies from transparent white, and passes through yellow to the deepest and most opaque brown. M. Turpin recognised four different bodies; the first of which he referred to the genus *Gaillonella* of M. Bory St. Vincent, or *Conferva moniliformis;* the second he considered as a different species of the same genus; the third was a mixture of tubular filaments, divided into cells at rare intervals, and remains of infusoria; the fourth was not organic, but served as a basis for rendering the whole solid. The *Silex pyromaque* of Delitzsch is much richer in organic productions, offering some very remarkable forms, probably belonging to the eggs of Polypi.—*Athenæum;* communicated by Charles Liverpool, M. D., *Plymouth, May* 9, 1837.

OBITUARY.

Professor Adam Azelius, the Nestor of scientific men in Sweden, died at Upsal, Jan. 30, 1837, aged 86. He is the last pupil of Linnæus, and celebrated for his travels in Asia and Africa. His African Herbarium is now in the Banksian collection in the British Museum. His younger brothers, John and Peter, the former devoted to Chemistry, the latter to Medicine, are both distinguished for their talents, and have, for nearly half a century, occupied chairs in the University of Upsal.

The learned botanist of the Cape of Good Hope, Mons. Persoon, is no more; he died at Paris, at a very advanced age, having lived there since he enjoyed a pension from his government, which was granted to him on giving up his herbarium to the Museum at Leyden. His works on *Cryptogamia* are excellent; and his *Enchiridion Botanicum* is one of the most useful works of the kind ever published.

THE NATURALIST.

CATALOGUE OF THE MAMMALIA, BIRDS, REPTILES, AND AMPHIBIANS FOUND IN DORSETSHIRE.*

By James C. Dale, Esq., A. M., F. L. S.

Class I. MAMMALIA.

Order I. FERÆ.

ii. Meles. Badger.

2. *taxus*. Common Badger. Glanvilles Wootton, &c.

iii. Mustela. Weasel.

3. *foina*. Marten Weasel. Near Stock House; caught alive by Mr. Yeatman's hounds, but biting the huntsman's hands severely; it was kept alive some time.

5. *putorius*. Fitchet Weasel. Glan. Woott., &c.

7. *vulgaris*. Common Weasel. Glan. Woott., &c.

8. *erminea*. Stoat Weasel. G. W., &c. Sometimes white in winter.

iv. Lutra. Otter.

9. *vulgaris*. Common Otter. River Stour; two (♂ and ♀) were shot there by Mr. St. Lo.

v. Canis. Dog.

12. *vulpes*. Fox. G. W., &c. Eats Beetles, &c.; for further particulars refer to the gentlemen of the "white cape."

vi. Felis. Cat.

13. *catus?* Wild Cat? G. W. Some very large Cats are occasionally taken in the woods, but it is doubtful whether they are the real Wild Cat; they are very destructive to game.

vii. Phoca. Seal.

15. *vitulina*. Common Seal. Caught off Portland, in a net, by some fishermen, Dec. 29, 1834. Museum of Mr. Bridge, Weymouth.

ix. Talpa. Mole.

18. *Europæa*. Common Mole. G. W.

x. Sorex. Shrew.

19. *araneus*. Common Shrew. G. W.

* Arranged according to Jenyn's *Manual*.

xi. ERINACEUS. Urchin.

22. *Europæus.* Hedge Urchin. G. W.

Order II. PRIMATES.

xii. RHINOLOPHUS. Horse-shoe.

23. *ferrum-equinum.* Greater Horse-shoe. Hanging by one hinder foot from the ceiling of an old house!

xiii. VESPERTILIO. Bat.

25. *murinus.* Common Bat. G. W.

29. *noctula.* Great Bat. G. W., &c. We once killed a dozen or more over the porch of the door.

36. *auritus.* Longeared Bat. I think I have seen this species in Dorsetshire, and probably many others, in old churches, such as that at Wimborne.

Order III. GLIRES.

xiv. SCIURUS. Squirrel.

39. *vulgaris.* Common Squirrel. G. W., &c.; also a variety with a white tail; sometimes found entirely black.

xv. MYOXUS. Dormouse.

40. *avellanarius.* Wood Dormouse. G. W., &c.

xvi. MUS. Mouse.

42. *messorius.* Harvest Mouse. G. W., &c. Sometimes reddish.

43. *musculus.* Common Mouse. G. W., &c.

44. *rattus.* *Black Rat. I have heard that this animal was common here formerly; it is now nearly extinct, except in Lundy Isle, Devonshire, where it is plentiful.

45. *decumanus.* *Norway Rat. G. W., &c. Too well known.

xvii. ARVICOLA. Arvicule.

46. *amphibia.* Water Arvicule. G. W.

47. *agrestis.* Short-tailed Arvicule. Lulworth, Charmouth.

xix. LEPUS. Hare.

50. *timidus.* Common Hare. G. W.

51. *cuniculus.* Rabbit. Too common.

CLASS II. BIRDS.†

Order I. RAPTORES. Preyers.

* These two species ought to have been separated, either generically or subgenerically, from the Mice.—ED.

† The figures in parentheses refer to the Rev. F. O. MORRIS's list; the rest, as before, to Mr. JENYNS's work.

FALCONIDÆ, Falcon family.

ii. AQUILA. Eagle.

(8) 2. *chrysaetos.* Golden Eagle. One was shot a few years ago in Sherborne Park, near a dead Deer; now preserved at Sherborne Castle, the seat of Earl DIGBY.

var. β. *fulvus.* Black Eagle. Dr. PULTENEY; Fill Grove, near Blandford.

var. γ. *ossifragus.* Sea Eagle. Longbredy and Morden decoy, Dr. PULTENEY.

(7) 3. *albicilla.* Osprey Eagle. Morden Park and ponds, Dr. PULTENEY.

iii. FALCO. Falcon.

(10) 6. *peregrinus.* Peregrine Falcon. Breeds in cliffs, Purbeck, at Worbarrow, Gadd-cliff, and Duddle-cliff (qu. Durdle door?), Purbeck; supposed to have sprung from a pair turned out by the late H. STRUTT, Esq.

β. *gentilis.* Gentil Falcon. Whitenose-cliff, Lulworth, Dr. PULTENEY.

(12) 7. *subbuteo.* Hobby Falcon. Breeds in Dorsetshire; leaves in October, Dr. PULTENEY.

(14) 8. *æsalon.* Merlin Falcon. G. W., in October, near Blandford, Dr. PULTENEY.

(16) 10. *tinnunculus.* Kestril Falcon. Lulworth, &c. One that was seen at dusk, with a stick in its mouth, and among some Partridges, was taken for a Wood Snipe.

iv. ACCIPITER. Hawk.

(1) 11. *palumbarius.* Gos Hawk. Furzebrakes, &c.

(2) 12. *fringillarius.* Sparrow Hawk. Common.

v. MILVUS. Kite.

(17) 13. *ictinus.* G. W.

vi. BUTEO. Buzzard.

(4) 14. *vulgaris.* Common Buzzard. Common in Dorsetshire; Dr. P.—Eaten in France.

(5) 16. *apivorus.* Honey Buzzard. Rare in Dorsetshire; Dr. P.—Eaten in France.

(18) β. *æruginosus.* Moor Buzzard. Morden bogs, &c.; Dr. P.

(19) 18. *cyaneus.* Hen Harrier. Breeds on Grenville Down.

β. *pygargus.* Ringtailed Buzzard. Near Furze; Dr. P.

(20) 19. *cinerascens.* Ash-coloured Harrier. Shot near Charmouth, by C. BARTLETT, Esq.

STRIGIDÆ, Owl family.

viii. Otus. Madge.

(22) 22. *vulgaris.* Longeared Madge. Woods at Stock Gayland, 1824; near Dorchester, Blandford, and Cranborne Chace.

(21) 23. *brachyotus.* Shorteared Madge. Commoner than the last.

ix. Strix. Owl.

(26) 24. *flammea.* White Owl. G. W., &c.

x. Syrnium. Hooter.

25. *aluco.* Cranborne Chace, &c.

(27). *stridula.* Tawny Hooter.

Order III. INSESSORES, Perchers.

Tribe I. DENTIROSTRES, Notch-billed Birds.

LANIADÆ, Shrike family.

xii. Lanius. Shrike.

(44) 29. *excubitor.* Grey Skrike. Stafford, J. C. Dale; Almer Wood, and near Weymouth, Dr. P.

(46) 30. *rufus.* Wood Shrike. Dr. P. says he never saw this bird, but that he is assured it has now and then been shot in the county; probably only a variety of the next.

(45) 31. *collurio.* Red-backed Shrike. Not uncommon.

MUSCICAPIDÆ, Flycatcher family.

xiii. Muscicapa. Flycatcher.

(105) 32. *grisola.* Spotted Flycatcher. Not uncommon in the county, Dr. P.

(104) 33. *luctuosa.* Pied Flycatcher. Dorset, in the collection of S. Digby, Esq.; and Mr. Heysham says, in a letter, that Selby had one from this county.

TURDIDÆ, Thrush family.

xiv. Cinclus. Dipper.

(67) 34. *aquaticus.* Common Dipper. River Char, near Charmouth, Mr. B. R. Morris.

xv. Turdus. Thrush.

(99) 35. *viscivorus.* Missel Thrush. G. W., &c.

(101) 36. *pilaris.* Fieldfare. G. W., &c.

(98) 37. *musicus.* Song Thrush. G. W., &c.

(100) 38. *Iliacus.* Redwing Thrush. G. W., &c.

(102) 39. *merula.* Black Thrush. G. W., &c.

(103) 40. *torquatus.* Ring Thrush. Portland, April and September, Dr. P.

SYLVIADÆ, Warbler family.

xvii. Accentor. Dunnock.

(129) 43. *modularis.* Hedge Dunnock.

xviii. SYLVIA. Warbler.

(116) 44. *rubecula.* Redbreast Warbler.

(114) 46. *phœnicurus.* Redstart Warbler.

49. *phragmitis.* Sedge Warbler.

50. *trivialis.* Grasshopper Warbler, Dr. P.

(117) 51. *luscinia.* Nightingale Warbler.

(122) 52 *atricapilla.* Blackcap Warbler.

(118) 54. *cinerea**. Whitethroat Warbler.

57. *trochilus.* Willow Warbler.

(123) 58. *hippolais.* Pettychap Warbler.

xx. REGULUS. Kinglet.

(54) 60. *auricapillus.* Goldencrowned Kinglet, G. W., &c.

xxi. MOTACILLA. Wagtail.

(108) 62. *alba.* Pied Wagtail. G. W., &c.

(107) 63. *boarula.* Grey Wagtail. Rare in Dorset, Dr. P. It is the reverse at G. W.

(106) 64. *flava.* YellowWagtail. Common, Dr. P. The reverse at G. W.

xxii. ANTHUS. Pipit.

(94) 67. *pratensis.* Meadow Pipit.

(92 or 96 ?) *rupestris.* Rock Pipit. Common at Charmouth, B. R. MORRIS.

xxiii. SAXICOLA. Chat.

70. *œnanthe.* Fallow Chat. G. W. & Portland.

71. *rubetra.* Whin Chat.

72. *rubicola.* Stone Chat.

xxiv. PARUS. Tit.

(53) 73. *major.* Great Tit.

(52) 74. *cæruleus.* Blue Tit.

(49) 76. *palustris.* Marsh Tit.

(50) 77. *ater.* Coal Tit.

(48) 78. *caudatus.* Longtailed Tit.

Tribe II. CONIROSTRES, Cone-billed Birds.

FRINGILLIDÆ, Finch family.]

xxvii. ALAUDA. Lark.

(90) 82. *arvensis.* Sky Lark.

(92) 83. *arborea.* Wood Lark.

* We should be glad if Mr. DALE would look out for the Whitebreasted Fauvet (No. 55 of JENYNS) in Dorsetshire.—ED.

xxviii. EMBERIZA. Bunting.

(83) 85. *nivalis.* Snow Bunting. Shot at Turnwood in 1835. In the collection of the Rev. E. STUART, of Houghton, late of Blandford.

(89) 86. *miliaria.* Corn Bunting.

(85) 87. *schœniculus.* Reed Bunting.

(88) 88. *citrinella.* Yellow Bunting.

(86) 89. *cirlus.* Cirl Bunting. Shot at Charmouth, by Mr. B. R. MORRIS.

xxix. FRINGILLA. Finch.

(75) 91. *cœlebs.* Chaff Finch.

(74) 92. *montifringilla.* Bramble Finch. Blandford, Rev. E. STUART.

(76) 93. *domestica.* House Sparrow.

(72) 95. *coccothraustes.* Haw Finch. Bishop's Caundle, C. W. DIGBY, Esq., Dec. 24, 1836.

(73) 96. *chloris.* Green Finch.

(79) 97. *carduelis.* Gold Finch.

(78) 90. *spinus.* Siskin Finch.

(81) 99. *linaria.* Redpoll Finch.

(80) 100. *cannabina.* Linnet Finch.

(82) 101. *montium.* Twite Finch.

xxx. PYRRHULA. Bullfinch.

(70) 102. *vulgaris.* Common Bullfinch.

xxxi. LOXIA. Crossbill.

(68) 104. *curvirostra.* Common Crossbill. Shot at Haselbury Briant.

STURNIDÆ, Starling family.

xxxii. STURNUS. Starling.

(40) 107. *vulgaris.* Spotted Starling.

xxxiii. PASTOR, Amzel.

(42) 108. *roseus.* Rose Amzel. Shot in Portland by the Rev. G. PORT, and now in the museum of HODDINOTT of Stalbridge. Long Critchel, Dr. P.

CORVIDÆ, Crow family.

xxxiv. FREGILUS. Chough.

(37) 109. *graculus.* Redlegged Chough.

xxxv. CORVUS. Crow.

(29) 110. *corax.* Raven Crow.

(30) 111. *corone.* Carrion Crow.

(32) 112. *cornix.* Royston Crow. Seen near Weymouth, J. C. DALE. Abbotsbury and Poole, Dr. P.

(31) 113. *frugilegus.* Rook Crow.

(33) 114. *monedula.* Daw Crow.

(34) 115. *pica.* Magpie.

xxxvi. GARRULUS. Jay.

(35) 116. *glandarius.* Common Jay.

Tribe III. SCANSORES, Climbers.

PICIDÆ, Woodpecker family.

(56) 118. *viridis.* Green Woodpecker.

(59) 119. *major.* Great Spotted Woodpecker.

(59) 120. *minor.* Lesser Spotted Woodpecker.

(55) 120. *martius.* Black Woodpecker. Shot in the nursery garden at Blandford; also at Whitchurch, and other places in Dorsetshire, Dr. P. Lately shot in Norfolk and Lincolnshire.

xxxix. YUNX. Wryneck.

(62) 121. *torquilla.* Common Wryneck.

CERTHIADÆ, Creeper family.

xl. CERTHIA. Creeper.

(63) 122. *familiaris.* Common Creeper. G. W.

xli. TROGLODYTES. Wren.

(109) 123. *Europæus.* Common Wren.

xlii. UPUPA. Hoopoe.

(64) 124. *epops.* Common Hoopoe. Charmouth, Spring, 1835, F. O. MORRIS; Cranborne Chace, Almer, Shroton, Handford, near Dorchester, Wareham, Dr. P.

xliii. SITTA. Nuthatch.

(61) 125. *Europæa.* European Nuthatch. G. W.

CUCULIDÆ, Cuckoo Family.

xliv. CUCULUS. Cuckoo.

(137) 126. *canorus.* Common Cuckoo. G. W., &c.

Tribe IV. FISSIROSTRES. Wide-beaked Birds.

MEROPIDÆ, Bee-eater family.

xlvii. MEROPS. Bee-eater.

(65) 129 *apiaster.* Common Bee-eater. Shot at Chideock, and now in Bridport museum (late Dr. ROBERTS's).

HALCYONIDÆ, Halcyon family.

xlviii. ALCEDO. Kingfisher.

(66) 130. *ipsida.* Common Kingfisher.

HIRUNDINIDÆ. Swallow.

(133) 131. *rustica.* Chimney Swallow. I once saw about a dozen on wing, making south, in one undeviating course, late in the season, as if migrating.

(132) 132. *urbica.* Martin Swallow, I have seen nests of this bird on the chalk-cliffs by the sea, near Lulworth Castle.

(131) 133. *riparia.* Sand Swallow. I once noticed these birds in profusion on the sea-shore, near Portland Ferry, as if preparing to migrate, late in the autumn.

l. CYPSELUS. Swift.

(135) 134. *murarius.* Wall Swift. In great numbers on Wimborne Towers.

CAPRIMULGIDÆ, Nightjar family.

li. CAPRIMULGUS. Nightjar.

(136) 136. *Europæus.* European Nightjar.

ORDER III. RASORES, Scratchers.

COLUMBIDÆ, Pigeon family.

lii. COLUMBA. Pigeon.

(139) 137. *palumbus.* Ring Pigeon. G. W., &c.

(140) 138. *œnas.* Stock Pigeon. Isle of Purbeck, Dr. P. In large flocks in Turnip fields in the winter, at Parley (and Thorne.)

(142) 140. *turtur.* Turtle Dove. Cranborne Chace.

PHASIANIDÆ, Pheasant family.

lvi. PHASIANUS. Pheasant.

(143) 145. *Colchicus.* Common Pheasant, G. W., &c.; also the Pied Pheasant; both naturalized.

146. *torquatus.* Ring Pheasant.

TETRAONIDÆ, Grous family.

lviii. TETRAO. Grous.

(149) 149. *tetrix.* Black Grous. Parley and Pool Heaths; Morden and Moreton Heaths, and formerly shot on Knighton Heath, near Dorchester, by the late JOHN FLOYER, Esq.

lix. PERDIX. Partridge.

(144) 153. *cinerea.* Grey Partridge, G. W., &c.

(145) 154. *rufa.* Redlegged Partridge. Shot at Upway, near Weymouth, Dr. P.

(146) 156. *coturnix.* Quail. I have seen two or three at West Stafford. There are generally a few on Fordington Fields.

STRUTHIONIDÆ, Ostrich family.

lx. OTIS. Bustard.

(152) 157. *tarda.* Great Bustard. A few seen in Dr. P.'s time, about Woodyates and Ashmore Downs, Langton and Strickland. Now quite extinct in Dorset. I once saw one that had just been shot near Amesbury, Wiltshire.

Order IV. GRALLATORES, Waders.

CHARADRIADÆ, Plover family.

lxii. Œdicnemus. Thick-knee.

(153) 160. *crepitans.* Stone Thick-knee. Knighton Heath; near Lulworth and Blandford.

lxiii. Charadrius. Plover.

(156) 161. *pluvialis.* Golden Plover. Near Dorchester.

(157) 162. *morinellus.* Dotterel Plover. Pimperne, and near Pentridge, Dr. P.

(158) 163. *hiaticula.* Ring Plover. Sea-coast.

lxiv. Vanellus. Lapwing.

(155) 166. *griseus.* Grey Lapwing.

(154) 167. *cristatus.* Peewit Lapwing.

lxv. Strepsilas. Turnstone.

168. *interpres.* Common Turnstone. Near Weymouth, spring, 1795. Dr. P.

lxvii. Calidris. Sanderling.

(161) 169. *arenaria.* Common Sanderling. Sea-coast.

lxvii. Hæmatopus. Oyster-catcher.

(164) 170. *ostralegus.* Common Oyster-catcher.

ARDEIDÆ, Heron family.

lxix. Ardea. Heron.

(204) 172. *cinerea.* Common Heron.

(198) 177. *minuta.** Little Bittern.

(197) 178. *stellaris.* Common Bittern. Bishop's Caundle, C. W. Digby, Esq.

179. *lentiginosa.* Freckled Bittern. Puddle-town, Rev. Thomas Racket.

lxxi. Platalea. Spoonbill.

(192) 183. *leucorodia.* White Spoonbill. Near Poole, Dr. P., 1793.

SCOLOPACIDÆ, Snipe family.

lxxiii. Numenius. Curlew.

(190) 185. *arquata.* Common Curlew.

(189) 186. *phæopus.* Whimbrel Curlew.

lxxiv. Totanus. Sandpiper.

(177) 189. *ochropus.* Green Sandpiper.

(174) 191. *hypoleucos.* Common Sandpiper.

* We are surprised to find Mr. Jenyns retaining this species in his subgenus *Ardea*; especially as the two following species are placed in his *Botaurus*.—Ed.

lxxv. RECURVIROSTRA. Avocet.

(182) 194. *avocetta.* Scooping Avocet. Sea-shore, Dr. P.

lxxvi. HIMANTOPUS. Stilt.

(165) 195. *melanopterus.* Black-winged Stilt, Poole, Dr. P.

lxxviii. SCOLOPAX. Snipe.

(188) 198. *rusticola.* Wood Snipe, G. W., &c. Sir R. HOARE has several varieties, one white, another with white wings, a third dusky color, and some young birds stuffed in glass cases.

(187) 200. *major.* Great Snipe. I have seen some in Elsington Wood.

(186) 186) 201. *gallinago.* Common Snipe.

(185) 202. *gallinula.* Jack Snipe.

lxxix. TRINGA. Tringa.

(166) 204. *pugnax.* Ruff Hollywell, W. WARRY, Esq.

(168) 208. *maritima.* Purple Tringa.

lxxxi. PHALAROPUS. Phalarope.

(213) 214. *lobatus.* Grey Phalarope.

RALLIDÆ, Rail family.

lxxxiii. RALLUS. Rail.

(206) 216. *aquaticus.* Common Rail. G. W. &c.

lxxxiv. CREX. Crake.

(207) 217. *pratensis.* Meadow Crake. G. W.

(208) 218. *porzana.* Spotted Crake. Shot near Sturminster. Newton, on the Stour, in 1820, J. CONWAY.

lxxxv. GALLINULA. Gallinule.

(211) 221. *chloropus.* Common Gallinule.

lxxxvi. FULICA. Coot.

(212) 222. *atra.* Bald Coot.

Order V. NATATORES, Swimmers.

ANATIDÆ, Duck family.

lxxxvii. ANSER. Goose.

(266) 223. *ferus.* Wild Goose.

224. *segetum.* Bean Goose.

(267) 225. *albifrons.* White-fronted Goose.

(269) 226. *leucopsis.* Bernacle Goose

(268) 227. *torquatus.* Brent Goose.

lxxxviii. CYGNUS. Swan.

(262) 233. *ferus.* Whistling Swan.

(263) 235. *olor.* Mute Swan.

lxxxix. TADORNA. Shieldrake.

[235. *rutila.* Ruddy Shieldrake. Bryanston, Dorsetshire, JENYNS.—ED.]

(274) 236. *Bellonii.* Common Shieldrake.

xci. ANAS. Duck.

(276) 239. *clypeata.* Shoveller Duck.

(272) 240. *strepera.* Gadwall Duck.

(287) 241. *acuta.* Pintail Duck.

(275) 243. *boschas.* Wild Duck. Rare at G. W.

(285) 244. *querquedula.* Gargany Duck. Stafford-on-Frome.

(286) 245. *crecca.* Teal. G. W., but very rare.

xcii. MARECA. Wigeon.

(283) 246. *penelope.* Common Wigeon. I shot one at Hammoon once.

xcv. OIDEMIA. Scoter.

(281) 250. *fusca.* Velvet Scoter.

xcvi. FULIGULA. Pochard.

(280) 252. *rufina**. Red-crested Pochard.

(279) 253. *ferina.* Common Pochard.

(278) 256. *marila.* Scaup Pochard.

xcvii. CLANGULA. Garrot.

(289) 258. *chrysophthalmos.* Goldeneyed Garrot.

xcviii. HARELDA. Hareld.

(288) 260. *glacialis.* Longtailed Hareld.

xcix. MERGUS. Merganser.

(261) 261. *merganser.* Common Merganser.

(260) 262. *serrator.* Redbreasted Merganser.

(258) 263. *cucullatus.* Hooded Merganser.

(259) 264. *albellus.* Smew Merganser. Stafford-on-Frome, and near Weymouth.

COLYMBIDÆ, Diver family.

c. PODICEPS. Grebe.

(218) 268. *auritus.* Eared Grebe (or *minor?*).

ci. COLYMBUS. Diver.

(224) 270. *glacialis.* Northern Diver.

(223) 272. *Septentrionalis.*

* Our correspondent had affixed the English name of an entirely different species (viz. the Tufted Pochard, *F. cristata*) to this bird.—ED.

ALCADÆ, Auk family.

cii. URIA. Guillemot.

(220) 273. *troile.* Foolish Guillemot.

(221) 274. *grylle.* Black Guillemot.

civ. FRATERCULA. Puffin.

(227) 276. *arctica.* Common Puffin.

cv. ALCA. Auk.

(225) 277. *torda.* Razorbill Auk.

(226) 278. *impennis.* Great Auk.

PELECANIDÆ, Pelican family.

cvi. PHALACROCORAX. Cormorant.

(229) 279. *carbo.* Common Cormorant.

(230) 280. *cristatus.* Shag Cormorant.

cvii. SULA. Gannet.

(228) 281. *Bassana.* Solan Gannet. Once caught alive at Charmouth, with its head stuck in the sand, B. R. MORRIS.

LARIDÆ, Gull family.

cviii. STERNA. Tern.

(248) 282. *Cantiaca.* Sandwich Tern.

(274) 285. *hirundo.* Common Tern. (In plenty at Whittlesea Mere.)

(251) 287. *minuta.* Lesser Tern. G. W., end of October, 1831.

cix. LARUS. Gull.

(242) 294. *ridibundus.* Blackheaded Gull. Charmouth, B. R. MORRIS.

(241) 296. *tridactylus.* Kittiwake Gull.

(240) 297. *canus.* Common Gull.

(237) 300. *fuscus.* Fuscous Gull.

(236) 301. *marinus.* Blackbacked Gull.*

cxi. PROCELLARIA. Petrel.

(255) 309. *puffinus.* Shearwater Petrel.

(253) 312. *pelagica.* Stormy Petrel.

(254) 313. *Leachii.* Forktailed Petrel. Charmouth and Weymouth.

CLASS III. REPTILIA.

Order II. SAURIA, Saurians.

LACERTIDÆ, Lizard family.

iii. LACERTA. Lizard.

* Mr. DALE had put, after this species, "A Lesser Blackbacked Gull, B. MORRIS." We presume this ought to refer to *L. fuscus.*—ED.

4. *agilis.* Common Lizard. I have also found a very blue and green species, at Parley.*

Order III. OPHIDIA, Ophidians.

iv. ANGUIS. Blindworm.

5. *fragilis.* Slender Blindworm. G. W., &c.

v. NATRIX. Natrix.

6. *torquata.* Ringed Natrix. G. W., &c.

vi. VIPERA. Viper.

7. *communis.* Common Viper. I have seen a variety all over red in Portland, and several similar specimens on Cranborne Chace.

CLASS IV. AMPHIBIA, Amphibians.

Order I. CADUCIBRANCHIA,† Caducibranchians.

RANIDÆ, Frog family.

i. RANA. Frog.

1. *temporaria.* Common Frog.

ii. BUFO. Toad.

2. *vulgaris.* Common Toad.

SALAMANDRIDÆ, Salamander family.

iii. TRITON. Eft.

6. *aquaticus* [Qu. the Striped Eft, *T. vittatus.*—ED.]. Near Maiden Newton, Mr. ABRAHAM and Mr. LESTER.

I propose continuing the Dorsetshire Fauna in a future number of *The Naturalist*, if the above is suitable to your pages.

ON THE DECREASE OF THE OAK IN GREAT BRITAIN.

BY J. E. DAVIS, ESQ.

"Tout est utile dans ce bel arbre, l'éncore, l'aubier, le bois, les feuilles, les fruits, le gui, plante parasite; l'espèce de champignon qui est nommé *agaric de chêne*, la mousse même, en un mot, les diverses productions du chêne tant naturelles qu' accidentelles, sont d'usage dans les arts ou en médecine. Ainsi le chêne majestueux, ornement de nos forêts, jouit d'une juste prééminence sur tous les arbres de l'Europe, puisqu'il la droit surtout à son utilité."—GENLIS.

ENGLAND was once celebrated for the numerous and extensive forests of Oak which it contained, as well as for the size and grandeur of the trees themselves;

* We are curious to see it; could our correspondent conveniently favour us with a specimen? —ED.

† Literally, animals with deciduous gills.—ED.

but this national characteristic we have now totally lost. A few giants of old, indeed, still remain, but they only serve to point out in a yet stronger light the degeneration of our present condition.* The country that can now perhaps, with the greatest truth, claim the superiority in this respect, is Canada, and the United States; and why? Not because the inhabitants of the new world have seen our negligence and improvidence, and have therefore determined to take a warning from experience, but because the work of destruction, although rapidly progressing, has not yet had sufficient time to extirpate the noble and majestic forests which extend, almost without interruption, from the shores of the Pacific on the West, to the Atlantic on the East. And that we were in by-gone ages in the same state, is perhaps one reason why we have now to lament the decrease, amounting almost to extermination, of this noble tree. Former superabundance of timber led to wanton destruction, and our ancestors—never dreaming, amidst such plenty, of the possibility of the present generation suffering from their profusion—employed in the construction of their Halls and Castles that tenfold strength and thickness which is visible in all the architecture down to the reign of ELIZABETH; and piled their hearths with many a log which we would now gladly see in the furniture of our modern drawing-rooms. The lord commanded the work of destruction, and the vassal obeyed, with that readiness which all uneducated minds feel when engaged in destroying the work or growth of years, in the construction or progress of which they take no delight or gratification, but pass it by with apathy and indifference.

To a certain extent this has had a desirable effect, by extending the proportion of productive ground, which an increasing population required, and in exterminating or diminishing those animals which the increased civilisation of mankind had rendered obnoxious and injurious to their comfort and security. For "when great changes are made on the surface of a country, as when forests are changed into open land, and marshes into corn fields, or any other change that is considerable, the changes of the climate must correspond; and as the wild productions are very much affected by that, they must also undergo changes; and these changes may in time amount to the entire extinction of some of the old tribes, both of plants and of animals, the modification of others to the full extent that the hereditary specific characters admit, and the introduction of not varieties only, but of species altogether new."—MUDIE'S *Guide to the Observation of Nature.*

But we of the present day have no such excuse; we go on consuming and destroying, at the same time aware of the injury, if not moral crime, we are

* Of eighty-seven British forests enumerated by SPELMAN, not above nine remain.—Note to TIGHE'S *Plants*, 2nd edit., 1812.

committing. We boast of our wooden walls and English Oak, without making any attempt at securing a right to continue those expressions.

But it is to *The Naturalist* I am writing, and not for the purpose of shewing what the probable consequence of this decrease may be in an economical or political point of view.

To the naturalist, then, there will be much cause for regret; he has to lament, not only the decrease of one of the finest productions of Nature, but the proportional increase of the Larch and Fir—trees suited to but a very small part of the scenery of this island. Instead of the beautiful and varied greens of the Oak, mingled with the lighter Ash, we now look upon square masses of Larch, here and there interspersed with the cold blue of the Scotch Fir.

> " O Harmony, once more from heaven descend!
> Mould the stiff lines and the harsh colours blend:
> Banish the formal Fir's unsocial shade,
> And crop the aspiring Larch's saucy head:
> Then Britain's genius to thy aid invoke,
> And spread around the rich high clustering Oak;
> King of the woods! whose towering branches trace
> Each form of majesty, and line of grace:
> Whose giant arms, and high-embower'd head,
> Deep masses round of clustering foliage spread,
> In various shapes projecting to the view
> And clothed in tints of Nature's richest hue;—
> Tints, that still vary with the varying year,
> And with new beauties every month appear:
> From the bright green of the first vernal bloom,
> To the deep brown of autumn's solemn gloom.
> Each single tree too, differing from the rest,
> And in peculiar shades of verdure dressed,
> Spreads a soft tinge of variegated green,
> Diffused, not scatter'd, o'er the waving scene."——KNIGHT's *Landscape.*

What can be more beautiful than an Oak forest? Viewed at any time of the year it presents to the lover of Nature charms which can seldom be equalled, never surpassed. Go visit it in summer, and while reclining beneath the shade, the eye will be feasted with a thousand bright and lovely objects. The Ferns and Mosses, and a variety of plants and shrubs—each an object of endless attraction to an observing and contemplative mind—find shade and protection beneath the huge and twisted branches of Oak. In winter, when other trees stand bare and naked to the blast, many species of Oak still retain their leaves, which are only lost when the germinating bud of the succeeding leaf gradually displaces them. In winter, too, the Mosses appear in their greatest beauty; and the oblique rays of the sun falling on the rain-drops which hang in countless thou-

sands from the underwood (and which supply the Mosses beneath with the constant moisture so necessary to their existence—

"Within whose tufts
Around the root the bedded acorns sleep
Till Zephyr fans the glowing blush of spring,")*

furnish scenes which leave no room to regret the change which intervenes between one summer and another.

It is in the delight and satisfaction with which scenes like these are contemplated, that Man can best appreciate those noble faculties with which he is endowed. It was in scenes like these

—"The Theban Eagle plumed
His daring pinions on Cithæron's brow:
In scenes like these Salvator grouped his iron
And gaunt banditti near the foaming crash
Of cataracts, that o'er the sombre rock
Had cast the headless and uprooted trunk."*

And it is, moreover, in scenes like these that we

"Revere the fostering Lord of Nature, who
In love created all the harmonic maze
Of worlds, reflection of the eternal mind."*

But in the destruction of the Oak and increase of the Larch is involved the destruction of these scenes, and, consequently, of the hallowed reflections which their existence produced in the mind. For the Larch and the Fir tribe generally forbid the existence of vegetable life—even their own offspring are forbid to put forth their tender shoots beneath the baneful influence of the parent stem.†

The inhabitants of Worcestershire and Herefordshire especially, can appreciate the value of the Oak; they possess the finest specimens now existing of that tree, and they have to lament the loss of thousands which in the spring of every year are cut down and the bark carried to the tan-pit. And here, again, is a fertile source of dissertation on the consequences, a failure in the supply of bark—a failure which must be the natural result of such an extensive annual destruction. But the consequences of the decrease of the Oak in a commercial point of view have been often alluded to, though, seemingly, with but little effect.

Seeing, then, the value of the Oak to the naturalist—seeing the decrease which

* Tighe's *Plants.*

† "Those who are familiar with Pine forests, or Pine plantations, must be aware, that the seeds of the cones never germinate under the thick shade of the trees, and grow up so as to form an underwood in the forest. Cones in abundance are produced every season, but they contribute chiefly to the food of the animal inhabitants, and it is only where a blank occurs, from the decay or the casual destruction of a tree, that young plants rise to fill it up."—Mudie.

has taken place, and which must be apparent to every one—and seeing the prejudicial effects of this decrease in every point of view, the cause remains to be considered which has apparently induced us to forget all claims of posterity—the cause of that want of foresight in which, in other respects, we are by no means deficient.

The principal cause is probably this: The object of the land-owner and planter has been to cultivate trees that will produce timber or wood, in his lifetime; now, unfortunately, the Oak will not do this:

> "Jam quæ seminibus jactis se sustulit arbos,
> Tarda venit, seris factura nepotibus umbram."

The Larch has therefore been brought in, and the growth of this tree, naturally quick, has been increased by cultivation. In a few years the planter sees with gratification the rapid progress it has made. But the timber, if such it can be called which is produced by this rapid growth, is of a very inferior nature; for it is a well-known maxim, that the excellence of timber is in the inverse ratio to the rapidity of the growth; yet the wood, bad as it is, answers the purpose of the grower; he can plant, cut down, and plant again, during his life.

But it is not entirely to him who plants for gain, that our loss is to be attributed; it is not altogether the decrease in quantity of which we have to complain, but also the inferiority in quality. Those who do plant Oak, do so merely for ornament.

"Most species of forest trees are so long in coming to maturity, that the grand incentive to planting them is ornament, and not use. Even the man who accumulates for posterity, in reality seldom does so in his own feeling of the matter: for he who leaves the most to others when he quits the world, did not collect it for them, but for himself—for the gratification of his desire of possession. The man who plants wishes to have something to look at, and to have it as speedily as possible, and that, with the other circumstances that have been noticed, conspires to cover the rich districts of the country with growing rubbish, which, when it comes to be cut down, is fit only for fire-wood, and very inferior for that."—MUDIE.

And in consequence of the inferiority of the timber thus planted, it has been argued, that the Oak cannot be cultivated—that it must be sown and grow by the hand of Nature, that the acorn must drop from the parent tree, and spring spontaneously into life; in short, that any interference on the part of man is injurious: this excuse, for the conduct of those who destroy, but never plant, is vain and futile, for—

"If people have been able to cultivate animals into greater size and strength and beauty, and also to make them have better flesh and finer wool; if they have been able to improve by culture the beauty of flowers, and the nourishing quali-

ties of all manner of esculent roots, stems, leaves, and fruits, it would be passing strange if their culture could do nothing for an Oak tree but make it mere worthless timber. If all the earth were given to man for improvement, and he had improved much of it—as he actually has done—it would be a perfect anomaly if timber, which is so very useful, should be the single article on which he could not lay his hand of culture without doing it an injury. It is impossible to believe that such an anomaly can exist in nature; and, therefore, the only way is to catechise the man who makes the attempt; and, if he does not understand what he is doing, send him back to Nature to inform himself as to what he should do."—MUDIE.

The real state of the case, then, is this. Those who do plant Oak, generally do so not for the purpose of forming timber, but for ornament, and those few (if any) who plant for posterity, have not hit on the right method of doing so.

"We have difficulty in keeping the cultivated plants 'rooted in,' and we have as much in getting the wild ones rooted out. A very little observation of Nature, and a few very simple reflections on that observation, might have shown us that that must have been the case; and had we taken that trouble, and very small trouble it is, we should never have gone about to cultivate timber in one plant by the very process whereby we destroy timber in all other plants. Yet we have done, and we continue to do that, for, grafting excepted, we breed Oaks and Peaches in the same ground, and much after the same manner."—MUDIE.

In the first place, the acorns are not sown in the spot where the trees are to remain. They are obtained by nurserymen, who buy them wholesale without any regard to their quality, and it is probable, as in almost all plants, that "the worst kinds of oak are the most prolific of acorns." The nurserymen, without attending to Nature, sow them deep in the ground, and within a few inches of each other, and the consequence is, that these acorns, originally bad, produce still worse plants, which, from their crowded state, are stinted in their necessary nourishment.* After remaining in this state for some years, they are transplanted to their final destination, a process which, it is needless to add, is extremely injurious, however carefully performed; and, in most cases, the space allowed there for their growth is scarcely better than that in the nursery-bed. In short, "the object of the grower has been to get goodly trees—trees that please the eye, without any regard to the quality of the timber; and the object of the nurseryman has been to rear up his seedlings, and get them to market as soon, and in as showy a condition as possible."

* Man comes in with his nursery-bed; and though he cannot be said to overstock the country, for there can hardly be too many trees (and there are numerous and wide wastes in England, where it is disgraceful there are not millions); yet the nursery-bed is overstocked, and the consequence is the dry-rot in Oak, and general rottenness and want of strength in all timber."—MUDIE.

If this be the case, and if it is in our power, by adopting the proper means, to preserve the King of the Forest in all his pristine grandeur and majesty, why should there be that apathy which exists on a subject, the importance of which is by no one disputed. Let, then, those in whose power the remedy exists, exert themselves in securing, for the ages yet to come, those blessings which our climate is calculated to produce, and does produce, and which we are now possessing and enjoying; by so doing they will receive their rich reward, in that satisfaction which must invariably follow from the consciousness of being employed in the benefit of our fellow-creatures—a benefit of the highest kind—

"For he who guards the state, and he who plants
The woodland screen, anticipates alike
The grateful meed, a future age's love."—TIGHE.

Presteign, Jan. 1, 1837.

ON THE LEMURIDÆ, OR FAMILY OF LEMURS.

(Continued from p. 13.)

THE genus *Microcebus*, GEOFF., contains, as far as we know at present, two distinct species, which, as we shall explain, have not only been confounded with each other, but have also been referred, even by modern naturalists, to genera from which they differ in many essential particulars. GEOFFROY ST. HILAIRE (vide *Annales du Musée*, tom. 19, 1796) the two species being undistinguished, places the *Rat de Madagascar* of BUFFON, which he regarded as identical with the Little Macauco of BROWN and PENNANT, in the genus *Galago*. Subsequently, however, in his *Cours de l'Histoire Naturelle*, 1834, GEOFFROY established the genus *Microcebus*, of which the *Rat de Madagascar* served him for the type. In the last edition of CUVIER'S *Règne Animal*, we also find (see foot-note, page 109) the Little Macauco of BROWN regarded as a *Galago*, as well as the animal described by G. FISCHER (in *Act. de la Soc. de Mosc.* I. p. 24, f. 1.), under the name of *Galago Demidoffii*. We have previously hinted our suspicions that the *Cheirogaleus Milii* will be found to belong to the genus *Microcebus*, but as we have never seen the specimens from which GEOFFROY ST. HILAIRE took his description, we cannot positively determine. With regard to the characters upon which the genus *Microcebus* is founded, it may be observed, that they approximate more closely to those of the true Lemurs, than do those of the genus *Galago*. In the latter genus, for instance, the ears are extremely large, membranous, and capable of being folded down; and the posterior extremities are remarkably developed. The Galagos, moreover, appear to be exclusively confined to Continental Africa, while the *Microcebi* are restricted (with the true Lemurs) to Madagascar.

Genus *Microcebus*, Geoffrey St. Hilaire.—*Gen. Char.*—Head round; muzzle short and pointed; ears moderate, erect, rounded at the tips, and nearly naked; eyes moderate, prominent, and bright. Fore limbs small; hand delicate; thumb short; fore-finger as short, or rather shorter, than the index finger; nails minute. Posterior limbs more developed than the anterior; tarsal bones distinct; thumb long; first toe furnished with a claw; tail long, and slightly pencil-tufted at the tip. Incisors $\frac{4}{6}$, Canines $\frac{1-1}{1-1}$, molars on each side $\frac{6}{5}$. The incisors above are small, the two central being the largest; these are separated from each other by an intervening space, as in *Lemur;* the incisors below resemble those of *Lemur;* the canines above are small and pointed; behind each is a space, much more contracted in proportion than in *Lemur*, for the reception of the lower canines; these latter scarcely exceed in size the first false molar, and present a similar shape and appearance; they incline considerably forwards, and when the jaws are close, fit in behind, and to the inside of the posterior edge of the upper canines. Of the molars above (on each side) the three first are false; they are simple and conical, with a minute notch anteriorly and posteriorly. The first two true molars have four acute points; those on the external edge of the crown being the largest; the last molar is the smallest, and has two outer points and one inner; of the molars below, the two first are false, simple, conical, and acute.

The skulls of the *Microcebi* differ from those of the Lemurs, in being of a rounder form, and in having the muzzle much more abbreviated. In the skull of a *Lemur* before us, the total length of which is $4\frac{1}{4}$ inches, the distance from the anterior margin of the orbit to the apex of the inter-maxillary bones is $1\frac{3}{4}$ inch, while in the skull of *Microcebus murinus*, the total length of which is $1\frac{1}{4}$ inch, the distance from the anterior edge of the orbit to the same point is two eighths and a half. Small as are the *Microcebi*, these animals are remarkable for their extreme activity, and the ease and rapidity of their leaping movements; it is, however, only at night that they indulge in sportiveness, being decidedly nocturnal: During the day they sleep rolled up like a ball, but rouse up from their torpor with the approach of grateful twilight. The brilliancy of their eyes, the *tapetum lucidum* gleaming through the round dilated pupil, indicates at once that night is their season of activity. Of their habits in a state of nature we know nothing, except that they are arboreal. In captivity they eat fruit and bread, but the character of their dentition indicates that insects, eggs, &c., form at least a great part of their diet. In their figure, (and especially in that of the *Microcebus murinus*) we are immediately reminded of the Lerot, or Garden Dormouse (*Myoxus nitela*), and this mutual resemblance is strengthened by a great similarity of manners. Like the Lerot, the *Microcebi* nestle in the holes of trees, which serve them as a dormitory, and a retreat in which to rear their young.

Species 1.—Murine Macauco, PENNANT.

Microcebus murinus.

Lemur murinus, PENNANT.

Lemur murinus, GMEL.

Rat de Madagascar, BUFF., Supp. III. c. fig.

General colour clear grey; a dark mark at the inner margin of each eye; a line between the eyes running down the top of the nose, white; throat and under surface, together with the inside of the limbs, white; tail rufous grey. Length of head and body 5½ inches; of the tail 6.

Habitat, Madagascar.

In Mus. Zool. Soc.

For an account of the anatomy of this species, see *Zool. Proceedings* for 1835, p. 125.

Species 2.—Little Macauco, BROWN.

Microcebus pusillus, GEOFF.

Galago Madagascariensis, GEOFF.

Ololicnus Madagascariensis, SCHINZ.

Little Macauco, PENNANT.

Fur soft, general colour rufous brown above, rusty grey beneath; tail long, and somewhat tufted at the top. Size rather larger than that of preceding species. Habitat, Madagascar.—In Mus. Zool. Soc.

The manner in which these two species have been confounded is not a little remarkable, seeing that they are very distinct. It is evident, however, that this confusion has arisen from a want of the opportunity of comparing them with each other, an opportunity which we have fortunately enjoyed. Though GEOFFROY, as he tells us in his *Cours de l' Histoire Naturelle*, *suspected* that there were *at least* two species in the genus *Microcebus*, yet he only characterizes one as the *Microcèbe roux*, which he regards as synonymous with BUFFON's *Rat de Madagascar*. In his sketch of the *Lemuridæ*, in the *Annales*, tom. 19, we find the *Rat de Madagascar* of BUFFON, the Little Macauco of BROWN, and the *Lemur murinus* of PENNANT, synonymous with his *Galago Madagascariensis*, which he describes as having "*pelage roux.*" On referring to PENNANT, we find him describing the *Lemur murinus* and the Little Macauco of BROWN as distinct species. The *Lemur murinus* he characterizes as being of "*an elegant light grey.*" The description of the Little Macauco is vague, its colour being called "*cinereous.*" The former species he states to be about *twice the size of a Mouse*, the latter "*rather less than the Black Rat.*" The term "*cinereous*," used by PENNANT, in *contradistinction* to "*elegant light grey*," and the larger size attributed to the latter, render it at least probable that the species indicated in these descriptions were truly distinct. GMELIN describes the *Lemur murinus* as

"*cinereus caudâ ferrugineâ*," which indeed is the exact colour of the former species, but not of the "*Microcèbe roux.*" With respect to the "*Rat de Madagascar*," of BUFFON, we feel but little doubt as to which of the two species described above it ought to be referred. The figure given by BUFFON is precisely that of the Murine Lemur; and the white line between the eyes is very apparent; the drawing was made from a living specimen in the possession of the Comptesse de MARSAN, but no notice is taken of its colouring. The white stripe, however, between the eyes clearly proves that it is not the *Microcèbe roux*, and, consequently, that GEOFFROY was mistaken in his views. Hence must we distinguish between the *Galago Madagascariensis* of GEOFF. in *Ann.*, and BUFFON's *Rat de Madagascar*.

There are two other Lemurine animals, respecting which we feel in considerable perplexity. We allude to the *Lemur cinereus* of GEOFF., in *Magaz. Encycl.*, and of DESMEREST in *Mammal.*, and to the *Galago Demidoffii* of G. FISCHER, and of GEOFFR., in *Annales*, 19.

The *Galago Demidoffii*—respecting which CUVIER seems in doubt as regards its distinctness from the Little Macauco of BROWN—is described as rufous brown, with a dusky muzzle, with ears shorter than the head, and a tail longer than the body, with a pencil-tuft at the tip. Size less than that of the Black Rat. With the habitat we are unacquainted. In this description we recognize the *Microcebus pusillus*.

The *Lemur cinereus* is described as grey, with a slight tinge of fulvous, the under parts being white. Total length 10 inches. Habitat Madagascar. This is the *Petit Maki* of BUFFON (*Hist. Nat., Supp.* vii.), who describes it as greyish, "*jaspée de jaune pâle*"—a somewhat indefinite account of colouring.—In the sketch of the Lemurs (see *Annales du Mus.*, tom. 19, p. 162). GEOFFROY observes, that this animal of BUFFON appears to be the young of one of the true Lemurs, a point which we deem at least very doubtful. BUFFON describes it as having a broad forehead, a short and pointed muzzle, and round prominent eyes. Its total length, following the curve of the back, is 14 inches, of which the tail is five. Judging from BUFFON's figure and description (the ground of all subsequent notices), we feel inclined to refer the animal to the genus *Microcebus*; but are unwillingly compelled to leave it at present as a doubtful species.

The next genus to which we turn is *Loris* (*Stenops*, ILLIG.). The genus *Loris* was first instituted by GEOFFROY, who afterwards divided it into two genera, viz. *Loris* and *Nycticebus*, upon very untenable grounds. The genus *Nycticebus* is distinguished, according to this naturalist, by the presence of only two incisors in the upper jaw, while the genus *Loris*, of which the Slender Loris is the type, is characterized by the presence of four incisors in the upper jaw (Vide *Cours de l' Hist. Nat.*, p. 40), and by the greater length of the

limbs, and elevation of the nose. The latter characters, as generic, are of no value; the former is erroneous. We have examined the skulls of examples of both these genera, and a fine skull of the Slender Loris is now before us. Its dentition, agreeing with that of the Slow Loris, is as follows:—Incisors $\frac{4}{6}$; canines $\frac{1-1}{1-1}$; molars on each side $\frac{6}{5}$. The incisors in the upper jaw are very small, and in pairs; the incisors of the lower jaw are as in the true Lemurs. The canines do not differ from those in the genus *Microcebus*.

Of the molars above, on each side, the three first are false, the first being single, the two next bicuspid. The three true molars are 4-cuspid, the points being acute.

Of the molars below, on each side, the two first are false, the first being simple and conical, the second bicuspid, with a small posterior notch. Of the true molars, the two first are 4-cuspid, but the third or last has a posterior additional tubercle.

The skull is broad and round, the arch of the forehead more distinct than in the genus *Lemur*, and the profile of the muzzle more concave. The orbits are round and large, and their frontal margin is much elevated above the skull: the interorbital space is reduced to a thin elevated ridge. The temporal fossæ, which are not at all deep, have their outline on the parietal and temporal bones defined by a distinctly raised line. The auditory *bullæ* of the temporal bones are more compressed than in *Lemur* or *Microcebus*.

Cuvier, in his *Règne Animal* (last edit.), though well aware of the generic distinctions laid down by Geoffroy, and adverting to them in a foot-note, does not adopt them; neither did that eminent naturalist, the late Mr. Bennett, regard them as tenable. For ourselves we have no hesitation in the matter, having examined both the Slender and the Slow Lemur anatomically.

Genus *Loris*, Geoff., *Stenops*, Ill.—*Gen. Char.*—Head round; muzzle short and acutely pointed; eyes large, full, bright, and approximating to each other; ears round, short, open, and almost buried in the fur; tail completely rudimentary. Body slender; head and feet as in *Microcebus*. Habitat, India and its islands. The species of this genus have long been celebrated for the slowness and caution of their movements, to which may be added a remarkable tenacity of grasp, in conjunction with the endowment, in the limbs, of a long continuance of muscular contraction. In the arteries, both of the anterior and posterior extremities, is observed a peculiarity, first detected by Sir A. Carlisle, which is also met with in the Sloth, and in the *Cetacea*. The main artery of the limbs, instead of being a single tube, giving off branches in its course, consists of an intertwined vermiform plexus of vessels, anastomosing freely with each other, and carrying onwards a large volume of blood, to which this congeries of tubes

may be a sort of reservoir. The relation of the plexus of vessels to the bulk of the limb which that plexus supplies with blood, is greater in point of volume than is that of the simple artery in ordinary animals. For an account of the general anatomy of the Slender Loris, see *Zool. Proceed.* for 1833, p. 22.

The animals of the present genus are eminently nocturnal and arboreal; they sleep during the day, clinging to a branch, with the body drawn together, and the head doubled down upon the chest; at night they prowl among the forest boughs in search of food. Nothing escapes the scrutiny of their large glaring orbs; they mark their victim, insect or bird, and cautiously and silently make their advances towards it, until it is within the range of their grasp; they then seize it with an unexpected and rapid movement, and devour it on the spot, previously divesting it, if a bird, of its feathers.

Of all the *Lemuridæ* which we have seen alive, none appear to be so susceptible of cold, or so incommoded by daylight, nor are any so apparently dull and inanimate. They appear as if in a continued state of torpor; but if exposed to the influence of warmth, they rouse up not only on the approach of evening, but, if secluded from light, even during the hours of day. When fairly awake, and comfortable, they delight to clean and lick their full soft fur, and will allow themselves to be caressed by those accustomed to feed them. An interesting account of the habits of one of these animals in captivity is given by M. D'Obsonville, and, recently, by Mr. Baird, in Loudon's *Magazine of Natural History*, to which we refer our readers.

Two species are known, namely, 1st, the Slender Loris (*Loris gracilis*, Geoff. in *Ann.*) *Loris grêle*, Cuv. General colour rufous grey, with a white mark between the eyes; length of head and body about ten inches. Limbs long, and very slender. Habitat, Ceylon.

2nd, Slow-paced Loris (*Loris tardigradus*, Audeb.). Fur soft and full; colour brownish grey, a deep chesnut stripe passing down the middle of the back; this stripe, continued on to the head, gives off a branch which encloses each ear, and another which encircles each eye, and extends to the angles of the mouth; a white spot on the forehead interrupts this chesnut mark. Size of a small Cat, the length being about 12 or 13 inches. Habitat, Ceylon, Java, Bengal.

Geoffroy St. Hilaire (see *Annales*, xix.) regards the Bengal and the Javanese animals as distinct from the Ceylon species, and from each other. Our examination of specimens from the above localities does not lead us to the same conclusion. Geoffroy founds his main distinctions on the intensity of the dorsal stripe.

Linnæus originally confounded both the Slender and the Slow Loris under the name of *Lemur tardigradus*, and Schreber continued the term *tardigradus*

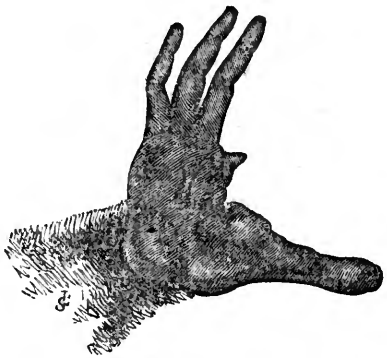
to the former. Both species are figured in Buffon, the first under the title *Loris* (*Hist. Nat.* xii.), the second under that of *Loris de Bengale* (*Hist. Nat.* Supp. vii.).

It will be seen that with the genus *Microcebus* we leave Madagascar, and, with a modification of the Lemurine form, enter upon other portions of the globe; namely, Africa and India, with the Indian Islands. The genus *Loris* is exclusively Indian; there has, however, been associated with it, or rather with *Nycticebus*, by Geoffroy, an animal from Sierra Leone, termed *Potto* by Bosman (*Lemur Potto*, Linn., *Galago Gruneensis*, Desm.), of which, until very recently, the characters were but imperfectly understood. The acquisition of a specimen in spirits, by the Zoological Society, enabled the late Mr. Bennett to characterize it afresh as the type of a distinct genus, to which he gave the name of *Perodicticus*; and from his paper in the *Proceed. of the Zool. Soc.* for 1831 (p. 109) we shall make a few extracts, premising that our own examination of the specimen in question leads us to coincide with the views of that naturalist.

"Perodicticus.—*Gen. Char.—Facies subfraducta. Artus subæquales. Cauda mediocris. Index brevissimus, phalange ungueali solùm exserto. Dentes primores supernè* 4, *subæquales; infernè* 6, *graciles, declives. Canini* $\frac{1-1}{1-1}$, *canici compressi, marginibus antico, posticoque acutis; molarium in maxillâ superiore, primus minimus; secundus major; ambo conici; tertius acutè tuberculatus, tuberculis duobus externis, alteroque interno; quartus præcedenti similis, tuberculo interno majore; sequentes (in specimine juniore desunt): in maxillâ inferiore duo conici æquales; tertius acutè, externè* 2—, *interne* 1=*tuberculatus. Sequentes (desunt).*"

Geoffroy's Perodicticus (*Perodicticus Geoffroyi*, Benn.).—General colour chesnut brown, slightly tinged with grey, becoming paler beneath; the fur soft and woolly, interspersed with a few cinereous hairs. Length of head and body eight inches and two-tenths; of the tail, including the hair, two inches and three-tenths, without the hair one inch and six-tenths. "The head is rounded, with a projecting muzzle; the nostrils are lateral, small, sinuous, with an intermediate groove extending to the upper lip; the tongue is rough, with minute papillæ, rather large, thin, rounded at the tip, and furnished with a tongue-like upper layer, which is shorter than the tongue itself, and terminates in about six rather long, lanceolate processes, forming a pectinated tip. The eyes are small, round, somewhat lateral, and oblique; the ears moderate, open, slightly hairy, both within and without. The body is rather slender. The limbs are nearly equal, long, and slender; the fingers moderately long. On the fore-hands the index is excessively short, the first phalanx being concealed, and the ungueal phalanx (the only phalanx free) being barely large enough to support a rounded nail."

The first finger of the hinder hands is furnished, as in the Lemurs generally, with a long, subulate, curved claw.

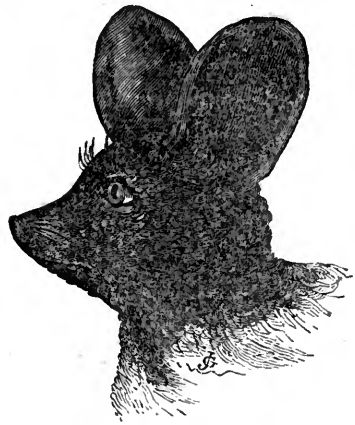


Forehand of *Perodicticus Geoffroyi*, Benn.

The essential characters of the present genus consist in the moderate elongation of the face; the moderate size of the ears; the equality of the limbs, and especially in the extreme shortness of the index of the anterior hands, to which may be added, the comparative length of the tail; this is shorter than in the restricted genus *Lemur*, or than in *Microcebus*, *Galago*, or *Tarsius*, but longer than in *Loris*, in which latter genus this organ is merely a rudiment. In the abbreviation of the index finger, the genus *Loris* approximates nearest to it; still, however, this abbreviation, though considerable in *Loris*, is far less so than in *Perodicticus*, where we find it carried to its maximum. The habits of the species are described as being slothful and retiring. "It seldom makes its appearance but in the night-time, when it feeds upon vegetables, and chiefly the *Cassada*. It is known to the colonists as the 'Bush-dog.'"

Weeded of the *Microcebus pusillus* and its allied species on the one hand, and of the *Potto (Perodicticus)* on the other, the genus *Galago*, to which we next turn our attention, will be found to include but a limited number of correctly known species; and of these the habitat of one, though suspected to be Africa, is not ascertained. One species (*Galago Senegalensis*, Geoffr.) is a native of Senegal, where it is known under the name of the "animal of the gum."

Agreeing with the true Lemurs in the general characters of dentition, there being four incisors in the upper jaw, placed in pairs, with an intermediate space, and six in the lower, narrow, compressed and projecting, the genus *Galago* presents a series of well-marked and important points upon which to base its genuineness.



Head of *Galago*, to shew the ears.

These consist, in the large size of the ears, which are membranous, naked, and, as in the Long-eared Bats, capable of being folded down over the external orifice; and in the extreme development of the hinder limbs, and especially of their tarsal portion, which remind us of those of the Gerboa; as well as in the magnitude of the eyes, which are full, directed forwards, and approximating closely together.

The head is round; the muzzle pointed; the tail long; the fingers, both of the fore and hind hands, long and slender, with the usual claw on the first finger of the posterior pair. The fur is full, soft, and woolly. Were we to regard the length of the tarsi in this genus, without reference to the feet, or rather hinder hands, which—from the length and freedom of the thumb and fingers, are admirably adapted as organs of prehension—we might be inclined to fancy that the Galagos were terrestial animals, proceeding by a leaping movement, as do the Gerboas and Gerbills, whereas they are eminently arboreal, and display the most surprising agility, sporting among the branches with the lightness and address of birds. They are, we need scarcely say, decidedly nocturnal, sleeping on their perch during the day, their ears being folded so as to exclude or rather deaden the noises of the forest; for their sense of hearing being exquisitely susceptible, sounds which would not interrupt the repose of most animals, would keep them in a state of perpetual watchfulness. On the approach of night they are all animation; with ears expanded, and glistening eyes, they begin their prowl for food. They watch the insects flitting among the leaves, they listen to the buzzing of the Moth as it darts through the air, they lie in wait for the incautious flutterer, and dart upon it with the velocity of an arrow, seldom missing their prize. In addition to insects they feed also on gum, and are

abundant in certain gum-forests in the great desert of Sahara, where they are captured for the sake of their flesh.

In the development of the organs of hearing, and in the acuteness of this sense, we trace an analogy between the Galagos and the Bats. A vast expanse of naked sensitive membrane, with reduplicatures, adding to the extent of surface surrounding the auditory aperture, is in many of the Bats a most conspicuous feature, and one which, in conjunction with their delicate wings, abundantly supplied with nerves, appears to give them an additional sense, a power of feeling, by the motion or quiescence of the molecules of the atmospheric air, the presence of contiguous objects, so that they are capable of directing their course, without striking against them, even when deprived of sight. In the Galagos the external auditory membranes are in a like state of development and nervous sensibility, a condition rendering them susceptible of the slightest vibrations of the air, and in all probability alive to sounds inaudible to animals in general. Hence, perhaps, one reason why they must be folded during repose.

According to Adanson, the Galagos build a nest in trees, of fibres and twigs, in which to bring forth their young. In captivity they are said to be timid and gentle, and to feed indifferently upon meat, preparations of milk, and eggs.

Two well-ascertained species are all with which we are acquainted. 1st, the Senegal Galago (*Galago Senegalensis*, Geoff.).—Colour ashy brown; the ears as long as the head, and naked; the tail longer than the body, and pencil-tufted at the extremity. Fur soft, full and woolly. Size of a Squirrel. Habitat, Senegal. In Mus. Zool. Soc.

2nd. The Great Galago (*Galago crassicaudatus*, Geoff.).—Fur rufous grey; ears somewhat shorter than the head; tail tufted. Size of a Rabbit. We have never seen a specimen. The genus *Galago* of Geoffroy is synonymous with *Otolicnus* of Illiger.

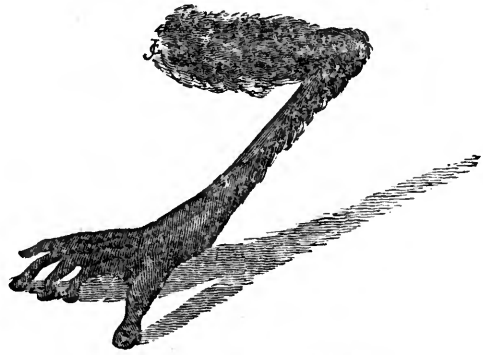
Genus *Tarsius*.—*Generic characters*.—Incisors above 4, of which the two middle are closely approximated, and longer than the lateral ones, appearing like canines. Incisors below 2, and canine-like, being conical and pointed. Canines above smaller than the two central incisors; those below of moderate size and pointed. Molars-$\frac{6-6}{6-6}$? according to Geoffroy. Arms long and slender; the fingers also much attenuated. Posterior extremities of great length; as are the fingers, of which the thumb is well developed, with a small triangular nail; the index and succeeding finger are both armed with small subulate claws. Head round; muzzle very short, and pointed; eyes very large, but not so close together as in *Loris*; ears large, naked, and capable of being folded. Tail long, covered with short hair, except at the tip, which is tufted. Fur full and soft.

In the structure of the Tarsiers we see the peculiarities, as regards the limbs, carried to a still higher point of development than in the Galagos, to which

genus they are closely allied; the head, however, is rounder, and the external ears less developed, which the character and number of the incisor teeth and the presence of a claw, not only on the index finger, but also on the second of the hinder hands, are circumstances distinguishing them from every Lemurine genus. The first description of the Tarsier is due to DAUBENTON, who gave it this title in allusion to the extraordinary length of the tarsi. GMELIN, however, unacquainted with its true relationship, and misled by its apparently anomalous structure, placed it in his genus *Didelphis* (the receptacle alike of Opossums and Kangaroos), under the name of *Didelphis macrotarsus*. PENNANT, misled by the length of its tarsi, termed it the Woolly Gerboa; and it was reserved for GEOFFROY ST. HILAIRE to rescue it from these misalliances, and restore it to its true situation.

In their manners the Tarsiers resemble the Galagos, being arboreal, nocturnal, and insectivorous. Till lately only one species was known; a second is, however, added on the authority of Dr. HORSFIELD, who has figured it under the name of *Tarsius Bancanus* in his *Zoological Researches*. It is described as being destitute of the two long middle incisors of the upper jaw.

Species 1. The Tarsier (*Tarsius spectrum*, GEOFF.; *Lemur tarsius*, SHAW).—Fur, of a greyish brown; ears half the length of the head; tail tufted at the tip; size of a squirrel.



Hind foot of *Tarsius spectrum*.

The *Tarsius fuscomanus* of FISCHER is regarded as identical with the *T. spectrum*. Habitat, Moluccas. In Mus. Zool. Soc.

Species 2. *Tarsius Bancanus*, HORSFIELD.—Colour, fulvous brown; ears rounded, and shorter than the head. Habitat, Banca. We have never seen a specimen.

GEOFFROY observes, that though the Tarsier has the external ears much less developed than have the Galagos, this inferiority is counterbalanced by the far greater volume of the auditory *bullæ* of the temporal bones, in the Tarsius

than in the Galagos; these bullæ are so developed as to touch each other; and thus the sense of hearing is, by another mode, rendered as acute in the former as in the latter.

We now arrive at the ultimate link in the chain of the *Lemuriaæ*, and are presented with a genus so peculiar in all respects, that CUVIER, in his *Règne Animal*, separates it from the Lemurs, and places it at the end of the *Vespertilionidæ*, to which family he evidently regards it as more immediately related than to the Lemurs. The genus in question is *Galeopithecus*, PALL., of which the Flying Lemur is the example. The "*Galéopithèques*," says this great and philosophic naturalist, "differ generally from the Bats, inasmuch as the fingers of the forehands, all furnished with trenchant claws, are not more elongated than those of the feet, so that the membrane which occupies their interspaces, and extends even along the sides of the tail, can scarcely fill any other office than that of a parachute." This want of the extreme development of the phalanges of the fore-hands, so remarkable in the Bats, whether insectivorous or fruit-eaters, would lead us to hesitate in placing this curious animal with the *Vespertilionidæ*, independently of some other points of structure in which characteristic differences are manifest. LINNÆUS—who in his discrimination of the great outline of groups has never been surpassed, may we not say equalled,—placed this animal with the Lemurs, under the title of *Lemur volans*, and, notwithstanding the extensive development of lateral and caudal membranes, there is that in the general aspect of the animal to incline us to his views. The possession of extensive membranes, serving not as wings, but as a parachute, ought not to startle us. We meet with them in the Squirrels,—they occur in the Phalangers of New Holland; and in deciding on the relationship of species thus distinguished, we must set these extraneous parts aside, and look at more important points of structure.

The head in its general aspect is that of a Lemur; the muzzle is long; the nostrils are naked, lateral and sinuous; the eyes are moderate; the ears short, and pointed. The anterior limbs are long; the hands are divided into five fingers; the first or thumb, separated from the rest, with which it cannot be said to antagonize, is short,—the remaining four are nearly equal, the index being rather shorter than the others. They are all armed, not with flat nails, but with large, deep, hooked, sharp-edged and retractile claws, and are connected by membranes, advancing even beyond the base of the claws. The hinder limbs slightly exceed the fore-limbs in length, and the feet are similar in character to the hands. If in the possession of large hooked claws on the fore-hands, we find a departure from the Lemurine type, we find, also, that in the abbreviation of the fingers, and the presence of large claws, not only on the thumb, but on all, there is an equal departure from the *cheiropterous* type of structure.

The thumb of the hind hands in all the Lemurs (the *Galeopithecus* excepted) is largely expanded at the tip, and furnished with a flat nail, while the index has a pointed claw. In the Tarsier, however, as we have seen, not only the index of the hinder hands, but the next finger also, is thus furnished; and here we trace a slight tendency to the exchange of nails altogether for claws, we see that a step has been gained in the passage. We do not, indeed, by any means intend to compare the hands of the Galeopithecus to those of the Tarsier, for in the hinder hands of the former we cannot but recognize a decided resemblance to the clinging feet of the Bat; in this point, rather than in the possession of a parachute, do we trace the marked affinity between *Galeopithecus* and *Vespertilio*. The thin and slender tail of *Galeopithecus*, enclosed in a wide membrane to its very tip (a membrane stretched between the posterior extremities), presents us with another point of affinity. We find, then, that the head of *Galeopithecus* inclines to the Lemurine; the forehands neither those of a Bat or Lemur; the hind-hands and tail those of a Bat; the membranous expansion (which extends from the sides of the neck along the anterior extremities to the finger-ends, encloses the fingers, stretches between the anterior and posterior limbs, and between the two posterior limbs, enclosing the tail) differing from the wing of a Bat, inasmuch as it is not constructed for flight, not developed anteriorly on slender fingers elongated to sustain it, yet is it more developed, posteriorly, than the parachute of the Flying Squirrels and Phalangers, in which the tail is free.

So far, then, it would appear that the Galeopithecus takes an intermediate station between the *Lemuridæ* and *Vespertilionidæ*, and it remains to be seen to which of these two families it rather belongs. Let us examine the skull.

In its general aspect it resembles that of a Lemur, but differs in many details; it is proportionably broader, shorter, and flatter; the orbits are decidedly lateral, with an elevated upper margin, the outer-ring being incomplete posteriorly; in the Lemur the ring of the orbits is complete, the intermaxillary bones scarcely reach each other at their apex, and the incisor teeth, in pairs, are placed laterally, with a wide intervening space. The zygomatic arch is very short and stout, the extent of the temporal muscle is indicated by a decided ridge; and the transverse ridge of the occiput is remarkably prominent. The interorbital space, across the upper part of the nasal bones, is far greater than in the skull of a Lemur of superior size; the auditory bullæ are very small; the outline of the palate represents about three parts of an oval, owing to the posterior molars on each side being somewhat nearer to each other, than are those in the middle. The lower jaw consists of two *rami*, the expanded base at the angle of each turning outwards. The coronoid processes are small conical elevations.

Dentition.—Incisors above four, in pairs, placed laterally, with a wide intervening space; the first is small, compressed and pectinated; the second is simi-

lar, but somewhat larger. The canines above, if canines they may be called, are compressed, with a sharp conical tubercle, and an anterior and posterior set of pectinations. The molars on each side are five, crowned with sharp, insectivorous tubercles; the first has two and a small inner notch; the rest have three, of which one is on the inside, and two are on the margin of the crown. The crowns incline inwardly. The incisors below are six, the four central close together, and deeply and finely pectinated; the two posterior incisors, removed at a small distance from the rest, more coarsely pectinated; the four central incisors project horizontally, and meet the gum, covering the intervening part of the intermaxillary bones, between the upper incisors, with the flat inner surface.

The canines resemble those of the upper jaw. The molars on each side are five; the first is elongated, with a central conical projection, an anterior pectinated ridge, and three small but acute posterior eminences; the other molars have four and even five acute tubercles; they incline outwardly.

Such is the dentition of this extraordinary animal, to which Bontius applied the name of *Vespertilio admirabilis;* an animal which, in the consideration of its characters, has perplexed every naturalist. Petiver termed it *Chatsingi* (Cat-ape), Seba *Felis volans ternatanus*, Linnæus *Lemur volans*. Pallas regarded it, and with justice, as a form in a certain sense isolated, or rather as blending in itself a mixture of the characters of others, and established for it, the name of *Galeopithecus*, a term having the same signification with that used by Petiver.

"Must the *Galéopithèque*," says Geoffroy St. Hilaire, "be regarded as a Bat, according to the views of Bontius? In truth, the name of 'wonderful' *(admirabilis)* would then be justly its due as its distinguishing title, since it wants the main character of that family,"—viz. the long slender fingers, serving as supports to a membranous wing. Yet, on the other hand, he observes, it is still less a Lemur. It is not, we own, a Lemur, yet does it appear to us that its affinities, intermediate as they render it, tend on the whole to place it on the border line of the Lemur family. We do not agree with Geoffroy that "its head is altogether that of a true carnassier." The Lemurine type of structure, though modified, is not lost in it, nor is there any other type to which, with all its variations from the normal form, it can be referred. With a tendency in its organization to the Bats, the *Galeopithecus* seems attracted as it were to the organization of the Lemurs, and affords a subject for the philosophic naturalist to study, when, taking a wide survey of the relationships of organic forms, he balances their affinities, and attempts to discover the true natural classification of animals.

Where Geoffroy St. Hilaire has left a subject in abeyance, and where great naturalists have differed, we ought to speak with diffidence. It may ultimately

be proved that the Galeopithecus is the type of a family *sui generis;* our present arrangement must be regarded as provisional. It is, then, on the side of the *Lemuridæ* that we venture to rank the Galeopithecus; but we see in it, as in many other forms in the animal kingdom, one of those links, which, embodying in itself the characters of other groups, or rather a portion of the characters of two, intervenes to constitute a bond between them. Aberrant forms as they are in one sense, they are essential to the unity of Nature, in whose works there are in truth no abrupt intervals, no unfilled chasms, a completeness of design being carried through the whole. We admit that vacancies do indeed occasionally interrupt us, but they are vacancies which the discoveries of the fossil-zoologist are perpetually enabling us to supply, and which will all ultimately receive their legitimate occupants.

The genus *Galeopithecus* contains but one species, subject to considerable variations of colour; in maturity it is of a grizzled brown above, and pale rufous brown beneath. Length of the head and body, 1 foot 6 inches; of the tail 10½ inches; spread of the arms, 3 feet. Fur soft and full above, scanty beneath, and especially on the under side of the membranes.

Species *Galeopithecus variegatus*, Geoffr. (*Lemur volans*, Linn.)

The Galeopithecus is a native of the Moluccas and the Islands of the Indian Archipelago; it is arboreal and nocturnal, but of its habits we have little detailed information. It is probably omnivorous. Like the Bats, it is said to sleep during the day suspended by its hind claws, with the head downwards. In passing from tree to tree it takes long sweeping leaps, which it executes with admirable ease and address. It is said to produce two young at a birth, which adhere to the teats of their parent, but Camelli, in a MS. on the subject in the British Museum, asserts it to have a double abdominal pouch, in which the young are carried, which is certainly an error. One of its native names is *Colugo;* and under the title of "Flying Colugo" it is described in Shaw's *Zoology*, Vol. I., p. 116, 1800. It is the "Flying Macauco" of Pennant. In Mus. Zool. Soc.

Corrigendum.—Lemur Anguarensis.—We have had a recent opportunity of examining this species, which is undoubtedly distinct. Body, above glossy greyish rufous; paler beneath. Head and throat grizzled, dusky black, darker on the forehead. Tail inclining to dull black at the extremity.

A BOTANICAL TOUR IN HEREFORDSHIRE, MONMOUTHSHIRE, AND SOUTH WALES;

WITH INCIDENTAL NOTICES OF THE SCENERY, ANTIQUITIES, &c.

By Edwin Lees, F. L. S., &c.

(Continued from p. 122.)

I left Swansea early in the morning, to visit Cromlyn Bog, a locality celebrated in insect-hunting history, and situated three miles to the eastward of the town. As I crossed the ferry over the Tawe, formidable masses of vapour appeared brooding over the nearest mountains, shrouding the distant view, and offering a demonstration of no very inviting nature. I moved forward rather hesitatingly, pondering upon the probabilities of becoming a walking bog-plant, and the differences that might be perceptible in my *habit* from such an occurrence, when contrasted with a drier and more congenial seat beside a comfortable breakfast-table at the Mackworth Arms. But my attention soon became engrossed with the "stars of earth," and as I rambled on by the sea-shore, and thence along the road towards Cromlyn, I took no note of the descending vapours till they at once overwhelmed me in their watery embrace, and forced me to remain for some time an unwilling prisoner beneath the arch of a bridge, bestriding the canal that skirts the edge of the morass. But at length the cloudy welkin ceased to pour its watery stores upon the plain—the vapours, slowly retiring to the hills, veiled them for a moment in pearly gossamer—and then sailing into mid heaven, a flood of light burst upon the sparkling inland prospect, the broad expanse of yellow sand, and the retiring waters of the scarcely heard terminating ocean.

The extensive sandy flats that stretch along the margin of the sea in South Wales are termed "Burrows," I presume entirely from the circumstance of their affording a retreat to multitudes of Rabbits; they are generally overgrown with a rough and unornamental vegetation, though producing a pretty fair pasturage in spots where a land rill trickles along, or marshy pools of fresh water moisten the thirsty soil. The sun of course often pours excessive radiance upon these sands, rendering them a favourite locality for the insect race, and at this time I observed several specimens of the *Cicindela sylvatica*, running with extreme swiftness over the sand. Here, on the Cromlyn Burrows, and on the ground intermediate between them and Swansea, I observed the following plants. I place the asterisk, as usual, to indicate where it occurs that the plant has been previously *unrecorded*, so far as I know, as a denizen of the spot, and at all

events is unnoticed in the county in WATSON's very useful *New Botanist's Guide in England and Wales.*

Salvia verbenaca. In profusion by the canal side.

Arabis hirsuta. In considerable abundance among the turf just beyond the ferry.

**Hesperis matronalis.* In a stony cove between the ferry and the bridge, over the canal leading into the Burrows. Perhaps an out-cast, as I met with but a single specimen.

Sisymbrium Sophia. Dispersed about the same stony cove.

Sinapis muralis. In sandy ground between the cove and the ferry.

Erodium cicutarium. With white flowers. Very abundant on the sandy ground near the canal.

**Geranium pyrenaicum.* Sparingly beneath a bushy bank bounding the cave.

**Vicia lathyroides.* With the above.

Œnothera biennis. On the shore beyond the pier.

**Salix argentea*, SMITH. Plentiful on the Burrows, its silvery leaves giving a beautiful relief to the eye, where it flourishes contrasted with the sandy soil. HOOKER and BORRER have now agreed to class it as a variety of *S. fusca.*

Juncus acutus. I found this plant in profusion on the Burrows, forming large hussocks dispersed about at intervals, and rather formidable from their singularly sharp bracteas, which might give painful wounds.

Leaving the Burrows I now proceeded along the canal side that receives its supply of water from and bounds the great morass of Cromlyn towards the sea. For though the term bog is generally given to this marshy waste, it is not of that light spongy description which occurs at the base of some of our English hills, or on our commons, and on "light fantastic toe" may be skipped across. It is a morass in the true meaning of the term, and extends about four miles, in a direction parallel with the old road between Neath and Swansea. That it was formerly a lake, as the name implies, I think there can be but little doubt, its winding dimensions being well marked between a corresponding range of low hills of the carboniferous sandstone. It must have then presented an aspect of great beauty, winding inland for several miles, and perhaps connected by a narrow outlet with the sea. Its present appearance is not favourable for investigation. "None indeed," observes DONAVAN,* "but botanists would traverse it, and of their number only those who are not to be accused of indifference to the pursuits of this pleasing science. I wandered myself for hours over this bog, wading at times through swamps knee deep, and at the hazard of suffocation in

* DONAVAN's *South Wales*, 2 Vols., 8vo., 1805.

the event of slipping down in search of a few of its tantalizing plants." The eastern end of the morass appears to have been partially drained since DONOVAN's time, but the great mass of it still precisely answers to his account. It must be confessed, however, that at this time partial openings in the sedgy forest, and several spreads of water within the dank and lurid herbage, presented scenes of transcendent beauty, from the profusion of white Nymphules (*Nymphæa alba*) that, in full flower filling the air with fragrance, almost hid the water from view, with their snowy multitude of flowers. One circular pond in particular had a fairy-like aspect, hemmed round in solitary loveliness—to be visited only by the Gallinule or Wild Duck, or perhaps rippled by the young of the Grebe—

> "Where in the midst upon her throne of green,
> Sits the large Lily as the water's queen."—CRABBE.

The splendid *Ranunculus lingua*, in almost equal profusion with the Nymphule, fringed the morass with its bright golden flowers; while, wherever a rising bank diversified the monotony of the morassy waste, a dense squadron of *Eriophori* waved their ermine tassels in the vagrant breeze. Most botanists, perhaps, have their favourite flower rendered dearer in their estimation from the charm of association.—LINNÆUS hung with rapture over the European Winter-green (*Trientalis Europæa*), while Sir J. E. SMITH, in *English Botany*, fixes upon the Water Avens (*Geum rivale*), gracefully drooping its crimson petals, as having a peculiar charm for him; but surely he that has once seen the white water-lily (Nymphule) in its native haunts, assuming the appearance of a silver chalice floating on the water, and resting on its broad emerald leaves, that occasionally rise up fluttering in the gale, can never again recur to the indelible image they have left upon his mind without renewed delight. It must be admitted, even in these unpoetical utilitarian days, that the flowers memory has entwined around our early recollections are among the few unalloyed objects that, with talismanic power, are yet enabled to touch and pierce, if but for a moment, the iron panoply with which care and contention have invested the human breast. And here I shall hardly be out of place (or forgiven, if I am) in alluding to that beautiful passage in WORDSWORTH's *Ecclesiastical Sonnets*, where he thus mentions the "vernal posy" his mother had placed at his breast, on his first going to be catechised with his young compeers before their rural pastor.—

> "How flutter'd then thy anxious heart for me,
> Beloved Mother! Thou whose happy hand
> Had bound the flowers I wore, with faithful tie:
> *Sweet flowers!* at whose inaudible command
> Her countenance, phantom-like, doth re-appear:
> O lost too early for the frequent tear,
> And ill requited by this heart-felt sigh."

Whoever botanizes with me must with me digress; for, as the Sea-mew, winging with shrill cry round and round in the air, still stoops to the element from which she sprung, and anon rests upon the restless wave, so must I, in the spectacle Nature presents to the unscientific eye, at intervals revel, if it be but to show that the botanist is not merely the picker up of the "unconsidered trifles" in general supposed,* but that in fact the philosopher may not be ashamed to derive some of his happiest illustrations from botanical subjects. But I must again to work, and present the following plants as falling under my notice principally at the eastern part of the Cromlyn morass, and in its boundary ditches, for I found it impracticable to pierce the centre without absolute danger, and in case of accident no assistance appeared near at hand.

**Hypericum elodes.* In a trench between the morass and the canal, where the bog can be crossed.

**Rubus suberectus.* On the side of the same trench in hussocky spots.

**Comarum palustre.* Very abundant and luxuriant in various parts of the bog, its dark purple flowers giving it a strange aspect.

Menyanthes trifoliata. A general concomitant of the Welsh bogs, from an altitude of upwards of 2,000 feet down to the sea-level, where I here observed it. Of course it is less luxuriant in the Alpine stations, where it does not seem to flower very freely. Its fringed blossoms have often been the theme of admiration, and deservedly so.

Lysimachia vulgaris. By no means *common*, as its names implies, and a great ornament to the side of any stream of water where its brilliant yellow panicled clusters glitter in the sun. This plant varies considerably in its aspect, and hence I conceive the report of *L. punctata* having been found in Britain has arisen. I gathered a specimen in a damp place by the side of a wood at Neath with the leaves whorled in fours, their under side and the stem and peduncles very downy. The leaves and their margins were minutely spotted with what appear to be small hard red glands, when held to the light and examined with a lens. I would not venture to affirm this to be *L. punctata*, but perhaps a similar plant has been taken for it.

Samolus valerandi. Abundant in marshy spots between the canal and the sea. One of the few cosmopolitan plants, having been found in Africa and Australia, whence no one would take the trouble to transport it.

* It is the common fault of botanists, and indeed of scientific naturalists in general, to be too exclusively absorbed in what they are pleased to consider the most important of earthly pursuits. It is not a little amusing to observe the total absence of poetry in many recent popular as well as scientific treatises on the subject—as if Natural History and Poetry had been doomed, by some immutable law, to remain for ever separate!—Ed.

**Alisma ranunculoides.* Growing in the water in various reedy pools about the burrows.

**Typha angustifolia.* In pools about the morass.

Eriophorum vaginatum, *E. polystachion*, and *E. angustifolium.*—Plentifully scattered in various parts of the bog.

Cladium mariscus. This fine member of the *Cyperaceæ* grew very luxuriantly in the boggy ditches by the side of the towing-path of the canal, on the side towards the sea.

Carex pseudo-cyperus. In a ditch at the eastern end of the bog.

**Briza minor.* This "very rare" grass, which I spoke of dubiously in my last, as having found upon the rocks above Oystermouth, proves correct, as I have since ascertained from three or four specimens I had mislaid in an old Memorandum Book where I had sketched an apartment in Oystermouth Castle. It is an interesting addition to the South Wales Flora.

Having at length found a practicable point at which to cross the morass, where deep indentations had forced it to yield an unwilling pasturage, I determined to return to Swansea by the opposite side, which, however, produced me nothing but a splendid panoramic view from a precipitous hill bounding the former northern border of the lake. To the left, for a long distance, the morass curved into a delightful vale dotted with the traces of cultivation, and bounded by distant mountainous undulations, revealed distinctly without an interposing cloud. To the north appeared the valley of the Tawe, with the hovering vapours of the copper-works; while just cresting an intervening wooded hill on my right, the buildings, pier, and harbour of Swansea, with the indented coast to Oystermouth and the Mumbles Lighthouse, glittered in the still radiance of a fervid noon. Before me in magnificent repose, far beyond a wide extent of yellow sands, sparkled the emerald ocean, diversified by a momentary breaker, shadowed by a passing cloud, or lit up with a long quivering line of light. No vessel stole along with lagging sails, and no sea-bird moved in lucid glare. I sat down on a craggy block of stone on the very verge of the precipice, where a friendly dwarf Oak spread forth its sinuated arms, and, resting upon it, gazed long and ardently upon the glorious scene.

A CHAPTER ON THE VARIETIES OF ANIMALS.

By the Rev. F. Orpen Morris, B. A.

"*Varium et mutabile semper.*"—Virgil, *Æneid.*

There seem to be few quadrupeds, birds, or other creatures, which are not subject occasionally to variation of colour, plumage, hair, or other external covering.

Probably there are none which are not liable to such accidents of birth or growth. While, however, in some species, the variation is only occasional or rare, in others it is exceedingly frequent and common, and in others, again, the natural appearance seems almost to form the exception to the rule of variety which affects almost every individual of the kind, no two, sometimes, appearing to be exactly similar. This is evidently the case with many species of Moths and Butterflies, and has often given rise to the sub-division of one and the same species, to the confusion of science, and the trouble of more accurate and discriminating entomologists.

It has been said, indeed, that no two individuals of any kind of creature have ever been exactly alike in every respect, and this probably may be the case; but my object now is not to examine into the laws which constitute a variety, but to mention some remarkable instances which have come under my observation, or to my knowledge, chiefly with the view of ascertaining the species which are subject to variety, and to instance any that are not. One of the most remarkable of these, I shall mention first. It is a milk-white Jay, in the possession of Mr. Hugh Reid of Doncaster, one or two small feathers in the wing having a slight tint of the blue which is peculiar to that part. It is not full grown, but is in fine feather and plumage, and was procured, I believe, somewhere in this neighbourhood. Another very curious bird, in the possession of the same individual, is a Cucoo,* of a general dark cream colour, with distinct markings of a darker shade upon the back. The Sparrow is met with under very different variations of plumage. Some I have seen nearly black, but these may have been somewhat begrimed with soot or smoke, though I believe there is a distinct black variety. I have one with several pure white blotches on the back, and over the tail, and with the quills of the wings and the tail mostly white; this I shot myself in Cheshire, after a fortnight's pursuit. Another in my collection was shot by a friend of mine at Paington, in Devonshire, and has the head and neck white, slightly approaching to cream colour, with much white over the rest of its body, and possessing very few brown feathers. I have also known one of a dark cream colour, and Mr. Reid informs me he has had another entirely white. I have seen a white Swallow on the wing, and another is in the possession of Lord Hawke [of Womersley Hall, in this county.—Ed.]. I have seen a cream-coloured Lark, rather darker on the back than in the rest of the plumage. Mr. Reid says that he has known one entirely white. He has in his possession a Jackdaw with the long quill feathers of the wing white, and one or two white feathers on the neck. Also a Partridge with a dull white breast, belly, and vent; the outside quill feathers of the wing the same, and the shoulders with a ring of the same colour

* Lest this should be supposed to be an error of the press, we take this opportunity of observing that the above method of spelling the word is that usually adopted by Mr. Morris.—Ed.

surrounding the lower part of the back of the neck. Likewise, another Partridge, a very curious bird, with the whole of the neck and chin of a pale buff colour, and the rest of the plumage of rather a lighter shade than usual. A third has many clear white feathers on the shoulders, neck, breast, head, and on part of the wings; the rest of the plumage of the ordinary colour.

Blackbirds seem very subject to variation of plumage, and particularly, I think, on the head or neck. In Mr. Reid's museum is one with the head white, and also the neck faintly divided by a black band, the black interspersed with white feathers, and one or two more on the shoulder; also another with the nape of the neck white, and shading off with the same colour towards the head. I have heard of a specimen entirely white. Mr. Reid informs me of a white Bunting*, with only one or two drab-coloured feathers on the wing. Also of white and cream-coloured Rats, which latter I have seen. White Mice are far from uncommon. Canaries [after long confinement, and especially if bred in that state.—Ed.] vary much in plumage. I have seen one with brown plumage on the nape of the neck, cheeks, and part of the back, and a bar of the same colour across the breast. White Bullfinches† have been seen, and also black ones. The latter, I believe, in consequence of their having been fed [too profusely] on Hemp seed.

In *The Naturalist* for December, 1836 (Vol. I. p. 224), mention is made by Mr. Neville Wood of a white Jackdaw, and by Mr. Blyth "of a female Whin Linnet one third white"; also, by Mr. Wood, of "a Rook, shot by the keeper to John Silvester, Esq., of the Grove, near Ashbourn, the head, feet, and bill of which are nearly white, and the primary feathers of the wing are perfectly white." I have read somewhere of a white Wren. [We have seen a Wren with the crown of the head white.—Ed.] In addition to the pied Sparrow in my possession, noticed above, I have just seen another very similar (they are both females, and I think in this species, the varieties more frequently occur in the female sex than in the male.). It has eight white feathers in each wing, but no other white markings, having the rest of the plumage of the ordinary colour; the two white feathers nearest to the pinion (in one wing only one feather from it; in the other eight) are separated by one of the usual colour, and in the right wing a second brown feather intermediate between two other of the white ones,

* We once noticed a Yellow Bunting in Bagot's Park, Staffordshire, with a white head. This species is, in our opinion, not so much subject to variety in plumage as represented by some writers; and we are inclined to attribute the difference observable in the intensity and extent of the yellow to age, sex, or season, in ninety-nine cases out of a hundred.—Ed.

† The only individual of this species, of which we have heard, with the bill, claws, and the whole plumage perfectly white, is now in our possession. It was shot near Foston Hall, Derbyshire, after a chace of about half-an-hour.—Ed.

Pheasants vary very often, and very much in plumage. They are sometimes seen entirely white; but when that is the case, they are generally, I think, rather inferior in size. Another variety (female) has the neck and head white, the centre feathers of the tail also white; the back is chiefly white, and likewise the quill feathers of the wing; the rest of the plumage is mottled throughout with white. Another variety (a female) appears to be assuming the plumage of the male, but is altogether more dull. The head is white with a few brown feathers, the breast is almost all rust-coloured, with a few and not very dark-purple edgings to the feathers; the back feathers have white edgings, and rather light brown. A male variety has the head nearly white, the neck purple, green, and white, the tail white; the rest of the plumage mottled, chiefly on the back; part of the breast of the ordinary colour. These three last are in the collection of Mr. W. H. Rudston Read, of Frickley Hall [near Doncaster.—Ed.]. Mr. Hugh Reid has a Partridge with the breast, belly, vent, and shoulders white, a white indistinctly marked line going from the latter round the neck.

Since writing the above, I have seen an entirely black Sparrow, and an entirely white one, though of rather a muddy colour, also a Sand Martin with the breast quite white, a whitish band round the nape of the neck, and the whole of the plumage of the back of the usual colour.

I have seen a Rook, on the wing, of a light chocolate brown colour. Another pied Blackbird which I have just seen, has the rump white, with a few black feathers, and one white tail-covert, and a few white feathers on the fore-head, shoulders, nape, and pinions.

(To be continued.)

[The most remarkable varieties of birds that have fallen under our notice were a Chaff Finch and a Corn Bunting. Both of these were pied in a very curious manner. The former would, probably, never have altered; but the latter appeared to be rapidly turning white. We have seen a Bank Swallow of a uniform silvery colour, and have heard of a white Robin Redbreast. A white Golden-crowned Kinglet, and many other interesting varieties of birds, may be seen in the British Museum.—Ed.]

CORRESPONDENCE.

The Difference between Amber and Copal.

To the Editor of the Naturalist.

Dear Sir,—The greater number of mineralogists with whom I am acquainted have been able to state what are the physical and chemical characters of Amber

and Copal, but not what is the positive distinguishing difference between them; I think, however, an experiment of my own, to be subsequently detailed, will accomplish this.

For example, Amber and Copal are vegetable gums, having the same specific gravity, and are similar in colour; they both burn with a bright flame, giving off a resinous odour. Both are electric, and, lastly, both of them are insoluble in water (at any temperature), but soluble in alcohol. Sometimes, however, the fracture of Amber is of a well-defined conchoidal form, whilst Copal is rarely even imperfectly conchoidal. Yet to the majority of students there is a doubt as to the identity of these interesting substances, whilst they have not hitherto had data sufficient to demonstrate their actual difference. At least such is my impression; and I say so because the works of mineralogists leave the subject in the state before mentioned, enumerating the characters common to both, but not pointing out the positive difference between them.

I had, however, a few years since, the satisfaction to obtain a *test* whereby to distinguish them, and which renders it necessary that they have some difference in their chemical properties. I may mention that I was trying an experiment with a piece of opaque amber, for the purpose of rendering it transparent. The following was the process:—A piece of opaque Amber, round which some packthread was tied, was suspended in linseed oil in a small saucepan, and the oil was gradually heated (the Amber remaining in it all the while); when it was removed, the only alteration which had taken place was simply that the Amber was cracked on its surface, in small and superficial fissures, the substance being otherwise unchanged. I then took a bit of Copal, and submitted it to the same process, and on examining it shortly afterwards, the Copal was softened, and subsequently dissolved.

Legend of the Bloody Stones.

Within the immediate vicinity of Conisborough Castle there is a small rivulet, in which are to be seen many stones having dark red patches on the surface. I am told that there is a tradition current among the lower classes of the village and its vicinity, that at some remote period of our history there was a sanguinary battle fought at this spot, and that such a quantity of human blood was spilled on the occasion, that all the stones become deeply saturated with it; and, although the water has continued to ripple over them for more than two centuries on its way to the Don, yet it has not been able to wash away the human gore—hence the designation "bloody stones." I have now some of these bloody stones lying before me,* and will describe them. They are pieces of carbonate

* The stones were given to me by Mr. Joseph Foster of this town, to whom I am indebted for the substance of the above legend.

of lime, about three or four inches long, and two broad, having irregular surfaces, the greater part of which are of a yellowish colour (ferruginous carbonate of lime), with patches of red oxide of iron, and a little green vegetable efflorescence.

My object in sending this brief notice to you arises from my knowledge of your devotion to science, and to everything that may advance the human mind in moral or intellectual excellence; hence I trust you will allow this a place in your interesting miscellany. I ask this, being convinced that the absurdities of various local traditions might be traced to some similar source of ignorance (like that of the bloody stones), and become ineffective and harmless, when examined by the recognised principles of true philosophy, and the refulgent lights of science.

I have the honour to be, Dear Sir,
Your obedient Servant,
J. L. Levison.

Hall-Gate, Doncaster, May 13, 1837.

On the Backwardness of the Season; and on the management of this Magazine.

To the Editor of the Naturalist.

My dear Sir,—Whatever our friend ———— may say—his wishes doubtless qualifying his language—I am bound to assert, that the migratory birds have *not* generally made their appearance in this part of the country within nearly three weeks of their usual time. Why if they had, we should have witnessed the phenomenon of the Nightingale "pouring his music in the night's dull ear" with a thermometer below the freezing point, and amidst clouds of falling snow. Witness the following extract from my log-book:—*April* 11.—"This afternoon, about two, p. m., the atmosphere having been obscure the whole morning, a furious snow-storm came on, and continued almost without intermission till late in the evening. About eight, p. m., the snow had become a sort of rime, which clung to and encrusted everything, so that the whole face of Nature was again enveloped in its wintry robe; the trees in particular being covered as with hoar-frost. So closely did this rimy snow cling, coming from the north-east, that in walking up to my house from Worcester, though with an umbrella, and defending myself in the best possible manner, my breast became as regularly encased with snow as if it had been thickly laid on artificially." "April 12.—A complete and wintry picture presented itself to view, every object glistening in its decorated and sparkling ermine robe; even the tower and pinnacles of Worcester cathedral, and old St. Andrew's spire, were encased at their very apices, and for some distance downwards, presenting a curious and singular spectacle." "*April* 13.—

Miserably cold, gloomy, and ungenial. A little after noon I placed a thermometer outside the window, towards the south-west, and it only indicated 38 degrees."

