

In conclusion, we must observe, that the specific characters are often far longer than is desirable; that in making alterations in the nomenclature, the author has in some cases not sufficiently pointed out the reasons which have induced him to adopt different names from those employed by Smith and Hooker; we must, however, add, that in most instances we are acquainted with causes fully authorizing the change. A more frequent reference to foreign authors would also have added much to the value of the book.

We must again