Now I know a copse by the side of the river Severn, where, in former years, I could constantly hear numbers of Nightingales invariably on the 8th or 9th of April; but this year the first I heard was on the 5th of May, though with an ear not altogether careless to Nature's dulcet sounds. I saw the Spring Oatear *(Budytes verna)* for the first time this year on the 25th of April, and on the same day a troop of Swallows. The Cuckoo was not heard here till the 28th of the same month, and the country even now does not resound as wont to do with that "curious voice" so pleasing to the recollection. I did not even hear the Wryneck before the same day. Yet the Swift, unwilling to shorten his usual three months sojourn, and having African engagements on the 2nd of August, was punctual to the 1st of May this year, as I have often noticed him before. But what can be said of vegetation? The Blackthorn was not in flower till the 1st of May, and if a premium of £100 were now offered for a branch of *Flowering May*, or Hawthorn, I know not where to procure one. Indeed the hedges are only now *beginning* to appear green; but as for Elm or Oak, they positively look as denuded as they did in February.* The Cherry only put forth its blossoms on the 7th of May, and as yet there is no appearance of opening flowers on the orchard Pear-trees—indeed I greatly fear the bloom is totally destroyed. Last Friday, in the course of a ramble, perceiving a large Pear partially arrayed in leaf, I was induced to examine a tree that thus seemed to have stood the stormy blast better than its neighbours; but alas! on close inspection, the blossoms only partly, and in most instances not at all expanded, were withered, completely nipped, and even, so to speak, scorched up by the frosts, and the leaves had thus precociously risen around the destroyed blossoms to hide, with their sympathetic shade, the frightful picture of desolation that would otherwise have presented itself to view.

To change the subject—I really hail *The Naturalist* now in his sober quaker-like dress—he seems like a man who has doffed his pumps and silk-stockings, and need no longer be afraid of wetting his feet or pricking his fingers. Depend upon it he will be all the better received for it everywhere, appearing like a straightforward, active, honest, worthy, enquiring fellow, who will, I hope, gain golden opinions from all. To drop allegory, *The Naturalist* looks like a scientific work, and there are real marks of research, intellect, and originality in its papers. The fresh air agrees with it. Do not, however, think for a moment I allude to any-

* Even now (June 13) the Oaks are not in full leaf in Yorkshire and in the south, we understand they are yet more backward.—Ed.

thing of my own—that is another affair; if I am enabled to please*, as you are kind enough to think I do, I am satisfied. You do wisely in reporting the Transactions of the London societies; it will be advantageous in many ways. The "Chapter of Miscellanies" is another department that I trust, and am indeed sure, you will find it your interest to keep up.

Yours, very sincerely,

EDWIN LEES.

CHAPTER OF CRITICISM.

SOME OBSERVATIONS ON ANANCHITES AND SPATANGUS.

To the Editor of the Naturalist.

London, May 17, 1837.

SIR,—In the last number of *The Naturalist* (p. 101), I observe a slight error occurring in an extract from KARSTEN'S *Archiv. für Mineralogie*, relating to the singular appearance sometimes presented by the casts of Echinites, owing to the existence of crystals of calcareous spar upon the interior of the original shell. The translator has made use of the word *blade* instead of *plate*, by which latter term the polygonal portions composing the external skeleton of the Echinus are designated. The phenomenon referred to in the work above quoted, and which the writer has explained by the examination of two fossils in the Royal Mineralogical Museum of Berlin, is an extremely puzzling one to those who may meet with a "Honey-comb Echinus," and are ignorant of the mould upon which the cells are formed. I am not aware that any solution of the problem has been published elsewhere, although the phenomenon itself, and the manner in which it has been produced, must be familiar to those who have made this interesting class of fossil bodies an object of investigation.

Fossil Echinites having crystals of carbonate of lime deposited upon their internal surface, although by no means of common occurrence, are found in all chalk districts which furnish the remains of *Radiata* in abundance. I have never seen these crystals lining the entire surface; about half or a third only being thus occupied, and usually confined to the spherical portion of the shell. It is a curious fact also, that (so far as my own observation has gone) this peculiarity is only exhibited by the genera *Spatangus* and *Ananchytes*.

* The papers of our valued correspondent are always sure not only to be interesting to all classes of readers, but also to contain much original information to attract the attention of the scientific naturalist.—ED.

Each crystal invariably occupies a separate plate, its base never extending over a suture. They are consequently disposed in rows, the size of each crystal diminishing from the base towards the apex of the Echinus. Now, wherever the chalk formation contains flint nodules in any considerable quantity, a certain proportion of the Echini have their cavities filled with silex, and if by natural or artificial means the shell (which is not itself silicified) be removed, we obtain a very accurate cast of the interior. These siliceous casts are generally abundant wherever the chalk has been abraded by currents of water, the imbedded flints being left in the form of superficial gravel. It is obvious that a deposition of calcareous crystals, in the cavity of an Echinus, would be no obstacle to a subsequent infiltration of silex, but a cast formed under these circumstances, instead of presenting elevations, corresponding to the sutures and ambulacral perforations of the shell, would exhibit the impression of these crystals. The history, therefore, of the Honey-comb Echinites is readily understood, but the existence of the crystals is, perhaps, deserving of some further consideration.

The writer in the *Archiv* mentions, that in one specimen the crystals were outside the shell. I have never known an instance of this nature, and I do not consider it possible for the exterior surface of the Echinus to regulate the size and disposition of the crystals in the same manner as the interior.

Perhaps the above brief notice may to some of your readers place the matter in a clearer light than the passage of which you have given a translation.

Your obedient servant,

EDWARD CHARLESWORTH.

NEVILLE WOOD, ESQ.

ON THE DISCOVERY OF CINCLIDIUM STYGIUM IN BRITAIN.

To the Editor of the Naturalist.

SIR,—I have this moment seen, for the first time, the number of *The Naturalist* for May, and am not a little surprised to find myself mentioned in it (p. 101) as having presented to the Botanical Society of London a new plant found on a Moor near "*Malkham Farm*," Yorkshire, and named by ME *Cinclidium styrzicum*. Now it is quite true that I did, some time ago, communicate to the Society, through the medium of the Curator, Mr. DANIEL COOPER, a specimen or two of a Moss new to Britain, but it was neither discovered nor named by me. It is the *Cinclidium stygium*, and has long been known as a native of the North of Europe. I believe it was first described by SWARTZ in *Diario Schrœderi*, and subsequently by WAHLENBERG in *Flora Lapponica*, p. 355; it is also figured in the *Flora Danica*, tab. 1422.

This very interesting addition to the British Flora was discovered on the

Moor near Malham Tarn, in Craven, Yorkshire, by JOHN NOWELL, JOHN HOWARTH, and WM. GREENWOOD, three young men from Todmorden, in this County, and to whom I am indebted for some of the specimens brought from that station.

I am, sir, Yours respectfully,
R. LEYLAND.

Halifax, May 22, 1837.

[We regret the occurrence of the error mentioned by Mr. LEYLAND; but as, previous to the publication of our report, we had seen precisely the same version of the matter in a widely-circulated weekly periodical, we concluded there was no reason to suspect its authenticity. As it is, however, we thank our correspondent for correcting the mistake.—ED.]

PROCEEDINGS OF NATURAL HISTORY SOCIETIES.

ZOOLOGICAL SOCIETY.

April 26.—Mr. THOMAS BELL, F.R.S., in the chair.—N. A. VIGORS, Esq., M.P., D.C.L., F.R.S., exhibited a specimen of the Snowy Surn (*Surnia nyctea*), shot on a moor near Selby, in Yorkshire. Mr. GRAY exhibited the horn of a new species of Deer from the Himalayas, which is probably intermediate between the Indian Deer and the Reindeer, drawings of a similar palmated horn having been published in HARDWICKE's Zoology of that country.—Mr. BELL described a new species of *Galictis*, which differs from the rest of the genus in the nature of the hair and the white fascia round the neck, which were turned up, the plantigrade character of the feet being moreover strongly marked. An individual examined by Mr. DARWIN was deficient in this particular; but this might, perhaps, depend upon temperature, the changes of which, it is well known, affect the quantity of the hair or feathers of many animals. Mr. GOULD exhibited seven rare species of European birds, from the collection of TEMMINCK, who had transmitted them to him for illustration in his *Birds of Europe*; he also characterized a new species of *Priomotis*.

Anniversary Meeting; April 29.—Earl DERBY, Pres., in the chair.—Mr. WALFORD read the report of the Auditors, which stated that the income of the year 1836 amounted to £19,123 14*s.* 10*d.*, and the disbursements to £19,637 3*s.* 6*d.* From admission fees was obtained £1,330; for annual subscriptions £5,326 5*s.*; compositions £670; ivory tickets £415 16*s.*; admission to

the Gardens £9,463 2*s*; admission to the museum £38 7*s*. Among the expenses incurred in the department of the Gardens were salaries and wages to the amount of £2,658 8*s*. 8*d*.; cost of animals £1,478 14*s*. 11*d*.; carriage of animals £1,040 12*s*. 1*d*.; food £1,853 12*s*. 6*d*.; works, repairs, &c., £1,981 4*s*. 5*d*.; and the museum formation £2,075 3*s*. 9*d*.; arrears of the previous and current year £810; invested in land £1,100; in cash £1,159 1*s*. 5*d*.; and capital funded £9,261 12*s*. 7*d*. The liabilities consisted of debts £1,382 2*s*. 7*d*., and contracts pending £1,453 18*s*. 8*d*. The average of the permanent and necessary expenditure of the last three years is upward of £10,000, the average annual subscriptions, during that period, being £5,200, exclusive of composition fees. The money required for the requisite expenses is mainly obtained by admissions to the Gardens. The revenue from this fruitful source, as might be expected, has varied considerably during the last seven years, the maximum having been in 1831, when £11,425 16*s*. was received; the minimum (1835) was £7,343 6*s*.; in the past year it amounted to £9,463 2*s*. It was proposed, that in future the *minimum* of the investment fund should be the amount which has been obtained from the annual subscriptions, and that all the money received for compositions should be invested permanently, with any other sums the Council might be able to add.

Mr. Yarrell then read the report of the Council, announcing that the present number of members is 3,050, and that there are 43 candidates for election. During the year 1836, 291 were added, 33 had been removed by the Council, 30 had resigned, and 56 had died. The number of Corresponding Members is 112; Foreign Members 24; and Honorary Members 10. The finances of this Society, always flourishing, have lately been unusually so, as, during the past year, the sum received from members had nearly equalled that for admissions to the Gardens. The library, which had been particularly attended to by the late Secretary, E. T. Bennett, Esq.—whose lamented death we have already announced—includes 420 volumes, of which 353 were presented, and 67 purchased; and it is the intention of the Council to devote an annual sum in future for the purpose of enlarging it. The report states, that in the last year 263,392 persons have visited the Gardens, of which 64,102 were members or their friends; 10,028 were admitted by ivory tickets, and 189,263 by payment; the sum received from the latter is £2,163 more than in the previous year. The menagerie contains 1,025 animals, of which 307 are quadrupeds, 794 birds, and 14 reptiles. The number of visitors to the museum was 3,668, from whom £38 7*s*. was received. The present number of specimens is 6,720, of which 870 are quadrupeds, 4,800 birds, 450 reptiles, and 600 fishes.

We are happy to be able to add, that the reports were most cordially received, and that the meeting closed, after the election of officers for the ensuing year,

without any of those scenes of disturbance of which it has, unfortunately, for the last few years been the arena.

BOTANICAL SOCIETY.

April 20.—J. E. Gray, Esq., F. R. S., Pres., in the chair.—The Secretary read the continuation of his paper, translated from the French of M. De Candolle, "On the geographical distribution of plants used as food." The memoir included various interesting facts relative tothe dispersion, according to climate and temperature, of the graminaceous order, and the uses which they serve in different nations.—The President alluded to the recent discovery of a French botanist, in the leaves of *Kylanium*. A number of membranous cylinders were found constantly projecting from each of the spiculæ, but afterwards became contracted; and, under a powerful microscope, this may even be seen in specimens preserved for forty years. The experiment has been repeated with success.—A communication was read by Mr. T. Hancock, on certain peculiarities in the two species of *Lamium*, viz. *L. maculatum* and *L. album*. The author's attention was first attracted to the subject by his having observed that many specimens of *L. maculatum* were entirely destitute of the white longitudinal patches on the leaves, which are described by some authors as its most important specific character. Mr. H. had also seen several specimens with white flowers, and so closely resembling *L. album* as to be with difficulty distinguished from it. From these and other circumstances he believes the two plants to be merely varieties of the same species. Their near affinity had often been observed by botanists; but no one except Dr. Lindley had ever so arranged them. Mr. H. considered the number of whorls not sufficient to form a specific character, and cited Sir W. J. Hooker's remark respecting the constant purple colour of the flowers, which was refuted by his own observation, as well as by that of others. We cannot ourselves consider the identity of *L. album* and *L. maculatum* as proved; the matter is one of considerable interest, and can only be determined by following up Mr. Hancock's observations. Mr. H. is of opinion that the garden specimen figured and described by Reichenbach as *L. maculatum* was really *L. purpureum*.

MEDICO-BOTANICAL SOCIETY.

April 26.—Earl Stanhope, F. R. S., Pres., in the chair.—"Remarks on the Haiowa, and on some kindred species," by Dr. Hancock, were read. This elegant tree inhabits the mountain regions of Guiana, and also near the coast, and is highly valued by the natives for its numerous applications in arts and medicine. Dr. H. enumerated its botanical characters, and considered the species identical with *Icicia heptaphylla* of Aublet and De Candolle, and *Amyris ambrosiaca* of Wilde. The fruit, leaves, and bark abound with a sweet odorifer-

ous balsam or gum resin, which—as in other species of *Amyridaceæ*—is yielded much more plentifully on the highlands than on the flat alluvial coast. Dr. H. believes that the species of the natural family *Amyridaceæ* have been multiplied and confounded, and that some extraordinary errors are entertained respecting their balsamic products—the Wourali* poison and that of the *Ticunas* having been attributed to one of the species, *A. toxifera*. The gum-resin of the Haiowa exudes from the trunk and branches, either naturally or from incisions made in the tree, and may be obtained in considerable quantities in the dry season, about the full moon, when its exhalations load the air with a grateful odour. The fruit is also replete with the balsam, and it is of a bitterish, subacrid flavour; its properties being similar to those of the famed carpo-balsamum formerly known in the shops. Dr. H. described some other trees belonging to the same family; and so abundant are these exudations in different parts of Guiana, that ship loads might be brought here, and it would be far superior to pitch and tar in imparting durability to cordage. The Indians mix it with anoto paint, and oil of carapa, for anointing their bodies. The author considers that it possesses virtues equal or superior to those of the balm of Gilead, the manner of preparing it being by drawing it into bottles, and keeping it closely corked, for it hardens and becomes brittle by long exposure to the air. The Haiowa is regarded by the natives as one of their most sovereign remedies. Its fumes are inhaled in coughs, and the balsam forms an excellent plaister for wounds, as well as a restorative in atrophy and hectic. The bark, in decoction, is employed in fevers and dysentery, and is considered very efficacious against spasms and convulsions. The remainder of the paper consisted of details of cases showing its effects in coughs and consumptions; and concluded with some observations on the utility of balsamic remedies in general, and on the erroneous impressions prevalent against their use; but these, of course, would not be suited to the pages of *The Naturalist*.

At the conclusion of the above paper Dr. H. exhibited some specimens of the Wourali plant, employed by the native Indians to poison arrows. The specimen of the plant was gathered in 1810, from the mountain Courantine, in the Rio Parime. It is considered to be a species of *Strychnos*, although its flowers have never been described by any botanist. The poison is enclosed in the fruit capsules of the plant, and the arrows are prepared by blowing them through a rod formed of a slender spike of Palm. The poison is prepared in the shape of an extract of the bark of the plant. Its mode of action is remarkable. When introduced into the blood of one of the lower animals it quickly proved fatal, but when taken into the stomach it produced no sensible effect; in this respect differing from every other species of *Strychnos*. It is necessary, however, to observe that in

* A popular weekly journal, in a recent report of this Society, terms the poison the "far-famed *Worary* poison"!—Ed.

the latter case the poison is uniformly obtained from the fruit, while in the Wourali it is always extracted from the bark.

CHAPTER OF MISCELLANIES.

ZOOLOGY.

THE OCCURRENCE OF THE CIRL BUNTING *(Emberiza cirlus)* IN YORKSHIRE.—At p. 164 you observe that you have met with the Cirl Bunting; and it may be that the species breeds in your neighbourhood. Dr. FLEMING, in his *British Animals*, mentions one having been killed near Edinburgh. It is a remarkably local bird in this part of the country, common in a few scattered isolated localities, especially on the bordering districts of Surrey and Sussex, and is nowhere more plentiful than in the vicinity of Alton, near Selborne, whence it is strange that GILBERT WHITE should have overlooked it. It occurs, indeed, in most parts of Hampshire, but rather sparingly, at least in comparison to its abundance in the Isle of Wight, where its tiresome repetition may be heard from morn till dusk, becoming irksome from its monotony. Its song resembles that of the Yellow Bunting, but wants the finish in a different key. MONTAGU compares it to that of the Whitebreasted Fauvet, but it is less energetic. A few days ago I saw a fine pair in a bird-shop, for which the man wanted 7*s*.—EDWARD BLYTH, *North Brixton, Surrey, May* 11, 1837.

THE SUPPOSED BACKWARDNESS OF THE PRESENT SEASON.—I constantly hear complaints of the backwardness of the present spring, and yet, on comparing the last year's notes of the arrival of a few of our spring visitants, I find a very singular coincidence between them and those of the current year. I am, however, aware that last spring was also considered backward. This refers to the neighbourhood of Dublin. I send two or three notes as examples:—

1836. *April* 22.—Saw several Sand Swallows, *Hirundo riparia.*
May 4.—Whin Chat, *Saxicola œnanthe.*
May 7.—Common Cuckoo, *Cuculus canorus.*
1837. *April* 23.—A solitary Sand Swallow.
May 1.—Sand Swallows in great numbers.
Same day.—Whin Chat.
May 6.—Cuckoo.

I shall also give the dates of the appearance of a few common flowers [see p. 225].—BEVERLEY R. MORRIS, *Trinity College, Dublin, May* 12, 1837.

Papilio podalirius A BRITISH INSECT.—Mr. ALLIS's account of this insect (p. 38) is a further proof of its being met with in the New Forest, and also its being set up at Portsmouth.—J. C. DALE, *Glanvilles Wootton, Dorsetshire, May* 13, 1837.

ANECDOTE OF PARENTAL AFFECTION IN THE HOUSE SPARROW (*Passer domesticus*).—"A pair of Sparrows," says Mr. GRAVES, "had built their nest in a wall, close to my house. I noticed that the old birds continued to bring food to the nest some time after the brood had left it. I had the curiosity to place a ladder against the wall, and looked into the nest, when, to my surprise, I found a full-grown bird which had got its leg entangled in some thread, which formed part of the nest, in such a manner as to prevent its leaving it with the rest. Wishing to see how much longer the old birds would feed their imprisoned offspring, I left the young one as I found it, and observed that the parents supplied it, during the whole of the autumn and part of the winter months; but the weather setting in very severe soon after Christmas, I was afraid it would kill the young Sparrow, and therefore disengaged its leg. In a day or two it went with the old ones in search of food; but they continued to feed it till March, and during the whole time they all nestled in the same spot."—*Communicated by* E., *Doncaster, May* 20, 1837. [We presume the above interesting anecdote is extracted from GRAVES's *British Birds*, a work, however, which we have never seen.—ED.]

ARRIVAL OF THE YELLOW WAGTAIL AND COMMON SWIFT IN THE NORTH.—I have to-day for the first time this year seen the Yellow Wagtail (*Motacilla flava*), at Kirk Sandall, near here. The first and indeed the only Swift I have yet seen this season, was two days ago. I fancied that I saw two or three pass the window a few days before, but am not certain.—F. O. MORRIS, *Doncaster, May* 23, 1837.

COMPARATIVE RARITY OF THE STONE CHAT IN NORFOLK IN 1837.—I find the Stone Chat (*Saxicola rubicola*) is, comparatively, very rare this spring in Norfolk, where I have been in the habit of seeing several pairs other years. I can only now find a solitary pair, and in some situations not a single bird is to be seen. I think many of our smaller birds are not so abundant as in former years; the Common Linnet (*Linaria cannabina*) is evidently not numerous. Our furze heaths are generally quite alive with them at this season, but now only a pair here and there fluttering from bush to bush are to be seen. I should attribute the severity of the winter as the cause of the scarcity, as I cannot perceive any difference in the numbers of our spring visitants, which are as plentiful as in former years.—J. D. SALMON, *Thetford, Norfolk, June* 14, 1837.

CAPTURE OF A SHARK ON THE BRITISH COAST.—Yesterday great crowds were attracted around the shop of Mr. SWEETMAN, fishmonger, opposite the Swan with

Two Necks, Lad-lane, by the exhibition of a fine young Shark, seven feet long, and 300lbs. weight. In the thickest part it was nearly four feet girth, and the spread of its tail was above two feet. It was said to have been taken off Margate, on Tuesday, evidently by a hook with a good length of iron attached to it, against which it seems in vain to have bit and gnashed its teeth. The front teeth of the lower jaw, extending several rows back, are everywhere broken down by the attempt to bite through its iron moorings. The young monster was in fine condition.—*Morning Herald, June* 2. [We have heard no particulars to enable us even to make a guess as to the species.—Ed.]

A Piebald Rook.—Yesterday week was shot, in the rookery of Mr. Sawyer, of Frampton, Lincolnshire, a young Rook, having a part of each wing white, its bill white, each side of its head, and under its throat leading to its breast, and above its bill, of a beautiful white; one foot was white, as were all the claws, and the other foot partly white.—*June* 5.

A Live Rat embedded in Stone.—On Monday week, as two miners were blasting a drift in a stratum of solid stone, called the scar limestone, at Alston Moor, six fathoms below the surface, they shot into a small cavity of the rock, out of which, to their surprise, sprung a full grown Rat. The miners endeavoured to take the animal alive, but in their attempts to do so it was killed. How long the Rat had been embedded in its living grave, and in what manner it had contrived to exist in such a situation, are questions that must be left to conjecture. On examination, the stratum around the cavity was found to be perfectly solid and close in every part.—*Newcastle Journal, June* 10.

Singular Propensity in a Cow.—On Thursday, May 4, a person, on his way from Bishop's Castle to Shrewsbury, observed a Cow milking herself. She was afterwards noticed sucking several other Cows; and the owner, Mr. Cheaton, a respectable farmer at Cothercoate, was informed of the fact. This disclosure explained to the dairy-maid the reason why the Cows, for several weeks past, had rendered scarcely any milk except in the morning of each day.—*Worcester Journal, May* 11.

New Silkworm.—At Maragnan and Rio Janeiro are several species of *Bombyx*, the caterpillars of which enclose themselves in a cocoon, after having spun a thicker and stronger silk than that of the ordinary Silkworm. It has been tried by Padre Mestre, and forms a very solid material. A species of Mulberry, the fruit of which is small and inedible, grows near Rio Janeiro, which it is proposed to cultivate for feeding the caterpillars. The subject is obviously of considerable practical importance.—Ed.

A Cat suckling a Rat.—We have lately somewhere read of a Cat suckling two Kittens and a young Rat at the same time, at the Brewery of Messrs.

Hawkes & Co., of Bishop's Stortford. Instances of this kind are curious and not very unfrequent perversions of the faculties of Philoprogenitiveness.—Ed.

Hybernation of Bees.—Harris, of Easington, buried a hive of Bees in his garden on October 17 last, and on being taken up last week they were found to be all alive, and within three hours commenced their busy labours. The most surprising circumstance is, that they were not supplied with any food at the time they were deposited in the earth, and, having cast a swarm during the latter part of the summer, the owner thinks there could not be any great quantity of honey.—*June* 14.

On the Value of Faunas.—Learning that my valued friend Mr. Dale has transmitted the first part of a Dorsetshire Fauna (p. 171), for *The Naturalist*, I send you the following extract from the last number of the *Quarterly Review*, commencing the critique on Mr. Yarrell's excellent *British Fishes*. I hope you will think the remarks appropriate, and not ill-timed, cordially agreeing as I do with the sentiments expressed by them. I have myself advanced far with a Natural History of this great county, which should have been sent for your pages from time to time, but as Mr. Dale has anticipated me, I will reserve it for you till he has finished.—F. O. Morris, *Doncaster*, *May* 27, 1837.

"Zoology, we have always thought, will never be satisfactorily unveiled till every country contributes its Fauna to the general fund, and till we shall be enabled, by a series of Monographs, to ascertain, not only the number of actually existing species, but their geographical distribution. As long ago as the establishment of the Zoological Club of the Linnæan Society, it was a favourite suggestion of some, that its members should turn their attention to the animal productions of our own country, and publish detached works, each treating of a particular branch of the subject, and accessible to the general reader, which, when completed, might form as perfect a catalogue of British species as the nature of things would permit, and be at the same time a useful and agreeable text-book of the Zoology of these islands. The proposition was received by men according to their tempers. The sanguine hoped; the cautious—not to say the timorous—began by suggesting difficulties which soon led them towards Doubting Castle, and at last conducted them into the safe custody of Giant Despair; and there is some reason for believing, that more than one Mr. Pliable found his way into the Slough of Despond. The proposition slumbered—the Zoological Society of London sprang up; the proceedings and transactions of that Society rose from the ashes of the *Zoological Journal*, whose office was done when those interesting publications were called into existence. A vast field was opened; new materials poured rapidly in from every quarter of the globe, and afforded such temptations to the naturalist that it was impossible to keep pen off them. But in the midst of these

dazzling collections of foreign zoological riches, some good men and true did not think 'that there is nothing in this island worth studying for'—as some did in worthy MICHAEL DRAYTON's time, whereat he expresses his wrath,—and quietly buckled to the work."

[The value of faunas of counties and districts, *when adequately compiled*, is, we believe, admittted by every well-informed naturalist.—ED.]

BOTANY.

THE FLUID ABSORBED BY THE SPONGIOLES OF PLANTS, HOW CONVEYED TO THE LEAVES?—Permit me, through the medium of your interesting periodical, to put the following question for solution by any of your readers:—Is the fluid absorbed by capillary attraction by the spongioles or rootlets, conveyed to the leaves by the same means (capillary attraction), or by some vital principle in the plant? Does not the fact that heat promotes the rise of the sap support the argument in favour of capillary attraction combined with heat?—T. C. H., *Doncaster*, *June* 6, 1837.

DATES OF THE APPEARANCE OF A FEW COMMON FLOWERS IN THE SPRING OF 1837.—I resume, from p. 221, the proof that the present spring is not so backward as some suppose, by giving the dates of the appearance of a few common flowers:—

1836. *April* 30.—*Narcissus biflorus.*
Same day.—*Ranunculus ficaria.*
May 1.—*R. aquatilis.*
Same day.—*Caltha palustris.*
1837. *April* 23.—*Narcissus biflorus.*
May 4.—*Ranunculus ficaria.*
Same day.—*R. aquatilis.*
Same day.—*Caltha palustris.*—BEVERLEY R. MORRIS, *Dublin*, *May* 12, 1837.

THE WOOD OF TREES WHICH HAVE DIED, AND THAT OF THOSE WHICH HAVE BEEN FELLED, IS THERE ANY DIFFERENCE BETWEEN?—Can any of your correspondents inform me, whether there is any difference, for purposes of use, between the wood of trees which have died, and that of those which have fallen under the axe?—F. ORPEN MORRIS, *Doncaster*, *May* 23, 1837.

REVIEWS OF NEW PUBLICATIONS.

Sacred Philosophy of the Seasons; illustrating the perfections of God in the phenomena of the year. Vol. II. Spring. Vol. III. Summer. By the Rev.

HENRY DUNCAN, D. D. Edinburgh: Oliphant and Son. 1837. fcap 8vo. pp. 410 each.

IN a former number (Vol. I. p. 274) we took occasion to make favorable notice of the first volume of this series, on Winter; in the two parts now lying beside us we are happy to observe the same philosophic and kindly spirit running throughout Dr. DUNCAN's pages. The books are written with an earnestness and an originality highly creditable to the reverend author, and must surely prove interesting to every admirer of Nature. Pressure of matter in other departments alone prevents us from analyzing the volumes, and from presenting our readers with the extracts we had marked; but we are convinced the work must obtain an extensive circulation.

The Botanist. Monthly. Nos. iv. & v., April and May. London: Groombridge.

THIS publication, conducted by the well-known botanists, Mr. MAUND and Prof. HENSLOW, has already been so enthusiastically received by the critical and reading public, that we need only observe, that both illustrations and letter-press fully maintain the high character so universally admitted to belong to the former parts of the work.

An Analysis of the British Ferns and their Allies. By GEORGE W. FRANCIS. London: Simpkin & Co. 1837. 8vo. pp. 68.

THE arrangement of this work is excellent, all the species of this interesting tribe of plants being included, with illustrative copper-plates of the genera, varieties, &c. The introduction contains much valuable matter, and the author has been assisted in his somewhat difficult task by several eminent and enterprising botanists. The treatise is inscribed to Sir W. J. HOOKER, and appears to us altogether indispensable to the student of the British Ferns. On a large separate sheet, the author has sent us the third edition of a *Catalogue of the British Flowering Plants and Ferns*, the value of which, being well and clearly drawn up, every botanist will be able to appreciate.

1. *A History of British Birds*, indigenous and migratory. By W. MACGILLIVRAY, A. M., F R. S. E. Vol. I. London: Scott, Webster, and Geary, 1837. 8vo. pp. 631.

2. *Journal of a Horticultural Tour through Germany, Belgium, and Part of France, in the Autumn of* 1835. By JAMES FORBES, A. L. S., &c. London: Ridgway and Sons, 1837. 8vo. p. p. 164.

3. *Annual Report of the Shropshire and North Wales Natural History and Antiquarian Society, for* 1836. Shrewsbury: John Davies, High Street. 1837. pp. 47.

BOOKS with the above titles are published, and will be further noticed in our next.

A Flora of Shropshire, by Mr. W. A. LEIGHTON, is preparing for publication.

THE NATURALIST.

REMARKS ON THE NATURAL HISTORY OF THE CENTRAL PORTION OF THE TRANSITION RANGE OF THE SOUTH OF SCOTLAND, IN WHICH ARISE THE SOURCES OF THE TWEED.

By William MacGillivray, A.M., F.R.S.E., &c.

The most elevated portion of the mountainous track which extends from the Mull of Galloway to St. Abb's Head, forming the central zone of the southern division of Scotland, consists of an aggregated group of mountains, from which arise the sources of the river Tweed. These mountains are for the most part situated in the parishes of Tweedsmuir, Megget, and Mannor, which form the southern and south-eastern parts of the inland county of Peebles, and are continuous with the high land forming the upper ranges of the celebrated pastoral districts of Yarrow and Ettrick in Selkirkshire, and with the higher parts of the parish of Moffat in Dumfriesshire.

The river Tweed, which collects the waters that drain from these mountains, commences at the southern extremity of Peeblesshire, receives accessions on either hand from the numerous vallies that wind among the smooth green hills, and proceeds north-eastward in an open, rather narrow, slightly tortuous valley, until it reaches Nedpath Castle, a little above Peebles, where it alters its course, and runs directly eastward, still receiving numerous tributaries, until it escapes from the mountain land, beyond the mouths of the Ettrick and Gala.

The scenery of this region is so peculiar, that an attempt to delineate its characteristic features seems to me not unworthy of the approbation of those who are interested in the Natural History of our romantic land. The general idea of it is extremely simple. It may be summarily described as a district composed of uniform, smooth, rounded, grey-wacke hills, scarcely ever precipitous or even abrupt, clothed to the summits with *Juncæ*, *Cyperaceæ*, Grasses, Heath, and pasture plants, and separated into groups or ridges by long, narrow, straight vallies, which, though generally green, seldom present any natural wood, even along the clear streams that flow into the valley of the Tweed.

But it is necessary to examine the picture more in detail. With this view, let us ascend the long valley of Mannor Water, which opens upon the Tweed a little above Nedpath Castle, and is one of the most extended in the upper part of the course of that river. This valley runs nearly north and south, for the most part in a straight line. Its breadth varies from a few hundred yards to half a mile in

its lower part, where, however, there is little alluvial deposit. The bounding ranges of hills are composed of uniform, rounded, smooth-sloped masses, having an elevation apparently of from 800 to 2,000 feet. These hills are generally green, the Heath upon them being regularly burnt, so that a plentiful crop of Grasses, *Carices*, and *Junci*, with numerous pasture plants, and patches of Fern, succeed the coarser vegetation which has been destroyed. Scarcely any rocks, properly so called, are to be seen in its whole course, although in several places there are great accumulations of debris along the slopes, and between some of the hills there are deep cuts or water-courses, the sides of which are almost entirely destitute of vegetation. The rock is everywhere greywacke, which is generally small-grained, more crystalline than aggregated, seldom fragmentary, always in thin strata, which are vertical or highly inclined, and sometimes slaty. The soil consists of rounded and angular fragments of grey-wacke, mixed with a light yellow tenacious clay. It being firm, and the sides of the valley presenting no level space, water does not accumulate on the ground. Very little natural wood is to be seen, even by the margins of the limpid stream, and where it occurs it consists merely of some scattered bushes of Hawthorn, Hasel, Mountain Ash, Alder, and Willow. There is no Broom, and scarcely any Furze—plants which in other districts form so conspicuous a portion of vegetation. Towards its upper part, or head, this valley, like the others, becomes narrower, with higher mountains and steeper slopes, the terminal rills flowing through deep and very inclined grooves, and in some places there are crags of considerable height.

Leaving Mannor Water at the uppermost farm-steading, and proceeding directly southward, we pass over an elevated moss forming the broad ridge which separates that valley from Megget-dale, and opens upon St.'Mary's Loch. In the ascent we observe several plants, such as *Saxifraga stellaris*, *S. hypnoides*, *Epilobium alpinum*, *Cochlearia officinalis*, and *Lycopodium selago*, which give promise of a richer harvest to be reaped on the huge mountain-mass that now presents itself at the distance of a few miles on the southern horizon. On the high grounds, here and elsewhere, we observe extensive and often deep deposits of peat, of which none occur on the gravelly slopes bounding the vallies. Beyond Megget-dale, a deep, narrow glen, bounded by lofty mountains presenting the usual aspect and structure, we pass over an elevated and undulated moor, until we arrive at Birkhill, situated at the upper extremity of Moffat Water.

Ascending to the summit of the ridge or narrow platform which extends along the north-western side of that valley, and passing over a moor deeply covered with peat, in the lowest stratum of which are abundant remains of the roots of trees, principally Birch, we come upon Loch Skene, a small body of water, about three quarters of a mile in length, beyond which is a precipitous corry similar to those of so frequent occurrence in the granitic portion of the Grampian range. This corry presents the most favourable place for alpine plants, and after examining

its rocks, tufted here and there with *Rhodiola rosea*, *Angelica sylvestris*, and *Salix aquatica*, we reach the summit of the mountain, where a strange prospect opens on every side; undulated ridges, with uniform rounded protuberances, stretching along in all directions as far as the sight can reach. The Solway Firth, the German Ocean, the Cumberland Mountains, and the Cheviots, form part of the view, which yet is by no means so striking as that from Ben Lomond, Ben-na-muc-dui in Braemar, Clisheim in Harris, or many other points in the northern and western parts of Scotland; its principal character being that of dull uniformity, the eye finding nothing to arrest it among the lines of rounded heaps that present the idea of a tempestuous ocean suddenly fixed by congelation.

This mass of elevated land has an undulated summit about three miles in length, and is broken into on its eastern sides, first by the corry at the head of Loch Skene, then by a narrow ravine, and again by two great semicircular bends. Its principal summits are named Lochcraighead, Middle Craig, and White Coom. Although the elevation exceeds that of Hartfell, which lies to the south-west, at the distance of a few miles, and has been found to be 2,685 feet above the sea, the general character of the vegetation is by no means Alpine, its very summit being densely covered with a green sward composed of *Scirpus cæspitosus*, *Nardus stricta*, *Junci*, *Alchemilla vulgaris*, *Tormentilla officinalis*, and many pasture plants common to the lowest regions. I even observed some burrows of the Mole on the summit of the Middle Craig.

At the southern side of that ridge which overlooks Loch Skene, is a deep tortuous chasm, with abrupt rocky sides, terminating towards the summit of the mountain in a semicircular recess about a hundred feet in height, down which flows a small stream. The rock here is generally slaty, more or less glistening, of a dark grey or blackish colour. The strata are inclined in various degrees, but are usually nearly vertical, and, as in other parts of the mountain, run from N.N.E. to S.S.W. In some places they were intersected with veins of quartz, mixed with calcareous spar and heavy-spar; and in the bottom of the ravine I found a block of decomposed green-stone containing crystals of olivine—the only appearance of trap I observed in the whole district.

The Alpine plants that occur in this chasm, and on the rocks around Loch Skene, are:—*Saxifraga hypnoides*, *S. oppositifolia*, *S. stellaris*, *Oxyria reniformis*, *Rhodiola rosea*, *Silene maritima*, *Thalictrum alpinum*, *Cochlearia officinalis*, *Poa glauca*, *Epilobium alpinum*, *E. alsinifolium*, *Saussurea alpina*, *Phleum alpinum*, *Lycopodium alpinum*, and *L. selago*. Along with these are numerous species of plants that occur abundantly in lower stations, as—*Epilobium angustifolium*, *Luzula sylvatica*, *Angelica sylvestris*, *Oxalis acetosella*, *Cerastium viscosum*, *Euphrasia officinalis*, *Vaccinium Vitis-idæa*, *V. myrtillus*, *Petasites vulgaris*, *Alchemilla vulgaris*, *Aira cæspitosa*, *Festuca vivipara*, *Rubus chamæ-*

morus, and many besides which it is unnecessary to mention. Near the summit of White Coom, in a mossy rill, I observed *Cerastium alpinum*, and in 1832 found a single specimen of *Phleum alpinum*. I am informed that a few other species have been met with, but in general the alpine vegetation is so scanty as completely to disappoint the student who has been accustomed to search the Grampians.

At the base of this mountain, or rather at the base of the ridge that forms the western side of the very narrow valley of Moffat Water, are two peculiarly interesting ravines. That in which is the celebrated waterfall of "the Grey Mare's Tail" breaks in upon the ridge to the length of five hundred yards or so, and presents a semi-circular termination about 300 feet in height. The rock being split into strata, nowhere shews continuous surfaces of any extent, but is broken into small shelves, and for the most part covered with vegetation. The strata, which run S. E. and N. W., are inclined to the west at an angle of about 50°. The Peregrine Falcon nestles in this recess, as the Eagle did of old on the island of Loch Skene; but the latter species has been extirpated, and the former is rare in the district.

It is somewhat remarkable that in these lower ravines, and in the cuts here termed "cleughs," are to be found the same alpine plants as in the broken ground on the higher part of the mountains. Almost all those mentioned above, occur in the ravine of the Grey Mare's Tail, intermixed with other species, of which a few of the more interesting may be mentioned:—*Aira flexuosa*, *A. cæspitosa*, *Festuca duriuscula*, *Triodia decumbens*, *Melica cærulea*, *Angelica sylvestris*, *Heracleum sphondyllium*, *Solidago virgaurea*, *Hieracium sylvaticum*, *H. paludosum*, *Leontodon taraxacum*, *Scrophularia nodosa*, *Geranium sylvaticum*, *Rubus idæus*, *R. saxatilis*, *Circæa lutetiana*, *Vicia sylvatica*, *Scabiosa succisa*, *Blechnum boreale*, *Aspidium filix-mas*, *A. filix-fœmina*, *A. oreopteris*, *Polypodium vulgare*, *P. dryopteris*, *Pteris aquilina*, *Asplenium viride*, *Hymenophyllum Wilsoni*, *Cryptogramma crispa*, *Cystopteris fragilis*. The trees which occur in the ravines, but are nowhere else to be seen in the district, are generally of very small size, and belong to the following species:—*Betula alba*, *Alnus glutinosa*, *Mespilus oxyacantha*, *Pyrus aucuparia*, *Fraxinus excelsior*, *Corylus avellana*, *Quercus robur*.

The other ravine above alluded to is nearer Birkhill, and presents on its southern side a perpendicular rock, vertically fissured by seams of stratification, so as to bear a strong resemblance to a group of basaltic columns, while its northern side exhibits a fine display of curved and undulated strata, the layers being of small depth, and consisting of grey-wacke and shale.

From White Coom to Tweedscross the mountains extend from N. E. to S. W., forming an undulated ridge, which, viewed from the plain above Moffat, presents the appearance of a huge barrier, resembling the southern edge of the Grampians,

although less broken. In this ridge, which marks the limits of the counties of Peebles and Dumfries, is distinguished the mountain of Hartfell, the height of which is 2,635 feet. On its southern side is a singular ravine of great depth, totally destitute of vegetation, and having its sides composed of black or dark grey argillaceous slate and grey-wacke, in thin strata running from S. W. to N. E., dipping to the west, and inclined at an angle of about 50°. The eastern side of this ravine is composed of crumbled shale, beneath which is a fragmentary mass containing much iron, and from which flow the celebrated chalybeate springs.

This mountain and the others in its vicinity are for the most part covered with spongy peat, and afford a rather luxuriant vegetation, consisting chiefly of *Calluna vulgaris*, *Erica cinerea*, and the common *Junceæ* and *Cyperaceæ*. At their southern basis, the first rock that presents itself, in nearly horizontal strata, is a dark-red friable sandstone, apparently of the new red series. Northward they continue of their ordinary geological character, forming rounded masses, with long narrow valleys, totally destitute of wood, and presenting only a few small Willows at long intervals along the clear streams which hasten to join the Tweed. The only remarkable plant, besides the Saxifrages and some of the other species mentioned above, that I observed in these valleys, is *Cnicus heterophyllus*, which grows abundantly at Carterhope on the Frood.

Descending the Tweed, we find it at first in all respects resembling its numerous tributaries, flowing rapidly over a bed of pebbles, and nowhere presenting a fall or even a rapid, excepting at the bridge near Tweedsmuir Church, where the nearly vertical grey-wacke strata are exposed for a small space, leaving between them a chasm in which the river flows deep and clear, and which bears a considerable resemblance to the Linn of Dee in Braemar. At the mouth of the Frood there is also a small waterfall or rapid, but in no other part of that stream is there any appearance of turbulence.

At Crook, on the left bank of the Tweed, and at the lower extremity of the parish of Tweedsmuir, is a quarry of transition limestone, celebrated in the Huttonian controversy, as affording an instance of organic remains contained in a primitive district, the grey-wacke of these hills having been mistaken for granite. And here it may be proper to state a fact which is not so generally known, or at least not so generally acknowledged, as it ought to be. The geological nature of this great range of the southern division of Scotland was first determined by Professor JAMESON, after his return from Germany, to belong to the transition series, and to present characters similar to those of the grey-wacke deposits of that country. Previous to that period, the transition rocks of England and Scotland were not understood.

If we follow the course of the river, through the parishes of Drumelzier and Stobo, we find little variation in the scenery, the valley being merely somewhat

wider in the former, and more wooded in the latter, although in all places there is scarcely any natural wood, and little cultivation, the unfavourable nature of the soil and the want of lime rendering the latter unprofitable. The same rounded hills present themselves, with the same smooth slopes, covered with green grass, intermixed with Heath and Fern. The rock, wherever it appears, exhibits the same characters, although on a low hill near Atterstane there is an extensive quarry of clay-slate, scarcely distinguishable from that of Luss, Dunkeld, and Foudland, but softer, more fissile, and much less durable.

Excepting the beautiful curve of the river at Nedpath Castle, and the wooded nook there, nothing of any interest occurs along the Tweed until we arrive at Peebles. Here the valley is wider, better cultivated, and partially adorned with plantations. The river flows with a uniform current of considerable rapidity, preserving nearly the same breadth, but hardly anywhere remarkable for the beauty of its marginal scenery. The enclosing mountains, though lower than those in the upper part of Tweeddale, are of considerable elevation, uniform in aspect, with gentle and unbroken slopes, and sinuous outline. The very little natural wood that occurs always consists of *Coryllus avellana*, *Mespilus oxyacantha*, *Fraxinus excelsior*, *Alnus glutinosa*, *Quercus robur*, and *Ulmus montana*, with the Sloe, and a few Willows.

At Innerleithen the scenery is not destitute of beauty, there being a fine valley, bounded by high hills, and partially covered with plantations. From thence to Whitebanklee, the valley is narrow, more destitute of wood, and less cultivated. The rock protrudes more frequently, affording opportunities of examining the geological nature of the district, although still nothing is to be seen but grey-wacke and slate. Tolerable clay-slate is quarried in two places, one on the south side of the river, above Innerleithen, the other below Caberston.

The grey-wacke is usually small-grained, of a bluish-grey colour, and consisting of quartz of various tints, felspar, and calcareous spar, with occasional fragments of clay-slate. It is intersected by small veins or threads of calcareous spar and quartz. Sometimes, but rarely, it is large-grained, in which case the quartz fragments predominate, and are usually coloured red, resembling jasper. When very small-grained, it becomes slaty, and usually of a blueish-grey colour; and when still finer in the grain, it presents the appearance of roofing-slate, which can be slit into sufficiently thin plates. The common tint of the roofing-slate is bluish-grey, sometimes greenish, and occasionally purplish or reddish. The strata are generally very much inclined, but in a few places I found them nearly horizontal. Grey-wacke, grey-wacke-slate, clay-slate, and slate-clay or shale, often alternate repeatedly in strata varying from an inch or less to a foot or more; but when the rock is grey-wacke alone, the stratification is often obscure, and the mass resembles trap in appearance. The slate and shale strata are often

undulated and contorted. The general dip is to the west, and the direction N. W. and S. E.

The diluvium consists of clay, gravel, and pebbles, the latter being of grey-wacke, slate, quartz, and Lydian stone, but without any intermixture of fragments of primitive or secondary rocks, so far as I have observed. The soil is clayey and gravelly or pebbly. The vegetation is in no respect remarkable, nor is the scenery at all picturesque.

From Whitebanklee or Thornylee the scenery is greatly improved, the river winding through a deep wooded valley to the bridge near Reclees, where the bed is rocky, and causes rapids of considerable beauty; but even here, and until we reach the mouth of the Ettrick, no remarkable geological appearances present themselves.

The Valley of Selkirk is several miles in length, and upwards of half-a-mile in breadth, the greater part of its bottom occupied by the river, and the broad pebbly beaches which it has formed, and which resemble those of the Spey at Fochabers. The inclosing hills are low, with long slopes, their sides cultivated, or covered with wood. The town of Selkirk, which stands on the brow of a hill, on the eastern side of the valley, is built on a pale-coloured, small-grained grey-wacke, intersected with veins of pink or white calcareous spar. The diluvium is very deep along the declivities, and consists of clay and sand, mixed with pebbles of transition rocks, without any fragments of the primitive or secondary series.

The range of low hills separating the Tweed from the Yarrow, is of the same general nature, the strata being of small-grained grey-wacke, which, in decomposing on the exposed parts of the summits, often becomes white, and sometimes reddish, in which latter case one might at first take it for red sandstone.

The upper part of the open valley in front of Bowhill and the mouth of the Yarrow, although possessed of considerable beauty, offers no remarkable phenomena, excepting a very high bank of diluvium. We may, therefore, ascend the celebrated pastoral stream which flows from St. Mary's Loch. Along the lower part of its course as far as Newark Castle, the strata of small-grained greyish-blue grey-wacke, alternating with thinner beds of soft shale, are nearly horizontal in many places. Beyond Newark the valley of the Yarrow, which is narrow, winds among the green hills, and towards the lake opens up a little, especially on the northern side. The stream is of inconsiderable magnitude, with darkish water, and a rapid current. It flows over a pebbly bed in its whole length, leaving beaches of considerable breadth, and in some places has cut the diluvium so as to leave gravelly banks from ten to twenty feet in height. It seems to have little influence on the vegetation along its banks, scarcely any natural wood occurring in its course. In the lower part of the valley, however, the defect is compensated by pretty extensive plantations.

The low round hills which bound the valley, present the same characters as those described in the course of the Tweed, but are covered with a finer vegetation, the greater part being green, even to the summit. The soil is a mixture of clay and sand, with pebbles of grey-wacke, and the diluvial subsoil is of the same nature.

As this district is celebrated for its pastures, one would naturally expect to find them of the finest quality; but, in fact, they present nothing remarkable in their appearance. On the high grounds *Calluna vulgaris* is the predominant species, which, when allowed to grow, choaks up most of the other plants, although it does not attain a great height, and is not nearly so strong as in the West and North Highlands. When it has been burnt, several grasses, such as *Nardus stricta*, *Aira flexuosa*, *Anthoxanthum odoratum*, and *Agrostis vulgaris*, spring up or are developed, together with *Juncus squarrosus*, *J. acutiflorus*, a few *Carices*, *Eriophorum angustifolium*, and the more ordinary heath plants, as *Tormentilla officinalis*, *Polygala vulgaris*, *Pedicularis sylvatica*, *P. palustris* and *Bartsia odontites*. A thick sward of young Heath, however, springs up, and the burning is renewed at intervals of a few years. In many places there is a profusion of *Pteris aquilina* and a few other Ferns, as *Blechnum boreale*, *Aspidium filix-mas*, and *Polypodium vulgare*, make their appearance. In the marshy places the vegetation is similar to that of such grounds in other hilly districts. On the whole, the vegetation of the higher parts is not luxuriant, but it seems in general well adapted for cattle. That of the slopes and lower grounds differs in no respect, as to the species composing it, from the pasturage of the Pentland and Ochill Hills; but owing to the great proportion of *Junci*, *Melica cærulea*, *Nardus stricta*, *Scirpus cæspitosus*, and other *Cyperaceæ*, is more verdant, and often produces dense crops, which might be cut with the scythe to a great extent.

St. Mary's Loch has been lauded beyond its deserts. Were it placed among the Grampians, it would attract little notice; but here, where one may wander whole days among uniform, smooth, grassy hills, without meeting with so much as a good peat bog, it does afford no ordinary degree of pleasure to the naturalist who for the first time views its smooth expanse embosomed among the pastoral mountains, the bright tints of which are reflected from its glassy surface. Perhaps a sheet of water is beautiful under any circumstances, unless indeed it be composed of an infusion of peat surrounded by bogs, like the lakes of Lewis and North Uist; but the beauty of a lake principally depends upon the character of the surrounding scenery. That of St. Mary's Loch is of the most simple character, consisting entirely of rounded, uniform, mostly verdant hills, with steep slopes, covered with a coarse grassy vegetation, and occasionally some Fern. A few bushes and decayed trees add in a manner to the general nakedness, and

two patches of plantation at the upper end have little effect any way, and are too formal. The slight sprinkling of natural wood on the slopes consist of *Corylus avellana*, *Cratægus oxyacanthi*, *Fraxinus excelsior*, *Pyrus aucuparia*, *Betula alba*, *Alnus glutinosa*, *Ulmus montana*, *Salix aurita*, *S. cinerea*, and *Prunus spinosa*. There is very little lacustrine vegetation, the bottom being uniformly pebbly near the margin. The species noticed were: *Potamogeton natans*, *P. crispus*, *P. gramineus*, *Ranunculus aquatilis*, *Arundo phragmites*, *Carex riparia*, and *Equisetum limosum*. Neither the White nor the Yellow Water-lily (Nymphule) occur in this or the adjoining lake, the Loch of the Lowes, which is about a mile in length, and with its deep dark water, even outlines, and tame rounded hills, is little calculated to excite admiration.

The strata in the hill at the north side of St. Mary's Loch run S.W. and N.E., dipping towards the east; on the south side of the opening of Megget-dale they have the same direction, but incline to the west at an angle of 60° or 70°, which they retain to the upper extremity of the lake.

Beyond the Loch of the Lowes we ascend a winding valley, among steep hills, whence come the sources of the Yarrow, in the immediate neighbourhood of those of Moffat Water, which runs southward in an opposite direction.

The high ridge that bounds the narrow valley of the latter stream on its eastern side, furnishes the sources of the Ettrick, which, commencing in the hills about five miles from Moffat, runs a course of thirty miles before it joins the Tweed. At the upper part of this district the valley is similar in character to that of the Yarrow, but broader, and with its hills less verdant, and presenting longer slopes. The stream is also similar, flowing with considerable rapidity over a pebbly bottom, which is broader than that of the sister stream. The rocks consist of grey-wacke and slate, of various tints, grey, blue, reddish-brown, and greenish. Several quarries are wrought to a small extent for slabs, which are employed as hearth-stones, and for other purposes. I was informed that the stone answers very ill for roofing-slate, as it cannot be procured thin enough, and rapidly decomposes.

Between Tushielaw and Selkirk the Ettrick is more tortuous than the Yarrow, although still very similar in character. Towards its lower part it presents steep diluvial banks in many places, and in a few the bed is rocky, with precipitous walls. The rocks, soil, and vegetation continue the same. In several places are small woods and thickets of natural trees of the usual species, viz., the Hasel, the Hawthorn, the Ash, the Oak, the Alder, the Mountain Ash, the Grey Willow, and the Sloe. There is no want of planting in the lower part of the valley, which, though in general similar to that of the Yarrow, is broader, and bounded by less rounded hills, with more elongated slopes. The vegetation is similar, but in general less verdant. There is a remarkable paucity of Willows

and Roses in these valleys, in which, as in other respects, they differ essentially from the glens of the Grampians.

The more common direction of the strata in Ettrick is S.W. and N.E., and their inclination to the N.W., but both are various. In the vallies of Ettrick and Yarrow there are no precipices, nor in fact many exposed portions of rock, excepting those in the streams. It is also singular that no rolled blocks are to be seen of the diameter of three feet.

The Ettrick receives the Yarrow below Bowhill, about two miles above Selkirk, and their united streams enter the Tweed a mile above Abbotsford, where we leave the river to pursue its course towards the ocean.

Perhaps few districts in Scotland of equal extent present fewer interesting geological phenomena than that which contains the sources of the Tweed. Excepting the limestone at Crook, I have not heard that any of the strata have been found to contain organic remains; nor are such mentioned in any of the Statistical Reports, which, however, are in general extremely deficient in every thing that relates to Natural History.

We have seen that the whole district, so far as it has been examined, is composed of grey-wacke, grey-wacke slate, clay-slate, and slate-clay, passing into each other, or alternating, distinctly stratified, often laminar, and frequently presenting plates of extreme tenuity. The general direction of the strata is from S.W. to N.E. They are usually much inclined, sometimes vertical, and not unfrequently horizontal, but present every degree of inclination. The general dip is to N.W.

The composition of the grey-wacke exhibits considerable variety. Sometimes, as in the upper part of Eddlestone Water, it is a very closely aggregated fragmentary rock, composed of white crystalline quartz, brown and red jasper, black Lydian-stone, grey or bluish flinty-slate, and pieces of dark-coloured shale, impacted in a fine-grained greyish basis. The fissures are filled with indurated argillaceous matter, and dark green unctuous earthy chlorite. Particles of mica and felspar are sometimes seen in the mass, of which the aggregation is often less perfect when it approaches in character to a conglomerate.

More frequently, when the rock is large-grained, it is of a bluish-grey colour, mottled with white, more crystalline, but still evidently fragmentary. The basis is small-grained, grey, with large fragments of compact or slaty rocks of the same colour, or sometimes of dark shale, interspersed. The impacted substances are white and grey quartz, with very few fragments of a different colour, sometimes small crystals of calcareous spar, and a few particles of mica. Veins of quartz and calcareous spar often intersect this variety.

From this it passes into a rock presenting at first sight, on its recently-exposed surfaces, the appearance of a green-stone, but still composed of the same ingre-

dients. The layers are usually thin, varying from a foot or more to a few inches.

Less aggregated, or more decomposed and earthy, the rock assumes a dull-red colour, presenting the appearance of a sandstone, but very readily distinguishable by its other characters. The fissures often present a ferruginous clayey matter, and the rock is less tenacious.

Next, it becomes very fine-grained, with numberless glistening points, and very readily splits into plates an inch or less in thickness, the interior of which is not laminar, but yields an uneven or conchoidal fracture in whatever direction it is broken. This is the common grey-wacke slate.

The laminæ becoming smaller, and the texture finer, with a lamellar disposition, the grey-wacke slate passes into transition clay-slate, which is glistening with minute points, but does not present the glossy surfaces of the primitive clay-slates, which seem to form a passage from the micaceous and chloritic slates. The grey-wacke clay-slates are always easily distinguishable from the primitive, although their colours may be nearly the same. They are never so hard, their laminæ are less coherent, and they decompose more readily.

Becoming still finer, and assuming a black or grey tint, without lustre, the slates pass into shales resembling those of the secondary formation, from which they often cannot be distinguished in cabinet specimens. Having the same carbonaceous aspect, with shining surfaces, they become glossy alum-shale, as in the ravines of Hartfell and White Coom.

All these varieties, but especially the slates and shales, have a tendency to break into rhomboidal fragments, of which the acute angle is about 65°. I have remarked curious tortuous impressions between the laminæ of the slate, but am unable to say whether they are indicative of the remains of organic matter or not.

Quartz, calcareous spar, and heavy spar, chlorite, and iron-pyrites, are the only minerals which I have seen in veins or nodules in these rocks. Galena, however, has been found in a few places, as on Mannor Water, and it is reported that a silver, some say a gold mine, was formerly worked in Megget-dale.

In form the hills approximate in a considerable degree to many of the granitic masses of Aberdeenshire, but they never present the precipices and corries which characterize the more elevated of the latter.

The whole district, with its rounded, smooth-sloped mountains, connected in elongated heaps, its long, narrow, straight, or slightly tortuous vallies, its argillaceous and pebbly soil, its clear and rapid streams, and its grassy vegetation, with the absence of natural wood, and the scarcity of artificial, forms a strong contrast to the mountainous district of the middle and northern divisions of Scotland, in which peaked, serrated and ridgy mountains with crags and corries,

rugged and winding vallies, slopes covered with debris and patched with Heath and Brake, brown or limpid streams fringed with Alder and Birch, rivers and lakes with cataracts and islands, dark forests of Pines and thickets of Briars, with other remarkable features, still, and will for ages, give interest to the ancient land of the Gael. The physical and moral character of the natives, too, is widely different, though, judging from what I have observed, I should have no hesitation in pronouncing the men of the south a noble race.

I have to add some remarks with respect to the distribution of the vertebrate animals.

The quadrupeds are few in species as well as in number. The Pipistrelle Bat and the Common Long-eared Bat, *Plecotus auritus*, I have seen in Nidpath Castle, near Peebles. The Hare, the Rabbit, the Brown Rat, the Domestic Mouse, the Brown Water-rat, the short-tailed Field-mouse, the Long-tailed Field-mouse, the Squirrel in some of the lower parts, the Foumart or Polecat among the hills, the Ermine, the Weasel, the Fox, which is rare, the Badger still more so, the Otter, nearly extirpated, the Common Shrew, the Mole, and the Hedgehog, are all the other species of whose occurrence I have obtained satisfactory evidence.

The birds are, of course, more numerous. To prevent misapprehension as to their nomenclature, I shall use chiefly the names employed by M. Temminck in his *Manuel d'Ornithologie.*

One of the species which I have always considered the most interesting, on account of its singular habits, lively disposition, and clear sweet song, is the Dipper, *Cinclus aquaticus*, which I have nowhere found more plentiful than along the Tweed and its tributaries. The Missel Thrush, *Turdus viscivorus*, I have seen about Peebles, Selkirk, and elsewhere. The Blackbird and Mavis are not so plentiful as in many other districts. In winter I have seen the Fieldfare and Redwing, which, however, are less plentiful than in the lower districts. Sir William Jardine informs me that the Ring Ouzel is not very uncommon in Moffat-dale.

Saxicola œnanthe and *S. rubetra* are both numerous in the higher valleys, where you also sometimes meet with *Fringilla cannabina ;* but *Saxicola rubicola* is rare, although I have met with it in winter.

In the woods, thickets, bushes, and hedges of the lower parts are found :—*Accentor modularis*, *Sylvia rubecula*, *Sylvia sibilatrix*, *S. trochilus*, *S. cinerea*, *S. phœnicurus*, which is not uncommon about Peebles, *Muscicapa grisola*, of which I have obtained specimens in Ettrick and at Peebles, *Sylvia troglodytes*, *Certhia familiaris*, *Parus major*, *P. cæruleus*, *P. ater*, *P. caudatus*, *S. regulus*, which, as well as the five last species, is common in plantations, *Fringilla chloris*, *F. cœlebs*, *Emberiza citrinella*, *Pyrrhula vulgaris*, *Fringilla carduelis*, and *Fringilla spinus.*

The House Sparrow is very rarely to be seen in any of the valleys; the Sky Lark is not so plentiful as in lower districts, but the Meadow Pipit, *Anthus pratensis*, is extremely abundant. *Emberiza miliara* and *E. schœniculus* are rather rare. The Common Crossbill I have had from the Rev. Mr. Adam, of Peebles.

Hirundo rustica, *H. urbica*, and *H. riparia*, are seen in most of the districts, although by no means plentiful.

Motacilla alba and *M. boarula* are frequent, and *M. flaveola* occurs rarely.

The Raven breeds in several places in the higher part of the group, as does the Carrion Crow; but the Hooded Crow is nowhere seen. The Rook is common, the Jackdaw occurs in a few places, and the Magpie is rare. The Jay is found in a few places along the Tweed.

Tetrao tetrix and *Lagopus Scoticus* are both numerous; but the Ptarmigan does not occur in the southern division of Scotland. *Perdix cinerea* is plentiful in the lower grounds. *Columba palumbus* is also plentiful. The Pheasant has been introduced in several parts.

The Cuckoo and Goatsucker occur, the latter very rare, as is the Kingfisher, *Alcedo ispida*, which has been seen on the Tweed.

The Eagles seem to have been extirpated. It is mentioned, however, in one of the Statistical Reports, that a White-tailed Eagle had been seen in 1831. The claws of one seen at Birkhill by Sir William Jardine, belonged to the Golden Eagle. The Common Buzzard, the Sparrow Hawk, and the Kestrel, I have seen in various parts. The Peregrine Falcon breeds in several places, among others on the rock of the Grey-mare's-tail. The Merlin and Hen Harrier I introduce on the authority of Sir William Jardine. The Barn Owl and Brown Owl are the only species of Strigidæ of whose occurrence I am certain.

The *Grallatores* observed are *Ardea cinerea*, *Vanellus cristatus*, *Totanus hypoleucos*, *Charadrius pluvialis*, *Tringa alpina*, *Numenius arquata*, *Scolopax rusticola*, *S. gallinago*, *S. gallinula*, *Rallus aquaticus*, *Gallinula crex*, and *G. chloropus*.

Swans and Geese are sometimes seen on St. Mary's Loch; but the only species of this family which I have met with are the common Wild Duck, the Teal, and the Golden-eye. In January last I saw a fine specimen of *Mergus serrator*, which had been shot on the Tweed. The Great Blackbacked Gull I have seen soaring over the bed of the Ettrick near Selkirk, not far from which is a breeding place of *Larus ridibundus*.

For specimens of many of these birds I am indebted to Sir Thomas G. Carmichael, Bart., of Stirling, and the Rev. Mr. Adam, of Peebles. No doubt several other species occur in the district; but the above are all whose occurrence I have ascertained.

The reptiles are the Viper, the Slow-worm, the Common Lizard, the Common Newt, the Frog, and the Toad.

The fishes are the Salmon, which ascends the streams in the breeding season, whence it is seldom permitted to return, the Sea Trout, the Phinnoc, the Common Trout, the Par, the Perch, the Pike, the Eel, the Common Lamprey, the Minnow, the Barbel, and the Stickleback.

The author of the "General Remarks on the County of Selkirk," in the *New Statistical Report*, imagines the parish of Selkirk to have been "one large high bed of grey-wacke and clay-slate, now cut by the larger rivers into long-shaped divisions, and cross-cut, by the smaller streams, to a less depth, and into smaller and rounded divisions." He might have extended his theory to Tweeddale, Scotland, Europe, and the globe; but in whatever way the counties of Peebles and Selkirk may have been formed, it concerns us more at present to know, that the elevation of their highest summit falls short of 3,000 feet*, and that snow never lies in summer even in their most sheltered hollows. It may therefore be inexpedient to apply the epithet alpine either to the hills or to the vegetation of any part of this region, even of the great ridge extending from St. Mary's Loch to Tweedcross. Among the Grampians, the same elevation would produce a much greater number of species; but the proximity of higher ground may account in a great measure for the circumstance. The dense sward which clothes the slopes, and the accumulations of peat which cover the summits and ridges of the southern hills, may have suffocated a multitude of species which might still be found there were the surface as bare as that of the granitic or micaceous groups of the north.

NOTES ON THE AMARÆ.

By Peter Rylands, Esq.

(Continued from p. 24.)

Species 11. *Amara ovata*, Stephens.

Syn.—*A. ovata*, Steph. *Mandibulata*, *i.* 129; *Carabus ovatus*, Fabricius.

Sp. Char.—Ovate; with the ant., pal., and legs entirely pitchy-ferruginous; above brassy; hd. impunctate; thx. rather convex, with a deep dorsal channel; the base unpunctate, with an oblique impressed line on each side; elyt. green-bronze, slightly convex, striated, the striæ impunctate, the margin with a continuous series of impressions; body beneath pitchy-ferruginous. Length 3½ lines.

I am indebted for the above description to Mr. Stephens, who states that he has only seen one individual of this species, which was captured near London.

* Broadlaw, in Tweedsmuir, 2,741; White Coom, in Moffat, 2,685; Hartfell, in Tweedsmuir and Moffat, 2,635.

Sp. 12. *Amara brunnea*, STEPHENS.

Syn.—*Harpalus brunneus*, GYLLENHAL; *A. brunnea*, STEPH. *Mand.* 1, 131.

Sp. Char.—Above, brassy-brown or chesnut; hd. smooth; thx. with a slight dorsal channel, and two small punctate foveæ on each side at the base; elyt. punctate-striated, with an interrupted series of impressions on the margin; body beneath rufous; legs, ant., and palpi, pale testaceous. Length 3 to 3¼ lines.

Rare near Warrington; also taken, according to STEPHENS, near London and Bottisham.

Sp. 13. *Amara bifrons*, STEPHENS.

Syn.—*Harpalus bifrons*, GYLL; *A. bifrons*, STEPH. *Mand.* 1, 130.

Sp. Char.—Oblong; black-brass above; hd. smooth, impunctate; thx. behind transversely depressed, and thickly punctulate, with two foveæ, the inner larger and deepest, the outer small, oblique; the lateral margin and the hinder angles, ferruginous; elyt. slightly convex, faintly striated, the striæ punctulate, with an interrupted series of impressions on the margin; body, beneath, smooth, pitchy-red, with the apex pale testaceous. Length 3 lines.

Not having met with this species, I am compelled, unwillingly, to copy a description of it from Mr. STEPHENS, who states, further, that only two specimens have come beneath his observation, which were captured near Hertford.

Sp. 14. *Amara discrepans*, MARSHAM.

Syn.—*A discrepans*, MARSHAM, MSS.; STEPH. *Mand.* 1, 131.

Sp. Char.—Above, shining brassy black; thx. with a slight dorsal channel, and two abbreviated punctulate impressions near the hinder angle on each side; elyt. with rather crenate striæ, the interstices flat; body beneath dusky; ant. and legs rufous. Length 3½ lines.

Rare, near London, &c.

Sp. 15. *Amara crassa*, STEPHENS.

Syn.—*A. crassa*, STEPH. *Mand.* i, 131.

Sp. Char.—Very distinct from all the foregoing; above entirely of a pitchy brown, with an obscure metallic tinge in the elytra; hd. very smooth; thx. convex, obsoletely wrinkled transversely, the base punctate, with two strongly punctate deep foveæ on each side; the margin anteriorly a little dilated, posteriorly somewhat attenuated; elyt. punctate striated, the interstices smooth, and the margin with an interrupted series of impressions; body beneath, legs, ant., and palpi pale testaceous red. Length 4½ lines.—STEPHENS.

"Taken near London; one specimen only has occurred."—STEPH.

Sp. 16. *Amara agilis*, RYLANDS.

Sp. Char—Above bright coppery; hd. with an impression on each side between the eyes; thx. anteriorly convex; with a dorsal channel, and abbreviated obsolete transverse impression, and two foveæ on each side at the base; the inner one oblong, obsoletely punctated; the outer one broad, shallow, and very distinctly punctate; elyt. with punctate striæ, and an interrupted series of impressions on the margin; body beneath, and fem. black; tib. and tarsi ferruginous; ant., with the three basal joints, and bases of the fourth and fifth, rufous; the remainder, dusky; palpi pitchy. Length $3\frac{3}{4}$ lines.

Allied to *A. puncticollis*, RYL., but is distinguished by the impressions on the thorax, the color of the antennæ, legs, &c. Only one specimen has occurred, which I captured this spring near Warrington.

Syn.—A. convexior, WILK.; STEPH. *Mand.* 1, 132.

Sp. Char.—Rather convex; deep blue black above; thx. anteriorly smooth, with a very slender dorsal channel; the base with an obsolete transverse impression, and towards the angles a little punctulate, with two indistinct foveæ, approximating to each other, and to the margins; elyt. delicately striated, the striæ impunctate, with a continuous series of impressions on the margin; body beneath, and thighs, deep pitchy black; tib. and tar. ferruginous; ant. pitchy, with the three basal joints rufous. Length $3\frac{1}{2}$ lines.—STEPH.

"Found near London, Hertford, and Norwich."—STEPH. *Mand.*

Sp. 18. *Amara plebeia*, STEPHENS.

Syn.—Harpalus plebeius, GYLL.; *A. plebeia*, STEPH. *Mand.* 1, 132.

Sp. Char.—Above brassy; thx. anteriorly convex, with the lateral and posterior margins depressed; the dorsal channel is faint, and on each side at the base, are two deep, thickly punctate foveæ; elyt. rather convex, with obsoletely punctate striæ; body beneath, and thighs, pitchy black; tibiæ testaceous, and tarsi pitchy; three basal joints of the ant., rufous; palpi pitchy. Length $3\frac{1}{2}$ lines.

Abundant near Warrington. "Not very common near London."—STEPHENS.

Sp. 19. *Amara obtusa*, STEPHENS.

Syn.—A. obtusa, STEPH. *Mand.* 1, 132.

Sp. Char.—Allied to the last; above brassy; thx. with a delicate dorsal channel, and two deep punctate foveæ on each side at the base; the intermediate space also punctate; elyt. punctate-striated, with an interrupted series of impressions on the margin; body beneath, and fem., deep-black; tib., and four basal joints of the ant., testaceous red; tarsi pitchy. Length $3\frac{1}{4}$ lines.

Rare near London, Warrington, &c.

Sp. *Amara atrocærulea*, STURM.

Syn.—*A. latescens*, STEPH. *Mand.* 1, 132.

Sp. Char.—Easily distinguished by its superior width, and by the rotundity of the sides of the thorax; above deep blue black; thx. obsoletely wrinkled at the extremity of the dorsal channel, and very obsoletely punctate near each angle, but without any foveæ; elyt. with impunctate striæ, and a continuous series of impressions on the margin; fem. black; tib. and tarsi, pitchy ferruginous. Length 3¼ lines.

Not uncommon near London, &c. Mr. STEPHENS denominates this species *latescens;* as, however, it appears identical with STURM's *atrocærulea* (a name which has not only the right of propriety, but is unobjectionable), I think it just to adopt it, in preference to that proposed by the former naturalist.

Sp. *Amara laticollis*, STEPHENS.

Syn.—*A. laticollis*, STEPH. *Mand.* 1, 132; *Carabus erraticus*, DUFTS.?

Sp. Char.—Readily distinguished by the breadth of the thx., which is totally impunctate throughout, having no other impression on its surface than the usual dorsal channel, and that somewhat obsolete; above of a bright glossy brass; sometimes entirely black; elyt. with faint impunctate striæ, and a series of rather distant impressions on the margin; ant., legs, and palpi pitchy. Length 3½ lines.

"I have seen two specimens only, of this species, both of which were captured near London."—STEPH. *Mand.*

Sp. *Amara rustica*, RYLANDS.

Syn.—*A. communis*, STEPH.; *A. rustica*, RYL. MSS.; *Harpalus trivialis*, GYLL.; *Carabus communis?*, FABR.

Sp. Char.—Above coppery, or greenish brass; thx. broad, with a slight dorsal line; the base obsoletely punctulate towards the angles, which have scarcely perceptible foveolæ; elyt. striated; the striæ slightly punctulate, with an interrupted series of impressions on the margin; body beneath, and femora, glossy black; tibiæ pale ferruginous; tarsi dusky; ant. with the three basal joints rufous, the remainder dusky; pal. black. Length 3¼—3½ lines.

Var. β.—*A. coquata*, STEPH.—Rather larger, with the foveolæ obliterated.

"Extremely common beneath stones, and in gravel-pits, throughout the metropolitan district; also at Bottisham, Kimpton, &c."—STEPHENS. It is certainly rare near Warrington; only three specimens have occurred.

Sp. *Amara familiaris*, CREUTZER.

Syn.—*Carabus viridis*, DUFTS.?; *A. familiaris*, STEPH. *Mand.* 1, 133.

Sp. Char.—Above brassy-green, or coppery; hd. smooth; thx. with a slight dorsal line, and an obsoletely punctate impression on each side at the

base; elyt. with slightly punctulate striæ, and a continuous series of impressions on the margin; body beneath pitchy-æneous black; legs, and three basal joints of the ant., rufous; pal. pitchy. Length 3¼ lines.

Var. β. Above shining black, or deep cœrulescent.

Var. γ. Similar in colour to the preceding, but distinguished by being only 2¼ lin. in length, and having the ant. entirely rufous, and the series of impressions on the margin, interrupted. Denominated by STEPHENS (who is in doubt whether it ought to rank as a species or a variety) *A. lucida;* it is also, apparently, *Carabus lucidus* of DUFTSCHMID.

Var. δ. (*Carabus erythropus*, MARSHAM, *MSS.; A. erythropa*, STEPH.) is distinguished from var γ. by having two obsolete smooth foveæ on each side at the base of the thorax. Length 2½—3 lines. *A. familiaris* is rare near Warrington, but of more frequent occurrence near London, Kimpton, &c.

Sp. *Amara atra*, STEPHENS.

Syn.—*A. atra*, STEPH. *Mand.* i. 134.

Sp. Char.—Deep black, slightly glossy, very convex; hd. smooth; thx. rather broad, with a slight dorsal channel, and two subpunctate foveæ, on each side at the base near the hinder angles; the inner rather the deeper; elyt. very faintly striated, the external stria with an interrupted series of impressions: the reflected margin of the elyt. and the sides of the thx. beneath, æneous; the tibiæ and tarsi pitchy-red; the ant. stout, fuscous, with the three basal joints testaceous. Length 3 lines.

The above description is taken from STEPHENS, who makes the following additional observations: "Remarkably convex, and of a deep, rather obscure black, which characters, and its slender, somewhat elongated legs, well distinguish it from its congeners; itsomewhat resembles a *Helops.*"—"One specimen only found near London."

Sp. *Amara tibialis*, STEPHENS.

Syn.—*Carabus tibialis*, PAYK.; *A. tibialis*, STEPH. *Mand.* i. 135.

Sp. Char.—Oblong; above brassy, black; in some specimens blue, coppery, or black; thx. slightly convex, transverse, nearly quadrangular; with a slight dorsal line, and two small impunctate impressions on each side at the base; elyt. with punctate striæ, and an interrupted series of dots on the margin; fem. pitchy; the tibiæ, tarsi, and three basal joints of the ant., rufo-testaceous. Length 2—2¼ lines.

Not common, but apparently pretty generally distributed. This and the succeeding species (to which it is closely allied) may be readily discriminated by the abbreviated striæ near the scutellum being absent, or its situation merely marked by a few distant, obsolete punctures.

Sp. *Amara infima*, STEPHENS.

Syn.—*A. infima*, STEPH. *Mand.* i. 135; *Carabus infimus*, DUFTS.

Sp. Char.—Above glossy black; hd. smooth; thx. with its lateral margins rounded, the disk tranversely convex; on each side at the base are two punctate foveæ, the inner oblong, and deepest; the lateral margin, and sometimes the hinder, tinged with ferruginous; elyt. as in *A. tibialis*; body beneath glossy black; the legs stout, rusty red, the thighs occasionally dusky; ant. dull ferruginous, with the three basal joints pale testaceous. Length 2—2½ lines.

"Apparently scarce; taken near London, and in Norfolk."—STEPHENS.

As circumstances have prevented my attending to an arrangement of the species of *Amara*, whilst writing this and my preceding paper, I beg to lay before the reader a classification of them. No doubt it will be branded by many as *artificial*. In some measure it is so; in most cases, however, the species are arranged according to their natural affinities; and if it answers no other good end, I think it not improbable that it will assist the student in his investigation of the species belonging to this difficult group—thus answering one of the primary objects of systematic Entomology.

Order, *Coleoptera*, LINN.

Tribe, *Carabacea*, RYL.* (*Adephaga*, CLAIRV.)

Family, *Harpalidæ*, MACLEAY.

Genus, *Amara*, BONEL.

* Destitute of fovea on the thorax.

1. *atrocærulea*, STU.; 2. *laticollis*, STEPH.

** With an obsolete fovea, on each side, at the base of the thorax.

3. *rustica*, RYL.; 4. *familiaris*, CREUT.

*** With a linear impression, on each side, at the base of the thorax.

5. *ovata*, STEPH.; 6. *trivialis*, STU.; 7. *nitida*, STU.; 8. *cursor*, STU.

* SWAINSON proposes *es* as a termination to distinguish tribes, as families are known by *idæ*, and sub-families by *inæ*. *Es*, as a *distinctive* termination, is obviously objectionable: thus we have, Insessor*es*, Dentirostr*es*, Anabat*es*, Ectopist*es*, and Scarabæoid*es*—all ending in *es*, and yet each of a different rank: the first being an *order*, the second a *tribe*, the third a *genus*, the fourth a *sub-genus*, and the fifth a *specific* (or trivial) appellation. Of what use can such a mock-distinction as this be, either to the student or professed naturalist? This Nomenclature may, however, be tolerated in a classification of birds, in which there are comparatively but few tribes—but in Entomology the case is quite the reverse, and therefore some more fit and useful termination ought to be substituted. I would propose *acea*, and that the tribes take their appellations from the typical families, as the latter do from genera; thus we should have, Carab*acea*, Papilion*acea*, Phalæn*acea*, &c. [We consider the plan worthy of general adoption.—ED.]

* * * * With two small and slightly punctate foveæ, on each side, at the base of the thorax.

9. *acuminata*, Stu.; 10. *lata*, Stu.; 11. *similata*, Steph.; 12. *Linnæi*, Ryl.; 13. *convexior*, Wilk.; 14. *brunnea*, Steph.; 15. *discrepans*, Marsh.; 16. *atra*, Steph.; 17. *lævis*, Stu.

* * * * * Thorax with two deeply punctate foveæ, on each side at the base.

18. *elegans*, Ryl.; 19. *plebeia*, Steph; 20. *obtusa*, Steph.; 21. *bifrons*, Steph.: 22. *agilis*, Ryl.; 23. *puncticollis*, Ryl.; 24. *crassa*, Steph.

* * * * * * With the abbreviated striæ near the scutellum obliterated.

25. *tibialis*, Steph.; 26. *infima*, Steph.

Bewsey House, near Warrington, June 15, 1837.

A LIST OF PLANTS COLLECTED NEAR LIVERPOOL, IN THE SUMMER OF 1836.

Dear Sir,—As a reader of your interesting Magazine, and being anxious, as far as I am able, to contribute to its support, I take the liberty of sending you a list of plants collected in the neighbourhood of Liverpool, during the summer of 1836. For some of the localities not noticed by myself, I am indebted to Andrew Stewart, Esq., a gentleman who has investigated a great deal of ground in various parts of Britain, and to whose kindness in imparting information I am anxious to bear testimony. I have in my Catalogue included all the common plants, which you most probably will reject.* My botanical excursions have been principally confined to the Cheshire coast, as I find many of the stations for plants at Bootle given by Dr. Bostock and the late Mr. Shepherd no longer exist, owing to the ground having been built upon, and a great portion dug up and cultivated; and the botanist must now extend his researches on the coast several miles further to find the plants usually given as growing there. It will be necessary to mention, that in naming the plants I have followed Sir James Edward Smith's *English Flora*.

Salicornia herbacea. Wallasea Pool.†—*Hippuris vulgaris.* In ditches near

* If our correspondent's catalogue professes to be a *Flora* of the vicinity of Liverpool, of course the common plants cannot be omitted. Besides, with plants as with animals, a species abundant in most parts of the country, need not necessarily be plentiful everywhere in that country, or may even not occur at all in some spots. Numerous instances of this will doubtless recur to the mind of the zoologist and botanist.—Ed.

† Wallasea Pool is a branch of the Mersey, which is only filled just at high-water, when the banks are overflowed for a considerable space; it abounds in salt marsh plants.

Wallasea Pool, at Bootle, and in the Moss ditches at Formby.—*Veronica serpyllifolia.* In fields, Woodside.—*V. Beccabunga.* Ditches, Woodside.—*V. officinalis.* On dry banks, Woodside.—*V. Chamædrys.* Woodside.—*V. montana.* Tranmere Wood.—*V. hederifolia.* Woodside.—*Utricularia vulgaris.* In pits; North Birkenhead.—*Lycopus Europæus.* In Ponds at Tranmere, on the Chester Road.—*Anthoxanthum odoratum.* Fields, Woodside.—*Iris pseudacorus.* In ponds, Woodside.—*Scirpus lacustris.* In pits, North Birkenhead.—*S. maritimus.* Wallasea Pool.—*Eleocharis palustris.* In ponds, Woodside.—*Phleum arenarium.* Sand-hills, New Brighton.* A. Stewart, Esq.—*Glyceria aquatica* and *Briza media.* Woodside.—*Dactylis glomerata.*—*Arundo arenaria.* New Brighton.—*Hordeum maritimum.* Wallasea Pool.—*Bromus asper.* Birkenhead Abbey walls.—*Triticum junceum.* New Brighton.—*Dipsacus pilosus.* Formerly grew on the site of Abercromby Square, Liverpool. A. Stewart, Esq.—*Dipsacus sylvestris.* Bidstone.—*Scabiosa succisa.* Tranmere Wood, and fields, Woodside.—*Sherardia arvensis.* Fields, Woodside.—*Asperula odorata.* Tranmere Wood.—*Galium saxatile.* Tranmere Heath.—*Galium verum.* New Brighton.—*G. uliginosum.* In ponds, Woodside.—*Parietaria officinalis.* Birkenhead Abbey walls, A. Stewart, Esq.—*Plantago maritima* and *P. coronopus.* Wallasea Pool.—*P. major* and *P. lanceolata.* Woodside.—*Potamogeton natans.* In ponds, Woodside.—*Cynoglossum officinale* and *Lycopsis arvensis.* New Brighton.—*Primula vulgaris.* Woodside.—*P. veris.* Though so common in some counties, I have not seen it in this neighbourhood, and I believe it is comparatively rare in the vicinity of Liverpool.—*Menyanthes trifoliata.* Very common in pits at North Birkenhead.—*Lysimachia vulgaris.* Bootle.—*L. nemorum.* Tranmere Wood.—*L. nummularia.* Gilbrook.—*Anagallis arvensis.* Woodside.—*A. cærulea.* Certainly wild in Hamilton Square Garden, Woodside, A. Stewart, Esq.; it is also reported to grow in Tranmere Wood.—*Convolvulus arvensis.* Woodside, common in the fields.—*C. sepium* is comparatively rare with us; I have only once seen it, and that was in a lane close to the Liverpool Zoological Gardens.—*Campanula rotundifolia.* New Brighton.—*Jasione montana.* Bidstone Stone-quarry,† and at New Brighton, with white flowers.—*Viola tricolor.* New Brighton, varying much in the colour of the corolla.—*Viola canina.* Woodside.—*V. odorata.* Speke.—*Verbascum thapsus.* On the road to Chester, near

* "The soil at Woodside and neighbourhood is clay based on rock. At New Brighton it consists of yellow sand, superincumbent on red sand-stone; it is much divided by fissures and of inferior quality."

† This locality may appear strange for some of the plants, but the Stone-quarry is part of a range of hills stretching for some distance (on one of which is the Light House and Telegraph Station), and the site of it is covered with verdure, much more varied and luxuriant than we are usually accustomed to see in this neighbourhood.

Bebbington.—*Solanum dulcamara.* Woodside.—*Lonicera periclymenum.* Woodside.—*Erythræa centaurium.* Very abundant at Woodside.—*E. latifolia.* Bootle, A. STEWART, Esq.—*Glaux maritima.* Wallasea Pool.—*Hedera helix.* Birkenhead Abbey walls.—*Salsola kali.* New Brighton.—*Gentiana pneumonanthe.* Tranmere Heath, A. STEWART, Esq.—*Burnium flexuosum.* Birkenhead Churchyard.—*Hydrocotyle vulgaris.* Ditches, Woodside.—*Eryngium maritimum.* Bootle.—*Sanicula Europæa.* Tranmere Wood.—*Daucus carota.* Woodside.—*D. maritimus.* In a field going from Woodside to Rock Ferry.—*Sium angustifolium* and *S. nodiflorum.* Ponds at North Birkenhead.—*Œnanthe fistulosa.* Ponds, Woodside.—*Œ. pimpinelloides.* Wallasea Pool.—*Pimpinella saxifraga.* Woodside and Seacombe.—*Apium graveolens.* Wallasea Pool.—*Smyrnium olusatrum.* Wallasea Pool.—*Parnassia palustris.* Very plentiful at Bootle, Formby, New Brighton, and Leasowe.—*Statice armeria, S. limonium,* and *S. spathulata.* Wallasea Pool.—*Linum angustifolium.* North Birkenhead, sparingly.—*L. catharticum.* Covering entire fields with its pretty white flowers, Woodside.—*Scilla nutans.* Tranmere Wood.—*Juncus glaucus, J. conglomeratus, J. effusus, J. filiformis,* and *J. lampocarpus.* Woodside.—*J. uliginosus.* Bootle.—*Luzula campestris, L. pilosa,* and *L. Forsteri.* Tranmere Wood.—*L. sylvatica.* Bidstone Stone-quarry.—*Rumex crispus, R. acutus* and *R. obtusifolius.* Woodside.—*R. acetosa.* New Brighton.—*R. mansimus,* A. STEWART, Esq.—*Triglochin maritimum.* Wallasea Pool.—*Alisma plantago.* Woodside.—*Œnothera biennis.* Very plentiful at Formby.—*Epilobium hirsutum* and *E. parviflorum.* Woodside.—*Chlora perfoliata.* Very abundant at Woodside.—*Vaccinium myrtillus.* Bidstone Stone-quarry.—*Calluna vulgaris, Erica tetralix,* and *E. cinerea.* Bidstone Stone-quarry.—*Polygonum aviculare.* Woodside.—*Adoxa moschatellina.* In lanes near the Wind-mill, Tranmere.—*Chrysosplenium oppositifolium.* Tranmere Wood.—*Silene inflata.* Woodside.—*Stellaria media, S. holostea, S. graminea,* and *S. glauca.* Woodside.—*Sedum acre.* New Brighton.—*S. reflexum.* Tranmere, A. STEWART, Esq. There are also several species of *Arenaria* at New Brighton, and in this neighbourhood.—*Cotyledon umbilicus.* Near Bidstone, and at Poulton-cum-Seacombe.—*Oxalis acetosella.* Tranmere Wood.—*Lychnis flos-cuculi* and *L. dioica.* Woodside.—*Cerastium vulgatum, C. viscosum,* and *Spergula arvensis.* In dry fields, Woodside.—*Lythrum salicaria.* Gilbrook.—*Agrimonia eupatoria.* Woodside.—*Reseda lutea.* Bootle.—*Mespilus oxyacantha* and *Prunus spinosa.* Hedges, Woodside.—*Pyrus aucuparia.* Bidstone Stone-quarry.—*Spiræa ulmaria.* Woodside.—*Rosa spinosissima.* New Brighton, covering the sand-hills; the roots run deep into the sand, and serve the same purpose as the maritime Grasses, in binding the sand together.—*Potentilla anserina, P. reptans,* and *P. fragariastrum.* Woodside.—*Tormentilla officinalis.* Bidstone Stone-quarry. I mention this locality because a friend who was

botanising with me found a specimen with double flowers, which happened to be growing in a moist place.—*Geum urbanum.* Tranmere Wood.—*Comarum palustre.* Pits at North Birkenhead.—*Nymphæa alba.* This beautiful plant is common in all the ponds near Woodside. The allied species, *Nuphar lutea*, though much the most common generally, I have not found in this neighbourhood.—*Anemone nemorosa.* Tranmere Wood.—*Ranunculus lingua.* Very plentiful in one locality near Woodside; I have found specimens with double flowers.—*R. ficaria*, *R. aquatilis*, and *R. sceleratus.* In ponds near Woodside. It is common to find *R. aquatilis* in pits that are dried up in summer, without the leaves in five segments, as they usually are.—*Caltha palustris.* Woodside.—*Mentha hirsuta.* Tranmere Wood.—*Teucrium scorodonia.* Very abundant at Woodside, Seacombe, &c.—*Verbena officinalis.* Sparingly at Woodside.—*Ajuga reptans*, *Glechoma hederacea*, *Lamium album*, and *L. purpureum.* Woodside. —*L. maculatum.* Doubtfully wild in Gilbrook; in some specimens the leaves are barred with white, in others spotted, and some much more intensely so than others.—*Galeopsis tetrahit.* On the road to Chester, near Bebbington.—*Betonica officinalis.* Woodside.—*Stachys sylvatica* and *S. palustris.* Woodside.—*S. arvensis.* Sparingly in sandy lanes, Woodside.—*Thymus serpyllum.* New Brighton.—*T. calamintha.* Sparingly in lanes, Woodside.—*Prunella vulgaris.* Woodside.—*Bartsia viscosa.* New Brighton. This plant, mentioned as extremely rare by Sir J. E. Smith, has been found at Ormskirk, Southport, Allerton, Speke, Hale, and Ditton, Lancashire, and on Bartington Heath, Cheshire, by different members of the Botanical Society of Warrington.—*B. odontites.* Very common in fields at Woodside.—*Rhinanthus crista-galli.* This plant is so common in all our pastures, that I think it has once been cultivated.—*Euphrasia officinalis.* Woodside.—*Melampyrum pratense.* Tranmere Wood. In Watson's *New Botanical Guide*, there are two or three species of *Melampyrum* mentioned as growing with us, but *M. pratense* is the only one that I have been able to discover.—*Pedicularis palustris* and *P. sylvatica.* Woodside.—*Antirhinum linaria.* Woodside.—*Scrophularia aquatica.* Woodside. This plant, as also *Cymbalaria*, Birkenhead Abbey walls, is cultivated in gardens frequently, as Bees are supposed to be very partial to the flowers; is that the case?—*Digitalis purpurea.* Bidstone Stone-quarry. The white variety is common in gardens.—*Draba verna*, *Lepidium campestre*, and *Cardamine pratensis.* Woodside.—*Cochlearia officinalis.* Wallasea Pool.—*Nasturtium officinale.* Woodside. —*N. terrestre.* Not common. Woodside.—*Erysimum alliara.* Birkenhead Church-yard.—*Arabis thaliana.* Woodside, varying much in the form of its radical leaves.—*Brassica monensis.* New Brighton.—*Sinapis tenuifolia.* On the walls at Chester, while collecting this plant last summer, I noticed a pair of Humming-bird Hawk-moths sporting beautifully over the large and elegant

yellow flowers.—*Erodium cicutarium*, and *Geranium sanguineum*. New Brighton.—*G. molle*, *G. dissectum*, and *G. Robertianum*. Woodside.—*Malva sylvestris* and *M. rotundifolia*. Woodside.—*M. moschata*. Not common with us; I once found it abundantly in a field, near the New Market, Woodside.—*Fumaria officinalis*. Woodside.—*F. capreolata*. Birkenhead Abbey walls, A. Stewart, Esq.—*Polygala vulgaris*. Bidstone Hill, with purple flowers; New Brighton, with white and flesh-coloured ones.—*Spartium scoparium*. Woodside.—*Genista tinctoria*. Occupying too great a portion of our pasture fields.—*G. Anglica*. Formerly at Bootle, A. Stewart, Esq.—*Ulex Europæus*. Woodside.—*Ononis arvensis*. With spines at Woodside; at New Brighton, abundant, and without spines.—*Anthyllis vulneraria*. New Brighton.—*Orobus tuberosus*. Woodside.—*Lathyrus pratensis*. Woodside.—*Vicia cracca*. Woodside.—*Astragalus hypoglottis*. On the road to Bidstone, A. Stewart, Esq.—*Trifolium ornithopodioides*. New Brighton, A. Stewart, Esq.—*T. minus*. Woodside.—*Hypericum androsæmum*. In lanes about Woodside and Seacombe.—*H. humifusum*. Hamilton Square, A. Stewart, Esq.—*H. pulchrum*. Woodside, and in dells at Seacombe.—*Sonchus arvensis*, and *S. oleraceus*. Woodside.—*Hieracium pilosella* and *H. murorum*. New Brighton.—*Leontodon taraxacum*, *Apargia hirta*, and *A. autumnalis*. Woodside.—*Hieracium sabaudum*. Woodside, Bidstone Stone-quarry, &c.—*H. umbellatum*. Rabbit-warren, Bootle, with the glandular swellings in the stems mentioned by Sir J. E. Smith.—*Crepis tectorum*, *Hypochœris radicata*. Smooth and hairy specimens. Woodside—*Cichorium intybus*. Reported to grow with us, but I have not seen it.—*Arctium lappa*. Between this and *A. bardana* I cannot distinguish; I have specimens from the same locality, varying much as regards the woolliness of the calyx.—*Serratula tinctoria*. Gilbrook.—*Cnicus lanceolatus* and *C. arvensis*. Woodside.—*C. palustris*. The white-flowered one is the most common.—*Bidens tripartita*. Woodside.—*Artemisia maritima*. Wallasea Pool.—*A. vulgaris*. Woodside.—*Gnaphalium uliginosum*. Woodside.—*Tussilago farfara*. Woodside.—*T. petasites*. Bidstone.—*Senecio vulgaris*. Woodside.—*S. sylvaticus*. Bidstone Stone-quarry.—*S. tenuifolius*. Woodside.—*S. Jacobœa*. Woodside and New Brighton. This plant grows in the greatest profusion every where in this neighbourhood, and seems to defy the most parching summers; at New Brighton, where it covers immense tracts of sand-hills, it is devoured by myriads of the larvæ of *Callimorpha Jacobœa* (*Phalæna Jacobœa*, Linn.); the perfect Moth is so numerous as to have long attracted the attention of the most incurious; I never could find them in the pupa state, though the caterpillars may be collected in any quantity, but they are very difficult to rear.—*Aster tripolium*. Wallasea Pool.—*Solidago virgaurea*. Bidstone Stone-quarry and Tranmere Wood. This plant varies much in habit; at Bidstone it is short, shrubby, and the panicle of many flowers

dense, the radical leaves numerous. In the wood they are taller, less shrubby; radical leaves few; cauline ones on long footstalks; the panicle is more lax, and consists of fewer flowers.—*Inula dysenterica.* Woodside.—*Bellis perennis.* Woodside.—*Chrysanthemum leucanthemum.* In great profusion, Woodside.—*C. segetum.* Bebbington, and at Formby, in the sandy fields.—*Matricaria chamomilla.* Woodside.—*Achillæa ptarmica*, and *A. millefolium.* Woodside. A. Stewart, Esq. has gathered specimens of *A. ptarmica* in this neighbourhood with entire leaves; and they were devoid of the pungent qualities which usually characterise this plant. *Centaurea nigra.* Woodside, very sportive in the form of the leaves.—*Orchis bifolia*, *O. morio*, *O. mascula*, and *O. maculata.* In fields, Woodside.—*Euphorbia exigua.* Woodside.—*Sparganium ramosum.* Ponds, Woodside.—*Carex arenaria.* New Brighton.—*Carex pseudo-cyperus.* In a pond on the road to Bidstone, near Sir John Tobin's lodge.—*C. recurva.* Woodside. —*Sagittaria sagittifolia.* Ince Blundell, A. Stewart, Esq.—*Tamus communis.* Woodside.—*Atriplex portulacoides.* Wallasea Pool.—*Polypodium vulgare.* Bidstone Stone-quarry; also *Aspidium Filix-mas*, and *A. lobatum.*—*Scolopendrium vulgare.* In lanes near the windmill at Tranmere.—*Blechnum boreale.* Bidstone Stone-quarry.—*Osmunda regalis.* Plentiful at Speke, A. Stewart, Esq.—*Equisetum arvense* and *E. limasum.* Woodside.

I remain, Dear Sir,

Yours most respectfully,

Woodside, May 15, 1837. T. B. Hall.

SOME OBSERVATIONS ON THE SMALLER BRITISH BIRDS.

In England we generally have some fine warm weather in February, and then the notes of a considerable number of native songsters may be detected by the diligent ornithologist, especially those of the following:—Missel Thrush (*Turdus viscivorus*), Fieldfare Thrush (*T. pilaris*), Garden Thrush (*T. hortensis*), Robin Redbreast (*Rubecula familiaris*), Goldencrowned Kinglet (*Regulus auricapillus*), Ivy Wren (*Anorthura troglodytes*), Garden Tit (*Parus hortensis*), Blue Tit (*P. cæruleus*), Coal Tit (*P. ater*), Marsh Tit (*P. palustris*), Long-tailed Tit (*P. caudatus*), Hedge Dunnock (*Accentor modularis*), Sky Lark (*Alauda arvensis*), Yellow Bunting (*Emberiza citrinella*), Chaff Finch (*Fringilla cœlebs*), Thistle Goldwing (*Carduelis elegans*), Spotted Starling (*Sturnus varius*).—How many persons, in all ranks of life, take walks in the country at the time of year of which we are speaking, and yet how few ever suspect that at least seventeen species of birds are carolling around them! In the above

enumeration we may have omitted the names of a few birds that sing in February; but we believe that one common and justly admired native chorister, the Garden Ouzel (*Merula hortensis*), never sings before the warm weather is regularly set in, and even then it is among the latest to commence, being usually first heard during one of those delightful sunny showers peculiar to, and so frequent in, April, and it is on those refreshing evenings that its deep rich melody sounds so charmingly in the yet leafless groves. We have elsewhere observed—what has hitherto been overlooked by most naturalists—that many birds which have been silent throughout a fair day, will immediately begin to sing when a shower of rain comes on. The Missel Thrush, it is well known, will pipe away merrily in the midst of a snow-storm, and a shower of rain at the close of a July evening, is sure to set all the Garden Ouzels in the neighbourhood singing.

It is also a curious, and in some measure a well-known fact, that some birds will sing late at night when a stone is thrown into the bush where they are roosting, or if any loud noise is made in the vicinity. Many of our readers are doubtless familiar with the circumstance as regards the Sedge Reedling (*Salicaria phragmitis*), but it is commonly believed that the Nightingale will not sing if a disturbance is made in the neighbourhood of its asylum. There cannot be a greater mistake than this; for we have repeatedly ascertained that on some of those dark windy nights in which Philomel's luscious strains are rarely heard under ordinary circumstances, it might be roused by the striking of the Hall clock, the shutting of a gate, or any other loud noise. We have likewise known the Robin Redbreast strike up its note on hearing the rumbling of carriage-wheels approach the tree on which it was resting, at eleven o'clock at night.

But what appears to have as much effect upon the song, and indeed upon the whole economy, of birds, as any thing else, is wind. The most hardy native birds, which have braved the severity of our coldest winters, as the little Wren, the Tits, &c., look miserably starved and uncomfortable on a windy day; and so soon as the boisterous March winds visit us, every throat is silent; as long as they continue, moreover, not one of the birds which we have mentioned as singing in February, is ever heard. Indeed wind seems to cause a complete stagnation in the ornithological world; and although we are not aware of its causing the death of even one of the most delicate species, yet it seems so unfavourable to activity, that, so far from enjoying their accustomed frolics, birds are often barely able to obtain a subsistence sufficient to keep them in "good case." During the March winds the smaller birds betake themselves, as much as possible, to the sheltered lowlands; and though herbage is at that season everywhere scarce, yet the practiced ornithologist well knows that he will add comparatively little to his knowledge in his favourite line, at this time.

All the arrivals of summer birds have been remarkably late this year. Near Dublin—always, we understand, an early locality—both the vegetable and animal world appear to have been more forward than with us (see pp. 221 and 225), although it must be remembered that, as "one Swallow does not make a summer," so the appearance of one or two individuals of even several plants or animals cannot be adduced to prove the forwardness of a season. The following are the dates of the arrival of some of our migratory birds in the north of England:—

In Yorkshire we first saw the Darklegged Warbler* (*Sylvia loquax*) on the 21st of April; the Swallow on the 24th; the Tree Pipit (*Anthus arboreus*) on the 26th; the Wood Warbler on the 28th; the Cuckoo on the 4th of May; the Meadow Crake (*Crex pratensis*) on the same day; the Sibilous Locustell (*Locustella sibilatrix*), Whin Chat (*Saxicola rubetra*), and Blackcapt Fauvet (*Ficedula atricapilla*), also on the 4th; we first observed the White-throated Fauvet (*F. cinerea*) on the 7th, but we had not previously visited the favourite haunts of this species for some weeks, and think it probable it may have arrived a few days sooner. From the few familiar instances above noted, it will be quite clear that the backwardness of the season, as regards weather and vegetation, has materially retarded the appearance of our birds of passage. The Darklegged Warbler is usually our earliest spring visitant; we have seen it at the beginning of February, but did not observe it till towards the close of April this year. The Swallows generally arrive on the 10th of April, but not until the 24th of that month in 1837, and they did not muster in full force till about the 4th of May, on which day we had a very large accession, both of species and individuals, of migratory birds.

We have lately discovered that the Tree Pipit (*Anthus arboreus*) is in the constant habit of wagging its tail slowly up and down when perched. This circumstance—which appears to have escaped the notice of all previous writers, and is not recorded in our own *Song Birds*—is not only interesting in itself, but valuable in a systematic point of view. It proves the close relationship of the more arboreal Pipits to the Wagtails, which they also resemble in having short crooked hind-claws. We believe the Meadow Pipit does not wag its tail, or if it does, we have not noticed it.

According to most writers, the Tree Redstart (*Phœnicura albifrons*) shakes its tail *laterally*. Upon this point we were doubtful when we wrote our description of the species in the *British Song Birds*, as will be seen on reference. We have, however, somewhere read (we believe in Mr. Blyth's edition of White's

* See Hewitson's account of this bird.

Selborne) that this is an error, and that the tail is moved up and down—an assertion which we have recently ascertained to be perfectly true.

We intended to have here recorded the observations on the Sibilous Locustell promised in a former number (p. 165); but as we have at present neither time nor space for the purpose, we are compelled to postpone them.

Campsall Hall, July 1, 1837.

A BOTANICAL TOUR IN HEREFORDSHIRE, MONMOUTHSHIRE, AND SOUTH WALES;

WITH INCIDENTAL NOTICES OF THE SCENERY, ANTIQUITIES, &c.

By Edwin Lees, F.L.S., M.E.S.L., &c.

(Continued from p. 208.)

I left Swansea for Neath early in the morning, but making no stay at the latter town, pushed on for the "Lamb and Flag" in Glyn Neath, which I had ascertained to have assumed of late years the aspect of a comfortable inn; and in this respect I recommend travellers, more especially scientific ones, not to be regardless of good quarters, or leave any thing to chance under the hope of an adventure, which may often prove any thing but agreeable. The outer man must be sustained if science is to profit effectually, and after a hard day's effort nothing is more unpleasant than *not* to be able to take one's ease in one's inn. I shall leave others to descant upon the "*Nidum* of Antoninus," which Neath is said to be, and I have not a word to say in favour of the grim ruins of its abbey, shrouded in dust and smoke, and which Donovan, who travelled this way thirty years ago, says, "fail to excite that pensive musing of the mind which buildings far less important will sometimes inspire." I will only, while I am enjoying the good cheer of mine host of the Lamb and Flag, just intimate, by way of episode, that some years previous, when an entire stranger to this part of the country, I had walked from Neath to Melincourt to see the celebrated cascade at that place. Here, while seated in the dingle on a massy stone some wintry flood had hurled from the precipice, amidst tall rank plants of *Œnanthe crocata*, spreading forth their white umbels, and purple stamens, and with my eyes fixed on a black sullen trunk that, with leafless arms, stood like a spectre on the rock, I listened to the patter of the water as it fell and splashed, and dashed a cloud of rime on all the trees around. While thus absorbed in meditation, I was startled as I turned round, by the sight of a stranger with a black knapsack on his shoulders, who, like me, was intent on a tour in search of the picturesque.

Apologizing for disturbing my reveries, he kindly informed me how I might cross to the other side of the vale, returning by Aberdilais Mill and Water-fall. I was much pleased then with Aberdilais, its rocky islet, and the enormous masses of rock at the base of the fall, though the height itself was inconsiderable. But alas! a steam-mill now deforms the scene, whose noise and smoke scares away the lovers of Nature and solitude. At the time to which I allude, one of the miller's family led me by a rude flight of steps to the summit of the rocky islet on one side of the mill, from whence the best view of the cascade was to be obtained. This islet I found overgrown with the *Rhamnus frangula* in profusion, and I was told various birds visited the rock to devour the berries. In the afternoon of that same day, as I was proceeding by the mail from Neath to Merthur, my friend of the knapsack appeared in front of the "Lamb and Flag" as the mail stopped there to change horses, and, addressing me, observed—this is the land of water-falls, for I am told five lie within a few miles of this inn.—Then, said I, this night I repose at the Lamb and Flag;—and at the Lamb and Flag again I am.

"This is the land of water-falls" observed my friend of the knapsack, and truly on that occasion I found it so, for the morning opened with torrents of rain, and before the day closed I was over the water, under the water, and in the water. In the present instance I was more fortunate, and meeting with an intelligent man, a native of the district, who happened to be out of a situation, I determined, under his guidance, to visit the water-falls of the Hepste and Mellte, as well as the singular cavern called Porth-yr-ogof, through which the latter river flows, all in one excursion. We first proceeded to Pond-nedd-vechan, the bridge over the little river Nedd, where there are a few Welch cottages, the celebrated "Angel Inn" of various tourists, and an unpicturesque little chapel. I saw nothing in the Angel to tempt me to exchange it for the Lamb and Flag, though in former days Mr. WARNER and other travellers were compelled to use it in default of better quarters. I have no doubt, however, the civility of its hostess has improved since the day when, as I was informed, she refused after night-fall to admit Sir WILLIAM HEYGATE, who was then travelling with a friend or two, and wished accommodation there, but the stern portress, entrenched within her fortress, vowed, that after sun-set she would not admit the Lord Mayor of London himself! The Lamb and Flag, which is said to have arisen from this circumstance, renders such rude "Carinthian"* proceedings now no longer heard of.

I had forgotten my resolution to abandon subterranean explorations, and I

* ——— "The rude Carinthian boor,
Against the houseless stranger shuts his door."—GOLDSMITH.

soon found the Mellte was not to be passed, any more than the Styx, without paying CHARON his fee. In other words, my redoubted guide contrived to recollect at Pont-nedd-vechan, that it was absolutely necessary to obtain the aid of another person with candles, and he knew a man well acquainted with the cavern, which he must confess he was not, whom he could get to accompany us. To prevent disappointment and indulge security, I submitted to this exaction, and we proceeded. Between Pont-nedd-vechan and the Dynas rock, to which we now directed our steps, I think I never saw so great a profusion of *Rosa villosa*, all exhibiting that deep red tint which renders the Welch Roses of this species so eminently beautiful. We crossed the brawling river Dinas, and examined the immense rock of mountain limestone which is quarried here, as well as that portion of it where the stratum forms a remarkable curve, well exhibited upon the face of the rock, and called in Welsh *Bœa maen*, or the stone-bow. The occurrence of tortuous strata is now well understood by geologists, and is not so uncommon as was formerly supposed, nor need I pause to dilate upon it here. The ravine above the "Stone-bow," however, approaches the terrific, and is well worthy the examination of the geologist. A narrow chasm, between precipitate rocks rising on one side above 200 feet in perpendicular altitude, is completely choaked up with enormous shapeless masses of stone, that have either fallen from the precipices above, or been swept along the gorges of the mountains by raving wintry torrents, when, stopped by some impediment to their career, they have here accumulated in towering stair-like masses, pile above pile, till they present the remarkable aspect of a stony glacier. I explored the ravine for some distance, till enormous crevices and gaps warned me that a slip might be attended with the unpleasant result of a fractured limb, and I therefore desisted ere too late.

We ascended the rock called *Craig-y-Dinas*, on the other side, by a road that in former times must have been a very unsafe one, but exhibiting a splendid view of the various mountains and vallies here opening into the wider vale of Neath, with a richly-wooded country extending in the direction of Swansea. *Arabis hirsuta* was very abundant about the rock. On the summit I noticed two or three grey old stones, evidently the remains of a druidical circle, though for the greater part almost obliterated; but I was enabled to make out the circle to my own satisfaction. At all events Superstition claims the place as her own, for my attendants pointed out to me a detached towering crag of limestone, separated from the general mass, as they told me, by supernatural agency, and certainly fearfully over-hanging the glen below. This they asserted was called *Ystol-Gividdon*, or the Chair of the Witch, and they invited me to ascend it on my hands and knees by a Goat's path, that I might neglect no possible chance of breaking my neck, though I believe, according to ancient usage, some virtue

or other was or ought to ensue from it in consequence; I was stupid enough to clamber up, hoping indeed "the Witch" might have some plant in store for me in her chair—but she was out, the cupboard was bare, and I only had the satisfaction of perceiving how easily this mortal coil might be shaken off by a jump from the rock. I did not stop long, however, to consider, lest some demon should make the suggestion. I noticed, about a third of the distance down the precipice, a Yew-tree (*Taxus baccata*) growing out of the rock, and on inquiry, I understood this was the only one known for many miles round, and that some of the youths of the neighbourhood would, on particular occasions, venture down at the risk of their lives to cut a branch of Yew from this tree. Few, however, durst undertake the hazardous exploit. I was here also treated to a legendary tale, which, as it is very short, I shall record. Both my guides gravely assured me, and evidently believed it themselves, that, two years ago—"I love to be particular in dates"—a man returning home late in the evening, perceived a woman before him as he thought, and thinking she was in the right path he followed her, when she led him to the brink of this awful precipice, and suddenly vanished, leaving him tottering on the verge—his next step being likely to be into eternity! He was already stepping off the rock, when the Syren spirit disappeared, but, stretching forth his hands as he descended, saved himself by clinging to the shrubs depending from the cliffs, and struggled into a Holly-bush some yards down the face of the precipice, which was pointed out to me, and thus saved himself from destruction, as he contrived to scramble back again from the Holly-bush to the summit of the rock. His hat, memorial of the transaction, remained in the ravine below. I care not about accounting for this, only mentioning it to show the proneness of mankind in wild secluded scenes to attribute the simple incident of a man's falling down a steep cliff, by mistaking his way in a dark evening, when perhaps under the influence of intoxication, to the interference of a supposed supernatural being.

In one part of the rock there is a cave, overgrown with briars, to which access is obtained by a narrow ledge along the face of the cliff. This is called *Y Ffwrn*, or "the Oven," for what sage reason I know not; at all events I did not like its aspect sufficiently to explore it. Having, however, noticed the remark, in a Guide to Swansea and its neighbourhood, that "the Sheep and *Goats* frequently shelter in it," and seeing no signs of the latter, I was induced to make particular inquiries respecting them. The result was, that wild Goats had been well remembered to have haunted the Dinas Craig and its vicinity for a long period, although they were not very numerous; but the proprietors of the lands around, having commenced plantations upon a large scale, and the young trees being injured by the Goats, they were all ordered to be shot about ten years ago, and

this mandate was so effectually carried into execution, that none have ever been seen since.

A foot-track leads across a dreary rocky moor from the Dinas rock to Cil Hepste Farm, from whence there is a most rugged and miry descent to the great water-falls. Some sombre views of distant gloomy mountains are presented in the course of the route, as well as a glance at the profound woody ravines, involved in whose shadows the rivers Hepste and Mellte urge their agitated waters far below to a junction. A deep stony and puddly gully, shrouded in an almost impervious thicket, is the only practicable pass down the steep, and this emerges in the glen below, at the base of the cascade. A considerable body of water (as there was at this time), projected over a slate rock in a fifty-feet fall, though not a sublime is a beautiful object, and if it does not alarm, it captivates. The water precipitates itself in five divisions, which, however, superficially unite into one showery mass of crystal spangles, dashing with eternal motion, like the joys of life, down the slippery rock that vainly offers to detain them within its intricate drapery—gleaming for a moment in iridescent lustre, till the instantly succeeding plunge, reverberated by the rocks around, records their passage into the sullen shadows that for ever conceal them from view. Over the gloom and stillness of the fallen waters quivers the lovely Iris, with its radiant zone—bright messenger of heaven, its coloured glory now oscilated in the gloom, like memory burnishing the past, but unable to advance a solitary gleam to light up the future. This water-fall may formerly have been much higher than at present, for the water has scooped deeply into the bowels of the slate rock, and the depth of the glen from the land above must be at least 150 feet, so that, were these precipices not densely clothed with wood, it must be very dangerous to descend them, and the streams, except from certain points, of course flow unseen. This is the general character of the streams in the schistose strata of Wales; the dark narrow glens are still annually deepening from the effects of continual attrition upon the shivering substance of the rock, and this cascade might in time be altogether obliterated, were it not probable that the glen below it would deepen in the same proportion to the ingulfing efforts made by its own waters upon the slaty stratum over which it flows. As in many other water-falls, a very fair passage, practicable even for horses, lies under the waters of this to the opposite side of the stream, and some tourists have boasted of taking shelter from a storm of rain under the watery canopy! This, like many other supposed wonders, would, however, pretty well illustrate jumping out of the frying-pan into the fire; for if the shower lasted long, the recipient of its sheltering powers would assuredly have a wetter coat, and feet too, than if he had jogged on and defied the elements, instead of attempting a trick upon Aquarius

in his own territories! My road lying under the water, I of course proceeded that way, and certainly the effect of a bright sun and brilliant azure sky, which it was my lot to behold through the falling watery veil, I should think greatly preferable to that of a dismal cloudy atmosphere, although it may allow the wanderer the benefit of the paradoxical boast of taking shelter from the rain under the water.

A walk through the woods, a few hundred yards, and a descent amongst the rocks, leads to the romantic boiling and foaming falls of little Col Hepste, which, fringed with and half hidden in wood, have a very romantic appearance. The Lime-tree (*Tilia parvifolia*) is very abundant and luxuriant on the banks of the Hepste river at both falls, and its beautiful glossy leaves and fragrant flowers, combined with the picturesque aspect that Limes always present, give an addition and character to the beauties of the scene. The Lime not being very common any where in this country in a wild state, and seldom found over-canopying brooks and streams, a question might justly arise whither the tree be really indigenous here. The aspect certainly is that of an original denizen of the soil, and its being included as such by Turner and Dillwyn in their catalogue of the botanical rarities of Glamorganshire, seems to confirm the assumption. The profound dingle in which the trees grow, has been formed by the continued action of the water upon the schistose rock, and it is therefore not difficult to imagine a time when the torrent flowed unshadowed by foliage, and open to the day over the very ground now occupied by the trees. From whence, then, did they come? They appear not upon the mountains, and may therefore possibly be the product of an ancient plantation, the memory of which is forgotten, though now undoubtedly naturalized to the locality. The falls I have just mentioned are a series of water-leaps, forming altogether a depth of about 70 feet, perhaps as interesting as the larger one, on account of the greater variety of rock and thicket presented to view, and, in my estimation, preferable to the more highly-lauded ones of the Mynach. This is a charming place for a bivouack, many portions of the rock offering a commanding position "high and dry."

CORRESPONDENCE.

Some Remarks on the "British Song Birds."

To the Editor of the Naturalist.

Bewsey House, June 14, 1837.

Dear Sir,—Since I last had the honour of writing to you, I have procured your *British Song Birds*, the perusal of which gave me much pleasure and satis-

faction. The nomenclature you use, in my opinion, is in most cases the best. Sir W. JARDINE seems, however, from his review of the *Song Birds* in the *Magazine of Zoology and Botany*, to think very differently. Surely the nomenclature *he* adopts cannot be considered excellent!—You must excuse me if I now proceed to offer a few criticisms on your book. I believe, however, that they will meet your approbation: at least I know I shall only be acting as you would wish any friend or correspondent candidly to do. At p. 285—6 you have some very pertinent and just observations on the use of "common" as a specific appellation, which you conclude by saying, "*common* can *never* be admissible." At p. 364 we have "*Common Goldwing.*" You will perceive at once that you have here laid yourself open to a charge of inconsistency. Would not "*Thistle Goldwing*" be a much better appellation? Now it appears to me that *vulgaris* is equally objectionable as "common" in vernacular nomenclature; and I am happy to find you have discarded it in many cases. But why have we still *Merula* VULGARIS and *Crucirostra* VULGARIS? The former cannot be said to be common, and the latter is of very rare occurrence in this neighbourhood. Would not *Merula hortensis* be preferable to *M. vulgaris*, for the *Garden* Ouzel?

At p. 184, in the article Coal Tit, lines 1, 7, and 25 from the top, we have *Marsh Tit* where the *Coal* Tit is evidently referred to.—I hope your interesting work may soon have to pass through a second edition, and should you think these observations just, you will then be able to made suitable corrections.*

ON THE BACKWARDNESS OF THE SPRING of 1837.

We have at length the happiness to experience a little summer weather in this quarter. How late the season has been! The Swallows did not make their appearance till the second week in April,† and the Swift was not seen until the 4th of May. Nature seemed to show her disapprobation of the ancient custom of decking the streets on the 29th of May with branches of Oak; for she denied foliage to that tree, and naked branches would hardly have suited the *cavalier's* purpose. For my own part, I think the Dame did quite right (craving your pardon if you are of that class who view CHARLES as a martyr, and reverence him as such). As a natural consequence of the Oak being so late in foliage, the *Melolonthæ* did not "break the still of eve" with their "booming flight" until at

* We have elsewhere observed that we should be glad to have a better name than *Common* Goldwing suggested. Thistle Goldwing appears to us the very thing. *Merula hortensis* is likewise good; but surely Mr. RYLANDS is mistaken in saying that this bird "cannot be said to be common;" we never visited any part of the country without finding it abundant, though always solitary (hence *Merula*, from *mera*, solitary) or in pairs.—We feel much flattered by our correspondent's favourable opinion of the *British Song Birds*, and beg to thank him sincerely for his candid and judicious criticism.—ED.

† And they were not common till the first week in May.—ED.

least a fortnight after their usual time of appearance. *Mancipium cardamines* did not appear till the first week in June; and the *Pontiæ* were very rarely observed previous to the same period. In fact, as far as I have been able to judge, each species of insect is from a fortnight to a month later in its appearance than usual.

Excuse my troubling you with such a lengthy, tedious and desultory letter, and believe me,

Dear Sir, yours very sincerely,

To Neville Wood, Esq., &c. Peter Rylands.

Campsall Hall.

The Cause of Blight in Trees.

To the Editor of the Naturalist.

Sir,—I was advised to give the following statements publicity, although from their simplicity they did not *appear* worthy, or sufficiently attractive for public notice. They were communicated to me by a neighbour in lowly yet easy circumstances of life—a man of observation, and one who takes great delight in the culture of his garden. The remarks were to the following effect:—I have for many years been trying to find out the cause of blight in trees, vegetables, &c. I once thought differently, but have now come to the following conclusion;—First, we know that Nature, whether animal or vegetable, breeds its own corruption, and thus I account for the blights. The tree or vegetable *commences* its growth; the sap or juice arises; however, shortly comes frost, east-wind, or some thing pernicious communicated through the atmosphere; instantly the plant shows it has received a check. Now the tubes, vessels, &c., are full or filling at this time; the outer opportunities of enlargement and evaporation of the substance are now denied. Then what becomes of the superfluous sap or juice? for the receiving vessels of the root, being protected, still continue to fill. What is the consequence of repletion and want of perspiration in the human body? Are not the pores of the skin the safety-valves of health? It must end in disease, some way or other.

In plants, &c., I conceive, as the check received is more or less violent, or more or less continuous, so will the blight be more or less abundant.

One circumstance supporting this supposition is, that the grub or fly comes in such a manner or in such a situation (in the heart of an apple, &c.) as frequently to prevent our supposing the blight to be caused by attacks of the insect tribe.

I have the honor to remain, Sir,

Your humble servant,

East Drayton, Nottinghamshire, G———.

June 17, 1837.

CHAPTER OF CRITICISM.

On the Music of Snails.

To the Editor of the Naturalist.

Sir,—Some time ago an article appeared in Mr. Charlesworth's ("Loudon's"!) *Magazine of Natural History* vituperative of *The Naturalist*. It was taken no notice of, its bad taste being sufficiently evident, and being therefore considered only likely to injure the falling cause it was intended to serve. The burden of the song was an attempt to throw ridicule upon an interesting *fact*, respecting the musical sounds attributed to snails, which had been mentioned by a lady of great veracity in a previous number of this Magazine (Vol. I., No. 1, p. 38). The whole narrative was sneered at, as utterly unsuitable to the pages of a scientific journal. Now, Sir, for an illustration of inconsistency. Mr. Charlesworth may indeed say, that he had not the conductorship of Loudon's *Magazine of Natural History* at the time I am about to allude to. No, very true, but if the Editor is changed, why keep up the former Editor's name? This may be a puzzling question, but the public, I know, are anxious to have it answered. Will it be answered? and, if so, will the reply be satisfactory? *Nous verrons!*

Now to the point. In vol. ii., p. 244, of Loudon's *Magazine of Natural History*, old series (or *old style*? "N. S.," I suppose, implies its existence, though people seem to think that the improvement is not so evident as it ought to be), we find the following paragraph, which tallies remarkably with the anecdote related in *The Naturalist*:—

"*Musical Snails.*—As I was sitting in my room, on the first floor, about nine P. M. (4th of October last), I was surprised with what I supposed to be the notes of a bird, under or upon the sill of the window. My impression was, that they somewhat resembled the notes of the Wild Duck in its nocturnal flight, and, at times, the twitter of a Redbreast, in quick succession. To be satisfied on the subject, I carefully removed the shutter, and, to my surprise, found it was a Garden Snail, which, in drawing itself along the glass, had produced sounds similar to those elicited from the musical glasses.—Sam. Woodward, *Diana Square, Norwich, April* 3, 1829."

Now, Sir, some criticism *might* be indulged in on the narration of Mr. Woodward, but I forbear. I will only leave it to the candour of Mr. Charlesworth, whether he ought not to take some notice of the statement I have just made, by way of apology for his former unseemly merriment.

Remarks on Mr. Joseph Clarke's Notes on the Crossbill.

In the palmy days of Loudon's *Magazine of Natural History* I used sometimes

to occupy a few of its pages. Among others I sent a paper on the habits of the Crossbill, from my own observation of that bird. More recently, a paper has appeared on the same subject from the pen of Mr. JOSEPH CLARKE, and as it appears to me that he has plagiarised rather largely from my account, I send you extracts from both, that the orignality of Mr. CLARKE may be made evident, as well as the care and attention of Mr. CHARLESWORTH in his capacity of Editor.

Extract from Mr. Morris's Paper.—"Having, probably, been but little ever disturbed in the recesses of their native forests, they were at first exceedingly tame. Mr. MARTIN [GEORGE MARTIN, Esq., of Sandall, near Doncaster.—ED.] informed me that, when he first observed them, they allowed him to fire at them several times, and to load his gun after each shot, without leaving the tree they were upon, though some of their number were killed each time: so little accustomed did they appear to the sight of a gun, and so little acquainted with its murderous use. The morning that I saw them, however, they evidently had become a little more wary, though still more tame than any other wild birds I had even seen before. * * * * The feet are exceedingly strong, and the legs placed very far backward indeed; there is very great power in the muscles and tendons by which they are worked, so that the bird can sway its body into almost any position such as the situation of its food may require for its getting at it. The birds seem almost as if their feet were ingrafted into the branch, so firmly fixed do they appear, bending their bodies at the same time upwards and downwards, in fact, in any direction, and in every attitude. When the bird is dead, the feet are contracted in a very forcible manner, requiring some strength to bend them, and bent as if grasping the branch to which they were before so attached: 'the ruling passion strong in death.'"—*Vol. IX.*, p. 414—15.

Extract from Mr. Clarke's Description.—These busy strangers, with their incessant twittering, were continually flying from tree to tree, curiously examining every fir-apple, and with one of their strong feet grasping the twig, and with the other the fruit, of the Fir; sometimes in a horizontal, sometimes in a vertical, position; turning up and down with as much facility as if on a pivot; swaying their bodies to and fro in almost every possible attitude; breaking with their strong, crossed, and admirably-adapted bills, the scaly case; and extricating the seed from every cone. It was highly amusing to observe them in their indefatigable avocations, which, on their first appearance, was a matter of no great difficulty, as they seemed totally unused to the busy haunts of men, and had not yet learned to fear the approach of an enemy. So tame were they as to be but little alarmed at the report of a gun, even when near them; but cruel experience soon taught them to be more wary, and to court the gaze of the destroyer less wantonly, although at no time could they be said to be wild or shy."—*Vol. I., N. S., p.* 165.

I remain, Sir,

Your obedient servant,

Doncaster, July 4, 1837. FRANCIS ORPEN MORRIS.

[As regards Mr. CLARKE's notes on the Crossbill, we consider them both original and valuable; and we are willing to believe that the similarity existing between some portions of his paper and that of Mr. MORRIS, are rather to be attributed to the accuracy of the observations of both parties than to plagiarism on the part of Mr. CLARKE. We should be glad to find that the latter gentleman could conscientiously confirm our opinion.—On the "Music of Snails" we shall not comment; the facts speak for themselves.—ED.]

Sir James Edward Smith, and not Dr. Latham, the Founder of the Linnean Society.

To the Editor of the Naturalist.

Sir,—I apprehend Dr. Latham was not the founder of the Linnean Society, as stated at p. 56, but Sir James Edward Smith, M.D., who brought the Linnean Cabinet from Sweden, although chased by a Swedish frigate!

I am, Sir, yours, &c.

James C. Dale.

Glanvilles Wootton, Dorsetshire,
June 18, 1837.

[At the time we wrote our brief notice of Dr. Latham we were not certain whether it was Dr. Latham or Sir James Smith who founded the Linnean Society, and we trusted to the kindness of some correspondent to correct us if we were in error. If our venerable friend was not the founder of the Society, he at least took an active part in its formation; and it may even be questioned whether it would ever have existed but for this celebrated man.—Ed.]

PROCEEDINGS OF NATURAL HISTORY SOCIETIES.

GEOLOGICAL SOCIETY.

May 17.—The Rev. W. Whewell, Pres., in the chair.—The conclusion of a paper, commenced on May 3, and entitled "A Description of the Geological Character of the Coast of Norway," by Mr. Pearce Pratt, F.G.S., was read. The paper is especially valuable, as it chiefly notes those circumstances which have either been imperfectly or not at all known previously. We shall, therefore, give a brief outline of the communication.—The chalk cliffs on the coast between Cape Antifer and Cape la Heve consist of chalk marl, and rest upon a bed of green sand, 40 or 50 feet in thickness. Alternate with these are argillaceous beds, ferruginous deposits, indicating the presence of the Gault and Hastings sand. These lie upon argillaceous limestone, separated into thin strata by layers of clay, the uppermost of which contain *Gryphœa vingula*, *Ostrea deltoidea*, &c., which represent the Kimmeridge clay. In consequence of a fault, bringing down the argillaceous deposit termed *Argile d' Honfleur* to the level of the shore, it has been supposed that this was equivalent to the Kimmeridge clay, as well as the deposit on the northern shore of the Seine; but it actually overlies the iron sand.

The Kimmeridge re-appears near Cricque Bœuf, and rests on a calcareous rock,

which, Mr. PRATT thinks, is equivalent to the coral rag formation, and does not represent the Portland beds. Towards the mouth of the Toucque a deposit of clay rises from beneath the calcareous layers, containing *Gryphæa dilatata* and *Ostrea gregarea*, thus representing the Oxford clay. This forms the cliffs as far as Dives, and is seen near the mouth of the Orne, overlying a calcareous oolitic rock, commonly considered identical with the Cornbrash, but in fossil remains bearing a much closer resemblance to the forest marble in the west of England. They are immediately above two beds filled with fossils, among which are *Terebratula digona*, *T. plicata*, *Avicula inæquivalvis*, *Apiocrinites rotundus*, and hence representing the Bradford clay.—The Caen freestone is usually considered to represent the Great Oolite of the west of England, but the few fossils found in it are similar to those of the Inferior Oolite.—Lias is distinctly traced some hundred yards, forming the base of the cliffs near St. Honorine.—From Mr. PRATT'S account we gather, that nearly the whole of the strata found between the chalk and the lias in England, occur on the coast of Normandy; the Portland and Purbeck beds, and the Kelloway rock, only, not being met with in that part of France.

A paper by Dr. MITCHELL, F.G.S., was read, describing a well sunk at Beaumont Green, on the premises of Mr. MUNT, a magistrate for the county (Hertford); in this well chalk was found at a depth of 126 feet; a spring was met with 40 feet lower, but the excavation was carried on 17 feet below the spring, to form a reservoir. The most remarkable stratum in the section was one 15 feet thick, formed of blue sand with black pebbles. In very wet weather it emitted foul air in such quantities as to suffocate a well-digger in descending. A Hawk, flying over the well, fell into it, and a similar fate befel smaller birds, as well as Bees and Flies.* Dr. MITCHELL has no doubt but the foul air was sulphuretted hydrogen gas, formed by the decomposition of water and iron pyrites. The country, for three or four miles round the well, is called the "foul country" by the well-diggers. In dry weather no unpleasant smell was noticed. The well has lately been bricked-up, in order to prevent the unpleasant odour above alluded to.

ZOOLOGICAL SOCIETY.

June 27.—Mr. THOMAS BELL, F.R.S., in the chair.—Mr. GRAY indicated the sebaceous glandular structure in the tail of a species of Fox (*Vulpes*), and we

* At least so says Dr. MITCHELL, though we very much question the circumstance. It is improbable that insects would approach the contaminated spot, and at the distance above the well at which Hawks and other birds would fly, we are at a loss to conceive how it could affect them so powerfully. As far as we can judge, Dr. M. does not, in this instance, speak from personal observation.—ED.

agree with him in thinking that this might form a valid generic character. The colour on the part of the tail appeared to be affected by it. Dr. SMITH observed that he had noticed a similar mark on two different species in South Africa, which seems to confirm Mr. GRAY's opinion. Mr. OGILBY thinks it possible that the same kind of glandular structure may exist in the "brush" of our Common Fox.—Mr. OGILBY described two species of Apes brought over by General HARDWICKE, from the Straits of Malacca; he named them *Hylobutes coromandus* and *H. styllites*. He then described some species of *Colobus*, and Dr. SMITH exhibited various species of Moles from his collection.

ASHMOLEAN SOCIETY OF OXFORD.

THIS Society has lately received a valuable donation from Lieut.-Col. STACY, consisting of organic remains from the Himalaya mountains. They are mostly bones of the Elephant, Mastodon, and Hippopotamus; Dr. BUCKLAND either has already described them, or will shortly do so.—A paper by Dr. DUNCAN was read, relating to the various fermented liquors used as drink by man, and discussing at some length the wines of ancient Greece and Italy.—Dr. DAUBENY then described the rocks of Adelsback, on the Bohemian frontier, a day's journey from the *Riesengebirge*, or Giant Mountains of Silesia, remarkable for the weathered condition of the sandstone of which they are formed. The rock is the *Quaderanstein*, and represents the green-sand formation of this country; it is a continuation of the rock through which the Elbe flows in Saxon-Swisserland. The whole of this sandstone formation, occupying a space of four miles by two, is divided into polyhedral masses, to a depth of not less than 100 feet from the upper surface. The causes are supposed to be the force of running water and the downward action of rain, to which Dr. BUCKLAND thought, that the force of the wind should be added, in which opinion we are inclined to concur.

We may here notice that we have lately received "*A Catalogue of the Ashmolean Museum*, descriptive of the zoological specimens, antiquities, coins, and miscellaneous curiosities. Oxford: S. Collingwood. 1836." By this catalogue we are glad to find that the museum of the society—hitherto so notorious for its disorderly and decayed state—has been recently undergoing arrangement. As far as regards the number of the specimens in almost every department of Zoology, the museum is well off, for it contains a great variety of British and foreign species. At the bottom of each page in the list the derivations of the various scientific terms are supplied. Of the state of preservation of the specimens we know nothing and are told nothing, but from the circumstance of many of them having been so long neglected, we fear that at least some portion of them must be in a bad condition. With this Museum and the splendid Radcliffe

Library—perhaps the best library for works on Natural History in existence—the Oxonians enjoy very considerable advantages for the cultivation of zoological science. At present there appears to be no herbarium in the Ashmolean Museum, a desideratum which we hope ere long to see supplied.

SHROPSHIRE AND NORTH WALES NATURAL HISTORY AND ANTIQUARIAN SOCIETY.

Among the numerous provincial Natural History Societies that are springing up on every side, there may be and doubtless are some conducted with more pomp and external show than that of Shrewsbury, but we verily believe it exceeds all others in the real desire of effecting something substantially beneficial to Natural Science. The annual report for 1836—a printed copy of which has reached us—is highly satisfactory. The members are above two hundred in number, including many names eminent in science, the professional men, and the nobility and gentry of the town and neighbourhood of Shrewsbury. We conceive gentlemen of property to be a great assistance to Societies of this description; and if they are either amateurs or connoisseurs in matters of science, they are sure to be amongst the most useful members. Indeed, to this circumstance we are inclined, in a great measure, to attribute the flourishing state of the Shrewsbury Society. Nothing, however, can be further from our desire than to see an aristocratic monopoly at the head of these institutions; on the contrary, every one, however limited his means, ought to be admitted on payment of the annual subscription; and if there be any really scientific men in the town or neighbourhood so poor as to be unable to pay even that small sum, they should be admitted as honorary members. All we contend for is, that the funds, the library, and the museum may receive much benefit from the richer members; and as, in our opinion, the nobility and gentry of England cannot employ their time or money more usefully than in encouraging literary and scientific institutions, we shall now give the names of those who lend their support to that of Shrewbury, trusting that so excellent an example will be followed in other districts. As we are not personally acquainted with many of the members, we can only judge by the list contained in the report, and may therefore, perhaps, overlook several of the rich gentry. We present the names in the order they occur in the report:—

William and John Anstice, Esqrs., Madeley Wood; Ven. Archdeacon Bather; Rt. Hon. Lord Berwick, Attingham Hall; R. M. Biddulph, Esq., F.Z.S., Chirk Castle; George Bowen, Esq., Coton Hall; Rt. Hon. the Earl of Bradford, D.C.L. F.H.S., F.Z.S.; Viscount Edward Clive, M.P., M.A., F.H.S.. F.Z.S.; Hon. R. H. Clive, M.P., F.R.S., F.Z.S., Oakley Park; Sir A. V. Corbett, Bart., Acton Reynald; Panton and Richard Corbet, Esqrs., Leighton Hall; Rt. Hon. the Earl of Darlington, M.P., F.Z.S, Snettisham Hall, Norfolk; Thomas

CAMPBELL EYTON, Esq.,* Eyton Castle; Col. GATACRE, Gatacre Hall; W. ORMSBY GORE, Esq., M.P., Porkington Hall; Rt. Hon. Lord HILL, G.C.B., G.C.H., F.H.S., F.Z.S.; Sir ROWLAND HILL, Bart., M.P., F.Z.S.; Lady HILL; Sir FRANCIS LAWLEY, Bart., F.H.S., F.Z.S.; Sir BALDWIN LEIGHTON, Bart.; Rt. Rev. the Bishop of LICHFIELD, D.D., F.R.S.; Rt. Hon. the Earl of LICHFIELD, F.H.S., F.Z.S., Pitchford Hall; C. K. MAINWARING, Esq., Oteley Park; G. A. MOULTRIE, Esq., Aston Hall; B. H. OWEN, Esq., Tedsmore Hall; Rt. Hon. the Earl of POWIS, D.C.L., F.H.S., F.Z.S.; S. A. and J. M. SEVERNE, Esqrs., Wallop Hall; R. A. SLANEY, Esq.,† Walford Manor; W. H. SLANEY, Esq., F.Z.S., Hatton Grange; Sir E. J. SMYTHE, Bart., Acton Burnell.

At present the meetings of the Society are held in the temporary Shire-hall, Shrewsbury, and the apartments dedicated to the museum are so inadequate to the purpose, that the committee suggests the propriety of erecting a building for the use of the institution. This is, of course, a most desirable object, and, with the assistance of the above and other opulent members, surely there could be no difficulty in raising the requisite funds. The museum and library appear to be in a flourishing state, for which the Society is mainly indebted to the munificent donations of some of the members, especially T. B. BARRETT, Esq., R. CORBET, Esq., T. C. EYTON, Esq., Capt. HILL, Mr. SHAW, Major WAKEFIELD, and the Rev. CANON NEWLING. Probably the donations would be still more numerous were there a museum wherein to arrange them.—Some lectures have been delivered before the members, and a Fauna and Flora of the county are in preparation, the former by T. C. EYTON, Esq., the latter by W. A. LEIGHTON, Esq.

DONCASTER LYCEUM.

CONSIDERING the opulence of the county of York, and the number of scientific men it contains, we cannot help feeling somewhat disappointed at the printed report for the year 1836 of the Lyceum. In reply to this we shall be told, that Doncaster is a small town, and that individuals from distant parts cannot be expected to join its institutions. This, however, is not the case with Shrewsbury; the Society of that town includes members from many other counties, some of which contain excellent public museums of a similar nature; and the same may be said of the Worcestershire Society. In general, the gentry of the county are among the foremost to come forward and assist these institutions, and there must be some reason for their not doing so in the present instance. The principal reason we conceive to be, as we have elsewhere observed, the too great attention paid by the Lyceum to Politics. A large number of the members are quarterly‡, and we suspect that many of them enter the Society merely for

* Author of *A History of the Rarer British Birds.*

† Author of *An Outline of the Smaller British Birds*, a book written in an extremely pleasant spirit.

‡ Quarterly members pay 10s. per annum—annual members £1.

the purpose of reading the newspapers. Be this as it may, it is rare to see any one in the room dedicated to books and periodicals, while on the other hand we have never found the newspaper room empty.

Several excellent lectures have been delivered at the Lyceum, but the library and museum are at present very small, and the apartments inadequate to contain a better collection. As long as so large a proportion of the funds* go to purchase newspapers, so long will tradesmen join the Society with the *sole* view of reading *them*, and so long, we opine, will the scientific men and the gentry be prevented from supporting it. It is obviously unfair that those who are really interested in the welfare of a scientific institution should be obliged to see it turned into a political news-room; and although no member is compelled to contribute towards the newspaper fund, yet the fact of newspapers being admitted at all, must and will prevent the utility of the literary and scientific department from becoming so extended as it might otherwise be.

The president for the current year is Edmund Beckett Denison, Esq.; the six vice-presidents are, Henry Bower, Esq., F.S.A.; E. Scholfield, M.D.; Ferguson Branson, M.D.; J. W. Childers, Esq., M.P.; Mr. E. Sheardown; T. Walker, Esq.

The list of members includes all the professional men of the town; but, whether for the reason we have assigned, or from some other cause, the gentry have never given the Lyceum their support. Only compare the following list with the array of names we have extracted from the report of the Shrewsbury Society (p. 267)!

Sir W. B. Cooke, Bart., Wheatley Hall; J. W. Childers, Esq., M.P., Cantley Hall; P. D. Cooke, Esq., Owston Hall; G. Martin, Esq., Kirk Sandall; T. Walker, Esq., Wilsic; Neville Wood, Esq., Campsall Hall.

That the Doncaster Lyceum is progressing we do not deny, but before it can hold up its head amongst other provincial societies, it must be equally well conducted. That we wish it success we need hardly say; whether or not it *will* succeed depends upon the judicious exertions of its members and officers.

It were unfair to close our present notice without observing that our correspondent, the Rev. F. Orpen Morris, has been a most liberal contributor to the museum.

* About £18 annually.

EXTRACTS FROM THE FOREIGN PERIODICALS.

ZOOLOGY.*

1. On the Migrations of North American Birds, by the Rev. John Bachman.—Migratory birds are admirably adapted for rapid and protracted flight. Their light hollow feathers, their bones full of air-cells, their large lungs, and the force of their wings, enable them to float a long time in the air with little exertion. It has been ascertained that the Migratory Pigeon (*Columba migratoria*), and many species of *Anatidæ*, fly at the rate of a mile and a half in a minute. [Some birds, and especially certain of the *Hirundinidæ* and *Falconidæ*, are supposed to fly occasionally at nearly four times this speed.—Ed.]—Thus these birds can, in a single day, travel from Charleston to the northernmost parts of the U. S., at once explaining the fact of Pigeons having been killed in the northern states with undigested rice in their gizzards, which they had swallowed, the preceding day, in Carolina or Georgia. A Falcon sent out by the Duke of Lerne, has returned from Spain to Teneriffe, a distance of 750 miles, in 16 hours.

It is certain that many birds of passage fly during the night; they first ascend in the air, from whence they send forth their cries, and many, as the Stork, seem scarcely to rest on their course from their winter quarters in the south to their breeding places, towards the polar regions.

Birds emigrate either to avoid the cold of winter, or, probably, to obtain food more suitable and more abundant.† In fact, among those which remain in the snows of the north, some are omnivorous (as *Corvus corax*, *C. Canadensis*, and other Crows), while others feed on the buds or leaves of trees, as the Pine Thickbill, &c. But the insectivorous species, those which frequent marshes and stagnant waters, the borders of rivers, &c., all emigrate, and go to seek in the south the kind of food they require. Some birds only migrate from the south to the north of the Union, and do not proceed further than Carolina; such are the various insessorial birds, as Larks, &c. When the winter birds return to the northern regions, they are replaced by analogous species from the tropics. Thus in America the White-headed Elanus (*Elanus leucocephalus*), the Mississipi Falcon, and others, build in the woods abandoned by the northern raptorial birds, so that each season brings a succession of different species.

* As this is the first ornithological extract we have made from the foreign journals in the present volume, we feel assured that no apology is necessary for quoting at such length from the very interesting paper of Mr. Bachman. The article originally appeared in the *American Journal of Science;* but our quotation is translated from a French periodical.—Ed.

† These, doubtless, are the circumstances for which birds are caused to migrate; but it must be remembered that birds are impelled to change their abodes at certain seasons by a mere blind impulse—an innate faculty, which is stimulated at those periods, and without any reason or knowledge on their part of the cause of these emigrations.—Ed.

Other birds only migrate occasionally and partially, according to the supply of food. The Virginian Partridge, if grain is scarce in New Jersey, crosses the Delaware to proceed to Pensylvania. The flight of these birds is so heavy, that, in general, unable to cross the river, they fall into the water, and complete the journey by swimming. It is the same with the Wild Turkeys, which, when they arrive weary and lean on the other side the Ohio, the Missouri, or the Mississipi, are caught in great numbers.

It is supposed that the Migratory Pigeons only visit the U. S. in very hard winters. This appears, however, to be erroneous. I have seen immense flights of these birds in Canada in winter, during intense cold, but after a season highly favourable to the grain on which they subsist. It is only the want of this food which compels them to migrate to the south.

Agricultural improvements, by introducing plants, &c., extend the migrations of birds. Thus the Mocking Wren (*Troglodytes Ludovicianus*), and other species now common in the northern states, were unknown in the time of WILSON. The Cliff Swallow (*H. lunifrons*), a Mexican bird, appeared for the first time on the banks of the Ohio, in 1815. It excited great interest by the structure of its mud-built nest, of which several are placed together, and resemble in shape a group of Gourds. Every year it advances in its migrations, which now extend to Canada. The same may be said of many other birds.

It has been computed, that out of the 450 species known in North America, only 108 are common to the two continents, the water-birds forming more than three-fifths of the number. These species are principally Eagles, Hawks, Owls, and Crows, among land birds, and Ducks or sea-birds among the *Aquaticæ*.

The most singular notions have been entertained respecting the habits of the Rail. Absent throughout the summer, it suddenly appears in myriads in August, on the banks of the Delaware. Here they remain till October, when they suddenly disappear, and not one is to be seen where, on the day before, they were found by hundreds. As their flight is heavy, these birds are supposed to retire in winter to hollow places, or even under the ice. The fact is that they take their departure in the night. They breed very far north, and have been seen on their nests along the marshy lakes of Upper Carolina.

When the period of departure arrives, birds display a kind of irresistible restlessness. Goldwings, Orioles, &c., carried while young to the north, and liberated in spring, fly in the direction of the pole, as if guided by a compass. A little before the approach of winter, and sometimes when the cold weather is already commencing, birds of passage assemble in flocks. The young of most species unite, as if they disdained to inquire the way of their elders. Some fly separate, others in thin scattered troops, and others again in regular flocks. Some fly slowly, and as though affected by the cold; others proceed rapidly, and achieve their journey in a few days. Some birds fly from land to land, and often

rest; others ascend into the clouds, and never stop. They know how to choose a favourable period for their passage, to direct their course, and to find the same spots which they have already frequented. A Blue Martin, so marked as to be easily recognized, has been known to return ten successive years to build in a box prepared for the purpose, and a Red-tailed Falcon *(F. borealis)*, remarkable for its plumage having accidentally become white, has, for ten consecutive winters, taken possession of an old Fir in the district of Colleton, in Carolina.

Many birds migrate by day, but still more, as the Herons, Snipes, Rails, &c., fly by night, the first continually screaming, the others in silence.

The arrivals and departures of birds form one of the best prognostics of the state of the seasons, and Capt. PARRY informs us of the anxiety with which the Esquimaux await the appearance of the Snowy Longspurs *(Plectrophanes nivalis)*. The Fishing Eagle announces, to the inhabitants of the borders of rivers in the north, the period of the arrival of the fish; and the note of the Carolina Nightjar *(Vociferator Carolinensis*, N.W.) informs the farmer that the time for sowing the corn is arrived.—*Bibliothèque Universelle de Genève, Jan.* 1837.

BOTANY.

2. ON *Lythrum alternifolium, by* M. BOREAU.—Towards the close of last century an amateur of Botany found, near Dijon, a *Lythrum* different from all the then known species. A specimen of this plant, preserved in the herbarium of M. VALLOT, was transmitted to the late M. PERSOON, who described it as *L. nummulariæfolia (Syn.*, pl. 2. 2. p. 8.). In 1830 MM. LOREY and DURET, at that time preparing the *Flore de la Côte d'Or*, submitted the plant to M. DE CANDOLLE, who described it under the name of *L. alternifolium*, pointing out that it offered characters tending to relate it to *E. hyssopifolium* and *E. Græfferi*. This description was copied into the *Flore de la Côte d'Or* (2. 1. p. 348. fig. 2), accompanied by a figure. Later M. MUTEL did not hesitate to admit this plant as a legitimate species, and he inserted it in his *Flore Francaise* (tom. i., p. 379). Up to that time, indeed, this plant not having been again met with, no one had ever been able to solve the question proposed by M. LOREY, viz., whether this plant was not a mere sport of Nature.

It was therefore with great pleasure that in August 1835 I perceived on the border of a stream, near Nevers, a plant reminding me of the species figured in the *Flore de la Côte d' Or;* but in attempting to gather this singular plant, I found that it was attached, by its lower part, to a stalk of *Lythrum salicaria!* The top of the stem having been cut, it had developed lateral buds, which, instead of producing a continuous spike, had only formed a few axillary flowers. In fact, in the normal state of *L. salicaria* the inflorescence is always intermixed with a greyish pubescence; the flowers have cordiform bracts, whose alternate disposition is especially observable at the top of the spike. Thus, if we suppose

the whorls more scattered upon a thinner and longer axis, we can easily understand how the bracts, retaining their shape, should assume the appearance and size of leaves, and that the flowers, in the midst of this development of herbaceous parts, should become the largest and least numerous. This, in short, is the whole mystery, and this remarkable form is only due to a greater distension of the parts of the inflorescence.

Lythrum alternifolium therefore ranks no longer as a species, or even as a variety, since this form, which one may, so to speak, produce at pleasure, is the result of mere chance.—*Annales des Sciences Naturelles, Nov.* 1836.

CHAPTER OF MISCELLANIES.

ZOOLOGY.

Temerity of the House Swallow (*Hirundo urbica*).—On passing, a few weeks since, along a narrow road way, between a range of out-buildings and a garden wall, I was surprised by the sudden passage of some dark body, immediately over my head. I at first suspected it was a stone, but on quickly looking up, found that it was a House Swallow that had just passed me. As I stood wondering at what could induce the bird to approach so close, I received another visit of the same kind, and after this several more, the bird passing each time within three or four inches of my hat. The next day, walking along the same road, I received a like salutation, and then discovered that the Swallows had a nest in the out-houses. This sudden darting at my head, with loud snaps of the bill, evidently for the purpose of driving me from the nest, continued several days; and although a party of Swallows generally assembled in the air, above my head, I found that only one pair were engaged in active service. Each day they became more bold, and every attack was attended by a kind of scream preceded by a loud chatter. I was never attacked as long as I kept a respectful distance from the nest. About ten days or a fortnight after the first attack, I resolved to peep in the nest, and effected this amid the screams and dartings of the agitated owners. I found in it young birds fully fledged. On looking into the nest the following day I found that the young birds were gone, but the attacks of the parents were renewed as usual. This, however, was the last time, for I have ever since been allowed to pass the spot unmolested. Since noticing the foregoing fact I have experienced similar treatment from another pair of House Swallows, but the attacks were not so violent as in the former instance, amounting to nothing more than a slight chattering, and darting past me at the

distance of a yard or two above my head.—Edwin Lankester, *Campsall, near Doncaster, July* 19, 1837.

The Nest of the Common Kingfisher (*Alcedo ispida*, Linn.).—A friend of mine while fishing on a small Trout-stream, near Louth, called the Crake, in the early part of June, observed a Kingfisher, with a fish in its mouth, flying several times near his hat with a whirring noise. He watched it until it entered a hole in the bank, the entrance to which was strewed with fish bones. On digging into the hole (which commenced low down in the bank, and ran upwards in a slanting direction for about two feet), he found the nest, containing seven young birds just hatched. The bottom of the nest was excessively thick, and mixed up with small bones of the Stickleback. Its structure, excepting the mixture of fish-bones, was not very unlike that of a Thrush. It crumbled to pieces on being touched, and I could procure no portion worth preserving. Near the nest was another hole, which had all the appearance of having been the Kingfisher's last year's residence, the bones at the entrance being dry and crumbly; but in this the parent bird again commenced laying, and on opening the nest six eggs were found on the fragments of the structure. They were white, and beautifully transparent, shewing the yolk through, which gave them a pinkish hue at the larger end. I have now in my collection one of the eggs, which, though so transparent, I was surprised to find thicker and stronger than the generality of eggs, and rounder in its form, the circumference being two inches and a half, the length eight-tenths of an inch.—R. P. Alington, *Swinhope House, Lincolnshire, July* 15, 1837.

The Name "Garden Thrush" as applied to *Turdus musicus*, Auct.—In *The Analyst*, No. xviii., I find the name "Garden Thrush" proposed to be substituted for Song Thrush. I should have given the name Garden Thrush to the Missel Thrush. At least its habits here would warrant such an appellation. I knew of five nests in gardens last year, and have already found one in a similar situation this year, snowy as it is.—Thomas Allis, *York*, 3 *Mo.* 24, 1837.

The Nest of the Yellow Bunting Seven Feet from the Ground.—On the 29th of May, 1834, I found the nest of a Yellow Bunting at the extraordinary elevation of seven feet from the ground. It was placed amongst the branches of a Broom (*Cytisus scoparius*), which was quite naked at the bottom, but which had a thick close head; in this the nest was situated.—J. D. Salmon, *Thetford, Norfolk, June* 14, 1837.

The Nest of a Blue Tit found inclosed in the Trunk of an Oak.—In the course of the present week, two men engaged in sawing into planks an Oak tree at Mr. Hunt's timber yard, near the canal basin, found in a hole in the centre the nest of a Blue Tit, containing several eggs. The nest must have been in this situation, it is supposed, for the last century, and when taken out was

quite wet. The surface of the tree was entirely sound, and there was no appearance of a communication to this hidden cavity.—*Gloucestershire Chronicle, June* 17.

Instance of the Wood Snipe *(Scolopax rusticola)* carrying its Young in its Bill.—A rare fact occurred a short time since in this county. A boy fishing disturbed a nest, the birds from which flew in different directions, one with a bird in its bill. The boy followed the weakest of the brood, and discovered it to be a young Wood Snipe, which is now in the possession of Mr. Burgoin, gamekeeper to the Duke of Devonshire, at Chatsworth. The bird which the boy first saw was one of the parents conveying its offspring from the impending danger, across the river at Ashford.—*Derby Mercury.*

The Egyptian Goose, the Bluethroated Fantail, and the Wood Snipe's Nest, found in Dorsetshire.—Mr. Knight tells me that two Egyptian Geese were shot last year in Dorsetshire, and Mr. C. Henning has one of them. The Bluethroated Fantail [*Pandicilla Suecica.*—Ed.] has also been killed in the same county, and is in the museum of Mr. R. A. Cox. A Woodcock's nest was found in Middlemarsh Common in April 1837. Sir R. C. Hoare has a white Woodcock, another dusky, and a third with white wings.—J. C. Dale, *Glanville Wootton, Dorsetshire, June* 19, 1837.

Utility of the Hedge Urchin.—The Hedgehog is, in general, the object of persecution, not only of idle boys, but is often obnoxious to the farmer and gamekeeper, on account of its mischievous propensities. It is, in fact, one which the agriculturist should endeavour to preserve. A garden in which a Hedgehog is kept, will, in the course of a few nights, be entirely freed from Slugs; and that enemy to fruit trees, the Millepede, is always a favourite food with him. An eminent professor, now living, has communicated the following circumstance. He states that Hedgehogs prey on Snakes. He saw one seize its prey, crack its bones at interval of half an inch or more, and then, placing itself at the tip of the Snake's tail, begin to eat upwards till about half was consumed, when it ceased from repletion, but during the night finished the remainder. The usual aliment of the Hedgehog is insects, Worms, Slugs, and Snails, but it goes higher in the scale of gastronomic enjoyment, devouring Frogs, Toads, and Mice. The Snake experiment was made by Professor Buckland, as above described. The fondness of the Hedgehog for insects, occasions it to be kept in many houses in London, for the purpose of ridding the kitchens of the innumerable hosts of Cockroaches with which they are infested.—*Gloucestershire Chronicle.*

Instinct of Birds.—A curious and pleasing instance of the instinct of birds, and their anxious affection for their offspring, was observed last week in Cheltenham. A gentleman who had discovered a Starling's nest, in which were several young birds, being desirous to domesticate them, had the nest removed from its

situation, near Marle Hill, at a late hour in the evening, when the young birds were brought down to his residence in the heart of the town, and placed in a cage which was suspended in his garden. About three o'clock in the afternoon of the following day, the female Starling was observed at the bars of the cage, actively employed in feeding its young, which, by an instinct hardly inferior to reason, it had thus succeeded in discovering.—*Gloucestershire Chronicle.*

Relationship of the Dipper *(Cinclus)* to the Ouzels *(Merula).*—Young Garden Ouzels *(Merula hortensis)* are very similar in appearance to the Dipper, the more so as their tails are not then full-grown, and as they frequently cock their tails in the same manner as the Dipper. Their close relationship then becomes evident, though, under other circumstances, the claims of the Dipper to rank in the Thrush family has more than once been questioned. A Garden Thrush, it is true, has not, to a casual observer, many points in common with the Dipper, but the affinity is obvious through the Ouzels. The young of the latter, in fact, if seen beside a rocky stream with their short tails cocked in the manner of the Dipper, might, in the first instance, be mistaken for the latter species, so great is their resemblance. Another point in which the Garden Ouzel approaches the Dipper, is its partiality to water, the difference being, that it prefers ditches and stagnant pools concealed by thick foliage to rocky and pebbly rivulets, and, of course, that it never *swims.*—Ed.

Distribution of the Cirl Bunting *(Emberiza cirlus)* in England.—In No. ix., for June (Vol. II., p. 164) of *The Naturalist*, the Editor informs us of an instance of the recent occurrence of the Cirl Bunting in Yorkshire, and I have no doubt but that he is right in supposing this to be the first specimen on record which has been met with so far north. It is not, however, true that it has hitherto been confined to Devonshire and the other counties on the southern coast. Many years ago I obtained two specimens at East Garston, near Lamborne, Berkshire; they were male and female, and a nest with two eggs were procured at the same place—the only instance I have known of the latter having been met with in Britain. I still possess one of the eggs: the other I gave to my friend the Rev. Nathaniel Constantine Strickland. It resembles, but is easily distinguished from, the egg of the Yellow Bunting. I was directed to the birds by their peculiar note, a sort of sharp chirp, but which I cannot describe, having only heard it that once, so long ago. I had the birds preserved at Oxford. Since then, two or three years ago, I shot one out of a flock of Yellow Buntings, near Lyme Regis, in Dorsetshire, and on the borders of Devonshire. This was in the middle of winter. I looked for more, but could not procure any. It therefore seems to associate with the Yellow Buntings as well as to resemble them. This fact—which, as far as I am aware, has not been mentioned before—seems to strengthen the supposition of Mr. Wood, that they may have been mistaken for

the common species, and I have no doubt but that such has frequently been the case.—F. O. Morris, *Doncaster, June*, 1837.

Cranes and Crabs.—On the Coast of Chili innumerable small Crabs live in cylindrical excavations in the sand, and, as the tide approaches, watch for their share of the booty brought by the waves, while they themselves are threatened by the long-legged Cranes, which pursue with extraordinary eagerness the crustacea, and in general all marine animals. But the bird cannot get one of these Crabs except by rapid flight, and even the diligent naturalist does not obtain them without digging in the sand; for the smallest trembling of the ground under foot, even the shadow of a person approaching, warns the little animal of its danger, and, with the rapidity of lightning, it starts into its hole. Swarms of little fish purposely suffer themselves to be brought by every wave far upon the beach, and seem to take pleasure in the sport, for they are so quick and so attentive that you may attempt in vain to catch a single one, or to intercept a number in their retreat with the receding wave. The grave Herons alone contrive to deceive them by their fixed attitude, which, at a favourable moment, is interrupted by an almost convulsive motion, and brings death to one of the poor dupes.—Pœpig's *Travels*.

A Hive of Bees swarming three times in eleven Days.—Mr. J. Thackray, of the Hill Top, near Bramham, has a hive of Bees which swarmed three times within the short space of eleven days, namely, on June 3, 11, and 13.—*Doncaster Chronicle*.

Remarkably large Trout.—A few days ago a Trout was caught in the river Strid, by Mr. Scott, of Strid Cottage, near Bolton Abbey, weighing eight pounds six ounces, and measuring two feet two inches in length, and fifteen inches round.—*Doncaster Chronicle, June* 24.

On separating the Pigeon Family from *Rasores*, and the Plover Family from *Grallatores*.—I think Mr. Allis (p. 57) has very ably shown that the *Columbidæ* ought not to be retained in the order *Rasores*, and I would suggest, that a portion of the *Charadriadæ* be removed from the order *Grallatores* to the *Rasores*, to supply the place of *Columbidæ*. I must leave it to more scientific persons than myself to define which genera are to be removed. I think there cannot be a doubt that the habits of most of the species partake more of the Rasorial than the Grallatorial order. Amongst them the Stone Thick-knee (*Œdicnemus crepitans*) is very conspicuous; for instead of resorting to low wet grounds, it entirely confines itself to the most arid parts of the country, and consequently cannot be considered a *Wader*. The same may be said of several other species now included among the *Charadriadæ*.—J. D. Salmon, *Thetford, Norfolk, June* 14, 1837.

BOTANY.

Backwardness of the late Spring.—With regard to the backwardness of the Spring, I may remark, that *Gentiana verna* was only just coming into flower at the beginning of June this year, and the rest of the larger Teesdale plants I found, during a recent excursion, very backward.—At York, last year, *Caltha palustris* flowered on the 10th of April, about which time also did *Ranunculus ficaria*, and in April *R. aquatilis; Oxalis acetosella*, and *Anemone nemorosa*, on the 4th of the same month.—E., *York*, *July* 19, 1837.

Derivation and Accentuation of *Veronica*.—I am sorry to find that none of your correspondents have given in No. X. the derivation and accentuation of *Veronica*. Withering has it *Veronìca*; Hooker *Verónica*. Is not the latter correct? *e. g.*, *Betónica livórnica*. Withering and others give various suppositions as to its derivation. E., *York*, *July* 19, 1837. [We have generally heard the name pronounced *Veronìca*. As to its derivation we are uncertain. —Ed.]

A venerable Elm.—At Brignolle, near Toulon, is an old Elm under which a dance was performed before Charles IX. of France, in 1564. Michel de l'Hospital*, born in 1563, speaks of this tree as an object worthy the attention of travellers.—*Athenæum*.

Foliage of the Oak.—It is seldom that the Oak first appears in leaf so late as in the present season. In a table of "Indications of Spring," observed by Robert Marsham, Esq., at Sratton, in Norfolk, published in the *Transactions of the Royal Society*, the earliest appearance of the Oak leaf, in a period of fifty years, is stated to have been March 31, 1750; and its latest appearance during the same period, May 20, 1799. It was somewhat later in the present year. —*Gloucestershire Chronicle*.

Remarkably large Poplar.—A week or two ago, a Poplar tree, of 25 years growth, was cut down at Wigginton, near York, the wood of which measured sixty feet in length, and seven in diameter at the top or small end; and the solid wood weighed upwards of two tons. Several eminent wood-valuers have stated, that the above extraordinary weight and dimensions are unprecedented by anything that has yet come within their knowledge.—*York Chronicle*, *June* 22.

MINERALOGY.

A Test for distinguishing Amber and Copal.—In perusing No. X. of *The Naturalist*, for July, I noticed amongst the Correspondence a letter by Mr. Levison (p. 211), on Amber, &c. That gentleman has omitted an important

* This individual, the *Athenæum* informs us, was *born in* 1563, *and Chancellor in* 1560!—Ed.

and simple test, for distinguishing the substance, which is as follows :—Take a specimen and rub it on a piece of cloth, so as to excite its latent electricity, upon which it emits a powerful odour, somewhat resembling Camphor. This will be found a more complete test than that mentioned by Mr. Levison.—If you will insert this I shall feel much obliged.—A Mineralogist, 41, *Strand*, *London*, *July* 14, 1837.

Insects in Copal.—When in London, a few days since, I called at most of the institutions, and found them in a flourishing state. I also visited many private collections of Natural History. It would be occupying too much of your time to make particular mention of them, but I cannot resist describing a few of the things I saw. In a shop in the Strand, nearly opposite Chandos Street, there are a number of specimens of Copal containing insects. Moths, Spiders, and Ants are enclosed within this transparent yellow substance,—forming a beautiful contrast to the tombs which usually receive the inanimate bodies of all things which have lived and moved. Instead of the gloom which surrounds the last habitations of animated beings, here was brightness, and, instead of being loathsome to look upon, there was something to admire and covet. There was one thing which particularly struck me, namely, that the Moths, Spiders, and Ants, although "quietly inurned" in their present magnificent sepulchres for centuries, retain their forms and *palpableness*, and seem as if they were but the other day doomed to be incarcerated in their present resinous receptacles. How insignificant and bungling seem the vain efforts of man to embalm and preserve the frail corpse of some departed friend, by saturating it in *bitumen*, and by folding it in numerous filaments saturated with essential oils, as compared to this manner of preserving animal bodies in a transparent, imperishable, and, when polished, elegant substance! O Nature, thou art profound and perfect, even in what may appear fanciful in thy works!—J. L. Levison, *Doncaster*, *July* 20, 1837.

REVIEWS OF NEW PUBLICATIONS.

A History of British Birds, indigenous and migratory: including their organization, habits, and relations; remarks on classification and nomenclature; an account of the principal organs of birds, and observations relative to Practical Ornithology. Illustrated by numerous engravings. By William MacGillivray, A.M., F.R.S.E., M.W.S., &c., &c., &c. Vol. I. *Rasores*, Scrapers, or Gallinaceous Birds; *Gemitores*, Cooers or Pigeons; *Deglubitores*, Huskers, or Conirostral Birds; *Vagatores*, Wanderers, or Crows and allied genera. London: Scott, Webster, and Geary. 1837. 8vo. pp. 631.

If Mr. MacGillivray has faithfully performed all that is promised in the above title, in this new treatise on British Ornithology, we shall truly have no fault to find with him—no "Crows to pick." In some particulars it decidedly has the advantage over other works on the same subject. We allude especially to the minutely-detailed and accurate descriptions of the *internal* organization, both of birds as a class, and of individual species. Our author points out and regrets the total ignorance of at least one most estimable and able naturalist on this subject—Mr. Swainson. But while, with Mr. MacGillivray, we admit the importance to the scientific zoologist of a knowledge of Anatomy, we are not disposed to go the length that he does on this subject. We can never, for instance, consider internal structure, of itself, a sufficient guide wherewith to form a system of Ornithology. Our author disclaims having added one to the numerous systems already "in partial use," though on what grounds, is to us not quite so obvious, since the arrangement, both of the larger and smaller divisions, is in many particulars quite new. In order to prove that Anatomy is an insufficient basis for classification, however ably the investigation may be conducted, we need only refer to the *Règne Animal* of the illustrious Cuvier, or to the *History* now before us. As, however, Mr. M'G. has, according to his own statement, only placed the birds in the most convenient order for description, it were perhaps unfair to criticise minutely on this topic.

As regards nomenclature, the author is not averse to reform, and as effected a few good alterations, and one or two others which may be deemed unnecessary. He holds that *single* English names are the best, though in practice he appears to have no particular rule in this respect—at all events, his laws are not like those of the Medes and Persians, which alter not. In one respect we may safely charge him with inconsistency; for though in the abstract he abjures the plan of supplying each genus and species with a separate English name, yet, in another part, in order to justify the alteration of an English appellation, he adduces as a reason the very system he had previously denounced as impracticable.

This work contains excellent descriptions of the habits of the birds included, with occasional extracts from the letters of friends. The following is from the pen of T. Durham Weir, Esq., of Boghead, Linlithgowshire:—

"The strong attachment which the feathered kind have to their offspring, is truly astonishing. Although the Carrion Crow is one of the most cunning of birds, yet I have deceived him with the young of the Rook. I once shot a female with all her brood, just as she was putting a part of a bird into the mouth of one of them. Being anxious to get the male, I took a young one out of the nest, and sent it with a boy to the rookery at Balbardie, to pick out four exactly of the same size. In this he succeeded. Having put them into the nest, I went back again in the course of two days, and shot him in the very act of feeding the young Rooks with grubs.

"Some naturalists assert, that when Crows carry off eggs, they break the shell, and thrust their bills into them. Whether this be their general practice or not I cannot affirm; but I can vouch for one fact to the contrary, which came under my observation. I recollect when I was

one day sitting at the side of an old wall, reading a book, a Carrion Crow flew over my head, with an egg in its bill. I halloed, and down dropped the egg into the middle of the field. On going to take it up, I found, to my astonishment, that it was whole. It was the egg of the Common Wild Duck.

"The Carrion Crow is very easily tamed, and is strongly attached to the person who brings him up. I once kept one for two years and a half. It flew round about the neighbourhood, and roosted every night on the trees of my shrubbery. At whatever distance he was, as soon as he heard my voice he came to me. He was fond of being caressed, but should any one except myself stroke him on the head or back, he was sure to make the blood spring from their fingers. He seemed to take a very great delight in pecking the heels of barefooted youths. The more terrified they were, the more did his joy seem to increase. Even the heels of my pointers, when he was in his merry mood, did not escape his art of ingeniously tormenting. His memory was astonishing. One Monday morning, after being satiated with food, he picked up a Mole which was lying in the orchard, and hopped with it into the garden. I kept out of his sight, and he seldom concealed any thing when he thought you observed him. He covered it so nicely with earth, that, after the most diligent search, I could not discover where he had put it. As his wings had been cut to prevent him from flying over the wall into the garden, he made many a fruitless attempt during the week to get in at the door. On Saturday evening, however, it having been left open, I saw him hop to the very spot where the Mole had been so long hid, and, to my surprise, he came out with it in the twinkling of an eye."—p. 527.

On the whole, we have every reason to be pleased with the full and generally accurate manner in which the *History* before us is written. It contains much that is new both in matter and manner, and if, in perusing the volume, a few trifling blemishes or errors have met our eyes, they are not such as to lessen the value of the work as a manual of native Ornithology. We are certain that much labour has been bestowed on it, and it is a production which reflects no small credit on the industry and ability of the Edinburgh naturalist.

We should have liked to have seen a wood-cut of each bird, in order that the student might have been enabled to identify the various species at a glance; and could have wished that more care had been taken with the figures of some of the heads. For the most part, however, the cuts and engravings are admirable. The volume contains some observations on the external anatomy of the feathered class. For a specimen of the manner in which he has treated this subject, we refer to an article by the same writer "on the external apparatus of the wings of birds," in our current volume, p. 13 (No. VII., for April).

A History of British Birds. By WILLIAM YARRELL, F.L.S., Sec. Z.S. Illustrated by a wood-cut of each species, and numerous vignettes. London: John Van Voorst. Part I. July, 1837. 8vo. and Royal 8vo. pp. 48.

HAVING but just dismissed what we consider a valuable treatise on British Ornithology, we might have been somewhat at a loss how to deal with the work now under consideration, were it not that its whole style, both as regards letter-press, wood-cuts, and paper and print, are so excellent, that we are compelled to declare that this will probably be the most complete History of British Birds ever offered to the public, and it is published at so moderate a price too, as to be within

the reach of every one. These are the first wood-cuts of birds we have seen that equal those of Bewick, and not only that, but they *surpass* those of the latter admirable artist. The descriptions are both concise, scientific, and popular, and, as far as possible, original. Nine species are figured and described in this Part; and if succeeding numbers are equal to the first, this work will probably even eclipse the *Fishes* and *Quadrupeds*, issued in the same series, and both of which are now concluded.

Supplement to the Flora Metropolitana; or, Botanical Rambles within thirty miles of London: containing an index of both Latin and English names, time of flowering, and colour of the phænogamous plants enumerated in the *Fauna;* with many new and additional localities procured last summer; and the height of the principal hills, &c., round London. By Daniel Cooper, A.L.S., &c. London: Highley. 1836. 12mo. pp. 36.

It may well be questioned whether it is fair to transmit to a reviewer the supplement to a work, without the latter. We presume, however, that Mr. Cooper imagined every one must of necessity possess his *Flora*, and acted accordingly in the present instance.—Those who think well of the *Flora*, will of course procure the Supplement—further we cannot say.

Journal of a Horticultural Tour through Germany, Belgium, and Part of France, in the Autumn of 1835. By James Forbes, A.L.S., &c. London: Ridgway and Sons. 1837. 8vo. pp. 164.

By the preface to this book, it appears, that the idea of the author's taking a horticultural tour on the continent, originated with his munificent employer, the Duke of Bedford. The work supplies as much, perhaps, as can be expected in a rapid tour, namely, a brief account of the manner in which fruits and flowers are cultivated abroad. The catalogue of *Cacteæ* at the end is not the least valuable portion of the book.

OBITUARY.

The *London and Edinburgh Philosophical Magazine* for June, contains an account of several naturalists who have recently departed from this world, but, strangely enough, the period of the death of these individuals is in no instance recorded. We make our extracts, with a few additions, as quoted in the *Magazine of Natural History* for July:—

Mr. Edw. Donovan, F.L.S., author of works on *British Birds*, *British Insects*, *British Fishes*, and on the insects of India and New Holland, all splendidly

illustrated. He wrote the articles "Conchology" and "Entomology" in Rees's *Cyclopædia*. Though extremely useful at the time when they were published, his works perhaps exhibit more of the splendour of art than of any enlarged views of science. He added some species to the previously existing knowledge of detailed Zoology; and it is painful to reflect that one who had laboured so much in the cause of science should not have escaped the penury that too often waits on age.

Henry Adolph Schrader, professor of Botany at Göttingen, author of *Spicilegium Floræ Germanicæ*, 1794, and *Flora Germanica*, vol. 1st, 1806, and various essays on exotic plants. His *Flora Germanica* has a high reputation, but it only extends through the class *Triandria*. There is an elaborate and very useful list of the botanical writers of Germany at the commencement. The *Flora Britannica* of Smith is spoken of in Germany as inferior only to the *Flora Germanica* of Schrader.*

John Latham, M.D.—Although we have already published a brief account of our venerable and amiable friend at p. 56 of the present volume, we feel assured the following further particulars, from the pen of Dr. Boot, will be perused with interest. He was one of the original members of the Linnean Society, and for nearly half a century took the liveliest pleasure in its prosperity and advancement. This venerable man devoted himself to his favourite science of Ornithology, with undiminished interest, to the close of his long life, which was extended to his ninety-seventh year. His writings on Ornithology were very voluminous, and are essential to every student; for though his views are perhaps limited in some respects, compared to those of more modern authorities, he made important use of the labours of previous naturalists, and added many species to those formerly known. It was a privilege of no ordinary kind, to one who had not attained by several years even the moiety of the age of Dr. Latham, to see him a few years ago, at our anniversary dinner, triumphant in body and mind over the assaults of time; and I remember looking upon him with reverence; not exclusively that becoming respect ever due from youth to age, whatever may be its intellectual characteristics; but that mingled feeling which partly arose from the impressive consciousness that a life so protracted, and exhibiting so much calm assurance of happiness, such serenity and cheerfulness of feeling, in a scene from which so many of his early friends had gone for ever, bespoke a mind at peace with itself and the world, and afforded a lesson of what true enjoyment lies beyond even the Psalmist's limit to the age of man, when time appears to have forgotten the good man's claim to a better state of existence; and it was impossible not to

* We should be glad if any correspondent could favour us with the date of the demise of Donovan and Schrader.—Ed. *Nat.*

feel that his pursuits of Natural History had, perhaps, contributed largely to the complacency and the elasticity of his almost patriarchal age.

William Elford Leach, M.D., F.R.S.—Few men, says Dr. Boot, have ever devoted themselves to Zoology with greater zeal than Dr. Leach, or attained at an early period of life a higher reputation, at home and abroad, as a profound naturalist. He was one of the most laborious and successful, as well as one of the most universal, cultivators of Zoology which this country has ever produced. His discoveries in the different classes of the *Vertebrata*, especially birds, were extensive; but it was in Entomology and Malacology that his labours have been most known, and his improvements of the greatest importance. His knowledge of the *Crustacea* was superior to that of any other naturalist of his time, and his arrangement the best, until the work of Dr. Milne Edwards appeared, two years ago. After a long suspension of his studies from ill-health, during which, and up to the period of his death, he was attended by the most devoted of sisters, he returned to his favourite occupation with his habitual ardour; and the letters he wrote to his scientific friends in this country exhibited the same devotion to the study of Nature which distinguished the brighter years of his life. His principal work, *The Natural History of the Mollusca of Great Britain*, in the possession of his friend, Mr. Bell, is not yet published. His other works were: *Malacostraca Podophthalma Britanniæ*, 4to., 1815 and 1816, not finished; *Zoological Miscellany*, 3 vols. 8vo., 1817; *On the Genera and Species of Proboscideous Insects*, 8vo., 1817. He described the animals taken by Cranch in the expedition of Capt. Tuckey to the Congo; and was the author of valuable articles in the *Encyclopædia Britannica*, *Edinburgh Encyclopædia*, *Philosophical Transactions*, *Zoological Journal*, *Memoirs of the Wernerian Society*, *Dictionnaire des Sciences Naturelles*. Between 1810 and 1820 he contributed seven papers to the *Transactions of the Linnean Society:* three on insects; a general arrangement of the *Crustacea*, *Myriapoda*, and *Arachnides*, a very laborious work; two descriptive of ten new genera of Bats; one on three new species of *Glareola*. He died in Italy, last year, of cholera.

Dr. B. continues:—Adam Afzaleus, Professor of Botany at Upsal, was, I believe, the last of the pupils of Linnæus, and distinguished, like all the pupils of that great man, for his exact botanical knowledge. He contributed two papers to the *Transactions of the Linnæan Society:* "On the Botanical History of *Trifolium alpestre*, *T. medium*, and *T. pratense*," in 1798. He resided in Sierra Leone for several years, and published his principal work, *Genera Plantarum Guineensium*, in 1804; and several dissertations on the medicinal plants of that country, besides some other works.

THE NATURALIST.

ROUGH MEMORANDA CONCERNING SUNDRY REPTILES, FISHES, AND MOLUSCA, NATIVES OF THE COUNTY OF YORK.

By Peter Murray, M.D.

Viper.—I confidently believe two species of Viper to be natives. The Black or English Viper, *Coluber berus*, and the Red, or *Coluber chersea*. The latter has the lozenge-shaped marks along the back, and one heart-shaped on the head, but is much more flat as to the conformation of the head, though more cylindrical in the body than *Coluber berus*, which, when compared with any Snake of equal length, strikes the observer at once as remarkably depressed in the form of its body. A most material specific distinction between these two Vipers is that of size; *Coluber berus* occasionally exceeding 20 inches in length, whereas *C. chersea* seldom, if ever, reaches beyond half that length.

The Red Viper was rather plentiful on the rough and wild banks of the river Nidd, along Scotton Moor, before the late inclosure of the common; and in the very many walks which, during a residence of twenty years in the neighbourhood, I have taken over that picturesque and rugged ground, I never fell in with the Black Viper, though often with the Red, and that in various stages of growth; although, it must be confessed, with none so very small and immature as finally to decide the question.

The Red Viper is not inferior to its congener in venom, but may be considered less dangerous upon the whole, from its inferiority in power of jaw, and consequently less equal to bite through any strong thick covering, whether natural or artificial.

I do not recollect any serious result occurring to any human being during my abode at Knaresborough, from the bite of *Coluber chersea*, but I have occasionally known injuries to Dogs, and once especially to a fine Harrier belonging to the late lamented Charles Slingsby, Esq., which was bitten in one of the hind legs, and became presently paraphlegiac, and died within a few hours.

As a constrast to Knaresborough, the large Black Viper is that most abundant in the vicinity of Scarborough, and may be met with plentifully on the moors, and on the wild and broken declivities of the cliffs, running down to the sea-beach, particularly to the south of the town, from the Spa to Cayton Bay, where the ground is seldom trodden except by the foot of the botanist or fossilist, and where my path has never been crossed by the Red Viper, though ever and anon by *Coluber berus*. In such encounters the luckless Viper always endeavoured

to glide away, never presuming to attack, and being utterly incapable of darting even when assailed. I have killed several of very different sizes, but have never seen one approaching in colour to *C. chersea.*

Sea Stickleback, *Gasterosteus spinachia.*—Mr. Couch is assuredly correct when he states this little fish to undergo various and rapid changes of colour from the effects of certain passions. Those of *fear* and *hunger* are those only of which I have witnessed the influence.

The *G. spinachia* swimming about in the deeper pools left by the receding of the tide, is exceedingly voracious, and whenever it perceives and pursues any small fishes, *crustacea* or *molusca*, the variations in tint are immediate, and, from my observation, rapidly returning to the original hue, but, altogether, most amusing to the *cautious* gazer; for if the fish but perceives that he is being thus watched, he will forthwith dart away, still varying his hues, into the shelter of some of the densely-interwoven *Fuci*. What can be the causes of such rapid changes of colour in this fish? It varies from a dark green to one of a far paler hue, while the sides, nearly of a golden tint, become a clear yellow, or even of a brownish colour, similar to that of the surrounding *Fuci*. Several other fishes possess similar powers, as the *Flounder*, some of the Blennies, and two or three of the fresh-water Sticklebacks, *inter alia.*

Many reptiles, especially Lizards, nearly rival the Cameleon, certainly in mutability, if not in the quickness of such changes. May it not principally depend upon the alterations which *must* take place in the excited state of the animal, from the sudden impetus of blood into the very extreme vessels which, by necessarily altering the density of the fine membranes furnished with these vessels, render them wholly and immediately different as media of light, whether transmitted or reflected. Even the size of the particles of such circulating fluids will greatly influence the refrangibility; and we well know that, under the influence of any violent stimulus, mental or bodily, the larger globules of blood will be powerfully and directly forced into the minutest branches of the vessels. From the structure of those fishes which display such Cameleon-like powers, I should believe this theory to be true, inasmuch as the membranes, though highly vascular and sensitive, are of wonderful tenuity, and susceptible, therefore, of great and rapid changes, as optical media, from the sudden filling of those blood-vessels by any violent stimulus applied to the heart or nervous system.

Perhaps, also, the reflected light thrown from surrounding bodies upon those delicate membranous tissues, may produce corresponding alterations in the colour of an animal under peculiar circumstances, and hence will assume a tint very similar to that of the surrounding medium.

The *Gasterosteus spinachia* builds a round-shaped nest of marine plants,

usually of the lesser *Fuci*, and those being attached to large twisted masses of the same kind, almost render it in appearance a pensile, and wholly a natant, nest, wherein the two kinds of spawn are deposited, while the male fish is generally to be observed swimming around it, chiefly across the aperture, and truly evinces no little parental affection and courage, slowly retiring when molested or alarmed, and presently returning to his station like a trusty centinel.

As illustrating the causes of disease in marine animals, and, probably also in consequence, that of the *occasional* unwholesome nature of those animals for food, I would state, that the Common Oyster will sometimes, when it seems sickly, flaccid in substance, and greenish and discoloured in appearance, exhibit proofs of being impregnated with iodine, usually under the form of hydriodate of soda. Can this arise from the Oyster having eaten largely of certain marine plants containing considerable quantities of iodine, and thus producing an unhealthy condition of the fluids, similar to that which takes place in man from the excessive use of mercury or iodine?

The *Gasterosteus spinachia* has been constituted, by Dr. Fleming, a distinct genus, under the term of *Spinachia*, and with some reason, for it is very like its congeners the Sticklebacks, there being no features of family likeness, except those of voraciousness and pugnacity. In appearance, indeed, it more resembles, though very different in structure, a *Syngnathus*, in those mailed sides and that long and tubular snout.

Nereis Noctiluca is hardly more than the tenth of an inch long, and of the thickness of a strong bristle; it occurs plentifully, particularly late in autumn, among the Sea-weeds, especially the lesser *Algæ*, spangling the leaves, when spread open, with countless sparks of a rich and brilliant blue fire. The luminosity of this well-known though minute Molusca, is unquestionably dependent upon the will of the animal, which, when disturbed or pursued, can instantaneously extinguish its lamp, and presently rekindle it, and that even if it be removed to a sheet of dry paper, where, however, it speedily dies; but among the *Algæ*, especially if repeatedly moistened with Sea-water, this marine glow-worm may be kept alive several days. For a very minute description of this singular little creature, I would refer your readers to the monograph of Adler in the third volume of the *Amœnitates Academicæ*.

Scarborough, May 20, 1837.

A COMMENTARY ON NUMBERS VII. AND VIII. OF "THE NATURALIST."

By Edward Blyth.

The Lemurs' Mode of taking their Food.—On Specific Distinctions.—On the Fitchet and Ermine Weasels.—The occurrence of *Papilio podalirius* in Britain.—On removing the Pigeon family from the *Rasores*, and general Observations on Classification.—The Skua mentioned at p. 86, probably *L. Richardsonii*, and not *L. parasiticus*.—Distribution of the Corn Bunting in Britain.—Does the Locustell (or "Grasshopper Warbler") *rvn* or *hop*?—The Difference between *Budytes flava* and *B. neglecta*.—Song of the Crossbill.—Occurrence of the Yellow-rimmed Albatross near Gainsborough.—Hawking with the Golden Eagle, Erne, &c.—Missel Thrush Singing on the Wing.—Blackcapt Fauvet darting into the Air after Insects.—Origin of the name "Stock Pigeon."

As I highly approve of the suggestion of your correspondent H. E. H. (at p. 89), and conceive that an occasional chapter devoted to retrospective commentary would be productive of beneficial results, in eliciting a variety of interesting particulars, which would otherwise be overlooked or imperfectly estimated, I venture to avail myself of this as an apology for offering the following observations, in compliance with the "hint" of your correspondent.

In reference, therefore, to a remark at p. 7, relative to the mode in which the Lemurs take up their food, it may be mentioned, that an *Ateles* (or Spider-monkey), if presented with a saucer of bread soaked in milk, invariably stoops, and seemingly with some difficulty, or at least awkwardly, to take up pieces with its mouth, which it thence transfers to one of its hands, never dipping the latter into the mess; a circumstance which I have repeatedly witnessed with a degree of surprise.

To proceed to Mr. Rylands's paper (p. 20), I may take occasion to remark, that I am by no means prepared to accede to a proposition for which he incidentally contends, to the effect, that species must be necessarily identical, merely because we happen to be unable to appreciate their distinctness. Regarding this question independently of the case of *Pontia rapæ* and *P. metra*,* as it must be admitted, that every grade exists between the species that are obviously distinct and such as are doubtfully so, it must therefore be conceived, I presume, that the closest similarity does not of necessity imply specific identity; a consideration of momentous import to the zoologist, who would infer the cotemporaneous deposition of geographically distant beds, on the plea of the assumed identity of a small portion of their included fossils. At the same time, in urging this, it would be absurd to undervalue the established datum

* Here, however, I must beg to differ from your correspondent, considering that the claims of these to be separately recognized are far from being annulled by the occasional occurrence of aberrant specimens, which it may be found difficult to refer correctly.

afforded by the ordinary limitation of *forms* within a restricted range of the vertical series. Unless, indeed, we admit the possibility, and even the probability, of the absolute similitude of distinct species, or, in other words, of races not descended from a common parentage, the question arises, Where are we to fix the maximum of approximation of what are allowed to be distinct species? I think, however, that there is much reason to suspect that many closely-allied original races have blended, their mixed offspring becoming mutually fertile in proportion to the amount of affinity subsisting between the parents. The comparative sterility of mules betwixt the Horse and Ass, or between the Pheasant and Fowl, I deem to be very far from deciding this important question. Let the hybrid progeny of the Whitebreasted and Yellowbreasted Martins (between which animals, I am informed by an anatomist of the highest authority, that osteological distinctions exist), of the Mouflon and Argali Sheep, of the Mealy and Rose Linnets of Britain, or the true *Phasianus torquatus* and *Ph. Colchicus*, or even of the Japanese and Indian Peafowl, be brought to the test, and I think that the result would then be more satisfactory. Surely it does not follow, that because the male progeny of the Goldfinch and Canary should be mutually unprolific, the same would obtain with the mixed breed of *Carduelis elegans* and *C. caniceps*, or with the hybrid offspring of the three closely-allied Jays of Europe, Asia-Minor, and Japan. I do not say that even these would naturally intermingle, if wild in the same locality; but, as species approach so very nearly as these do, there is of course no reason why some should not even more closely resemble. The Greater and Common European Bullfinches accord exactly to a feather, and as intimately in relative proportions; but they differ greatly in size,* and intermediate examples have never been met with. The female of the Japanese Bullfinch can only be told from that of Britain by the discordancy of a single feather, the smallest wing tertiary, which in both the European species is invariably tinged with red, in the females as well as in the males; a character not observable in that of Japan, which is besides, as can be seen only on comparing them together, of a rather different shade of brown upon the back. The Himmalayan *Pyrrhula erythrocephala*, inhabiting an intermediate region, though true to the type, is manifestly and obviously distinct, as the warmest advocates for climatal variation will readily allow. To give one or two more instances. *Otus brachyotus* of Europe and North America, when many specimens from both continents are seen together, is observed to be constantly of a more rufous

* For instance, the wing of the Great Bullfinch (of course I allude not to the *Corythus enucleator*, which has been improperly ranked in *Pyrrhula*) measures 3¾ inches, that of the Common species 3 inches; the tail of the former is 3 inches long, of the latter 2½ inches; and the difference in bulk corresponds to that of the linear dimensions. I have measured three specimens of the Great Bullfinch, which agree precisely with one another.

tinge when from the latter country, although there is no other perceptible distinction; the Magellanic specimens, however, add to this diversity a decided difference of structure in the bill, wherefore these have been specified as *O. Magellanicus*. In *Strix flammea* of North America and Europe, a difference of size is superadded to a slight diversity of average colouring; and it would be easy to enumerate many more analogous examples. Had some of these, then, inhabited the same district, it is not unlikely that they would have intermixed; nor is it improbable that their mutual offspring would have been freely prolific, so that the race would have become effectually blended in time. It is true that many naturalists, in the event of animals of a mixed race proving to be mutually fertile, would hastily arrive at the conclusion that the parents were only varieties of the same; but the inference, I suspect, would be inconsistent with a *presumed* result, that a series of degrees of fertility would become apparent, corresponding to those of physiological accordance, subsisting between the parents. *Probandum est*, however, and it is not much to the credit of the present advanced state of Zoology, that more experiments have not been instituted to decide this fundamental question.

It has always appeared to me, that the extreme irregularity in the amount of resemblance which obtains throughout the species of every group, the utter absence of any approach to uniformity, in this particular—many species, as above shewn, approximating each other so closely, that it is not only difficult, but seemingly even impossible (in numerous instances) to know them apart—is utterly irreconcileable with, and therefore of itself subversive of, any doctrine which contends for, a rigid system of arrangement, such as the theory espoused by Mr. SWAINSON, wherein every separate species, as well as natural group, of each degree of value, is held to be a component of a regular quinary circle; a notion which I conceive to require a precisely even amount of variation between every distinct species and correspondent group, the palpable non-existence of which it is useless to attempt to explain upon the easy principle of our partial acquaintance with original forms, seeing that the progress of discovery has only tended to render more irregular the several divisions, and has increased the number of anomalies in full proportion to that of the new species which it has brought under review. I shall revert to this subject presently.

The Fitchet Weasel is much more common within a circuit of ten miles from the metropolis than would be anticipated in so populous a neighbourhood. As we advance further than this into the county of Surrey, it becomes much more rare, and the Ermine Weasel considerably more abundant, a fact of which I am positive, but which I am at present unable to explain, unless it be that it gives the preference to furzy districts. It is called in some places the "furze-cat." I have been credibly informed of an instance of a man seizing and pulling forth

from a burrow what he supposed to be a Rabbit, but which proved, to his astonishment, a Fitchet-Weasel; it did not attempt to bite him, though he instantly let it drop on discovering his mistake. The young of this species are thinly covered at birth, with a whitish hair, which is succeeded by woolly fur of a uniform dark brown colour, though exhibiting the usual pale markings upon the head. They frequently develop their permanent teeth previously to the shedding of the first set, continuing to exhibit a complete series for a few weeks.

Respecting the occurrence of *Papilio podalirius* in the New Forest (p. 38), more stress ought surely to be laid on the circumstance, that many of our rarest *Lepidoptera*, as *Mancipium daplidiæ*, *Deilephila euphorbiæ*, *D. galii*, *D. lineata*, *D. celerio*, &c., have chiefly been met with along the line of our south coast; wherefore the question is at least fairly admissible, whether some of them should not rather be considered as occasional stragglers, than as truly indigenous to the country? It is certain that *Acherontia atropos* has been frequently met with far out at sea, as I have myself observed with *Macroglossa stellatarum*, *Cynthia cardui*, *Colias edusa*, and numerous others, some of them of very small size. With such facts before us, it seems at present that we have trivial arguments for the contended indigenousness of *Papilio podalirius*, even granting that a very few specimens have from time to time been captured within the realm of Britain. Is either of Mr. Allis's specimens a female insect? For it is needless to add that the males are considerably the more erratic.

In Mr. Allis's extremely interesting paper on the incongruity of the component groups of the *Rasores* (a view in which I heartily concur), it is stated that "gallinaceous birds see at their birth," also, "(I believe without exception,) run from their nest as soon as hatched," and "always pick up their own food as soon as they run from the shell." Is Mr. A., however, prepared to assert this of the *Pterocles* and allied genera (composing, I consider, an extremely distinct and well-marked family), which are generally understood to be incapable of leaving the nest for some time, being fed by the parent? Another anomalous group is presented by *Hæmapodius* and its various allies, birds of peculiar form, and wanting the hind toe, and which are undoubtedly more distinct from the *Tetraonidæ*, than this latter from the *Pavonidæ*. The *Struthionidæ* should certainly not be admitted among the *Rasores*, as such a combination merges two obvious and recognised divisions, to form one that is vague and comparatively indefinable; a junction which could only have originated in abstract theoretical views, based on deductions from insufficient data. I think it must be confessed, however, that the difficulties of achieving a perfectly unobjectionable arrangement, are insurmountable; as there will always be anomalous groups, which refuse to conform to any comprehensive division. Witness, for example, the Larks, the *Calamophilus*, the *Paradoxornis*, the *Menura*, the *Psophia*, the *Phœnicopterus*,

the Pratincoles, the Sheathbill, &c. If such be admitted, confessedly as a matter of convenience, along with other genera, such an arrangement might, provisionally, be adopted as at least possible; but when the position assigned to them is vaunted as equally satisfactory with those of genera concerning which there is no difference of opinion, it behoves those who pursue the inductive method of investigation to analyze their claims, as Mr. ALLIS has so ably done those of the *Columbidæ*, to a place among the *Rasores*. For my part I greatly admire that gentleman's method of procedure, vastly preferring the *positive* to the *imaginative*, in matters of this kind; for it rarely happens that a deviation in any fundamental character, such as those on which Mr. ALLIS has founded his conclusions, is unaccompanied by equivalent diversities to bear out the distinction.

To give an example; and I select it on account of its having been so overlooked. The crania of the Albatross and Petrels, on the one hand, and of the Gulls and Terns on the other, present essential distinctions, such as those to which Mr. ALLIS has alluded in the case of the *Columbidæ*, and true *Rasores;* and to recur to another of the leading characters mentioned by that gentleman, we find that the former lay, in every instance, a single white egg, whereas the latter produce three, which are blotched with black on a coloured ground. Again, the mode of flight, manner of progression on the ground, texture of plumage, and a variety of other particulars, afford corresponding indications, which are surely sufficient, taken collectively, to warrant their separation into two equivalent divisions, of the rank of families. It would, indeed, be vain to endeavour to point out analogous diversities between the *Pavonidæ* and *Tetraonidæ*, which have been admitted as such. They might subsequently be brought together, as a superior division, to be termed *Longipennes*, after CUVIER, which would be subordinate to the higher group *Natatores*. The Yagers *(Lestris)* would appertain to the same family as the Gulls, at least they are considerably more allied to these than to the Albatrosses and Petrels; though, at the same time, as they are considerably less intimately connected with them than the Terns are, it becomes necessary, in order to represent duly the subordinacy of characters, to institute a minor supergeneric division among the *Laridæ*, or what have been termed subfamilies, thus separating the Gulls and Terns from the Yagers. The Albatrosses and Petrels being considered as a separate group, equivalent to the entire *Laridæ*. Of course, the next step is into genera and sub-genera, which latter I should like to see specified in the following manner:—*Larus-xema minuta*, *Sterna-anous stolida*, *Sterna-rhyncops nigra*, *&c.;* these pertaining to the order and suborder *Natatores Longipennes*, and family and subfamily *Laridæ Larinæ*.

It is only thus, I conceive, by establishing a long series of successively subordinate divisions, that any approach to a satisfactory arrangement is at all prac-

ticable. Wherever recognizable groups exist, let them be specified, without any reference to abstract and preconceived theory; in other words, let the indiscriminate association of forms of different degrees of value be, as far as possible, avoided, such as is flagrantly exhibited in the incongruous composition of the quinarian order *Rasores;* not but that CUVIER's natatorial divisions, it may be added, of *Longipennes*, *Totipalmi*, *Brachypterus*, and *Lamellirostres*, are equally, or even more distinct, than the three primary rasorial groups above denoted.

The immense divisions *Insessores*, *Grallatores*, &c., are decidedly over-comprehensive; but would become free from every objection if resolved into groups of secondary value, such as that above proposed to comprise the two families *Laridæ* and *Procellaridæ*. It is true that the advocates of the quinary system have been compelled to adopt this plan in the case of the excessively numerous *Insessores;* but, with all deference to those who maintain this theory, it appears to me, that the latter has vitiated the attempt at dismemberment. The *Grallatores* are obviously referable to three very distinct sections, which are sufficiently indicated by their eggs alone; but the *Insessores* require a careful analysis, upon the principle on which Mr. ALLIS has proceeded, and conducted without any bias or prejudice in favour of arrangements hitherto proposed; an analysis which shall set forth their accordances and disagreements, without endeavouring to enhance or depreciate the value of either, to strain consistency with pre-conceived theoretic views.

But to proceed with the retrospect of your two last numbers, without indulging in any further digression. The species of *Lestris* mentioned at p. 86, is most probably *L. Richardsonii*, *L. parasiticus* being extremely rare on the British coast.

The Corn Bunting (p. 90) is decidedly not a rare bird in the south of England, though it is everywhere much less common than its congener, the Yellow Bunting. A principal reason that its nest is so seldom met with, arises from the fact of its commonly building in Clover, or similar herbage, in the interior of a field, away from the hedge, so that the site is removed from the track of nesting boys.

Your correspondent, Dr. LIVERPOOL, is mentioned in the *British Song Birds* as having kept the Locustell alive in confinement; perhaps he will favour us with information as to whether it constantly progresses on the ground by alternate use of the feet; all the authors affirm that it *hops*.*

Mr. HOY informs me that the principal, indeed the only, distinction which he

* We shall be very glad to hear from Dr. LIVERPOOL, or any other correspondent, on this point. We have ascertained, from personal observation of the Locustell at large, that it frequently hops, and we have no reason for believing that it ever adopts any other mode of progression on the ground. We are, therefore, a little surprised at the opinion expressed by a zealous ornithologist (Mr. J. D. HOY) in a foot-note at p. 78 of the present volume.—ED.

perceived between the habits of *Budytes flava* and *B. neglecta*, consisted in the latter shewing a decided partiality for watery situations, whereas the former chiefly affects dry corn-fields and sheep-walks, which agrees with my own observation. I was rather surprised, therefore, to peruse Mr. SALMON'S remarks on the species, at p. 103.

The song of the Common Crossbill (p. 103) is unmusical and squeaking, accompanied by a Goldfinch-like swing of the body, and a louder call-note analogous to that of the bird alluded to; its ordinary chirp is a low and sharp *chipp*.

Respecting the occurrence of the Yellow-rimmed Albatross near Gainsborough (p. 104), it is much to be desired that some reader, who may possess the opportunity, would endeavour to learn in whose possession the specimen now is, and furnish you with an account of its dimensions, and all about it;* for, at present, I think that a writer on British birds is scarcely warranted in admitting this species into his list of stragglers, should he receive no better authority for the fact of its occurrence than the newspaper paragraph cited.

A notice of Capt. GREEN'S trained Golden Eagle (p. 106) has appeared from time to time in several of the papers. It was mentioned in the *John Bull*, for November 13, 1836. The old Venetian traveller, MARCO POLO, who visited Tartary in 1269, relates that this species was there trained for the pursuit of large game, in which it displayed all the docility of the Falcons. In the Zoological Gardens the true Eagles prove to be far less untameable than the Ernes (*Haliætus*), which latter require to be kept in awe by their attendants. Sir W. JARDINE mentions having had the Golden Eagle and Peregrine Falcon tame, and even playful. Indeed, a White-headed Erne, long in the possession of Mr. LEADBEATER, was as fond and affectionate as a Cockatoo; but this is less usual in the species of *Haliætus*. At Uxbridge a Golden Eagle has actually hatched and reared several broods of chickens, which is, perhaps, the most extraordinary use an Eagle was ever put to. The Common Buzzard has been *several times* known to do the same; and the Buzzards are very nearly allied to the true Eagles. I have myself handled young but fully-grown examples of the Osprey and Cinereous Erne; that is to say, I have partly opened their wings for the purpose of investigation, without their offering to resent the liberty taken with them; though, as before related, the Ernes are apt to be indomitably savage, and it is doubtful whether they could be trained to purposes of falconry.

A few days since I had the pleasure of both hearing and seeing a Missel Thrush sing while on the wing (p. 106). My attention was aroused by hearing the notes of the bird becoming louder at every stave, as if approaching, and looking out, I soon perceived it flying low over the Furze, taking a long curve, and

* Any correspondent doing this will receive our best thanks.—ED.

at length approaching almost directly towards where I stood, when, seeing me it abruptly turned, and became silent, but not till after I had repeatedly witnessed the utterance of its loud song during flight. This species appears to be rapidly increasing in all parts of Britain. I may further remark, that the above mentioned individual was taking a very long flight, to judge from the distant sound of its notes when I first heard them.

I have also noticed, lately, two Blackcap Fauvets darting upwards into the air after insects, in precisely the manner of the Garden Fauvet, as detailed in your *British Song Birds*. This habit is by no means usual in the Fauvet genus.

I shall conclude these remarks by observing, that I am informed of several localities where the Stock-Pigeon breeds rather plentifully, resorting to what are called "stocks" for this purpose; in other words, to stunted leafy pollards, or wild trunks, which it appears, where it has the choice, to prefer to any other situation to build in. I have also known it, in two instances, select the hole of an aged Ash-tree, but my own experience of this species is rather limited. It is not a little curious to observe the variety of meanings which are attached to the word "stock," or "stocks;" the idea of "placing in," or "being placed in" them is not more opposed than are the senses in which it is used by persons engaged in rural occupations and pursuits; by the gardener, the agriculturist, and the grazier; the first of whom employs it in at least three distinct significations, independently of those alluded to in the latter instances; besides all which, when we speak of the original "stock" from whence aught is derived, we intend the word in still another sense, and have erroneously supposed this to have been the meaning in which it is applied to the species of wild Pigeon, the propriety of so designating which has, therefore, been called in question.

North Brixton, Surrey,
May 11, 1837.

A BOTANICAL TOUR IN HEREFORDSHIRE, MONMOUTHSHIRE, AND SOUTH WALES.

WITH INCIDENTAL NOTICES OF THE SCENERY, ANTIQUITIES, &c.

By Edwin Lees, F. L. S., M. E. S. L.

(Continued from p. 259.)

We now took the nearest route to the Porth-yr-ogof, the cavern where the river Mellte works for itself a sinuous passage through the limestone rock, amidst the deepest gloom, for a space of about seven hundred yards, before it again

emerges, solemn and tamed, into the fair light of heaven. The summit of the rock where the river enters the cavern is about sixty feet above the level of the water; but the opening in the rock itself does not extend twenty feet in height, and is about forty-five in breadth. It is to be observed that the stream, on entering, divides itself, one arm taking a winding course to the left, and forming in its passage deep perforations and fathomless pools, and the other proceeding with a wider current, leaving at first a space to trace its course, but at length filling up the cavity with its waters. Besides these two main tunnels, there are several lateral ones, which may be threaded, but all are so dark that candles are necessary. I had felt inclined to have pilgrimaged through the entire cavern, having understood from several authors that there was "a practicable passage" through it. I soon found that this practicable passage was only one for a fish or a Duck, the fact being, that where the river emerges no entrance or exit, but for an amphibious being, can possibly be obtained. By fording the stream, and taking the right-hand defile, of which it might not unaptly be said—

"Hinc via Tartarei quæ fert Acherontis ad undas,"

I was able to advance rather more than 150 yards over very slippery rocks, polished by the floods that frequently cover them, and which, excavating whirl-holes, render progression a tedious affair; for, of course, a slip would, as indeed I experienced, leave one floundering in the dark. Beyond the distance stated, I found there was no advance, the stone gradually sloping off in an inclined plane down to a black deep pool, which I ascertained by poking down on hands and knees till I felt the water. I then gave it up. This passage is, however, worth exploring, as in one place the roof expands in gloomy obscurity into a rude but lofty dome, a crevice in which, near the top, admits a trembling ray of light, that timidly progresses about half-way down, and just serves faintly to show the outline of a roof that would otherwise appear illimitable. It is remarkable, that the coppice covering the external roof or bridge formed by the embogueing river, is covered with stony debris, as if anciently overflowed with water, but whether this was occasioned by some extraordinary inundation, or whether in fact the river itself did not originally flow there—though now delving for itself a subterranean passage—I leave for more matured consideration.

On the smooth blue limestone slabs just before the mouth of the cave I found a gelatinous plant belonging to the *Algæ Gloiocladeæ*, about the size of a human ear. It exactly resembled a thick piece of glue soaked in water. Having been able to meet with no certain account of it, I describe the plant. It appears to belong to the genus *Palmella* in the *Nostochineæ*, tribe 21 of the *Algæ* in Sir J. W. Hooker's *British Flora*. Dark olive green or brown gelatinous *Palmella*,

frond convex, hemispherical, lessening in thickness from the centre to the circumference. Frond exceeding two inches in diameter, skin thick and slightly rugose, substance beneath of the same dark olive-green hue, jelly-like, and semi-transparent. Unattached upon the limestone slabs near the water, but not immersed in it. I brought a specimen home with me wrapt in leaves, and placing it in water preserved it for three weeks, but no hue was imparted to the water in which it was kept. It finally dried up, preserving its outline on a sheet of paper, to which I transferred it. This curious plant somewhat resembles, though evidently distinct from, *Palmella montana (Ulva mont, Eng. Bot.*, 2193), which LIGHTFOOT mentions as used by the Highlanders, who wash it, rub it between their hands in water, and make a paste with it, with which they purge their calves. In form it approaches the largest figure of *Rivularia calcarea* in *Eng. Bot.*, t. 1799, which Sir J. E. SMITH calls a "singular production," reported by several friends to have been found "about many water falls in North and South Wales, Shropshire, &c." SMITH describes this plant as belonging to a genus "destitute of an external cuticle," which the plant I found evidently has. He also describes his *R. calcarea* as having sessile fronds, "round, generally clustered or aggregate, each as big as a pea, or larger, but often united into an uneven undeterminate mass. The external surface is of a rich dark green." My *Palmella*, on the contrary, is of a dark glue colour, not aggregated, oval, or hemispherical, and more than two inches in diameter. The *Rivularia* is also stated to be "impregnated with a calcareous sediment, which renders it hard, though friable," while certainly there was no trace of any stalagmitic particles in my plant, which I believe to have been before unnoticed.

Passing from the cavern to Curn Porth Farm, to obtain a draught of milk, I noticed a singular old Elder-tree (*Sambucus nigra*), of larger dimensions than any that ever previously came under my inspection. It had quite a venerable aspect, hoary with Lichens, bearded with Polypody, and entirely hollow. Its girth at the base was 14 feet, and 8 feet at two yards from the ground. I have before hinted at the probability of the introduction of this tree into Britain by the Romans, who long made South Wales a favourite seat of their arts and arms; and this singular old relic in the neighbourhood of an ancient Nidum, and not far removed from a Roman way over the mountains, is in favour of my idea; the virtues and fame of the Elder having travelled hither from Greece, and been acknowledged by learned compounders in all ages. Hence, even so late as EVELYN's time, he has not scrupled in his *Sylva* to enlarge upon the "uses of the Elder, either for sickness or wound." "The inner bark," he says, "applied to any burning, takes out the fire immediately; that, or, in season, the buds, boiled in water-gruel for a breakfast, has effected wonders in a fever; and the

decoction is admirable to assuage inflammations and tetrous humours, and especially the *scorbut:* but an extract, or theriaca, may be composed of the berries, which is not only efficacious to eradicate this epidemical inconvenience, and greatly to assist longevity (so famous is the story of NEANDER), but is a kind of *Catholicon* against *all infirmities whatever!"* Who, then, believing this, would be without an Elder-tree, or neglect paying his respects to it with the devotion BOERHAAVE is said to have done?*

The subdued light of dying day invested the upper cataract of the Mellte, as I gazed upon its falling waters taking their seventy feet plunge into the naked glyn beneath them. This waterfall has a greater volume than Cil Hepste, but has altogether a different character, from not being overtopped on all sides by rocks, and immersed in the gloom of embowering foliage. It must also be viewed from above, for though I scrambled down the slate-rock into the chasm below, and thus obtained a nearer view, the path (if path that can be called where there is none) is not very alluring. Some distance further are the lower falls of the Mellte, pleasing and romantic, and girdled with wood, through which their white foam is conspicuous, but calling for no detailed description, especially as a long walk remained to be effected back to Glyn Neath.

As we retraced our steps to Port nedd Vechan, we descended an exposed heathy moor, and turned into a wood, shrouded in whose marshy intricacies the Pryddin gushes a small spout-like cascade called Scwd Wladis, or the Lady's Fall, near which the *Cinclus aquaticus*, or Dipper, is sure to be seen, with its brown plumage and white breast. Amidst the wood, a short distance below the fall, is a Logan or Rocking-stone, composed of the quartzose breccia found upon the mountains above, whence this boulder must have been rolled, to do its duty as a stone of judgment in this secluded spot, Except the imperfect stone-circle on Craig-y-Dinas, and the Logan here, I am not aware of any other druidical remains in this vicinity. Higher up the Pryddin is another fall of that river, called Yagwd Einon Gam, or the Crooked Waterfall, which the gloom of evening did not now allow me to visit. On a former occasion a "*Dim Saesnach*" led me to the foot of it by a villainous route, in which we forded the river perhaps a dozen times. Rain having recently fallen, and the torrent rising over the slippery foot-stones, my ardour was somewhat *damped* before arriving at the expected scene, which, however, deserves inspection from the height of the gloomy rock, the oblique direction of the upper sheet of water, and the spectral Oak that solemnly frowns high over all.

Of the various water-falls in and about Glyn Neath, I feel inclined to award

* EVELYN'S *Silva*, or a Discourse of Forest Trees, &c., fol., 4th Edit., 1706.

the palm to the Sgwd-yr-Hen-Rhyd, near Capel Colbren, about five miles over the mountains in a northerly direction. It can scarcely be found without a guide, the route lying over boggy moors and stony ravines, without a single habitation occurring near at hand the whole distance, except at Pont Henrhyd, just above the fall, where in the early morning I enjoyed, after a fatiguing walk, a delicious breakfast of Welsh bread and butter and milk, and a rest from the hot sunbeams. Pont Henrhyd is a romantic, two-arched ivy-girt bridge, beneath which the little river Llech pours its stream at first so quietly, that no one would imagine that fifty yards beyond it was likely to fling itself in thunder, foam, and spray, down a precipice ninety feet in height, into the dark excavation below. This, however, is the case. It first begins to murmur among the stones—then chafes and frets into its rocky channel—slides impetuously down an interposing ledge of black rock that comes athwart its course—foams and rushes on in anger—and then, collecting its waters together with sullen and still determination, leaps at one sudden bound into the deep gulf below. But its future course is not lost in shade; the glen into which it has fallen is seen opening some distance beyond, and the shaggy wood, robing the cliffs on the right, is relieved by a sparkling prospect of dales and hills, in noble perspective, down the vale of Tawe, into which the Llech runs, almost if not quite to the faint blue ocean. The fall may be descended to by a rough way down the cliff, by making a circuit to the right, and here it appeared in real grandeur. The perpendicular rock on either side of the descending water, horrid with wood and impending trees that seem tottering to their fall, the dark aspect of the precipice, shaggy with waving Mosses and *Confervæ*, and its superior height disturbing the rush with no impending crag, the flickering Iris on the water, and the seclusion of the glen, that yet partially reveals the on-flowing stream still bounding amidst huge blocks of stone, and hoarsely murmuring in the pauses of the louder dash of the cataract, conspire to leave a forcible impression upon the mind, and to cause the wanderer to leave the spot that has given rise to so many pleasing images very reluctantly. I the rather commend this water-fall to the botanist, as the way to it lies by an extensive and remarkable bog, called Gorselyn, where many interesting plants are located. To save trouble and prevent digression, I have reserved my list of the Plants I gathered in Glyn Neath for this place. Any botanist travelling there—and the place is now much visited—can easily slip this number of *The Naturalist* into his pocket, and identify the habitats I have given; and if he can increase the list with any thing more uncommon, no one will be more pleased than myself. It is surely a locality worth searching, and pleasure and delight must ensue.

PLANTS OF GLYN NEATH AND ITS VICINITY,
(Not previously mentioned in this paper.†)

Trollius Europæus.—In Gorsellyn Bog, on the Banwen Mountain.

Drosera rotundifolia.—In the same bog. Perhaps other *Droseræ* may be found here.

Hypericum androsæmum.—On the woody descent to Sgwd-yr-Hen-Rhyd Waterfall.

Stellaria uliginosa.—Watery spots about Pont Nedd Vechan.

Saxifraga tridactylites.—I gathered what appears to be a variety of this, with *entire* root-leaves, on the rocks at Cil Hepste.

**Rubus affinis.*—In great luxuriance between the great Mellte waterfall and the old road to Brecon over the mountains. Also on boggy spots on the Banwen.

R. idæus.—Very plentiful in bushy spots about the Hepste and Pyrddin rivers.

**Comarum palustre.*—Gorsellyn.

Geum rivale.—Plentiful within the dripping of Cil Hepste fall, and adorning the spot with its gracefully drooping dark ruby flowers.

**Rosa scabriuscula.*—Near Pont Nedd Vechan, and on the bank of the Mellte near its upper water-fall.

**Rosa villosa.*—Plentiful throughout Glyn Neath. I observed an apparent variety with *hooked prickles* between Pont Nedd Vechan and Merthyr, which may perhaps be *R. sylvestris* of LINDLEY.

Alchemilla vulgaris.—Growing excessively large at the Porth-yr-ogof.

Sanguisorba officinalis.—Abundant in fields below the mountain Craig-y-Llyn Vawr.

Gnaphalium dioicum.—Very abundant on a heath above the Logan stone, near Tewd-y-gladis cascade.

**Cnicus pratensis.*—Completely covering some wet meadows at the base of Craig-y-Lllyn Vawr, and equally abundant above Ginon Gam fall on the Pyrddin. Also on the Banwen, Breconshire.

**Prenanthes muralis.*—On the side of Craig y Dinas.

**Hieracium Lawsoni.*—In a rocky steep part of the road to Merthyr, before the woods give place to the open moor.

Hieracium murarum.—On the Rock and other craggy places.

Lobelia Dortmanna.—In Llyn Vawr, a lake at the northern foot of the

† It may be well to mention, for the benefit of new subscribers, that the asterisk is placed before species previously unrecorded, as far as Mr. LEES is aware, in the spot in which he found them, and at all events not included in WATSON's *New Botanical Guide*.—ED.

perpendicular rocks of the mountain Craig y Llyn Vawr, furrowed by the action of the torrents that supply the lake.

Erica tetralix.—On the Banwen.

Menyanthes trifoliata.—Abundant on the Banwen, about Porth-yr-ogof, and other boggy spots.

Pinguicula vulgaris.—Adorning the mossy rocks at the Cil Hepste Fall with its singular deep blue flowers. Very plentiful also on Gorsellyn Bog.

Veronica montana.—Between the Lamb and Flag and Pont Nedd Vechan.

Digitalis purpurea, var. flor. alb.—A noble Foxglove with white flowers I gathered by the side of the little cascade at Aberpergwm.

**Scutellaria minor.*—On the mountainous boggy moor close to Cil Hepste Farm.

Callitriche autumnalis.—Fringing almost the entire southern margin of Llyn Vaur, both in and out of the water.

Juncus uliginosus.—Plentiful on the Banwen mountain.

Juncus squarrosus.—On the barren Craig y Llyn Vaur.

Narthecium ossifragum.—Very abundant in the boggy meadows near the Mellte and Pyrddin, as well as on wet spots below Llyn Vaur, and on the Banwen, where its rich golden clusters make a fine show when in flower.

**Eliocharis pauciflora.*—On the Banwen mountain.

**Eriophorum pubescens.*—Abundant in Gorsellyn Bog, but confined to the wettest and least accessible parts of it, where it grows in company with the Globe-flower (*Trollius Europœus*), amidst a forest of Reeds, Sedges, &c., while *E. angustifolum* and *E. polystachion* keep on the more exposed parts of the marsh, and on dryer spots.

E. vaginatum.—On the Banwen mountain in wet places.

Carex dioica.—Rather plentiful in wet spots on the Banwen, near Gorsellyn.

C. muricata.—In a marshy meadow below Llyn Vaur.

C. stellulata.—On the Banwen.

**C. fulva.*—Boggy ground on the Banwen.

C. distans.—On Gorsellyn Bog.

C. vesicaria.—On the margin of Llyn Vaur.

C. ampullacea.—On the border of Gorsellyn Bog.

Polypodium phegopteris.—This delicate fern was plentiful on the rocky banks of the Hepste river about both the falls.

P. dryopteris.—Equally abundant below Cil Hepste.

P. calcareum.—Among copse wood half way up the rock below Sgwd-yr-Hen-Rhyd.

Aspidium lobatum.—Between Pont Nedd Vechan and Cil Hepste.

A. oreopteris.—On a bank in a wet field below Llyn Vaur.

A. spinulosum.—In the woods at Pont Nedd Vechan.

Cistopteris fragilis.—Abundant on the rocks above Craig-y-Dinas.

Asplenium viride.—Beautifully adorning the rocks within reach of the spray of Sgwd-yr-Hen-Rhyd and Cil Hepste Falls.

Equisetum sylvaticum.—Between the Mellte river and Schwd-y-gladis.

A botanist is of course always anxious to seize a *rare* plant, but the notification of such a capture, especially in the case of doubtful species, is very tantalizing to a traveller who may follow in his steps. I have, therefore, aimed at distinguishing plants that may be found again in the localities named, thus assisting the inquiring student, rather than at investing doubt in the robe of rarity, thus leaving room for future correction, and engendering perpetual disappointment. That further investigation of this district may probably bring to light "fairer flowers" than it has yet been my fortune to gather, no one is more aware than myself. Such at a future time I may record, and in the interim wish a successful campaign to all brother botanists.

ON SCIENTIFIC NOMENCLATURE AND CLASSIFICATION, ILLUSTRATED BY AN ARRANGEMENT OF THE BRITISH FALCONIDÆ.

By R. H. Sweeting, Surgeon.

The practice of using Greek words for the generic, and Latin for the specific names of birds and other animals, did not originate with *Mr.* Any-one (see p. 150), but was the invariable plan—whenever admissible—of the illustrious *Baron* Cuvier. The following are specimens, taken from his *Règne Animal:*—*Pernis apivorus, Caryocatactes nucifraga,** *Machetes pugnax.* Classical names for birds, &c., whether Greek or Latin, or Latin *and* Greek, ought, if truly appropriate, to be considered equally admissible. Where *both* languages are employed to designate species, I am quite of the opinion that the Greek should take precedence of the Latin.

I have been a very humble student of the delightful Book of Nature (particularly as regards the birds of the British Islands) for many years past. I will, however, only at present trouble you with my notions on the names and most appropriate classification of one family, to which I have given my most parti-

* We very much question whether our correspondent ever met with the name *Caryocatactes nucifraga* in any edition of the *Règne Animal:* as far as we are aware, the only author who uses it is Nilsson, in the *Ornithologia Suecica.*—Ed.

cular attention, namely, the *Falconidæ*, or Falcon family. The arrangement is as nearly as possible according to the true natural affinities, and is the only really scientific one I ever saw. It was adopted by, and, I believe, originated with, Mr. VIGORS [NOW N. A. VIGORS, Esq., M.P., D.C.L., F.R.S., &c.—ED.], in some admirable papers by that distinguished naturalist in the *Zoological Journal*.*

Rock Goshawk, *Astur palumbarius.*
Sparrow Hawk, *Accipiter fringillarius.*
Common Merlin, *Æsalon cæsius.*
Kestril Falcon, *Falco tinnunculus.*
Orange-legged Falcon, *Falco rufipes.*
Hobby Falcon, *Falco subbuteo.*
Peregrine Falcon, *Falco peregrinus.*
Jer Falcon, *Falco Islandicus.*
Golden Eagle, *Chrysaëtus aquilinus.*† [*i. e.*, Aquiline Golden-Eagle!—Why not *Aquila aurea*, of our worthy countryman WILLUGHBY?—ED.]
Common Ossifrage, *Haliaëtus albicilla.*
Common Osprey, *Ichthyaëtus piscivorus.*‡
Common Kite, *Milvus furcatus.*
[White-headed Forktail, *Elanus leucocephalus.*—ED.]
Honey Buzzard, *Pernis apivorus.*
Rough-legged Buzzard, *Buteo pennatus.*
Common Buzzard, *Buteo vulgaris.*
Marsh Harrier, *Circus rufus.*
Hen Harrier, *Circus cyaneus.*

* We are well acquainted with the excellent article of Dr. VIGORS in the *Zool. Journ.* Vol. p. 368), but we must confess ourselves at a loss to perceive much resemblance between either the nomenclature on arrangement adopted by Dr. V. and that presented to the readers of *The Naturalist* by our correspondent.—ED.

† The above [generic] name for the Golden Eagle, I consider the most appropriate that can be given. The adults (two magnificent specimens of which I lately inspected in the Zoological Gardens, with special reference to the propriety of that name), when in full plumage, are of dark brown, mixed with a fine rich tawny, as nearly as possible the colour of gold when slightly alloyed with copper; and as it is the only truly typical species we possess, it follows, as a thing of course, that it is the most aquiline of the group, and, in my opinion at least, fully justifies its claim to the above appellation.——[That the Golden Eagle is typical of its genus we do not deny, nor yet do we oppose the claims of the genus itself to typicality as far as regards the subfamily to which it belongs; but assuredly neither of these circumstances have any thing whatever to do with the specific name of the bird.—ED.]

‡ Here the fish-eating is given both as a general and specific character, which is decidedly objectionable.—ED.

Ash-coloured Harrier, *Circus cineraceus.*

A remark or two on the above names and arrangement, and I have done. First as to the arrangement: I have seen the Buzzards placed between the Hawks and Falcons, which I take to be unnatural, and, consequently, wrong. Why? because the Buzzards are among the ignoble, or the irreclaimable, and the Hawks and Falcons are the noble or reclaimable birds of prey [The general habits, form, and structure, likewise confirm the propriety of Mr. SWEETING's arrangement.—ED.]. The Buzzards should, therefore, stand as above, between the Kites and Harriers. It will then be found, that, according to the quinary or circular system, the Goshawk being at the top of the list, and the Buzzard at or near the bottom, they will approach sufficiently near to each other, both as regards their configuration and habits.

As to the names, they are mostly such as have been conferred by various eminent naturalists, and are generally received and approved. Those which I believe are new, and perhaps unscientific, are of my own construction, and are in a private list which I wrote out some time since for my own amusement. As I consider them appropriate, perhaps you will allow me to say a few words respecting them.

The tarsi and toes of the Merlin are, in proportion to his size, remarkably longer and more slender than those of the Falcons *(Falco)*, in which respect it approaches the Sparrow Hawk. I have therefore placed it between that bird and the Falcons. If *Haliaëtus* is applicable to the Ossifrage, as possessing certain generic distinctions, that or any other similar name is totally inapplicable to the Osprey; for if we allow that its beak resembles that of the Ossifrage, in the conformation of its feet, and above all of its talons, it differs widely, not only from that bird, but also from all the rest of the family, and is, therefore, entitled to a peculiar generic appellation. Should any hypercritic object to my proposed name by saying that it implies half a *fish*, I reply that, on the same principle, *Haliaëtus* implies half a *sea*, either of which objections would be too absurd for ridicule. *Falco* is a much better name for the Falcons than any Greek word can be, as it implies at once their grand characteristics, as regards both beak and talons.

The term *lagopus*, as applied to a bird, signifies, or ought to signify, that not only the tarsi, but also the toes, even to the claws, are covered with hair-like feathers, as in the Red Grous or the Ptarmigan, which is not the case in any of the Falcon family; and as I had seen the name applied to a foreign species, namely, the Booted Falcon *(F. pennatus)*, I thought it would equally suit the Rough-legged Buzzard. *Pennipes* is, I conceive, still better.

The specific designation *Britannicus*, as applied to the Red Grous, which I

observe in Mr. Morris's list (p. 126), and which I consider truly appropriate, I believe originated with myself, as I proposed its adoption in a letter I wrote to Mr. Loudon two years ago.

Charmouth, Dorsetshire, July 18, 1837.

[If our correspondent's suggestion was only made in a private letter to Mr. Loudon, it was little likely ever to meet the ears of the ornithological world. *Lagopus Britannicus* was employed for the first time in *The Analyst*, No. xiv., for Jan. 1836 (Vol. III., p. 206), in a list of British birds which Mr. Sweeting appears not to have seen.—Ed.]

SOME ACCOUNT OF GLANVILLE'S WOOTTON, THE RESIDENCE OF J. C. DALE, ESQ., A.M., F.L.S.

By the Rev. F. Orpen Morris, B.A.

I purpose on the present occasion sending you a few particulars respecting Glanville's Wootton, the residence of my hospitable and truly valued and esteemed friend James Charles Dale, Esq. He reminds me of the sentiment so feelingly expressed in Percy's *Reliques*:—

> "I'll sing you a good old song that was made by a good old pate,
> Of a fine old English gentleman who had an old estate;
> And who kept up his old mansion at a bountiful old rate,
> With a good old porter to relieve the old poor at his gate."

For many years I have now had the pleasure of his acquaintance, and every succeeding year has only increased my feeling of very great regard, which he deserves at the hands of all who know him. Glanville's Wootton is a small country village, in the county of Dorset, in a retired and very lovely situation, about midway between Sherborne and Dorchester, a short distance from the high road between those two towns. Mr. Dale is the squire of the parish, and his house is situated at the extremity of the village, and indeed of the parish, but completely separated from the former by plantations and grounds. Except in the summer season, when he generally makes an entomological tour (for he thinks nothing of a trip to Scotland, or the Lakes, in quest of a rare Butterfly), he is to be found at home, and I will answer for a hospitable reception for any one who may be disposed to visit and inspect his superb collections. He has one room occupied entirely by cabinets of British insects, stuffed birds, and the most complete private entomological library in England. He has, if I recollect right, about one hundred and twenty drawers, well filled with the insects of our islands, to a number that I am almost

afraid of mentioning, through fear of not being quite correct. They are all scientifically arranged, according to the excellent classification of Mr. CURTIS, author of *British Entomology* (now fast approaching its completion), to whom Mr. DALE has always been a trusty, true and valuable friend, despite the malignant and narrow-minded opposition with which Mr. CURTIS has been assailed.

It would be an endless task to enumerate the rarities which enrich Mr. DALE's cabinets. His brilliant discoveries in the genus *Stylops* are well known, and I will only repeat what I said before, that any person, whether entomologist or not, will, I am sure, receive a hearty welcome, and have the gratification of inspecting the collection which he has been upwards of twenty years amassing, and in the completion of which he has spared neither time, trouble, nor expense.

Mr. DALE's family is ancient. In earlier times they resided in the neighbouring county of Hampshire, but for a considerable period in Dorsetshire. In front of the house stands a very large evergreen Oak, now fast going to decay, which is said to be one of the oldest and most remarkable trees of the kind in the kingdom.

The neighbourhood of Glanville's Wootton is well wooded, and an entomologist, merely passing through it, would expect that it was a good locality for insects; but such is not the case; Mr. DALE has had to travel far for most of his specimens, and though he has well explored his own neighbourhood, yet he has met with but indifferent success. He used to take *Papilio machaon* about twenty years ago, on a rather "high and dry" hill, and elsewhere, but he has never seen it since, which is very remarkable, as he did not take all the specimens he saw, and the fly continues to appear every year in the fenny counties in which it is found. On the Mintern or Telegraph Hills, near Glanville's Wootton, Whortleberries grow, on which Mr. DALE has taken *Phytometra ænea; P. straminea* he has captured in his garden, and also *Plusia orichalcea*, formerly abundant on the Honey-suckle. *Lycæna acis* or *L. cymon* was at one time taken, in great numbers, on the same hill with *P. machaon*, but is now only occasionally met with, and in the low grounds.

There is a Roman encampment in the vicinity of Mr. DALE's residence, with two brick arches, which was, however, supposed to be of modern construction; and from the summit of the hill, near these antiquarian remains, there is a most magnificent and extensive view.

A very curious Snipe of an unknown species was shot some years ago near Glanville's Wootton, and the Lesser Tern has been picked up dead. Mr. DALE has a brood of Pheasants, of which only one now remains—"*sola superstes*"—twelve years old, a female in the male's plumage. They used to come to the windows every winter during the hard weather, to be fed, and would perch on the window seat, if you tapped on the glass.

Mr. Dale may truly be said to be the great patron of Entomology in England; his fortune enables him to visit all parts of the kingdom, with the view of procuring the richest treasures, and I have known many instances of his generosity being liberally exercised towards entomologists in distress.

I have been induced to draw the attention of your readers generally, but more particularly those who take an interest in the science of Entomology, to the extensive and richly-stored cabinets of Mr. Dale, feeling assured that his kindness and liberality will at all times prompt him to render assistance to the entomologist in the prosecution of his studies, by giving every facility for an inspection of his admirably-arranged collection.

Lendal, York, 1836.

ON THE FLIGHT OF GULLS.

By Mr. W. H. Benshed.

It is the custom with many farmers in the neighbourhood of Tonbridge, Yalding, and several other places in their vicinity, to manure their land with Sprats, which are brought from the sea in barges. In a few days the Gulls visit the fields, and it is necessary to have persons constantly upon the spot, to drive them off, or the greater part of the fish would be carried away. The course of their flight is about N. E., and they pass regularly in parties from the sea in the morning, and back again in the evening, going nearly over Maidstone in their passage to and from their food. Their discovering the fish at so great a distance is very remarkable. Can it be by their great powers of smelling? The fish soon putrify, and the effluvium is very great; but I have generally supposed that a few individuals first follow the course of the river, and, having ascertained the spot where the fish are deposited, they afterwards make a short cut of the distance to the sea. It is very amusing to watch their morning and evening flight, as they vary their plans, according to the wind and weather. If they have a strong head-wind to contend with, they separate and wheel about, beating upwards, and occasionally sweeping downwards to within a few feet of the earth, then, mounting on a sudden gust, seem to hang poised in the air, but, with a slight quivering motion of the wings, they again dash forward. In fine calm weather they fly like the first figure on the next page, and I was once particularly struck with a manœuvre of these birds. It was on a still afternoon in December, the clouds were remarkably high, and

"Spotless as snow, and countless as they're fair,
Scattered immensely wide from east to west,
The beauteous semblance of a flock at rest."

On looking upwards I observed a large detachment of Gulls wheeling in large circles, and as they wheeled they were slowly swinging onwards to the sea. Watching them for ten minutes they ceased flying in circles, and arranged themselves in the figure of a ——————/ and, slowly waveing their wings, were soon lost to my sight; but another detachment had arrived over my head, and breaking up their straight flight, commenced the beautiful figure of soaring in circles. After a short time they followed the example of their companions, and vanished in the distance. I watched four successive flocks, and each went through the same manœuvre. There was a gentle current of air where these birds were flying, from the south-west, and it struck me that the flight in a line was upon an inclined plane, the birds (if I may so express it) were sliding onwards, and consequently falling towards the earth. On arriving at certain points of their journey, they arose by circling in the air, and the course of their flight may be represented by this diagram.

1, 3, 5 inclined plane 2, 4, 6 figures described by raising themselves in circles to a higher point.

Should this suggestion be worthy of your consideration, you will oblige me by its insertion; and I will endeavour to procure you some more observations which now and then fall under my notice.

Maidstone, July 8, 1837.

THE PINE APPLE.—It has been discovered that the leaf of the Pine apple possesses a fibre which gives every promise of being a valuable article both in manufacture and commerce. It far exceeds other threads in strength and fineness, and possesses the valuable quality of receiving and retaining dye, while colouring matter invariable peels off flax. The cost of rearing this plant in the West Indies (no idea is entertained of making it an English article) is so very small, that the fibre could be delivered in England, at the expense of 4d. per lb., of course exclusively of duty; while from two to three acres of land are sufficient to yield a ton of the fibre.—*Brighton Herald.*

CORRESPONDENCE.

The difference between the Wood of Trees which have died, and that of those which have been felled.

To the Editor of the Naturalist.

Dear Sir,—Your correspondent, the Rev. F. O. Morris, inquires :—Is there any difference for purposes of use between the wood of trees which have died, and those which have fallen under the axe? On putting this question to a practical man, a carpenter, he replied, that the wood of trees which have died is rough, and does not "work up so well" as those felled by the axe; the wood next the bark being roughest. He was not aware that there was any difference in the duration and strength of the timber, provided both were sound. This is the answer that might have been expected from a previous knowledge of the functions of the wood of trees. The wood of trees is distinguished by botanists into two kinds; the central wood deposited in previous years' growth and containing the peculiar secretion of the tree, called duramen, or heart wood, and the external layers of wood, deposited in the last years of the growth of the trees, and not yet filled with the consolidating secretions, called alburnum, or sap-wood. The largest portion of the nutritive sap of the tree ascends to the leaves through the alburnum, only a small quantity being more or less diffused through the duramen. When a tree dies, it generally arises from the stoppage or vitiation of the sap, and, consequently, we find that the smaller branches, or those composed entirely of sap-wood, suffer most, and are easily broken. As we approach nearer the stem the branches become stronger in proportion to the duramen they contain, and the wood of the trunk consisting chiefly, in timber trees, of duramen, appears to suffer very little. The sap-wood, of course, would suffer more or less according to its age, but the heart-wood, being almost entirely independent of the sap, could not suffer from its suspension or vitiation.

The Distinctions between *Quercus pedunculata* and *Q. sessiliflora*.

Mr. Davis, in his interesting paper on the decrease of the Oak, in your *Naturalist* of last month, has not alluded to a circumstance that has, probably, had some influence in reducing the number of our Oak-forests. Perhaps you will allow me to draw the attention of your readers to it. There are two species of Oak indigenous in Britain, *Quercus pedunculata* and *Quercus sessiliflora;* the former is known by its long flower-stalks, and short leaf-stalks; the latter by its short flower-stalks and longer leaf-stalks. *Q. pedunculata* is a slow-growing tree, with bright green leaves. *Q. sessiliflora* is much more rapid in its growth,

has a darker and more permanent foliage, and is a handsomer tree, the wood is smoother, the fibres are less tortuous, and the medullary rays are further apart than in *Q. pedunculata*. From some prejudice or misrepresentation, the former tree alone is supposed to afford good timber, and thus the handsomer, quicker-growing Oak is seldom planted. I am not aware of the precise difference in their rate of growth, but I have the authority of Professor LINDLEY for stating that it is very great. Were this fact generally known it might be an inducement for planters to grow this species of Oak.

I remain, Dear Sir,

Your obedient servant,

Campsall, near Doncaster,
July 19, 1837.

EDWIN LANKESTER.

ON THE TURNIP FLY.

To the Editor of the Naturalist.

SIR,—I beg leave to suggest, through your pages, to such of your readers as may have time and opportunity, the propriety of watching the habits, &c., of the "Turnip Fly" in their various neighbourhoods, as I begin to suspect that there are at least three species of insects which have a hand in the destruction of our Turnip crops; each, however, being confined to its own locality, and not frequenting the districts infested by the other. One of these is *Athalia spinarum*, on which there is a paper by my brother, the Rev. F. O. MORRIS, at p. 180 of Vol. I. This, I think, is the only one known in the south of England. The next is, I believe, an *Aphis*, but what species I have yet to be informed, as I have never myself seen it. It was mentioned to me by Mr. C. STORER, of Hawksworth, Nottinghamshire, who says that the Turnips in that neighbourhood were infested by a small fly which, from his discription, I take to be an *Aphis*. He says the leaves turned yellow, no doubt from their juices being extracted by these insects. The rain did not appear to affect them, as they were chiefly on the underside of the leaf. He observed them one evening, late in September, in immense swarms in the air, near his residence; in such numbers indeed were they, that they might be taken in handsful from the windows on which *some few (!)* of them settled. He did not at all know the larva of *Athalia spinarum* on my describing it; so that I imagine the Turnip Fly of that district must be a very different insect from that of the South of England. The third is a *Haltica*, but how it commits its ravages I do not know, unless it be in the early stages of the growth of the seed, or on the seed itself before germination; it could, I imagine, do but little injury to the full-grown plant. I should be glad if any of your correspondents would give me their experience on the

subject, as any new facts must be interesting. Also whether there are an y remedies yet known for their destructive ravages.

I am, Sir, yours, &c.

Charmouth, Dorsetshire,
July 10, 1837.

BEVERLEY R. MORRIS.

DISTRIBUTION OF THE CORN BUNTING IN ENGLAND.

To the Editor of the Naturalist.

SIR,—In the May number of *The Naturalist* Dr. LIVERPOOL wishes any correspondents of the periodical, according to their observations, to corroborate or oppose his opinion respecting the distribution of the Bunting (*Emberiza miliaria*).* The fact is, that this bird is very locally and unequally dispersed. In some districts it is sufficiently abundant, while in others you will not see one. In the neighbourhood of the downs in Berkshire, near Lambourne, in the heart of the county, they are very plentiful. I have also seen a good many in Dorsetshire, near Lyme Regis, and occasionally near here, but it is only partially distributed in these parts. I think it may be said chiefly to frequent such farms as furnish in plenty the food from which it derives its name. I am pretty certain that they migrate occasionally, and perhaps periodically, from one part of the country to another. This may account, in some degree, for the opinion as to their scarcity, as they may have been missed when they were out visiting.

I remain, Sir,

Your obedient servant,

Doncaster, May 4, 1837.

F. ORPEN MORRIS.

To the Editor of the Naturalist.

SIR,—In reply to the observations of Dr. LIVERPOOL, at p. 80 of the present volume, I send the following note. The Corn Bunting is by no means so common as the Yellow Bunting in the neighbourhood of Charmouth, in the south of Dorsetshire. The number of Corn Buntings in any given space in that locality certainly falls very far short of that of the Yellow Buntings, though I have never considered it a rare bird, plenty of specimens being at all times procurable. It is, I understand, often passed off on the uninitiated in the London markets as a Lark, so that I suppose it must be tolerably common in the districts which supply the poulterers of the metropolis with those birds.

I am, Sir,

Your obedient servant,

Trinity College, Dublin,
May 15, 1837.

BEVERLEY R. MORRIS.

* See also a reply to the same query by Mr. BLYTH, in his "Commentary on Nos. vii. and viii. of *The Naturalist*," in our current number.—ED.

To the Editor of the Naturalist.

My Dear Sir,—In reply to Dr. Liverpool, the Corn Bunting is most certainly very abundant in this and the adjoining county (Suffolk), evidently preferring the more open fields to places where the enclosures are small and the hedges tall. In this district it is as numerous as the Yellow Bunting; and several may be seen in a walk of a few miles round the town, perched upon the top-most twigs of the fences adjoining the road. The nest is usually placed among Corn, Clover, or Trefoil, and it is only when the two latter are cut that we find it. The Bunting is certainly very late in its nidification. I have not yet seen a single nest this season.

I remain, my dear Sir,

Yours very truly,

Thetford, Norfolk,
June 14, 1837.

J. D. Salmon.

[We shall be glad to receive further communications on this subject.—Ed.

Some Account of a Wasp's Nest taken near Campsall Hall.

To the Editor of the Naturalist.

My Dear Sir,—During the past week my attention was directed to the existence of a Wasp's nest in a very peculiar situation. It had been discovered by a labourer, and from the situation of the nest, and the appearance of the insects, it was supposed to be a different species from the Common Wasp (*Vespa vulgaris*). The nest was attached to the branch of a dead bough, near the lake at Campsall Hall. It was nearly of a spherical shape, and measured about 12 inches in circumference. It was appended to the bough by its base; there was an orifice in it, at the most dependent part, about an inch in diameter, and it was situate three or four inches from the ground. The external portion of the nest consisted of four or five layers of fibrous matter, agglutinated with some wax-like substance. The fibres were not so coarse as those of the covering of the nest of the Common Wasp. Internally the combs consisted of three circular tiers, arranged horizontally; the lower-most of these was the smallest. Each tier was attached to the one above it by a single pedicle extending from its centre. The hexagonal cells of the combs diminished in size towards the circumference of each tier. The cells, in number 500 or 600, were filled with young in different stages of growth. Those most external were in the larva state, and the cells were open below. The centre cells were closed over with a paper-like substance, and each contained a Wasp in its pupa state. The external appearance of these cells resembled a petrified bunch of grapes.

The nest was taken by introducing under the orifice a squib of moistened gun-

powder;* the smoke stupified the insects, and the nest was easily obtained. On examining the captured insects, they were found to correspond to the Linnæan character of *Vespa sexcinctus*, and also with the plate of the same insect given by Donovan. It likewise agrees with the description of *Vespa Britannica* of Leach, which in Stewart's *Elements of Natural History*, is said to be common in Scotland, but rare in England. *V. sexcinctus* is not given as a British insect in this work. Perhaps some of the readers of *The Naturalist* may be able to inform me what species of Wasp this really is.

I am, my dear Sir,

Yours very sincerely,

Campsall, Aug. 11, 1837. Edwin Lankester.

CHAPTER OF CRITICISM.

Mistake in a Review of Hewitson's "British Oology."

To the Editor of the Naturalist.

My Dear Sir,—I was much gratified with the perusal of the May number of *The Naturalist*, and I fully intended ere this to have offered a few remarks upon it, but unavoidable engagements have prevented me from availing myself of an earlier opportunity. I have not yet received the number for the present month, as it was "not out"† when the monthly periodicals came down on the first; but I find, by the advertisement of it in the *Magazine of Natural History*, that it promises to be as interesting as the last numbers. I quite agree with H. E. H. (p. 88), that a chapter of criticism will be a valuable addition to the pages of *The Naturalist*, and consider such a chapter one of the essentials of a periodical, provided all personalities are excluded in the criticisms.

In the review of Hewitson's *British Oology* (p. 112), No. xxx. and xxxi., the three figures of plate 118 are described as belonging to *Sylvia loquax*, whereas the two last figures represent those of *S. sibilatrix*, as will be seen on reference to the letter-press annexed. The eggs of *S. loquax* do not, according to my experience, vary very materially; that figured by Mr. Hewitson is a beautiful representation, and very characteristic. My specimens are very similar. I should like to have seen an additional figure of the egg of *S. sibilatrix*. Several

We beg to caution our readers against this most dangerous method of taking the nest, a method which has lately caused two very serious accidents in our neighbourhood. In one instance the individual—a near relative of the Editor's—received so violent an injury that the hand was obliged to be amputated next day; in the other the whole arm was sacrificed. In both cases the vessel containing the gun-powder burst in the hands of the operators.—Ed.

† Our numbers are invariably in town several days before the first of each month.—Ed.

of my specimens have a beautiful zone surrounding the larger end, much more clearly defined than in the first figure of the plate, resembling the eggs of the Red-backed Shrike, but considerably darker.

I remain, my dear Sir,

Yours ever truly,

Thetford, Norfolk,
June 14, 1837.

J. D. Salmon.

Classification of the Falcon family by the Length of the Primaries of the Wing.

To the Editor of the Naturalist.

Sir,—I believe Dr. Vigors distinguishes the different groups of Falcons by the comparative length of the quill feathers of the wing. In the Ash-coloured Falcon, however, the female (the Ringtail of old authors) has the fourth feather the longest, and the male the third feather. This is a very important fact, and one which appears to have been hitherto overlooked.* It was first pointed out to me by Mr. R. H. Sweeting.

Origin of the Name *Fringilla cœlebs.*

In Rennie's edition of Montagu's *Ornithological Dictionary* the specific name of the Chaff Finch (*cœlebs*, or bachelor) is said to be very appropriate, as probably given to it from the neatness of its nest, &c. This does not appear to me to be the origin of the name. Many birds build quite as neat nests as the Chaff Finch. The name, I think, was bestowed in consequence of large flocks of these birds, of separate sexes, collecting together in winter, and not uniting again till milder weather arrives.† This is more the case in some winters than in others, and is chiefly noticed in severe seasons. I have seen immense flocks of females with scarcely a male among them, and *vice versâ*.

The Name "Ivy Wren," as applied to *Anorthura troglodytes.*

I wish to ask you, Mr. Editor, why you give the name *Ivy* Wren to *Anorthura troglodytes?* I think you yourself allow that it only occasionally builds in Ivy, and *I* have *never* found its nest but in holes or hollows in mossy banks—whence the name *troglodytes*, as I explained in a former number. I believe you also allow that the specific term should represent some *peculiar* characteristic of the species. This is not conveyed by the name Ivy Wren.

I remain, Sir,

Your obedient servant,

Doncaster, April 3, 1837.

Francis Orpen Morris.

* Has our correspondent noticed this circumstance in more than one instance?—Ed.

† This unquestionably is the reason.—Ed.

[We picked up the name Ivy Wren from a list of British birds published in *The Analyst*, Vol. III., p. 199. If peculiar or exclusive specific names could be procured for every animal under the sun, we should be very glad to adopt them. But as it is scarce possible to find such a designation for any one living creature, we must be content with the best we can get. As regards the nidification of the Ivy Wren, we have met with its nest in almost every locality *besides* "holes or hollows in mossy banks."—Ed.]

PROCEEDINGS OF NATURAL HISTORY SOCIETIES.

ZOOLOGICAL SOCIETY.

Mr. Yarrell, Sec., in the chair.—A letter was read from Mr. Abbott, of Trebizond, in Persia, announcing a present of several skins of rare birds from that country; as also from Mr. Cumming, from Manilla, with 54 species and 151 specimens of birds.—Mr. Martin read a paper on the Proboscis Monkey (*Simia nasalis*), describing a singular formation of the nose, differing slightly from that of *S. recurvus*. Mr. Gould resumed his description of the birds brought over by Mr. Darwin, amongst which were several Wrens, Woodpeckers, and Gulls, and two *Galactes*. He also exhibited a common British Pied Wagtail, which had been hitherto undescribed, or inaccurately defined by naturalists, and which he named *Motacilla Yarrellii*, probably because Mr. Yarrell is now Secretary to the Zoological Society!

July 6.—Viscount Gage, V. P., in the chair. The most interesting donations during the past month were,—two Sloth Bears, from J. Walkinshaw, Esq.; two Thibet Watch Dogs, from P. S. Coxe, Esq.; and two yellow Parrokeet Macaws, from the Hon. Miss Bentinck. The sum of £100 has been awarded by the Council for the purchase of zoological works for the library, which has hitherto been very deficient, and the contributions of members were also requested.

Aug. 8.—Mr. R. Owen, F. R. S., in the chair.—A letter was read from Mr. Harvey, of Teignmouth, accompanying some preserved *Radiata* and fish from the Devonshire coast, the former including a *Comagilla*, *Tubularia indivisa*, *Caryophilla*, &c.—Mr. Ogleby [Qu. Ogilby?—Ed.] described two new species of his genus *Chemas*, which now includes four species.—Mr. Gould introduced several new species of birds from Mr. Darwin's collection, among which was a Raven from California, named, from the beauty of its appearance and hue, *Corvus splendens*, a new *Ortyx*, and another species of the *Dendroceta*, or Wan-

dering-crow of authors, so called from its restless disposition, differing especially from the Magpie, in having more arboreal feet, shorter tarsi, &c.

BOTANICAL SOCIETY.

July 6.—J. E. Gray, Esq., F.R.S., Pres., in the chair.—Mr. Hopkins concluded his paper "on vegetable fermentation, and on the products resulting therefrom."—A discussion took place on some points in Vegetable Physiology, and on the phenomenon of "a tree growing within a tree."—Mr. Chatterley, the Secretary, described a new variety of *Stachys sylvestris*, recently discovered by him near London. The whole plant differed from the well-known species of that name, not only in having white flowers, but also in scent, and in the villous character of its leaves.—Mr. Gray remarked that the Royal Fern (*Osmunda regalis*), hitherto supposed not to exist within twenty miles of London, was last week found by him on Putney Common. A variety of donations of books and specimens were announced, after which the President adjourned the Society till August.

HORTICULTURAL SOCIETY.

July 4.—The following medals were awarded:—a large silver medal to Mrs. Lawrence, F. H. S., for *Gesnera faucialis:* silver Knightian medals to Mr. Fairburn, of Clapham, for Heaths; to James Bateman, Esq., F. H. S., for various Orchidaceous plants; to Mr. S. Hooker, F. H. S., for Roses; to Mr. Errington, gardener to Sir P. Egerton, Bart., F. H. S., for Royal George Peaches; to Mr. J. Stewart, gardener to Lord Ashburton, F. H. S., for white Magdalen Peaches, and Keen's seedling Strawberries; and a silver Banksian medal to W. Leveson Gower, Esq., F. H. S., for double yellow Roses. Besides the above was a beautiful show of specimens of *Lychnis bungeana*, *Crinum amabile*, *Eutoca viscida*, *Combretum purpureum*, Irises, Pelargoniums, &c. The Earl of Arran, and six other gentlemen, were elected Fellows.

July 18.—Medals were awarded to Mr. Errington, for Nectarines; to Mr. Flanagan, gardener to Sir Thomas Hare, Bart., F. H. S.; and to Mr. Durnsford, gardener to Baron Dimsdale, F.H.S., for a specimen of *Catasetum luridum*. —There were also some well-preserved apples; one, the growth of the year 1835, and received by the Society from Lord W. Fitzroy, F. H. S.—Six candidates were elected Fellows.

ENTOMOLOGICAL SOCIETY.

Aug. 7.—Mr. Bowerbank showed strange proofs in cork and timber of the ravages of a species of *Dermestes*, and recommended oil of almonds for their ex-

termination.—Mr. BAINBRIDGE exhibited a small Moth which had been very injurious to Apple-trees in the neighbourhood of Lambeth, in many cases the leaves having been destroyed altogether. The cocoons are formed on the leaves, which soon become covered with webs so strong, that in many cases the young leaves cannot burst through; but the larger leaves of Apple trees escape, and Pear trees are but rarely attacked.—Mr. WESTWOOD detailed an entomological visit lately made to Paris, and, amongst other subjects, introduced to notice a disease with which Silk-worms have been very extensively attacked in France, called Muscadine. The malady is a parasite, which gradually envelops the whole body in a white Fungus, and destroys the Silk-worm, the mischief being produced by the explosion of a Fungus which is taken in by the spiracles or pores of the skin, as has been proved by M. ADOUIN, who has inoculated several Worms and Beetles with it. There was also a specimen of the *Scolytus pigmæus*, an insect which attacks the Oak, and which has latterly proved so destructive that 80,000 trees in the *Bois de Vincennes* have been cut down through its attacks. Mr. WESTWOOD, in conclusion, made some remarks on the progress of Entomology in France, which he stated to be in advance of this country, there being more working collectors, and the collection at the *Jardin des Plantes* being superior to that of the British Museum; M. ADOUIN having likewise just completed a course of fifty lectures on Entomology. With this establishment also are connected five persons devoted to Entomology, whilst in the British Museum there is only one.

EXTRACTS FROM THE FOREIGN PERIODICALS.

ZOOLOGY.

1. ON THE MIGRATIONS OF NORTH AMERICAN BIRDS.—We now present our readers with such portions of the Rev. Mr. BACHMAN'S instructive paper as we were compelled to omit last month.

A great number of American birds of passage do not at all traverse Carolina, but proceed to the West Indies across the Gulf of Mexico. Others follow the direction of the Alleghanies, and thus pass to Mexico, or even to still more southerly countries.

It has been supposed, that some migratory birds, in quitting the United States, may pass the tropics, and find, towards the south pole, climates analogous to those which they have quitted in the north, which enable them to build a second time. Such is known to be the case with the Stork of Europe, which rears a second brood in Africa.

Swallows have been said to retire in winter into holes in the banks of rivers, and there to remain benumbed. But JOHN HUNTER has clearly proved that the anatomical structure of these birds prevents the possibility of their long existing in a frozen state. Moreover, Swallows, like other birds, may be traced in their migrations, as is now well known.

When the period of departure arrives, birds testify an irresistible restlessness. The Canada Geese* (*Anser Canadensis*), tamed by the author at Charleston, attempted every spring to obey their instinct. Although deprived of a joint of the wing, they endeavoured to fly, and if they were set at liberty for a moment, they escaped towards the north by running, as if they would undertake so long a journey on foot! A well-authenticated fact is mentioned by WILSON, of a tamed Goose which escaped from Long-Island in spring, and returned to it in autumn with three young ones, which remained with her. Goldwings, Orioles, &c., carried while young from the north, and set at liberty in spring, fly in the direction of the pole, as if guided by the compass.—*Bib. Univ. de Genève.*

2. THE REPTILES OF BARBARY.—The reptiles which I have studied, says M. GERVAIS, come from Morocco and the province of Algiers. For those of the one I am indebted to M. FORTUNÉ EYDOUX, who visited Tangier when he was principal surgeon to the frigate Victoria. The others were taken in the neighbourhood of Algiers, by M. le docteur MARLOY. I have likewise seen several from Bona and Oran; these last were sent to the Paris Museum, by MM. BRAVAIS, GÉRARD, GUYON, and STENHEIL. The species which furnished the researches of the various individuals I shall have to quote, amount to only twenty-seven; but, though few in number, they sufficed to impart a tolerably complete idea of the Erpetology of Barbary. The reptiles of this country differ little from those of the other parts of the shores of the Mediterranean; but one circumstance deserves notice, namely, that the number of species common to Spain and the Morea which were found in Barbary, is unquestionably greater than that of the Egyptian species. I do not insist on this observation, which is limited to geographic researches on another genus: indeed the acquaintance of naturalists with the productions of these interesting countries is so little advanced that all generalisations which might at present be attempted, would undoubtedly be premature. On the Erpetology of North Africa we have but the information collected by MM. GEOFFROY, SAVIGNY, RUPPEL, &c., for Egypt; and by SHAW and POIRET for Barbary. VANDELLI has studied the reptiles of a part of Spain; WAGLER has also described a few, but, by a singular mistake, has given them as inhabiting Brazil; MICHAELIS has observed them still more recently. M.

* These birds are not, strictly speaking, British; but they are met with in a half-wild state in many noblemen's and gentlemen's parks in various parts of England.—ED.

Dugès has furnished excellent descriptions of many species from the south of France. Prince Bonaparte has studied those of Italy, on which Metaxa is at present engaged. And MM. Bibron and Bory have recently published the names of thirty-one species, some of which, obtained from the Morea, are new. Other accounts also exist on the reptiles of the same countries, but they are for the most part scattered through various works, and have not special reference to erpetological geography.

The following are the twenty-seven reptiles mentioned by M. Gervais as occurring in Barbary:—

Testudo marginata, Schœff.; *T. ibera*, Pall.; *Emys leprosa*, Schweig.; *Gecko fascicularis*, Daud.; *G. verruculatus*, Cuv.; *Gymnodactylus Mauritanicus*, Dum. and Bibr.; *Chameleo vulgaris*, Linn.; *Uromastyx acanthinurus*, Bell; *Lacerta viridis; L. agilis; Algira Barbarica; Lerista Dumerilii*, Cocteau; *Scincus ocellatus; S. cyprius*, Cuv.; *Seps tridactylus*, Daud.; *Anguis fragilis*, Linn.; *A. punctatissimus*, Bibr. and Bory; *Pseudopus serpentinus*, Merr.; *Amphisbæna cinerea*, Vandelli; *A. elegans*. Gerv.; *Coluber Agassizii; C. hippocrepis*, Linn.; *C. Austriacus*, Linn.; *C. viperinus*, Linn.; *C. Æsculapii*, Lacép.; *Bufo Arabicus*, Crestz.; *Triton Poireti*, Gerv.—*Annales des Sciences Naturelles.*

3. On the Lammer Geyer (*Gypaëtus barbatus*).—These birds, observes Mr. Hodgson, of Nepaul, which appear to be sufficiently common in the western portion of the vast chain of the Himalayas, are also found, though more rarely, on the eastern side, in Nepaul. They live either separate or in flocks, and assemble wherever there is a good repast to be had, without fearing even the neighbourhood of man. The author considers them as belonging to the *Gypaëte des Alpes*, and the *Vautour barbu* of Africa. In fact they agree in size; and although the assertion of Bishop Heber, that the Himalayan bird measures twenty feet from wing to wing, must be rejected as a popular exaggeration, yet it appears, by the observations of the author, that the length is often ten and even eleven feet. Its form is more that of a Vulture than of an Eagle. The bill is horn-coloured, straight, and very strong; the nostrils are covered with stiff black bristles, directed forwards; two bunches of similar bristles, at the base of the lower mandible, give this bird its provincial name. The head and neck are entirely covered with short, straight, pointed feathers, which are of a light tawny brown color, with a yellowish tinge. The wings are as long as the tail, the feathers being dark, with a white stripe in the centre. The legs are short, the tarsi very short, and entirely covered with feathers; the talons, intermediate between those of the Vultures and the Falcons, are lead-colored. It has not, like the Lammer Geyer, a white band round the head, but there is no great importance in such a character, and Mr. Hodgson's description seems to

confirm his opinion as to the identity of the species.—*Bibliothèque Universelle de Genève.*

4. Propagation of Spiders.—In some recent Nos. of the *Annales des Sciences Naturelles*, M. Dugès, of Montpellier, has published extremely interesting papers on Spiders; from one of them we extract the following:—

The eggs of Spiders are placed in cocoons which vary much in form and structure. They are generally round, and surrounded by an irregular web; they are sometimes flattened in the shape of a disc. Those of one species of *Epeira (Epéire soyeuse)*, says M. Dugès, resemble the Gourds vulgarly called *bonnet-de-prêtre* (priest's-pate). But those of the *Araignée labyrinthe* and the *Epéire fasciée* require a more detailed description. Both are often found suspended in the midst of tall plants; that of the former consists of a large apartment formed of rather compact taffety, with openings pierced for the passage of the mother, who generally watches her treasure, but abandons it at the slightest alarm.* In this apartment is suspended, by a dozen pillars, a smaller chamber filled with down, in which is situate the papyraceous bag containing eggs of the size of a grain of Millet, and less numerous than in many other species. The cocoon of the *Epéire fasciée* is frequently met with in the middle of France, and every one living there must have noticed this beautiful ball, of the size of a Partridge's egg, the shape of a small truncated pear, and of a pale yellow color, intersected with thin black longitudinal bands. The interior is of the consistency of parchment, and has a lid above the truncature. In the centre, and upon the finest web, is placed a small groove of hair, itself a lid, and filled with many hundreds of round eggs, of a beautiful orange yellow.

M. Dugès mentions many analogous facts, and notices various means of preservation employed by the mother, when he terminates his essay by some remarks on the instinct which actuates her, observing, that this instinct is not always so blind as one might suppose, and that the insect sometimes testifies a kind of intelligence. In the majority of instances, however, it is a wholly mechanical impulse which moves it. Hence it is that one may deceive the instinct of *Dolomedes* and *Lycosa*, whose custom is to carry their groups of eggs with them. One may substitute for this group a ball of cotton, which will generally be adopted, and protected with as much care as a true cocoon, by the female who has been deprived of her own offspring. It is true, however, that if she has the choice she generally discovers her error, and does not allow herself to be deceived a second time.

* We question whether this is a correct expression. At the approach of a human form the insect would doubtless disappear with all speed; but where there is any chance of a successful defence being maintained on the part of the parent insect, we believe she will not be found to desert her charge.—Ed.

BOTANY.

5.—Organography of the *Cistaceæ*.—A learned and able paper on this order of plants, recently published by M. Edouard Spach, commences in the following words :—

A new treatise on a group composed chiefly of species indigenous to France, will doubtless appear superfluous to many; nevertheless, judging even by the most recent works, the pretended characters of the *Cistaceæ* depend only on extremely vague and superficial notions. I flatter myself I have supplied this gap by a comparative examination of even the most minute details of nearly all the known *Cistaceæ*, as well as of many new species—a method, indeed, little expeditious, but replete with means for proving the worthlessness of theoretical classifications, founded on partial observations.

The order *Cistaceæ* consists, according to the majority of botanists of the present day, of the genera *Cistus*, *Helianthemum*, *Hudsonia* and *Lechea*. It is to the species comprised in these four genera that the researches the results of which I am about to lay before the reader almost exclusively relate. Altogether I have reason to believe, that a revision of several of the neighbouring orders, especially *Portulaceæ*, *Bixinaceæ*, *Tiliaceæ*, and *Flacourtiaceæ*, would probably enrich the first with a number of plants now erroneously classed among the others.

I shall not dwell at all on the duration, bearing, leaves, and inflorescence of the *Cistaceæ*, having but little to add to what is already known on this subject.

The vegetation of the *Cisti* with deciduous leaves, offers a peculiarity which I cannot pass over in silence. In these plants the leaves developed on the young shoots, during the early months of fine weather, generally fall in the course of the summer, when new branches proceed from their axillæ. The leaves which grow on these stalks are almost invariably of a very different shape from those of the primary shoots, and entirely alter the appearance of the plant. The inflorescence varies greatly in many species; so that characters drawn from the number and disposition of the flowers, would in many cases be wholly worthless.—*Annales des Sciences Naturelles.*

GEOLOGY.

6.—On the Fossil Bones found near the Jamna, in India.—We have already frequently laid before our readers the active researches which the discovery of important fossils has caused in many places in the immense English empire in the Indies. We shall report the new facts which transpire on this subject, and which are interesting both to the geologist and the zoologist.

The works undertaken to facilitate the navigation of the Jamna, have led to the discovery of numbers of fossil bones, in different states of transformation. Some

are pulverulents, the interstices being filled with the concrete and conglomerated chalk of the river; others are enveloped in a layer of spar; others, lastly, entirely fossilized, are of a blackish brown, shining, heavy, brittle, of a conchoidal fracture, and retaining but little of the phosphate in their composition. These last are almost converted into hydrate of oxide of iron. The hard enamel of the teeth resists this transformation a longer time, and its whiteness contrasts with the coloured mass in which it is enveloped. The specific weight of these *osseolites*—if they may be so termed—is 4.5, and their composition is as follows:—

Phosphate and carbonate of lime	17.5
Water	6.0
Red oxide of iron	76.5
	100

The engineer DEAN, to whom the discovery of these fossils is owing, thought he had found some human bones, but the anatomists of Calcutta demonstrated his error, and that which he had mistaken for the neck of the femur of a man, appeared to be the outside of a large Stag's horn!

Independently of numbers of remains of Elephants, teeth, remarkably well-preserved, and easily recognized by the ridges and other lines on their crowns, were found among the bones of a fossil Hippopotamus. This animal has always been regarded as a stranger in India. It is therefore an interesting discovery among the fossil remains of animals evidently originally belonging to the country. The bones considered by Mr. DEAN as belonging to the Camel—which would likewise have been an important discovery—have been determined to appertain to an animal of the Ox family.

The other bones belong to several species of Stags, Antelopes, Oxen, Horses, Pigs, Rats, &c., with teeth and vertebræ of Saurians, and, lastly, a curious specimen resembling a cervical vertebra of the Giraffe.—*Bibliothèque Universelle de Genève.*

CHAPTER OF MISCELLANIES.

ZOOLOGY.

ORNITHOLOGICAL NOTES.—I found the eggs of the Thrush *(Turdus musicus)* and Blackbird *(T. merula)* on the 4th of April, 1836. The Hooded Crow *(Corvus cornix)* sitting on the 10th. The Sand Swallow *(Hirundo riparia)* appeared on the 11th. Migratory songsters arrived generally on the 12th, a few on the 6th. In the present year they did not appear so early, but probably I

may have overlooked them, as they do not begin to sing until some time after their arrival. Saw the last Woodcock on the 16th of April, 1836. Noticed the first early in October, 1835; this year I saw only three, all in the beginning of October. The Longeared Owl (*Strix otus*) sitting on three eggs in a Magpie's nest, placed in a Scotch Fir, May 2, 1836. Swifts arrived May 15, 1836. Young Partridges hatched under a hen, July 1, 1836. Saw the first flock of Stone Thicknees* (*Œdicnemus crepitans*), Oct. 6, 1836. Swallows gone, Oct. 15, 1836. Swallows came generally on the 22nd of April, 1837. The Longeared Owl sitting in a Scotch Fir on three eggs, April 23, 1837. Saw the last flight of Fieldfares, April 23, 1837. The migratory songsters were sitting in the last week in May. Kingfisher sitting in the early part of June.—R. P. Alington, *Swinhope House, Lincolnshire, July* 15, 1837.

Egg of the Ortolan Bunting.—I find, by Mr. Hewitson's illustrations of the eggs of the Ortolan Bunting, that they resemble more closely those of the other Buntings than I was previously aware of. My specimens all correspond in their markings with the last figure of the plate.—J. D. Salmon, *Thetford, Norfolk, June* 14, 1837.

New Fox from Algiers.—The new Fox brought from Algiers by M. Bodichon, and presented by him to the Ménagerie at the *Jardin du Roi* of Paris, is ten months old, and not so large as the Common Fox, which it resembles in its fur, but it is redder on the chine and flanks; the throat, lips, breast, belly, and inside of the thighs, are all of the most silvery white. The tail, nearly as long as the body, is ornamented with a half circle of black hairs, and terminated by a plume of white. Its head and muzzle are elongated, the skull is more flattened, the neck thinner, and the ears are wider, longer, nearer to each other, and placed more on the top of the head, like those of a mule, rather than those of the Fox of northern climates. It looks like a young Dog, emits a fetid odour when fed on living prey, and in that case drinks but little; when fed on vegetables it is docile and obedient, although ten days of a contrary diet restore it to its natural ferocity. It, however, never entirely loses its taste for poultry; and if it does not eat Fowls which stray near it, it hunts them and kills them, hiding them afterwards.—*Athenæum, July* 8.

The *Craterinæ* Indigenous to Britain.—No Martins (*Hirundo urbica*) have returned this season (1837) to their nests over our front door, but there have been several *Craterinæ* crawling about the door and sides of the house adjoining, which proves that the *Craterinæ* remain here, and are truly British.—J. C. Dale, *Glanville's Wootton, Dorsetshire, Aug.* 4, 1837.

* This, at least, we take to be the species designated by our correspondent as the "Whistling Plover," under which name it certainly would not be known to the majority of our readers.—Ed.

The Cinereous Sea-eagle a Straggler in Yorkshire.—The Cinereous Sea-eagle (*Falco albicilla*), though unknown on our coast, has been a straggler into Yorkshire. An individual was shot at Heywra Park, belonging to Sir W. A. Ingilby, of Ripley Castle, in this county, and was presented by that gentleman to the Scarborough Museum.—Patrick Hawkridge, *Scarborough, Aug.* 7, 1837.

Collection of Shells purchased, by the British Museum, of W. J. Broderip, Esq.—A grant of £1,575 has been voted by the House of Commons to enable the trustees of the British Museum to purchase the collection of shells belonging to W. J. Broderip, Esq., offered by him at the price of 1,500 guineas, and valued by Messrs. Turner and Sowerby at £1,640 2*s.* 6*d.* Mr. Gray says:—"The collection consists of nearly 3,000 specimens, and contains about 200 species, or very distinct varieties, that are altogether wanting in the already extensive collection of the British Museum. Such is the beauty of the specimens, in consequence of the great attention paid by Mr. Broderip to the purchase of none but the finest that could be procured, and so remarkable are the deviations in form and colouring in the several series of the more variable species, that nearly every individual specimen of the remaining portion will also be valuable to our collection, either in replacing a much inferior specimen, or as rendering more complete the series which we already possess. The duplicates to be displaced will be few, and will, for the reasons above given, be taken in every instance from our present collection, and not from among the specimens in the new acquisition. A very large proportion of the species contained in this collection, and wanting in the British Museum, are among the rarest shells that are known to exist, and many are absolutely unique.—*Magazine of Zoology and Botany, No.* ix., *Aug.* 1837.

Comparative Insensibility of Fishes and Insects.—People are apt to reprobate the cruelty of the angler's sport, and that of the entomologist in transfixing a live insect on a pin. But in fact the organisation of these creatures is so low, that they really feel little, if at all, an injury which would cause terrific pain to a bird, a quadruped, or a man. It is well known that animals cannot eat when in pain; but the Pike will carry off a large hook and retain it in its stomach several months, apparently without suffering in the least from the intrusion. Nay, they will chase other fish almost the moment they have broken the fishing-line. As regards the insects, they bear worse matters yet more heroically. The other evening we entered a boat-house the sides and roof of which were covered with Old-lady Moths (*Phalæna maura*, Linn.). We transfixed a number of these to the wall with pins, without their offering the slightest resistance. It is true that even a slight touch of their wings would immediately cause them to flutter with all their might, and then it was difficult

to pacify them; but it was sufficiently obvious that the pins occasioned them no kind of inconvenience. It may here be remarked, by the way, that the circumstance of so many Old-lady Moths being congregated in one small boat-house is somewhat remarkable.

To return once more to the fishes. That the Common Eel, considered so great a delicacy for the table, feels when the cook is making fruitless attempts to destroy its life, is not to be questioned; and even the old excuse, that "they are accustomed to it," will scarcely suffice to prevent our pitying their condition. But, on the other hand, this same Eel must indeed be a devoted creature if, in its protracted writhings, it feels as sensibly as an animal higher in the scale of organization would do. Apparently, the slightest touch causes great pain to a Worm, and we have often considered the part this poor animal is caused to play in angling the most exceptionable feature of that pastime. But this writhing may actually arise only from a desire to escape from confinement; and, be this as it may, those who stigmatise the angler or the entomologist as cruel, must bear in mind the axiom of Anatomy, that nervous sensibility diminishes in proportion as we descend in the scale of animal life.

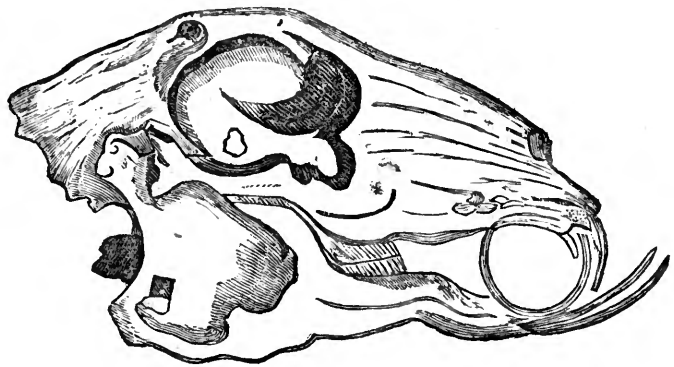
Therefore, although we are far, very far indeed, from countenancing the schoolboy's indecent propensity to twirl Cockchafers on a string, let his parents cease to tell him, as heretofore, that the insect with the pin through its body feels as intensely as the boy himself would do were a sword thrust through his hand.

We have introduced these few observations not so much with the view of apologizing for the supposed cruelty of men often really benevolent, as in order to correct a widely-spread popular error.—Ed.

The Yellow Breasted Warbler (*Sylvia hippolais*).—It is somewhat singular that this species, which inhabits the gardens and hedge-rows of those portions of the coasts of France and Holland immediately opposite our own, should not, like the rest of its congeners, more diminitive in size, have occasionally strayed across the Channel, and enlivened our glens and groves with its rich and charming song, which is far superior to that of either of the three other species of the group. Those who have not had an opportunity of listening to the song of this little tenant of the grove, can scarcely form an idea of its power and melody, in which respects it is only equalled by those of the Blackcap and Nightingale.—Gould's *Birds of Europe*.

Singular Growth of the Teeth of a Rabbit.—One of those curious cases of *lusus naturæ* to which quadrupeds as well as birds are liable—perhaps as great a monstrosity or defect as a celebrated "naturalist" supposed had taken place in the mandibles of the Crossbills—is now in the possession of my brother. In the year 1826 he shot a Rabbit in which the singular form and extraordinary length of the front teeth in both jaws would seem to have altogether incapa-

citated the animal from obtaining its natural food. Notwithstanding, the Rabbit was healthy, in good condition, and full-grown.



The front teeth in the lower jaw, curving upwards, project considerably beyond the upper teeth, and measure little short of an inch in length. The upper, as soon as they leave the gum, begin to bend inward; one does not much exceed the usual length of those teeth, but the other, on reaching the lower jaw, turns round, and, forming a complete circle, passes into the bone of the upper jaw, and, running down it again, protrudes near the origin of the tooth. This tooth measures the extraordinary length of nearly three inches. The bore of the upper jaw is not broken or much mis-shapen by the passage of the tooth within it, though certainly longer than is usually the case in the skull of a Rabbit.—R. P. Alington, *Swinhope House, Lincolnshire, July* 15, 1837.

The Fieldfare Thrush *(Turdus pilaris)* breeding in Scotland.—For several years past Fieldfares have bred in Scotland, a circumstance, I believe, altogether unheard of amongst old observers of Nature. In the spring of 1835, while walking in the park of Mr. Scott, of Gala, in Selkirkshire, I was surprised on seeing, so late in the season, a large flock of Fieldfares chattering from tree to tree; when a gentleman who was with me, and who is remarkable for his acute observations on the habits of birds, asked me if I had ever seen their nests; offering to show me several within a very short distance. I gladly availed myself of this opportunity of seeing what was to me a new object, but which my friend had observed in that district for two or three years preceding. The nests were all placed in the clefts of trees, often at a considerable height from the ground, and very different from the situation spoken of by the poet who, in describing the blanched bones of the battle field, makes the human skull a fitting hollow for the Fieldfare's nest.

It is a fine object to observe the female of this large bird seated fearlessly on her nest, her long tail projecting upwards, and her great and mild black eye watching confidently the movements of those at hand. We stood for several minutes in admiration of one in the cleft of a low dwarf Apple-tree in the garden; and, being desirous of seeing the nest and eggs, it was not without almost pushing her off her nest that I could induce her to quit it for a few minutes, to gratify my curiosity.

I have since seen a nest of the same bird in Kent; but in the districts where the large Mistletoe Thrush is found, it requires some care to distinguish between the two; for both birds build, in the same situations, a grassy nest; and it is only on the wing, or in the hand, that the female can be readily distinguished. The plumage of the male birds, as well as their mode of flight and note, is sufficiently distinct.—George Fairholme, in the *Magazine of Natural History, No. VII., N. S., July*, 1837.

Mortality among Birds.—In your number for June (p. 163), I noticed an extract from a Lausanne journal, giving an account of a singular mortality among the feathered tribes in the neighbourhood of Soleure. The following somewhat similar occurrence took place probably about the same time. Whilst botanizing on the 3rd and 4th of June, at Middleton Teesdale, Durham, I observed in various places, amongst the Ling on the Moors, a considerable number of dead moorfowl, one or two of which were still warm, remarkably full in the crop, and apparently in a good and healthy state, which they of course would not have been had they died of hunger, or the inclemency of the late winter. The guide attributed it to a Worm, a disease to which he said they were liable. I did not dissect any of them,and therefore cannot confirm or disprove his assertions. The birds had been particularly sluggish on the wing, but at the time I was there they were very swift, and often saluted us with their sudden rise and crow as we brushed through the heather. The mortality appears to have been confined to the higher districts, as I am unable to learn that anything of the kind has occurred in the lower. Some have attributed it to a deficiency of sand, owing to the long continuance of snow on the mountains.—E., *York, Aug.* 8, 1837.

Robin Redbreast (*Rubecula familiaris*) with white Wings.—The seventh number of your work, for April (p. 53), contains an account of a singular malformation in the mandibles of the Redbreast (*Rubecula familiaris*). Perhaps the case alluded to is unique; but the Redbreast is a species much liable to variation. I have seen them nearly white. Last summer (1836) I observed one in this parish which had the primaries in both wings snow-white. I lost sight of it during the winter, but have again seen it several times during the summer.—R. P. Alington, *Swinhope House, Lincolnshire, July* 15, 1837.

[The bird mentioned by our correspondent was singularly fortunate in remaining

so long unmolested, as in general all the guns in the neighbourhood are in full chase in these cases. We have seen and heard of many partially white varieties of the Robin Redbreast, and have been told of one which had the whole plumage entirely so.—Ed.]

The Siskin breeding in Scotland.—Our esteemed correspondent, Mr. William Drew, of Paisley, has favored us with the following notice respecting this bird:—I have remarked the account of the Siskin contained in your journal of this month. Undoubted as the circumstance of its breeding in Scotland must now be, from the respectable authority of Mr. Weir, yet I do not think it amiss so far to corroborate his observations. Early in June, 1833, at which time I resided at Inverary, I went out one morning to fish, and, according to my usual practice, I carried a light gun with me. I was rather surprised, at that season, to see a pair of Siskins among some Furze bushes, on the shore of Lochfine, and the birds being close together, I killed both. On dissecting the female, an egg was found ready for exclusion, and I never had any doubt but that the birds were breeding in the neighbourhood, though I did not look for or see the nest. It is very likely that it was in some of the Spruces, which were the predominant trees in the place. I subsequently secured a pair of Siskins in the same locality. —*Edinburgh Journal of Natural History, Part VII.*

[We have long been pretty certain that the Siskin breeds both in England and Scotland, though probably rarely in the former. Still Mr. Drew's communication is valuable; and it is a pity he should not sooner have caused it to see the light. Facts of this kind are always valuable, and ought never to be kept back on any account.—Ed.]

Grey Linnet with a white Ring round the Neck.—In your last number (No. x., for Aug., p. 208), Mr. Morris gives some account of the varieties of plumage he has found amongst birds of the same species. Perhaps a singularly marked specimen of the Grey Linnet (*Fringilla cannabina*) which I saw a few days ago flying near Bawtry, may be worth noticing. It had a broad ring of white feathers round its neck, which became narrower towards the front, and expanded behind, so as to reach a little way down the back. The rest of the plumage was pretty near the general hue, though I thought the grey a shade lighter. It appeared to me to be a female bird.—W. R. Scott, *Doncaster, July* 9, 1837.

Sensibility of Canary-birds to Noxious Air.—It is a remarkable fact, that if a Canary-bird be hung up in a cage at the head of a bed with close curtains, it will be found dead in the morning.—Curtis *on Health*, p. 22.

Does the Rook Crow (*Corvus nudirostris*) ever imitate the Notes of the Daw Crow (*C. monedula*)?—I do not think the Rook is guilty of ventriloquism; but I have often put the above query to myself, when I have seen a number of Rooks pass over my head, and have every now and then heard the noise which I

supposed to proceed from the Jack-daw, without being able to observe any difference in the size of the birds overhead.—W. C. Hewitson, *Bristol, Oct.* 10, 1836, *in the Analyst*, No. xx., *July*, 1837.

Situation of the Nest of the Swallow (*Hirundo rustica.*)—The places selected for nidification by the Swallow are very various. It is no unusual circumstance to find the nest of this bird placed under the wooden bridges, which commonly communicate from the drainage mills to the river in the fens. I have repeatedly found it in such situations. I once saw one in the cavity of a hollow tree. Out-houses, stables, &c. &c., are very general situations, and in such places whenever you approach very near the nest, or even only occasionally enter the building, the old birds are extremely vociferous. Still I never saw them assume a menacing attitude as described in your interesting communication see (p. 273, No. XI). This is a new feature in their economy.—J. D. Salmon, *Thetford, Norfolk*, *July* 11, 1837.

An Osprey (*Falco Haliætus*) taken near Flamborough.—An adult male of this species once alighted in an exhausted state upon the rigging of a small vessel passing Flamborough Head. It was brought to Scarborough, and presented to the Museum of that town by John Tindall, Esq.—Patrick Hawkridge, *Scarborough*, *Aug.* 7, 1837.

Instances of the Capture of the Red-footed Falcon (*Falco rufipes*) in the British Islands.—Since my notice of the four specimens killed in Norfolk, in 1830, which I believe is the first record of the occurrence of this species in England, a fifth example has been shot in the same county, in 1832. Two specimens have been obtained in Yorkshire, and one in the county of Durham. An adult female specimen lived two years in the menagerie of the Zoological Society. A specimen is preserved in a museum at Devonport, which was obtained not far off; and Mr. Thompson, of Belfast, has recorded a notice of one that was killed in the county of Wicklow in the summer of 1832.—Yarrell's *British Birds*, p. 45.

Swarm of Flies.—On Monday evening a singular circumstance took place at Redruth. At about seven o'clock the main street of that town was visited by a shower of small yellow flies*, which fell so thick as to cause great annoyance to persons walking at the time. They bit or stung severely the faces or hands of those on whom they alighted. It is rather singular that the insects confined their movements to the High-street alone.—*Plymouth Journal*, *July* (?), 1837.

The above account differs materially in many points from the plague of flies so prevalent, in the north at least, last year. Query, were they the Turnip fly ?—

* "Fly" is a yet more comprehensive term in Entomology than "Sparrow" in the sister science of Ornithology!—Ed.

E., *York, Aug.* 8, 1837. [The swarms—the myriads—of insects we more than once noticed in Doncaster and elsewhere last summer, were certainly very capricious in their times of appearance. And so rapidly did they arrive in certain spots, that you would suddenly find yourself entirely covered with them, and then, after a time, they would as abruptly disappear. The insects never attempted to sting us, and they appeared to live but a little time, many dozens of them falling dead in our carriage in a short period.—Ed.]

Number of Eggs of the Long-tailed Tit (*Parus caudatus*).—I have more than once found the nest of the Longtailed Tit containing as many as *sixteen* eggs. Still I consider twelve the more usual number.—J. D. Salmon, *Thetford, Norfolk, July* 11, 1837, *in a letter to the Editor.*

Sir J. E. Smith on the Importance of Facts in Natural History.—The slightest piece of information which may tend to the advancement of the science, we should thankfully receive. However trifling in itself, yet, combined with other facts, it may become important. Whatever relates to the determination of species, even in the lowest, and seemingly unimportant tribes of Nature's works, ought never to be neglected. Nor let the humble and patient student of this very difficult part of Natural History be discouraged by the sneers of the supercilious coxcomb, or of the ignorant vulgar. He who determines with certainty a single species of the minutest Moss, or meanest insect, adds so far to the general stock of human knowledge—which is more than can be said of many a celebrated name—no one can tell of what importance that single fact may be to future ages; and when we consider how many millions of our fellow-creatures pass through life without furnishing a single atom to increase this stock, we shall learn to think with more respect of those who do.—Sir J. E. Smith's *Introductory Discourse before the Linnean Society.**

Interesting Habit noticed in the Whin Chat.—In one of my walks I met with a Whin Chat (*Saxicola rubetra*) perched upon a little tree, and he turned round to look at me as I trespassed upon his domain, following me with his eyes till I had passed, turning round his body as on a pivot, with every advance of mine, and stooping down his head and body in a very curious manner. No doubt he had a nest near. Nothing is more interesting than to watch the various ways in which the instinct of birds displays itself in the care of their expected or nearly-born progeny.—F. O. Morris, *Doncaster, June* 18, 1837.

Aporus bicolor.—Mr. Shuckard mentions this insect as a variety. I have a

* This is extracted from *A Brief Memoir of the late Dr. Latham*, printed for private circulation, and with a copy of which we have been favored by the author. The greater part of this memoir will be found in *The Analyst*, No. xx., for July, 1837. Our quotation is made with the view of impressing on the beginner the importance of facts—a circumstance of which every accomplished naturalist is fully aware.—Ed.

pair which I took on Parley Heath about twelve years ago; and I believe I took last year the *A. unicolor*, which would appear from his work to be doubtful as British, giving it only as the *type* of a *genus*. If not a species, *A. unicolor* is a black variety of the former.—J. C. Dale, *Glanville's Wootton, Dorsetshire, July* 9, 1837.

Is the "Soldier insect" commonly Carnivorous?—While digging in the garden some time since, I turned up a chrysalis of the large orange Under-wing Moth (*Triphæna innuba*), but was disappointed to find that the original tenant had been ejected from his chamber, or rather injected into the mouth of one of those insects known among school-boys by the name of "soldiers" (an allied species enjoying the name of "sailor," the latter having a blue, the other a red uniform).* He was feeding on the remains of a defunct chrysalis, yet both were buried *under ground*, where the chrysalis must have been lying since the time of its transformation. How is all this to be explained, and does it frequently occur? as I was not aware that these insects partook of the carnivorous nature of the *Carabidæ*, from which in systems they are so far removed.—Francis Orpen Morris, *Beechfield House, near Doncaster, Aug.* 17, 1837.

The Peregrine Falcon (*Falco peregrinus*) near Scarborough.—This bird is now and then met with here. The specimen in my collection was shot under the Castle cliff at Scarborough. For some years a pair of Peregrine Falcons have been known to breed in the cliffs overhanging the sea in Newbiggin Wyke, a wild unfrequented part of the coast, a few miles south of Scarborough. —Patrick Hawkridge, *Scarborough, Aug.* 7, 1837.

The Grey Flycatcher's mode of taking its Food.—The manner in which the Grey Flycatcher captures its tiny prey is interesting in the extreme, and although every one at all alive to the charms of the feathered race, as noticed in their daily frolics in the woods and fields, must have frequently watched the manœuvre alluded to, yet it is not, in our opinion, the less interesting on that account. You see one or more of these birds perched on the top of a wall, the topmost branch of a naked tree, or almost any other commanding situation, and certainly the casual observer would have no idea of the object it had in view, so listlessly does it stand on its favourite pinnacle, and so easy and graceful are its motions, even after it has flitted into the air to seize the puny morsel. Yet it probably never misses its prey, the capture of which is announced by a snap of the bill, audible at a distance of many yards. We noticed four adult individuals of this species the other day, catching flies near the lake in Campsall Park, mak-

* It has also been said—we know not with what truth—that these two insects never meet without fighting. Certain species of Umbelliferous plants have their flowers constantly covered with the "soldiers," and are, in fact, seldom seen without a number of them.—Ed.

ing their starting-post the railings of the bridge crossing the water. The bird by no means invariably returns to the same spot after each capture, as—if we remember rightly—some authors affirm. The Grey Flycatcher, though a plain, is a handsome bird, and considering that the adults are scarcely spotted at all, the pretty mottling of the young birds is a little remarkable. This bird is sometimes called the Spotted Flycatcher; but this is obviously objectionable, as it can only apply to young birds before the first moult.—Ed.

Uses of the Sheep.—That Sheep of some species or other were bred for their skins and milk in the earliest ages of the world, we have the testimony of the Inspired Volume to prove. Whether the antediluvian flocks were of the same species as our own—whether the wool had at that early period assumed the curled crisp character which it at present possesses—these and other questions, however interesting, cannot now receive even a plausible reply. We know that the young of the Sheep constituted the victim of the earliest sacrifices, and that the same animal was the most important, because the most clearly typical subject of the Jewish offerings. It does not appear that it was anciently a favourite article of food; nor is it in the present day, excepting in this country, esteemed so highly as some other kinds of meat. But in all countries, and in all ages, it has constituted one of the most useful animals which has ever been reduced under the immediate domination of mankind, from the exceeding value of its woolly covering, as the basis of the most wholesome and comfortable and durable articles of clothing, and for its milk, which it yields in considerable abundance, and which is at once pleasant and highly nutritious.

There probably is not a species amongst all our domestic animals which in its historic relations is so interesting as the Sheep. Its early domestication, its employment as the subject of the first sacrifices, its typical character as an offering of atonement, its importance as forming the principal wealth of the early patriarchs—its various connexions, in short, with the political, the religious, and the domestic customs of those primitive magnates of the Jewish nation, are all of them subjects affording ample food for deep and delightful reflection. The relation which existed between the patriarchal shepherds and their flocks was indeed of so intimate and even affectionate a nature, as to have afforded the subject of many of the most beautiful and touching parables and moral illustrations in the Sacred Writings. It is scarcely necessary to refer to the unequalled appeal of Nathan to David, to the still higher and prophetic allusion to the character of the Messiah, or to the sublime illustration of the beneficence of "the great Shepherd of Israel," in the beautiful and well-known pastoral psalm. These are subjects which cannot be discussed here; but it is impossible to pass them wholly without notice. But the historical interest attached to this animal does not stop here. The customs observed in the treatment of their flocks by the shepherds

of the Eastern nations in the present day, offer numerous and highly important coincidences with those incidentally alluded to or more distinctly described in the Scriptures.—Bell's *British Quadrupeds*, p. 441.

Mistake respecting the Generic Name *Cephus*.—Messrs. Stephens and Westwood seem to *exult* when they can upset a generic name given by Mr. Curtis, but sometimes fail in their object. This name is used by Cuvier for a genus of birds, which they have omitted to discover.—Mr. Stephens, moreover, gives some species as new to Britain which had previously been noticed by Curtis.—J. C. Dale, *Glanville's Wootton*, *July* 9, 1837.—[There are no authors or editors on whom we look with more pity and contempt, in a certain point of view, than those who, out of mere spite and personal or partial party interest, attempt to detract from the works of those whom they consider their rivals. It is, in fact, descending from the lofty pinnacles of science, and the calm contemplation of its wonders, to the meanest and most despicable kind of warfare. That so much of this spirit exists amongst the naturalists of our own day, is certainly to be regretted.—Ed.]

Notice respecting *Libellula Sparshalli*, Dale.—I had this insect from Mr. Sparshall of Norwich, who assured me, both personally and by letter, that he took it at Horning, Norfolk, in 1823, in company with Mr. Seaman. Mr. Scales saw it soon after its capture, and wanted to possess it. He is quite positive as to the fact, but acknowledges that he should not recognise it if he was to see it again! I suspect he had confounded it with *Libellula cancellata*, which I had from him also at the same time, and it was probably taken at Horning, a place similar to Whittlesea-mere, where I have taken *L. cancellata*. Mr. Haworth had specimens from China which appeared to me to be the same, and I have lately seen some very similar from Jamaica!—J. C. Dale, *Glanville's Wootton*, *Dorsetshire*, *July* 9, 1837.

The Garden Fauvet (or Greater Pettychaps) near Scarborough.—The Greater Pettychaps (*Curruca hortensis*) may be considered scarce in our neighbourhood. I shot one in the plantation near the Museum in the spring of 1833. I was attracted by the singular beauty of its song. In order to obtain this specimen I was obliged to watch a considerable time before an opportunity could be obtained to fire at it, as the foliage had become thick, and the bird confined itself to the tops of the trees. I soon found him to be very restless, not remaining more than one minute in the same place, threading backwards and forwards, yet never leaving the situation where it was first seen more than fifty yards. Diligent search has since been made, with a view of procuring other specimens, but hitherto without success.—Patrick Hawkridge, *Scarborough*, *Aug.* 7, 1837.

The Irish Hare (*Lepus Hibernicus*, Yarrell.)—Mr. Yarrell was, I believe, the first zoologist who observed that a considerable difference existed i

the external characters of the Irish and Common Hares. His account will be found in the *Proceedings of the Zoological Society* for July 23, 1833, since which time Mr. Bell, in his *History of British Quadrupeds*, has described both of them, characterizing the Irish Hare under the name of *Lepus Hibernicus*. I am not, however, aware that any observations on the anatomical distinctions of the two species have been made public. With a view, therefore, of filling up the blank to a certain degree, this paper is written.

On placing the skeletons of the two species in juxtaposition, the most obvious distinguishing characters are, the greater size altogether of the skeleton, the greater length of the lateral processes of the lumbar vertebræ, the superior breadth of the scapula, the greater breadth of the ribs, the greater length of the humerus in proportion to that of the ulna (which is scarcely longer than in the Common Hare), together with the much larger size of the cranium and inferior maxillary bones in the Irish Hare. These differences would probably distinguish it as a species distinct from the Common Hare did no other characters exist.

In the numbering of the vertebræ and ribs they do not differ, except as to the caudal ones, which in the Irish Hare are 13, and in the English 16; the sacral in both are 4, the lumbar 7, the dorsal 12, and the cervical 7, making the total number in the Irish Hare 43, and in the Common Hare 46.

The ribs in each species are 12. The males of both species are smaller than the females in all their admeasurements. The intestinal canal is in the male of the Irish Hare nearly two feet shorter than in the female.—Thomas Campbell Eyton, Esq., *of Eyton Castle, near Shrewsbury, in the Mag. of Zool. and Bot., Vol. II., p.* 283.

Notes on the Thrushes (*Turdus*, Antiq.).—About the end of November large flocks of Fieldfare and Redwing Thrushes may often be seen intermixed. They generally frequent hedges abounding with hips, haws, and other berries, and are particularly partial to large trees growing out of hedgerows. They admit of a near approach,* the whole flock sometimes passing directly over your head. They seldom quit the trees simultaneously (unless unusually alarmed), but more generally in straggling companies, the Fieldfares being readily distinguished by their superior length, chattering note, and less even flight. With regard to the latter particular, it may be observed, that there is a gradation in the regularity of the flight of the genus, from the Missel Thrush, in which it is extremely loose and irregular, to the Garden Thrush, which bears a more intimate resemblance, in this respect, to the neighbouring species of the *Sylviadæ*.

* It is to be observed that all birds—even those most persecuted by man—admit of a nearer approach, *ceteris paribus*, on horseback than on foot. If, however, birds of any species are frequently shot by horsemen, of course they soon become comparatively shy of *equestrians* too.—Ed.

The body of the Redwing Thrush is compact and short for its size, and the flight approaches nearer to the bounding character of that of the *Fringillidæ* or Finch family. Both the migratory Thrushes are very sociable and pacific in their habits, and we rarely remember to have seen one alone. The Fieldfare Thrush is more clamorous than the Redwing; but although a large flock of them raise a considerable and to us not unpleasing tumult, they are exceeded in this particular by their brethren the Missel Thrushes. Upon the Ouzels *(Merula)* we have not touched in these cursory notes.—Ed.

The Sibilous Locustell* (or Grasshopper Warbler) in the Vicinity of Scarborough.—My friend Mr. Williamson has found this bird in Raincliff Wood, near this town, and the Cricket-like note of the species was distinctly heard by Dr. Murray from his own garden in May last.—Patrick Hawkridge, *Scarborough, Aug.* 7, 1837.

BOTANY.

The Rise of Sap in Plants.—A correspondent (T. C. H.) in your last (p.225) speaks of capillary attraction probably being the cause of the rise of sap in plants. I believe it is now pretty generally understood that it is not by capillary attraction that plants take up their nourishment; although this opinion was at one time very extensively held. The fact, however, that fluids will not rise in the capillary vessels of dead plants appears fatal to this theory. Heat is proved, by many facts, to have a great power in assisting the rise of the sap in plants; but I do not think it in any way advances the opinion of its being through the means of capillary attraction. Dutrochet, I think, was the last to give us a principle explanatory of this interesting question. He supposes it, from some experiments he has made, to take place from electrical causes. In his experiments he took the gut of a Fowl, filled it with milk, and tied it at both ends; he immersed it in water, and after it had remained there some little time it was found that a small quantity of water had passed through the membrane and mixed with the milk. He let it remain until the gut became much distended, which it did in a little longer time. After this a new and very remarkable action took place: the water passed back again from the milk. He took also a gut and filled it with a solution of gum arabic, tied it at one end, and at the other inserted perpendicularly a glass tube. He put the tied end into water, and soon observed that water again entered and forced the gum into the glass tube. He inferred from this that a thin fluid will pass through a delicate

* We were always of opinion that if unobjectionable English names were employed in standard works on Natural History, they would speedily be adopted by the majority of the reading classes. In support of this opinion we may observe, that we meet with the name Locustell applied to the "Grasshopper Warbler" in a popular volume entitled the *Language of Birds*, by a lady.—Ed.

membrane into a thicker fluid, and in all such cases, as circumstances may happen, will there be an inflow termed *Endosmose*, or an outflow, *Exosmose*, and which depends upon electrical agency. So in the cases of plants, he supposes that the spongioles of the roots contain a thicker fluid than that they imbibe, and that, by a similar action to the one above mentioned, it is forced upwards. But this interesting question is still unsettled, and its causes are as little satisfactorily shown as those influencing the descent of the pulp.—W. R. S., *Doncaster*, *Aug.* 11, 1837. [Further observations will be published on this subject in our next.—Ed.]

REVIEWS OF NEW PUBLICATIONS.

A Guide to an Arrangement of British Insects: being a catalogue of all the named species hitherto discovered in Great Britain and Ireland. By John Curtis, F.L.S., &c., &c. Second edition, greatly enlarged. London: Pigot and Co., Fleet-Street, 1837.

This is the latest and best catalogue of native insects extant. It has evidently been compiled with great care and labour; and the entomologist in possession of the first edition will quickly find that the "greatly enlarged," on the title-page of the present impression, is not a mere catchpenny. Not the least important improvement is the addition of the alphabetical index of genera, the want of which we have often felt in the previous edition. Every student is aware of the very large number of genera in British Entomology, and this may frequently prove a stumbling-block even to the proficient in the study, without a well-arranged index to the genera.

The author has the following considerations in view in offering his *Guide* to British entomologists:—

"1st. It will enable them to arrange their cabinets systematically.

"2ndly. They may mark off their own insects so as to know instantly whether they have a species or not, by which means their desiderata will be shown; and this the author is persuaded will enable students to enrich their cabinets, by mutual exchanges, to an extent which could not be accomplished by any other means.

"3rdly. It will form labels for cabinets.

"4thly. It will be a systematic index to the *British Entomology*, a reference being given to every genus already illustrated, and may easily be continued by those who are desirous of completing it.

"5thly. It will be a catalogue of the author's cabinet, those without a * being his desiderata, and of those with a † he has only foreign specimens. The names in italics denote those which are doubtful natives."

The only comprehensive divisions employed by Mr. CURTIS in this volume are orders. These are sixteen in number:—*Thysanura*, *Coleoptera*, *Dermaptera*, *Dictyoptera*, *Orthoptera*, *Strepsiptera*, *Hymenoptera*, *Neuroptera*, *Trichoptera*, *Lepidoptera*, *Homoptera*, *Hemiptera*, *Aphaniptera*, *Diptera*, *Omaloptera*. Of his second order there are no British examples.

Now we cannot consider any entomological arrangement perfect without the introduction of families, if not of tribes, &c. These families would, in many instances, take the places of the Linnæan genera. Thus the species formerly ranged in the genus *Papilio* would now form the Butterfly family, *Papilionidæ;* those of the genus *Phalæna* would in like manner become the Moth family, *Phalænidæ;* and so on. This, certainly, is a mere matter of opinion; and, however the question might be settled—whether a verdict of *guilty* or *not guilty* were returned against Mr. CURTIS by a jury of entomological systematists—there can, we think, be but one opinion regarding the value and importance of the catalogue which we trust we have induced a considerable number of our readers to purchase.

British Oology; being Illustrations of the Eggs of British Birds, with Figures of each Species, as far as practicable drawn and coloured from Nature: accompanied by Descriptions of the Materials and Situation of their Nests, Number of Eggs, &c. By WILLIAM C. HEWITSON. Edwards, London. Nos. xxxii. & xxxiii. May, 1837.

WITH much pleasure we revert to Mr. HEWITSON'S beautiful publication, which has always been a favourite with us, and indeed, as far as we are aware, with every competent ornithologist and oologist.

The first plate contains a figure of the egg of the Caspian Tern (*Sterna Caspia*, PALL.), characteristic and accurate, no doubt, but scarcely so highly finished as it might have been. In a practical point of view we have rarely any fault to find with the plates in this work; but, regarded as mere works of art, we generally fail to discover the roundness and solidity of the originals. The attempt to impart these qualities to the figures by the somewhat hard shading towards the outline, is, we must confess, feeble, and frequently has more the appearance of a groove in the egg than anything else. However, this can never in the slightest degree detract from the real value of the work; and as the publication now rapidly approaches its completion, it may be deemed rather late to offer critical remarks of the nature of the above.

The Caspian Tern "is said to make no nest, depositing its eggs upon the bare rock, or in some slight depression on the sea-beach; they are two or three in number. For this variety I am indebted to the collection of Mr. YARRELL."

Then follow the eggs of the Ortolan Bunting (*Emberiza hortulana*), which we believe we have never seen. They bear considerable resemblance to those of the Yellow and Reed Buntings. The third figure is destitute of streaks, and is, we suspect, of much less frequent occurrence than the other two.

The next plate includes eggs of the Greylag Goose (*Anser palustris*, Flem.) and Bean Goose (*A. ferus*). They scarcely present any point of difference. Mr. Hewitson did not succeed in meeting with the Greylag Goose in his tour in Norway, but, from the information he obtained, believes that it breeds upon the high inland grounds. The Bean Goose is not uncommon in Britain. The flesh of one shot near Doncaster last year was by no means unpalatable.

Three eggs of the Merlin Falcon (*Falco æsalon*, Temm.) are represented on the following plate. The second and third varieties are rare, as every oological collector knows. They are finely executed.

We are then presented with two splendid illustrations, being the eggs of the Whistling Swan (*Cygnus ferus*) and Bewick's Swan (*C. Bewickii*, Yarrell). The reason of attaching the name of the great wood-engraver to this species is best known, doubtless, to the eminent individual who gave the bird its present distinctive appellation. Had the excellent rules for nomenclature propounded by Mr. Swainson been attended to in this instance, *Cygnus Bewickii* would, however, never have been admitted. To the occasional and judicious commemoration of the services of eminent naturalists in this way, we, like Mr. Swainson, do not object; it is only the *abuse* we reprobate.

"Like the larger species, the Little Bustard (*Otis tetrax*) lays its eggs upon the bare ground. They are said to be from three to five in number, 'of a clear, shining, grass-green colour, without spot or stain.' This is, I think, most likely an oversight, and that the faint undefined spots may have been overlooked. Any one who had previously seen the eggs of the Greater Bustard, would look for a similar character in those of the present species, and he would be pleased in observing the close resemblance which they bear to each other, distinct as they are from those of all other birds. I would, however, by no means dispute the fact that there may be spotless varieties."

Plate cxxxi. is dedicated to the eggs of the Spotted Tringa (*Tringa macularia*, Linn.). The difference between the figures, both in shape and color, is striking. Both the eggs represented by our author are American specimens.—The number closes with an excellent figure of the egg of the Rock Gossak (*Astur palumbarius*). This bird is mentioned in the *Fauna Orcadensis* as being rather common in the Orkneys; but Mr. Hewitson suspects that the reverend ornithologist has mistaken the species, as the Gossak is not now to be met with there. According to Mr. J. D. Hoy this bird breeds in the same nest several successive years. Mr. Selby informs us that the eggs are "marked with spots and streaks of reddish

brown," but our author's figure—taken from the only specimen he has seen—is spotless.

The Language of Birds: comprising poetic and prose Illustrations of the most favourite Cage Birds. With twelve highly-coloured plates. By Mrs. G. Spratt. London: Saunders and Otley. 1837. 12mo. Gilt edges.

"Some authors write for fame or notoriety, others (we are assured) are actuated solely from a wish to benefit their fellow-creatures, and a *very small portion* to benefit themselves. Now I must candidly confess that I am not sufficiently ambitious to be influenced by the first consideration, nor am I philanthropist enough to brave the censures of a very amiable set of gentlemen known by the title of *critics*, to be induced to write entirely for the second motive; but as for the last, *perhaps* it may have as much weight with *me* as it has with *some* who disdain to acknowledge it.

"Having frequently assisted others in their endeavours to amuse or instruct the public, as well as having presented a trifle or two of my own, although not in *propria persona*, which the said public were kind enough to approve, I am induced once more to venture forth, and to solicit further indulgence and patronage for the present work."—p. 2.

That the field naturalist should find much novel matter in a book similar in plan to the present is not to be expected. But the descriptions and anecdotes will doubtless please many to whom abstruser reading would be tedious and uninteresting. That it contains some mistakes also, is not surprising, although the authoress appears to be in possession of a few good modern authorities; and if she be really as fond of the feathered race as she expresses herself—of which we have no doubt—we see no reason why she should not occasionally observe her little favourites in their natural state, and endeavour to add something new or interesting to our present knowledge. Depend upon it she would derive far greater pleasure from studying birds at large to noticing them in captivity. We approve the tendency of the following quotation:—

"I have a great dislike to robbing birds of their dearly cherished offspring, and have always endeavoured to make children sensible of the cruelty of destroying either their nests or eggs; being one day in the country, I met a little boy with a nest thrust into his hat, containing one poor, miserable, perishing, half-fledged little creature. I accosted him by asking if he were aware of his cruelty, and how would he like any great over-grown monster to tear him from his fond mother, his indulgent father, and expose him naked to the wind and rain? (for it was then raining fast.) His reply was—'Why, *Marm*, *vive* or six on us *chaps* have agreed to *xe* who can get most *nestes*, so we takes all as we can find.' 'And was there only this one in the nest you have taken?' 'Noa, there *wur* three more, but Tom Snooks would get up the tree too; so you *xe* as how he said he *seed* the nest furst; but I did him, for I got hold of the nest, and while he was trying to grab the young 'uns out of it, two fell into the bushes under us, and while he was looking for them, I bolted with this here un and the nest.' 'And what are you going to do with it?' 'To take it to *I armer* Stubbs.' 'And what will Farmer Stubbs do with

it?' 'Give it to the Cat, to be *sure*; for you zee the varmer says as how the birds eat his corn and fruit, and he is 'termined to kill them all, and he tell we boys he will gie us a penny *vor* every nest as we takes him with young 'uns; but as Tom grabbed me the other birds, I doubt he'll on'y gie I a hap'ny.' 'Ask Farmer Stubbs if he would like any one to take his children away from him?' The boy replied, grinning—'he *ha'nt* got none,—he *beant* married.' 'So much the worse; if he were a parent he would have more feeling, and perhaps not grudge those interesting birds the small modicum they purloin from his abundance.' After reprimanding the boy for the misery he had occasioned the parent birds as well as the young, he very innocently asked me if they could feel. He said he knew they felt if he hurt them, but that was not what he meant—could they feel sorry, as he sometimes did if his brother or sister were ill? After explaining to him that those little creatures were as susceptible of pleasure or pain as ourselves, I had the satisfaction of seeing that he felt pleased and grateful for the trouble I had taken to convince, him begging me to take the poor little bird, and save it from the claws of *Varmer Stubbs's Cat.*"—p. 69.

The *Language of Birds* will probably induce many to look further into Nature's wonders and beauties than they would otherwise have done, and it will please many more who will feel no desire to penetrate deeper in the subject. It will, therefore, be an indirect means of furthering Natural History. Its faults, in our opinion, are, that it contains too little matter fresh from the woods and fields, and that the fair writer has fallen into some errors which the possession of such a work as Selby's *British Ornithology*, or almost any other modern authority, would have prevented. We wish to see correct information, originality, and cheapness, combined in these popular books, which are always sure to be eagerly devoured by a considerable number of juvenile readers. Some may be inclined to censure us for paying so much attention to the little volume before us. But we reply, that it may be the means of making more naturalists, and, indirectly, of advancing Natural History in a greater degree, than many elaborate scientific works.

LITERARY NOTICE.

The twenty-second Part of Gould's magnificent *Birds of Europe*, completing the work, was published on the first of August.

OBITUARY.

An inspection of the last number of the *Magazine of Zoology and Botany*, edited by Sir W. Jardine, Bart., P. J. Selby, Esq., and Dr. Johnston, has enabled us to supply the date of the demise of Mr. Donovan, who departed this life Feb. 1, 1837, thus dying only two days before Dr. Latham.

THE NATURALIST.

NOTES ON THE CIRL BUNTING.

By Edward Blyth.

As the peculiar habits of the Cirl Bunting cause it to be little noticed by ordinary observers, even in localities where it is quite common, a minute description of them may possibly lead to its discovery in districts where its presence has been hitherto unsuspected.

This local species is much more shy than the Yellow Bunting, and also considerably more arboreal; chiefly frequenting the leafy summits of Elm trees, where, difficult to discern amid the dense foliage, it reiterates its monotonous lay at brief intervals, in the manner of its congeners. It is a surprisingly timid species, and consequently by no means easy to procure in the summer months, except by the unfair method of watching near the nest. I have watched hours in the futile endeavour to procure a specimen, when as many as five were singing within hearing.

Its song-note is compared by Montagu to that of the Whitebreasted Fauvet, by Gould to that of the Common Chaffinch. Mr. Hoy, and also myself, have likened it to the well-known chaunt of the Yellow Bunting, but without its finish. It is delivered more rapidly, however, than the ordinary note of the last-mentioned species, and without the *tingle* which usually characterizes the latter. It has sometimes reminded me of part of the shivering cry of the Grove Petty-chaps (*Sylvia sibilatrix*); and, to offer yet another comparison, the Green Grosbeak will occasionally emit a note not very unlike it. Those who are skilled in the language of our native birds will, I am sure, not fail to recognise it from this description. Little musical as are any of the Bunting genus, *E. cirlus* is to me the least so of the five British species. I have noticed that it sings more habitually in the afternoon than at any other time, though in districts where the species is tolerably common, some may be heard at all hours of the day. They continue in full song till the middle or end of August, or until the period of their autumnal moult, which then takes place. In several which I killed in the beginning of that moult, no indication of change of plumage was perceptible.

When flying across a field, the chirp which it utters is sharper than that of either of the other Buntings, and may be likened to the sound *stip*: the analogous note of the Yellow Bunting is more like *chig*; that of the Corn Bunting *zit*; and of

the Reed Bunting *chink*. The cry of the young differs only in being more shrill and ear-piercing; and, as you approach the nest, the parents utter, in addition to this, a lengthened sibilous *peep*, or *pseep*, and not uncommonly feign lameness to entice you from the spot, more especially when their young are first stirring. The latter habit is less frequently noticeable in the Yellow Bunting; and Mr. SALMON records having once observed it in the Reed Bunting. I have known both parents to act thus, in the present species; and the consequence was, I managed to capture two of their brood, of which one is now alive in my possession.

The nest is placed in similar situations to that of the Yellow Bunting, but, I think, on the average, not quite so near the ground; and usually at no great distance from a clump or row of Elms, to which the male resorts to serenade his mate. I have examined, in all, about a dozen specimens, which differed exceedingly from one-another; two were chiefly composed of green moss, and lined with hair, while others contained not a particle of those materials, being constructed of bents, and lined with fibrous roots; they are uniformly, however, smaller and less compact than those of the Yellow Bunting, but without so loose an exterior. The eggs cannot always, with certainty, be distinguished from those of the allied species alluded to; but may generally be told by having the ground-colour clearer, and inclining to bluish, whereas those of the Yellow Bunting have commonly a reddish tinge; the Cirl Bunting's eggs are also, on the average, a trifle smaller, but numerous specimens occur which are undistinguishable.

The young have no tinge of yellow in their nestling plumage, but their markings correspond with those of the adult female as observed in winter. During the summer months the adults of course shed the terminal edgings of their feathers to a considerable extent, so that the back of the male becomes of a uniform rufous colour. I have noticed, in numerous instances, the parent birds with Grasshoppers in their mouths, which I believe are the sole diet wherewith they supply their progeny. On dissecting the adults I have found the remains of Beetles in their stomachs, and towards harvest-time they feed principally on the nearly ripe wheat. In winter they enter and search stackyards, when the weather is severe, but do not usually flock with other species. I am informed that they are particularly partial to the seeds of Sorrel, insomuch that a few dry plants of this mingled in a hay-rick are sure to attract their attention. They would appear to be rather more sprightly in their deportment than the Yellow Bunting; though probably this arises merely from their timidity, and suspiciousness of being approached.

The geographic range of the Cirl Bunting extends to Asia-Minor, where, according to Mr. STRICKLAND, it would seem to replace the Yellow species, and to frequent the borders of streams and rivulets, which I have never observed it to

do in this country. As before remarked, I have constantly found it to affect umbrageous Elms, evincing so marked a predilection for this particular tree, that the species might have been named very appropriately the Elm Bunting. Its song is comparatively seldom heard from the hedge. I have repeatedly met with it, indeed with several individuals, singing from the tops of a clump of Elms surrounding a farm-house, which, throughout the south of England, is a very likely situation to meet with it. It is rarely noticed but within a few miles of the sea, and appears to be most abundant in certain districts of the Isle of Wight. Near Chichester, and again at Alton, it is not uncommon; and lately, while enjoying the view from the summit of Selborne Church, I noticed two of them singing in the vicar's garden beneath me, though the species was unnoticed by Gilbert White. Proceeding inland it rapidly disappears, and at Godalming is accounted a rare bird. Now and then a specimen is taken, mostly in winter, by the London bird-catchers, who seem to consider it a prize; but it can only be regarded as a straggler near the metropolis. It is sparingly diffused over the greater part of Hampshire, and also, I should suspect, Dorsetshire; but I cannot speak from personal observation to the westward of Hants. It is popularly known in the Isle of Wight by the name "French Yellowhammer," and partially, both there and elsewhere, by the term "Black-throated Yellowhammer," which are the only provincial epithets I have heard applied to it. The young appear to be extremely hardy, for during a pedestrian tour I carried one in a box in my coat-pocket for several days, feeding it on what various fare I could pick up by the way. This bird is now alive and healthy. I captured it near Yarmouth in the Isle of Wight.

North Brixton, Surrey, Aug. 19, 1837.

A FEW OBSERVATIONS ON THE GENUS ORGYIA.

By G. C. Gascoyne.

Two of the principal entomological works referred to by students in that science in this country, namely Stephens's and Rennie's, differ so widely in the descriptions of the *Orgyia*, and are altogether so imperfect (to say the least of it) in that part referring to the larvæ, that any one previously unacquainted from actual observation would not be able, from their descriptions—even if he had a caterpillar of *Orgyia gonostigma* before him—to recognize it as belonging to that insect.

The genus *orgyia* contains only two species, *Orgyia antiqua* and *O. gonostigma*.

In describing the larvæ of the latter STEPHENS says:—"Caterpillar black, *spotted with red*, with four pair of yellowish or luteous dorsal tufts, two composed of capitate hairs on the neck, *one on each side of the body*, and one on the tail."

Of eighteen larvæ of this species which I have examined this season, not one possessed the tufts of capitate hairs on the sides of the body, nor were they spotted with red, but striped longitudinally with yellow or orange. Indeed so well does his description agree with the larvæ of *O. antiqua* (one of which is now before me), that I am convinced he has mistaken the one for the other. RENNIE, in his conspectus, says of this insect:—"Caterpillar gregarious, with *eight white* tufts on the back; with two black ones on the neck, and one on the tail." He is correct in the number of capitate tufts; those on the back are not, however, as he asserts, white, but of a tawny or light chesnut colour, and only *four* in number. Nor is the caterpillar gregarious; for although, like those of *O. antiqua*, the eggs are laid by the female on the cocoon, yet the young larvæ disperse soon after being hatched.

I have found them at almost every stage of their growth, but never more than one at a time; even when the eggs are deposited on a solitary thorn-bush the caterpillars wander to the full extent of the branches, and are never found feeding in company like those of *Vanessa Io*, *V. urticæ*, *Eriogaster lanestris*, *Pygæra bucephala*, &c. RENNIE, in describing *Orgyia antiqua*, says:—"Caterpillar dusky, spotted with red, with four white tufts on the back." No mention is made of the two tufts of capitate hairs on the neck, the one on the tail, and two on the sides, all of which are found in *O. antiqua*.

Among such a medley of imperfect and incorrect descriptions, is it surprising that the young student should become bewildered? I confess that STEPHENS is generally to be relied on; but how he could possibly stray as he has done in this instance I am at a loss to conceive; for it appears, from his own statement, that he has been in possession of the larva of *O. gonostigma*, and by means of the female it produced he procured males from Combe-Wood.

In company with a friend I took, this season, eighteen larvæ, and am now in possession of several perfect specimens of the imago, both male and female, of this rare insect; others I expect from the pupa daily. I have also been fortunate enough to secure above six hundred eggs from one female; these were laid on the cocoon, and covered with the down from her own body.

The female commences laying her eggs immediately on the male leaving her; but should no male visit her she will retain her eggs ten days or a fortnight. I have also observed, that of those which arrive at the perfect state, two-thirds are females; and as these are without wings, this is no doubt a provision of Nature to enable the males the more easily to find mates, and prevent the species from becoming extinct.

Doncaster, July 17, 1837.

ON VEGETABLE NUTRITION.

I PERCEIVE in the last number of your interesting periodical (No. x., for July, p. 225) a question proposed by one of your correspondents, as to whether "the fluid absorbed by capillary attraction by the spongioles or rootlets of plants be conveyed to the leaves by the same means (capillary attraction), or by some vital principle in the plant?" I hope that, if his object be to obtain the present most probable opinions on a disputed point, without the trouble of diving through all the pages usually allotted to such discussions in botanical works, which discussions indeed are often more curious than useful, I shall not be thought to be intruding on your pages by condensing, as far as lays in my power, what I have seen in one or two modern books on the subject, particularly from that of Professor HENSLOW, as at once cheap and within the reach of every individual. Should he, however, require new facts in proof of his own opinions, some other more erudite of your correspondents may perhaps satisfy him on that point.

That the conveyance of sap absorbed by the spongioles or rootlets to the leaves, is at all the effect of capillary attraction, has of late years been questioned by various authors, and Dr. ARNOTT, in his *Elements of Physics* (art. Capillary Attraction), says that the raising of the sap from the roots of vegetables "is known now to be chiefly an action of vegetable life." That the vital force alone is the cause of its ascent, is, however, on the other hand, by no means probable, and the opinion of DE CANDOLLE—who supposes it to be propelled along the intercellular passages by successive contractions and dilatations of the cells—is now, for very obvious and well-grounded reasons (as the same opinion is also in the case of the propulsion of the blood through the arteries and veins), for the most part exploded. The spongioles, moreover, have not only the power of absorbing, but also of propelling the fluid imbibed by them with considerable force; and it has been supposed, from the analogy of the results of this action with those of *endosmose*—or that property of both animal and vegetable membrane of allowing fluids of different density on the opposite sides of it to pass through, and thus intermix until the density of both be equal—that the propulsion of the sap might be partly at least attributable to this action going on between the denser fluids contained in the vesicles of the spongioles and surrounding fluids, and thus that both its absorption and propulsion may be principally referred to mechanical causes. However this may be, certain it is that the vital force itself holds an important station in this as well as the other operations of vegetable economy, although in the case of absorption by the spongioles its effects are not so evident from experiment; and the ease with which fluids are absorbed, depending more

upon their fluidity than their nutritious properties, would, were facts wanting on the other side, go far to give weight to the opinion of capillary attraction being a main cause of the ascent of sap in the branches.

The vital energy must be considered as indispensably necessary for the proper regulation and the continuance of the propelling action, and in conjunction with this must be taken into consideration the influence of the absorption of sap from below, consequent upon the continual exhalation of moisture from the surfaces of the leaves, &c. I shall not at all enter upon the second query, as I have not sufficient information to lead me to adopt the conclusion intimated in your correspondent's question.

York, July 19, 1837. E.

ON THE PHILOPROGENITIVENESS OF THE CAT.

By W. R. Scott,

Corresp. Memb. of the Edinbuagh Phrenological Society.

The instinct for the love of young is very strongly exhibited in many of the lower animals, but a rather rare manifestation of it met my observation a few days ago, an account of which may not be altogether uninteresting to the readers of *The Naturalist.* I have been shewn a Cat nursing four young Rabbits with two of her own offspring, and becoming to them a careful and affectionate foster-mother. Soon after she had brought forth her own progeny a nest of young Rabbits was found by the person to whom she belongs, and as she had before shown some affection for the young of other animals at a similar interesting period, it was thought possible that she might not withhold her kindness from these helpless sucklings. They were put beside her young, and she has ever since bestowed upon them all the attention of a careful and watchful mother. They have been now with her between three and four weeks, and are all doing very well.

I mentioned that she had previously shown some wish to extend her affections to the young of other animals at a time when she had kittens. This makes the case yet more interesting. She has thrice had young, and at each of these times has indicated a strongly-excited Philoprogenitiveness. The first time she brought a puppy to the place where she had her young, and wished to adopt it as one of her own, taking every means to induce it to suck. The next time she brought a young Lapwing (*Vanellus gavia*), which was running in an adjoining garden, and placed it in a box with her kittens. This child of her adoption, however, could not rest satisfied with its new mode of life, and as often as she put it into her nest, so often it lept out. This was allowed to continue until the people of the house were sufficiently amused with the *curiosity*, when the bird was taken

from her. This time a nest of young Rabbits was found; they were put beside her: as I have stated, she takes every care of them, and in all probability they will attain maturity under her fostering care.

This case is the more curious as Cats may be considered generally great enemies to Rabbits; which indeed may be accounted amongst their natural food, as also may birds. Yet we see in this instance the propensity to destroy, often so strongly manifested by Cats, give way to that of love of young.

We have been told by a respected and lamented philosopher, that nothing is more suited to throw light upon the power and constitution of the mental faculties than the study of their manifestations in the lower animals. Mixed motives and the influence of circumstances are less likely to operate upon them than on man. Now the case before us is evidently not one of an ordinary kind; every animal of the species would not so have adopted the young of other animals, and nursed them with affection. I have heard before of Cats nursing leverets, and WHITE mentions his having known them suckle Squirrels. These cases, however, are uncommon, and as such become questions of interest, the philosophic observer always expecting an efficient cause for every deviation from the general law of Nature. In the first place we have to observe here, that amongst the inferior animals there is a difference in the strength of feelings manifested, as well as in the more exalted animal, man. The question then comes, have we to look to the influence of habit or circumstances for this difference observable amongst them? What habits or circumstances can have acted upon animals left wholly to themselves, as has been the case with the Cat above spoken of. It has never been accustomed to Rabbits or birds (I made particular enquiry on this head), yet it would adopt and nurse their young with its own. I have known animals, on the other hand, where the disposition to destroy was so great that they never could be taught to give up the desire of possessing themselves of birds that were kept in cages in the house with them, though strong measures were often taken to frighten them from making such attempts; and also have seen the like eagerness displayed for Rabbits.

In these cases circumstances could not be made to have effect, so as to place the one animal out of danger from the other. Who then can contend that circumstances alone effect those different dispositions which are not only observable in man, but also extend to the lower animals, even to such an extreme as we have here related? It is then to constitutional tendency we must look for the cause of those differences; and Phrenology is the only doctrine that can clearly and satisfactorily explain such phenomena—contradictions in Nature. Dr. GALL observed, that there was a great difference between the crania of the male and female amongst all the lower animals, in the part he considered to be the organ of the love of young, or Philoprogenetiveness. I have myself repeatedly observed

this in the skulls of Cats, Rabbits, and some other animals. There is sometimes a difficulty thrown in the way in examining the heads of living animals by the external integuments, which interfere with minute observations; but the general fact that the female head is longer and narrower than that of the male is very perceptible in many species of animals. Indeed, when a boy, I remember that the head was one of the criterions by which I judged of the sexes of my Rabbits, a thick and bullet-like head indicating a male, a long and narrow one a female. It is rather curious, and perhaps worthy of being here mentioned, that the male Rabbit is very apt to destroy the young, if allowed to remain with the female when she brings forth; and from this circumstance Rabbit-fanciers always separate them before that takes place. I speak from observation among tame Rabbits. In places where I have found young wild Rabbits, the mouth of the hole has always been covered up with soil,—is this to secrete them from the male, lest he should destroy them?

But to return to the more immediate subject of this communication, I may add further, that her head very forcibly supports Dr. GALL's opinions. The head is long and narrow, and it appeared to me that the occiput extended a much longer way from the ear than is generally the case; this was borne out by several other cases which I compared with it. Destructiveness also appears to be small. On enquiring whether she was good at killing Mice, I found that she had not any peculiar character in that line.

The variation in the strength of the feelings or instincts exhibited amongst the lower animals, would teach us that individual character exists in them probably as much as in mankind. But how can we expect that any extensive knowledge can be obtained on this head, when even the number and kind of instincts possessed by the inferior creatures has never yet been attempted to be shown? Dr. SPURZHEIM said truly, that naturalists had paid too little attention to this subject. These observers have taken every care to describe the minutest shades of difference in the bodily formation of animals, even to the colour of a tuft of hair, or a feather; but they have been too careless in their notes on the dispositions, and the modifications of these, in their investigations. Would not, however, a good knowledge of the mental characters of animals assist materially in forming a classification less liable to objections than some of the present? The single word "instinct" has been considered enough to denote any of the mental acts performed by animals; but while such a vagueness exists in our ideas regarding the animal mind, our nomenclature in this department must be equally vague, and consequently how imperfect and inaccurate must be many of the expressions denoting the habits, &c., of animals. It is like the language of the metaphysician when speaking of memory and imagination. How much more accurate, logical, and precise is that of the phrenologist, need hardly be said. Let us then have

such a nomenclature introduced by which we may speak of the animal mind, let us not only speak of instinct, but the kind of instinct. Mr. NEVILLE WOOD, in his *British Song Birds*, has done something towards this, and though some may perhaps smile at it, such is the fate which all new things meet with.

In a volume of Transactions published by the Edinburgh Phrenological Society, there is a communication from Mr. CARMICHAEL, of Dublin, "On the Mode of studying the Natural Dispositions and Instincts of the Lower Animals." It is brief but instructive, and perhaps some of your readers who have not seen the work referred to, may be interested by a short extract from it. Mr. C. says:—"My plan is very simple. To form four columns, under the name of the animals. In the first column to insert all the habits, &c., of the animal recorded. In the second, to reduce these to such of the thirty-three faculties of man as they might most properly be ascribed to. In the third, to state whether the respective organs had been ascertained or not. And to leave the fourth for observations respecting the differences between the male and female, and for pointing out prominences supposed to be organs, the faculties of which had not yet been discovered. Such a synopsis would exhibit at a glance the whole of our information, and all our deficiencies; but in the present state of our knowledge the two last columns would be nearly blanks." I may add that Dr. VIMONT has lately published upon this interesting question, but I have had no opportunity of seeing his work, and am only acquainted with its nature and contents from the accounts of it, and the extracts which have appeared in the *Phrenological Journal*, and in *The Naturalist*.

Blyth, near Bawtry, Notts.
Aug. 9, 1837.

CATALOGUE OF BIRDS FOUND IN LANCASHIRE.

By PETER RYLANDS, ESQUIRE.

Class AVES.*

Order I. RAPTORES.

ii. AQUILA. Eagle.

4. *haliætus.* Osprey Eagle. Southport.

iii. FALCO. Falcon.

6. *peregrinus.* Peregrine Falcon.

7. *subbuteo.* Hobby Falcon.

* I have not in this list followed the nomenclature of any particular author, but for the sake of reference the numbers of the genera and species in JENYNS' *Brit. Vertebr. Animals*, are prefixed in every case.

8. *æsalon.* Merlin Falcon.
10. *tinnunculus.* Kestril Falcon.

iv. ACCIPITER. Hawk.

12. *nisus.* Sparrow Hawk.

vi. BUTEO. BUZZARD.

14. *fuscus*, RYL. (*vulgaris*, Auct.). Brown Buzzard.
15. *lagopus.* Rough-legged Buzzard. Crosby, T. K. GLAZEBROOK, Esq., F. L. S.

CIRCUS. Harrier.

18. *cyaneus.* Hen Harrier.

viii. OTUS. Madge.

22. *auritus*, RYL. (*vulgaris*, Auct.). Long-eared Madge.
23. *brachyotos.* Short-eared Madge.

ix. STRIX. Owl.

24. *flammea.* White Owl.

x. SYRNIUM. Hooter.

25. *aluco.* Tawny Hooter.

Order II. INSESSORES.

xii. LANIUS. Shrike.

29. *excubitor.* Grey Shrike. Near Southport.
31. *collurio.* Red-backed Shrike. Warr., &c.

xiii. MUSCICAPA. Flycatcher.

32, *grisola.* Spotted Flycatcher. St. Helens, Southport, &c.
33. *luctuosa.* Pied-Flycatcher.

xiv. CINCLUS, Dipper.

34. *aquaticus.* Rivulet Dipper.

xv. TURDUS. Thrush.

35. *viscivorus.* Missel Thrush.
36. *pilaris.* Fieldfare Thrush.
37. *hortensis.* Garden Thrush.
38. *iliacus.* Redwing Thrush.

MERULA. Ouzel.

39. *hortensis** (*vulgaris*, Auct.). Garden Ouzel.
40. *torquatus.* Ring Ouzel. Warrington, &c.

xvi. ORIOLUS. Oriole.

41. *galbula.* Golden Oriole. Near Manchester.

xvii. ACCENTOR. Dunnock.

43. *modularis.* Hedge Dunnock.

RUBECULA. Redbreast.

* The name *M. hortensis* was first published in the fourth volume of *The Analyst*.—ED.

44. *familiaris.* Robin Redbreast.

PHŒNICURA. Redstart.

46. *albifrons.* Tree Redstart.

FICEDULA. Fauvet.

52. *atricapilla.* Blackcap Fauvet.

54, *cinerea.* Whitethroated Fauvet.

SYLVIA. Warbler.

57. *melodia.* Willow Warbler.

58. *loquax.* Hedge Warbler.

XX. REGULUS. Kinglet.

60. *auricapillus.* Gold-crested Kinglet.

XXI. MOTACILLA. Wagtail.

62. *maculosa.* Pied Wagtail.

63. *cinerea.* Grey Wagtail.

BUDYTES. Oatear.

64. *verna.* Spring Oatear.

XXII. ANTHUS. Pipit.

67. *pratensis.* Meadow Pipit.

XXIII. SAXICOLA. Chat.

70. *œnanthe.* Fallow Chat. Warrington, &c.

71. *rubetra.* Whin Chat. Warrington, &c.

72. *rubicola.* Stone Chat.

XXIV. PARUS. Tit.

73. *hortensis.* Garden Tit.

74. *cæruleus.* Blue Tit.

76. *palustris.* Marsh Tit.

77. *ater.* Coal Tit.

78. *caudatus.* Longtailed Tit.

XXV. CALAMOPHILUS. Pinnock.

79. *biarmicus.* Bearded Pinnock.

XXVI. BOMBYCILLA. Waxwing.

80. *garrula.* Garulous Waxwing (R†.). Sefton, Middleton, &c.

XXVII. ALAUDA. Lark.

82. *arvensis.* Sky Lark.

83. *arborea.* Wood Lark. Warr., Southport, &c.

PLECTROPHANES. Longspur.

84. *Lapponica.* Rusty Longspur. One specimen taken near Preston.—JENYNS.

85. *nivalis.* Snowy Longspur. North Meols.

† As in some instances I have altered the vernacular nomenclature, the names substituted are marked with an R, in parenthesis, as above.

xxviii. EMBERIZA. Bunting.

86. *miliaria.* Corn Bunting.

87. *shœniculus.* Reed Bunting.

88. *citrinella.* Yellow Bunting.

90. *hortulâna.* Ortolan Bunting. One specimen shot near Manchester.—JENYNS.

xxix. FRINGILLA. Finch.

91. *cœlebs.* Chaff Finch.

92. *montana.* Bramble Finch.

PASSER. Sparrow.

93. *domesticus.* House Sparrow.

94. *arboreus.* Tree Sparrow. Chat Moss.

COCCOTHRAUSTES. Grosbeak.

95. *cratægus.* Haw Grosbeak. Ormskirk.

96. *chloris.* Green Grosbeak.

CARDUELIS. Goldwing.

97 *elegans.* Thistle Goldwing (R.).

98. *spinus.* Siskin Goldwing.

LINARIA. Linnet.

99. *pusilla.* Redpoll Linnet.

100. *cannabina.* Whin Linnet.

xxx. PYRRHULA. Coalhood.

102. *modularis.* Hedge Coalhood.

DENSIROSTRA. Thickbill.

103. *enucleator.* Pine Thickbill. Hulston Fir-trees.—T. K. GLAZEBROOK, Esq.

xxxi. CRUCIROSTRA. Crossbill.

104. *cinerea*, RYL. (*vulgaris*, Auct.). Pippin Crossbill.

xxxii. STURNUS. Starling.

107. *varius.* Spotted Starling.

xxxiii. PASTOR. Amzel.

108. *roseus.* Rose Amzel. Near Salford, &c.

xxxiv. FREGILUS. Chough.

109. *graculus.* Red-legged Chough. Crosby Marsh.

xxxv. CORVUS. Crow.

110. *corax.* Hooded Crow.

111. *corone.* Carrion Crow.

112. *cornix.* Raven Crow.

113. *frugilegus.* Rook Crow.

114. *monedula.* Daw Crow.

PICA. Pie.

115. *loquax.* Mag Pie.

xxxvi. GARRULUS. Jay.

116. *glandarius.* Crested Jay (R.).

xxxviii. PICUS. Woodpecker.

118. *viridis.* Green Woodpecker.

119. *major.* Spotted Woodpecker.

120. *minor.* Barred Woodpecker.

xxxix. YUNX. Wryneck.

121. *torquilla.* Mottled Wryneck (R.).

xl. CERTHIA. Creeper.

122. *familiaris.* Spotted Creeper (R.).

xli. ANORTHURA. Wren.

123. *troglodytes.* Ivy Wren.

xlii. UPUPA. Hoopoe.

124. *epops.* Crested Hoopoe (R.). Warrington, Scarisbrick, &c.

xliv. CUCULUS. Cuckow.

126. *canorus.* Grey Cuckow.

xlviii. ALCEDO. Kingfisher.

130. *ispida.* Blue-backed Kingfisher (R.).

xlix. HIRUNDO. Swallow.

131. *rustica.* Chimney Swallow.

132. *urbica.* Eave Swallow.

122. *riparia.* Bank Swallow.

(l.) CYPSELUS. Swift.

134. *murarius.* Wall Swift.

(li.) VOCIFERATOR. Nightjar.

136. *melolontha.* Fern Nightjar.

Order III. RASORES.

lii. COLUMBA. Dove.

137. *palumbus.* Ring Dove.

138. *œnas.* Stock Dove.

139. *livia.* Rock Dove.

140. *turtur.* Turtle Dove.

lvi. PHASIANUS. Pheasant.

145. *Colchicus.*

lviii. TETRAO. Grous.

149. *tetrix.* Black Grous.

150. *Scoticus.* Red Grous. "Formerly on Tarleton Moss."—T. K. GLAZEBROOK, Esq.

lix. PERDIX. Partridge.

153. *cinerea.* Grey Partridge.
156. *coturnix.* Quail Partridge.
lx. OTIS. Bustard.
158. *tetrax.* Little Bustard. Burscough.

Order IV. GRALLATORES.

lxii. ŒDICNEMUS. Thick-knee.
160. *crepitans.* Stone Thick-knee.
lxiii. CHARADRIUS. Plover.
161. *pluvialis.* Golden Plover. River Mersey.
162. *morinellus.* Dottrel Plover. Sea coast.
163. *hiaticula.* Ringed Plover.
lxiv. VANELLUS. Lapwing.
167. *cristatus.* Crested Lapwing.
lxv. STREPSILAS. Turnstone.
168. *interpres.* Collared Turnstone. Sea coast.
lxvi. CALIDRIS. Sanderling.
169. *arenaria.* Spotted Sanderling (R). Sea coast.
lxvii. HÆMATOPUS. Oyster-catcher.
170. *ostralegus.* Pied Oyster-catcher.
lxix. ARDEA. Heron.
172. *cinerea.* Grey Heron (R).
BOTAURUS. Bittern.
178. *stellaris.* Mottled Bittern (R).
lxxii. IBIS. Ibis.
184. *falcinellus.* Glossy Ibis. A few years since a specimen in immature plumage was shot at the mouth of the River Alt.
lxxiii. NUMENIUS. Curlew.
185. *arquata.* Spotted Curlew (R).
187. *phæopus.* Whimbrel Curlew.
lxxiv. TOTANUS. Sandpiper.
188. *calidris.* Redshank Sandpiper.
191. *hypoleucos.* Cinereous Sandpiper.
192. *glottis.* Greenshank Sandpiper. Sea coast.
lxxv. RECURVIOSTRA. Avocet.
193. *avocetta.* Scooping Avocet.
lxxvii. LIMOSA. Godwit.
195. *rufa.* Bar-tailed Godwit. Sea coast.
lxxviii. SCOLOPAX. Snipe.
197. *rusticola.* Wood Snipe.
199. *major.* Great Snipe. Aughton, and near Manchester.

200. *gallinago.* Mottled Snipe (R).
201. *gallinula.* Jack Snipe.
lxxix. MACHETES. Ruff.
203. *pugnax.* Pugnacious Ruff (R).
TRINGA. Dunlin.
205. *variabilis.* Mottled Dunlin (R). Warr., &c.
210. *cinerea.* Cinereous Dunlin (R). Warr., &c.
lxxxii. GLAREOLA. Pratincole.
214. *pratincola.* Collared Pratincole. "The first recorded specimen was shot near Liverpool."—JENYNS.
lxxxiii. RALLUS. Rail.
215. *aquaticus.* Water Rail.
lxxxiv. CREX. Crake.
216. *pratensis.* Meadow Crake.
217. *porzana.* Spotted Crake. Rufford and Croston.
219. *pusilla.* Little Crake. North Meols, and near Manchester.
ixxxv. GALLINULA. Gallinule.
250. *chloropus.* Greenshank Gallinule (R).
lxxxvi. FULICA. Coot.
221. *atra.* Black Coot. (R).
Order V. NATATORES.
lxxxvii. ANSER. Goose.
222. *ferus.* Wild Goose.
223. *segetum.* Bean Goose.
224. *albifrons.* White-fronted Goose.
BERNICLA. Bernacle.
225. *leucopsis.* White-fronted Bernacle.
226. *torquata.* Brent Bernacle.
lxxxviii. CYGNUS. Swan.
232. *ferus.* Whistling Swan.
234. *olor.* Mute Swan.
lxxxix. TADORNA. Shieldrake.
236. *Bellonii.* White-backed Shieldrake (R).
xci. ANAS. Duck.
238. *clypeata.* Shoveller Duck.
240. *acuta.* Pintail Duck.
242. *boschas.* Wild Duck.
243. *querquedula.* Garganey Duck.
244. *crecca.* Teal Duck.
xcii. MARECA. Wigeon.
245. *penelope.* Whistling Wigeon (R).

xcv. Oidemia. Scoter.

249. *fusca.* Velvet Scoter.

250. *nigra.* Black Scoter. Ribble and Lune Rivers.

xcvi. Fuligula. Pochard.

252. *ferina.* Red-headed Pochard.

255. *marila.* Scaup Pochard.

256. *cristata.* Tufted Pochard.

xcix. Mergus. Merganser.

260. *merganser.* White-breasted Merganser (R.).

261. *serrator.* Red-breasted Merganser.

263. *albellus.* Smew Merganser.

c. Podiceps. Grebe.

264. *cristatus.* Crested Grebe.

266. *cornutus.* Horned Grebe.

267. *auritus.* Eared Grebe.

268. *minor.* Little Grebe.

ci. Colymbus. Diver.

269. *glacialis.* Northern Diver.

271. *septentrionalis.* Red-throated Diver.

cii. Uria. Guillemot.

272. *troile.* Foolish Guillemot.

273. *grylle.* Black Guillemot.

ciii. Mergulus. Rotch.

274. *alle.* White-breasted Rotch (R). Sea-coast.

civ. Fratercula. Puffin.

275. *arctica.* Collared Puffin (R). Sea-coast.

cv. Alca. Auk.

276. *torda.* Razorbill Auk. Sea-coast.

277. *impennis.* Great Auk. Sea-coast.

cvi. Phalacrocorax. Cormorant.

278. *carbo.* Black Cormorant (R).

279. *cristatus.* Green Cormorant.

cvii. Sula. Gannet.

280. *Bassana.* Solan Gannet. "One found dead on the shore off Southport."—T. K. Glazebrook, Esq.

cviii. Sterna. Tern.

284. *hirundo.* Black-headed Tern.

286. *minuta.* Lesser Tern.

cix. Larus. Gull.

293 *ridibundus.* Black-headed Gull.

295 *tridactylus.* Kittiwake Gull.

296. *canus.* White-headed Gull (R).
298. *argentatus.* Herring Gull.
209. *fuscus.* Fuscous Gull.
300. *marinus.* Black-backed Gull.
cx. LESTRIS. Skua.
305. *Richardsonii.* Richardson's Skua.
cxi. PROCELLARIA. Petrel.
311. *pelagica.* Stormy Petrel.
312. *Leachii.* Leach's Petrel. Near Middleton.

SOME ACCOUNT OF THE SIBILOUS LOCUSTELL, OR "GRASSHOPPER WARBLER."

BY NEVILLE WOOD, ESQUIRE.

ALTHOUGH this little creature *(Locustella sibilatrix)* is by no means rare in some parts of Britain, yet little accurate detail has been ascertained relative to its habits in its natural state. This may unquestionably be attributed to two circumstances:—1st, the generally shy and hidling habits of the species; and 2nd, the very limited number of individuals who have time, patience, or inclination to attend to the minutiæ of the manners of animals. The number of zealous naturalists, in any given district, is unquestionably small; and when we consider the various branches of Mammalogy, Ornithology, Entomology, Ichthyology, Erpetology, Botany, Geology, &c., into which Natural History is divided, and the difficulty of attaining to even a tolerable general knowledge of any of these extensive sciences, it is not to be expected that the history of any country or district should become perfect all at once. The biography of the Locustell is, however, at present so imperfect, that it still remains a question among ornithologists whether this bird progresses on the ground by hopping or by running (see pp. 78 and 293)—a circumstance at first sight trivial, but one of considerable interest and importance both to the systematist and the field naturalist.

We have only once enjoyed an opportunity of observing the Sibilous Locustell at large. On the morning of the fourth of May (a remarkably sultry day for the time of year) happening to stroll near a wood in the neighbourhood of Campsall, we all but trod upon a Ringed Snake *(Natrix torquata)*. Now although this species is not venomous or poisonous, yet when irritated, or suddenly alarmed, it raises its head threateningly, hisses vehemently, and thrusts

out its long tongue in so imposing a manner, that one cannot help feeling somewhat nervous in such company. This little incident served to keep us on our guard; ere long we heard a rustling similar to that made by the Snake; and looking carefully amongst the underwood, observed a small bird at the foot of a Fir-tree, scraping the ground with its feet, and altogether comporting itself in a very extraordinary manner. Its short jerky movements at first led us to suppose that it was an eccentric Sparrow, tired of the ceaseless jargon and lawless life of its comrades, and determined to pass the remainder of its existence in peace and seclusion. The bow of the head and cock of the tail next caused us to mistake it for a Wren, though certainly not of the common species. At length, with some difficulty, on account of the intervening brushwood, we obtained a clear sight of the bird, which turned out to be a Locustell! We were almost as pleased at this as if we had added a new Wren to the British fauna, seeing how rarely the species has been recorded as occurring so far north in England.

It seemed like a stranger in a foreign land, and would sometimes sit motionless on a twig several minutes together, without so much as moving its head once, or testifying the least sign of life—reminding one most ludicrously of a very melancholy and "interesting" young lady. It appeared to consider the brushwood scarcely a sufficient concealment, and frequently endeavoured to nestle into the ground at the foot of a young Fir-tree, scraping with its feet, and fluttering occasionally with the wings. We noticed this singular manœuvre several times, and indeed it was that which first attracted our attention to the spot.

Some authors have characterised the Locustell as shy, but we believe this to be incorrect. It is not to be supposed that every bird or other animal of hidling or solitary habits must necessarily be timid, though they frequently are so. The present species, like many others, probably only seeks shelter in bushes, &c., from a desire to conceal itself, apart from any other motive. It appears, in fact, to be secretive rather than cautious. Indeed, so far was the individual above referred to from being shy, that it seemed to be on excellent terms with us, and would at any time allow us to approach within a few feet of it, on which occasions we could gaze at each other with mutual satisfaction. Had a gun been at hand, nothing would have been easier than to have shot the bird; yet the bushes and underwood, in the midst of which it almost always remained, rendered it difficult to obtain, at pleasure, a distinct view of the whole bird at once. Though naturally active and sprightly, it seemed to be burdened with some weighty cares it could not disclose; and although we stood watching it full three-quarters of an hour—to the unfeigned astonishment of a fellow working in an adjoining field—it did not once utter the slightest note or chirp of any kind.

In RENNIE'S edition of MONTAGU'S admirable *Ornithological Dictionary*, the mode of progression of the Locustell is stated to be by hopping; but in the May number of *The Naturalist* (p. 78), it is mentioned, on the authority of Mr. J. D. HOY, that the bird advances by *running*, and not by hopping. The individual noticed was repeatedly observed to hop, and never once to run. We therefore feel very little doubt but that RENNIE and others are perfectly correct in their statements; but we shall be glad of the observations of correspondents on this point. One thing is certain, namely, that the Locustell does proceed on the ground by hopping—the question is, whether this is invariably or only occasionally the case?

We fully expected, from the restless and disconsolate appearance of the bird, that as it was the first so it would be the last time we should see it, and accordingly made ourselves master of its habits and attitudes as far as was possible in so short a time. Partial as it evidently was to the covert, we occasionally succeeded in driving it from the bushes, when it flew to the ground, exactly in the hurried shuffling manner of the Ivy Wren when it thinks itself watched. These disturbances certainly tended to attach it more and more to its favourite brushwood, but not in the slightest degree to cause it to apprehend danger on our near approach. We could do all but catch it; and as we wished, if possible, to induce it to sojourn a while in our neighbourhood, we took care not to molest it more than was necessary for purposes of observation. But we had predicted truly. Campsall was not to be the resting-place, even for a few days, of the Sibilous Locustell. Often and diligently have we since searched the spot and the neighbourhood, at all times of the day, and almost of the night too, without once again meeting any traces of our favourite of the 4th of May.

Campsall Hall, Sept. 3, 1837.

CORRESPONDENCE.

WHICH ARE THE BEST WORKS IN THE SEVERAL DEPARTMENTS OF NATURAL HISTORY?

To the Editor of the Naturalist.

SIR,—From the kindly spirit which I have with pleasure observed pervading *The Naturalist*, both on your own part, and in general on that of your contributors, I feel assured you will not close its pages against an enquiring *tyro* in Natural History. Indeed, your ready acquiescence in the proposal of H. E. H. (p. 89), satisfies me that you are ever willing that there should be a free inter-

communication, in the shape of queries and answers, critical observations, &c., between your correspondents, and therefore I may, as an humble student of the vast field of Nature, be permitted to proceed to the subject of my present communication without further preface or apology.

I wish then to inquire, which are the best works in the several departments of Natural History, especially Zoology and Botany? First, I should be glad to be informed as to the general and more comprehensive works, and, secondly, as to the monographs, treatises, memoirs, &c. I should like the size of the works to be specified; and where particularly good accounts of the economy, &c., of any one species have been published in the Transactions of learned Societies, or in periodicals, &c., it might be of use to myself and others to specify these.

Although I am but a beginner, it is not to be supposed that I have no books whatever relating to Natural History, though possibly I may not have the best. What I have been recommended is, first, to obtain a general idea of each branch, and then to descend to minutiæ. Without the mind of a LINNÆUS, a CUVIER, or a SWAINSON, I am fully aware that it would be impossible to *advance* science in any way without attaching oneself particularly to some department; but perhaps, by knowing something of the collateral branches, we may be assisted in the particular study we have selected. Were I not certain that your reply to my query would be of eminent service to others as well as myself, I would not have ventured to occupy so much of your space. The most convenient plan of arranging the list would probably be to make Mammalogy, Ornithology, Entomology, &c., the heads of columns, with subdivisions under each for "general works," "monographs," "treatises and papers in periodicals," &c., but this, of course, you will manage according to your own judgment, and doubtless to the best advantage.

I am, Sir, with much respect,

Your obedient servant,

Alton Hall, Gloucestershire,
Sept. 27, 1837.

CHARLES HANWAY.

[Our correspondent appears to expect that we shall ourselves reply to his query. Our usual plan is to allow contributors to answer all questions of this kind. This we shall accordingly do in the present instance, confident that we have many readers both willing and able to furnish a list of works on one or more branches of Natural History. But should no one come forward, we will then supply the catalogue, to the best of our ability. Meanwhile we may observe, that M. PERCHERON has published a catalogue raisonné of entomological works, and that our *Ornithologist's Text-book* contains notices of ornithological books, treatises, &c.—ED.]

CHAPTER OF CRITICISM.

On Faunas and Floras, in general and particular.

Bewsey House, Aug. 18, 1837.

Dear Sir,—Your talented correspondent, Mr. Dale, has set an example to zoologists, and Mr. Bloxam to botanists, which, I think, ought to be followed in as many cases as possible. The advantage of having local floras and faunas is universally acknowledged, and the manner in which they are published in *The Naturalist* appears to me much better than if, as in Loudon's *Magazine of Natural History*, the productions of the various counties were to be known by short notices of the capture of perhaps a dozen rare birds, or the discovery of a like number of rare plants, in different neighbourhoods, scattered here and there throughout the volume. In the "Dorsetshire Fauna" Mr. Dale mentions *Fuligula rufina*, to which it appears, by a note at the bottom of the page, he had affixed "Tufted Pochard" as the English name. Is it not probable that he meant the Tufted Pochard, which is of common occurrence, and pretty generally distributed, while of *Fuligula rufina*, Mr. Jenyns informs us, only four specimens have been met with? This supposition is strengthened by the circumstance of *F. cristata* not being in his list. Of *Mergus cucullatus*, according to Jenyns, only one specimen has been met with in Europe; if Mr. Dale has found it in Dorsetshire, the particular locality is, in my opinion, very desirable. Perhaps there may be some mistake. The same remarks will apply to his notice of *Procellaria puffinus*. Of course I only make these observations to elicit information. It appears to me that the "blue and green" species of Lizard, which, Mr. Dale informs us, he has found at Parley, is *Lacerta stirpium*. At all events this species ought to have a place in the Dorsetshire fauna, as, according to Jenyns, two specimens were taken by Mr. Yarrell near Poole, in Dorsetshire. Persons have informed me that they have seen "green Lizards" near Southport, in this county. I think it not improbable that these will be referable to the same species.

Scarcity of the Garden Ouzel near Warrington.

With regard to the Garden Ouzel (*Merula hortensis*), the fact that it is not common here has been remarked by others as well as myself. Considering its extreme abundance in other parts of the kingdom, it most certainly "cannot be said to be common in this neighbourhood." This statement is analogous to one made by Mr. Morris, in a preceding number of *The Naturalist* (No. ix., p. 166), respecting the House Sparrow not being common near Doncaster. It is com-

mon enough here, in all conscience. This is sufficient proof that we cannot judge, from the abundance or rarity of a species in one locality, of its frequency elsewhere.

Believe me, my dear Sir,
Very sincerely and faithfully yours,

NEVILLE WOOD, Esq.,
&c. &c. &c.

PETER RYLANDS.

DONCASTER LYCEUM.

To the Editor of the Naturalist.

SIR,—In your publication for last month (No. xi., p. 268), there is an article inserted respecting the Doncaster Lyceum, but in which there are several inaccuracies, and it is only in justice to the institution that they should be pointed out.

The writer, after expressing his disappointment that the neighbouring gentry of Doncaster do not give greater support to the institution, states, that he conceives that it is to be attributed "to the great attention paid by the Lyceum to politics." He says that "a large number of the members are quarterly," and suspects "that many of them enter the society merely for the purpose of reading the newspapers." He also adds, "that a portion of the funds goes to purchase newspapers."

The writer, who seems to be well acquainted with the motives both of the neighbouring gentlemen who do *not* support the institution, and of "many" members who *do*, would have done wisely had he also made himself acquainted with the fact that, according to the altered rules of the Society (and which were altered and made public long before the publication of the article in question), there are no longer to be any quarterly members, and that no portion of the funds subscribed to the Lyceum will be or can be applied for the purchase of newspapers.

All members are to be annual; but for the benefit of the young, and of those whose means are limited, there are to be two classes of subscribers: the first to pay 16*s.* a-year, and the second 7*s.* The latter class are to have all the privileges of the other, except the right of voting in the management of the institution; and not one farthing of the subscriptions of either class can be appropriated for newspaper purposes, but solely for the benefit of the museum and the literary and scientific departments.

Politics are neither admissible into these departments of the Institution, nor is it compatible with their designs, and I believe they are never obtruded.

But, Sir, it is no less true, than, as I think, an advantage to the Institution itself (unless it can be shown that it is well for man to possess all knowledge

save that which most concerns him in a worldly point of view—the knowledge of the affairs of the country in which he lives), that there is a room separate and apart from the other rooms of the institution, into which newspapers are admitted. Such members of the Lyceum as desire it, have the option, by paying a small additional annual sum, of being members of this room. The fund subscribed to this room only, is appropriated for the purchase of newspapers, and the management of the newspaper concerns is solely vested in the members of the news-room.

The plan adopted in this respect by the Doncaster Lyceum is similar to that followed by many Institutions, upon a much larger scale, in different parts of the country, where experience has proved that it is salutary, and not dangerous.

I remain, Sir,

Your obedient servant,

Doncaster, Aug. 19, 1837. EDWARD SHEARDOWN.

[The only publication of the altered rules that we are aware of, consists in a copy of them having been placed in the reading-room of the Lyceum, and the consequence is, that *many* members were not even aware that any change had been proposed in the regulations. We are not, therefore, to blame for remissness in this particular. The next thing insisted upon by our correspondent, is the importance of newspapers. This is nothing to the point. It matters not to the subject in hand whether or no we admit the value of these engines of instruction. What we before said, and what we now repeat, is, that, in our humble opinion, a "Literary, Scientific, and Natural History Society" has nothing whatever to do with newspapers. The introduction of these will doubtless attract members of a certain description, but assuredly not those whose assistance and co-operation the institution should court. In this particular we can scarcely consider the laws about to be put in force as improvements on the present plan.—ED.]

OBSERVATIONS ON "THE NATURALIST," *passim.*

To the Editor.

MY DEAR SIR,—I shall content myself at present with scribbling a few observations on your journal *passim*. You will excuse my remarking, I hope, what perhaps it is impossible to prevent, that notwithstanding the general admirable attention paid to the orthography of *The Naturalist*, here and there some strange misnomers occur, suggesting the idea that just at an occasional point the pen had dropt from the hand of the drowsy corrector. Professor AZELIUS at p. 170 should be AFZELIUS. You are already, I see, corrected by Mr. LEYLAND in using *styrzicum* for *stygium*. (I scarcely wonder at your shrinking from the

Stygian flood). At p. 264 reference is made, in a report of the Geological Society, to a description of the coast of "Norway," which seemed a complete riddle to me, till mention of "Caen free-stone" made it obvious that *Normandy* was intended. But I dare say you have at your tongue's end—"Cease, rude Boreas, blustering railer," so I shall ruffle you no longer on this point.*

On the Backwardness of the Spring of 1837.

Mr. Beverley Morris, of Dublin, I see, has somewhat strangely questioned the backwardness of the spring of this year (pp. 221, 225), and, without any reference to meteorological details, has adduced the fact of certain plants flowering as early as usual. Having before alluded to this subject (p. 213), I feel obliged to remark upon what Mr. Morris has adduced. In the first place, the plants he has selected are, with the exception of *Narcissus biflorus*, primaveral. Nothing can, therefore, be drawn from them, as such plants with a warm aspect may flower in certain spots without the majority of their brethren, as every body knows who has met with a Primrose or Cowslip by the wood-side. But admitting that Mr. Morris means the general flowering of the plants he mentions, surely May 4 for *Ranunculus ficaria* is very late, since it usually gilds the marshy meadows by the second week in April, and I have seen it in flower in February. I should also say that *Caltha palustris* generally flowers in Worcestershire in the middle of April. But I will appeal to what every body notices—the trees and shrubs, and ask if they do not fully bear me out in the assertion that the present season has been *nearly three weeks* behind an ordinary one. The following memorandums are taken from my log-book, and let any one compare them with a record they may have made in former years, or leave them for reference to future.

1837.—*May* 1. In vain we look for the Hawthorn or May in flower; it is not even in leaf, except very scantily here and there, and there is no real display of green leaves anywhere save on the Gooseberry bushes that stand lone epiplytic sentinels on the pollarded Willows. Almost every thing has been cut up by the long-continued bitter frosts and never-ending storms of sleet and snow, the Horse Chesnut has not yet unfolded its leaves, and the Blackthorn (*Prunus spinosa*) is only this day coming into flower. Now on reference to Forster's "Indications of the Seasons," in the *Encyclopædia of Natural Phenomena*, we find it stated that "the Blackthorn usually blooms about the middle of April."

* We are rather glad Mr. Lees has alluded to the typographical errors, as it enables us to clear ourselves of nearly the whole blame. Mistakes marked in the proofs are occasionally left uncorrected, and in one or two instances letters creep into or fall out from the worked-off copy where all was right in the proofs. Such defects are, however, not numerous or important in our late Nos., and a few will occur in every work.—Ed.

With regard to *Ranunculus ficaria*, the same writer, in his "Rustic Calendar," says, under April 3, that "Pilewort *now* bespangles every shady bank and sloping grove with its golden stars, which *remain till May*." He also says that *Caltha palustris* is in full flower in the *middle of April*. If, therefore, these plants did not flower with Mr. Morris till the 1st of May, he himself proves the backwardness that he denies.

May 10.—No Pear-trees yet in flower in the orchards, though, according to Forster's "Rustic Calendar," they generally commence flowering on April 13.

May 13.—Alder not in leaf except very partially; Ash, no signs of opening foliage apparent; Beech, the leaves only fully expanded to-day; Birch, young leaves just expanded; Elm, leaves expanding, but scarcely open; general aspect denuded; Hawthorn,—the hedges are not yet entirely green, and no sign of blossom any where: yet who does not remember gathering *May* on May-day? "In early warm springs," says Forster, "it flowers on the 1st or 2nd of May;" Hazel, not in leaf, except here and there; Horse Chesnut, foliage fully out, but not any flowers; Lime, only just opening; Maple, buds as yet only apparent; Oak, entirely bare; Pear, leaves only partially expanded; Poplar (*P. nigra*), red flowers very conspicuous, but leaves not fully expanded; Service (*Pyrus torminalis*), entirely leafless; Sycamore, in young leaf, though, according to Forster, this should be the case on April 10 in ordinary seasons; Willow (*Salix alba*), young foliage just apparent.

May 15.—Pear-trees now first fully in flower, though the third week in April is the usual period for this.

May 25.—Horse Chesnut only just come into flower.

May 26.—Noticed a Hawthorn-bush in flower for the *first time this year*, but in a ride of thirty miles it was the *only one* so circumstanced.

June 11.—The Horse Chesnut, Laburnum, and Lilac, are at length arrayed in the beauty that in ordinary seasons they assume a month earlier!

I will now, by reference to a well-known, common, and universally-diffused English flower, attempt to ascertain the number of days the season in question was behind ordinary ones, and the plant I shall select is a solstitial species, as most fit to refer to. I have noticed for a number of years that the Yellow-flag Iris (*Iris pseudacorus*) always unfolds its brilliant corolla on May the 31st or June the 1st; the latter date is given by Forster in his "Rustic Calendar," and I do not remember a season in which the marsh was not yellow with some of its flowers on the 1st of June. This year I observed no flower open till June 19, so that there can be no doubt that vegetation received a general *retardation* of at least eighteen days. I shall only observe further, that *Rosa spinosissima*, which usually flowers in April, did not expand till the 11th of June; and that not a

single plant of *Rosa canina* flowered in the hedges before June 19, and then very partially.

The Doncaster Lyceum, &c.

I find I must at present considerably abridge what further observations I had intended to make. I greatly admire the fearless spirit in which you speak out as to the Doncaster Lyceum. Squeamish persons may, as usually happens, wince and hesitate, but the plan you have pursued is the only way for improvement. Constant adulation is the ruin of many institutions, the heads of which keep bowing and bowing to each other, till, with their backs turned to real truth and science, the recoil of their courtliness hurries them down the precipice of ruin. You are, in my opinion, quite right in saying that these institutions should be patronized by the countenance of noblemen and country gentlemen; but no *class*, professional or not, should evidently have the hand of fellowship held out to it more than others. If so disgust ensues, and justly I must say, that in Worcester all our literary and scientific societies are somewhat faulty—Politics in one, jealousy and monopoly in another, and a true scientific spirit absent from all. Hence great cry and little wool. I am afraid human nature wants another century of rubbing down; for while selfishness and charlatanism prevail in the world as they do at present, true observing but quiet science is sure to wither, and parade and ceremony are the sorry substitutes for investigation and research. I speak generally, though I admit it is perhaps unwise so to speak (except confidentially), for human nature recoils from the pill that is not gilded by flattery. I shall, however, always give my opinion freely.

Believe me to be, my dear Sir,

Yours very sincerely,

Dryadville, near Worcester,
Aug. 7, 1837.

Edwin Lees.

Concerning two Errors in a Review of Hewitson's "British Oology."

To the Editor of the Naturalist.

Dear Sir,—In your May number (p. 112), I perceive a review of my twin No. (xxx. and xxxi.), which must have been written without the least regard to accuracy. In the first place, in criticising plate cxviii., in which the eggs of the Chiff Chaff and Wood Wren are figured, it is stated, in reference to the former (which is in the new nomenclature called the Darklegged Warbler), that it ought to be "*Sylvia loquax*, and not *S. hippolais*, as given by Mr. Hewitson." Now I should much like to know what authorities your reviewer has for setting me right on this point, and beg to give mine for its adoption, which are to me quite

sufficient for its use—Swainson, Selby, and Gould. It is then stated, with regard to the same plate, that "the author has judged right in giving three figures. We never saw one of the dark colour of fig. 2, a shade between figs. 1 and 3 being commonest." Now these three eggs happen to be those of two birds, fig. 1 being that of the Chiff Chaff, 2 and 3 those of the Wood Wren;* and I feel confident that the writer never saw an egg of the Chiff Chaff "a shade between figs. 1 and 3." He might well say he "never saw one of the dark colour of fig. 3."

The next error is in reference to plate cxix., in which the reviewer mentions the two figures there drawn as of the Purple Heron, "differing remarkably in size." Now although the eggs do differ remarkably in colour, and sometimes a good deal in size, they do not vary quite so much. The eggs there represented are also those of two species.

You will, I trust, excuse me for mentioning these errors, which have most likely got into your pages without your having had time to correct them. I ought not to conclude these remarks without expressing my satisfaction at the manner in which the *British Oology* is spoken of in the critique alluded to.

I am, dear Sir,

Yours truly,

Derby, Aug. 26, 1837. William C. Hewitson.

[We really are at a loss to imagine how the errors which Mr. Hewitson has taken the trouble to point out, could have crept in, unless indeed—which is an unusual occurrence with us—we were dozing at the time we wrote the critique. We may, however, positively state that we have seen an egg of the Darklegged Warbler spotless white. After the account given of *Sylvia hippolais* in Gould's *Birds of Europe*, we thought every naturalist had known that the bird of that name found in Britain is "now universally acknowledged to be the *S. rufa*," or *S. loquax* of Herbert.—Ed.]

"For Many Years Past."

To the Editor of the Naturalist.

Sir,—"For many years past" may perhaps mean as many as six or seven; and there are cases where it may be as well to mention the source from which information has been derived. I have instructed several in the *rudiments* of Natural History, and have taught others the names of the commonest species of British birds. Will Mr. R. H. Sweeting be so good as to inform me, in the first

* Mr. Salmon has already been kind enough to correct us in this particular, for which see our September number, p. 313.—Ed.

place, whether he has ever *read* or *seen* CUVIER's *Règne Animal;* and secondly, whether *Caryocatactes nucifraga* occurs therein, as Mr. SWEETING has boldly stated. I perceive that the Editor asks the same question; but Mr. WOOD is wrong in stating that NILSSON, in the *Ornithologia Suecica*, is the *only* author who has used the name,* as I proposed it some time since in *The Naturalist*, and had at that time never heard of NILSSON. Mr. SWEETING makes rather a confused statement in his paper on the British *Falconidæ*. I had laid down as a rule, that generic names should invariably be of Greek, and specific names always of Latin origin. But Mr. SWEETING says, that "the practice of using Greek words for generic, and Latin for specific names of birds and other animals" did not originate with me, but was the invariable plan, wherever admissible, of CUVIER. Now I must beg of Mr. SWEETING to give me the chapter and page wherein CUVIER has laid down this as a *rule*. Until he can do this I think his instancing *three* birds with which such a rule (?) has been acted upon will have very little weight in proof of his assertion. I may here mention, by the way, that one of these names (*Pernis*) Mr. SWEETING did not know to be of Greek derivation till I pointed out its origin to him.

"*Whenever admissible*"! May I ask, was it not the result of my arguments that it should *always* and *invariably* be admissible? I doubt, however, very much whether CUVIER had any *plan* whatever of the sort. It should be a very long series, consisting of several thousand names (instead of three, or rather *two and a half*, as I have shown above), to lead us to the conclusion that he had any such plan, in the absence of all declaration of having any plan of the kind, which, if he had indeed made, I must again beg of Mr. SWEETING to point out *when* and *where*. Meantime I shall assert the correctness of my former statement in my treatise on scientific nomenclature in *The Naturalist*, that my laying down such a rule *as a rule* (and *without exception too*), was the first time that such had been done, as it *had* "*been* before (but *obscurely* and *faintly*) *acted on*."

I do not understand Mr. SWEETING's following sentence; do you, Mr. Editor? "Classical names for birds, whether Greek or Latin, or Latin *and* Greek, ought, if truly appropriate, to be considered equally admissible." Does he mean to set this up against what he before (though erroneously) stated to have been the "invariable plan, whenever admissible, of the illustrious Baron CUVIER?" But if so—if both are equally admissible, how comes he in the very next sentence to say, that "where both languages are employed to designate species, I am quite

* We stated that NILSSON was the only author, *so far as we were aware*, who employed it, in alluding, moreover, rather to separate works than to memoirs or papers published in Transactions, periodicals, &c.—ED.

of opinion that the Greek should take precedence of the Latin"? To designate species! Why I thought that the rule (erroneously) claimed for CUVIER, and first *laid down* by me, was that Greek should be used for genera! There seems to be a little confusion in this. But I look forward to the pleasure of seeing Mr. SWEETING some time this summer, if all be well, when I will endeavour to set him right on this and also on some other points.

I remain, Sir,

Faithfully yours,

F. O. MORRIS.

PROCEEDINGS OF NATURAL HISTORY SOCIETIES.

ZOOLOGICAL SOCIETY.

Aug. 22.—The ordinary meeting was held on Tuesday evening, THOMAS BELL, F.R.S., in the chair.—Mr. OWEN exhibited the cranium of an Oran Outan from Borneo, the dentition of which was intermediate with all the known species, and which was the only example that had been seen in Europe.—Mr. CHARLESWORTH explained some facts on the structure of the Argonauts, particularly on the reproduction of certain parts of the shell.

ROYAL SOCIETY.

THE following abstract of a paper "on the temperature of insects, and its connexion with the functions of respiration and circulation," by Mr. GEORGE NEWPORT, is extracted from *The Athenæum* of August 26. The account is of such interest that we shall present it without curtailment.

The author states at the commencement, that although it has long been known that insects living in society, as the Bee and the Ant, maintain in their habitations a temperature higher than that of the open air, the fact had never yet been established that individual insects of every kind possess a more elevated temperature than that of the medium in which they reside, and that in each species the degree of elevation varies in the different stages of their existence. He was first led to study the temperature of insects in consequence of the various results which he had met with in some observations he had himself made, in the autumn of 1832, on a species of wild Bee in its natural haunts, with a view to ascertain, as had been suggested to him by Dr. MARSHALL HALL, the relation between the temperature of these insects during their hybernation, and the irritability of their muscular fibre: but the fact of the existence of a higher

temperature in individual insects had been ascertained by himself prior to these observations; the results of which observations, together with other facts connected with the physiology of insects, he subsequently communicated to Dr. M. Hall.

Since the time when the author has been engaged in the prosecution of this inquiry, some observations on the same subject have been published by Dr. Berthold, of Göttingen, who expresses it as his opinion that insects ought not to be regarded as cold-blooded animals, but who does not appear to have detected the existence of a temperature higher than the surrounding medium in any individual insect. The author also notices the observations on this subject made by Hansmann, Juch, Rengger, Dr. John Davy, and others, some of whom have detected, while others have not observed, the existence of an increased temperature in this class of animals. He then gives a detailed account of the precautions to be taken for insuring accuracy in making observations of this kind; and remarks that greater reliance is to be placed on those made on the external than on the internal temperature of the animal, seeing that comparative results are all that can be obtained, and that the injury inflicted on the insect by its mutilation very materially interferes with the correctness of the conclusions as to the degree of internal temperature.

After premising these introductory remarks, the author gives a detailed account of his observations on the temperature of insects in their several states of larva, pupa, and imago, from which it appears that those which possess the highest temperature are always volant insects, and are chiefly diurnal species, residing almost constantly in the open air. He shows that the larva has a lower temperature than the imago, and that the energy of its respiration is also less, regard being had to the activity of the insect, and to the size of its body. In lepidopterous insects the average elevation of temperature above that of its surrounding medium, is in the larva from 0° ·9 to 1° ·5; while in the imago it is from 5° to 10°. Among the *Hymenoptera* it is from 2° to 4° in the larva, and in the imago from 4° to 15° or even 20°; but in all cases the amount of this elevation is shown to depend on the degree of activity, and the quantity of air respired during a given period. The author then inquires into the influence of various circumstances, such as inactivity, sleep, hybernation, and inordinate excitement, on the temperature of insects, and shows that the evolution of heat gradually diminishes in a degree corresponding to the length of time during which the insect remains in a state of repose, but that it is immediately increased as soon as the insect is roused into action. He adverts also to the remote cause of hybernation, which he ascribes, in every state of the insect, to accumulations of adipose matter, or of nutrient fluid, which, being stored up in the system, induce a plethoric state, from which the animal is aroused when this store of

materials has been exhausted. A variety of experiments are related, tending to prove that a large proportion of the heat evolved by an insect, when in a state of great activity, is dissipated into the surrounding medium, and that the quantity of heat so generated bears definite relations to the habits, the locality, and the energy of respiration in each respective species of insect. Volant insects, he finds, have the highest temperature; and of these the diurnal bear a higher temperature than the crepuscular; next to these must be placed the diurnal terrestrial, and last of all the nocturnal terrestrial species.

In the next division of this paper the author considers the temperature of those insects which live in societies; and in particular of the Humble Bee and the Hive Bee. His observations are confirmatory of many of those of Huber relating to the incubating habits of the former of these species; and he has further ascertained, that during the act of incubation the Bees possess a voluntary power of generating heat, whereby the temperature of their bodies is raised, apparently for the purpose of imparting warmth to the young in the cells; that this process is accompanied by accelerated respiration; and that the amount of heat evolved is proportional to the quantity of air respired. The law established by Dr. Edwards in the case of the young mammiferous animals, namely, that they possess less power of generating heat, and that for a certain time they are unable to maintain their usual temperature, is shown by the author to be equally applicable to the early stages of insect life, and also to the perfect insect immediately after its development from the pupa.

The temperature of the Hive Bee is next examined, and it is shown, contrary to the statements of Reaumur, Huber, and others, that Bees do not maintain a very high temperature in their hives during winter, but that they are disposed, when not disturbed by any occasional vicissitudes of atmospheric temperature, to assume the state of hybernation; although, on the other hand, when the Bees are much disturbed, the temperature of the hive may, even in the midst of winter, become greatly raised. The temperature of the hive is lowest in January, and gradually increases up to the period of swarming, in May or June, after which time it diminishes. A table is given exhibiting the results of successive observations on the influence of the diminution of heat and of light which attended the progress of the annular eclipse of the sun on the 15th of May, 1836, on the temperature of the hive.

It appears, from the inquiries of the author, that different parts of the hive do not preserve the same relative heat among one another at different periods, and also that the amount of free heat in the hive is often 10° or 15°, even in the months of July and August.

The remaining division of the paper is devoted to the consideration of the connexion existing between the development of heat and the functions of respira-

tion, circulation, and digestion. The state of the pulse during all the different stages of the larva until its metamorphosis into the pupa, is examined with great minuteness, and the results are given in a tabular form. The author traces the rate of pulsation during different conditions of repose and activity, and the corresponding frequency of respirations, and finds that although there is a general accordance between the activity of these two functions, yet that the activity of respiration and the quantity of heat evolved, do not depend primarily on the velocity of the circulation, but that under all circumstances the quantity of heat developed is exactly proportioned to the quantity of respiration. While the insect is feeding, and digestion is going on, the evolution of heat increases, and while it is fasting it diminishes; but this diminution has a limit, whereas increased respiration is invariably attended by increased heat. Gaseous matter is exhaled in great abundance from the surface of the body of an insect, and contributes to regulate and equalize its temperature; but the quantity diminishes in proportion to the length of time during which it has been deprived of food. The author maintains that animal heat is not an effect of mere nervous influence, either general or ganglionic—an opinion which he derives from the following considerations:—first, that in many insects in which considerable degrees of heat are evolved, and the respiration is energetic, the nervous system is small compared with that of others in which the respiration is less vigorous; and secondly, that if the evolution of animal heat were dependent on the existence of ganglia, the Leech ought to generate more heat than the larva of the *Lepidoptera*, since it has a much greater number of ganglia. Hence he is disposed to draw the general conclusion that animal heat results directly from the changes which take place during respiration; and that the reason why so large a quantity passes off so rapidly from the body of an insect is because it does not become latent, since the circulating fluid, unlike what takes place in the higher animals, is neither completely venous nor completely arterial, but a character intermediate between both.

Twenty-one tables are annexed, exhibiting the records of the experiments referred to in the paper on the respiration, temperature, and circulation of insects.

A paper has likewise been read before the members of the Royal Society "on the upas poison used by the Jacoons and other aboriginal tribes of the Malayan Peninsula, by Lieut. T. S. Newbold." The author gives an account of the process by which the Jacoons, an aboriginal tribe inhabiting the mountains and forests of the Malayan Peninsula, prepare the poison applied to the points of the slender arrows which are propelled from the blow-pipe. Three preparations are employed for this purpose, distinguished by the names of *Krohi, Tennik* or *Kennik*, and *Malaye;* the last of these is more powerful than the other two, and is obtained from the roots of the *Tuba*, the *Parachi*, the *Kopah*, and the *Chey*, and

rom those of the shrub *Melaye*, whence it derives its name. The *Krohi* poison is prepared from the root and bark of the *Spoh* tree, and the roots of the *Tuba* and *Kopah*, with the addition of red arsenic and the juice of Limes; and the *Tennik* from the same ingredients, omitting the Kopah root. A few experiments are related, made by the author with a view to ascertain the effects of the poisoned arrows on living animals, from which it appears that the symptoms commence in a few minutes after the infliction of the wound, and terminate fatally with more or less rapidity, according to the size of the animal.

HORTICULTURAL SOCIETY.

Aug. 1.—An Address to Her Majesty on her accession to the throne having been voted, the same was read, together with an announcement of Her Majesty's gracious consent to become the Patroness of the Society.—A large silver medal was awarded to Mr. PAXTON, gardener to the Duke of DEVONSHIRE, for the exhibition of a very beautiful *Cattleya crispa*; silver Knightian medals were also given for the new variety of *Oncidium Carthaginense*, from Mr. REDDING, gardener to Mrs. MARRYATT, F. H. S.; for *Ericæ*, from Mrs. LAWRENCE, F. H. S.; and silver Banksian medals for Roses from Mr. STEPHEN HOOKER, F. H. S., for *Stanhopea insignis*, from Mr. PRATT, gardener to W. HARRISON, Esq., F. H. S.; and for Carnations and Piccotees from Mr. HOGG, of the Harrow Road. Eight candidates were elected Fellows.

The meteorological observations between the 18th of July and the 1st of August were as follows:—

Barom.—Highest, July 24	.....	30,117
Lowest, July 29	.....	29,293
Therm.—Highest, July 27	.....	85°, FAHR.
Lowest, July 30	.....	45°, FAHR.

Total amount of rain, 0.63 inch.

Aug. 15.—A note upon the cultivation of the Ranunculus, by Mr. DUNSFORD, gardener to the Hon. Baron DIMSDALE, was read.—Silver Knightian medals were awarded to JAMES BATEMAN, Esq., F. H. S., for *Oncidium lanceanum*; and to Messrs. PAUL, of Cheshunt, for Roses exhibited by them. Silver Banksian medals were also adjudged for a new striped Dahlia from Messrs. PAUL; for Cucumbers from Mr. P. FLANAGAN, gardener to Sir THOMAS HARE, Bart.; for a plant of *Erica Exeana*, from Mrs. LAWRENCE, F. H. S.; and for *Erica ampullacea*, &c., from J. ALLNUTT, Esq., F.H.S. On the table were also observed some very fine black Hamburgh Grapes, Melons, Cherries, Gooseberry-pippins of 1836, in excellent preservation, &c.

JONATHAN KING, Esq., and JOHN TEMPLE LEADER, Esq., M. P., were elected Fellows.

The following was the meterological report from Aug. 1 to Aug. 15 :—

Barom.—Highest, Aug. 7	30.385
Lowest, Aug. 2	29.666
Therm.—Highest, Aug. 14	85°, Fahr.
Lowest, Aug. 4	42°. Fahr.

Total amount of rain, 0.85 inch.

EXTRACTS FROM THE FOREIGN PERIODICALS.

ZOOLOGY.

1. On the genus *Pagurus*, by Dr. Milne Edwards.—The singular crustacea which, to protect their soft and trailing abdomen, dwell in the interior of various turbinated shells, and carry them about everywhere with them, have long excited the curiosity of naturalists. They did not escape the notice of the ancients, and one of the first anatomists who paid attention to the internal structure of the inferior animals, Swammerdam, has studied their organisation. Authors appear, however, to have long confounded the different animals which present these different characters; but since the close of the last century they have examined them with more care, and have discovered that a considerable number belong to distinct species. Fabricius, who separates them from the Crabs under the generic name *Pagurus*, enumerates fifteen, and since then almost every travelling naturalist has added to the number. Hence this group is one of the most numerous in the class *Crustacea*, and, for want of being studied sufficiently in a comparative point of view, it has become, at the same time, one of the most difficult as regards the determination of species. This circumstance has induced Dr. Milne Edwards to undertake the revision of the genus, and he has obtained abundant materials for his task.

The genus *Pagurus* of Fabricius, like most other generic groups of this great entomologist, has been sub-divided by more recent authors; but it was so natural that the limits of the group still remain the same; only instead of being a genus it has been elevated to the rank of a tribe.

The author of the beautiful work *On the Crustacea of Great Britain*,* Dr. Leach, who lately died in Italy, and who had long been lost to science, first separated from the true *Paguri* the *Cancer latro*, of which Rumph has given a good figure; he established for it the genus *Birgus*. More recently Latreille,

* We are not aware whether this is its exact title, which we have at present no means of ascertaining.—Ed.

who during his long career has been occupied with so much perseverance and success in entomological classification, has pointed out in the external structure of the other *Paguri* modifications hitherto unnoticed, and these he has made a basis for new divisions. In the edition of the *Règne Animal* published a few years before his death, he separated the *Cenobites* from *Pagurus*, on account of their long median antennæ. Lastly, he established, under the name *Prophylace*, another generic group, which he considers as equally belonging to the tribe of Pagurians, but concerning whose structure there is still much uncertainty.—*Annales des Sciences Naturelles.*—[We may perhaps be tempted to translate further from Dr. Edwards's valuable paper in a future number.—Ed.]

2. Some Observations on Helminthology, by Charles Leblond.—Notwithstanding the systematic works of the most celebrated authors, and the patient investigations of the most distinguished anatomists, Helminthology is, perhaps, of all the numerous branches included in Natural History, that which presents most gaps to be supplied, errors to be corrected, and uncertainties to be dispelled.

What guides, indeed, does science possess with regard to the structure of many even of the commonest helminthological species? What fables have not been received with indifference, and published, as they were collected, without criticism or investigation? How many useless discussions have been carried on regarding the systematic value of a circumstance, of an accident, remarkable indeed, but accessory, and altogether worthless as a character? Should the entozoaries form in the zoological series a class, a family, distinct, or well divided, without regard to their character of internal parasites, and after the mere consideration of their structure, among the different groups founded by all naturalists on the organisation itself of the animals?

This then is the condition of Helminthology at the present day, but M. Leblond feels convinced that it will not long remain in such a state. Here in fact, as elsewhere, synthesis has preceded analysis; but analysis, already once discarded, will necessarily return sooner or later to regulate the synthesis, and establish it on a sure foundation. The ordinary advance of the human mind requires it.

The blots which disfigure the history of the entozoaries, and which seem to lead us back to the early ages of Zoology, would not surprise us if they appeared in the older scientific works, at least if the animals occasionally present extraordinary and paradoxical forms; but what can we think when they remain despite the recent discoveries in Comparative Anatomy, and when, effaced from time to time, they re-appear at short intervals, shining with all the pretensions of novelty?

Thus, sometimes limited to the zoological description of species, sometimes

confined to the valueless rules of general classification, by turns wavering, incomplete or false, once rational and philosophic, Helminthology is in more immediate need of new researches and guides than any other branch of Natural History.—*Annales des Sciences Naturelles.*

3. On a peculiar Human Race of the Atlas.—M. Guyon, principal surgeon to the African army, in a letter to M. Dureau, announces, that there exists at Bougie a native of the interior, a female, supposed to be descended from a white tribe of the Auref mountains. This woman is about 26 or 28 years of age; has a most agreeable countenance, blue eyes, flaxen hair, beautiful teeth, and extremely fine white skin. She is married to the Iman of the Mahometans, Sidi Hamed, by whom she has three children who bear a considerable resemblance to him. M. Arago adds, that this is not so rare an occurrence as may at first be imagined. While going, towards the close of 1808, from Bougie to Algiers by land, he saw, in the greater part of the villages of the Kabyles, women of all ages who were remarkably white, and who had blue eyes and fair hair. Circumstances prevented him from ascertaining their origin.—*Bibliothèque Universelle de Genève.*

4. Formation of Spiders' Webs.—We now continue our abstract of M. Dugès' paper "*Sur les Aranéides*," in the *Annales des Sciences Naturelles*, for September and October, 1836.

The seventh article treats of the secretion of the web. This secretion takes place in a glandular mass situated at the posterior part of the abdomen; it is a viscous substance, which dries more or less rapidly according to the species, and according to the fineness of the thread. This substance is insoluble in water, and rain breaks the webs without dissolving them. M. Dugès thinks, contrary to the opinion of Lister and Latreille—who believe that the threads are forced out—that they are simply drawn out by the motion of the body or of the legs.

This web first serves to construct habitations varying considerably in different species. Sometimes the threads alone are employed, sometimes mixed with other materials. Some species construct tubes, often very solid; lastly, we know the singular lids with which the Mygales (*Mygale*) protect their dwelling. This web serves, in the second place, as every one knows, to form snares for furnishing the food of the Spider. The position of these snares depends on the habits of each species. One of the most important points which M. Dugès has studied in this respect, is the means employed by the Epeiras (*Epeira*) to carry their webs to considerable heights, for which purpose they throw into the air long threads, which are often attached to points very distant from each other. The author has seen, at the extremities of branches, little Spiders, sometimes motionless, sometimes rapidly moving their anterior legs. He succeeded in seeing them draw from their *web-former (filière)*, and cause to float freely in the air a bundle

of filaments so fine, that the slightest breeze wafted them upwards in the same direction. The insect pulled it from time to time to itself, and when it felt it fixed on a solid body at some distance, when the resistance and tension appeared sufficiently great, it did not hesitate to dart forward on this almost imperceptible bridge, doubling the thread by a fresh addition, to all appearance passing unsupported through the air. M. Dugès feels no doubt but that the *fils de la vierge* are owing to an emission of this kind. This article closes with a description of the manner in which Spiders destroy and envelop, in the substance they secrete, the animals accidentally caught in their webs, when the prey is too large to be immediately seized by the relentless tyrant.

5. Mode of Attack and Defence employed by Spiders.—Lastly, in the eighth section of M. Dugès' interesting paper, are enumerated the means of attack and defence of the Spiders, which consist principally of a poisonous fluid and a hook at the end of the mandibles, which may be compared to the venom of Vipers, and employed while the fluid is inserted into the wound. The bite of Spiders appears incapable of inflicting serious injury to man. He has experimented several times upon himself, and considers that the effects of the bite of the Tarantula (*Tarentula*), as well as of some exotic Spiders, have been exaggerated. The majority of Spiders escape from their enemies by flight, and by concealing themselves in holes, which, however, does not prevent their destruction, by a great number of quadrupeds, birds, and insectivorous reptiles, Scorpions, Scolopendras, Mants (*Mantis*), and various other insects. They are liable to be devoured by parasites. Their interior forms an asylum for the larvæ of insects; on the exterior they have to fear the larvæ of Trombidions (*Trombidium*); finally, the Sphexes (*Sphex*, Linn.) make an active war on them, and stupify them by stinging them.

BOTANY.

6. On the Botanical Geography of Swisserland, by M. Oswald Heer.—During the last two years MM. Julius Fröbel and Oswald Heer have published, at Zurich, a journal entitled *Mittheilungen aus dem Gebiete der theoretischen Erdkunde* (Communications relative to Theoretic Geography), of which the four first numbers, forming a volume, have appeared at irregular intervals. Passing over the articles on pure geography, and on zoological and geological geography, many of which are well worthy of attention, we will give some account of the papers on botanical geography, due to the researches of M. Oswald Heer. They relate to Swisserland, but are subordinate to the general views which render them valuable to the scientific men of every country.

The first is on the relative proportion of Monocotyledons and Dicotyledons in the Alpine region of the Mountains of eastern Swisserland. M. Heer having determined the proportion of the two numbers in several localities, found more

dicotyledonous plants in calcareous than in granitic mountains; on the most elevated points than in the centre of the Alpine zone (above the forests); lastly, in dry than in moist places. This last circumstance, already well known, explains the two first, for calcareous mountains, and the tops of mountains, are liable to become very dry. In the granitic Alps of Glarus M. HEER found no Monocotyledon at a greater altitude than 9,000 feet. Between 7,000 and 8,000 feet he found the proportion of one Monocotyledon to $5\frac{9}{14}$ Dicotyledons; from 6,000 to 7,000 feet, $1:5\frac{1}{4}$; from 5,500 to 6,000 feet, $1:5$. At this last height, in a moist place, the proportion was $1:3\frac{5}{7}$. On the calcareous Alps of the canton of Glarus the relative number of Monocotyledons is always a little smaller, or that of Dicotyledons somewhat greater, at equal heights; thus between 5,000 and 6,000 feet the proportion is $1:6$.

According to the Flora of GAUDIN the proportion for the whole of Swisserland is as 1:3, 49. In the Alpine zone there are always fewest Monocotyledons. M. HEER has taken care to keep in mind the number ascertained, by many authors, for other chains of mountains, numbers which prove that the proportional diminution of Monocotyledons in high mountains, above the limits of forests, is a general law.

The second article published by M. HEER is an account of the botanical geography of the canton of Glarus, very complete, and of great interest to individuals occupied in this branch of science. In the first part the author examines the physical conditions that influence the vegetation of the country; he describes the mountains and the vallies, makes meteorological observations on the temperature and the quantity of rain in the several months of the year, and at various heights; lastly, he establishes the limit, so delicate, of the perpetual snows, the variable duration of the snow at different altitudes, and the climatic zones founded on all these facts. He next treats of the distribution of plants by stations, and in each zone. He enumerates the species and establishes the proportion of the families and classes in each of the zones. Unfortunately, the classification adopted by the author (that of M. BARTLING), however excellent it may be in itself, has not been followed in the most important floras and works on botanical geography, and hence the numbers must be calculated over again, in order to be compared with those of the principal authors on geographic Botany, for example with those of BROWN, DE CANDOLLE, and DE HUMBOLDT.

M. HEER has carried his investigations to the point of giving, for each zone, the relative abundance of species, and their greater or less disposition to grow in company or solitary. Proximate numbers indicate these facts in a very happy manner, although different from the plan adopted by M. D'URVILLE. The procedure of M. HEER is to indicate by a number, from 1 to 10, the degree of

general frequency of a species in the country or zone he is engaged on, and by another number, from 1 to 10, the disposition of a plant to present, in a given locality, individuals solitary or more or less grouped. Thus 1 to 10 express a species rare in the country, but social in those places where it does occur; 10 to 1 point out, on the contrary, a common species which every where grows solitary.

The writings of M. Oswald Heer deserve to be consulted as much as M. Wahlenberg's work on Swisserland, and even more, if we consider that M. Heer has profited by the labours of the learned Swedish voyager, and has enjoyed the superior advantage of residing in the country he describes.—Alphonse De Candolle *in the Bibliothèque Universelle de Genève.*

CHAPTER OF MISCELLANIES.

ZOOLOGY.

The Hedgehog's Method of taking its Food.—I once had much pleasure in watching a Hedgehog making its meal in the day-time upon something which, on account of the long intervening grass, I was unable clearly to see. When I at last disturbed the animal, it rolled itself up, and partially enclosed within itself a half-devoured Toad. I took the Toad from it, in order to ascertain the fact beyond a doubt, and after examining it laid it down just by the Hedgehog, when on my retiring to a little distance to watch it, it soon quietly unfolded itself, took the remains of the Toad in its mouth, and ran off with it at a fair trot into a neighbouring covert.—Thomas Meynell, jun., Esq., *in a letter to the Rev. F. O. Morris.*

The European Dipper near Scarborough.—Any one desirous of an opportunity of observing the peculiar habits and manners of this brisk little fellow—so ably described by various authors—may visit that sweet and romantic place Haiburn Wyke, contiguous to the sea-side, a few miles north of Scarborough. This bird is also found in Scalby Beck. I possess specimens from both places.—Patrick Hawkridge, *Scarborough, Aug.* 7, 1837.

The Museum of Boulogne.—When at Dover a short time since, I took the opportunity of crossing over to Calais, and returned by the way of Boulogne. The museum of this latter place is rich in the various departments of Natural History. It is open to the public *gratis* from the hours of ten to four, on Sundays, Thursdays, and Saturdays. Foreigners may obtain admission any day by showing their passports. I observed that a great many of the objects were presented by Englishmen.—J. D. Salmon, *Thetford, Norfolk, Sept.* 6, 1837.

Penthophera nigricans, Curtis.—I found another of those case-bearing larvæ on a Furze-bush, October 13, 1836, on Knighton Heath, near Dorchester. It fastened to the cage for the winter, and, though in a room with a constant fire, it never moved till April 28. As I was unfortunate with those I had before, I consulted Mr. Curtis on the proper mode of treatment, when he showed me a figure of a Moth, male and female (♀, apterous), in a French magazine, which had been bred in France. It is doubtful whether it is the same species, but is called *Psyche* ————?—The periodical above alluded to says:—"The larva feeds on Lettuce, *Solidago virgaurea* (and Curtis thinks Dandelion); twenty-six days in the pupa state; and the imago appears from the 25th to the 31st of August." My Moth, which is unique as British, was taken by me on a Birch-tree at Parley Copse, June 18, 1824. The other larvæ were found on Heath and Furze, Sept. 6, 1831, two on Knighton Heath, and another on Parley Heath, Aug. 20, 1834, in which, on opening, I found a pupa dead; but the other died in larva, after beginning to move, as early as March 1832. I have now supplied this larva with Dandelion, but I cannot see that it touches it, and I fear for the result. Mr. Stephens gives *Geometra alniaria*, Linn., as British, and the specimen in the Linnæan Cabinet agrees with Panzer's figure, but I have never seen a British specimen like it.—J. C. Dale, *Glanville's Wootton, Dorsetshire, July* 9, 1837.

The Redpoll Linnet (*Linaria minor*) scratching in the Manner of the *Rasores*.—During one of those fine days that now and then intervened amongst the miserably cold and cheerless weather of last spring, I was agreeably surprised to see a pair of those beautiful little fellows the Lesser Redpolls (*L. minor*), busying themselves in picking up various seeds, &c., from among the refuse left by the inundation of the river. What more particularly engaged my attention was my observing them *scratching*, something after the manner of the Gallinaceous birds, in order to obtain their food. They were so much engaged in their occupation that they apparently heeded not my presence, although within a few yards of them, so that I had ample opportunity of observing their movements, and when I disturbed them they only hovered round for a short distance, and again alighted to resume their employment. As I never before witnessed them feeding except amongst Alder and Birch trees, I do not know if this peculiarity appertains to the species when feeding on the ground. I have since watched many of our Insessorial birds, but in no instance have I been able to detect this habit, which I had hitherto supposed to be strictly confined to the Rasorial order.—J. D. Salmon, *Thetford, Norfolk, July* 11, 1837.

Some Account of the Ortolan Bunting (*Emberiza hortulana*).—In Italy, Germany, and various parts of the Continent, the Ortolan Bunting is an abundant species. I am fortunate in being able to give some account of it from an

eye-witness of its habits. The liberality of Mr. Hoy has also furnished me with the nests and several beautiful varieties of the eggs, from which the figures are drawn; each the representative of a different nest. The Ortolan Bunting begins to build early in May; it places its nest almost invariably in the corn, preferring Rye to other kinds; indeed it is partial to light sandy soils, where Rye is much cultivated. The nest is placed in some little hollow in the ground, in the manner of that of the Sky Lark; it is formed of dry grass and roots, thickly lined towards the interior with very fine roots; in some the inside is finished with a few hairs. The eggs are four or five, sometimes, though rarely, six in number. As will be seen by the plate, they resemble a good deal those of the Yellow and Blackheaded Buntings. Mr. Hoy adds, "I have never found them breeding except amongst corn. The male is almost incessant in his monotonous song during the pairing season; it much resembles that of the Cirl as well as the Reed Bunting."—Hewitson's *British Oology*, *Moy*, 1837.

Swallows issuing out of Grasmere Lake.—In one of the country papers I have lately seen an extract from the *Kendal Mercury*, detailing the circumstance of a person having observed several Swallows emerge from *Grasmere Lake* this spring. He describes them as making their appearance on the surface of the water in the form of "*bell-shaped bubbles*," which, on bursting, each liberated a Swallow. The Editor says:—"We give the *fact* well authenticated by the parties from whom we received it, in the hope that it may prove an acceptable addition to the data on which naturalists frame their hypotheses," &c. &c. How gratified would the author of the *Natural History of Selborne* have been to have seen such a statement! Really I thought this notion had been exploded long since. I had no idea of meeting with such a paragraph (except to point out the erroneous views of our old naturalists), stated with all the semblance of truth, at this enlightened period of general knowledge. In a calendar kept at Upsal in 1755, Alexander Mal Berger says:—"Aug. 4, birds of passage, after having celebrated their nuptials, now prepare for departing;" and then, "Sept. 17, Swallows go under water"!—J. D. Salmon, *Thetford*, *Norfolk*, *July* 11, 1837.

Distinctions between the Coal and Marsh Tits.—The note of the Coal Tit (*Parus ater*) is chē-chĕ, chē-chĕ, &c., while, on the contrary, in the ditty of the Marsh Tit (*Parus palustris*) the stress is laid on the last syllable, thus:—chĕ-cheē, chĕ-cheē, chĕ-cheē, as far as it can be expressed in writing. The Coal Tit is much wilder than the other species, although it usually inhabits nearer the dwellings of man. Both these interesting little creatures sing more unceasingly immediately before and after the breeding season than during its continuance, and we have frequently heard them sing in the midst of winter when the weather was mild. The Marsh Tit will sometimes almost sing and feed at one and the same time, seeming to find both occupations so agreeable that it is

unwilling to intermit either for the shortest time. When close, the Marsh and Coal Tits are at once distinguished by the absence or presence of the white spot behind the head.—Ed.

Comparative Distribution of the Buntings.—Amongst scores of Buntings shot within a few months in the neighbourhood of Doncaster, only one was a Corn Bunting. The Yellow species, as elsewhere, is extremely abundant, and the Reed Bunting by no means scarce. The latter is, we believe, equally but rather sparingly distributed in England.—Ed.

Propriety or otherwise of the Name *Budytes*.—I rather doubt the propriety of the name *Budytes*, as applied to the Spring Oatear of your *British Song Birds*, having noticed the Pied Wagtail quite as assiduous in his attentions to the cattle, in extensive low pastures, as the former, and quite as familiar with them, if not more so; but this kindness seems only to be given on special occasions.—Edwin Lees, *Dryadville Cottage, near Worcester, Oct.* 21, 1836. [That the Pied Wagtails may often be seen among cattle is not to be questioned; but that they are much less constant cattle-attenders is, on the other hand, equally certain.—Ed.]

The last Swallow in Surrey in 1836.—Swallows were last seen here on the 21st of this month.—Edward Blyth, *Tooting, Surrey, Oct.* 28, 1836.

The Missel Thrush in a Shower of Rain.—On the 21st of October, 1836, while taking shelter under a tree, we remember noticing a Missel Thrush perched on the top of a lofty Beech-tree, during a pelting shower of rain, without moving an inch. It would not permit any of its species to approach the tree, which it quitted as soon as the shower ceased. It appeared to view the descending element in the light of a shower-bath, and to enjoy it accordingly. The same may be said of Pigeons, which every one must have noticed spreading their wings to receive the shower.—Ed.

The Black Rat at Yarm.—Mr. Thomas Meynell, jun., informs me, that he meets with the Black Rat at Yarm. He says:—"I took one this year (1836) among several Water Rats, in a trap set for the purpose, in consequence of their having attacked the Peaches and Nectarines; they were not even contented with the fruit, but also attacked the branches of a Hamburgh Vine."—F. O. Morris, *Doncaster, Sept.* 3, 1837.

The Robin Redbreast on the Sea-coast.—In winter this bird may often be seen close to the sea-side, upon those rocks covered with sea-weed, probably in search of marine insects. To some this may not appear extraordinary; yet many of the admirers of this universal favourite would be a little surprised at meeting him there, in a place so different from his usual haunts.—Patrick Hawkridge, *Scarborough, Aug.* 7, 1837.

A Ferret Weasel suckling a Kitten.—A few days ago a live Kitten was

put into a box containing a Ferret Weasel and some young ones, as food for the old female. Instead, however, of immediately killing and devouring the little animal, the Ferret took it under its protection, and brought it up along with its own offspring. The Kitten remains with them at present; but from the confinement of the place, and the overweening attachment of the old Ferret in keeping it well covered with hay, it is in a weakly state, not being allowed sufficient air and exercise. It grows up with the young Ferrets, and is now about the same size as its companions. If the kitten is at any time taken from the box and placed upon the ground outside, it is immediately fetched back in the mouth of its foster-mother, and covered up in the litter along with the young Ferrets. The Ferrets belong to Mr. Bower, of Rossington.—*Cheltenham Chronicle* (?), *Communicated by* Charles Hanway, Esq., *Alton Hall*, *Gloucestershire*, *Aug.* 27, 1837.

Capture of Whales in Orkney.—On the 21st of August there was an important capture of Whales, of the Bottle-nosed species, in Scapa Bay, near Kirkwall. A hundred and sixty were taken in all, varying in length from 6 to 22 feet each. The massacre was dreadful, and the whole scene had something of the sublime and terrific in it. The bay was for a time metamorphosed *ad literam* into a "Red Sea," and the shore presented the spectacle of 160 dead carcases ranged along it. A sale of these monsters of the deep afterwards took place. They were disposed of in lots, and brought upwards of £400. At Stromness about 60 Wales, of the same species, made their appearance, some of which were captured off the place, and a few were run on shore. We have been informed that a number of the same description are ashore at Stronza. Some of them were also seen off Scapa Bay since the first capture, but though hotly pursued they got off.—*Sept.* 1.

Black Variety of the Rabbit.—A variety of the Rabbit is taken at Nappa, near Aysgarth, which we know by the name of the Nappa Rabbit. It is quite black when young, and becomes of a blue-grey when full-grown. The fur is considered valuable, which causes the proprietor of the warren to be very tenacious of the breed. I only know of one other place in England where it exists. Whether it is indigenous or not I cannot say. The skins are sent to London.—Thomas Meynell, jun., Esq., *in a letter to the Rev. F. O. Morris.*

Singular Habit noticed in the Whin Chat (*Saxicola rubetra*).—We believe, but are not certain, that the Whin Chat, both old and young, frequently makes a rapid motion with one wing while the other remains quiescent. The tail is moved at the same time. To ascertain the precise action of the bird during this manœuvre is difficult, on account of the rapidity of the movement. We first noticed this circumstance at three o'clock in the morning of July 1, when comparatively few birds were in action. An old Whin Chat was perched on the top

of a thick hedge, and appeared in the greatest tribulation when we approached, uttering a shrill cry, and ceaselessly performing the curious motion of the wing noticed above. After a considerable time a newly-fledged Whin Chat—doubtless the offspring of the other—made its appearance, and, therefore, unless the parent had a second nest in hand, we are unable to account for the extreme anxiety it testified during our stay near the spot.—Ed.

Hawking with the Rock Gossak (*Astur palumbarius*).—Inferior in power to the Falcons, though equal in size to the largest of them, the Goshawk is yet the best of the short-winged Hawks; but its habits, as well as its mode of flying at its game, are very different; it does not stoop to its prey, like the Falcons, but glides along in a line after it, and takes it by a mode which, in the language of falconry, is called *ruking*. The Goshawk was formerly in esteem among falconers, and was flown at Hares, Rabbits, Grouse, and Partridges. It flies fast for a short distance, may be used in an enclosed country, and will even dash through woods after its prey; but if it does not catch the object, it soon gives up the pursuit, and perching on a bough, waits till some new game presents itself. This habit of taking to a branch of a tree and waiting is particularly alluded to by Colonel Thornton, formerly of Thornville Royal, who was devoted to hawking, and who, in reference to the Goshawk, says, "If its game takes refuge, there it waits patiently on a tree, or a stone, until the game, pressed by hunger, is induced to move; and as the Hawk is capable of greater abstinence, it generally succeeds in taking it. I flew a Goshawk," says the Colonel, "at a Pheasant; but it got into cover, and we lost the Hawk: at ten o'clock next morning the falconer found her, and just as he had lifted her the Pheasant ran and rose."

As the flight of the Goshawk is low, and it takes its prey near the ground, the females were flown at Hares and Rabbits; the males, which are much smaller, were flown at Partridges.—Yarrell's *British Birds*, p. 56—9.

Instinct of Animals.—Instinct is not an unerring guide to animals. An interesting paper might be written on the mistakes into which they are liable to fall. The following examples may lead to the mention of others by those naturalists who pry into the habits of animals, and accurately observe their resources. Even the wonderfully-gifted Bee falls into error occasionally. I have frequently observed Bees hover about and for a moment settle upon the coloured leaves of the red and purple Clary, and in an instant after turn away suddenly, as if vexed and disappointed, and settle upon the flowers below. A lady who had on an elegantly-flowered challis dress once visiting my hives, was immediately surrounded by the Bees, and many of them settled upon the flowers (Pinks) which were so exquisitely depicted upon her dress.—R., *Doncaster, Sept.* 6, 1837.

The Hobby Falcon (*Falco subbuteo*) near Scarborough.—This bird is

scarce in our neighbourhood. A specimen was once killed by a boy with a stick at Knapton, near Scarborough, and presented to the museum of that town by Mr. R. Tindall. When we consider the diminutive size of this Falcon, we may venture to pronounce it second to none of its family in point of courage. At the time the individual above mentioned was taken, it had just seized a Rook, and was very heedlessly giving the boy a sample of its skill as an anatomist.—Patrick Hawkridge, *Scarborough*, *Aug.* 7, 1837.

The Turkey-Pheasant.—Three or four of these birds once frequented the woods near Handford House, in this county; one of them was shot by the late H. Seymer, Esq., in October 1759, and an account of it was published in the *Philosophical Transactions* for 1760. It is figured and described by Edwards as *Meleagris hybrida*, Linn., being a hybrid between a cock Pheasant and a hen Turkey.—J. C. Dale, *Glanville's Wootton*, *Dorsetshire*, *July* 9, 1837.

The Wryneck's Mode of Feeding.—A Wryneck which a person of my acquaintance long kept in confinement, did not exactly take insects by means of its long tongue, but was fond of sitting on the window, and when it saw a Fly within reach of its beak, it would dart out its tongue, repeatedly, with a very quick motion, so quick as to allow of no mistake, above and around the Fly, and would so gradually work it down the pane of glass till within reach of its beak, tickling it down as it were.—Mr. Edward Blyth, *Tooting*, *Surrey*, *Sept.* 20, 1835, *in a letter to Neville Wood*, *Esq.*

The Egyptian Goose.—This bird quacks in a manner somewhat similar to the Mallard Duck, but the note is more barking. The shape of the body is also more that of an *Anas* than of an *Anser*, though, according to modern systems, it can belong to neither of those genera.—Ed.

Relative Abundance of the Warblers (*Sylvia*) in Norfolk.—The Hedge Warbler (*Sylvia loquax*) is a very rare bird in this district. I have not yet heard a single individual this year. The Willow Warbler (*S. trochilus*) is extremely abundant, but the Wood Warbler (*S. sibilatrix*) is scarce. I only saw one pair last season, owing, I suppose, to our not possessing any natural woods, the Scotch Fir, Larch, and Spruce Fir, being the principal trees growing in this sandy district.—J. D. Salmon, *Thetford*, *Norfolk*, *April* 12, 1836. [see p. 388.]

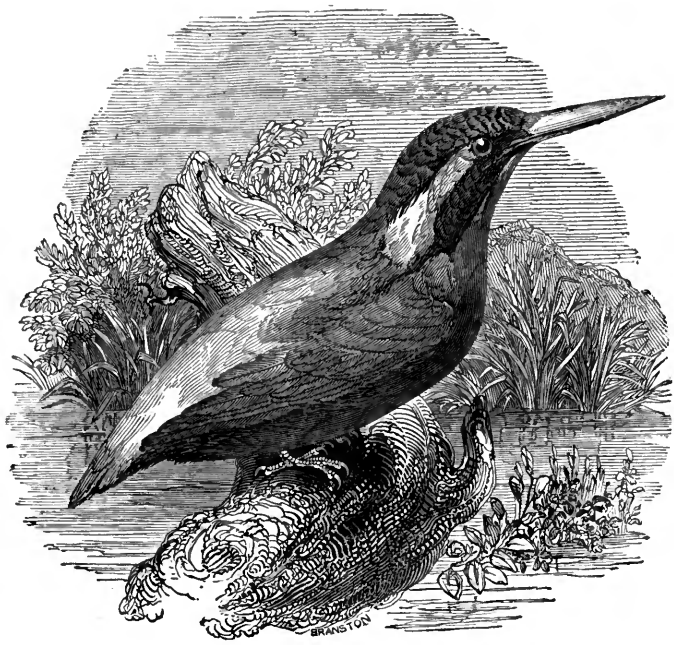
The Siskin Goldwing (*Carduelis spinus*, Steph.).—The shape of the Siskin Goldwing is neat and tidy, and the tail short and considerably forked. The tints of black and green are beautifully variegated in the male; of this ordinary observers and even practical ornithologists appear to be little aware. Indeed our writers seem to be little acquainted with the bird, except as a dried skin, when both the size, shape, and colour are usually considerably altered. In confinement it may be fed on various kinds of small seeds; and, as I am informed by a London bird-catcher, it is partial to the catkins of the Alder and Willow. When kept in an aviary or small room, it should be provided with the branches

of any tree to which it is observed to be partial. It will then thrive much better than if the room were merely "furnished" with dry perches, and it frequently lives several years in perfect health. One instance of its living so long as ten years has come to my notice; this individual was reared from the nest, and appeared to die of old age, as it seemed to have no malady to the last. This cannot of course determine the length of its life in its natural state, for birds never live half so long in cages as in their natural haunts. The Common Goldwing (*Carduelis elegans*) is said to have lived so long as twenty years in a cage, though not perhaps on very good authority; it is however certain, that the Canary has been preserved ten, fourteen, and sixteen years, and on this account we may infer that many of our small birds attain a considerable age in their natural state.—Neville Wood's *British Song Birds*, p. 360.

Observations on the House Sparrow (*Passer domesticus*).—I must think you are soo severe upon poor *Mr. Sparrow* in the *British Song Birds*. I cannot consider him a *detested* creature, and should scarcely feel myself justified in applying this epithet to the most hideous creature in the creation. A few pairs of these birds have annually taken possession of the holes make by the Bank Swallows in a clay-pit adjoining this town, for the purpose of nidification. This I consider a very unusual situation for the Sparrow to build in. I have examined several of the nests, and find them composed of a very small quantity of materials—scarcely more than would suffice for the Bank Swallow, whose nests I am inclined to suspect they usurp.—J. D. Salmon, *Thetford, Norfolk, July* 18, 1837. [We did not term the Sparrow detested in our own feeling of the matter; but that it is very generally detested amongst the agriculturists of this country, can, we think, admit of no doubt.—Ed.]

Sphinx Daphne.—I gave Curtis the name "Rosebay Moth" for this insect. I got it from an old coloured print the late Mr. Burney shewed me of the larva, though not much like the one figured by Curtis. It would appear that it is not new to Britain, and Mr. Burney wrote me word (on my telling him of its again appearing in Britain), dated Jan. 11, 1834:—"Your anecdote of Mrs. Raddon striking at *Sphinx Nerii* [*Daphnis Nerii*, Linn.—Ed.] with her parasol, I very well remember; but confess that the probability of her being mistaken as to the species appeared to me so great, that I never laid it to heart as a fact likely to be authenticated. The corroborations which you mention are indeed most unexpected and interesting."—J. C. Dale, *Glanville's Wootton, Dorsetshire, July* 9, 1837.

The Common Kingfisher.—We have never yet seen a good figure of this bird, and hope that the wood-engraving we now present—executed by an eminent artist—may be considered a faithful representation. All the other figures we have seen of it err in the too great bulkiness of the body; for although a thick bird, it is not so dumpy as ornithological draughtsmen would have us believe.



A very general opinion prevails as to the scarcity of the Kingfisher in England. This, however, is owing to the shy nature of the bird, and to the small attention paid to Natural History by the majority of our countrymen. The assertion of some, that it is extremely common, is, on the other hand, equally erroneous. The fact is, that it is equally but rather sparingly distributed throughout the country, though it may perhaps not often be noticed save by the observing ornithologist. That a bird equalling in the spendour of its plumage the brightest ornithological gems of tropical climes should be indigenous in our comparatively northern latitude, is certainly not a little remarkable. The majority of British birds, as almost every one knows, are plainly attired; but the plumage of many of them is, nevertheless, extremely handsome.—Ed.

Proposed Work on American Skulls.—A work to be entitled, "*Crania Americana;* or a comparative view of the skulls of various aboriginal nations of North and South America," is noticed in the last number of Silliman's Journal, as having been for some time contemplated by Dr. Samuel Morton. The work is proposed to be of a folio size, and to contain from twenty-five to thirty lithographic plates, on which "at least fifty skulls will be represented, with such national, individual, and anatomical illustrations as can be obtained in reference to each. The work will be preceded by an *introduction*, embracing a general view of the five *great races* of men, and followed by an exposition of the probable original of the American tribes.—*Mag. of Zool. and Bot., Vol. II., p.* 284.

Occurrence of the Grey Shrike (*Lanius excubitor*) in the Vicinity of Scarborough.—This bird is occasionally met with here. A very fine specimen of the male was shot within a mile of Scarborough by Mr. J. Wilson, and given to me immediately after. One was also shot by Mr. Samuel Taylor, of Bleachfield, and is now in his possession.* In the year 1832 another was taken. A fourth, shot in 1835, at Cloughton, near this town, is in the Scarborough Museum. —Patrick Hawkridge, *Scarborough, Aug.* 7, 1837.

Relative Abundance of the Warblers (*Sylvia*) in Surrey.—The Dark-legged Warbler (*Sylvia loquax*) is in this neighbourhood rarer than I can well account for, though quite common in several places about four or five miles distant, or even less. We always hear a few of them in spring and autumn, but this season not one has bred in the neighbourhood, although the Willow Warbler literally abounds. It is more confined to the woods than *S. trochilus*. [See Mr. Salmon's communication on the relative abundance of the Warblers in Norfolk, p. 385].—Edward Blyth, *Tooting, Surrey, Oct.* 3, 1835.

Wanderings and Ponderings of an Insect-hunter.—It is known to every book-writer that the preface is the very end of his labours. Still, such is the mendaciousness of man, that he always places it at the beginning—the author of *Tristram Shandy* excepted, who veraciously places it where he wrote it—in the middle. I think it is rather new to put the preface at the end.

The reader, the courteous and gentle reader of the *Entomological Magazine*, has observed divers wood-cuts, having no apparent connexion with the text: thus, a public-house was made to illustrate Bowerbank *On the Circulation of the Blood;* and a quaker's meeting-house embellished Douglas's *Random Thoughts*. Now, although the sapients may attempt to prove that the public-houses cause a circulation of the blood, and that quakers' meeting-houses are places for random thoughts, be it distinctly understood that no conclusions of the kind were intended. Again, the residence of Thomas Rogers is to be placed at the end of this article, whether convenient or inconvenient, although that great man is yet in need of an introduction to my readers; moreover, in the next space an intended representation of the Needles, as seen from Alum Bay, is to be introduced. All these were designed by the Insect-hunter as illustrations of his "Wanderings." They represent very faithfully the objects from which they were drawn; although, in justice to the engravers, it should be stated, that they complained grievously of the want of composition in the drawings, and also of their being positively commanded to make exact copies without embellishment. In these respects tastes widely differ. The Insect-hunter likes faithful representations of all things. He would rather possess exact though homely likenesses

* In all cases of the occurrence of rare birds and other animals, it would be interesting to know the dates.—Ed.

of his friends, than more brilliant ones, nominally representing the same person, but modelled after the VENUS DE MEDICIS and the APOLLO BELVIDERE.

But the Wanderer is wandering from his subject. The want of connexion between the cuts and the accompanying text is the difficulty before us; and that difficulty he hopes to obviate on a future, and, mayhap, not far distant occasion, by reprinting these chapters, with an illustrative cut at the head of each.—*Entomological Magazine, No. XX., July*, 1837, *Vol. IV., p.* 409—10.

ORGANIZATION OF THE ORAN OUTAN.—M. GEOFFROY ST. HILAIRE has recently presented to the *Académie des Sciences* the following observations on this subject:—If we compare the Oran Outan with Man, we perceive the most remarkable conformity in all their parts. There is not a vessel, nor a nerve, nor a muscular fibre, more or less; but, at the same time, each organic element presents modifications in the length and thickness of the parts. The vertebral axis is comparatively shorter, not from the absence of any of its parts, but on account of their vertical compression. The head is generally larger, but more in appearance than in reality. The neck seems wanting, the parts which form it seeming to belong to the hind-head, and to prolong it to the shoulders. This is produced by the following mechanism. In the Oran, as in the Bats, the clavicles are extremely long; and to be kept beneath the integuments without occupying too much room, they are directed obliquely, so that their outer extremity has, as it were, ascended towards the skull, and drawn with it a certain number of muscles, which, adding to their thickness that of the muscles peculiar to the posterior region of the neck, fill up the wide groove formed by the series of spinous processes, which are themselves very large. The action of this strong layer of cervical muscles tends to throw the head backwards. The animal, in consequence of this general modification, must keep its body and head parallel to the trunk of the tree on which it resides, clinging to it by the extremities, and also fixing itself by the hands to the branches which are small enough to be laid hold of. The brain of the young Oran Outan bears a great resemblance to that of a child. The skull might, in fact, be taken, at an early age, for that of the latter, and the illusion would be almost perfect, were it not for the development of the bones of the face. But it happens, in consequence of its advance in age, that the brain ceases to enlarge, while its case continually increases. The latter becomes thickened, but in an unequal degree, enormous bony ridges appear, and the animal assumes a frightful aspect. When we compare the effects of age in Man and the Oran Outan, the difference is seen to be, that, in the latter, there is a super-development of the osseous, muscular, and tegumentary systems more towards the upper than the lower parts, while the development of the brain is entirely arrested.—*Edinburgh Journal of Natural History and the Physical Sciences, Part* vii.—[The most important point of

difference between the structure of Man and the Oran Outan—as between Man and all other animals—is unquestionably the transcendently superior development of that part of the brain devoted, in the former, to the intellectual faculties. The striking flatness of the forehead in Monkeys, Apes, &c., must have arrested the attention of every one. A man who had a forehead like that of any Monkey in the Zoological Gardens, would be an idiot.—Ed.]

BOTANY.

Mushrooms.—Mushrooms are exceedingly plentiful this year. On Thursday week eleven hundred-weight were sent by the boats from the neighbourhood of Northwich and Nantwich to Manchester, to be there converted into ketchup. On the previous Tuesday six hundred-weight were sent from the same places.—*Sept.* 1.

Extraordinary Fungus.—Mr. Smith, of Micklebring, on entering a field where some sheep were grazing, one morning last week, observed something white near the hedge, which he supposed to be a lamb; but on a nearer approach he found it to be an enormous Fungus, which measures 44½ inches in circumference, and is seven pounds in weight. It may now be seen at Mr. Mason's, Braithwell.—*Sept.* 1.

Large Fungus.—Last week was gathered in a field, in the possession of Mr. Robert Wearmouth, at Newbold, near Chesterfield, a Fungus measuring three feet round and two feet six across.—*Sept.* 1.

Manure for Grapes and Asparagus.—Dr. J. W. Smith, of Lockport, New York, says he found, from experience, that the coal-dust and scales of iron from the blacksmith's forge, when properly mixed with fine garden mould, were incomparably the best manure for the Grape that can be used. For Asparagus he has also made use of finely pulverised Oyster-shells, well incorporated with the earth in which it is planted, or dug in about the roots of the old bed. The effects are said to be astonishing, especially on old beds.

GEOLOGY.

Edible Earth.—New facts are constantly brought forward by the learned men of the Continent, to shew that the earth eaten in Lapland, as described by Humboldt, is known to other nations as a species of food. M. Edouard Biot has laid before the French Academy of Sciences an account translated from the narratives of the Missionaries, in the *Japanese Encyclopædia*. In China it is called *chi-mien*, or stone flour, and the description is as follows:—"The stone flour is not an ordinary production, for it is a miraculous substance. Some say that it was born in seasons of scarcity; and in the time of the Emperor Hien Tsong (744 of the Christian era) a miraculous spring came out of the ground,

the stones were decomposed, and transformed into flour." The text is here accompanied by wood-cuts, representing the spring escaping in cascades, and the stones separating into filaments, but the latter are too incorrectly drawn to enable us to form any mineralogical idea of their nature. Another missionary writes, that "in the province of Kiang Si, in consequence of the destruction of the crops by the overflowing of the rivers, a great many people subsisted on the bark of a tree, and others on a light earth, of a white colour, which they discovered in a mountain, but which was not abundant, and people even sold their wives, children, household goods, and houses, in order to procure it." It appears that several of the enormous provinces of China consist of open plains, traversed by large rivers, the beds of which are constantly raised by the soil deposited by the water, so that it is necessary to border them with high dykes. If the rivers, as it occasionally happens, rise above these dykes, or break through them, the whole country is inundated, and the usual calamitous circumstances follow. If we add to these disasters the frequent and widely-extended earthquakes which take place in China, those sudden and remarkable changes in the amount of population, which have often excited astonishment, may be easily accounted for.—*Athenæum, Aug.* 19.

REVIEWS OF NEW PUBLICATIONS.

A History of British Birds. By WILLIAM YARRELL, F.L.S., Sec. Z.S. Illustrated by a wood-cut of each species, and numerous vignettes. London: John Van Voorst, 1, Paternoster Row. Part ii. Sept. 1837.

THIS second number justifies the favourable anticipations we were induced to make in a former review (p. 281), relative to this undertaking. In most illustrated works on Natural History the great difference in the execution of the figures tends not a little to detract from their value; and where ordinary individuals might applaud, the ornithologist may detect errors little creditable to a scientific publication. In the work before us no such defects are to be noticed, even on the most careful inspection. We do not mean to assert that some of the wood-cuts are not less excellent than others; but this we may safely say, that the admirable character of even the least well-executed, prevents the necessity of our here examining each representation separately. That these are the most admirable wood-cuts hitherto presented to the public, can, we think, hardly admit of a doubt, except, perhaps, among those whose prejudices or associations lead them to consider the wonderful workmanship of BEWICK as still reigning

paramount in this line. In the humour and admirable tact displayed in his vignettes, we freely allow that BEWICK leaves all his competitors at a goodly distance behind him; but no competent and unprejudiced ornithologist will think of comparing the wood-cuts in BEWICK's work with those engraved by THOMPSON in Mr. YARRELL's *History*.

We have thought fit to say thus much respecting the illustrative portion of the work, because, hitherto, we have possessed no book of moderate size and price containing accurate delineations of British birds. The histories of the various species have been much better cared for, having been minutely attended to in several works which still continue to be quoted as valuable and standard authorities. It is not, however, to be supposed that, in thus paying our tribute of admiration to the talent displayed in the illustrations, we undervalue the accompanying letter-press. On the contrary, we have much reason to be pleased with the manner in which this part of the work is performed. When completed, these two volumes will, of course, contain a considerably larger number of species than any other author has been able to include;* and as it is frequently impracticable to furnish much novel matter regarding birds which have been so often described, Mr. YARRELL has judiciously collected whatever authentic detail has been published by other ornithologists, in his descriptions of species, doubtless adding any thing of interest or importance that may have fallen under his own observation.

That we take a lively interest in the progress of this work, and anticipate the publication of future numbers with pleasure, we need hardly say.

A History of British Quadrupeds. By THOMAS BELL, F.R.S., F.L.S., Prof. of Zool. in King's Coll., London. Illustrated by a wood-cut of each species, and numerous vignettes. London: John Van Voorst, Paternoster Row. Part xi. Aug. 1837.

HAVING repeatedly reviewed Mr. BELL's *Quadrupeds* in the most favourable manner, both in *The Naturalist* and elsewhere, we shall now only observe, that the work is at length completed, in one thick and handsome volume. The present part contains an index, preface, title-page, &c., and illustrates the cetaceous animals, which figure somewhat strangely in a volume entitled *British Quadrupeds;* though we ought in fairness to add, that the title, in full, is, "*A History of British Quadrupeds, including the Cetacea.*"

* In making this observation we ought perhaps to except Mr. MACGILLIVRAY's work on British birds, which, being published cotemporaneously with that of Mr. YARRELL, will probably enjoy equal advantages in this respect.

We presume it is needless to add—what every mammalogist knows—that this is by far the best work extant treating of our native quadrupeds. It is inscribed to Mr. JOHN MORGAN, F.L.S., surgeon to Guy's Hospital, "in grateful memorial of a long and uninterrupted friendship." We could wish that the plan of dedicating their labours to their brethren in the field of science were more frequently adopted by naturalists—it is a testimony of esteem equally gratifying to the bestower and the receiver.

The Entomological Magazine. Nos. xix. and xx. April and July, 1837. London: R. Clay, Bread-street-Hill.

THE current report, that the *Entomological Magazine* was likely to be discontinued, appears to have had no foundation, though we fear there are not enough scientific entomologists in this country to support a periodical similar in character to the present. A large proportion of the work is written in Latin, for what earthly purpose we really are at a loss to imagine. The leading article in No. xx., entitled "Wanderings and Ponderings of an Insect-hunter," has, in our opinion, no business in the *Entomological Magazine;* for, although sufficiently interesting, it really contains nothing bearing in any way on Entomology. That it is desirable to introduce papers of a popular nature into these works, we fully admit, but surely the study of insects might afford matter much more interesting and valuable to the majority of readers of the periodical than the Wanderings and Ponderings above alluded to.—Mr. CHRISTY'S "Notes of a Voyage to Alten, Hammerfest, &c.," form an excellent paper, and Mr. WALKER'S treatise "On the *Dryinidæ*, &c.," is carefully drawn up, and calculated to be of much use to the student, who may here also brush up his knowledge of the Latin tongue, which, mayhap, he has hitherto permitted to slumber in peace since his school-boy days.

No. xix., we may observe, opens with an excellent treatise entitled "Researches on the Insects injurious to the Vine, known to the Ancients and Moderns, and on the Means of preventing their Ravages," by Baron WALCKENAER, but, in our opinion, 46 pages ought never to be devoted in any periodical to a *translation*, whatever may be the merits of the paper.*—Both these numbers contain several valuable articles, and the journal is edited by Mr. EDWARD NEWMAN.

It is to be hoped, that we shall at least receive credit for good intentions in

* A translation of the Baron's article also appeared in an early number of TAYLOR'S *Scientific Memoirs.*

what we have said. We sincerely wish success to the *Entomological Magazine*, as to every promising periodical relating to Natural History, but the character of some of the articles admitted must be considerably altered before it can become a general favourite. It moreover wants *popularizing* a little.

Bibliothèque Universelle de Genève. Nouvelle Série. Seconde Année. No. xvii. Mai, 1837. Genève: A Cherbuliez, Rue-de-la-cité.

This is an admirable and extremely well-conducted periodical, issuing monthly, in thick 8vo. numbers, at Geneva. Its scope and objects are sufficiently varied to suit almost all tastes, and the frequent translations we have from time to time made from its pages will at once attest our approbation of that department of the magazine devoted to Natural History.

Annales des Sciences Naturelles, comprenant la Zoologie, la Botanique, l'Anatomie et la Physiologie Comparées des deux Règnes, et l'Histoire des Corps organisés fossiles. Rédigées, pour la Zoologie, par MM. Adouin et Milne Edwards, et pour la Botanique, par MM. Ad. Brongniart et Guillemin. Nov. 1836. Paris: Crochard et Cie.

France is, perhaps, the only country in the world capable of producing a work like the *Annales des Sciences Naturelles*—the only country, too, capable of appreciating such a publication, and this, to say the truth, is no slight compliment. In England, unquestionably, a periodical of similar character would not last six months. We are apt to boast of the popularity of Natural History in this country; but the circumstance of some of the best journals relating to this *very popular study* barely paying their expenses—while one still keeps afloat by the force of old associations, and the influence of the publishers—is a poor encouragement to those Editors who have toiled so hard for the general good.

Every number of the *Annales* contains a vast mass of valuable matter relative to Zoology and Botany, and the work is every way worthy its eminent conductors.

To this periodical, as well as the preceding, we have frequently resorted for the amusement and instruction of our readers.

SOME ACCOUNT OF PROFESSOR BLUMENBACH.

THE following particulars relative to the great *lion* of Göttingen, are extracted from a communication in the *Medical Gazette*, and will, doubtless, prove interesting to our readers :—

The great lion of this university (Göttingen) is BLUMENBACH, Professor of Natural History, by whom I was most graciously received, though without any formal introduction : yet I have heard he is not always so courteous. He speaks English fluently,—in fact he is the only professor who appeared to have any knowledge of the language, which surprised me much, considering the intimate connection that exists between Hanover and our own country. The venerable Professor, though he has reached his eighty-second year, still retains all his faculties perfect. He spoke of the kindness of GEORGE III. during his visit to England, forty years since, at which period he also went to Oxford. One of his apartments is fitted up as a museum; it is by no means large, but contains rather an odd medley of preparations, and a numerous collection of skulls of negro tribes, as well as specimens explanatory of Comparative Anatomy. He called my attention more particularly to a tattooed head of a New Zealand chief, which was presented to him by the Duke of NORTHUMBERLAND, and on which he appeared to set a very high value.

His lecture commences every day, except Saturday, at three; his class did not exceed forty. He stoops considerably, usually wore a shaggy great coat, with a small green velvet cap on his head, his hair hanging in long silvery locks. He was particularly fond of laughing at his own jokes and anecdotes, which he mentioned during his lecture, sometimes raising his voice to a stentorian pitch, whilst at others it could scarcely be heard. He could read his notes without the assistance of spectacles, and often explained his subject in terms not quite adapted to "ears polite;" expressing his astonishment or admiration at the wonders of Nature in no measured language—making use of a phrase which, though of very unusual occurrence among us, still is very common among the Germans,—that of "HERR JESUS," which is, however, only an expletive, and occupies the place of *mon dieu* of the French. He exemplified his subject with preparations either dried or in spirits, as well as by plates or drawings; some of which, from their age and roughness, were very curious.

A specimen he valued much, and which he prized above all others, was the fœtus of a Bear in spirits, which is very rarely seen; and it was certainly a most misshapen object of very diminutive size; it was quite, as the old Professor expressed it, an "unlicked cub." Another rather interesting specimen was a young Porcupine in spirits, before the quills had commenced growing; in which

he pointed out, on the outer side of the scapula, the two mammæ. An Ostrich's egg, arrived at the full period of incubation, was also curious, where the young bird had half escaped from its shell: it was of large size, and its neck of very considerable length. He always appeared particularly delighted in mentioning any anecdote connected with occurrences or incidents he had met with in England; thus he used to speak of the size and value of the Horses employed in the breweries of London, as well as those bred for the turf, or chase, in terms which no doubt excited the surprise, and perhaps even the unbelief, of many of his hearers.

On the subject of the Turtle, he gave some account of its excellencies with respect to the table, saying that when he was in England he had seen whole courses served up in various forms and dishes, adding, at the same time, that the dessert consisted entirely of Turtle, casting an apparently longing eye on the shell before him, as if he still remembered the bygone repast!!

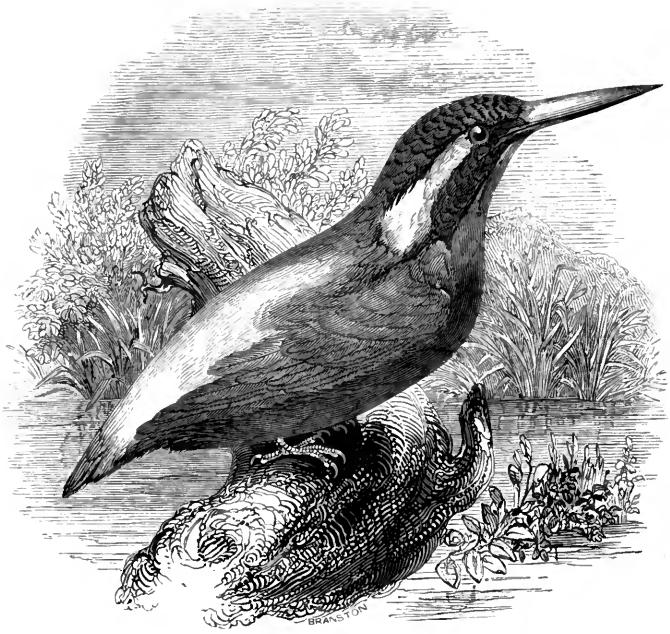
On the subject of Cocks, he gave an account of their fighting in England, exhibiting to his class a pair of steel spurs, as used by them in their battles. Of the Flamingo* he had never seen a single specimen, though at one of the museums at Oxford he was shown a dried leg and foot.

Blumenbach's lectures were by far the most interesting of any I attended at Göttingen. He exhibited, one day, a machine for hatching eggs, which he had frequently used, and which only required the heat of a spirit-lamp, and constant attention to keep all in order.

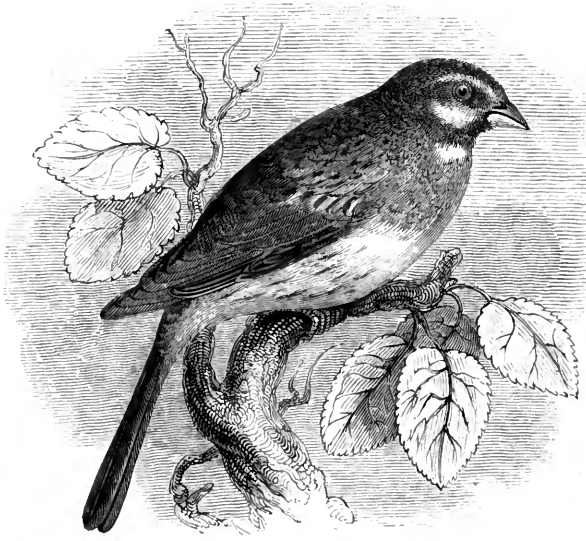
OBITUARY.

Mr. Joseph Standish, one of our oldest and most successful collectors of *Lepidoptera*, lately died at Camberwell, in the eighty-fourth year of his age. He was formerly in business as a stationer, and resided under the Royal Exchange, but had for many years been living independent of trade. He was a close observer of the economy of *Lepidoptera;* he made an immense number of drawings of larvæ in all their stages, and these, as well as others of the perfect insect, were executed with much fidelity and beauty.—*Entomological Magazine, July*, 1837. [We believe Mr. Standish coloured a considerable portion of the illustrations in Hewitson's *British Oology*.—Ed. *Nat.*]

* The *Dodo*, and not the *Flamingo*, is here alluded to.—Ed. *Nat.*



COMMON KING-FISHER.



CIRL BUNTING.

THE NATURALIST.

NOTES ON THE NATURAL HISTORY OF NORTH AMERICA.*

By Edward Doubleday, C.M.E.S.

During the few last days of our passage (across the Atlantic) we saw great numbers of Porpoises. One night, when the sea was very luminous, we had scores of them close to the ship, and, as they shot through the water, they left a line of fire of a pure white colour; we also saw scores of small cetaceous fish, from ten to sixteen feet in length. On the evening of the 24th of April we had a pilot come on board; since the loss of the *Mexico*, these men are much better behaved, and come out forty miles from New York: soon after dark we saw the lighthouses at the entrance of the outer bay.

The persons we met with at our hotel at New York gave me a good opinion of the Americans: they were very civil, and communicative, but *not inquisitive*. From all to whom we had letters, we have received the greatest kindness. A gentleman, to whom we had an introduction, accompanied us to the custom-house, and all our luggage was passed without examination, or even uncording the boxes. We called on two brothers of the name of Carey, Englishmen, botanists, and very kind persons; they knew W. Christy, Newman, and most of our club;† we dined with them on the 30th. We went to the Lyceum of Natural History. They have here a good many minerals, some very fine fossils; not many birds, but some beautifully stuffed by Ward, who resides here; also a library. On the 1st of May we attended a meeting at the Lyceum; there was not much to interest: a paper on a new *Arvicola*, and a new *Sorex*: Cooper, who helped Bonaparte, was there, and several other members; all very pleasant people.

My first journey was on the 27th, to the residence of J. S., directly after breakfast. I crossed the ferry to Jersey city, where the rail-road to New Brunswick commences. The first part of this is unfinished, and too uneven to allow the passage of locomotives; we were therefore drawn by two horses at length; the tram is so near the cut made for the permanent road, that I consider it anything but safe. In some places there is an intervening space of not more than six inches between the tram and the edge of a precipice, cut perpendicular through the rock, thirty or forty feet deep, and not a morsel of fence to prevent

* See *Entomological Magazine*, Vol. IV., p. 487.

† The Entomological Club.—Ed.

the carriage going over: at Newark we exchanged for locomotives, and soon got to Rahway, about ten miles further. Newark, Elizabethtown, and Rahway are all places of considerable trade in coals, and there are some manufactories in the latter: all these are rather irregularly built; the houses are mostly of wood. The country around is salt marsh, with some good pasture land; in places scattered about are large rocks, almost rising into considerable hills. *Veratrum nigrum* grows in plenty among the rocks. The climate was more like our March than the end of April. I saw few birds, and fewer insects.

We are now staying at the house of a friend, about two miles east of the city of Hudson: it is a most beautiful place, but how to describe it I know not. In looking from the window where I am now writing, the first object that attracts my notice is the gigantic range of the Catskill mountains, distant eighteen miles, with their summits still covered with snow. The Hudson lies below, invisible from the house, and a gently rolling country extends from its shore. The tops of the hills are covered with Pine, Hickory, Oak, and other trees; and here and there is seen the genteel house of some opulent farmer, or the humbler dwelling of him who has to depend on his own industry. Meadows not yet verdant, and arable land, fill up the space to the little river (Americè *creek*), which runs at the bottom of a steep orchard, belonging to the premises. The fruit trees are alive with birds. The day before yesterday I saw the first Blue-bird (*Sialia Wilsonii*.—Ed.); as he glanced between the trees in the sun, nothing could be more beautiful. A pair of these birds are now building in a hole in an old Apple-tree. They go and pull off Moss, and, returning with it, hang a moment at the mouth of the hole before they enter. Sometimes they hover over the ground, and pick up an insect; but seem mostly to find their food on the trees. They are as tame as possible: their nest is not twenty yards from the window at which I am writing. Just now a pair of Baltimores were sitting on an Apple-tree, close to the corner of the house; I went out and got right under them, and had a good view of them.

Yesterday, whilst pinning Beetles, I saw some birds in a tree, by the side of the creek; I took R. Foster's* telescope, and found them to be Golden-winged Woodpeckers, apparently two males and a female; the males were twisting their heads, erecting their feathers on their crowns, and spreading their tails in a most odd manner. I used to think our English Green Woodpecker put itself into the oddest attitudes at such times; but 'tis nothing to the Golden-winged. At last the two males had a furious battle; after which one flew away, followed by the female, and the other remained behind. Just after this an Osprey passed like lightning along the creek, and perched on a large white Oak, close by.

* Mr. Doubleday's companion.—Ed.

This morning, May the 6th, I heard a great screaming and scolding noise in the garden, and some of the oddest noises that bird ever made. I went to try to make it out, and found it was a *Pipra polyglotta* of Wilson, *Icteria viridis* of Bonaparte. But of all noises I ever heard made by birds I must confess that of the Blue Jays to be the worst; there are a good many round about here, but I have only seen one, which came into the garden to-day. The mewing of the Cat-bird (*Orpheus felivox.*—Ed.) I also heard to-day, for the first time: a pair of them allowed me to get within ten yards; the birds here are all as tame as possible. The beautiful little summer yellow birds (*Sylvia citrinella*) are very numerous, and come so close that you can see the colour of every feather. There are also plenty of Flycatchers, and several Sparrows, which I cannot yet make out: one has a note like a Yellow Hammer; another, with a very pleasing note, I at first took to be a *Sylvia*, but have since made it out to be *Fringilla melodia*. There are also Wrens and Blackheaded Tits in plenty; the note of the last is nearly like that of our Blue-headed Tit. The day before yesterday, walking from Hudson, I saw three Meadow Larks at play in the air; they alighted on a tree just by, and then crossed the road with their wings about two thirds expanded, and scarcely moving: they passed so near that I could see every mark on their breasts. Of Crows there are plenty, in flight and note as different as can be from ours; no one need mistake *them*. Not so the Swallows, between which and our own in flight and note I cannot discover any difference. Besides plenty of Swallows, there are to-day a great many Swifts, here called Chimney Swallows (*Cypselus pelasgia*); and one, if not two, species of *Hirundo*, which I cannot make out. The first Woodpecker I have seen in the garden came to-day; he staid so short a time that I could not make him out. A pair of *Turdus rufus* seem to have a nest somewhere near; they are as tame as the poultry. I have seen one or two Grackles, and a bird which I take to be Wilson's *Alauda rufa*, Bonaparte's *Anthus spinoletta*; also a Sandpiper, a Partridge, *Tetrao umbellus*, some wild Ducks, and one Hawk I could not make out.

I find that there are in this neighbourhood Grey and Red Squirrels, Ground Squirrels, Musk Rats, &c.; but as yet I have only seen one Ground Squirrel. We walked yesterday to a hill covered with Fir, *Arbor-vitæ*, Cedar, Cypress, &c.; here we found two Box Tortoises, those which close their shells; and saw the *Tetrao umbellus*. Among the clefts of the rocks the little Hepaticas were flowering more beautifully than I have ever seen them in England; they are bright blue, pale blue, and white; I have seen no pink ones. *Aquilegia Canadensis* was also in plenty, just coming into flower. The sides of the creek and the meadows are yellow for yards together with the yellow Dog's-tooth Violet, and in other places white with the beautiful *Sanguinaria Canadensis*.

We had much thunder yesterday, which continued most of the night; such thunder and lightning I never witnessed: the lightning was rose-coloured. The rain has caused the woods to put on rather a greener hue; but, save the Willows, not a leaf of any deciduous tree is out; one or two Cherry blossoms, and a Peach blossom, are nearly out, and the Apple-trees are budding a little. Besides the plants I have mentioned, I have only seen a *Viola*, an *Anemone*, and a *Saxifraga*, which I do not know; also a *Gnaphalium* and a *Taraxacum*. The Sallows are in bloom partially, and yesterday I saw some Vireos* (*V. olivaceus*, I think) catching Flies off them. The wild Vines in the woods have stems as large as my arm.

Of insects few are out yet: of *Lepidoptera* none, save *Antiopa;* another *Vanessa*, resembling *Urticæ*, which I could not catch; we found also one crushed specimen of *Arctia fuliginosa;* one *Noctua*, and two or three *Tineæ*. Of *Coleoptera* we have taken many; *Cicindela*, two species; *Carabus*, 1; *Brachinus* 1; *Lebia* 1; *Cymindis*, 1; *Chlœnius*, several; *Pœcilus*, 1; *Harpalus*, several; *Anchomenus*, *Agonum*, and *Bembidium*, several; and one beautiful thing allied to *Carabus*. I have also a *Byrrhus;* one or two *Aphodii;* three or four *Melolonthæ;* several *Elateres*, one allied to *E. hæmorrhoidalis*, by dozens; *Nitidula*, one species; *Meligethes*, 1; *Altica*, several; and among these are several large and beautiful species, one the form of *A. nemorum*, but much larger; it has a red thorax, and black elytra; each elytron having a white longitudinal line. The most extraordinary Coleopterous insect I have seen is a thing somewhat like *Sepidium*, but shorter; it is heteromerous, covered with tubercles, and the male has two horns on the thorax; it is rather longer than our biggest *Trox*, which it a little resembles; I found one male and two females of this insect on a Fungus. I have also got a most beautiful *Chrysomela*, as large as *C. polita*, of a pale cream-colour with a green suture, and several green lituræ on the elytra; the thorax is also green. I have likewise taken a *Thanasimus*, an *Onthophagus*, a beautiful creature allied to *Ips*, and many others; but as they are still in their winter-quarters, it requires good hunting to find them. The old rotten stump swarms with Ants, some species an inch long; also a small species of white Ant (*Termes*); these are at present in the pupa state. The *Bombi*, *Andrenæ*, and *Osmiæ* are just coming out. I have taken a very beautiful *Abia* or *Zaræa*, with clouded wings; a species of *Dosytheus*, just like *D. Junci*, is abundant.

I noticed another bird this morning, a *Sylvia striata;* it has been running up and down the stem of a Cherry-tree, about eight feet from the window, like a

* We believe SWAINSON terms these birds "Greenlets."—ED.

Creeper; there are a great many Robins* about. Returning from Hudson to-day, I saw two large round-winged Hawks, as big as Buzzards, and having the same cry; they were soaring very high, and in circles. I also saw another male Baltimore; these and the Blue-birds appear much brighter living than dead. I go on to Utica to-morrow, for a few days.

Hudson, May 7, 1837.

ON THE VITAL MOTIONS OF THE FLUIDS OF PLANTS.

By Edwin Lankester, M.R.C.S.

As the question of the cause of the absorption and progression of sap in plants has lately occupied the attention of some of your correspondents, perhaps you will allow me to make a few remarks on the same subject. The cause of the motions of the sap has long beeen a *vexata questio* amongst botanists, and many and varied have been the theories attempting to account for it. Much of the perplexity attendant on this subject arises from our ignorance of the minute structure and intimate nature of those parts of the plant that convey the fluids to the different parts of its system; and therefore, perhaps, in the present state of our knowledge on these points we must expect that every theory offering an explanation of these phenomena will be more or less chimerical. In considering this subject, also, it is much easier to demolish a theory than to substitute a better in its place. However, as the subject is one on which at present few botanists entertain the same opinion, the following observations may not be altogether uninteresting.

Many of the speculations with regard to the ascent of the sap have depended on the ideas entertained by the botanist on the nature of the vegetable tissues in which this takes place. Some have supposed that the sap ascended in straight uninterrupted tubes, and this was one reason for concluding that the sap ascended as in capillary tubes. There is, however, no proof of the existence of such tubes, or that the sap ascends in a continuous vertical direction at all. The principal forms of vegetable tissue in which sap ascends are ducts (which appear to conduct either air or sap, according to circumstances), vasiform tissue, cellular tissue, and woody fibre. None of these forms of tissue are tubes continued from one end of the plant to the other; it is, therefore, impossible that the sap should be affected in the same manner as fluids in continued tubes.

Four distinct kinds of motion have been observed to take place in these tissues. First, the general ascent of the sap, which is constantly going on to a

* We presume *Turdus migratorius* is the species here alluded to by Mr. Doubleday.—Ed.

greater or less extent. The relative changes this fluid undergoes during different seasons, and under varying atmospheric influence, have been made the subject of an ingenious series of experiments by Biot.* During the spring and summer, when the leaves are expanding, and performing their functions of exhalation, respiration, digestion, and formation of the fibres of the wood, the quantity of sap ascending is very great; but in the winter only enough sap seems to ascend to maintain the vitality of the plant.

The general tendency of this motion of the sap is undoubtedly upwards, but it does not appear to be necessary to suppose that the particles of the fluid move directly upwards, or that they do not pursue a retrograde course before they reach their destination. If the phenomena of intercellular rotation were considered a part of the general motion of the fluids of the plant, it would strengthen this supposition.

A second motion is that of intercellular rotation, and is seen in the cells of *Chara*, *Nitella*, and other plants, and probably exists in the cellular tissue of all other plants. It has been supposed, that the fluid seen moving in these cells was confined to them, but from the resemblance of this motion to the general circulation observed in polypiferous animals, and from the structure of *Chara*, &c., not differing from other plants, it seems most consistent with analogy to refer this "rotation", as it is termed, of the sap to the general movement of that fluid in plants. In fact it does not appear that the fluid in the cell rotates, but that minute globules in the cell are seen to ascend and descend in a rotatory manner. Whatever may be the extent of this intercellular rotation, its cause is very obscure. There is, however, one point connected with it to which I would allude here. It is the resemblance between this motion and those observed in the lower tribes of animals—the *Polypifera* and *Poriphera*. In these animals a similar motion of the fluids has been observed, and the resemblance between these motions and those produced by the ciliæ which have been lately observed to exist in many of the canals conveying fluids in animal bodies, has led some comparative anatomists to attribute them to the same cause.† The question I would propose, is—Can the motion in the cells of plants be referred to the action of minute invisible ciliæ?

A third kind of motion has been described by Schultz, as taking place in a peculiar kind of vessel which he calls "vital vessels" or "ducts of the latex." Dr. Lindley thinks these vessels are nothing more than intercellular passages, and probably the fluid seen passing through them is only a part of the general motion of the fluids of the plant.

* His apparatus is described in Henslow's *Physiological Botany*.

† For all that is at present known on this subject, see an elaborate article on "Ciliæ," by Professor Sharpey, in the *Cyclopædia of Anatomy*, &c.

The descent of the proper juice of the plant is also another motion of these fluids which is constantly going on, and by which the peculiar secretions of plants are deposited in their various organs.

These, then, are the motions of the fluids of plants that so many theories have been furnished to explain; and looking at their variety we can hardly suppose that the operation of mere physical causes is capable of explaining them. Yet many physical theories have been adopted by eminent botanists.

Capillary attraction was one of the earliest opinions entertained as the cause of these motions. There are, however, many objections in the way of this theory. First, plants do not absorb moisture after vitality is extinct, which ought to be the case if its absorption depended on molecular affinities. Secondly, trees would be filled with the greatest quantity of sap during the winter, when no evaporation takes place, which is not the case. Thirdly, heat does not promote the flow of sap, as may be seen by dipping a branch of Spurge flowing with sap into hot water. The flow of sap in the spring of the year, arises from the expansion of the leaf-buds, and not from the accession of heat. Fourthly, the cause of the descent of the sap would be left quite unexplained by the theory of capillary attraction.

Amongst other physical theories, the following may be mentioned:—Malpighi supposed that it depended on the contraction and dilatation of the air enclosed in the air-vessels. Borelli attributed it to the condensation and rarefaction of the air and fluids of the plant. Du Hamel, who was supported by Linnæus, accounted for it by the agency of heat. Hales demonstrated the insufficiency of this principle in accounting for the phenomena of the progression of the sap, but did not adopt a theory less objectionable, having embraced the same views as Malpighi. Du Petit Thouars attributes the ascent of the sap to the expansion of the leaves in spring, but this is not referring the phenomenon to a distinct principle. If the motion given to the sap by the commencement of the function of the leaf be really the origin of this motion, it would appear to depend upon atmospheric pressure, fresh particles of sap rising to fill the place of the particles consumed by the requirements of the leaf.

Other physiologists have explained the motions of the sap by referring them to vital actions. Brugmanns, Coulon, Saussure, and De Candolle adopted the theory of vegetable irritability. The vessels in which the sap was contained were supposed to be susceptible of the action of stimuli, and the contact of the sap with the tissues of the plant was considered to act as a stimulus, and to produce a contraction and dilatation of the vessels by which the sap was propelled.

Knight adopted the theory of contraction and dilatation, but he supposed this phenomenon took place not in the sap-vessels but in the silver grain or medullary

rays of the wood, by which the whole of the tissues of the plant were successively contracted and dilated during the periods of night and day.

Grew gave a compound theory, and ascribed the motion of the sap to its volatility and magnetic tendency, aided by fermentation.

But the most recent and generally-received theory is that which explains the motion of the vegetable fluids by electrical action. Amici long since attributed the intercellular motion of the sap in *Chara* to electricity, but it was left for Dutrochet to develop a theory of its action. The construction of his endosmometer, the effects produced by it, and the application of his theory to this department of science, are so well known, that I need not detail them here. I shall, therefore, only offer some objections which may be urged against it. First, there is not a strict analogy between the animal or vegetable membrane and the tubes used in the endosmometer of Dutrochet, and the spongioles and fibres of the root and trunk of a tree. Again, is it a fact that the fluid existing in the tree is denser than the external fluid surrounding the spongioles of the roots? This is a point necessary to be determined before we can subscribe to the above theory. In the next place, I am not aware that, in any instance, the application of the most delicate galvanometers has detected in the processes of exosmose or endosmose the slightest indication of a galvanic current. Lastly, if this principle is admitted as a sufficient cause for the ascent of the sap, it cannot be applied to the descent and appropriation of the proper juices of the plant, as a contrary phenomenon takes places in this case to that observed in endosmose.

From the imperfect sketch I have attempted to give, it will be perceived that the subject of the vital motions of plants is one of considerable interest, and that it has received the attention of the most eminent botanists. There are many points connected with it, at present unexplained, which require for their elucidation an accumulation of well-observed facts. On this subject, as well as many others, there is too much to justify the observation of De Candolle, that "*les idées théoriques sur la structure générale des végetaux, ont plus influence que l'observation directe, sur les idées qu'on s'est faites de l'usage des vaisseaux.*" —[Theoretical views on the general structure of plants have more influence than actual observation, upon the opinions regarding the use of vessels.—Ed.]

Campsall, near Doncaster,

Oct. 1, 1837.

THE VALLEY OF KNILL.

By James Edward Davis.

"Stranger, if Nature charm thee, if thou lov'st
To trace her awful steps, in glade or glen,
Or under covert of the rocking wood,
That sways it's murmuring and mossy boughs
Above thy head; now when the wind at times
Stirs its deep silence round thee, and the shower
Falls on the sighing foliage; hail her here
In these her haunts." Bowles.

It is a no less true than trite remark, that we seek for fine scenery, and the beauties of Nature, amid the recesses of the Alps, or on the banks of the Rhine, and leave the charms of our own country to be discovered and enjoyed by foreigners. We certainly collect crystals from the cliffs of Snowdon, and pebbles from the coast of Scotland, but we do little more; we visit a few places pointed out by a guide-book, but we do not investigate and discover beauties for ourselves; the consequence is, that a large portion of British scenery remains comparatively unknown; and I now write to call the attention of the readers of *The Naturalist* to a spot which is well worthy the trouble of visiting.

The Valley of Knill lies between the towns of Presteign and New Radnor, on the road from Worcester and Birmingham to Aberystwith.

The first impression on the traveller would probably be a sentiment of wonder, that such scenery could have so long remained unknown and unnoticed. The hills which surround this valley, although of moderate elevation, are of so picturesque shapes, and harmonize in such a manner with each other, as to furnish a variety of landscapes each worthy the pencil of a Claude, especially if viewed on a summer evening, when the rocks cast a broad shadow over the more hidden recesses of the Valley, while the summits of the hills are clothed in joyful sunshine, long after night has closed on the inhabitants of the vale below.

The valley is irrigated by the river Somergil, the noisy turbulence of whose rapid waters is drowned amid the various operations of the men employed at the kilns, which supply a large portion of the Radnorshire agriculturists with lime. The monotonous din of the iron instruments employed in raising portions of the rock, is broken every now and then by the startling and terrific sound of an explosion, by which some giant mass of limestone has been raised from its slumbers of past ages.

Even the cottages and farm-houses are, generally speaking, far from being destitute of beauty, and have a picturesque effect which in these days few places can boast of.

Knill Court, the residence of Sir JOHN WALSHAM, Bart., one of the Assistant Poor Law Commissioners, is built in the Elizabethan style of architecture. It is beautifully situated close to the banks of the Somergil, and is, alone, well worthy of the traveller's attention.

But this lovely Valley has other charms and attractions than those of the landscape. To the geologist there is an unbounded field for exertion, for the formations are not only various and interesting, but have been but slightly investigated. The northern side of the valley is chiefly composed of the Caradoc sandstone, which, having been forced upwards, has thrown the Dudley and Wenlock Limestone and Shale on either side.

The hills on the south are the Upper Ludlow Rock, and on the west, at Stanner Rocks, the green-stone porphyry obtrudes itself. In this volcanic rock appears the source of disturbance of the formations, not alone of this valley but probably of a large extent of surrounding country, where violent action has evidently occurred. The organic remains in the Limestone and Caradoc sandstone are extremely beautiful.

The botanist must not think himself treated uncourteously if he is referred to the "Devil's Flower-garden"! a spot situated among the rocks at Stanner, where, it is said, are some rare and beautiful plants; but the path which leads to this place is so difficult to find, and when found is so hazardous to traverse, that few have felt inclined to visit it. This difficulty of access was the probable origin of the name.

The antiquarian will find an ancient encampment at Berva. This was probably one of those numerous fortifications which were situated on Claud Offa, or OFFA's Dyke, which may be traced along the summits of the hills.*

* "The celebrated earthen rampart which OFFA raised as a line of partition and defence between the kingdom of Mercia and the dominions of the Welsh princes.† The general course of this stupendous but useless work is tolerably ascertained, but its original commencement at neither end has yet been discovered. Mr. PENNANT has carefully explored what vestiges of it are visible in North Wales. In Radnorshire it is first seen near Knighton, whence it takes nearly a southern direction, and is easily traced through the parishes of Norton, Whitton, and Discoed, near Beggar's Bush. Here it inclines to the south-east, and enters Herefordshire at the village of Knill. Berva's

† "OFFA, when he saw his country go to wrack,
From bick'ring with his folk, to keep the Britons back,
Cast up that mighty mound of eighty miles in length,
Athwart from sea to sea, which of the Mercian strength
A witness though it stand, and OFFA's name does bear,
Our courage was the cause why first he put it there:
As that most dreadful day at Gavelford can tell,
Where under either's sword so many thousands fell,
With intermixed blood, that neither knew their own;
Nor which went victor thence, until this day is known."—DRAYTON.

This neighbourhood was the scene of fierce engagements between the Romans and the British, during the time of CARACTACUS, and indeed subsequently throughout the long contentions between the Welch and English.

But by far the most interesting circumstance connected with this valley remains yet to be told. Knill Church, whose spire appearing above the group of trees which surround it adds greatly to the effect of the landscape, possesses in its outward appearance little or nothing to distinguish it from other churches situated in equally remote and secluded districts; but humble as is its external character, within its holy precincts lie the remains of the immortal Sir SAMUEL ROMILLY.

* * * * * * * * * *

It must indeed have been a mournful sight to have seen this great man carried to the vault in which, but a few hours previously, the remains of Lady ROMILLY had been deposited. The time of year (November) must have added not a little to the melancholy of so distressing a scene.

On a plain marble slab, at the east end of the church, is the following inscription:—

Sir SAMUEL ROMILLY, Knight,
One of his Majesty's counsel,
And Solicitor General in 1806 and 1807,
Born March 1, 1757,
Died November 2, 1818.

Also ANN, Lady ROMILLY, his Wife
Eldest daughter of
FRANCIS GARBETT, of Knill Court, Esquire,
Born November 20, 1774,
Died October 29, 1818.

In conclusion: If this slight sketch should have the effect of inducing any reader of *The Naturalist* to visit this lovely spot, the writer of the preceding pages will at all times be happy to act as his guide.

Presteign, Feb. 10, 1837.

[We shall always be glad to hear from Mr. DAVIS, and trust he will become a frequent contributor to the pages of *The Naturalist*.—ED.]

Bank, a steep hill on the borders of the county near this place, is almost surrounded by the dyke, which is extremely deep, and about fifty feet in width. On this hill are some other entrenchments, which warrant the inference that it formed one of the strong posts by which this rampart was defended."—*Beauties of England and Wales*, Vol. xviii.

CATALOGUE OF COLEOPTEROUS INSECTS FOUND IN DORSETSHIRE.

With Notes, Observations, &c.

By James Charles Dale, Esq., A. M., F. L. S.

Order III. COLEOPTERA.

Genus x. Cicindela.—Species 1. *sylvatica*, L. Poole and Parley Heaths, dry sandy paths.—4. *maritima*, Dej. Poole, Mr. Millard; sandhills on the Studland coast.—5. *campestris*, L. Glanville's Wootton, though very rarely; common at Parley.—6. *Germanica*, L. Charmouth, in plenty in wet reedy places.

Genus xi. Cychrus.—1. *rostratus*, L. Parley Heath; rare in Dorsetshire.

xii. Carabus.—*purpurascens*. Near Weymouth, 1833, Mr. Saunders.—2. *catenulatus*, F. Portland, Knighton and Parley Heaths.—4. *monilis*, F. Glanville's Wootton, Lulworth, and Parley and Knighton Heaths.—7. *granulatus*, L. Glan. Woott., Stinstford, Parley, &c.—8. *arvensis*, F. Knighton, and Parley and Poole Heaths.—9. *violaceus*, L. G. W., &c.—9^{b}. *exasperatus*. Portland, Mr. Curtis; Stourton Caundle.—9^{c}. *purpurascens*. Very rare.—12. *nemoralis*, Ill. G. W., Parley, &c.—15. *nitens*, L. Bere, Wareham, Poole and Parley Heaths; on black peaty bogs.

xv. Helobia.—1. *brevicollis*, F. G. W., &c.—1^{b}. *Portlandica*, Dale. Very similar, but the thorax is much narrower, resembling *H. Marshallana*.

xvii. Leistus.—*spinibarbis*. G. W., Portland, &c.—2. *fulvibarbis*. G. W., rare.—4. *spinilabris*, Panz. G. W., &c.

xviii. Loricera.—*pilicornis*, F. G. W., Portland.

xx. Brachinus.—1. *crepitans*, L. Sherborne, Portland, Purbeck.—2. *explodens*, Dej. Isles of Portland, Purbeck, Charmouth, &c.

xxi. Drypta.—1. *emarginata*, F. Charmouth, Sept. 1833, Mr. Walker.

xxiv. Tarus.—4. *homagricus*, Dej. Portland, Sept. 22, 1833, Mr. Walker, but not since.

xxvi. Lamprias.—3. *chlorocephalus*, Ill. G. W., Hodd Hill, Sherborne, Stourton Caundle.

xxvii. Demetrias.—2. *atricapillus*, L. G. W., Portland.

xxviii. Dromius.—1. *linearis*, Ol. G. W., Portland.—2. *agilis*, F. G. W.—3. 4-*maculatus*, L. G. W., Portland, Cranborne Chace.—4. 4-*notatus*, Panz. G. W., Stourton Caundle,—5. *melanocephalus*, Dej. G. W., Portland, Parley.—7. *fasciatus*, Pk. Lulworth Cove, 1832.—9. *spilotus*. G. W., only one, Sept. 24, 1821.—11. *glabriatus*, Dej. Charmouth.—

13. *foveolus*, Gyl. G. W., Portland.—15. *maurus*, Stu. Portland, Charmouth.—16. *truncatellus*, L. G. W.

xxxi. Clivina.—1. *fossor*, L. G. W., &c.

xxxii. Dyschirius.—2. *nitidus*, Dej., or 3. *politus*, Dej. Portland.—5. *arenosus*. Between Poole and Bourne Mouth.—9. *thoracicus*, Pk. Portland.—11. *gibbus*, F. G. W. and Middlemarsh Woods.

xxxiv. Stomis.—*pumicatus*, Clv. G. W., Sturminster, Newton, &c.

xxxv. Broscus.—2. *cephalotes*, L. Parley Heath, Portland, sandhills.

xxxvi. Steropus.—1. *madidus*, F. G. W., Portland, &c.

xxxvii. Omaseus.—5. *nigrita*, F. G. W.—7. *melanarius*, Ill. G. W.

xxxviii. Platysma.—1. *nigra*, F. Parley Heath, Lulworth.

xxxix. Abax.—1. *striola*, F. G. W., Portland, Swanage.

xl. Pterostichus.—1. *macer*, Mar. Near Sherborne, Mr. Beverley Morris; Isle of Purbeck, in plenty, Mr. Serrell.

xli. Patrobus.—1. *rufipes*, F. G. W., rare. A small variety.

xlii. Pogonus.—2. *littoralis*, Stu. Parley Heath, very rare.—3. *chalceus*, Mar. Portland, Purbeck, &c., on the coast.

xliii. Ophonus.—2. *obscurus*, F. Portland, Weymouth.—3. *sabulicola*, F. Portland.—5. *azureus*, Ill. Portland.—6. *nitidulus*, Sch. Portland.—9. *puncticollis*, Pk. Portland.—12. *cribellum*, St. Portland.—14. *pubescens*, Pk. Portland, Lulworth, Swanage.

xliv. Harpalus.—1. *ruficornis*, L. G. W., Portland·—2. *binotatus*, F. Parley.—6. *æneus*, F. G. W.—7. *pumilus*, Stu. Chesil bank, Portland.—8. *vernalis*, Duf. Chesil bank, or Isthmus of Portland.—15. *rufimarginatus*, Wilk. Chesil bank.—17. *annulicornis*, K. Portland and Parley.—23. *atrocæruleus*, K. Parley, Lulworth.—25. *limbatus*, Duf. Parley.—29. *fulvipes*, Stu. Portland, Lulworth.—33. *rubripes*, Gyl. Portland, Parley.—35. *thorathicus*, Leach. Portland.—35^{b}. *melampus*, Duf. Portland, near Pensylvania Castle.—39. *anxius*, Duf. Portland.—39. *piger*, Duf. Portland.—40. *nigripes*, Stu. Portland and Parley.—44. *rufimanus*, Mar. Portland.—48. *Portlandica*, Dale. Chesil bank, July 13, 1831, and Mr. Streatfield.

xlv. Zabrus.—1. *gibbus*, F. Portland, West Stafford, Parley, and Lulworth.

xlvi. Masoreus.—1. *laxatus*, Dej. Portland, Mr. Curtis and Professor Henslow; near Weymouth, Mr. Saunders.

xlvii. Curtonotus.—1. *aulicus*, Ill. G. W., Portland.—2. *convexiusculus*, Mar. G. W., Portland.

xlviiii. Bradytus.—2. *apricarius*, F. G. W., &c.—2. *ferrugineus*, L. Parley.

xlix. AMARA.—1. *curynota*, ILL. Parley.—4. *vulgaris*, L. G. W., Portland.—6. *trivialis*, GYL. Parley.—8. *lævis*, STU., or *nitida ?*, STU. G. W., Parley. See the "Notes on the *Amaræ*, by PETER RYLANDS, Esq." —19. *communis*, F. Portland.—22. *erythropa*, ST. Parley.—26. *tibialis*, PK. Parley.—27. *infima*, DUF. G. W.

l. OÖDES.—1. *helopioides*, F. Parley.

li. PŒCILUS.—2. *dimidiatus*, F. Parley Heath.—3. *cupreus*, L. G. W., Portland, &c. &c.—4. *versicolor ?*, STU. G. W.

liii. CALATHUS.—1b. *angustatus*, DALE. Parley, 1823.—2. *cisteloides*, ILL. Portland, Parley.—3. *flavipes*, PK. Parley, Portland.—4. *fuscus*, F. Portland.—5. *rufangulus*, MAR. Portland.—6. *mollis*, MAR. Portland. —7. *melanocephalus*, L. Portland, Parley.

liv. PLATYDERUS.—1. *ruficollis*, MAR. Portland; Charmouth, Mr. MORRIS.

lv. ARGUTOR.—3. *strenuus*. ILL.—4. *erythropus*, MAR. G. W.—6. *interstinctus*, STU. G. W., West Stafford.—8. *inæqualis*, MAR.—9. *vernalis*, F. G. W.

lvi. SYNUCHUS.—1. *vivalis*, IL. Portland, Lulworth, West Stafford, Cranborne Chace.

lvii ODONTONYX.—1. *rotundatus*, PK. Portland.

lviii. AGONUM.—1. *marginatum*, L. G. W., &c.—4. *parumpunctatum*, F. G. W.—6. *viduum*, IL. G. W.—7. *emarginatum*, GYL. West Stafford, on the bark of the Willow.—9. *mœstum*, STU.—16. *piceum*, L.—17. *Simpsoni*, SP. Parley Heath.—18. *pullum*, HOF. Sherborne, Mr. B. MORRIS.

lx. PRISTONYCHUS.—1. *subcyaneus*, IL. Blandford.

lxi. PLATYNUS.—1. *angusticollis*, F.

lxii. ANCHOMENUS.—2. *albipes*, IL. G. W., Portland.—3. *prasinus*, F. G. W., Portland.

lxv. CHLÆNIUS.—3. *vestitus*. Portland, Charmouth.—6. *nigricornis*, F. G. W. and Holnest.

lxvi. LICINUS.—1. *silphoides*, F. Portland; and Messrs. CURTIS and SERRELL.—3. *depressus*. Cranborne Chace; and Mr. STREATFIELD.

lxvii. BADISTER.—2. *bipustulatus*, F. G. W., Portland, Swanage.—2b. *microcephalus*, ST. Cranborne Chace, and Knowle Hill.

lxviii. STENOLOPHUS.—1. *vaporariorum*, F. Parley Heath, found dead.

lxix. TRIMORPHUS.—1. *sodalis*, STU. G. W.; Charmouth, Mr. MORRIS.

lxx. TRECHUS.—*meridianus*. G. W., Weymouth.—3. *minutus*. G. W., Portland, Parley.—5. *fulvus*. G. W., Portland, Parley.—7. *suturalis*. Parley.—8. *ruficollis*. G. W.—9. *flavicollis*. Parley.—10. *parvulus*. Parley.—11. *dorsalis*. G. W.

lxxi. Blemus.—4. *paludosus*, Gyl. Near Lulworth Castle.—5. *pallidus*, Stu. Portland, Mr. Curtis.

lxxvi. Tachys.—2. *binotatus*. G. W.—3. *vittatus*. G. W.—4. *immunis*. Near Dorchester.—5. *obtusus*. G. W.—9. *minimus*, Curt. Charmouth, May 12, 1827.

lxxvii. Philochthus.—*subfenestratus*. G. W.—4. *guttula*. G. W.—5. *hæmorrhous*. G. W.—6. *æneus*. G. W.

lxxviii. Ocys.—1. *currens*, Ste. Parley.—2. *melanocephalus*, Stu. G. W.; not rare. Head not black!—3. *rubens*, F. G. W., Blandford, rare.

lxxix. Peryphus.—3. *femoratus*. Charmouth.—4. *rupestris*. G. W.—6. *decorus*, Pz. Charmouth.—7. *nitidulus*. G. W.

lxxxi. Lopha.—1. *pœcila*. G. W.—2. 4-*guttata*. G. W., Weymouth, Portland.

lxxxii.—Tachypus.—1. *celer*. G. W.—2. *properans*. G. W.—7. *bipunctatus*. G. W.

lxxxiii. Bembidium.—3. *flavipes*, L. G. W., Charmouth.

lxxxiv. Elaphrus.—1. *uliginosus*. Near Wareham, Mr. Curtis.—2. *cupreus*, Meg. Parley; Sherborne Park, Mr. F. Morris.

lxxxv. Notiophilus.—1. *aquaticus*, L. G. W., Portland.—3. *biguttatus*, F. G. W., Portland.—4. 4-*bunctatus*, Dej. Portland, Mr. Streatfield.

lxxxvi. Blethisa—1. *multipunctata*, L. Parley.

lxxxvii. Haliplus.—1. *elevatus*, Pz. G. W. Took three in our pond, Sept. 22, 1830.—3. *ferrugineus*. G. W.—4. *obliquus*. G. W.—5. *confinis*. G. W.—6. *lineato-collis*. G. W., Portland.—8. *ruficollis*. G. W. 12. *impressus*. G. W., Parley.

lxxxix. Hyphydrus—1. *ovatus*. G. W., and a variety.

xc. Hygrotus.—4. *confluens*, F. G. W., gravel-pits, &c.—5. *collaris*. Parley.—6. *reticulatus*. Parley.—7. *inæqualis*. G. W., Parley, Portland.—8. *scitulus*. Parley Heath.—9. *pictus*. G. W., Parley.

xci. Hydroporus.—1. 12-*pustulatus*, F. G. W. A few in our pond, Sept. 1830.—2. *depressus*, F. G. W., Portland.—8. *lineatus*. Sherborne, Mr. Morris.—9. *picipes*, F. G. W. Hollwell, Oct. 23, 1839.—11. *latus*, Curt. G. W. Two taken in our pond in the spring of 1813.—12. *dorsalis*, F. G. W., Sherborne, Charmouth, Mr. Morris.—13. *sex-pustulatus*, F. G. W., Portland, &c.—17. *rufifrons*, Duf. Parley, 1824; Holwell, Oct. 1830.—N. S. Parley, 1824; much smaller, and new to Mr. Curtis.—N. S. (Small black). Parley, 1824.*—23. *minimus*, Ill. G. W., Parley, &c.—25. *ovalis*. G. W., Parley, Holwell.—28. *planus*.

* Are these two species named in the second edition of Curtis's *Guide*?—Ed.

G. W.—29. *melanocephalus.* G. W.—30. *erythrocephalus.* G. W.—31. *flavipes.* G. W.—33. *pubescens.* G. W.

xcii. Laccophilus.—1. *minutus.* G. W.—2. *hyalinus.* G. W.

xciii. Noterus.—2. *sparsus.* Holwell.

xcv. Colymbetes.—1. *obscurus.* G. W.—4. *fenestratus.* Parley.—6. *fuliginosus.* G. W.—7. *maculatus.* G. W.—8. *abbreviatus?*—9. *vitreus.* G. W.—10. *femoralis.* Parley, Mr. Ingpen.—17. *chalconotus.* G. W.—19. *bipustulatus.* G. W.—23. *Sturmii.* G. W.—25. *paludosus.* G. W.—26. *pulverosus.* Holwell.—31. *bipunctatus.* G. W.—33. *guttatus.* G. W., rare.—34. *oblongus.* Holwell.—*fuscus.* G. W.

xcvii. Dytiscus.—5. *marginatus.* G. W.—6. *punctulatus.* G. W.

xcix. Acilius.—1. *sulcatus*, L. G. W.—2. *Scoticus*, Curt. G. W.; Sherborne, Mr. Morris.

c. Gyrinus.—1. *æneus*, Leach. Parley, Wareham.—4. *natator*, L. G. W.—5. *substriatus*, Stu. G. W. Looks like a dull variety of the last.—8. *villosus*, F. Wareham, Mr. Curtis; Charmouth, Mr. Morris.

ci. Parnus.—1. *prolifericornis*, F. Parley.—2. *bicolor.* G. W., only one.—5. *auriculatus.* G. W., Wareham.

cii. Heterocerus.—3. *lævigatus*, F. G. W.

civ. Elmis.—7. *æneus.* Parley.—8. *obscurus.* G. W.

cv. Hydrochus.—1. *elongatus*, F. Parley, rare, April 5, 1824.—2. *crenatus*, F. G. W., Portland.

cvi. Elophorus.—1. *aquaticus*, L. G. W., Portland.—2. *granularis*, L. G. W., &c.—2[b]. *griseus.* G. W.—3. *dorsalis*, Mar. G. W., rare.—7. *nubilus*, Oliv. G. W., Parley, Portland.

cvii. Ochthebius.—5. *pygmæus.* Portland.—6. *marinus*, Pk. Portland, Wareham.—7. *dilatatus.* Parley.

cviii. Hydræna.—1. *riparia.* G. W., Parley.—3. *testacea.* G. W., only one.—3[b]. *pulchella.* Holnest, Mr. Curtis.

cix. Limnebius.—1. *ater?* G. W.—3. *truncatellus?* G. W.—4. *marginalis.* G. W.—5. *nigrinus.* G. W.—8. *minutus.* G. W.—9. *nitidus.* G. W.

cxi. Hydrœus.—1. *piceus*, L. G. W., rare.

cxiii. Hydrobius.—3. *fuscipes*, L. G. W.—5. *griseus.* G. W.—6. *torquatus.*—7. *testaceus.* G. W.—9. *fulvus.* G. W.—11. *margipallens*, Mar. Parley.—13. *bicolor.* G. W., Parley.—14. *minutus.* G. W., Parley.—16. *globulus.* G. W.—18. *bipustulatus.* G. W.—19. *colon.* G. W.—21. *bipunctatus.* G. W.—22. *orbicularis.* G. W.

cxiv. Berosus.—1. *æriceps.* Holnest gravel-pits.—2. *lucidus.* Holnest gravel pits.

cxv. Cercyon.—Several unnamed species.—14. *piceum*. G. W.—18. *laterale*.—Under sea-weeds, Weymouth.—19. *hæmorrhoidale*. G. W.—25. *melanocephalum*.—36. *lugubre*. G. W., &c.—52. *quisquilium*.

cxvi. Sphæridium.—1. *scarabæoides*. G. W., &c.—2. *bipustulatum*. G. W. 6. *marginatum*. G. W.

cxvii. Onthophagus.—1. *ovatus*. Portland, Mr. Quekett; St. Caundle, Mr. Serrell.—2. *nuchicornis*. G. W.—3. *Dillwynii*. Portland.—4. *cœnobita*.—5. *fracticornis?*—6. *medius*. Portland.

cxix. Aphodius.—1. *fossor*. G. W.—2. *subterraneus*.—3. *hæmorrhoidalis*. G. W.—4. *erraticus*. G. W.—5. *fimetarius*. G. W.—7. *unicolor*.—9. *scybalarius*. G. W.—10. *fœtens*. G. W.—15. *inquinatus*. G. W.—17. *sticticus*. G. W.—19. *terrestris*. G. W.—23. *pusillus*. G. W.—25. *anachoreta*. Portland.—26. *rufipes*. G. W.—27. *nigripes*. G. W. 27ª. *luridus*. G. W.—28. *depressus*, F. Portland.—29. *sphacelatus*, Panz. G. W., &c.—31. *prodromus*. G. W.—32. *ciliaris*, Mar. G. W.—34. *sus*, F. Portland, Professor Henslow and J. C. Dale.—35. *merdarius*, F. G. W.

cxxi. Ægialia.—1. *globosa*, Ill. Portland.

cxxii.—Trox.—1. *sabulosus*, L. Parley.

cxxiii.—Geotrupes.—1. *lævis*. Puddletown Heath.—4. *sylvaticus*, F. Parley.—5. *stercorarius*, L. G. W.—*mutator* (green variety). Portland, Mr. Matthews; G. W., Mr. Serrell.

cxxiv. Typhœus.—1. *vulgaris*, Leach. Parley.

cxxviii. Melolontha.—2. *vulgaris*, F. G. W.—3. *solslitialis*, L. Lulworth, Blandford, Dorchester.

cxxix. Serica.—1. *brunnea*, L. Knighton Heath.

cxxx. Omaloplia.—1. *ruricola*, F. Lulworth.—[2. *varius*, Mar. var.? Near Marleywood by Winfrith.]

cxxxi. Anomala.—2. *Frischii*. Portland.—[3. *Julii*, F. Parley plantations.]

cxxxii. Anisoplia.—1. *horticola*. Parley, Stafford, on trees. Not at G. W.!—[2. *arvicola*, Mar. var.?]

cxxxiii. Hoplia.—1. *pulverulenta*, Ill. G. W., on Alder; Parley.

cxxxv. Cetonia.—2. *aurata*, L. G. W. Very small at Lulworth.

cxxxvi. Sinodendron.—2. *cylindricum*, L. G. W.

cxxxvii. Lucanus.—1. *cervus*, L. Bryanston, where called Branston Bucks; near Blandford, Wimborne, &c.—1. *parallelipipedus*, L. Charmouth, Mr. Morris.

cxl. Dendrophilus.—5. *punctatus*. Blandford.

cxli. Hister.—2. *unicolor*. G. W.—3. *cadaverinus*. Parley.—8. *bimacu-*

latus. Isle of Purbeck, Mr. SERRELL.—12. *carbonarius*. Parley.—16. *æneus*. Portland.

cxlii. ABRÆUS.—9. *minutus*.

cxliii. ONTHOPHILUS.—2. *striatus*, FORST. G. W.

cxliv. MICROPEPLUS.—1. *porcatus*. G. W., Maiden Castle.—2. *staphylinoides*. [G. W., Maiden Castle.]

cxlvi. CATHERETES.—1. *bipustulatus*. G. W.—2. *pedicularis*. G. W.—3. *caricis*. Parley.—4. *junci*. Parley.—8. *pyrrhopus*. G. W.

cxlvii. MELIGETHES.—1. *erythropus*.—2. *nigrinus*.—5. *cæruleus*.—8. *rufipes*. G. W.—10. *dulcamaræ*.

cxlviii. STRONGYLUS.—1. *strigatus*, F. G. W.—4. *luteus*. Cranborne Chace, July 13, 1835.

cxlix. NITIDULA.—3. *villosa*, THUNB. G. W., Parley, &c.—5. *obsoleta*. G. W.—7. *obscura*. G. W.—8. *bipustulata*. G. W.—10. *discoidea*. G. W.—11. *colon*.—12. *depressa*. G. W.—14. *punctatissima*.

cli. IPS.—2. 4-*punctata*, OL. Middlemarsh Common, on a gate.

clii. ENGIS.—2. *humeralis*. G. W.

cliv.[b] MYCETÆA.—*furcata*, MAR. G. W.

clv. ANTHEROPHAGUS.—2. *pallens*, L. Near Dorchester; West Stafford.

clvi. CRYPTOPHAGUS.—3. *fumatus*.—6. *cellaris*.—*typhæ* ?

clvii. BYTURUS.—1. *tomentosus*, F. G. W.

clviii. TRIPHYLLUS.—4. *bifasciatus*. Parley.

clix. MYCETOPHAGUS.—1. 4-*pustulatus*, L. G. W.

clx. TETRATOMA.—3. *fungorum*. Parley.

clxiv. PHALACRUS.—3. *ovatus*.—4. *corticalis*.—5. *coruscus*.—7. *caricis*.—12. *bicolor*.—17. *consimilis*.

clxvii. LEIODES.—13. *polita*. G. W.

clxviii. AGATHIDIUM.—4. *globulus*.—8. *nigrinum*.

clxxii. CYPHA.—2. *rufipes*.

clxxiii. SCAPHISOMA.—3. *agaricinum*.

clxxv. TRICHOPTERYX.—1. *atomaria*.

clxxvii. PTOMAPHAGUS.—1. *truncatus*.

clxxviii. CATOPS.—5. *chrysomeloides*.

clxxix. CHOLEVA.—1. *angustata*.

clxxx. PHOSPHUGA.—1. *atrata*, L. G. W.—2. *subrotundata*, LEACH. Portland, Charmouth.

clxxxi. SILPHA.—1. *lævigata*. Portland.—3. *obscura*. Parley, Portland.—4. *tristis*. Portland, Parley.—7. *reticulata*. Parley.

clxxxii. OICEOPTOMA.—3. *rugosa*. Parley, Portland.—5. *thoracica*. Sherborne.

clxxxiii. NECRODES.—1. *littoralis*. Sherborne, Parley, &c.

clxxxiv. NECROPHORUS.—1. *mortuorum*. Parley, G. W., St. Caundle.—3. *humator*. G. W., St. Caundle.—6. *vespillo*. G. W.

cxxxv. EMUS.—1. *hirtus*, L. Parley.

cxxxvii. CREOPHILUS.—1. *maxillosus*. Parley, Charmouth, &c.

cxxxviii. STAPHYLINUS.—1. *nebulosus*. G. W.—2. *murinus*. G. W.—4. *erythropterus*. G. W.—6. *stercorarius*. Portland.—8. *æneocephalus*. Portland.

cxxxix. OCYPUS.—1. *olens*, F. G. W.

cxcii. QUEDIUS.—1. *picipennis*, PK.

cxciii. PHILONTHUS.—3. *splendens*.—6. *politus*.—16. *marginatus*.—33. *bimaculatus*.

cxcvii. CAPIUS.—1. *fucicola?* Lulworth.—1. *xantho-loma*. Charmouth.—3. *lateralis*. Portland, Swanage, &c.

cxcviii. ACHENIUM.—1. *depressum*. G. W.

cc. GYROHYPNUS.—5. *cruentatus*. G. W.—9. *linearis*. G. W.

cci. LATHROBIUM.—3. *elongatum*. G. W.

ccii. TACHINUS.—2. *pallens?*—3. *subterraneus*.—5. *cinctus*.—7. *rufipes*. 11. *marginellus*.

cciii. TACHYPORUS.—5. *pubescens*.—11. *marginatus*.—14. *obtusus*.—17. *chrysomeloides*.

cciv. BOLETOBIUS.—3. *trimaculatus*, F. G. W.

ccvi. MEGARTHRUS.—2. *depressus*.—3. *macropterus*.

ccvii. PROTEINUS.—1. *brachypterus*.

ccviii. ANTHOBIUM.—10. *piceum*.—11. *melanocephalum*.

ccxi. LESTEVA.—7. *obscura*.

ccxii. ELONIUM.—1. *striatum*.

ccxvi. OXYTELUS.—8. *carinatus*.—9. *rugosus*.

ccxix. OXYPORUS.—1. *rufus*. West Stafford.

ccxx. DRUSILLA.—1. *canaliculata*. G. W., Portland, &c.

Glanville's Wootton, Dorsetshire,
May 18, 1837.

[The student will form some idea of the immense numbers of insects belonging to the British Fauna, when he is told, that in the preceding paper only one order is taken into consideration; and that, numerous as are the species mentioned by Mr. DALE, perhaps he has not included one-fourth of the British insects appertaining to the group. We hope to present the remainder of our able correspondent's article on a future occasion.—ED.]

ON THE NIDIFICATION OF THE GOLDEN-CROWNED KINGLET.

By the Rev. R. P. Alington.

In the first volume of Bewick's *British Birds*, page 236, I find the following account of the nest of the Goldcrest (*Sylvia regulus*, Temm., *Man.*):—

"In these (the largest trees) it builds its nest, suspended from a branch, of a kind of cordage made of the materials of which the nest is chiefly composed; it is of an oblong form, having an aperture on one side."

As far as I have been able to examine the nest of this beautiful little species, the above passage appears to be incorrect. Yet I should not have troubled you with the following remarks, did not so recent a publication as Wilson's *American Ornithology* seem to favour the same opinion, from which I am led to suppose that Bewick's description is still received as authentic. The passages alluded to in Wilson, I take from the edition published in 1832, with illustrative notes, &c. &c., by Sir William Jardine, in which it is said that the "*Regulus reguloides* (Jard.) covers it (the nest) entirely round, leaving a small hole on one side for entrance." (Vol. i, page 130). And Lucian Bonaparte, in his continuation of Wilson, remarks that "they both (*Regulus reguloides* and *R. cristatus*) build their nests of the same admirable construction, having the *entrance* on the upper part;" (vol. iii. page 285). The Golden-crested Wren appears not generally to build in the larger trees, though sometimes the nest is found in the Spruce Fir, but then not far from the ground. But its favourite place of abode seems to be in the thick Juniper bushes. I have found it, also, in quick hedge-rows, and more than once on the taper branch of the Labernum.

In every specimen, too, that I have examined, the nest has always been (as in that of most other species of birds) entirely open at the top, the parent sitting with its bill and a portion of its tail projecting over the edge, though the back is much sunk down, owing to the great depth of the nest. In the year 1834 I examined four, two built in the Spruce Fir, and two in Juniper bushes; excepting in one specimen, and in that only in a slight degree, there was no appearance of any cordage whatever to support the nest. In 1835 I examined four more, with nearly the like result. In one specimen there was certainly the appearance of cordage, but it was much broken and disjointed. In another, on one side of the nest, an entire cord made chiefly of moss; but it gave no support to the nest, merely serving to secure a twig that ran underneath. In 1836 I procured only two nests; one was placed in a thick thorn hedge, and had not the least appearance of any cordage, the other was situated underneath the branch of a Labernum, not far from the extremity, and had all the appearance of being supported by two cords running from the opposite edges of the nest to the main

branch, under which it rocked to and fro in every gust of wind. But upon nearer examination, even before the young were hatched, I found the cordages broken in several places, and displaying in the interstices the real supports of the nest, namely, slender twigs that run down each rope, and were firmly fixed into the bottom of the nest. This present year I have not been able to obtain one specimen.

From this it would seem, that when the cordage is used, which is only in particular cases, it is not for any support to the nest, but for the purpose of bringing into play certain leaves and branches, until the time that the nest is firmly fixed to them. During the period of incubation these little birds are remarkably tame, not only allowing the branch to be lifted up, but the nest to be touched, without alarm.

Within, the nest is about one inch and a quarter in diameter, and two inches and a quarter in depth; but it is much deeper on the outside, being firmly and compactly made.

Swinhope House, Lincolnshire,
September 1, 1837.

REMARKABLE FACT RESPECTING THE ECONOMY OF *Cossus ligniperda.*

By R. H. Cowlishaw.

Having paid some attention to the study of Entomology, nothing has more astonished me than the wonderful economy of the *Cossus ligniperda;* and although much interesting and valuable information has already been afforded by eminent and distinguished naturalists, I feel assured by their continued research much more will be acquired than we are yet in possession of, perhaps to facilitate this object.

It perhaps may not be unworthy of observation or notice in your valuable publication, for those who are not in possession of the fact, and those who are disposed to investigate the wonderful phenomena of this interesting insect, that the larva is capable of living to a surprising length of time without sustenance or food, and also without preventing its coming to maturity or the perfect imago, as the following circumstance will corroborate.

On the 13th of June, 1836, I took an excursion for the purpose of procuring a few specimens of the *Cossus*, in company with an intelligent naturalist, in the neighbourhood of Nottingham, where they so greatly abound amongst the Willow-

trees. I was fortunate in procuring a dozen chrysalids. I also found abundance of the larva, in all its stages, *one* of which was in its second year, and this I put into a tin box (the lid being perforated with small holes to admit air). On my return home I placed the box in a situation which for six months afterwards escaped my recollection, when I again laid my hand upon it, and, on opening it, to my surprise the caterpillar was not only alive and healthy, but to all appearance larger than when I first saw it. I afterwards removed it into a large box, which could not be perforated, and watched its process very closely for a considerable length of time, when I put in a small quantity of sawdust, for the purpose of allowing it to spin itself a coccoon or nest, respecting which, at the time, it appeared careless. But about the beginning of May, 1837, commenced operations which it completed in a few days, since which time it remained until the 17th of July, when it emerged into the perfect Moth (which I placed in my cabinet), thus remaining without food or support in the larva ten months, and two in the chrysalis.

Nottingham, Aug., 1837.

P. S. It is but right to observe, that the box was placed in a very warm situation, in a cupboard near the fire.

CORRESPONDENCE.

Derivation and Accentuation of the Name *Veronica*.

Dryadville Cottage, August 11, 1837.

To the Editor of the Naturalist.

My dear Sir,—Feeling a slight attack of the "*cacoethes scribendi*," I am inclined to send you another stave before leaving home, and if I fail to fill up my paper will do so on my route.

I perceive great enquiry has been recently made in *The Naturalist* as to *Veronica*, its derivation and mode of pronunciation. As no one seems to have grappled with this doughty question, I will just state what I know about it. Dr. Thornton says there was a *princess* of that name, who was, we are left to infer, complimented by having her name transferred to the bright-eyed modest flowers of this family, just as, in the present day, birds, insects, and fishes, as well as plants, are named, it is thought, to *honour* various individuals, who will, at last, doubtless profit as much from it as the princess Veronica has in the present case. Not having the honour of the said princess's acquaintance, I am unable to refer her to any existing European family. I find, however, another

claimant in the *Circle of the Seasons*,* in the person of "St. Veronica, *Virgin of Milan*, A. D. 1497," whose festival occurs on Jan. 13, and under that date we are informed that "the Wall Speedwell being in some early years in flower on this day, it *would seem* as if it had been so called after the saint above recorded. Indeed, the monks, friars, and vestals, of the religious ages, being our first British botanists, the names of most popular plants then known have received religious names; but whether *Veronica* be or be not an exception to this mode of origin of names we *cannot quite determine*." So that, after all, the claim of the "Virgin of Milan" appears but slender, although we are further edified by the statement that "she exhibited a *wonderful* example of austerity and vigilance, and was said to be a *living model* of the rule of her order." In Reid's *Historical and Literary Botany* a third claimant to the honour of being represented by our blue-eyed plant is made in favour of Verron, who, it appears, accompanied Commerson the botanist round the world, and who, it is said, named this genus in memory of his friend. But as Commerson died in 1773, this must be a mistake, the similarity of the name having probably misled the editor of the work in question, for "the maid of Milan" had established her right long before this time. Some other plant must, therefore, have been intended by Commerson to record his friend Verron. Sir W. J. Hooker, in his *British Flora*, says the name *Veronica* is of "doubtful origin." Hoffman, however, as quoted in Phillips's *Flora Historica*, derives it from φερονικην, meaning φερω to bring, νικη victory, "because it was said to bear the bell among plants." This observation is re-echoed in Withering's Botany, where it is particularly urged, that "in *Veronica* the *ni* is to be the accented syllable, and not the *ro*, which is a common error." No doubt the English name Speedwell refers to the "great vertues" as old Gerarde has it, attributable "to the same," but this same *speed* being prejudicial to modern practice,its qualities are now voted "insignificant" by the faculty, according to the dictum of Sir J. E. Smith, though the French name—"*Thé d'Europe*," seems to speak something in its praise. Having, as you must admit, thus given abundant scope for choice as to the origin of the name *Veronica*, I shall now, by way of a wind up, produce a solution of my own, which I need hardly say *I believe* to be the best! Discarding, therefore, the princesses and virgins, I consider the word compounded of *ver*, spring-time, and *onychinus*, of a purple colour. This, if literally translated, would give us the appropriate appellation of Spring-purple, and there are many worse names. In this case, of course, the accent must be on the second syllable, *Verónica*, and not on the *i*, in which way, in fact, I have always heard it pro-

* Edited, I believe, by Mr. Forster, author of the *Encyclopædia of Natural Phenomena*.

nounced. If it be objected to this that the flower of the Veronica is blue, I can only say that several species are purple, especially before expansion; and indeed in Scotland, PHILLIPS tells us that "the sprigs of Brooklime (*Veronica beccabunga*) are brought to market under the name of *Water-purpie*." I think this last fact is decisive. The poets, too, have often given the appellation of "purple" to the spring, no doubt having in view the various flowers then springing up, which combine their roseate and blue tints at a little distance into a blush of purple, as in the following quotation from MASON:—

> "Pride of the year, *purpureal Spring!* attend,
> And in the cheek of these sweet innocents
> Behold your beauties pictured."

I wish Mr. MORRIS, who has ably assaulted the ornithological nomenclature, or some other correspondent of *The Naturalist*, would, *seriatim*, give us the derivations of the names of genera in the British Flora. It would doubtless call up some agreeable criticism. For, of course, when Greek meets Greek then comes the tug of war. My present derivation, however, is Roman *versus* Greek. I am afraid you will feel inclined to say to this *verbose* disquisition—*vox et præterea nihil!*

ANECDOTE OF A DOG.

Welchpool, August 18, 1837.

I open my letter again to announce—as the correspondents of the daily press say—that I was unable to fill up my sheet before leaving home, and therefore advance to the attack again. As I think myself legitimately entitled to rest my understanding when flitting about, I become, as you will easily perceive, a picker up of "unconsidered trifles," having my eyes open even to the vagaries of a fly. I can only say, in justification of myself, that "trifles make the sum of human things."

In travelling by coach between Worcester and Bridgenorth, I noticed a little Dog of a half terrier breed following the coach at the top of his speed, and at first concluded that he must belong to a passenger, who was thus rather cruelly trying his powers. I found, however, on enquiry, that this was not the case, the coachman stating that the Dog had followed the coach from Cheltenham, it was presumed on some business of his own, as nobody knew him. As the coach stopped a moment at a public-house on the road an attempt was made to capture the Dog, but to no purpose; he rushed forward alone, and was soon again visible in his old position, rattling along in the wake of the coach. Curiosity induced me to watch his motions, and I now found whenever the coach stopped to change horses, he walked quietly on, and was found resting on the edge of a

field waiting till the coach came up. At Kidderminster he walked on completely through the town, and was supposed to be lost, but when we had cleared the houses he soon became visible again. He finally left us at Bridgnorth, after a "severe run" of 52 miles! Now it certainly seems rather odd what object should induce the poor animal to distress itself in this manner. It was, however, an entirely voluntary task on his part, or rather a work of supererogation, since he could neither be driven off from the object he had in view, nor, on the other hand, would he on any account accept a lift, though the passengers were all anxious to make room for him! It must be borne in mind, too, that this was not a slow coach, as we generally galloped at from ten to twelve miles an hour. The coachman thought the Dog would return by the *same conveyance* in the evening, but as I did not witness this, I do not vouch for it. The guard assured me that Dogs not unfrequently followed them in the way I witnessed, for many stages, apparently for the mere love of the run, and he once knew one to keep on to Chester, where he was caught. I must here, however, close this *doggish* chronicle, lest you should feel strongly inclined to *snarl*.

Scarcity of the Feathered Tribes at Aberystwith.

Aberystwith, August 27, 1837.

If it be any curiosity to receive a letter with three different dates, this, at least, will be one in that respect, for since I left Welchpool I have had this letter in my pocket-book, looking out for a favourable opportunity to finish it, but in vain; so that I shall be something like Johnson, who commenced the translation of an Ode of Anacreon's at 16, and could never find an opportunity to finish it till he was turned 60! Like other birds of passage, I am now got down to the sea, among faded dowagers, and a precious assortment of female commodities—"on sale or return"! Fortunately I am a "dead man"—a technical term well understood—or I should be netted to a certainty by some of the naked naiads, who splash the brine about at a famous rate, and, what is worse, scare all the birds away, for I protest only one Gull and two Cormorants have met my eye since I have been here. I could have seen ten times the number at home. I had a scramble over Plinlimmon the other day, but found birds nearly as scarce even there, one poor solitary Grous being the only one left as far as I saw on the mountain. There were, however, two or three flocks of Golden Plovers about the stones of the summit. The Swifts have been all invisible for the last fortnight, but I saw three flying about the Abbey Tower, Shrewsbury, as late as the 13th.

I am really almost ashamed to send you such an anomalous, heterogeneous, mithridatic hodge-podge as this, but to this conclusion I am come at last, al-

though it is like the "conclusion" in RASSELAS, a "conclusion in which nothing is concluded."

Believe me, my dear Sir,
Yours very truly,

NEVILLE WOOD, Esq. EDWIN LEES.

CHAPTER OF CRITICISM.

ON THE HABITS OF THE WAGTAILS.

To the Editor of the Naturalist.

MY DEAR SIR,—On my return home I found your interesting communication of the 17th of July; but the bustle of electioneering, and various other engagements, have prevented me from giving you an earlier reply. In the first place, I find, in a "Commentary on Nos. vii. and viii. of *The Naturalist*," (No. xii., p. 294), that Mr. BLYTH expresses some surprise at my remarks relative to the habits of *Motacilla flava*, TEMM. You are of course aware that they were written in reply to the statements at p. 221 of the *British Song Birds*, that "you must not look for the Spring Oatear *near the margins of running streams, &c.*,"* the fallacy of which was the object of my remark, it being the very situation to which the pairs that annually resort to this locality prefer. In consequence of the incidental remark of Mr. BLYTH, at p. 294, of the difference of habits between *Motacilla flava* and *M. neglecta*, as observed by Mr. HOY, I was induced the other day, very reluctantly, to shoot two pairs of the species that frequent the banks of our river, in hopes that they might have belonged to the latter species, which, however, I regret was not the case, as they proved, upon examination, to be *M. flava*, although in one specimen the *throat and line above the eye was nearly white;* but the absence of an ash-grey head, similar to that of the Red-backed Shrike, at once distinguished it from *M. neglecta*.

I must say, with deference to the various opinions advanced as to the peculiar habits of *M. flava*, that they differ very materially from those of *M. Yarrellii* (GOULD); for during the period of nidification, and through the summer, both are to be found alongside the margins of the river. Perhaps the former, on its

* As a general rule, and especially in comparison with the habits of the other Wagtails in this respect, we believe the sentence Mr. SALMON has quoted to be perfectly true; though it cannot be denied that the Spring Oatear may occasionally approach the margins of streams.—ED.

first arrival in spring, may be more generally met with in the Sheep-folds, but from the limited number that visit this district I cannot determine; for in such situations it is no uncommon occurrence to see *M. Yarrellii*, the nest of which I have more than once found on a heathy common, far away from any water. Both species delight to be in the vicinity of cattle, more particularly when they are grazing in the lands adjoining the river. The only difference I have been able to detect, is that *M. Yarrellii* resorts to the homesteads, and on that account may be looked upon in the light of a domestic bird. This is certainly not the case with *M. flava*, which does not approach very near the habitations of man.

Perhaps it may be as well to mention that there is little or no low ground adjoining the river at this place; the heath and warren often approach close to the margin of the stream, which flows very rapidly, and is navigable; for several miles below this town, where the low ground is contiguous, the river does not exceed a stone's-throw across it; still it so happens, that where it is of the greatest breadth is the situation selected by *M. flava* for its common residence.

I have lately ascertained from a friend, that this species is to be seen through the summer very abundantly alongside the edges of the drains intersecting the fens of Norfolk, Huntingdonshire, &c. This I can myself in part confirm, and I saw it very plentifully in similar situations as I passed through those fens in the spring of 1836.

Structure of the Kingfisher's Nest.

I find Mr. Alington, at p. 274, describes the structure of the Kingfisher's nest, "excepting the mixture of fish bones, as *not very unlike that* of a Thrush." I have had many opportunities of examining the place of nidification of this bird, and in no one instance could I find the least appearance of a nest; with the exception of excavating the hole, I should most certainly say that it constructs no nest whatever. A pair of birds will occupy the same situation for more than one season: and from the accumulation of fish bones, and the castings of young birds, mixed with sand, an *artificial nest* will be formed of a very frail structure, which I suspect was the case in the instance described, as it stated that it crumbled to pieces on being touched. I scarcely need observe that the Thrush's nest is of a very compact structure.

Does the Hooded Crow breed in Lincolnshire?

At p. 322 Mr. Alington remarks, in his "ornithological notes":—"The Hooded Crow *(Corvus cornix)* sitting on the 10th." May I ask if that bird breeds in the neighbourhood of Swinhope House, as it is the first instance I have seen of its breeding on this side the Tweed.

My observation relative to the egg of the Ortolan Bunting (p. 323) was to

correct a previous communication of mine on the analysis of GOULD's *Birds of Europe*, in *The Analyst*.

I remain, my dear Sir,
Yours very truly,
J. D. SALMON.

Thetford, Norfolk,
Sept. 6, 1836.

PROCEEDINGS OF THE BRITISH ASSOCIATION AT LIVERPOOL,
SEPTEMBER, 1837.

President—W. S. MACLEAY, Esq., F.S.L.; *Vice Presidents*—Dr. RICHARDSON, Prof. GRAHAM, Prof. LINDLEY; *Secretaries*—C. C. BABINGTON, F.L.S., W. SWAINSON, Esq., A.C.G., F.L.S., Rev. LEONARD JENYNS, F.L.S.

Committee—Rev. Dr. HINCKS, N. A. VIGORS, Esq., M.P., D.C.L., F.R.S., F.L.S., Rev. F. W. HOPE, F.R.S., Dr. NEILL, Prof. HENSLOW, Dr. TRAILL, Earl of DERBY, Rev. W. HINCKS, F.L.S., JOHN CURTIS, F.L.S., T. C. EYTON, Esq., P. B. DUNCAN, F.L.S., J. E. GRAY, F.R.S., C. S. PARKER, Rev. J. YATES, J. E. BOWMAN, Esq., C. HORSFALL, R. BALL, P. J. SELBY, Esq., F.R.S.E., M.W.S., L. W. DILLWYN, J. N. WALKER, A. H. HALIDAY, J. T. MACKAY, Capt. J. ROSS, Sir W. JARDINE, Bart., F.R.S.E., M.W.S., Messrs. R. HARRISON, H. SANDBACH, TINNE, J. SALISBURY, GREEN, F. ARCHER, G. COOKE, Dr. DUNCAN,

The general arrangements at Liverpool for the reception of the seventh meeting of the Association were not at all inferior to those made in other places. But as these have been so fully and generally reported through the medium of the daily and weekly press, we shall only advert to those points, and detail those proceedings, which we think will most interest the readers of *The Naturalist*. We shall, therefore, at once proceed to give a full account of the transactions of that section of the Association devoted to Zoology and Botany. The meetings of this section were held in the Theatre of the Royal Institution. On Monday morning (Sept. 11) the chair of the section was taken by WILLIAM SHARPE MACLEAY, Esq.

The business commenced with a paper by Dr. TRAILL, on a species of *Argas*, from the province of Mianneh, in Persia. He proposed to name it *A. Persicus*. He said he had called the attention of the members to this insect on account of the painful wounds and dangerous constitutional effects produced by its bite. He thought it belonged to the class *Arachnidæ*: It was an octopod, and resembled the parasitic insect that infects Pigeons. The constitutional symptoms following the bite were similar to those of typhus fever.

The president observed that some of the statements with regard to these insects were erroneous, and frequently derived from popular prejudice.

Dr. TRAILL stated, that having brought the subject before the Wernerian Society of Edinburgh, General WRIGHT, who had been in Persia, confirmed the observation of his informant.

The President remarked that among the specimens exhibited by Dr. TRAILL there were two genera (*Argas* and *Ixodes*), and that if they were both poisonous, it would lead to the supposition that the whole family of *Ixodidæ* were poisonous. He had seen insects of this family in Cuba, where they attacked Horses,* but so far from being poisonous, they were thought to be beneficial to the animal.

The Rev. F. W. HOPE observed that he knew the Horses in the Island of St. Domingo were infested with a species of *Ixodes*, which attacked their ears, but was not aware that it was poisonous.

Mr. GRAY then brought before the meeting a notice of experiments on the reproduction of insects by Galvanism, performed by Mr. CHILDREN. He stated that these experiments were undertaken in order to ascertain the correctness of the results of some experiments by Mr. CROSSE, in which he supposed he had organised or revivified insects by the power of Galvanism. The greatest care had been taken that the circumstances under which the experiments were performed should resemble those described by Mr. CROSSE. A solution of Silica was obtained from Mr. GARDEN, and submitted, both with and without access to the atmosphere, to the action of a powerful galvanic battery; the intensity and quantity of the galvanism were varied, but no insects were obtained.

The Rev. F. W. HOPE thought it quite impossible that insects so high in the scale of organisation as those described by Mr. CROSSE should be produced. If matter had been vitalised, we should have looked for it in its simplest and most elementary forms. The insects said to have been reproduced were a species of *Acarus*. The ova of these insects might have been accidentally introduced into the solution, and have become developed during the course of the experiment.

Mr. GRAY related some instances of the ova of insects becoming developed after exposure to circumstances that might be supposed would destroy them. The larvæ of the Common Fly were not destroyed by exposure to prussic acid. The ova of various insects which must have been confined for several years, had produced larvæ on exposure to moisture.

These remarks led to a discussion, in which Professor GRAHAM, Mr. GRAY and

* At a subsequent meeting the President stated that those *Ixodes* which attacked Horses in some instances literally covered the animal. They inserted their serrated proboscis into the animal's skin, and remained fast attached to it for some days, when they dropped off, leaving their rostrum behind. If the insect was captured at this stage of its existence, it was generally found full of ova, which did not escape at the termination of the oviduct, but at the orifice which had been produced by the breaking off of the rostrum. After falling off the Horse, the insect generally retreated under stones, wood, &c., where it deposited its ova.

other gentlemen, took part, as to what kind and degree of vitality existed in plants and animals which had been for a long period secluded from the ordinary stimulants of vitality.

The President related the fact that seeds had vegetated after being confined for the space of 2,000 years. He had also seen the *Gordius* and *Filaria* dried up and apparently dead, become alive by exposure to a damp atmosphere.

Mr. Golding Bird stated that he had repeated Mr. Crosse's experiments, but unsuccessfully. He had taken every precaution, and varied his experiments, but the results were always the same. He believed in the mode in which Mr. Crosse had prepared his solutions of silica that no silica was left in solution at all. He had performed his experiments in precisely the manner described by Mr. Crosse, submitting the solution to the action of the electrodes of the galvanic battery, by means of a cotton filter.*

The Rev. F. W. Hope read a letter from Sir Thomas Phillips, on the subject of preserving books from the attacks of insects. The writer thought the paste was the principal object of attack. He had observed that the insects which attacked the books deposited their larvæ in the wood of the library, and he therefore placed several pieces of Beech wood smeared with paste in his library; and when he found, by the perforations in it, that the insect had deposited its ova, he removed the piece of wood and destroyed it; and he had thus succeeded in protecting his books from further attacks. This insect was the *Anobium striatum*. He had two other Coleopterous insects in his library—a small black Beetle, and another six times as large, imported from Frankfort, belonging to the family *Curculionidæ*, and which deposited its ova in Oak wood.

Mr. John Curtis observed that he believed the paste of books was not the only object of attack, as he had seen the leaves of books destroyed by insects.

Several members then detailed their experience with regard to the preservation of objects in Natural History from the attacks of insects. Some placed great confidence in frequently exposing the specimens to turpentine. Some used nothing but camphor, whilst others had employed a spirituous solution of corrosive sublimate with the greatest success.

The President observed that his books had suffered greatly from the boring

* From what passed at the above meeting there can be no doubt that Mr. Crosse had exposed the materials of his experiments to the deposition of the ova or larvæ of the *Acari*, the most common of which is the *Acarus domestica* that infects cheese. The ova of this insect is so small that, by computation, it is said, 90,000,000 may be contained in a space not larger than a Pigeon's egg. There are two ways by which insects might have gained access to Mr. C.'s experiments:—1st, by being accidentally swept or blown from some substance containing them into the solution; or, 2ndly, they might have been deposited on the cotton used as a filter in order to bring the solution in contact with the electrodes of the battery.

propensities of *Dermestes minimus*. He believed that the paste was most frequently attacked by *Acaridæ*, and the leaves of books by Coleopterous larvæ. He had tried many means to defend his library, but the most successful was the securing the circulation of fresh air round the books, which could be done by removing them an inch or two from the wall, and a few lines from each other.

The Rev. F. W. Hope stated, that in America paper had been dipped in an infusion of Quassia as a preservative against insects.

Mr. Ball exhibited some living specimens of a new species of Heath named *Erica Mackaiana*. It most nearly approached *E. tetralix*, from which it differed in the whorls of leaves of the flower-stalk being continued quite up to the pedicels of the flowers. In *E. tetralix* the whorls gradually disappear, and the flower stalk is quite naked for some distance below the pedicels of the flowers. The plant was found growing in the same districts with *E. tetralix*, and invariably retained the above character perfect.

Professor Graham objected to admitting this plant as a species. He thought it nothing more than a variety of *E. tetralix*, and was very much opposed to the system of multiplying species.

Mr. Lankester remarked that there was great difficulty in determining what constituted a species and what merely a variety. Unless some rule could be laid down, by which the value of the characters of a species or variety could be determined, the arranging a new and constant form of a plant under either head must be left to the taste and judgment of the discoverer.

Professor Henslow thought that if the seeds of new forms of plants could be collected and grown in botanic gardens, the value of their characters might be determined by the constancy of their reproduction.

After some further remarks on the subject, from Messrs. Babington, Ball, and Mackay, the section concluded its meeting for that morning.

On Tuesday the section was better attended than on the former morning. The President commenced the business of the morning by stating that he was about to read a letter which, although not from a professed naturalist, would throw some light on a question at issue between two eminent comparative anatomists. He alluded to the difference of opinion on the development of *Crustacea* that existed between Mr. Thompson and Professor Rathke of Berlin. The former denies that *Crustacea* pass through any changes previous to their assuming their perfect form, whilst the latter contends they do undergo certain changes. It might appear at first sight, strange, that animals so high in the scale of organisation as Crabs and Lobsters should undergo the same changes as insects; but he thought the facts contained in the letter would settle the subject. It was extraordinary that Mr. Thompson should take the view he did, as he had long

ago pointed out the development of the Cirrhapods, which are first deposited free, and afterwards become fixed. The letter was from Captain Du Cane, of Southampton, who had been led accidentally to investigate this subject. He had obtained the ova of what he supposed at first to be the Common Prawn, from a ditch to which the sea had access, but on examining the water he found it only slightly brackish, and therefore he inferred it was not the Common Prawn, and proposed to name it the "Ditch Prawn." After keeping these ova for some time they produced a number of minute diaphanous animals, altogether different from the full-grown Prawn. On attentively watching them he found that they assumed different forms as they increased in size. He was, however, unable to trace their changes beyond the third day, as they invariably died at this period. The letter was accompanied by drawings of the various forms the animals had assumed.

The President observed that it was generally difficult to keep salt-water animalculæ alive, as the water became so soon decomposed. The letter of Capt. Du Cane was valuable, and he hoped that the subject of the development of *Crustacea* would meet with more attention than it had done at present. He questioned whether many of the received species of *Crustacea* were any thing more than one animal in its several stages of growth.

Dr. Richardson inquired if it were not possible for Capt. Du Cane to have mistaken some parasitic animals for the young Prawn?

The President replied that he did not think this probable, as the ova were found several times in great abundance, and their development led to the same results.

The Rev. W. F. Hope suspected the animal whose development had been observed belonged to the Shrimp and not the Prawn family. The Ditch Shrimp—which he suspected this to be—was common on the Norfolk and Suffolk coast.

Some general remarks then followed by various members on the economy of Crustacea.

Mr. Haliday exhibited some plates of the *Argas* and *Ixodes*, which produced the poisonous bites alluded to yesterday.—The President observed that the term "bite" was improperly applied to the wound produced by these insects. They were the result of the introduction of their long serrated proboscis, and he thought the painful consequences were the result of violently extracting the part from the skin.

Mr. Babington then read a "Notice, with the Results, of a Botanical Tour in Guernsey and Jersey." He spent two months on the islands, collected about 500 species, and obtained a list from Mr. Saunders, nurseryman, of 225 others. Of plants not before recorded he had found the following:—*Hypericum lancifolium*, *Neottia æstivalis*, *Sinapis incana*, *Mercurialis ambigua*, *Arthrolobium ebracteatum*, *Atriplex rosea*. Of plants common in England he had not seen in

the Channel islands: *Anemone nemorosa*, *Bromus asper*, *Campanula* (none of the genus), *Hypericum hirsutum*, *Listera ovata*, *Betula alba*, *Caltha palustris*, *Habenaria chloranthus*, *Helianthemum vulgare*, *Juncus glaucus*, Of those common in England and rare in the Channel islands he had found *Cardamine pratensis*, *Lamium album*, *Primula veris*, *Ranunculus ficaria*, *Mercurialis perennis*. Of those rare in England and common in the islands, he had met with *Orobanche cærulea*, *Scrophularia scorodonia*, *Lotus hispidus*, *Erodium moschatum*, *Iris fœtidissimus*, &c.

Mr. Allis then read a paper "On the Sclerotic Bones of the Eyes of Birds and Reptiles." He began by adverting to the little attention this subject had received from naturalists and comparative anatomists. When he commenced his investigations he had no idea of the difference in size, form, number, and texture these peculiar organs presented. He then made quotations from Cuvier, Blumenbach, Yarrell, Carus, and Buckland on this subject; and having demonstrated the points of agreement and difference between his observations and those of the authors above quoted, he stated that "the shape of the individual bones is so various, that it cannot be given in any general terms; the external edge of the bones is, in most instances, beautifully serrated, but the serration is not visible in the bony ring: this serration being generally destroyed by the process of boiling that is necessary to their preservation. The rings generally overlap each other, there being a depression on the under side of one bone, and a precisely corresponding one on the upper side of its fellow; so that when overlapping each other they present nearly an even surface, having one bone with both depressions on its inner surface, and forming an interior key to the arch, another, having two depressions externally, and forming an exterior key. They form a defence and protection to the eye, and those birds which are pugnacious, or have a peculiarly rapid flight, or vary their attitude in flying, &c., have the sclerotic rings of larger size and more convex form, and are of greater strength; the same remark holds good with respect to water-birds. Another use of these bones is, altering the convexity of the cornea, as mentioned by Dr. Buckland." He then exhibited a great number of specimens of these bones, and observed that in the Eagles and Vultures they were strong and large, and varied in number from fourteen to sixteen; in Owls soft and porous, and not hard, as Cuvier had stated; in the *Gallinidæ* the number varied from thirteen to seventeen; in the *Columbidæ* they were small and feeble; in the Ostrich tribe they were large; in the *Grallæ* small and feeble; in the *Scansores* the same, and twelve or thirteen in number; in the Swimmers they were weak and small, and from twelve to sixteen in number; in Divers strong and large, and twelve to fifteen in number; in the *Passerinæ* they varied considerably, but were generally weak; in Reptiles they varied considerably in number, shape, and size.

A paper by the Rev. J. Reade, "On the Chemical Composition of Vegetable Membrane and Fibre," was read by the Secretary. The author stated that his attention was directed to this topic by Professor Henslow's observations in his work on Botany, that the chemical composition of the membrane and fibre of plants was very difficult to be obtained. Having noticed the success with which his friend Mr. Rigg, of Walworth, analysed vegetable substances, he requested him to undertake this subject, and he had obtained the following results.

Spiral vessels from a Hyacinth yielded—

Carbon	41.8
Hydrogen	1.1
Nitrogen	4.3
Water	51.8
Residuary matter	1.0
	100.0

Cellular tissue :—

Carbon	39.2
Oxygen	7.4
Nitrogen	3.9
Water	48.5
Residue	1.0
	100.0

An analysis of different parts of the flower-stalk of the Hyacinth gave the following results :—

	C.	H.	O.	N.	W.	Res.	
Epidermis and stomates	41.7	—	2.0	4.0	50.8	1.5	100
Cellular tissue beneath epidermis	41.8	—	2.1	4.1	50.5	1.5	100
Woody fibre under bark	39.2	0.5	—	5.7	55.6	1.0	100
Spiral vessels	35.8	1.7	—	3.9	58.1	0.5	100

In these experiments the existence of nitrogen to so great an extent was pointed out as remarkable. The author also thought they tended to prove that vegetable fibre was not a form of membrane, as generally supposed.

Professor Henslow observed that, in his work, he had alluded to the great difficulty of isolating entirely either fibre or membrane. The cells of the cellular tissue must contain some fluid matter in their interior, besides the fibre that lined them externally. Mr. Rigg had experimented on spiral vessels which contained both membrane and fibre; therefore, the ultimate composition of membrane and fibre were still a desideratum.

Professor Lindley remarked that in a subject of this kind it was necessary that the facts should be properly understood. He was not at all satisfied with the conclusions of the paper. In the first place, he feared the author was not well acquainted with the structure of plants, for he had mentioned that the

petals of the Hyacinth contained no spiral vessels, when in fact they existed there in great abundance. In the next place, it appeared to him that the author had confounded cellular membrane and woody fibre with elementary membrane and fibre. The analysis of the former was easily obtained, but that of the latter must still be a desideratum.

The Rev. F. W. Hope then read some "Remarks on *Filaria*, a Genus of Parasite Worms, recorded as infesting Man and Insects." His object, he stated, was to call the attention of the Section to this class of parasites, and to solicit authentic information respecting them. He believed they first attacked insects in their larval state, and grew with their growth. He thought one of the uses of parasites might be to control the exuberance of species. He presented to the meeting a table of forty genera, and several species of insects, infested by *Filariæ*. To confirm the opinion of these parasites attacking the larvæ of insects, he instanced those genera, as *Acilius*, *Colymbetes*, and *Phryganea*, in which the larvæ are aquatic. *Phryganiæ* are frequently the subjects of these attacks, which could not well take place after they had emerged from the pupa state. He had not, however, succeeded in detecting *Filariæ* in larvæ of any kind. Rudolphi had stated that he thought all the parasitic *Filariæ* were of the same genus: but he doubted this; and even Rudolphi had marked one as "genus doubtful." The *Filaria* found in *Phryganidæ* differed from those of *Coleoptera*. The species of the genera *Ascaris* and *Filaria*, he thought would bear distributing into several other genera. The species found in *Phryganidæ* appears intermediate between *Gordius* and *Filaria*. The author concluded by suggesting that the term *Filaria* be restricted to the *Filaria Medinensis* (or Guinea-worm) and its congeners; while several other sub-genera may be formed, to include the parasites infesting insects.

Mr. Duncan inquired if it was the opinion of Mr. Hope that each genus of insects was attacked by its peculiar parasites? It had been stated, at a former meeting of the Association, that this might be one means of determining the genus or species of animals; and, if the parasites were constant, it would undoubtedly be a valuable means of diagnosis.—The President observed that he had seen parasitic worms in the *Arachnida*; and in the *Bibliothèque Universelle* there was an account of a *Filaria* found on a species of *Gryllus*. The economy of these animals is very curious: they may be dried, and brought to life again by moisture at an indefinite period. They are common in the waters of clay soils, and may probably be introduced into the system in the same manner as the *Fasciola*, which produces the "rot" in sheep, and which exists in the water from which the animals drink.—Mr. Hope replied that he believed each genus of insects had its distinct parasite, and he thought that even now he could tell to what order an insect belonged by examining its parasitic invaders.

Mr. Bowman read a paper by Mr. Gardner, "On the Internal Structure of

the Wood of Palms." The attention of the author was directed to this subject by the remarks of Professor LINDLEY in his *Introduction to Botany*. Being situated where he had access to abundance of Palms, he determined to test the truth of the views of MOHL. He accordingly made a vertical section of a Palm-tree about four inches in circumference, and whose leaves were about three inches separate from each other. Having done this, he could trace the fibre of the wood proceeding from the base of the leaves, passing from this point to the centre of the stem, at an angle of about 18 degrees. It then turned inwards and outwards to within a few lines of the bark, forming an arc about two feet and a half in length. The fibres of the wood were distinctly traced for some way up into the substance of each leaf. Several Palms of varying age and size were examined, and all exhibited the same appearance. The author then proceeded to answer the following queries of Dr. LINDLEY in his work:—1. Is the whole of the lower part of the stems of Palms choked up by the multitude of descending fibres? Answer.—The fibres of the leaves do not descend from the upper leaves to the bottom of the plant, but terminate at various distances, according to the situation of the leaf; the fibres of the older leaves extending further than the more recent ones.

Question 2.—Is the lower part of the bark harder and much more filled with woody fibres than the upper? Answer.—The fibres of the lower leaves being longest, make the lowest portions of wood harder than those of the upper, by the greater quantity of interlacement produced. The lower part of the stems of the Palms is the only portion used by the natives of the country in which they grow for economical purposes.

Professor LINDLEY observed that this paper confirmed the views of the structure both of endogens and exogens, which had been increasingly embraced by botanists. In the first place, the views of MOHL on the structure of endogens were confirmed. There was, however, a slight difference between Mr. GARDNER and Professor MOHL; the latter having stated that the woody fibres of endogens terminated *in* their cortigal integument, whilst the former had traced them only within a few lines of this point. In the next place, the paper confirmed the theory of the formation of wood from the emanation of fibres from the leaves. Whatever might be the difference between the arrangement of the fibres of exogens and endogens, there could be no doubt that their origin was the same. Mr. GARDNER had referred, in his paper, to the glandular disks on the woody fibre that were, at one time, thought to characterize the order *Coniferæ*. He, would, however, draw the attention of the Section to a fact that had lately been discovered, and not hitherto published, that these glandular disks existed on all the woody fibres of plants that yielded resinous matter. BROWN first discovered them in the wood of *Tasmannia* (*Winteraceæ*), and GRIFFITHS had since demonstrated them in *Sphærostema* (*Schizandreæ*).

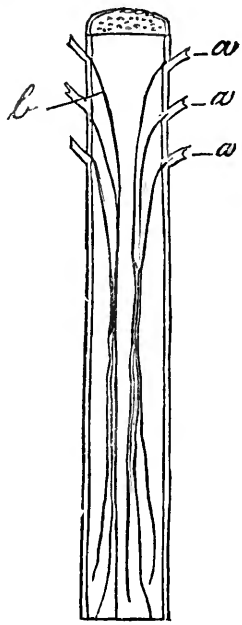


Fig. 1.

In the accompanying diagram (Fig. 1.) we have endeavoured to shew the course of the fibres in the stem of Palms, as given by Mr. BOWMAN. a. a. a. leaves from which the fibres proceed. b. a fibre proceeding throughout its whole length, but terminating in the bark as supposed by MOHL.

Mr. NEVAN read a paper on the results of some experiments performed by him, on certain points of Vegetable Physiology.

The experiments were performed on Elms, forty years of age, in February, 1836.

Experiment 1.—The stem of the tree was denuded, in a circle, of its cortical integument alone, leaving the alburnum and cambium beneath uninjured. On the May following the denuded part was filled up by the exudation of bark and wood from the upper surface of the wound, and the tree had not suffered in growth.

2.—The bark and *cambium*, without injuring the alburnum, were removed in the same manner. In August 1837, this tree sickened, and there was no formation of wood or bark in the wounded part. Two developments, however, took place, one from above, the other from below; the former having the appearance of roots, the latter were branches with leaves.

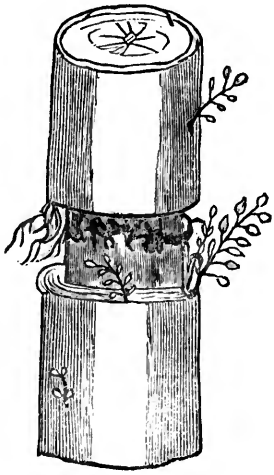


Fig. 2.

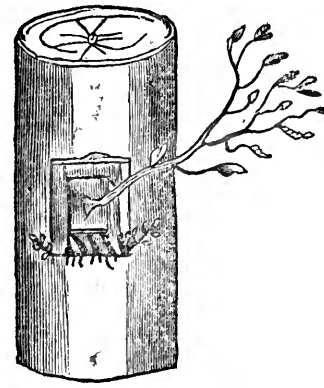


Fig. 3.

Appearance of Elms, in second Experiment, as exhibited to the Association.

3. The bark and two layers of alburnum were cut away. The tree was at the time unhealthy; it, however, put forth its leaves on that and the ensuing spring, but shortly after died. No sap was observed above or below the wounded part. Roots were developed from the upper, and branches from the lower part of the section.

4. The bark and six layers of alburnum were taken off. The tree became much less vigorous, but did not die, and otherwise presented the same appearance as the last.

5. The bark and twelve layers of alburnum were stripped. The consequences were again similar to the last two; the alburnum above and below the cut being dry, but an accidental cut that penetrated into the heart-wood exuded sap.

6. This was a repetition of the experiment of Palisot de Beauvais, but on a much larger scale, by cutting away a circular ring of bark around a single branch. The branch continued to grow, and roots sprouted from the under surface of the isolated bark and branch.

7. In this the whole of the wood of the tree was cut away, except four pillars, composed of bark and sap-wood. In this case the sap first appeared from above, descending by the pith, and then from the heart-wood, the alburnum being dry. In this case the sap must have passed up the alburnum, and horizontally through to the heart-wood.

Mr. Nevan inferred from these experiments—1. That the life of the tree does not depend on the liber or cambium. 2. A descent of sap takes place before the development of leaves. 3. That new matter arises from below; which had not previously been allowed. He thought there were two distinct principles in the tree,—one the ascending, or *leaf-principle*; the other the descending, or *root principle*. Mr. Nevan had also performed some experiments on the conversion of roots into branches, and came to the conclusion that buds or branches might be developed from any part of the root above its extreme end, from which point it was impossible for buds to be developed.

Professor Lindley remarked that these experiments confirmed entirely the theory of the structure of wood adopted by Du Petit Thouars. He did not think that the existence of any new principle could be inferred from the experiments. In the seventh experiment the horizontal circulation of the sap was proved, which confirmed the accuracy of Hale's experiment, in which he cut a tree on alternate sides, almost through, and found the sap still ascended perfectly well. With regard to buds proceeding from roots, their occasional formation on these parts had long been well known, and they might always be certainly developed where the roots assumed the situation or character of the stem. He then alluded to a plant lately brought to Europe (*Cissus hydrophora*) in which the fibres of wood, as they descended from the leaves, separated in the form of

network, and gave a strong confirmation to the theory of the formation of wood of Du petit Thouars.

Mr. Gray then made some remarks on a few rare Mammalia in the Liverpool Philosophical Museum. 1. A new species of Otter from Brazil, intermediate between the genera *Lutra* and *Enhydra*. It possessed broad flat feet and tail, and flat head, but not so marked as in the marine Otter, and much more so than the land Otter. 2. A young specimen of the Hyæna of New Holland (*Thylacinus cynocephalus*), perhaps the only one in Great Britain. 3. Two specimens of the *Antelope Philantomba*, which had only been described from a young specimen in the British Museum, and on this account the size had been unknown. One of these specimens, being fully grown, determined that point. 4. *Viverra Linsans*, a rare animal, only known in this country through a bad specimen brought from Java, and called *Felis Javanensis*. 5. *Phoca lemura*, 12 feet long, being a very fine specimen, and probably one of the largest Seals in a preserved state in this country.—Mr. Gray observed that all these animals were acquisitions to science, and would be valued as such by the zoologists present. He also observed on the inducement it offered for further exertions on the part of local museums.

Professor Lindley then read a paper on a new plant, belonging to the natural order *Nymphæaceæ*, that had lately been introduced to the attention of botanists by M. Schomburgh, agent of the Geographical Society of London; but, he was sorry to say, only drawings of the plant had at present been obtained. He read an account given by M. Schomburgh of his discovery of it. (See report of Botanical Society, in our current number.) He also made some observations on the structure of this plant, and proposed to give it the name *Victoria regalis*. He concluded by stating that he hoped the opportunities afforded by the trade of Liverpool with America would soon be the means of introducing this truly splendid exotic to our shores.

Wednesday.—Some papers were read, and subjects discussed arising out of questions which had occupied the meetings on preceding days, before the room was opened for the reception of visitors. As our pages are intended for general perusal we shall not give an account of this portion of the business of the section.

The Rev. James Yates was requested to read the Report of Dr. Daubeny on the cultivation of plants under glasses without ventilation.

In the latter end of last April, the Doctor introduced into globular glasses, covered over with bladder, three several sets of plants. In the first were *Salum*, *Lobelia*, &c.; in the second, *Primula*, *Alchemilla*, &c.; in the third, *Armeria*, *Sempervivum*, &c. At the end of ten days the plants were healthy, and had grown. The air in the jars was examined, when it was found that the first and

second had 4 per cent. more oxygen than the atmosphere, and the third 1 per cent. more. This was the result of examination during the day, but at night the excess of oxygen had disappeared. On the eleventh day the first jar contained 2 per cent., the second and third 1 per cent. excess of oxygen. At night there was less oxygen than in the atmosphere. On the 20th of June the following results were obtained: in first jar $2\frac{1}{2}$ per cent., in second jar $3\frac{1}{4}$ per cent., and in third jar 4 per cent. less oxygen than in atmospheric air. Some experiments were then made to determine the rate of access of air to the plants through the bladder, and it was found that when the jars were filled with oxygen, the average rate at which it escaped till the internal air was like that of the atmosphere, was 11 per cent. daily.

Professor Lindley then read a paper by Mr. Ward on the same subject. The Professor observed that Mr. Ward, of Wellclose Square, London, had made many experiments on the subject of keeping plants in unventilated vessels, and was the original proposer of the plan for preserving plants in this manner. The discovery of their being able to be thus preserved, was of great practical importance, as it enabled us to bring plants from foreign climates that could in no other way be introduced into this country. The paper commenced, "Consider the Lilies *how* they grow." The attention of the author was first directed to this point by accident. He had placed under an inverted jar a chrysalis, and on looking at it some time after, he found a Fern and a blade or two of grass had grown under the jar, the sides of which appeared to be covered with moisture. Taking the hint, he introduced some plants of *Hymenophyllum* under a jar, which grew and flourished in this situation. The Messrs. Loddige then enabled him to perform some experiments on a larger scale. The plants were inclosed in glass cases, or small green-houses, made tight with paint and putty, but, of course, not hermetically sealed, and were watered once in five or six weeks. From his experiments the author came to the following conclusions:—First, that confining the air secured a more equal temperature for plants, as its expansion and contraction by change of external temperature, by its relation to heat in those states, prevented any great or sudden change. This was remarkably exemplified in some plants that were brought from India, which were in the course of three months successively exposed to 20°, 120°, and 40° of Fahrenheit. The enclosed plants were very frequently found surrounded by a temperature higher than the external atmosphere. Secondly, that Vascular plants required to be grown in a greater quantity of air than Cellular. Thirdly, that light must be freely admitted. Fourthly, that the enclosed air must be kept humid. This can be done by occasional watering, provided any means of escape for the water are allowed, but is not necessary where the water has no means of escape. Besides the advantage of enabling us to bring plants from abroad, it

would also furnish to the physiological botanist the means of observing those operations of Nature in his study, for which, before, he had been obliged to resort to the forest and the plain. As an instance, the author had been enabled to observe the rapid growth of a *Phallus fœtidus*, by merely devoting to it a few hours of the night. The writer concluded by suggesting that this mode of preserving tropical productions might be extended from the vegetable to the animal kingdom.

Professor LINDLEY also read a letter from the Messrs. LODDIGE to Mr. WARD, stating that in every case in which his instructions had been attended to, foreign plants had arrived in a state of safety.

The Rev. J. YATES read a paper on the same subject. The Committee of the section of Natural History, wishing to make an experiment, on a large scale, which might be exhibited at the meeting of the British Association in Liverpool, a green-house, 9 feet by 18 in dimensions, and with a southern aspect, had been erected in the yard of the Mechanics' Institute, in Mount-street. It was stocked with foreign plants of all kinds, to the number of about 80 species. A list of the plants, and observations on their condition and progress, by Mr. MURRAY, of Liverpool, was laid upon the table. The general result of the experiment was, that the plants had flourished perfectly well, being in a vigorous and healthy state, without any extraordinary growth. Many of them had flowered, and *Canna* and some Ferns had ripened seed. The green-house had no flue, and no provision for any artificial heat. It was judged best to construct it without a flue, both as least expensive, and for the purpose of trying, by a fair experiment, to what extent plants might in this state be kept alive, even during the severity of winter, which would certainly die if fresh air were more freely admitted. It was also to be observed, that nothing had been done to prevent the water from escaping through the yellow sandstone rock, on which the green-house was erected, and hence it had been necessary to give the plants occasionally a fresh supply of water.

Mr. GRAY stated that he had grown Droseras under glass jars: one circumstance with regard to them he thought worthy of remark, their leaves did not turn red, as is usual when exposed to the atmosphere. Professor GRAHAM observed that although in Mr. WARD's experiments atmospheric air had been admitted, he did not think it essential to the welfare of the plant. Plants grown in this manner only required a glass large enough to contain a sufficient quantity of air, to permit of the absorption of oxygen without deteriorating the air of the vessel to such an extent as to injure the plant. The want of red in the leaves of *Drosera*, he thought, depended on the presence of moisture. A singular point was, that the plants growing naturally in arid soils and climates, flourished in the humid

and confined atmosphere of the closed jars. He had placed under jars completely closed some plants of *Cacti*, which had flourished more than those now so situated. He did not think that animals could be sustained in the same manner, as they consumed all the oxygen which they inspired.—Dr. TRAVERS remarked that he had seen common Mould, which was a species of Fungus, in a tube which had been heated and hermetically sealed for two years.—Mr. BOWMAN had observed that *Droseras* did not under the jars change the colour of their leaves as in open air. He wished to know of Dr. GRAHAM, how long his *Cacti* had lived in a moist atmosphere; they were naturally at certain seasons of the year exposed to heavy rains. He thought it was very possible for plants and animals to live together. —Mr. DUNCAN inquired, if plants were healthy and fit to be transplanted to the open air, when treated in this manner.—Professor GRAHAM stated, that the *Cacti* had lived without accession to air eighteen months. He believed that plants and animals might live together, provided the vessel in which they were inclosed was sufficiently large to enable the plants to absorb the carbonic acid gas expired by the animals. This would be a representation in miniature of what takes place in our own world.—Professor LINDLEY, in reply to Mr. BOWMAN's question, stated that plants suffered little when confined in carefully closed vessels. From improper treatment they may become debilitated, but he had seen them arrive from foreign countries, when treated in this manner, in the most perfect state of health. Want of skill in the management of those brought from abroad was the most frequent cause of injury. Too much water was frequently given to plants when just packed. They had better be placed in too dry, than in too moist, an atmosphere. He had seen this illustrated in plants from India; plants exposed to too much moisture rotted very soon. He thought the change of colour in the leaves of plants depended on their free exposure to light: the Droseras mentioned had not been exposed to the free access of light; this was certainly the case with the Droseras at Chatsworth, and those of Mr. GRAY. The discovery of Mr. WARD was not only important in enabling us to import foreign plants, but it also rendered the ventilation of green-houses less necessary, and would enable gardeners to manage the artificial climate of their hot-houses with less difficulty. The fact that cellular plants grow best under this mode of treatment was well established.—Professor GRAHAM stated that the order in which he had found plants to grow best, was, 1. Lycopodiums; 2. Grasses; and 3. Begonias.

Mr. POOLEY then made a few remarks on some Swallows which he had found embedded in ice in Germany. He thought this fact involved the probability of the hybernation of these birds. A discussion arose, in which Mr. ALLIS, Mr. SELBY, and Professor JONES, pointed out the impossibility of animals so

high in the scale of organisation as the Swallow being capable of hybernating.*

Mr. Gould exhibited several drawings of birds, and proceeded to make some remarks on the family *Trogonidæ*. This family, he stated, might be regarded as strictly tropical, as by far the greater number of the species inhabited South America; none of those inhabiting Asia and Africa having any specific relation with those of America. It is a remarkably isolated group, no *direct* affinity with other forms having been discovered. In organization and economy they are perhaps nearest the *Caprimulgidæ*. They inhabit the most retired and gloomy forests, remaining secluded during the day, and appearing at night; evening and morning being the only time in which they take their prey. They usually feed on insects, capturing them during flight, but sometimes they feed on berries. They incubate in the holes of trees, and, like the majority of Fissirostral birds, produce white eggs. The tribe present among themselves but little difference of structure. There are, however, well marked divisions according to their geographical range. Mr. Swainson divides them into five minor groups, *Trogon*, *Harpactes*, *Apaloderma*, *Temnurus*, and *Calurus*. The species of bird that Mr. Gould presented before the Section belonged to the latter group, and he proposed to call it *Calurus Peruvianus*. This subgenus comprises the most beautiful birds of the whole family, and perhaps in the creation; it contains five species, only one of which until lately had been characterized. The present species, although it has not the lengthened upper tail feathers of the *C. resplendens*, (which was exhibited), yet its relations to that species were sufficiently obvious.

Dr. Vigors, M.P., remarked on the necessity of not only knowing the structure and plumage of birds, but also their general economy, in order to arrange them in a proper manner. The kind of food this family, the *Trogonidæ*, partook of, would, in a great measure, determine their relations. They appeared to stand between the Scansorial and Fissirostral birds. Their feeding and colour brought them near to the latter group, but their powers of wing were not so great.

Mr. Bickersteth then presented some milk that had been obtained from the *Galactodendron utile*, the Cow-tree of Humboldt.

* We wonder at this subject being seriously discussed by the members of the Section, as there exist so many facts proving the impossibility of birds hybernating. There is nothing remarkable in a bird living for a few days imbedded in ice; all animals (even Man) will bear to be surrounded for many days with ice or snow which never have a temperature less than 32°. Some of the members inquired how could the animals respire? We believe that ice contains air and is pervious to the atmosphere, and thus afforded an abundant supply to maintain the low state of vitality in which the Swallows must have existed. The notice of Swallows issuing from Grasmere Lake, in *The Naturalist*, p. 381, requires a more minute and definite description of the circumstances before the occurrence can be looked upon as a fact.

The milk was handed round to the members; it smelt sour, and tasted bitter and disagreeable.

Dr. TRAILL related that he had obtained from Caraccas some milk of a reputed species of *Galactodendron;* it kept very well, and at the end of six months was quite sweet. It differed from the milk of the Cow-tree of HUMBOLDT in not possessing Caoutchouc.

Mr. SANDBACH exhibited two new birds from the museum of the Royal Institution, Liverpool, and proposed calling them *Pyronites superciliosu*, and *Parus melanotus*.

Mr. FORBES read a paper on some new forms of animals and plants. He exhibited two new mollusca of the order *Nudibranchia*. The first allied to *Doris pinnatifida*, MONTAGU, the second to *D. longicornis* and *D. cærulea* of the same author. They were both from the Isle of Man. The next animal was the *Asterias rubens* of JOHNSTON, which, he stated, was not *Asterias spinosus* of LINK, as had been supposed. This rare animal had been lately obtained by Mr. WALLACE, of the Douglas museum, Isle of Man. He also exhibited two specimens of *Polygala* and *Euphrasia*, which he thought might be found to be distinct species of those genera.

Professor GRAHAM stated that Dr. MACNAB had lately added to the Scotch Flora, 1. A new species of *Arenaria*, 2. *Lathyrus pisifolius*, 3. *Cochlearia Anglica*.

There was no meeting on Thursday, in order to enable the members to visit the collections of the Earl of DERBY, at Knowsley.

FRIDAY.—The meeting commenced this morning by Dr. VIGORS proposing a vote of thanks to the Earl of DERBY for his liberality to the members who visited Knowsley yesterday.

The President stated that he had a new plant to introduce to the section, and which he had discovered on the body of a dead Fly on a window-sill in Liverpool. He observed that the appearance this gave to the Fly had not escaped the notice of KIRBY, who had ascribed it to a kind of plethora in the insect. He was convinced, however, that it was a plant, and he believed at present undescribed. It was an interesting fact, as we had now positive evidence of the capability of the vegetable and animal kingdom living parasitically on each other, as well as on themselves. Plants living on plants, animals on animals, and animals on plants, have been long known, but now we have the singular fact of plants living on animals. They must be called Epizooites.

Professor LINDLEY stated, through the President, that a disease called "Muscardine," had existed among the Silk-worms of France, which had occupied the

ttention of the *Académie des Sciences*, and this was supposed to arise from a parasitic plant upon the animal. He thought the present plant was a species of the genus *Botrytis*.*

Mr. MALLETT read a paper on "The power possessed by Aged Trees to reproduce themselves from the centre of the Trunk."

He observed that trees, at a certain period of their growth, became decayed and hollow in the centre. This process was frequently followed by the splitting up of the trees, so as to make it resemble several trees, instead of one. He then described this process as arising from the power the bark possessed of depositing new wood, when the old became decayed. The new wood thus deposited, becoming covered also with fresh deposited bark, was the cause of the entire removal of some parts of the old bark, and the formation of the separate trunks alluded to. But the process did not stop here, as the deposition of wood kept on, and frequently filled up the interior of the tree, that had been formerly decayed. The centre of the tree appearing to be filled up with "liquid wood." In proof of his views, the author exhibited several drawings of old trees, as the Mulberry at Battersea, the Cobham Chesnut, the Fortingal Yew, &c.—Mr. MALLETT also exhibited some very fine specimens of crystallized Hæmatine, the colouring principle of the Logwood tree *(Hæmatoxylon Campeachianum.)*

Professor HENSLOW differed from Mr. MALLETT; he had seen tree grow within tree, and was more inclined to attribute it to the accidental deposition of a seed within the old tree, than to any deposition of new wood. According to Mr. MALLETT, the growth of trees might be eternal, but this was an unphilosophical assumption.—Mr. DUNCAN stated, in confirmation of Professor HENSLOW's views, that he had seen a Sycamore growing within a Lime.

Professor GRAHAM stated that he had lately seen an instance in which the branch of one Fir tree had been transferred to another, by the union of the wood of the two branches, which had been accidentally brought together, and subsequently separated. He had seen also a Beech and Horse Chesnut united, and another instance of union between the Ash, Elm, and Holly. He thought it impossible that the fluids of the different trees in these cases should be transmitted generally through the united trunks. There must be, however, organic connexion between these trees, and he was puzzled to know the kind of union that existed.—Professor HENSLOW doubted whether organic connexion existed in the cases related; a very close approximation might take place, but he questioned the possibility of an organized interval.

* The dead flies in the town of Liverpool assumed generally the appearance adverted to by the President, and an eminent comparative anatomist, to whom we mentioned it afterwards, stated his belief that it was some excrescence arising from disease in the fly. He remarked that it always occurred in the same spot and on both sides of the fly.

Mr. J. Smith exhibited to the meeting two species of undescribed shells of the genera *Fusus* and *Serpula*.

A paper was announced, but not read, by the Rev. J. Reade, "On the solid Materials found in the Ashes of Plants and animals."

Professor Lindley made some remarks "On the structure and affinities of *Orobanchaceæ*." He stated that this order had been usually placed near *Scrophulariaceæ*, and in his *Natural System* he had included it in the Scrophulal alliance. In their didynamous stamens, superior ovary, and monopetalous flowers, they resembled *Scrophulariaceæ*. Schultz had placed this order near *Gentianaceæ*, on account of their fruit and placentation resembling those of this order. Other botanists had placed *Orobanchaceæ* near *Monotropaceæ*, on account of their membranaceous foliage and parasitical habits. One important point in which they differed from *Scrophulariaceæ*, was the position of their carpels, with respect to the axis of inflorescence. In *Orobanchaceæ* the carpels were right and left, or perpendicular to the axis, while in *Scrophulariaceæ* they were fore and aft, or parallel to the axis. This pointed out another affinity with *Gentianaceæ*, which had its carpels in the same position. With regard to its affinity to *Monotropa*, there was a point which had been much overlooked by botanists, the presence and absence, or large and small quantity, of albumen in the seeds of plants; he had found this a very constant character, and one of the best for indicating the affinities of plants. Both *Monotropaceæ* and *Orobanchaceæ* were distinguished for a minute embryo, lying in a large quantity of albumen. *Monotropaceæ* was a polypetalous order, but its structure generally compelled botanists to place it amongst monopetalous plants, near *Pyrolaceæ* and *Ericaceæ*. He remarked, by the way, that the division of plants according to the presence or absence, cohesion or non-cohesion, of the petals, was very artificial, and hoped that it would soon be abandoned. He thought that the affinities of *Orobanchaceæ* were stronger with *Monotropaceæ*, *Pyrolaceæ*, and *Gentianaceæ*, than with any other orders. The Professor then made some remarks "On the Placentation of *Orobanche*," which he said had made him doubt the correctness of the present theory of the situation of the placenta. It was generally supposed that the seat of the placenta in the carpellary leaf was its margin, so that it would be necessarily placed alternating with the dorsal suture or pistil. Exceptions, however, frequently occur, as in *Parnassia*, *Papaveraceæ*, &c.; and the placenta is spread over the whole surface of the carpellary leaf, or on various parts of it. In the carpels of *Orobanche* there are evidently two placentæ, but having no communication with the margin of the carpellary leaf. He therefore inferred that any part of the surface of the carpellary leaf might become ovulized. He was borne out in his opinion by the fact that leaves which occasionally produce buds, produce them from all parts of their surface, as seen in *Ornithogalum*,

Nymphæa, *Butomus*, &c.; the production of buds on leaves and ovules in carpels being analogous processes.

The jaws of a very large Shark, and some oil from its liver, with a specimen of *Goliathus magnus*, were exhibited. This is the largest species of insect known, measuring three or four inches in length, and one and a half in breadth. It is also very rare, only three specimens existing at the present time in the cabinets of Europe.

The President observed that he believed this insect to be *Goliathus giganteus*. It was one of the rarest insects known. It had been offered for sale at the price of fifty guineas, and he had himself offered twenty guineas for a specimen. It belonged to the family of the *Cetonidæ*. This family was one of the most extensive and best known groups of insects that we possessed, and afforded the best opportunities for acquiring ideas of general arrangement. It contained 600 species, only six of which were British. The family *Buprestidæ* perhaps equalled them in numbers. He then made some remarks on the forms of the section *Goliathides*. They might be reduced to five principal forms of structure; the four first characterized by the forms of their labium, the last by the situation of its epimera.

The President then exhibited some wood from the new pier at Southampton, that had been attacked by the *Limnoria terebrans*. He had been applied to by Captain Du Cane, mayor of Southampton, for his opinion as to what was the best course to be pursued, as the existence of the pier was threatened by these devastating animals. He had recommended that stone be substituted in the pier for wood. He believed that this was the only plan, for wherever wood was exposed to the *gentle action* of salt water, these crustaceous animals attacked it. They never attacked wood exposed to the more violent action of the waves of the sea.

The Rev. F. W. Hope stated that a memoir had been published on this subject by Mr. Coldstream, in the last volume of the Transactions of the Entomological Society. He had heard that Kyanised wood was not attacked by White Ants, and he thought it might be applied to prevent the attacks of these terebrating animals. These remarks led to a general conversation on the subject of preserving wood from the attacks of insects and crustacea, as well as the bottoms of vessels from the adhesion of plants.

Mr. Francis stated that sap-wood, exposed to the action of chloride of mercury, became as durable and fit for use as the heart-wood.

Mr. Gray then introduced to the attention of the meeting several new species of the shells of *Gasteropoda*. He observed that not a day passed in Liverpool but he found some new or undescribed species of animal, and he trusted this fact would awaken the naturalists of Liverpool, if there were any, to a sense of the

splendid opportunities their port afforded, of extending our acquaintance with both the animal and the vegetable kingdom. The first was a new genus of land shell, intermediate between *Helix* and *Anostoma*. 2ndly, Several new species which he designated as follows:—*Achatina Funita*, *Carocolla filomarginata*, from India, and *Paludina Yatesii*, one of the largest and most beautiful species of this elegant genus. He then introduced a species of *Unio*, new to this country, and discovered by Mr. GILBERTSON, of Preston, a zealous and exemplary naturalist, at Broughton, near Craven, in Yorkshire. The species was *Unio Roysii*.

Dr. VIGORS stated that he was sorry not to be able to read his paper "On the Classification of Birds" to the Section, at their present meeting. He was not sufficiently prepared to lay before them, distinctly, his views on this important subject. He stated that he should have had great pleasure in doing so, on account of the presence of their honoured President, whose philosophic views of the arrangement of the Animal Kingdom he had endeavoured to apply to his classification of birds.

The Rev. F. W. HOPE exhibited some rare insects he had found in the collection of Mr. MELLY, of Liverpool. The first was a female specimen of the *Cheloderma Childreni*. The second *Chiasognathus Grantii*, and the third a very curious species of *Curculio*.

Other papers had been announced, but as the time for closing approached, they were postponed.

The President then took a general survey of the subjects on which they had been occupied. He pointed out the importance of the inquiries in which the section had been engaged. This section bore on all, and the investigations which they met to pursue, were essential to improvement in other branches of science. It was this Section alone that could explain the anomalous results of the experiments of a CROSSE; it was this Section alone that could decipher the fossil hieroglyphics discovered by the geologist; and it was to this Section that the medical philosopher must repair for obtaining rational and philosophic views of the phenomena of both healthy and diseased bodies. He trusted that the meetings of the Association would be the means of directing increased attention to these branches of science, by shewing to the public the practical value of their investigations.

[We have supplied a full report of the Section of Natural History at the British Association, as we have been enabled, with the kind assistance of a gentleman who attended the meetings, not only to correct the errors of previous accounts, but likewise to add much new and interesting matter, not hitherto presented to the public.—ED.]

PROCEEDINGS OF NATURAL HISTORY SOCIETIES.

GEOLOGICAL SOCIETY.

June 14.—Rev. W. Whewell, Pres., in the chair.—A letter was read, addressed to C. Lyell, Esq., from Dr. M'Clelland, who had been associating with Mr. Griffith in the scientific expedition sent by the Indian government under the direction of Dr. Wallich, to investigate the Natural History of the country, and the circumstances under which the Tea plant is found wild in Upper Assam.

Some high land was seen between the channels of the Ganges and Burrampooter rivers, at the foot of the Kossiah Mountains, or that portion called Garrow-hills; rounded knolls are interspersed throughout the partially inundated plain, and are composed of layers of sands, clays, gravels, and boulders, appearing to be the remains of a talus of great extent, which had been partially swept away by the great hill streams. The foot of the mountains is composed of a rock in which *Nummulites* are found. On ascending the mountain acclivity over limestone and sandstone rocks to Cherra Ponji (a station established at an elevation of above 5,000 feet, and reaching a height of 1,500 feet above the level of the sea), the author discovered a stratum filled up with shells and marine exuviæ two feet thick, reposing upon sandstone and covered by soil, which resembled a well-defined marine beach. Several hundred specimens were, and many thousands might have been, obtained. The species were about 100 in number, and when compared with about an equal number from the Paris basin, no less than twenty species were found to be identical in the two collections.

The sandstone higher up the mountains than this deposit, contained impressions of shells and other organic remains. On this sandstone reposes a deposit of compact limestone, from which 37 species of shells were extracted, consisting of species of *Trochites*, *Cerithiæ*, *Mediolæ*, and of *Pileolus plicatus*, Sowerby. On this formation reposes a bed of coal to the depth of about twenty or thirty feet, in which remains of an exogenous plant were found.

On crossing the mountain towards the centre of the group, the sandstone on which the limestone and coal rest at Cherra Ponji was found for 15 or 18 miles, forming in horizontal lofty undulating lands. Beyond this the strata displayed marks of confusion, and in the first deep river valley, a mass of greenstone was found with the adjoining sandstone tilted up in highly-inclined tabular masses, and compact and glassy in the neighbourhood of the greenstone.

Beyond this (the Bogapani) all traces of sandstone disappear, and the centre of the mountains from Muflong to the highest ridges is composed of syenite.

Granular quartz in slaty and vertical strata is found in contact with this, and displaying progressive changes to the sandstone. The northern side of the mountains from Muflong into Assam is composed of granular, foliated felspar penetrated by quartz veins. Extensive beds of syenite and central nuclei of granite are found as far as the valley of Lower Assam. Hot and salt springs were met with. It was at the base of the mountains that fossil bones were observed by the late Mr. Scott. The author also collected about 160 species of the animals, chiefly birds, of the forest of Assam, as well as 120 species of the fishes of the Burrampooter.

A paper was then read on the remains of a fossil Monkey from the tertiary strata of the Sewalik Hills, in the north of Hindostan, by Capt. P. T. Cautley, F.G.S., Bengal Artillery, and Hugh Falconer, M.D., Bengal Medical Service.

In this communication the authors minutely describe, and compare with that of *Semnopithecus entellus*, an astragalus which had been found in the fossil state, as already mentioned in the letter from Capt. Cautley to Dr. Royle. Though they have for some time possessed this specimen, they were unwilling to risk the announcement on any thing less characteristic than the cranium and teeth. Messrs. Baker and Dura, of the Bengal Engineers, have since found a considerable portion of the face, and the whole series of molars of a quadrumanous animal, belonging to a much larger species than theirs. The fossil astragalus is that of the right hind leg, and was sent, as well as that of a recent *S. entellus*, with the paper. The former was completely mineralized, having a specific gravity of about 2.8, and appearing to be impregnated with hydrate of iron. Although only a solitary bone of the foot, the relations of structure are so fixed, that the identity of the fossil is as certain as if the entire skeleton had been found. This astragalus closely resembles in size and general form that of the recent *Semnopithecus entellus*, but the points of difference are sufficient to leave no doubt about a difference of species.

In the debris or different beds of the formation which yielded to the quadrumanous fossil astragalus, the authors have also discovered the remains of a species of Anoplotherium, also of the Crocodile and Gavial, which now inhabit the Ganges. The Camel, Antelope, and Anoplotherium have been exhumed from the same bed. The Elephant, Mastodon, Hippopotamus, Rhinoceros, Hog, and Horse, have been found in the same formation with the *Sivatherium giganteum*, armed with four enormous sheathed horns; with these have been found several *Carnivora*. Of the feathered tribes there are huge *Grallæ*—of reptiles, besides those already mentioned, there are other Crocodiles and *Testudinata*, both of enormous size.

BOTANICAL SOCIETY.

Sept. 7.—J. E. Gray, Esq., F.R.S., Pres., in the chair.—The Secretary read a communication from Mr. R. H. Schomburgh, Corresponding Member of the Geographical Society, dated New Amsterdam, Berbice, May 11, 1837, on a new genus allied to the Nymphule or "Water-lily" (*Nymphæa*), named *Victoria regalis*, by permission of her Majesty. The communication was accompanied by magnificent drawings of the plant, one half the natural size, which may be seen at the rooms of the Society on any of the nights of meetings. The following account is extracted from Mr. Schomburgh's paper:—"It was on Jan 1. this year, while contending with the difficulties Nature opposed in different forms to our progress up the river Berbice (in British Guiana), that we arrived at a point where the river expanded and formed a currentless basin: some object on the southern extremity of this basin attracted my attention—it was impossible to form any idea what it could be, and animating the crew to increase the rate of paddling, shortly afterwards we were opposite the object which had raised my curiosity,—a *vegetable wonder!* All calamities were forgotten; I felt as a botanist, and felt myself rewarded. A gigantic leaf, from five to six feet in diameter, salver-shaped, with a broad rim of a light green above, and a vivid crimson below, resting upon the water: quite in character with the wonderful leaf was the luxuriant flower, consisting of many hundred petals, passing in alternate tints from pure white to rose and pink. The smooth water was covered with them; I rowed from one to another, and observed always something new to admire. The leaf on its surface is of a bright green, in form orbiculate, with this exception opposite its axis, where it is slightly bent in: its diameter measured from five to six feet: around the margin extended a rim, about three to five inches high, on the inside light green like the surface of the leaf, on the outside, like the leaf's lower part, of a bright crimson. The stem of the flower is an inch thick near the calyx, and is studded with sharp elastic prickles, about three quarters of an inch in length. The calyx is four-leaved, each upwards of seven inches in length, and three in breadth at the base; they are thick, white inside, reddish-brown and prickly outside. The diameter of the calyx is twelve to thirteen inches: on it rests the magnificent flower, which, when fully developed, covers completely the calyx with its hundred petals. When it first opens, it is white with pink in the middle, which spreads over the whole flower the more it advances in age, and it is generally found the next day of a pink colour; as if to enhance its beauty, it is sweet-scented: like others of its tribe it possesses a fleshy disk, and petals and stamens pass gradually into each other, and many petaloid leaves may be observed which have vestiges of an anther. We met them afterwards frequently, and the higher we advanced the more gigantic they

became: we measured a leaf which was six feet five inches high, and the flower across fifteen inches high. The flower is much injured by a coleopterous insect (*Thrincius* ———?), which destroys completely the inner part; we have counted from twenty to thirty in one flower."

Another paper on a new species of *Loranthus* (also accompanied by a highly-finished drawing), named by Mr. SCHOMBURGH *Loranthus Smythii*, in honour of Lady JAMES CARMICHAEL SMYTH,* a great admirer of Botany, was also read.—The thanks of the Society having been ordered to be returned to Mr. SCHOMBURGH for his kind assistance, he was unanimously elected a Foreign Member.—The meeting was then adjourned till Thursday, Oct, 9.†

HORTICULTURAL SOCIETY.

Sept. 5.—Two communications were read before the Society, viz. "Notes on the Cultivation of the *Chlidanthus fragrans* by the Rev. J. BELFIELD," and "Observations on the Vegetation of Seeds after boiling, by WILLIAM WELLS, Esq." A silver Knightian medal was awarded to Mrs. MARRYATT, F.H.S., for the collection of plants exhibited by her, and silver Banksian medals were also given for the seedling Dahlias from Mr. ANSELL, of the Camden Town Nursery, and for the Maltese Melon from Mrs. NICHOLS, of Hammersmith. We noticed also Melons from an open-sided frame, from JOHN WILLIAMS, Esq., C.M.H.S.; Peaches from J. A. Knight, Esq.; a very fine sort of Fuchsia, named *Fuchsia fulgens*, from Mr. JOHN LEE; a new sort of Barley of a blue colour, from Mr. J. A. HENDERSON; some highly-finished drawings of *Orchidaceæ*, from Mrs. WITHERS; and some newly-invented artificial stone flower-pots from Mr. STIFF, of Lambeth Walk. WILLIAM DUCKWORTH, Esq., and WILLIAM HAWKINS, Esq., were elected Fellows.

The report of the Meteorological Observations between the 15th of August and the 5th of September, was as follows:—

Barom.—	Highest, Aug. 24	30.206
	Lowest, Sept. 1	29.363
Therm.—	Highest, Aug. 17	87° FAHR.
	Lowest, Sept. 4	40° FAHR.

Total amount of rain, 2.38 inches.

Sept. 19.—Remarks on the growth of Melons in open-sided frames, and on two fruits this day exhibited, illustrating the above, from JOHN WILLIAMS, Esq., C.M.H.S., were read. The above sort of frame, a figure and description of which

* Mr. SCHOMBURGH seems determined that the ladies shall not be forgotten in his nomenclature!—ED.

† See *The Athenæum*, No 515.

is given in the last part of the Society's Transactions, is described by Mr. Williams to be peculiarly adapted to the growth of the Persian varieties of the Melon, as well as to fruits of that species generally, on account of the greater ventilation carrying off a larger portion of the watery exhalations of the plants.

A large silver medal was awarded to Mr. John Lee, for the *Fuchsia fulgens;* silver Knightian medals to Mrs. Marryatt, for the *Hedychium Gardnerianum;* and to Messrs. Chandler, for the *Bignonia jasminoides;* and silver Banksian medals to Mr. R. Buck, for Cannon Hall Muscat Grapes; to Mrs. Lawrence, for *Gesneria rutila*, &c.; and to Messrs. Chandler, for Dahlias, this day exhibited. The following was the Meteorological Report from September 5th to September 19th :—

Barom.—Highest, Sept. 19.....30.144
Lowest, Sept. 13 .....29.072
Therm.—Highest, Sept. 17. .....71° Fahr.
Lowest, Sept. 5.....39° Fahr.
Total amount of rain, 0.69 inch.

CHAPTER OF MISCELLANIES.

ZOOLOGY.

The Red Squirrell (*Sciurus vulgaris*) a Carnivorous Animal.—A friend of mine had in his garden an aviary in which he confined several of the *Fringillidæ* (or Finch family), with a pair of the Red Squirrel. Having several times found one or two of the birds dead, which, from the wounds that were apparent on the head and elsewhere, had evidently been killed by some animal, he suspected that the Cat had seized them with her claws through the wires, and therefore made the cage more secure from her attacks. Still the birds were destroyed, and my friend was considering in what manner the Cat could seize them, when, on visiting the aviary a few days since, in the morning, he found the Squirrels very busily engaged in eating one of their feathered companions. Still he was doubtful whether the Squirrels had themselves slain the birds, and therefore left them in the cage for further trial. Their next meal consisted of two more of the birds, which they devoured entirely, leaving the bones very tidily picked. A second pair subsequently shared the same fate, when my friend, thinking the game had lasted long enough, confined the depredators in another cage. Now, although we must always reason very cautiously respecting the habits of animals in a wild state from those of individuals kept in confinement,

yet I am inclined to believe, from this occurrence, that Squirrels do occasionally feed on young birds, especially as a similar carnivorous propensity is exhibited by allied species.—Peter Rylands, *Bewsey House, near Warrington, Sept.* 26, 1837.

The Nest of *Vespa Britannica*.—We are informed, by the Rev. F. W. Hope, F. R. S., that the Wasp's nest mentioned in No. xii., for September, p. 312, of *The Naturalist*, as having been found by Mr. Lankester, near Campsall Hall, belongs to *Vespa Britannica*.—Ed.

Engraving of the Cirl Bunting.—The figure of the Cirl Bunting (*Emberiza cirlus*), at the beginning of our current number, was intended to illustrate a paper on that bird by Mr. Blyth (No. xiii., p. 341 *et seq.*), for which, however, it arrived too late. *E. cirlus* is true to the Bunting type, as will be noticed on comparing it with any familiar typical *Emberiza*, either British or foreign. Its nearest approach is to *E. citrinella*.—Ed.

A live Toad embedded in Stone.—One of those curious facts the origin of which remains unexplained, is believed to have taken place in the limestone quarry of J. Johnson, Esq., near the cast iron bridge of the Earl of Morley, over Catwater. As the workmen were removing a quantity of dislodged limestone that lay in the bottom of the quarry, they discovered a Toad, which when first seen appeared to be but just removed from a state of torpidity. It is supposed that the Toad had been an inmate of its lonely dwelling in the limestone rock, shut out from all communication with the air we breathe, ever since its formation. One of the animal's eyes was rather singular, being no larger than a pin's head, the other the usual size. The Toad appeared to be of more than the ordinary dimensions. *Journal.*—[Some naturalists altogether deny the possibility of a circumstance similar to the above. Accounts of Toads, and even other animals, embedded in stone, not unfrequently appear in the newspapers, but they are in general not sufficiently authenticated, considering the interest of the subject. We, however, perceive no such insurmountable barrier in the way of the thing as many appear to imagine. The fact of so notoriously sluggish and long-lived a creature as the Toad being most frequently the subject of these reported incarcerations, renders the occurrence at least possible. The chief obstacles appear to be the entire exclusion of air, and the fearful length of time which the Toad must have remained in its gloomy prison. In theory such an occurrence seems impossible. We believe, however, that well-authenticated instances of it have happened; it therefore only remains to be ascertained, by experiment, whether this circumstance can or cannot happen, and to draw inferences accordingly.—Ed. *Nat.*]

Extraordinary Fowl's Egg.—An egg laid by a hen belonging to Mr. John Lowe, of the Cheshire Cheese, Temple-Street, near Dale-Street, in this town,

weighs three ounces and three quarters, and measures in circumference seven inches and a quarter by six and a half.—*Liverpool Standard.*

The Portland Veneer *(Crambus tentaculellus).*—Why this insect is called the Portland Veneer I am at a loss to know: whether from its having been taken there or from the Duchess of Portland. There is one in Mus. Bentley, taken at Coombe Wood, Surrey, by Mr. King, and I believe Sir P. Walker has one, taken by Mr. Neale, and there should be one in the British Museum, *ex Mus. Portl.*—J. C. Dale, *Glanville's Wootton, Dorsetshire, July* 9, 1837.

A Black Hare.—Early in the present month the Rev. Mr. Musters shot, in Annesley Park, near Nottingham, a Hare which was entirely black. This is considered a remarkable sporting incident.—*Taunton Courier, Oct.* 11. [We have noticed jet black Rabbits in great numbers on several occasions, but we think we never saw or heard of a black Hare. The latter species inclines, in its natural state, more to varieties of a light hue; and white, cream-coloured, or grey Hares have not unfrequently fallen under our observation, some of them being prettily marked.—Ed.]

Engraving of the Common Kingfisher *(Alcedo ispida.)*—As far as regards shape, I am fully disposed to admit that the representation of the Kingfisher published in your last number (p. 387), is the best that has hitherto been presented to the public. It surprises me, however, a little that so eminent an artist as Branston should still have given so "dumpy" an appearance to the bird, a defect, I should think, which might easily have been obviated. I trust you will excuse my noticing so trivial a circumstance, as it may prove useful on future occasions.—J. B. Tatum, *Lincoln, Oct.* 13, 1837. [In justice to Mr. Branston, to our readers, and to ourselves, we have caused an impression of the figure of the Kingfisher to be struck off from the same block as before. This representation—which will be found at the beginning of our present No.—will amply prove Mr. B. to have performed his part with his wonted success.—Mr. Tatum's note reached us at the eleventh hour, and could not therefore be inserted in the "Chapter of Criticism."—Ed.]

OBITUARY.

Joseph Sparshall, Esq., F.L.S., died, after a few days' illness, April 15, 1837, at his residence in Norwich, aged 45. Though Entomology was his fort, Ornithology, and the Zoology of the district, claimed no small share of his attention. At an early age he exhibited a fondness for collecting and observing the habits of the lower classes of animals, which increased with his maturer years. He was

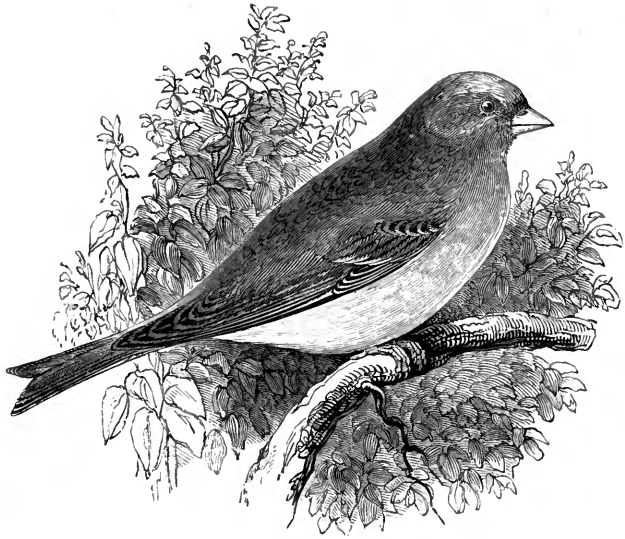
destined for the medical profession, which, however, he never practised. While a pupil at the Norwich Hospital he captured, at that institution, on July 22, 1809, a specimen of *Odonestis pini*, which is now in the British Museum. About this time he became acquainted with other kindred spirits, among whom were Joseph Hooker (brother to Sir William), Howard Sims, Richard Griffin, Rev. J. Burrell, A. H. Haworth, Sir J. E. Smith, S. Wilkin, Rev. W. Kirby, Rev. J. Skrimshire, J. Curtis, J. Scales, Dawson Turner, Dr. Leach, J. C. Dale, Esq., J. F. Stephens, Lily Wigg, A. Macleay, Esq., &c., with all of whom he kept up a friendly intercourse. In 1824 Mr. Sparshall, in conjunction with Mr. Wilkin, Mr. R. C. Taylor, Mr. Sothern, and Mr. S. Woodward, originated the Norfolk and Norwich Museum, of which he continued an active member until his death.

In his manner Mr. Sparshall was plain and unostentatious, of easy access, and never appeared so happy as when aiding his fellow creatures. To any individual—however humble his sphere—who exhibited a fondness for the study of insects, he was ever ready to afford assistance, by his own experience, his valuable cabinet, and his library; and to those whose future prospects he felt an especial interest in advancing, his exertions were unbounded, and his disinterestedness and kind-heartedness most exemplary. He was ever ready to afford relief to the distressed, many of whom will have to lament the loss of a generous and cheerful benefactor. Mr. Sparshall was the sixth member of his family who had died within a few months.—Abridged from the *Mag. Nat. Hist., No. X., for Oct.* 1837.

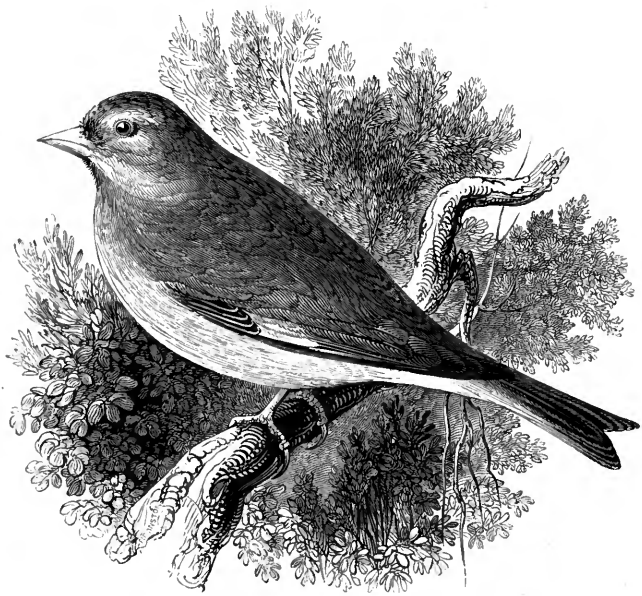
On the 6th of July, 1837, Dr. James Woodforde, of Castle Carey, Somerset. Dr. W. completed his medical studies at the University of Edinburgh, where he graduated M.D. in 1825. The year previous he published a *Catalogue of the Indigenous Phenogamic Plants growing in the Neighbourhood of Edinburgh*,—the result of much industry, and a useful companion in botanical excursions.—Can we suppose that in the motto prefixed to this work Dr. W. had the anticipation of his own brief career? "*Brevi cadentia hœcce, Brevem docentne vitam?*" —*Mag. of Zool. and Bot., No. X., Oct.* 1837.

LITERARY INTELLIGENCE.

The second volume of Swainson's *Birds of Western Africa* is just published. —The great length to which the report of the British Association has extended in our present number, compels us to postpone notices of the *Entomological Magizine*, No. xxi., a popular work on animals, by the Rev. W. Tiler, the *Address of Earl Stanhope to the Medico-Botanical Society*, and many other publications.



MEALY LINNET.



REDPOLL LINNET.

THE NATURALIST.

ON THE MEALY LINNET (*Linaria canescens*, Gould.)

WITH REMARKS ON THE CLOSE AFFINITY OF PARTICULAR SPECIES.

By Edward Blyth.

Within the range of Ornithology a number of inextricable little groups occur, which, on a superficial view, most naturalists would be disposed to consider as consisting of varieties merely of as many species; but which, when numerous facts and considerations that can be adduced come to be thrown into the scale of evidence, induce us to suspend our judgment a while, and are finally apt to impress a full conviction (since the doctrine of transmutation of species is inadmissible) that veritable specifical diversity does not absolutely require to be indicated by a single appreciable distinguishing character. Our native Barn Owl belongs to a group of this description, as does also the Common Gallinule; and it is not likely that ornithologists will ever be agreed as to the number of species which each of these forms presents; both are of general distribution, but exhibit modifications in different parts of the globe, the value of which is variously estimated by systematists; and the advocate for the opinion that such (often very slight) variations are to be ascribed to local or climatal influence upon the descendants of the same primitive stock, will not only find it impossible to fix the limits between his *species* and *varieties*, and be compelled, by the most urgent analogies, to bring obviously distinct species together, but, in following out his theory through the entire series, will find it irreconcileable with numerous instances wherein the very species (?) assumed to be thus variable prove to be dispersed over an extensive area—embracing great climatal and other differences—without undergoing any perceptible modification; while, within a circumscribed range, and even in the same locality, a plurality of those more or less distinguishable races occur, the existence of which had been prematurely attributed to local causes.

It is only by taking a series of examples, illustrative of the grades of approximation from manifestly distinct species to such as are undistinguishable, that the possible non-identity of certain of the latter becomes apparent; that is to say, the probability that some original races may have been alike. To expatiate on the close similitude which many universally-acknowledged species display, would be taxing the reader's patience to little purpose; it is sufficient to refer to those very numerous instances of species which, a few years back, were considered to be mere varieties of each other, but which are now, by general consent, admitted separately,—as the Waxwings, Crows, and Coots, of America

and Europe. Should there be any, however, still disposed to regard these as mere varieties superinduced by the long-continued influence of external circumstances, we have only to recede another step, and place in juxta-position the Buboes, Woodcocks, and Bitterns, of the two Continents; and after them any two species of the same genus, however dissimilar, and whether inhabiting different or the same localities. Or the question may be fairly propounded, how the European Sparrow Hawk comes to be represented by more than one closely-allied species in the corresponding latitude of America, and the Kestril of that continent by more than one analogous species in Europe?—But as no one, in fact, now hesitates to admit all the above-named species as really distinct—inasmuch as the contrary opinion is quite untenable—we may forthwith proceed to the other extremity of the scale, and examine the claims of more intricately approximate races to be ranked as species.

The remarkable parallelism subsisting between a large proportion of the American and European birds is too obvious to have escaped the notice of the most cursory observer. It obtains, less or more, throughout every group which is common to the two continents; and abounds in instances tending to support the theory for which I contend. Thus, of twelve transatlantic species pertaining to the typical primary division of the *Ardeidæ*, or Heron family, corresponding to the genus *Ardea*, as defined by Temminck, six are represented by as many analogous races in Europe, and may be opposed to them, commencing with the most diverse; those on the left being the European species, and the right their American representatives.

Botaurus stellaris.	*B. lentiginosus.*
Ardea cinerea.	*A. herodias.*
Ardeola minuta.	*A. exilis.*
Egretta garzetta.	*E. candidissima.*
Egretta alba.	*E. leuca.*
Nycticorax Gardenii.	*N. Gardenii?*

Of the remaining species, the elegant European Purple Heron (*Ardea purpurea*) can only, as belonging to the same restricted genus, be opposed to the magnificent White Heron (*A. occidentalis*): and the abnormally structured *Egretta russata* and *E. ralloides* to the two dark-plumaged Egrets *E. cærulea* and *E. rufescens*; though the former also deviate from the pure unsullied white adult garb which distinguishes the numerous typical representatives of the subdivision to which they pertain. The fauna of Europe is deficient in species to counterbalance the *Ardea* (?) *virescens*, *Egretta* (?) *Ludoviciana*, and aberrant *Nycticorax violacea*, —of which the last-mentioned, as also the Bittern of America, have been met with in England, wherefore the occurrence of a solitary instance or so of *Nycticorax Gardenii* (?) of the American dimensions (to be presently noticed) on this

side the water, cannot be adduced as satisfactorily conclusive evidence of its identity with the European bird.

The two counter-ranged Bitterns, which are considerably the most unlike of the several races thus posited, were regarded as mutual varieties by Dr. LATHAM; but are now, together with the six following, independently acknowledged, I believe without a single dissentient. Some difference of opinion still exists as to the establishment of *Egretta leuca* as distinct from *E. alba*, but the majority of systematists certainly incline to the opinion that it is a separate species. The Nightherons alone offer no difference of plumage; and be it remarked that the dissimilarity in this respect is but very inconsiderable in any of the foregoing races, with the exception of the Bitterns; that of structure being still less, and the disparity of size trivial in some. The Nightheron of America, however, is described by WILSON to measure "two feet four inches in length," and by NUTTALL "twenty-eight inches or upwards;" whereas that of Europe, according to MONTAGU, is only "twenty inches," and "twenty-one" as given by Mr. JENYNS. Analogy with all the rest of the tribe would alone lead to the supposition that these two races were distinct, even were not the above diversity so considerable. AUDUBON indeed asserts that the American bird is subject to vary much in size; but I have repeatedly seen, in the London markets, a dozen or upwards of the European race together, and could never discern any extraordinary inequality among them. It will be necessary, however, to recur to this particular, which is far from being unexplainable.

Let us, in turn, consider all the differential characters upon which systematists proceed to distinguish species; and which, in dead specimens, may be reduced to three,—structure, size, and colour. In living birds, the notes, nidification, eggs, and general habits, may likewise be taken into consideration; though perhaps merely as adjuncts to the former.

In the genus *Pyrrhula*, then, we have two races, the common European, and the Japanese, which exactly resemble each other in size and structure, but differ slightly (though perpetually) in *colour;* also two European races, inhabiting the same locality, which differ constantly and considerably in *size*, but in no other particular; and the only invariable distinction prevailing between the African *Elanus melanopterus* and American *E. dispar*, consists in the structure of the tail, the outer feather of which is in the former rather the longest, and more than half an inch shorter than the next in the latter.

In three of the four cognizable races of Crossbill, the plumage is absolutely alike; their only differences being those of size and comparative strength of conformation. Mr. MACGILLIVRAY has consequently brought them together as a single species, having noticed (what, I believe, is pretty generally known) that aged or at least old specimens of each successively less robust of these races are

scarcely, if at all, distinguishable from some that might be picked out from a number of examples of the race immediately superior. Still, I cannot help thinking that he is premature in thus uniting the three, as the great mass of individuals are readily distinguishable, and as we have yet to learn whether their song-notes are precisely similar, and indeed all that relates to the largest of them—the Parrot Crossbill—in its living state; besides which, of many American specimens which I have examined, I have never seen one that equalled the *average* size of the smaller European race, nor, of a considerable number of examples killed on this side the Atlantic, have I hitherto observed any so small as in the *average* size of the race inhabiting North America; neither, among heaps of the ordinary European Crossbill, has a single specimen occurred which had attained the normal contour of *L. pytiopsittacus:* again, the existence of the closely-allied *L. leucoptera*, which fails to exhibit corresponding variation to that implied by the union of the other three as a single species, while it varies to the extent of either considered separately, affords analogical evidence of the others being truly distinct; and the near resemblance of its plumage, also, excepting merely the white upon the wings, may suffice to remove our marvel, nay tend even to create an anticipation that any other species still more allied to the common one, and wanting the peculiar white markings of *L. leucoptera*, would be scarcely, even if at all, distinguishable from it.

The two British species of *Budytes* correspond precisely in size and structure, also in their nidification, eggs, and even notes; and their only difference in colour —there being none in markings—is confined to the head: yet their haunts are somewhat different, and they have now been generally recognised as distinct species.

Between the *Colymbus halticus* and *C. arcticus* a few shades of difference in the colour of the head, superadded to a considerable superiority of size on the part of the former, constitute the sole distinctions; and both inhabit the very same localities. The common Teals of Europe and America differ less in size, but more in the development of particular markings in the former, which are wanting or rudimental in the latter. There are three Jays (including the European), each possessing a distinct geographical range, which can only be distinguished by slight diversities of colouring on the head; yet which there is no reason whatever to regard as not having been pristine.

It would be easy to fill several pages with similar examples; and while, on the one hand, every gradation might be traced to the utmost dissimilarity; on the other, the very next step would be absolute resemblance, wherein the light of analogy only could lead to the suspicion of non-identity. In some few cases, indeed, a slight difference might obtain in the secondary or adjunctive characters; as in the instance of the American Creeper, as opposed to the European; for the eggs of the former (as described by WILSON and others) decidedly differ from

those of our native bird, even allowing for a moderate degree of variance more than is observable—the birds themselves appear to be quite undistinguishable.

We have now seen each character, in its turn, stand forth as the sole exception to complete resemblance, though reduced to the very minimum of non-conformity; and this in races inhabiting the same districts, as well as in those which people different parts of the globe,—thus negativing the assumption that external influence had necessarily produced the diversity, which theory obviously requires for its support the existence of intermediate specimens in all their progressive stages, and is consequently inconsistent with the observed permanency of the various races in question. At the same time, as I have remarked on a former occasion, although these closely-allied races, when inhabiting the same locality, apparently manifest no disposition to intermix and blend, as is uniformly the case with even the most distant of true varieties, such as are caused by domestication—and it may be that many such races constantly keep apart, even though so similar that we possess no means of distinguishing them—yet that, in the case of an occasional union (brought about by peculiar circumstances), it is highly probable that the tendency to barrenness in the mule progeny would decrease in the ratio of the amount of physiological affinity subsisting between the parents, until in the most approximate races (though not descended from a common origin, and therefore specifically distinct) the hybrid offspring would be even mutually as prolific as individuals of unstained descent. In connexion with this speculation, the highly curious physiological fact may be borne in mind—which possibly may have for its object the continued separate existence of each primitive race—that very closely-allied species, and (as an apparent consequence of the same law) similar varieties also, less frequently produce, on intermixture, offspring of blended character, than progeny entirely resembling one or the other parent.

However, having launched into conjecture, it may, on the other hand, be supposed, as perfectly consistent with this presumed law, adjudged to regulate the productiveness of hybrids, that the aversion to interbreed would lessen with each additional degree of affinity; till in the most approximate races of all, though still not descended from the same original parentage, all mutual unwillingness to reproduce would be entirely extinguished,—so that, in a few generations, nothing would prevent their becoming effectually blended, save that inexplicable tendency (so remarkably evinced by even emigrants) to return to pair and propagate in the native locality, which must necessarily occasion relatives to transmit their race in far greater proportion than individuals of diverse lineage,—a circumstance which it is truly surprising does not induce a much greater splitting into varieties than is actually observed; and this, if climate or locality really exercised the amount of influence which many naturalists imagine, would confer distinctive characters on the individuals of almost every province.

It is needless to remind the reader that the supposition last advanced, involves the possibility of numerous existing races, or species, being derived from a plurality of original stocks; and the variableness of the American Nightherons may thus, it is not unlikely, have originated in the admixture of a smaller race, perhaps the European. So likewise the anomalous irregularity in the number of tail feathers in Bewick's Swan—eighteen or twenty—may indicate that two primitive races have become united; which is the more probable, in this instance, as, over and above certain other discordances which I have noticed in individuals of the same sex and parentage, the *Cygnus Bewickii*, as now existing, inhabits alike America and Europe, whereas the Hooper Swan, which is peculiar to the eastern continent, is represented by an analogous but obviously distinct race in the western, namely the Trumpeter Swan (*C. buccinator*), which has not hitherto been observed elsewhere. That many scarcely distinguishable races, however, do, at the same time, exist in the very same districts, apparently without intermixing, is a fact that has been already sufficiently descanted on.

Now the general corollary on all the foregoing detail, I conceive to be a fair inference (of what is necessarily incapable of demonstration) that many true species, or originally-created races, exist, which it is utterly impossible to distinguish—a conclusion of startling consequence to the student of Geology. It will be sufficient to mention one additional case, wherein probability strongly militates against the supposition of identity, but in which the most scrupulous comparison fails to detect a single differential character to bear out the suspicion.—I allude to the Common Cormorants of Europe and America. The birds of this genus, though remarkably powerful on the wing, and capable of long continued exertion, besides being able to recruit themselves by alighting on the water, are notwithstanding only met with in the near vicinity of land; and it would consequently be inferred, that, of races inhabiting the Atlantic coasts of Europe or America, those of which the range extended farthest northward would be the most likely to occur on both continents; yet such is not found to be the case; inasmuch as *Phalacrocorax carbo*, Auct., which becomes rare in the northern isles of Scotland, and soon disappears along the Scandinavian coast, and which in America scarcely reaches beyond the southernmost extremity of Labrador, is deemed to be identical on both shores of the ocean, whereas the European *Ph. cristatus*, and the American *Ph. dilophus*, two nearly-allied but evidently distinct species, both of which extend to high northern latitudes, appear to be quite confined to their respective continent, where each is very numerously diffused.

I commenced this essay by entitling it a disquisition on the Mealy Linnet; but I have little now to say exclusively relative to that particular race,—*Montes parturiunt, &c.*—It belongs to one of those intricate knotty groups of which I have spoken, comprising a number of undefinable species; though of which two,

inhabiting this country, are mutually distinguishable, namely, the little common Redpole, or Rose Linnet, and the subject of the present remarks; their exotic relatives I see no hopes of extricating.

The Linnets of this form inhabit northern countries, or elevated tracts of corresponding climate and productions. After the breeding season they descend in numerous flights to the plains. Their habits are more exclusively arboreal than in the typical representations of this genus, which resort more to the brake, and nidificate in bushes; the former according rather with the Siskin Goldfinches in their general economy, and frequently building like them on trees at a considerable height, though more commonly in Willow-beds or brush-wood. The character of their plumage likewise resembles that of the allied group in question, being less hard than in the more characteristic Linnets, and agreeing also in texture with that of the Crossbills, and *Erythrospizæ*, which inhabit the same countries, and are all nearly connected by the tie of affinity, though presenting structural modifications, requiring to be duly recognised in a systematic arrangement. The nestling plumage of all these groups, and more that could be added, presents the same general longitudinally-streaked markings, which are permanent in a large proportion of them, more especially the females; and it is curious to observe how minute is the correspondence which prevails in the distribution of these markings, as well as in their subseqent colours. Thus, a young Crossbill, Siskin, or Redpole, will be found to accord feather by feather, exhibiting even the same medial pale streak along the back, and a similar dusky space on the throat; and when they have moulted, though the Crossbill loses its streaks, the red upon the male is brightest upon the crown, breast, and rump, where only the cock Redpole assumes that hue; and the beautiful crimson tint which coronates the latter, is represented in the male Siskin by a patch of black. There is a peculiarity in the red or roseate which the males (and less commonly the females) of all these birds, with the exception of the Siskin, assume to a varying extent, namely that it is never acquired by them in a state of captivity,—save in the instance of the young Crossbill very imperfectly, which species further differs in naturally putting forth the tint in its full brightness at the autumn moult; whereas the common or Song Linnet developes dark brownish-maroon feathers (with deciduous greyish edgings), when it renews its plumage, which in Spring suddenly brightens into crimson; and the Redpole group, at their autumnal renovation, produce pinkish feathers similarly margined, the colour of which is also much enhanced towards the breeding season; in connection with which facts it may be remarked that the Crossbills very commonly (though not always, as has been asserted) fail to re-acquire the red plumage at their subsequent moultings, obtaining a saffron-tinted garb in its stead, resembling what the Redpoles assume when in confinement; also that the wild Song Linnet occasionally,

but much more rarely, has the crown and breast of the same hue, in which state I possess a remarkably fine specimen, killed in the height of the breeding season; and that the Redpole Linnets, also somewhat less unfrequently than the last, exhibit a sort of Salmon-coloured tint on the corresponding parts, which I deem to be analogous. The genus *Corythus* apparently accords exactly with the Crossbills in all that relates to plumage; and it is most probable that the *Erythrospizæ* are occasionally subject to a like variance: though in no instance, not even in the Crossbills, am I disposed to consider such as a normal state of plumage proper to any particular age. In captivity, that portion of the coronal and breast feathers of the Song Linnet which should become red in summer, is developed of a faintly shining dusky-brown, which undergoes not even the slightest seasonal change; and the terminal margins to the feathers, which in the wild state disappear coincidently with the alteration of colour, are retained permanently; yet this bird propagates freely in confinement, and manifests no sign whatever of physical debility.

The above digression might seem a little out of place, did not the tracing of the affinities of species constitute a highly interesting portion of their history, and the capability of being followed into such details affords a sure proof that the assumed relationship is not arbitrarily assigned. I am unaware that any writer has before insisted on the close proximity of the Siskins and Redpoles to the Crossbills; and perhaps it is necessary to know them well in their living state to be enabled to appreciate the full amount of their mutual agreements. Even in the dead Crossbill, however, conceal the head, and the dissimilarity is reduced to comparative robustness; and its extraordinary beak is merely that of a Siskin, still more elongated, and anomalously curved; its peculiar functions of course necessitating the relatively superior size of the head, to furnish attachment to the very powerful muscles which work the mandibles. Still it is in the living birds, and particularly as observed in a captive state, when their manners can be leisurely examined, that the affinity here intimated is most obviously manifested; and it is impossible to witness a Crossbill delivering its squeaking song, and uttering its loud call-notes, analogous to those of a Goldfinch, and accompanied with the same peculiar swing of the body, without being instantly struck with the resemblance; moreover, all these birds are in confinement perpetually clambering over the wires of their cage, and seizing them with the bill as they creep along, which is only the more noticeable in the Crossbill from the singular form of its mandibles, which enables it to hold in the manner of a Parrot, as has often been remarked; they are alike familiar, very docile in disposition, and in the wild state are usually engaged so earnestly in picking forth their similar food, as not only to allow of a very close approach, but to suffer themselves to be taken without difficulty with a bird-limed switch; their constrained attitudes

when thus in search of sustenance have been noted by all who have written on them.

It is in the adaptation to cling on pensile twigs, Fir-cones, and the like, that the Redpoles structurally differ somewhat from the true Linnets; and they have the bill rather more drawn out at the point, insomuch that our common species has been ranked as a Siskin in *Carduelis*. The males acquire the shining crimson on the crown at the first moult, but the rosy colour on the breast (except merely a trace of it in a few specimens) not before the second, and it is not fully developed till the third. Females also exhibit more or less of this colouring, but it is in general quite wanting in the sex, though the crown, after shedding the nestling garb, is of a saffron tint. Their seasonal changes have been before adverted to.

Of the two British races, one is a constant resident, migrating seasonally within the limits of the island; the other apparently an occasional winter visitant, of very irregular appearance, and I think most commonly met with in the eastern counties, particularly Suffolk and Essex, according to my own experience. This bird is every way larger than the other, and rather more bulky in its make; its wings measuring, from the bend, three inches, and tail two inches and a quarter. The plumage only differs in the markings being somewhat less defined (a constant character), and in the greater intermixture of whitish on the upper parts, particularly the rump, which exhibits scarcely an obscure trace of the roseate tinge so distinct in the other; the wing-coverts are also more broadly and conspicuously tipped with yellowish-brown. It is impossible to overlook its manifestly superior size, as seen alive; and the mealy-white feathers of the rump, being ordinarily thrown over the wings when the bird is at rest, accordingly constitute another very conspicuous character.

The chirp and call-note of the Mealy Linnet are undistinguished from those of its near congener, but its song, though equally trivial, is decidedly different; it as frequently introduces the call-note into its song as the other, but mingles this with a low harsh chattering, very unlike the less unmusical repetition of which the song-notes of the small Rose Linnet are composed, and which recall to mind the more continuously sustained lays of the *Carduelis* genus.

Though decidedly of very rare occurrence near the Metropolis, the Mealy Linnet is tolerably well-known to the bird-catchers, who distinguish it from the smaller race (or *Common Redpole*) by the name "Stony Redpole," which Mr. Selby has mistakingly appropriated to the former. I endeavoured, for five or six years (long previously to its being admitted into our catalogue*), to procure a living specimen of the dealers, before I succeeded in the winter of 1835-6, since

* See a notice of the species in the *Field Naturalist* for April, 1834, p. 172.

which time I have not heard of any being met with: about ten years ago they were taken one winter in immense numbers.

This bird would seem to possess a more northern range than the other, and is apparently the same on both sides of the Atlantic, whereas the smaller race does not occur in America. I have seen many skins of a still larger species from Russia and Siberia, and examples undistinguishable from the British Mealy Linnet from Japan: but some of the foreign specimens are extremely puzzling, and I very much incline to the opinion that all cannot be discriminated: even the American specimens have generally rather more white upon them than those of Europe.

It is worthy of notice, and a curious indication of the difference of size between the two British races, that whereas both are equally fond of hemp-seed, when in captivity, the larger only is enabled to crack their seeds for itself; and would feed on nothing else if suffered to do so: the lesser kind may manage to husk an unusually small one, but cannot feed on those of average dimensions.

North Brixton, Surrey,
Sept. 20, 1837.

SOME ACCOUNT OF THE PRINCIPAL WORKS ON ZOOLOGY AND BOTANY.

Section 1. Zoology.

By Neville Wood, Esquire.

A correspondent has favoured us with a brief account of some of the most important works on Botany; but as no one has had the courage to grapple with the zoological department, we shall, in compliance with the wish expressed by Charles Hanway, Esq., of Alton Hall, Gloucestershire (p. 359), attempt to supply that information which our contributors appear to think should in courtesy be allowed to fall to our own lot.

In soliciting information respecting not only the best complete works and monographs, but also papers in transactions of learned societies and in periodicals, Mr. Hanway can have but little knowledge of the labor such a task must necessarily involve, or of the extent to which Natural Science has been studied in the civilized world from the time of Pliny downwards. The mere titles of all the works extant upon Natural History would occupy more pages than we are at present willing to bestow upon the subject; and as to the innumerable

hosts of treatises in transactions and magazines, the laborious research required for compiling anything like a complete or satisfactory catalogue of these would absorb more time, patience, and money than most men would be willing to devote to the undertaking. Even supposing it once accomplished, the list would, in our estimation, be more interesting than useful. For although some of our most eminent naturalists in every department have long been in the habit of communicating the result of their scientific investigations to the public through the medium of periodical publications of various sizes and characters, yet the substance of these papers is in a short time sure to be incorporated in all the best standard and elementary works on the subject. In fact we may go so far as to observe, that the perusal of these isolated treatises, some years after their publication, would be almost as useless and absurd as the attempt to obtain a competent knowledge of Natural History, at the present day, from the writings of ARISTOTLE or PLINY.

The cases we have adduced are, indeed, similar in kind, though doubtless not in degree. The works of ARISTOTLE and PLINY are not only surprising productions, but they were of incalculable service during their generation; and, in days of yore, he who wished to become a good naturalist, repaired, as a matter of course, to the writings of these venerable authors. And no one will venture to call in question the expediency—nay the necessity—of such a proceeding. We venerate the works of ARISTOTLE and PLINY as well for their antiquity as for the inestimable services which they have, beyond all doubt, rendered to the study of Nature's works. We should even be glad to possess a good English version of PLINY'S *Natural History**, but we should be very sorry to place it in the hands of a beginner. Let us, however, proceed with our retrospect of zoological literature, commencing with general and complete works on the animal kingdom.

From the circumstance of Mr. HANWAY being a gentleman of fortune, and especially from the extensive nature of his wishes, we presume he intends collecting an extensive natural-historical library rather than to procure the smallest number of books whereby to become acquainted with the science upon which he proposes to enter, and our observations will be written accordingly, though we neither are able nor desire to supply a *complete* catalogue.

After having possessed himself of the works of the ancients, the student will find himself compelled to make a very long skip, the next general zoological treatise of any value being the *Systema Naturæ* of LINNÆUS. This book may still be studied with advantage. It is only valuable at the present day as giving

* We are informed that such an undertaking is in contemplation. If illustrated by wood-cuts, well translated, published in monthly parts, and, lastly, at a cheap rate, we have very little doubt but it would succeed.

an idea of the *outlines* of Natural History, for which purpose it will always be useful, whether or not the student intends further to prosecute his investigations. For a knowledge of species, reference to LINNÆUS's System is of no avail—in fact it has long ceased to be valuable for the *minutiæ* of the science.—We presume every one is acquainted with BLUMENBACH's *Handbuch der Naturgeschichte* (Manual of Natural History), and we shall therefore pass it over without comment. In 1800 the late indefatigable Dr. SHAW commenced his *General Zoology*, which, unfortunately, he did not live to complete. The continuation, undertaken by Mr. STEPHENS, is perhaps equal in merit to the previous volumes; but the circumstance of Dr. SHAW having embraced the system of LINNÆUS, while his successor adopted that of VIGORS, is not a little calculated to detract from the merits of the publication. Notwithstanding the defects of this compilation, it still remains a valuable work, the descriptions—though dry and concise—and engravings being sufficiently accurate for ordinary purposes. It was brought to a close in 1826, in fourteen octavo vols. The Rev. W. BINGLEY has published popular works on animals which are familiar to every one. The voluminous productions of BUFFON, likewise, stand in no need of introduction to our readers. On the contrary, it may be necessary to caution the student against being led away by the eloquence of this author; neither his "facts" nor his reasoning deserve implicit reliance. The same may be said of an equally popular compiler in this country, whose *Animated Nature* is in almost every one's hands.

We now approach an important era in Zoology, introduced by the appearance of CUVIER'S *Règne Animal*, an original and admirable work. We are no admirers of the new system propounded in this work. Although its author has characterised a large number of genera with great accuracy, he failed in the attempt to establish the larger groups upon an equally sure basis as that adopted by LINNÆUS. Consequently—notwithstanding the eminent services of CUVIER in Systematic Zoology—his classification is, as a whole, far inferior to that of the *Systema Naturæ*. The beginner may, nevertheless, study the *Règne Animal* with considerable advantage.

Dr. FLEMING'S *Philosophy of Zoology* contains much useful and interesting matter, but the wheat is mixed so inextricably with a considerable portion of chaff, that we shall not recommend this work. A recent volume, entitled *The Observation of Nature*, by ROBERT MUDIE, will be perused with interest and advantage, though it is, perhaps, too abstract in character either to answer the expectations or the wishes of its readers. Those who can afford it should add LESSON'S *Illustrations de Zoologie* to their libraries. It was published at Paris, in numbers, price 6s. 6d. each, with coloured plates. SWAINSON'S *Zoological Illustrations*, a superb work, with coloured plates, should likewise be procured, if possible.

But perhaps the best and most philosophic work on general Zoology still remains uncompleted. We allude to the series in course of publication in LARDNER'S *Cabinet Cyclopædia*, by WILLIAM SWAINSON, Esq. It professes to be a condensed text-book of the science, and this purpose it will, we confidently anticipate, fulfil in a most satisfactory manner. This series contains an exposition of the quinary system well worthy of careful and repeated perusal, and will tend yet further to increase the well-merited celebrity of its talented author. The *Naturalist's Library* is too extensively known to require any notice in this place.

The last work to be mentioned treating of Zoology in general is PARTINGTON'S *Cyclopædia of Natural History*. It is too evidently published with a view to the publisher's purse, and contains faults of all kinds; but still it conveys an immense mass of instructive matter in a cheap and portable manner, and, though imperfect, it will be found very useful for reference.

We now turn to works on general Zoology treating of particular countries or districts, and this department will be found much richer than that which we have just left. CATESBY'S *Natural History of Carolina* (1731, 2 vols. folio), is a splendid publication, with fine coloured plates, and descriptive letter-press. The edition published by EDWARDS in 1771 is, we presume, still to be had. The *Fauna Grœnlandica* (1790) of FABRICIUS, and LINNÆUS'S *Fauna Suecica*, are both esteemed valuable, as also is ILLIGER'S *Prodromus Mammalium et Avium*. MULLER may be consulted for his *Zoologia Danica* (4 vols., folio, 1788—1806). BERKENHOUT'S *Synopsis of the Natural History of Britain* (2 vols., 1789) and TURTON'S *British Fauna* (1807, 12mo.) are too antiquated to be of any value at the present day: the same sentence may be passed on a book, on the whole, excellent for the time at which it appeared (1828), but which is now useless,—FLEMING'S *British Animals*. We have much pleasure in recommending, in its stead, Mr. JENYNS'S *Manual of British Vertebrate Animals* (8vo., 1835), a highly creditable volume. PENNANT'S *British Zoology*, once a popular book, may now safely be laid aside, but his *Arctic Zoology*, with figures (3 vols., 4to., 1792), is excellent. SHAW'S *Naturalist's Miscellany* and *Zoological Lectures* are not now highly thought of. GILBERT WHITE'S *Natural History of Selborne* has passed through innumerable editions. It is a perfect model for the spirit in which it is written, and will ever be esteemed valuable. Nor ought we to forget the "amiable wanderer," CHARLES WATERTON, Esq., of Walton Hall, in this county, whose delightful and original *Wanderings in South America* has passed through three editions.

We must, however, now retrograde a little in order to notice a few works of older date, and amongst these BRISSON'S *Regnum Animale*, SWAINSON'S *Zoological Illustrations*, and RICHARDSONS and SWAINSON'S *Fauna Boreali Americana* (3 vols.)

—especially the two last—are well deserving of attention, on account of the accuracy of their descriptions, and the admirable character of the coloured plates. To these we may add other valuable and expensive publications, as Dr. Horsfield's *Zoological Researches in Java* (1824, 4to.), the *Faune Francaise*, by MM. Vieillot, Desmarest, De Blainville, Audinet-Serville, St. Fargeau, Walkenaer (1824, 8vo., incomplete), Bonaparte's *Fauna Italica* (Rome, 1832, folio, in course of publication), his *Genera of North American Birds* (New York, 1828, 8vo.), and *Illustrations of Zoology*, by James Wilson, Esq., containing representations of rare species.—Pulteney's *Catalogue of the Birds, Shells, &c., of Dorsetshire,* is frequently referred to. Sowerby's *British Miscellany* (1806, 8vo., with coloured plates), and Capt. Brown's *Zoologist's Text-book* (1833, 2 vols., 12mo.), are books of little worth, but Low's *Fauna Orcadensis* is both interesting and useful. We shall conclude this department of our paper by recommending, for general perusal, three popular and recently published works:—Mudie's *British Naturalist* (Whittaker & Co., 1835, 12mo.), Jesse's *Gleanings in Natural History* (1832—5, 8vo., Murray), and Knapp's *Journal of a Naturalist* (Murray, 8vo., 1829).

The works treating exclusively of Mammalogy are both few in number, and, for the most part, indifferent in quality. Those deserving of the most favourable notice are of continental origin. In 1820—22 M. Desmarest published, in two 4to. parts, at Paris, *Mammalogie, ou descriptions des espèces de mammifères;* and Temminck issued, at the same city, his *Monographies de Mammalogie* (1827, 4to.). All the works of these two naturalists are of the highest order. The *Synopsis Methodica Animalium Quadrupedum et Serpentini Generis* (1693, 8vo.), of our worthy countryman Ray, is more interesting in an historical point of view than instructive at the present comparatively advanced period of our knowledge. A whole host of popular books on "beasts" have at various times issued from the press. At the head of these stands Bewick's *General History of Quadrupeds*, now chiefly valuable for its wood-cuts and vignettes. Donovan's *History of British Quadrupeds* (1820, 3 vols., 8vo.) appears to be but little known: we have never met with a copy of it, or heard it mentioned either with praise or censure. But the recent appearance of Bell's *British Quadrupeds* (Van Voorst, 1837, 1 thick 8vo. vol.) has had the effect of completely placing in the shade all the previous labours of British authors on this subject. Its admirable letter-press, and equally excellent illustrations, render it indispensable to the mammalogist, who needs no other work to render him perfectly acquainted with the quadrupeds of this country.

The first purely ornithological work to which we shall allude is the *Ornithology* of Willughby (folio, 1678), not because it is the first book in this department of Natural History which we would place in the hands of the beginner, but on

account of its having commenced a new era in Ornithology. It is really a surprising work when we consider its time of publication: the engravings are, of course, as bad as they can well be. RAY's *Synopsis Avium* (1713) is in some measure a transcript of his friend WILLUGHBY's book. FRISCH's *Vorstellung der Vögel* (Berlin, 2 vols., folio, 1739—63), and ALBIN's *Natural History of Birds*, barely deserve notice. It were impossible to bestow too high commendation on EDWARDS's *Natural History of Uncommon Birds* and *Gleanings of Natural History* (7 vols. 4to., 1743—64). They are invaluable works. SEPP's *Nederlandische Vögel*, though indifferently executed, is perhaps useful as a fauna of the Netherlands. The descriptions in BRISSON's *Ornithologie* (6 vols. 4to., 1760) and *Ornithologia* (2 vols. 8vo., 1672) are accurate, but the plates very indifferent. It is with sincere pleasure that we here recommend the *General Synopsis of Birds*, by our late friend the distinguished Dr. LATHAM, published, so long ago as 1782, in five 4to. volumes. Though it necessarily contains many faults, both of omission and commission, it is to this day constantly quoted as a standard authority by the best ornithologists. The *General History of Birds* (10 vols., 4to., 1821—4) is only an enlarged edition of the *Synopsis*, and has not increased the reputation of its amiable and venerable author, who must ever be considered one of the greatest ornithologists this country has produced. BECHSTEIN's *Gemeinnützige Naturgeschichte der Vögel Deutschlands*, his *Ornithologisches Taschenbuch*, and his *Cage Birds* (translated by RENNIE), have earned for the author a well-merited fame.

W. LEWIN's *Birds of Britain* (8 vols. 4to., 1795—1801), once valuable, has long since ceased to be so considered; but W. J. LEWIN's *Birds of New South Wales* contains plates "of permanent value." BEWICK's *British Birds* is familiar to all our readers. The vignettes or tail-pieces in this publication still retain their original charm; otherwise the work is any thing but indispensable. We shall not fatigue the reader with an enumeration of the splendid and costly illustrated monographs of the continental ornithologists DESMAREST, VIEILLOT, LESSON, AUDEBERT, and others, especially as we have supplied their titles in full elsewhere. (*Orn. Text-book*, pp. 24 and 47). LEVAILLANT's *Histoire Naturelle des Oiseaux d' Afrique* is an inestimable work (6 vols., folio or 4to., Paris, 1799). MONTAGU's *Ornithological Dictionary* is deserving of all praise; and so far from being—as its name might imply—a dry book, it is one of the most interesting works on birds with which we are acquainted. A new edition is in preparation; and we would advise those who propose procuring the Colonel's dictionary to wait for its publication rather than submit to purchase RENNIE's edition.

ALEXANDER WILSON's *American Ornithology* has long been familiar to the reading public as one of the liveliest and most accurate works on this delightful subject in existence. Professor JAMESON has published a cheap and good edition

(1831, 4 vols., 12mo., 16s.). The *Taschenbuch der Deutschen Vögelkunde* (1810, 2 vols.), by Drs. MEYER and WOLF, is more recent than that of BECHSTEIN, and is in many respects preferable to the latter. TEMMINCK's celebrated *Manuel d' Ornithologie* (1820) will without doubt be procured and duly studied. The Dutch Professor's *Histoire Naturelle Générale des Pigeons et des Galinacés*, and his *Nouveau Recueil de Planches coloriées d' Oiseaux*, though valuable, are less indispensable.

Illustrations of British Ornithology (2 vols. 8vo., 2nd edit., 1833), by PRIDEAUX JOHN SELBY, Esq., only wants illustrative engravings to render it a complete manual of our native birds. The plates belonging to the work (elephant folio) are very expensive, and, consequently, beyond the reach of the majority of students. *Illustrations of Ornithology*, by Sir W. JARDINE and Mr. SELBY, now in course of publication, is rather a "work of luxury" than one which it is absolutely necessary to possess. Of Dr. SAVI's *Ornitologia Toscana* (Pisa, 1827, pp. 302) we know but little; and we shall content ourselves with merely noting the titles of WERNER's *Atlas of the Birds of Europe*, MUDIE's *Feathered Tribes of the British Islands* (a delightful book), his *Natural History of Birds*, and MEYER's *Illustrations of British Birds*.

GOULD's *Birds of Europe* (22 parts, just completed, folio) is the finest and most perfect ornithological work ever published, and, all things considered, by no means dear. Intending purchasers will do well to send their names to the author early, as only a small number of copies remain on hand. Mr. GOULD has, we think, carried ornithological painting—a most difficult art, be it observed—to the *ultimatum* of perfection in some of his splendid plates. The accompanying letter-press is excellent.

AUDUBON's *Ornithological Biography* is a truly fascinating description of the birds of America, and contains much new matter. We do not in general so much admire his immense plates, some of which, however, are very fine.

We have frequently spoken, in terms of high eulogium, of HEWITSON's beautiful *British Oology*, and need not, therefore, here repeat our opinion of the work, which will shortly be completed, in three handsome volumes, royal octavo, or the same size as *The Naturalist*.

YARRELL's *British Birds* is beyond all praise; it is now in course of publication. MACGILLIVRAY's *British Birds* (also in course of publication), and his *Rapacious Birds of Britain*, are likewise good books.

The treatises on reptiles, &c., are not numerous. The following are perhaps among the best:—ROESEL's *Historia Naturalis Ranarum nostratium*, Nurnberg, 1758, folio; LATREILLE's *Histoire Naturelle des Salamandres de France*, Paris, 1800, 8vo.; DAUDIN's *Histoire Naturelle des Reptiles*, Paris, 1805, 8 vols., 8vo.; and J. E. GRAY's *Synopsis Reptilium*, London, 1831, part 1, *Cataphracta*. Of

the latter work we believe only one part has appeared. If we are not mistaken, Mr. Bell has published a large work on *Testudinata;* and he is about to undertake the *British Reptiles* in Van Voorst's zoological series.

Fishes were at an early period illustrated with considerable success. Willughby's *De Historia Piscium Libri Quatuor*, edited by Cromwell Mortimer, physician (London, 1743, folio), is a valuable book, as are also the following:—*Histoire Naturelle des Poissons*, par MM. Cuvier et Valenciennes (Paris, 1828—33, 9 vols. 4to.); Bloch's *Ichthyologie* (Berlin, 1785—95, 12 parts, folio); Lacépède's *Hist. Nat. des Poissons* (Paris, 1798—1803, 5 vols., 4to.); Rondeletius *De Piscibus Marinis* (1554, folio); Nilsson's *Prodromus Ichthyologiæ Scandinavicæ* (1832, 8vo.); Ray's *Synopsis Piscium* (1713, 8vo.); Mrs. Bowdich's *Fresh-water Fishes of Britain* (1828, 4to.). Donovan issued a *History of British Fishes*, which, however, has been entirely eclipsed and rendered useless by the publication, in 1836, of Mr. Yarrell's work with a similar title (Van Voorst, 2 vols., 8vo.).

Having thus brought our rapid retrospect of the works relating to vertebrated animals to a close, we may be expected to furnish some account of those dedicated to insects. This, however, we shall do in a very few words, both because that department would require a chapter—nay a volume, aye, and a thick one too—to complete it in a manner satisfactory to ourselves and our readers, and because we have at present neither time nor space to devote to the undertaking. If Mr. Dale, Mr. Rylands, or any other of our entomological readers would furnish a condensed paper on this subject, for *The Naturalist*, it could not fail to be both interesting and instructive.

Latreille's Entomology, Stephens's *Illustrations of British Entomology*, and Newman's *Grammar of Entomology*, will suffice to impart a very fair knowledge of the subject, if combined with field study. Curtis's *British Entomology*, illustrative of the genera, is a truly splendid work; many volumes are published, and it now rapidly approaches its close. Every one who can afford it should possess a copy of this publication. Mr. Samouelle has written an *Entomologist's Useful Compendium*. Need we add any further commendation of this volume?

Lest we should perchance bewilder and alarm the student of Natural History by our retrospect, and the numerous works noticed, rather than encourage him to pursue the course upon which he has entered, and lead him in his selection of literary guides, we purpose concluding the present essay by mentioning a few of the works indispensable to every naturalist.

For Zoology, then, Cuvier's *Règne Animal*, or Dr. Shaw's *General Zoology*, will suffice. In Mammalogy Bell's *British Quadrupeds;* in Ornithology Latham's *General Synopsis of Birds*, Wilson, Audubon, or Nuttall's *American Ornithology*, Montagu, Selby, or Yarrell's *British Birds;* in Erpetopology,

any of the works before mentioned; in Ichthyology YARRELL's *British Fishes*, and the works of CUVIER and VALENCIENNES, will be found sufficient; and, lastly, that of LATREILLE for the insect tribes.

Whatever department of Natural Science the student intends to pursue in detail, we would recommend him to obtain, in the first instance, a general knowledge of the whole subject; and even if he wishes to turn his especial attention to any one order or genus of animals, let him still first, in some degree, acquaint himself with the class to which that order or genus appertains. As it is our firm conviction that this is the safest, and, in the end, the speediest method, we have purposely omitted, in almost every case, noticing monographs or separate treatises. If, however, either Mr. HANWAY or any other reader of *The Naturalist* be desirous of learning further particulars relative to the books we have briefly noticed, or concerning those which we have *not* introduced, it will give us sincere pleasure, as far as in us lieth, to comply with their wishes.

Campsall Hall, Nov. 1, 1837.

SECTION II. BOTANY.

BY EDWIN LANKESTER, M.R.C.S.

If the following notes on a few botanical works will be of any assistance to you in making up a list of books, in answer to your correspondent Mr. HANWAY, they are much at your service. With regard to structural and physiological Botany, Professor LINDLEY's *Introduction to Botany* stands decidedly first. In this work the most recent views of German and French botanists are given, and the author, by developing the theories of the structure of the parts of the plant, and introducing a strictly correct and scientific nomenclature, has enabled the British student of Botany to keep pace with the progress of that science on the Continent, which, till the publication of this work, was absolutely impossible.

Professor HENSLOW has also published a small treatise on the same subject, forming one of the volumes of the *Cabinet Cyclopædia*. This book is very well adapted for commencing the study of Botany, and, as far as it goes, is in accordance with the advanced state of the science. The Society for the diffusion of Useful Knowledge has also published a treatise on Botany. This work contains all the information necessary for commencing the study of the science, and in addition contains remarks on the classification and nomenclature of plants which are to be found in no other work, and which, from their value, lead to the conclusion, that this treatise is the production of the most advanced botanist of the present day.

Several other works on this department of Botany might be mentioned, but for the student no other can be so safely recommended. As for monographs on this

subject, Dr. LINDLEY's introduction contains references to all those deserving particular attention.

In Systematic Botany the works of LINDLEY and BURNETT are the best, being, I believe, the only authors that have published complete works adapted for the student of the natural affinities of plants.

The late Professor BURNETT's *Outlines* is a laboured production, and contains a large mass of information, but the want of condensation and simple arrangement must ever render it an unacceptable book to beginners. LINDLEY has published an introduction to the study of the Natural System, called by the rather inappropriate name of *Ladies' Botany*, seeing that the book is just as well adapted for gentlemen as ladies. This book is probably altogether the best that has been published for the commencement of the study of Botany. It at once introduces the beginner to the study of the vegetable kingdom according to its natural affinities, and discards altogether the artificial system of LINNÆUS, as prejudicial to the advancement of the science of Botany.

LINDLEY's *Natural System* is the only work in the English language that gives a complete view of the vegetable world arranged according to its natural relations. This is a work that deserves to be increasingly studied, as it is only by studying the vegetable kingdom as a whole that the science of Botany can be advanced, or its true ends as a science be attained. It has been too much the habit of British Botanists to content themselves with studying the species of their own island, whilst their structure and functions, and their relation to the plants of other parts of the world, were entirely neglected.

Catalogues of plants with descriptions are numerous. LOUDON's *Cyclopædia of Plants* contains descriptions of nearly 30,000 species cultivated in Great Britain. Sir J. E. SMITH's *English Flora* is the best account of plants indigenous in this country. Dr. LINDLEY has also published a *Synopsis of British Plants*, arranged according to the natural system. Sir W. J. HOOKER has published a single volume containing the British Phænogamous Plants, and two other volumes containing British *Cryptogamia*, which may be had separate. There is an illustrated work on English Botany by SOWERBY and SMITH, containing beautiful drawings of every species; also drawings of British Fungi by SOWERBY.

Lists of botanical works are given in Sir J. E. SMITH's *English Flora*, in GRAY's *Arrangement of the British Plants*, and other works.

I have not pretended to furnish you with a list of botanical works, but have referred to the above as those which would be most likely to be useful to your correspondent, or any other of your readers, in commencing the study of Botany.

ON THE ORGAN OF MARRIAGE IN MAN AND OTHER ANIMALS.*

By Joseph Vimont, M.D.

Is there a special faculty for attachment for life, or marriage? Is it only the result of the action of several faculties, or the modification of one only—that of Adhesiveness for example—of which I shall speak hereafter? A more profound study of the organisation of the nervous system of animals and of their habits, can alone throw light on the question.

If we watch closely the conduct of wild animals, we shall find that amongst some species, the males, after having satisfied the desire for sexual intercourse, separate themselves from their females—either to go to impregnate others—to live in a state of solitude—or to unite themselves to several individuals of the same species and of the same sex. Such we see is the case among wild Boars, Wolves, and Stags. Other species again live constantly with their females—for instance the Fox, the Marten, the Roebuck, amongst quadrupeds; and the Raven, the Jay, the Magpie, the Swallow, the Sparrow, amongst birds.

Gall, though seemingly disposed to believe that attachment for life depended on a particular organisation, has not cleared up the subject by instances drawn from Comparative Anatomy. Nor has he been more explicit with regard to Man.

Spurzheim thinks that marriage is but a modification of the faculty of Adhesiveness; that the instinct of living in society, and that of living in family, are only particular modifications peculiar in their nature—just as the taste for vegetable or animal food is a modification of smell and of taste in herbivorous and carnivorous animals.

These observations of Spurzheim are but specious, and are overturned by studying the habits of certain species. I do not think that union for life is merely a modification of Adhesiveness:—it appears to me to possess all the characters of a fundamental faculty. To me it is sufficiently proved that an animal may have great Adhesiveness and yet not live in company with its female. The Dog is a striking instance in support of my assertion. Wolves live often in large bodies, but do not remain in a state of union with their females. Stags act in a similar manner. The Fox, though brought up very young, does not attach himself to any one, but unites himself to his female for life. It is not then true that where this union for life exists we find Adhesiveness; which, however, ought to be the case if it were, as Spurzheim affirms, only a modification of that faculty.

Gall has not, in my opinion, given a more satisfactory solution of this question when he says, "If I could place full confidence in my knowledge of Natural

* Translated from the *Traité de Phrenologie*, in the *Phrenological Journal*, Vol. X., p. 653.

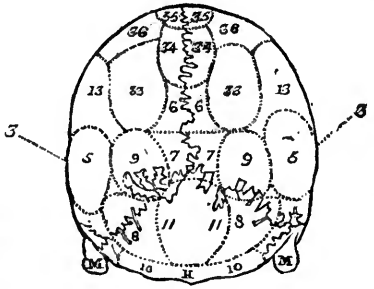
History, I would offer an opinion of my own. It appears to me that in all those species where the male and female mutually assist in taking care of the young, there is union for life: but in those species, on the contrary, in which the male contents himself with procreating young without assisting in any way in bringing them up, that the first female met serves to satisfy his desires, and that the main design of Nature is accomplished without the bond of union for life." This observation of GALL in no wise settles the question. At the very outset, it is not the fact, as he states, that in those species where the female gives her attention to the young conjointly with the male, there is constantly union for life. The Roebuck, which is attached to its female for life, does not in any way occupy itself in the care of the young. GALL says that this animal defends its family against their enemies. I do not deny the fact, but I do not think that we must necessarily attribute this conduct to the faculty of attachment to its young. Supposing even—which is not proved—that in certain species where this union for life exists, the male and female give themselves by turns to the care of their young,—that does not by any means prove that the two faculties are not distinct: the one appears to me totally different from the other, since its action continues long after the young are separated from their parents. The explanation of GALL, then, is none at all. SPURZHEIM believes that it is attachment and friendship which the male and female feel for each other which determines them not to separate after the instinct of propagation is satisfied, and to remain united even beyond the season of desire. Is this not in other words saying that there exists in certain species a sort of attachment which induces them to remain united for life; and after the observations which have been made, are we not compelled to admit that it is not to Adhesiveness, properly speaking, that we ought to attribute such conduct?

GALL does not appear disposed to consider as a faculty belonging to man that of union for life; or at least he seems to view it as a modification of the organ of Adhesiveness, and not as a special fundamental faculty. There are, says he, men and women who, without any outward adventitious cause, have an aversion for marriage. If we could read the bottom of their hearts, we might there find the solution of the enigma. Are such persons incapable of attachment or friendship? Do they dread the charge a family imposes? It will be seen that this language of GALL is exceedingly vague, and that it is only presented to us under the form of a doubt.

The more I have studied the conduct of men and the habits of many species of animals, the more satisfied have I remained that the feeling which leads to attachment to one companion for life, is the result of a fundamental faculty. Some observation which I have made on the human species, and many more

which I have collected amongst animals, have enabled me to fix the situation of the organ in man and animals. Before pointing out upon the brain and skull the place where it is to be found, I must enter into some anatomical details.

The region of Philoprogenitiveness, as laid down in the works or on the bust which phrenologists have in their hands, occupies too extended a space, and comprehends two distinct portions of the brain, the one placed at the middle part (No. 11), the other (No. 8) more laterally and outwards. The first appears to me to be the seat of the organ of Philoprogenitiveness, the other that of attachment for life, or marriage. I have already found this latter region well developed in two persons who had very early manifested the desire of being united to each other, and without being induced to do so by other motives than such as leads to four-fifths of marriages. I have found, on the other hand, the same region little developed in persons who had naturally a repugnance for marriage. As a few observations will not suffice to establish a certainty, I would entreat phrenologists who have opportunities of making numerous observations to ascertain if new and carefully noted facts might be found to confirm my remarks.



Except in quadrumanous animals, it is not in the region of the occipital bone that we ought to look for the seat of the organ which leads animals to become united for life. It must be recollected that I maintained this point in Anatomy while describing the occipital region of quadrupeds and birds; in the former it is entirely filled by the cerebellum; in the latter it contains the cerebellum, and a great part of the acoustic apparatus.

It is then in the posterior parietal region that we should look in these two classes for the seat of the organ in question. I have compared with care the skull and brain of a species of bird well known to live in a state of union, as well as those of species which live separate from their female after impregnation. There is a remarkable difference which I have observed between them. The portion of the skull corresponding to the middle part of the posterior border of the cerebral hemisphere (No. 8), is very prominent in all birds which live in a state of union. Such are the following skulls and brains which have presented to me this form of organization very apparent. The Buzzard, the Raven, the great Screech Owl, the Hooded Crow, the Magpie, the Jackdaw. The brain of the Hooded Crow, of the great Screech Owl, and of the Buzzard, will be found represented in my work. We should remark, that in these three species, which live in a state of

union, the cerebral hemisphere is not only much raised and well rounded towards its posterior edge, but that it is prolonged, even in a perceptible manner, over the *tubercula quadrigemina*.

Another fact which I should point out is, that, if we remark the extent of the posterior part of the cerebral hemisphere from the point where it touches the other, to the exterior side, this part is found much more developed in the cases just mentioned than in those species which are not united for life. We may compare in this respect the brain of the domestic Goose with that of the Buzzard; and again we may compare this region (No. 8) in the Raven with the same region in the Turkey and the Common Fowl. With a little attention it will be found that the difference is very striking. I beg those who possess a collection of skulls of animals to place the skull of a Turkey and that of a Hooded Crow near each other; they will at once be struck with the difference which I have just now pointed out; in the Turkey all that portion is depressed; in the Hooded Crow, on the contrary, it is full and rounded.

The portion of the brain which manifests attachment for life in quadrupeds is that which is found situated backwards and outwards from No. 11 (Fig. 7, pl. LXXV.*). Let any one compare two brains having very nearly the same volume and of the same class,—the one, for instance, which I have now pointed out, being that of an animal which lives in the state of union; the Martin Weasel, with that of the Cat, which lives in the opposite state, and he will see that, in the former, the convolution 10 is not prolonged so much backwards, and covers much less of the cerebellum. The convolution 10 in the Cat is that which gives rise to Philoprogenitiveness. In all the animals which live in a state of union this convolution is extended more backwards. I have found these relative positions well expressed in the brain of the Badger, the Fox, and the Fitchet, Marten and Common Weasels, all animals living in a state of union. We may compare with this view the brain of the Badger with that of the Dog. The same part seems to me but little developed in the Rabbit, the Hare, and the Guinea-pig. Again, to show the difference of development of the organ in question, we may compare the brain of the Weasel, which lives in a state of union, with that of the Guinea-pig, which feels no lasting attachment to its female.

Before closing the account of the faculty which leads Man and animals to become united for life, I cannot pass over in silence certain remarks which might seem to militate against the opinion which I have now offered. We are told, and GALL himself relates the fact, that Wild Cats and Wolves had lived together in a state of union. Even supposing this observation to be true, I do not think that it can overthrow the opinion that attachment for life is the characteristic of some

* This plate we have not given.—ED. *Nat.*

species only, and consequently a fundamental faculty. Because one may have seen a Wolf and a Cat, animals which do not live habitually in a state of union, to be always together, we are not obliged, as it seems to me, therefore to conclude that such is the ordinary state of those animals. It is not surprising that, living isolated, two animals of the same species become attached so far as to remain together, but in order to make the observation conclusive, it would be necessary that the Wolf and Wild Cat had lived in a state of union, though surrounded by several animals of the same species.

SOME ACCOUNT OF A VISIT TO KNOWSLEY, THE SEAT OF THE EARL OF DERBY.

By a Member of the British Association.

As there was no meeting of the Natural History Section on Thursday, at the late meeting of the British Association, I determined, with many others, to avail myself of the Earl of Derby's liberality to the Members of the Association, by visiting his collections. This we were enabled to do by obtaining a ticket of admission from the Chairman or one of the Committee of the Natural History Section. A party consisting of several eminent naturalists—in fact the majority of the Members of the Committee of the Section, the names of whom, I perceive, are given in the last number of *The Naturalist*,—(p. 424)—started in the morning, at 10 o'clock; but the weather was exceedingly wet, and prevented the attendance of many more. The mode of conveyance was by the rail-way, which passes within three miles of Knowsley. I was not fortunate enough to be one of their number, for the hours of starting are punctually observed by the trains on the rail-way, and though I was but a few minutes too late, the party were undoubtedly nearly at their journey's end when I arrived at the station. As the rain descended very fast, I hardly regretted my absence from them. However, at noon it cleared up, and I again repaired to the rail-way station, and started for Knowsley.

On alighting I found I had several companions on the road making for the same destination. Without the formalities of introductions we were all soon known to each other, and I found in my fellow-travellers some of the ardent and devoted naturalists whose names had long been familiar to my ears and eyes, but with whom for the first time I had the pleasure of conversing. This alone is a strong recommendation of the British Association, that it brings into close contact men of kindred minds, and offers to the student of science the example of eminent men, and his intercourse with them a strong inducement to follow the course he has begun.

He now knows and feels that the most eminent have had to work and labour as he does himself. He is also assured of their sympathies, and by the enjoyment of their society receives a strong incentive to persevere, though perhaps secluded, and far removed from personal intercourse with any of kindred dispositions.

But I am wandering from the object of this communication. We arrived at Knowsley about three o'clock, and after sending in our cards and tickets of admission, we were directed to the aviary. We were first shown into a square plot of ground surrounded by small buildings, and cages for various birds and animals. There were several Marsupial animals loose in this enclosure; they seemed but little annoyed at our presence, and allowed us to approach close to them. There were several species of Deer, also free, and amongst them the Moos Deer presented to the Earl by the Zoological Society of Dublin. One small species of Antelope attracted our attention by its crouching towards a large fire in one of the buildings. It stood so close that on laying our hands on its back we were unable to stroke its skin on account of the heat. In this inclosure were several fine Vultures, amongst others two species of the rare and singular genus *Percnopterus;* also several very fine Eagles, including all the British species. Amongst the confined animals were several Opossums, a little family of that curious animal the Jerboa, some Kangaroo Rats, and several Armadillos. There was a fine specimen of the old English Mastiff in a kennel, and several other specimens of Dogs were running about the premises. One wretched little creature without any observable hair upon its hide particularly drew our attention.

But although the quadrupeds are worth attention, the birds form the greatest attraction in this collection. Most of the birds from tropical climates are kept in warm rooms, whilst others, less dependent for health on heat, were kept in extensive cages, the wire-work of which extends over several hundred feet of ground. The water-birds were allowed to swim about freely in a large reservoir of water situated in the middle of the aviary. Amongst the smaller birds confined in cages were several interesting specimens. An African species of the genus *Thamnophilus* attracted our immediate attention by its large deep yellow eye, which, contrasted with its dark purple plumage, gave quite a new character to the bird. In size it is something less than the Common Starling, and exceedingly elegant in form. It is the only specimen alive in this country. There were also various forms of the American hard-billed birds; likewise some beautiful specimens of the American Thrush, commonly called the American Robin [*Turdus migratorius.*—Ed.]; these, we were informed, had been bred in the Aviary. Several small birds from Australia, amongst them the *Vanga destructor*, a species of the Shrike family, whose extraordinary powers of voice were fully exhibited. Also a species of the beautiful genus *Euplectes*. Amongst the Scansorial birds were several rare and beautiful specimens. There was a living Red-billed Toucan

(*Ramphastos erythrorhynchus*). The other rare birds of this group which may be named were the *Nymphicus Novæ-Hollandæ*, *Palæornis Barabaudiæ*, *Platycercus Stanleyii*, *Platycercus Bauerii*, some species of *Timranus*, &c. Amongst the Rasorial birds were several varieties of Grouse, as the Sand-Grouse, or genus *Pterocles*; also the Red Grouse and Black Grouse. There were several young specimens of these birds, which had been bred in the Menagerie, a circumstance which, if not unknown before, is at least extremely rare.

In one large cage, occupying several square yards, were confined a great variety of Pigeons and Gallinaceous birds. Some of the latter were of the rarest kind; amongst the former the Passenger Pigeon [*Columba migratoria*, Auct., *Ectopistes migratoria*, SWAINS.—ED.] was pointed out to us; and as there were a great many of them it seems probable this bird may become extensively reared in this country.

Of the *Struthionidæ* there were several noble specimens. Some of them were very young. Of the Wading birds the most striking was the Stanley Crane (*Anthropoides Stanleyanus*). Its tall figure, graceful carriage, and tame habits, attracted considerable attention. It is between four and five feet in height; its plumage is of a bright grey colour; its most remarkable feature is its large head, which, according to the phrenologists, would indicate a most dangerous development of the animal propensities, as the greater part of its bulk is situated behind the articulation of the skull with the vertebræ.

Amongst the Swimming birds were some very fine Pelicans, several Black Swans, and a great variety of this tribe, of a smaller kind. After having visited the Aviary, we were kindly invited to partake of some refreshment in the house, and were afterwards shewn through the extensive range of apartments, which to the lover of the Fine Arts afforded abundant delight, in the splendid collection of pictures they contain. The Earl possesses a large library, and upon the table I observed copies of the most costly and splendid works on Natural History. There is also a magnificent collection of stuffed birds; but it must be obvious that we could take nothing more than a hasty glance at the various objects of interest that presented themselves in this extensive establishment. We did not see the noble owner of these collections, but I understand his lordship went round with the party in the morning, and endured the pains and penalties of the pouring rain for two or three hours, thus demonstrating the interest he takes in the objects he has been at so much pains to collect around him. On the following Saturday I joined a small party in an excursion to the Leasowes, which, if agreeable, I will forward for the next number of *The Naturalist*.

October, 1837.

A CHAPTER ON THE VARIETIES OF ANIMALS.

By the Rev. Francis Orpen Morris, B.A.

"Varium et mutabile semper."

(Continued from p. 211.)

I have made notes of a few more varieties of birds and other animals, which have been brought under my observation or to my knowledge; and when you have a spare page, if you consider them worth insertion, others I dare say will think so too, as it certainly is pleasing to observe the curious changes which present themselves to us, and interesting to note the species in which the variations mostly occur. In a letter received from my brother, Mr. B. R. Morris, he says,—"I have lately seen two black Sparrows, in this city" (Dublin). "Their bills are light-coloured, and, contrasted with the dingy black, or mixture rather of dark brown and black, which is otherwise universal, they look very curious among the other Sparrows. The primary wing feathers are of a deeper black than those of the rest of the body. I have seen a Sparrow with white wings, and total albinos are tolerably common, but I think I never heard of a black one before.—C. S———, of Hawksworth, Nottinghamshire, informs me that he once saw a straw-coloured Sparrow. It was shot, but unfortunately was too much injured to be stuffed. I remember, five or six years ago, seeing a Blackbird in confinement which had a mixture of black and white—the woman that owned it (at Sherborne) told me that she had had it several years, and that it was only within the last three or four that it had begun to change its plumage. At each moult it became whiter and whiter, and she expected that it would turn entirely white in a short time."

Mr. Dale, in a letter lately received, informs me of a white Woodcock, a dusky one, and another with white wings, in the possession of Sir Richard Colt Hoare, Baronet. The latter, with the young ones, was stuffed. A nest was also found on Middlemarsh Common, Dorsetshire, April 1836.* The Snowy Owl varies very much in plumage. Independent of the difference in the plumage of the sexes, some are much darker and more mottled than others—almost every shade occurs down to nearly a pure white. The Turnstone varies very much in plumage, and so does the Ptarmigan; but "*omnibus hoc notum est.*"—Many birds change their winter for a summer dress, "and when the hour again comes round" resume their former appearance, regardless of fashion, content with the admirable

* Mr. Dale informs me of his having found a red Cowslip growing wild, which is, I believe, a very great curiosity. It is the first of which I ever heard of that colour. The next thing will be to find a *blue Dahlia.*

adaptation of their colour to their haunts and wants. The Moor Buzzard varies very frequently in plumage. I have seen one with the head quite brown, uniform in colour with the rest of the plumage, or nearly so, excepting the chin, which was white.—Another had the head buff-coloured, mottled with the same colour, or between that and white on the nape of the neck and the chin, with a few white feathers on the breast, shoulders, and back, and one or two on the outside of the wing.

The Common Buzzard is subject to great variety, some being very dark, and almost black (one in my collection, a noble bird, is the darkest I have ever seen), and others with an almost equal admixture of white feathers with the brown, and they too of a lighter cast;—also every intermediate variety. I have seen a Hare of a blue silvery colour, its nose white, the head, cheeks, and ears light brown, the latter bordered with white. Is the Pheasant with the white ring round its neck, which is sometimes seen (*Phasianus torquatus*), a distinct species, as is, I believe, generally supposed, or not? I can hardly think it is, as we see some with so very little of the white mark, compared to what others have. One of the most singular varieties that I have ever seen was a Wild Duck of a general ash-colour, the speculum of a very dull lead-colour, the tail a kind of buff; the back was mottled with light brown, the breast of the same colour, and the neck and head were like those of the common Wild Duck, but of rather a lighter shade.

Besides the varieties of the Blackbird mentioned in my last communication, I have seen one with a delicate white ring encircling the neck as far as the shoulder. In other parts it exhibits the colour from which it derives its name. A very curious variety of a Duck, being a hybrid between the Common Wild Duck and the Pintail, is in Mr. Hugh Reid's collection. The speculum is somewhat similar in colour to that of the Mallard; the neck long and thin, and therefore more like that of the Pintail. The tail is short, and like that of the Mallard, with the exception of two feathers, which are about half the length of the tail of the Pintail. The head and neck are like those of the Mallard; from the latter the breast is divided by a semicircle of white feathers.

Another variety of the Hare that I have seen, is of a general dusky ash-colour rather lighter on the belly and neck. But the most beautiful variety I have ever seen is a bird of which, from the singularity of its appearance, I am unable to discover the species. I at first thought it was a young Nightingale, but the tail was too cuneiform. It was shot in a wood near Doncaster, and was sent to be preserved by Mr. Reid; and admirably has he performed his task, though only with his usual ability, which cannot be made too widely known. A more beautiful bird I never saw. It is entirely of a pure white, with a faint tinge here and there of a delicate rose colour. This "forms her description—her description,

true"; and, though mentioned last in these notes, it is impossible for any bird to exceed it in beauty. It is a young bird, scarcely full-grown, but in fine plumage, and belongs to some of our summer visitants, but to which it is "χαλεπον ειπειν."

Doncaster, September, 1837.

CORRESPONDENCE.

Which are the Best Works on Geology?

To the Editor of the Naturalist.

Sir,—At p. 359 I perceive your correspondent Mr. Hanway makes inquiries relative to publications on Zoology and Botany. I feel certain that a catalogue of the kind mentioned by Mr. H. will be of much use to many of your readers, as it once would have been to me. Therefore I may probably take an early opportunity of transmitting you the required list, though only upon condition that you do not receive any other communication on the same subject. Now an Englishman must, as all the world knows, turn every thing into a bargain; and, with a view of keeping up this ancient and venerable usage, I take the liberty of requesting that either you or some one of your contributors will, in return, furnish a similar account of the principal geological works. I am acquainted with the writings of De La Beche, Lyell, Buckland, &c., of which I have been led to think very highly. I am particularly desirous of becoming acquainted with the labours of French, German, and American authors in this interesting branch of science.

I may observe, that I possess a tolerably extensive library of Natural History, and therefore hope to make my intended list tolerably complete. As regards periodicals and transactions of societies, I think it will be amply sufficient to mention the titles of the most important of these, without alluding to any of the numerous and often admirable papers they contain.

On Magazines of Natural History, and Transactions of Societies.

If we may be allowed to judge by the number of societies which publish transactions, these publications must succeed very well. There appears, unfortunately, to be a much smaller demand for magazines devoted to Natural History. The *Zoological Journal*, Rennie's *Field Naturalist*, and the *Zoological Magazine*, all perished early. *The Naturalist* would probably have ceased to exist long ere this but for your "enterprising spirit"; the *Magazine of Zoology and Botany* is, I

hear, not going on very prosperously;* and, lastly, the *Magazine of Natural History* —which once enjoyed an extensive circulation—has, according to current report, considerably fallen off of late years. *The Analyst* (partially devoted to Natural History) is, I am glad to find, beginning to reap the reward which its merits ought long since to have earned for it. There can, however, be no question but the students of Nature are rapidly increasing in number, and it is to be hoped that the present infantile craving for trashy compilations with coloured daubs will shortly give way to a more rational desire for works of real merit—whether periodical or otherwise—scientific or popular. I am not one of those who reprobate altogether the publication of popular compilations. On the contrary, I think they may, if well done, be of very extended use. I am therefore a little disposed to *scold* you for your somewhat severe notices of certain compilations in your *Ornithologist's Text-book*. But I will not further trespass on your time and attention than by subscribing myself,

Sir, your obedient servant,

Lincoln, Nov. 2, 1837. J. B. TATUM.

[Mr. TATUM's letter reached us immediately after the retrospect of zoological and botanical literature published in our present number went to the press; otherwise it would have given us much pleasure to have published his list; and indeed we regret that he did not sooner comply with Mr. HANWAY's request. If any correspondent competent to the undertaking will furnish the catalogue desired by Mr. T., we shall be most happy to give it an early insertion.—We agree with our correspondent as regards the value of properly-executed compilations; but should probably differ from him in our views of a good work of that kind.—ED.]

CHAPTER OF CRITICISM.

NIDIFICATION OF THE GOLDENCROWNED KINGLET.

To the Editor of the Naturalist.

RESPECTED FRIEND,—In the November number of *The Naturalist* (p. 416) I noticed a paper on the Goldcrest, in which Mr. ALINGTON endeavours to prove that the nest of this bird is never attached to the twigs or branches of trees by

* We hope, for the credit of British naturalists, that the report is not true. But of course no estimate can fairly be taken of the circulation of a periodical printed at Edinburgh or in the country merely by ascertaining its London sale; which, on many accounts, may chance to be comparatively small.—ED.

means of "cordage," mentioning several instances to the contrary from his own observation. I have not any specimens of the nest at hand to refer to; and perhaps I ought not to speak too positively from recollection, but, if my memory does not greatly deceive me, I am strongly inclined to think that the bird *does* employ cordage wherewith to fasten its nest. Indeed I have seen instances of the nest hanging underneath a fir branch in which this must necessarily have been the case. But I rather send this with a view of eliciting further remarks on the subject than in order to communicate a matter of fact.

If this trifle is deemed worthy of a place in the pages of *The Naturalist*, its insertion will oblige.

Thine respectfully,
JAMES DILLON.

PROCEEDINGS OF NATURAL HISTORY SOCIETIES.

ZOOLOGICAL SOCIETY.

Mr. RICHARD OWEN, F.R.S., in the chair.—LUCIEN BONAPARTE, Prince of Musignano, exhibited the drawing of a new species of Salamander, differing both from the Triton and the Menobranchus, which he characterised as a new genus. The same distinguished naturalist likewise characterised several new birds from Mexico, from a collection which he had received for examination from that country, many of which had before been considered to be confined exclusively to the United States. Full descriptions of several of the new varieties were promised by him for publication in the *Transactions* of the society. Colonel SYKES, F.R.S., read some observations on the identity of the Wild Ass of Thibet, which principally inhabits Kutch, on the Indus, with the Jikta, or *Equus hemiones* of PALLAS. Although known to ARISTOTLE, PLINY, ÆLIAN, and other early writers on Natural History, this interesting animal appears to have been scarcely known in Europe until PALLAS described it in the *Memoirs of the Russian Academy*. This animal has, it appears, a very wide geographical range, being found in Mongolia, Arabia, the Himalayan Mountains, and many other parts of the continent of India. The learned author also mentioned that the ordinary distribution of Asses according to size was not correct, it being imagined that the largest species were found at the tropics, and that they diminished in size according as they approached towards the north, as the reverse was in many instances the fact, in some parts of India even the Asses, which are used as beasts

of burden, being little larger than Newfoundland Dogs. He also impressed upon naturalists and travellers the use of the camera lucida, for obtaining more correct configurations of animals than could be got by the unaided vision.

Mr. Gould exhibited a collection of the Raptorial birds of Australia, consisting of twenty-six species, amongst which were two white Hawks, which he considered were sufficiently characterised to be placed in a distinct species. Dr. Vigors remarked on the total absence of the *Vulturidæ* and the typical Raptorial birds as a distinguishing feature in Australian Ornithology, and also on an equal deficiency of ruminants amongst mammalia, as well as several insects and plants. He also congratulated the meeting on the presence of Prince Lucien Bonaparte, after an absence of ten years from this country, devoted to an inquiry into the Ornithology of the New World.—Mr. Gould described three new species of birds from New Zealand.

ENTOMOLOGICAL SOCIETY.

Oct. 2.—Mr. J. F. Stephens, Pres., in the chair.—Papers bearing the following titles were read:—1. A series of diurnal observations upon the larva of *Athalia centifolia*, or black caterpillar of the Turnip, with suggestions as to the best modes for its destruction, communicated by Mr. Sells; 2. observations on the Hemipterous family, *Phymatites* of Laporte, with a monograph on the genus *Macrocephalus*, by Mr. Westwood; 3. observations on the economy of several species of Œstrideous insects which attack the Horse, by Mr. Sells. In this communication the author entered fully into several points of the Natural History of the different species of Horsebots, arriving at conclusions opposed to those of Mr. Bracy Clark.—Mr. Saunders exhibited a small but interesting collection of insects from the interior of India, and Mr. Westwood specimens of the grub which, at the present time, is committing serious injury to the Turnips in the midland counties. He also presented specimens of two small Beetles, *Apion radiolus* and *Haltica fuscipes*, generally found upon the Marsh Mallow, but which he observed to be very injurious to the Hollyhock. The same gentleman likewise presented highly magnified drawings of the appearance of the secretion emitted by the Domestic Fly, produced by a disease which causes its death, and which had been considered by Mr. Macleay, at the Liverpool meeting, as a species of parasitic Fungus (see p. 440).—Numerous donations of books were announced, and other routine business was transacted.—Mr. Francis Walker, F.L.S., was elected a member, and certificates were read in favour of other candidates.

HORTICULTURAL SOCIETY.

Oct. 17.—Dr. HENDERSON, V. P., in the chair.—After a variety of presents had been announced, consisting of donations from the Academy of Sciences and the Horticultural Society of Frankfort-on-the-Maine, Dr. LINDLEY read a communication from Mr. DILWYN, on the growth of stove aquatics in the open air, stating that the writer had grown even the most tender South American varieties in this manner, which flourished well without any protection. A Melon was exhibited, grown by Mr. WILLIAMS, of Pitmaston, under frames open at the sides, and which, although the season was so far advanced, was in full perfection, as was also a superb queen Pine-apple, from Mr. HARRISON, weighing 4lbs 14oz., and of greater size than any previously produced of this variety. The fruit from the gardens of the society consisted of fifteen new varieties of Pears, and twenty of Apples. The flowers consisted of a choice variety of Dahlias from the gardens of the society, and Messrs. CHANDLER and CATCLEUCH; amongst the former being seen some of the seedlings of the original Mexican flower from which all the different forms at present known have sprung. There were also interesting collections of plants from the gardens of Sir EDWARD ANTROBUS, Mrs. LAWRENCE, and Messrs. YOUNG: amongst the latter being a rare plant, *Impatiens scandiflora*, from Ceylon, on which Dr. LINDLEY took occasion to remark on the propriety of introducing garden plants from this country and the southern parts of the peninsula of India. Silver Knightian medals were awarded to Mr. YOUNG, Mr. HARRISON, and Mr. GREEN, gardener to Sir EDWARD ANTROBUS, after which the meeting adjourned to the 17th of November.

EXTRACTS FROM THE FOREIGN PERIODICALS.

ZOOLOGY.

1. ON THE GENUS *Pagurus*, by DR. MILNE EDWARDS.—We intimated in a former number (p. 375) that we might probably extract further from Dr. EDWARDS's valuable paper on the *Paguri*, published in the *Annales des Sciences Naturelles*. This we accordingly now proceed to do.

It is generally agreed, observes the doctor, that in the *Paguri*, as well as in the *Cénobites*, there are only ovipositors (if *appendices ovifères* may be so translated) or false feet on one side, and that this part of the body is quite membranous above. M. DESMAREST, on the contrary, says that in the female,

false legs, destined to carry the eggs, exist on the abdomen, and that these organs are larger on one side than on the other. Lastly, according to LATREILLE, *Birgus* has two rows of lamellar appendages under this part of the body. All these opinions are more or less incorrect. In a great number of *Paguri* the abdomen is covered above with transverse horny plates, considerably developed, and of a sufficiently firm consistency; and even when these plates are reduced to a rudimentary state, they are almost always sufficiently distinct to mark the seven rings of which this part of the body is composed. The two last rings are always very firm, as are also the members of the penultimate segment, which serve to retain the animal in its dwelling, and to carry the latter after it. The kind of tail thus formed is always separated from the antepenultimate ring by a large membrane; in *Birgus*, as well as in the *Paguri* and the *Cénobites*, it exists, and lacks all symmetry. The new genus which I have established under the name *Cancelle** is the only group of the tribe in which this terminal portion of the abdomen is symmetrical. In the females we find, attached to the four horned plates which represent the four abdominal rings comprised between the first and sixth segments, four members which occupy the left side of the animal, and which serve to bear the eggs; these false legs are often large, and there sometimes exists a similar one on the right side, but two rows are never found, even in *Birgus*. In the male these organs are sometimes entirely wanting; in general there are three on the left side of the abdomen, and in certain *Paguri* it exists on both sides. In these latter we find, immediately behind the posterior thoracic legs, a pair of little appendages inserted near the median line, upon a horny organ which represents the first ring of the abdomen; they are each formed of a basilar articulation, and a terminal plate, shaped like a channel, similar to what exists in the short-tailed decapods, and in many canceriform *Anomoures*, forming my family *Aptérures*.

The horny plate which represents the second ring of the abdomen has also a pair of symmetrical appendages, which are considerably more elongated, and are inserted much further outwards, but which, in the ordinary position, are bent forwards and inwards, so as to place itself between these with the first pair. The three following segments each bear only one segment similar to those of the second pair; and it is to be observed, that in the *Paguri*, where the whole number of these appendages only amounts to three, it is the last which exist,

* While British naturalists in general attend little to vernacular nomenclature, continental writers have, on the contrary, so great a regard for it as to give each genus a separate French or German name, which they commonly employ without supplying the Latin designations. In the case of new genera or species, this practice is certainly to be regretted; and in France it is carried so far as often greatly to embarrass the English student.—ED.

while those of the second ring are only represented by a tuft of down, and those of the first ring have entirely disappeared.—*Annales des Sciences Naturelles.*

BOTANY.

2. Phanerogamous Plants naturalised near Montpellier. By M. Alphonse De Candolle.—Nothing, says M. De Candolle, is more difficult than to prove the introduction of a phanerogamous plant into the European floras. Our countries have long been in communication with the whole world, so that the species which might easily have been introduced have been introduced many centuries before accurate botanists could prove it. If new relations introduce, accidentally or voluntarily, new species, the frequent changes of our ex-extratropical climates, aud the extent of our culture (of plants), commonly prevents their being naturalised in a lasting manner. How many seeds escape from our gardens, which, nevertheless, cause no addition to the flora of our fields! How many species have been sown without the boundaries of our cultivated grounds, from which nothing has resulted, or the produce of which has disappeared after having struggled one or two years with the climate, and with indigenous plants, exclusive masters of the land.

Gouan of Montpellier, Grosse of Geneva, and several Parisian botanists, have, during many years, thrown handfuls of foreign seeds into our woods, meadows, and mountains, and, to my knowledge, no one of these is naturalised.

The following, however, is an instance of successful naturalisation in the neighbourhood of Montpellier. *Jussiæa grandiflora*, an aquatic plant of the order *Onagraceæ*, a native of Georgia and Carolina, was thrown into the little river Lez, six or seven years ago, by M. Delile, director of the garden of Montpellier. It has propagated and naturalised itself in an extent of many leagues, almost so as to obstruct the mill-streams. This year (1836), in September, I have seen it erecting its beautiful yellow flowers in the midst of the *Polygonum*, *Mentha*, &c., which have always covered the peaceful waters of the banks of the Lez. It occurs abundantly above the *Pont Juvénal;* and if we then repair to the neighbouring inclosures destined for the cleaning of wool*, we can compare a complete and permanent naturalisation with the ephemeral introductions which botanists have frequently mentioned. The fact relative to the *Jussiæa* admits of no doubt. The cause of its success appears to me to be the nature of the station of *J. grandiflora*. The plants which live more or less submerged in water are commonly found in countries distant from each other. They are, so to speak, more *sporadic* than the generality of species belonging to the same genera or families. They accommodate themselves more easily to all climates, because the medium

* The wools of the East, dried at the *Pont Juvénal* introduce annually some species, but they are not found to spread and multiply in the country.

in which they live maintains a temperature more equal than the atmosphere, and more similar in different countries. Their stalks or their seeds, protected from cold and heat by a mass of fluid, develop immediately the season becomes favorable, whatever be the temperature of the atmosphere during the rest of the year.

The mean temperature of Montpellier during the three summer months (June July, Aug.) is 24°, C., as at Naples. It is sufficient to ripen the seeds of many aquatic plants belonging to hot countries, and especially to those which are analogous, as the U. S., Van Dieman's Land, or Japan. In the cold season, during the months of Dec., Jan., and Feb., a mean external temperature of +8°, which is perhaps +10 to 12° in the waters of the Lez, cannot be very hurtful to these same species. The aerial or land plants, on the contrary, are exposed to mountainous temperatures of —7°, or —8°, C.

In confirmation of these principles, I may observe, that Mr. LICHTENSTEIN, of Montpellier, sowed some rice in a salt-marsh of the province of Aude, with remarkable success. A summer heat of 23, C., suffices on an average to ripen rice, as may be ascertained by the geographical situation of the rice-grounds of Piedmont. In M. L.'s experiment the obstacle to be feared was less the temperature than the saline quality of the ground, but it appears that rice does not suffer from a certain degree of salt. We may therefore perhaps one day see the vast saline ponds which surround the middle of France, from the mouth of the Rhone to the Pyrenees, covered with productive rice-grounds, and furnishing to the inhabitants, now overwhelmed with fever, a means of resisting this evil by better food, better clothes, and more healthy dwellings.—*Bibliothèque Universelle de Genève, New Series.*

CHAPTER OF MISCELLANIES.

ZOOLOGY.

THE RING PIGEON (*Columba palumbus*) BREEDING IN CONFINEMENT.—I have this year succeeded in breeding the Ring Pigeon in confinement. I took the old birds from the nest in the autumn of last year. This year they bred a pair of young, which have now passed through the first moult, and are not distinguishable from the old birds.—THOMAS ALLIS, *York*, 11*th Mo.* 4, 1837. [This fact tends to confirm the opinion we ventured to advance in *The Naturalist*, Vol. I., p. 132.—ED.]

SUBSTITUTE FOR CORK-LINING IN ENTOMOLOGICAL CABINETS.—The following

receipt, as a substitute for cork-lining for drawers in cabinets of insects, will be found a very good one, and it does not require above a fifth of the expense attending the usual method:—

White Resin, 10 oz.
Bees-Wax, 6 oz.
Tallow, 2 oz.
Turpentine, 1 oz.

The last item, might, I should think, be dispensed with.—F. O. Morris, *Doncaster, Nov.* 4, 1837.

Large Ray.—An enormous Ray has been taken off Feroe, which weighed 384 pounds, was 13 inches thick, 8 feet 8 inches long, and 6 feet 2 inches wide.—*Athenæum, Oct,* 21, *communicated by Charles Liverpool, M.D.*

Hybrid between a Lion and a Tiger.—"*Ibrida quo pacto sit.*" Horace, *Satires,* 1. vii., 2.—Mr. Reid, of Doncaster, has in his museum a very fine specimen of an animal between a Lion and a Tiger. In size and shape it more resembles the latter species, and in colour the former. It was bred in Yorkshire. I consider it a very great curiosity.—F. O. Morris, *Doncaster, June,* 1837.

Notice respecting the Whiteheaded Osprey (*Pandion haliætus*).—In a former number of *The Naturalist,* I stated, that an adult male of this species, which alighted in an exhausted state on the rigging of a small vessel passing Flamborough-head, was brought to Scarborough, and presented to the museum of that town by John Tindall, Esq. I may add that the bird, while in the hands of the sailor-boy, evidently did not admire its situation—that of being carried round for sale. It assumed a very dignified appearance; and, although no doubt both hungry and fatigued, its proud spirit looked with apparent disdain upon a piece of raw meat offered to it. Since the capture of this bird another was repeatedly seen at Scalby-beck, a rivulet celebrated for its delicious Trout. It branches from the Derwent, and empties itself into the sea about a mile to the north of Scarborough.

This epicurean angler afterwards took up its quarters at the Hackness fish-ponds, a few miles from its previous abode. But it was not long suffered to remain here, the keepers having received instructions from the generous proprietor, Sir J. V. B. Johnstone, Bart., to secure all desirable objects of Natural History* for the Scarborough Museum. Accordingly, in order to immortalize this gourmand, as much pains were taken to seize it as though it had been a cut-purse or a swindler. The bird escaped after all. Another individual of this interesting

* Were proprietors of parks to adopt this plan, and on the other hand to forbid all unnecessary destruction of many birds vulgarly termed "varmint," the system would, we are confident, prove beneficial to all parties.—Ed.

species was brought to the Scarborough Museum, having been shot near the town on the 18th of last May.—Patrick Hawkridge, *Scarborough, Aug.* 7, 1837.

Lamb without a Head.—"*Ut abortivus olim Sisyphus.*" The most extraordinary *lusus naturæ* I have ever seen has just been preserved by Mr. Hugh Reid, of Doncaster. It is a lamb without a head! It is perfectly formed in every other respect.—F. O. Morris, *Doncaster, July*, 1837.

White Varieties of the Partridge.—Two Partridges have been shot this season at Alston, near Preston, perfectly white, not a coloured feather being found on either bird. On the same estate two others, of exactly simliar plumage, have also been seen.—*Taunton Courier.* [Wholly or partially white varieties of the Partridge are not very uncommon, a circumstance attributable, perhaps, to their inhabiting so near the haunts of man. It may be observed that as birds or other animals come under our immediate jurisdiction and control, in equal ratio does their liability to stray from the natural type, as regards plumage, size, &c., increase. Thus, generally speaking, the *Aquaticæ* (Latham) are more subject to variety than land birds; but amongst the former the Mallard Duck (*Anas boschas*) will be found to vary much more frequently than most of the marsh and moor birds, which again supports our observation.—Ed.]

Starling with an elongated Upper Mandible.—In the same collection (that of Mr. Reid) is a Starling with the upper mandible remarkably elongated, curving downwards, and inclining a little to the left. I have seen other similar instances.—F. O. Morris, *Doncaster, July*, 1837.

White-headed Osprey.—A fine specimen of the Osprey was shot a few days ago, at Sandhill Park, by Sir Thomas Lethbridge's gamekeeper. This bird measures five feet two inches from tip to tip of the wings. It is now in the hands of Mr. J. Turle, birdstuffer, of this town.—*Taunton Courier, Oct.* 11.

Cross between a Cock Pheasant and a Grey-hen.—Mr. Dale writes me word that, in the title-page to Eyton's *Rarer British Birds* there is a figure given of a hybrid between a cock Pheasant and a "Grey-hen." In the preface it is said to have been one of a brood of five. The neck appears to be black, and the rest of the plumage mottled. At p. 101 a similar instance is mentioned as having occurred in Cornwall, and another near Corwen, now in the collection of Sir Rowland Hill, Bart.—F. O. Morris, *Doncaster, August* 7, 1837.

Insect Food.—A peculiarly disgusting insect is eagerly devoured by the Chinese Hottentots; caterpillars are cooked into a dish in some parts of Australia, and the people of New Caledonia eat Spiders. Ants and their eggs are eaten by several nations, and this kind of diet has been eulogised by some Europeans who have partaken of it. In some parts of the East Indies it is said that vast quantities of Termites (white Ants) are collected, and made with flour into a variety of pastry; but an inordinate use of this food occasions colic, dysentery, and

death. Mr. STEDMAN says that the Africans eat these Ants (roasted) by handfuls, and several Europeans have declared that they are delicious—like sugared cream or a paste of sweet almonds. Locusts are eaten in almost all the countries where they appear, either dried, pounded with milk, ground with flour and baked into cakes, or made into soup.—*Asiatic Journal.*

THE GARDEN OUZEL CROWING LIKE A COCK.—The circumstance of the Garden Ouzel (or "blackbird") having been known to crow like a cock, has excited considerable curiosity and speculation. Theoretically, we should say that the species has an amply-developed faculty of Imitation, and that the notes are by no means original, but are obtained from the constant crowing of Cocks near the haunts of these birds. Our own observation unquestionably tends to confirm this view of the question. Thus we have known Garden Ouzels imitate the various shades of crowing or cackling of the Dunghill, Game, or Bantam Fowls. Where the favourite quarters of these birds are in the immediate vicinity of sequestered farms, is the best place for noticing the cackling of the "blackbirds"; and the circumstance of our having known the latter almost immediately confine themselves to their natural notes when the Fowls were removed from a spot similar to that of which we are speaking, in our opinion at once settles the point in dispute.—ED.

Crambus argyreus.—Very fine dark specimens of this insect may be had on Parley Heath and near Lyndhurst, from July 3 to August 26. Other varieties occur in different localities, one even within a mile, in Clover fields, and others running more yellow elsewhere, as at Whittlesea Mere, Gambingay Heath, &c., near Bedford, Dover, and other places.—J. C. DALE, *Glanville's Wootton, Dorsetshire, July* 9, 1837.

Crambus margaritellus.—Schichallion, Loch Ranock, Craig Cailleach, Winandermere, July 11 to Aug. 26. Near Birmingham, Mr. WEAVER; Beachamwell, Norfolk, June, 1823, Mr. HAWORTH. In a garden at Brightwell, Berkshire, Rev. R. BURNEY; also Thorne Moor, July, 1837.—*Id.*

NUMBER OF EGGS OF THE STARLING.—I have repeatedly found seven eggs in the nest of the Starling; and I think (though I cannot say positively, having no memorandum by me) that I have known this number exceeded. At any rate I consider seven the more usual number.—J. D. SALMON, *Thetford, Norfolk, July* 23, 1836. [In the *British Song Birds* we stated the number of eggs to be "four or five"; but we believe Mr. SALMON is right. In this particular we suspect that —contrary to our usual custom—we spoke rather from closet knowledge than from a comparison of our private notes and observation in the fields.—ED.]

EGGS OF THE WOOD LARK (*Alauda arborea*, LINN.).—I have never been able to meet with the eggs of the Wood Lark; they are, consequently, desiderata in my collection.—J. D. SALMON, *Thetford, Norfolk, July* 28, 1836.

BOTANY.

Fuchsia fulgens.—At the flower-show in the Egyptian-hall on Thursday, there was exhibited, for the first time in this country, a specimen in full blow of that magnificent plant *Fuchsia fulgens*. It was introduced from Mexico by Messrs. Lee, of Hammersmith, and for its culture they obtained the large silver medal. The leaves of the plant are of a bright green, tinged with a beautiful deep purple towards the centre. The flowers are red, and the inner fold is of a deep scarlet. They measure three inches and a half in length, and hang down in luxuriant branches of from thirty to sixty blooms, varying according to the strength of the shoot.— *Oct.* 11.

The Tea Tree.—I read in your paper lately an account of the Tea-tree being cultivated in the gardens of Mr. Lerry, at Angers. I recollected at the time to have seen, as I believed, a hedge of evergreen plants in the nursery gardens of Mr. Page, near Southampton. I have since been to see them, and there are now plants that are not less than six feet high, growing with all the hardiness of a common Bay-tree; the leaves healthy, and in some seasons producing ripened seed. I am induced to believe that the shores of Devonshire, or the Isles of Wight, Jersey, and Guernsey, would grow this plant for profitable use.—*Mark Lane Express.*

Enormous Turnip.—On the 12th instant a white Turnip was taken from the field of Mr. James Crompton, Meltham Grange, near Howden, the diameter of which was five feet one inch; the circumference of the bottom, 3 feet one inch; stood, when growing, 14 inches; when the top and root were taken off weighed 15 lb.; was sown on the 22nd of June last.—*Oct.* 11.

A Fact for Naturalists.—In the neighbourhood of Bierley there is a tree which was, a few years ago, split with lightning. An iron chain which was fastened round it in order to restore it to its pristine form is now covered with bark, and the tree is in good condition.—*Wolverhampton Chronicle.*

Victoria regalis.—Dr. Weissenborn, of Weimar, states, in the November number of the *Magazine of Natural History*, that the plant named by Mr. Schomburgh *Victoria regina*, is unquestionably *Euryale Amazonica*, Pöppig. It is therefore probable that Mr. Schomburgh will be under the necessity of withdrawing his name.—Ed.

GEOLOGY.

Remarkable Caverns, Geology, &c., in Brazil.—Dr. Lund, the Danish traveller, now in Brazil, has discovered, in the mountain chains between the Rio Francisco and the Rio das Velhas, a great number of caverns; among which Sappa nova de Marquiné, in the Sierra de Marquiné, is one of the most remarkable. The mountain consists of clay-slate, flinty-slate, and limestone of the

transition period, in which last is the cavern described; the total length of which, from north to south, is 1440 feet, the height being from 30 to 40 feet, and the breadth from 50 to 60. It is separated by masses of stalactite into twelve divisions, of which only three were known before Dr. LUND explored them. The others, especially the innermost, were of such extraordinary beauty, that his attendants fell on their knees, and expressed the greatest astonishment. On the river Velhas, the banks of which the traveller afterwards traversed, the vegetation assumes a peculiar character. The inhabitants call the forests *catingas* (white forests). They form a thicket of thorny trees and bushes, interwoven with parasitical plants of the same nature. The leaves fall in August, and, from the beginning of September till the rainy season, the *catingas* are as bare as European forests in winter. On this excursion Dr. LUND had an opportunity of examining nineteen caverns, all of which confirmed his opinion of their geological formation. He has collected many remarkable particulars respecting the circumstances which must have taken place in a great inundation, as well as respecting its effects, and convinced himself, by several indications, that its course in South America was from north to south. In three of the nineteen caverns which he explored, he found petrifactions of quadrupeds, which he had not discovered in the Marquiné cavern, viz., *Cerous rufus*, *Caelogenys*, *Paca*, *Cavia aperia*, six species of Bats, four species of *Mus-lepus Brasiliensis*, and *Strix pectata*. In the first-mentioned cavern he found two species of ruminating animals, far larger than those now living in Brazil, and a Megatherium, of the size of an Elephant.—*Literary Gazette.*

M. TOURNET has presented a long memoir to the French Academy of Sciences, containing his geological observations in the neighbourhood of Arbresle, in which he establishes some well determined affinities between the nature of those rocks which have pierced through the upper crust at different periods, as well as their directions, the soil which covered them, and their degree of fusibility, as connected with the period of eruption. M. TOURNET thinks that the true and only primordial sedimentary rock is composed of clay slate, and that this rock, which contains the element of mica, being altered or modified in different manners, has been transformed into gneiss, mica-slate, &c. He admits four modes of alteration: one is calcination, a second trituration, a third the changes produced by penetration and *cementation*, and the fourth is the influence of the granite which transforms it into gneiss, by introducing its feldspath when in a state of fusion.

REVIEWS OF NEW PUBLICATIONS.

On the Natural History and Classification of Birds. By WILLIAM SWAINSON, A.C.G., F.R.S., F.L.S., &c. Vol. II. London: Longman and Co., and John Taylor. 1837. 12mo. pp. 398.

THE present volume contains a brief but masterly explanation of the affinities of *Dentirostres*, *Rasores*, *Grallatores*, and *Natatores*, or the Dentirostral birds, Gallinaceous birds, Waders, and Swimmers, illustrated by numerous wood-cuts. The work is for the most part written in our author's usual philosophic spirit, but we greatly dislike the tone of the following extract:—

> If our opponents, by any theory of their own, equally comprehensive, can explain and illustrate what this cannot do, we will then not only consent to abandon our propositions as untenable, but adopt any other more demonstrative of the unity of Nature's laws. Until this, however, is done, or until something more philosophic is urged against us than the old reiterated assertion that "the time has not yet come" for these investigations, &c. &c., we may be allowed to preserve silence: these vague and querulous complaints, in truth, have emanated from those *only* who have hitherto done nothing to place their names in the prominent ranks of science, and who may consequently be presumed inadequate judges upon matters they have not sufficiently studied.—p. 2.

Mr. SWAINSON is here alluding to the leading article in the first number of the *Magazine of Zoology and Botany*, by Mr. JENYNS. It is, to say the least, uncourteous to judge thus harshly of so excellent a naturalist as Mr. J., who was merely expressing the individual opinion at which he had arrived respecting the classification; and, if to either of these gentlemen, we should in this instance be inclined to ascribe the "querulous complaints" to Mr. SWAINSON.

We believe the quinary system to be more in accordance with Nature than any other arrangement hitherto promulgated. In this country it appears to have been adopted by almost every naturalist of note who has impartially investigated the theory. On the other hand we are not aware of its having ever been opposed with anything like success. It has been sufficiently ridiculed in private, but never openly and fairly grappled with in public. Naturalists holding contrary views must either consider the subject too absurd to be gravely discussed, or there must be a lack of real objections to the system. Some years ago an attack upon the doctrine was published in the second edition of MONTAGU's *Ornithological Dictionary*, by a gentleman evidently little acquainted with the subject. Attempted demolitions of the quinary system have likewise appeared in the *Magazine of Natural History* (Vol. IX., we believe), by PETER RYLANDS, Esq., and Mr. BLYTH.

Mr. SWAINSON then proceeds to the description of genera, mentioning one or more species under each group, and illustrating the chapter with figures.

The only faults we can find in this admirable volume are those of the "printer's devil" and of the engraver. We could have wished that these had been less numerous; for, though perhaps minor failings, we cannot help remarking them in a standard publication.

Catalogue of the Cellulares or Flowerless Plants of Great Britain, or those included in the Linnæan class *Cryptogamea*. By W. A. LEIGHTON, B. A., F.B.S.E., &c. London: Longman and Co., & Davies, Shrewsbury, 1837.

THE advantages of Mr. LEIGHTON'S *Catalogue* appear to be similar to those of CURTIS'S *Guide to an Arrangement of British Insects* (see p. 336.). It is carefully compiled from Sir W. J. HOOKER'S *English Flora*, Sir J. E. SMITH'S *English Flora*, MACKAY'S *Flora Hibernica*, HENSLOW'S *Catalogue of British Plants*, &c.: and, being printed upon a single sheet, may be transmitted to any Part of the kingdom for a single postage.

A Catalogue of the South African Museum: now exhibiting in the Egyptian Hall, Piccadilly. The property of a Society entitled "The Cape of Good Hope Association for exploring Central Africa." London: Smith, Elder, and Co. 1837. pp. 39. 8vo.

THIS *Catalogue* includes a considerable number of rare African quadrupeds and birds, with extremely interesting remarks on the former. The Cape of Good Hope Association was established in 1833, and we are glad to find that it is in a flourishing state. If well conducted and liberally supported, it cannot fail to be a valuable auxiliary to science.

The Entomological Magazine. No. xxi., Oct., 1837. London: R. Clay, Bread-street-hill.

THIS is an excellent number of the *Entomological Magazine*, nearly all the original communications being valuable. In our last publication (p. 397) it will be remembered that we extracted a paper by Mr. E. DOUBLEDAY, on the Natural History of North America, from the periodical under notice. In the present number Mr. D.'s interesting notes are continued, but we regret our inability to make any quotation at present. Other articles, by Mr. WALTON, Mr. F. WALKER, and Mr. HEWITSON, with the reports of British and foreign societies, combine to render this magazine interesting and useful to the entomologist, while the lighter effusions of Mr. DOUGLAS and the "Insect-hunter" may prove attractive to the less scientific reader.

Address of Earl Stanhope, President of the Medico-Botanical Society, for the Anniversary Meeting, Jan. 16, 1837. London: J. Wilson, Piccadilly.

From the amiable and scientific spirit pervading this Address, no one will venture to deny that its noble author amply deserves the respect and esteem in which he is held by the institution over which he presides. A critical notice would here be out of place; but we may observe that we object to the generic names of the plants being in small capitals. Not only is it a departure from the usual method, but it appears to be unattended by any counterbalancing advantage.

CONFLICT WITH A TIGER ON THE MALABAR COAST.

With regard to Mr. Tiler's book on birds, beasts, fishes, insects, &c., we shall content ourselves with making the following extract from its pages:—

There is now living in the village of Kildwick, in Craven, Yorkshire, a Mr. Turner, who, at an early period of his life, was in the East Indies, as a soldier in one of the regiments stationed there. When encamped at Ganjam, on the Malabar coast, he had a dreadful personal conflict with a huge Tiger. With the particulars of the affray, Mr. Turner himself has obligingly furnished us for this work. He is, probably, the only living instance of an individual encountering a Tiger, under such circumstances, and remaining, as he certainly did so, by the retreat of the enemy, master of the field.

On the day the regiment arrived at Ganjam, two men belonging to it, named Bateman and Murray, had gone upon a contiguous mountain without fire-arms, and had been put into considerable consternation by a large black Bear. The next morning they invited Mr. Turner to accompany them to the same place; and took with them two muskets and bayonets, with six rounds of ammunition, as a prudential defence against the dangers they might probably encounter. Having ascended the summit of the mountain, Mr. Turner perceived a small, loose rock, upon the edge of a lofty precipice, and tumbled it down, for the purpose of disturbing, from their lurking places, the wild and savage tenantry of the place. The result was immediately seen; for one of the party shouted out "a Tiger! a Tiger!" and fired upon it, when they all immediately recognized a large royal Tiger, that turned his eyes upon his enemies, and paralyzed them with a dreadful roar, as he doubled the angle of the mountain, in proceeding to his lair. This, unfortunately, lay directly upon the path by which they had ascended the mountain, and being the only safe road by which they could descend the eminence, the Tiger's position cut off their retreat. Recovering a little from their consternation,

BATEMAN and MURRAY proposed to attempt their escape in another direction: while TURNER, more courageous, was for facing the foe, and offered to fire upon the Tiger if his companions would load their pieces. Mr. TURNER had barely secured a favourable position for the attack, as his eye met that of the Tiger, who with an amazing bound and dreadful roar sprang up the cliff to meet him. The assailant fired, and the Tiger fell, tumbling down the rock he had ascended with so much agility; but, recovering himself, the monster made a second spring, with a roar of agonized fury, when he received Mr. TURNER's second ball, which tumbled him again backwards. Thrice again the Tiger returned to the charge, more infuriated from the effects of each successive shot; when Mr. TURNER's companions called out that the ammunition was expended, and advised their escape by the back of the mountain. Against this he remonstrated, from his own perilous position, and urged them to stand by him, but they were deaf to all remonstrance, and disgracefully left him to the fury of the Tiger, whose near approach was announced by a roar more terrific than any he had previously uttered. Mr. TURNER had but a moment to place himself in a posture of defence, when the infuriated animal sprung at him, and received the bayonet into his chest, up to the muzzle of the musket. In the attempt to disengage the bayonet from the Tiger's chest, however, it unfortunately became separated from the musket, which Mr. TURNER instantly clubbed, and with every energy that fear and courage could supply, he struck the Tiger with such force as slightly to fracture his skull; whilst the firelock was broken, by the blow, into three pieces.

Up to that moment, the hardy soldier had not received a single scratch, though he had inflicted many severe wounds upon his adversary; but his present position was the extreme of peril, being unarmed and completely defenceless before an enraged Tiger, whose wounds appeared to make him the more dreadfully infuriate. The Tiger sprung at the head of his victim, and immediately brought him to the ground, and, seizing Mr. TURNER by the right shoulder, he lifted him from the ground with a furious shake, tearing his body across the loins, from side to side. In a very short period thirty-three wounds were inflicted upon the body of Mr. TURNER, whilst his garments, which were a sort of undress of light calico, were torn to shreds and drenched in blood: indeed, all that remained of his dress upon the mangled body, were the waistband of the pantaloons and the collar of his shirt. Though thus dreadfully mutilated, shaken, and torn, by the savage beast, Mr. TURNER had the presence of mind to fix his grasp in a wound which one of the muskets balls had made in the neck of the Tiger, and tore out a quantity of ragged flesh from the interior of the wound. From the pain thus inflicted upon the Tiger, he uttered a tremendous roar, which was distinctly heard into the camp, a mile distant, and then took his departure.

For some moments Mr. TURNER lay upon the rock insensible; but a voice from two Europeans, exclaiming, "TURNER's killed!" roused him, and, jumping up on his feet, he cried out, "I'm worth twenty dead men yet!"—Being taken into the camp, his wounds were carefully examined and dressed, and happily pronounced not mortal. The result justified the decision, for, by careful treatment, Mr. TURNER so far recovered as to be able to re-visit the scene of the battle, in about a month from the period when it took place. The dead body of the Tiger was found, the morning after the affray, upon the bank of a small rivulet, whither he had gone to quench his thirst. Mr. TURNER very naturally observes, that the recollection of this perilous conflict, though more than thirty years have now rolled over since its occurrence, is still frequently attended with mingled emotions of wonder and terror.

LITERARY INTELLIGENCE.

MESSRS. LONGMAN & Co. announce that they have in the press a work entitled *Sketches of Natural History*, by CHARLES WATERTON, Esq., the well-known author of *Wanderings in South America*.—Mr. T. GISBORNE, M.A., has published *Considerations on Modern Theories of Geology* (London: Cadell, 1837), which we may perhaps be able to notice further on a future occasion.

END OF THE SECOND VOLUME.

INDEX.

ORIGINAL PAPERS.

CORRESPONDENCE.

CHAPTER OF CRITICISM.

PROCEEDINGS OF NATURAL HISTORY SOCIETIES.

EXTRACTS FROM THE FOREIGN PERIODICALS.

CHAPTER OF MISCELLANIES.

REVIEWS OF NEW PUBLICATIONS.

LITERARY INTELLIGENCE.

LIST OF ENGRAVINGS.

LIST OF CONTRIBUTORS.

ERRATA.

P. 2, l. 12 from b., for "*Semnopitheus*" read "*Semnopithecus.*"—P. 11, l. 5 from b., for "*Galeopithecus,*" "*Galeopithecus.*"—P. 18, l. 13 from b., for "*metacarpal,*" "*metacarpal.*"—P. 22, l. 20, after "*Elyt. striated,*" add "*the striæ punctulate: fem. glossy black: tib. and tar. dull ferruginous.*"—P. 23, l. 23, for "*rib,*" "*lib.*"—P. 24, l. 8, for "*striæ,*" "*foveæ.*"—P. 24, l. 8, for "*rarely,*" "*rather.*"—P. 24, l. 19, after "*striated*" insert "*legs, 4 basal joints of the ant., and base of the pal., ferruginous.*"—P. 26, l. 19, dele "*from the size of the bird.*"—P. 26, l. 21, for "Κοϱονη," "Κοϱωνη."—P. 27, l. 1, insert a period after "*Common.*"—P. 29, l. 9 from b., for "ουτα," "ουϱα".—P. 29, l. 5, f. b., for "*œnanthe,*" "*œnanthe.*"—P. 29, l. b. l., for "———," "——*rubicola.*"—P. 42, l. 2 f. b., for "*clilatatum,*" "*dilatatum,*" and for "*libatum*" "*lobatum.*"—P. 47, l. 12 f. b., after "*obtain*" insert "*in.*"—P. 61, l. 11 f. b., for "*Crucidæ,*" "*Cracidæ.*"—P. 71, l. 7 f. b., for "ωτις," "ωτα."—P. 72, l. 6, after "*Charadrius*" insert "Χαϱαδϱιος."—P. 72, l. 21, for "αμμα," "αιμα."—P. 72, l. 22, for "*lego,*" "*lego.*"—P. 76, dele l. 17.—P. 79, line 12, for "*charmœdrys,*" "*chamœdrys.*"—P. 81, l. 16 f. b., for "*slyvestris,*" "*sylvestris.*"—P. 82, l. 20, for "*tetralis,*" "*tetralix.*"—P. 82, l. 22, for "*myrtyllus,*" "*myrtillus.*"—P. 84, l. 16, for "*usual,*" "*unusual,*"—P. 84, l. 8 f. b., after "*mistaken*" add "*for them.*"—P. 88, l. 7, dele "*part of the.*"—P. 88, l. 10, for "*the wings underneath,*" "*the under wings.*"—P. 88, l. 19, for "*be,*" "*lie.*"—P. 89, l. 11, f. b., for "*combatted,*" "*combated.*"—P. 108, l. 10 f. b., for "*asynthium,*" "*absynthium.*"—P. 118, for "*aore,*" "*acre.*"—P. 125, l. 11, for "*Prygila,*" "*Pyrgita.*"—P. 126, l. 19, for "*Aëdonis,*" "*Aëdon.*"—P. 132, l. 6 f. b. for "*Helleberis,*" "*Helleborus.*"—P. 133, l. 24, for for "*pracox,*" "*præcox.*"—P. 134, l. 13, for "*Crepus,*" "*Crepis.*"—P. 134, l. 14, for "*Cichorium,*" "*Cichorium.*"—P. 135, l. 1, for "*Lanniehellia,*" "*Zannichellia.*"—P. 136, l. 26, for "*alla,*" "*alba.*"—P. 140, l. 8, for "Πεχνος," "Πεχνος."—P. 141, l. 7 f. b., after

"πους" add "*a foot.*"—P. 147, l. 18, for "*cibarium*" "*cibaria.*"—P. 149, l. 6, dele "*of.*"—P. 152, l. 8, f. b., for "*Siphnas,* '*Siphnos.*"—P 155, l. 14. after "*H. Chester, Esq.,*" dele "*M.P.*-"—P. 160, l. 10 f. b., for "*prove,*" "*proves.*"—P. 164, l. 7, for "*Slow,*" "*Sloe.*"—P. 166, l. 12 f. b., for "*bird,*" "*birds.*"—P. 170, and p. 284, for "*Azelius*" and "*Afzaleus,*" "*Afzelius.*"—P. 177, between ll. 6 and 7, insert "xxxvii. Picus. Woodpecker."—P. 177, l. 4 f. b., for "*Swallow,*" "*Swallow family.*"—P. 183, l. 7 f. b., for "*l'encore,*' "*l'écorce.*"—P. 183, l. 5 f. b., for "*sout,*" "*sont.*"—P. 192, l. 14, for "*Desmerest,*" "*Desmarest.*"—P. 194, l. 15, for "*continued,*" "*continual.*"—P. 205, l. 4 f. b., and note*, for "*Donavan,*" "*Donovan.*"—P. 212 l. 5, f. b., for "*become,*" "*became.*"—P. 222, l. 2, for "*is,*" "*wants.*"—P. 224, l. 2, for "*faculties,*" "*faculty.*"—P. 248, l. 20, dele "*R. mansimus, A. Stewart, Esq.*"—P. 249, l. 10, for "*five,*' "*fine.*"—P. 249, l. 10 f. b., for "*Cymbalaria,*" "*A. cymbalaria,*" and this to come after "*A. linaria.*"—P. 250, l. 12. for "*A. hypoglottis,*" "*Ornithopus perpusillus.*"—P. 250, l. 13, for "*T. ornithopodioides,*" "*Lotus corniculatus.*"—P. 251, l. 19, for "*limasum,*" "*limosum.*"—P. 263, l. 5 f. b., for "*are,*" "*is.*"—P. 280, l. 21, for "*as,*" "*has.*"—P. 291, l. 10, for "*daplidicæ,*" "*daplidice.*"—P. 306, l. 9 f. b., for "*was,*" "*are.*"—P. 331, l. 12, for "*a,*" "*the.*"—P. 341, l. 5 f. b., for "*moult,*" "*month.*"—P. 404, l. 3 f. b., for "*faites,*" "*faite.*"—P. 408, bottom l., for "*glabriatus,*" "*glabratus.*"—P. 409, l. 13 f. b., for "*thorathicus,*" "*thoracicus.*"—P. 409, l. 6 f. b., for "*laxatus,*" "*luxatus.*"—P. 411, l. 20, for "*4-bunctatus,*" "*4-punctatus.*"—P. 413, l. 17, f. b., for "*solstitialis,*" "*solstitialis.*"—P. 414, for "*globulus,*" "*globus.*"—P. 426, note, l. 3, for "*is so small,*" "*are so small.*"—P. 440, l. 8, for "*superciliosu,*" "*superciliosa.*"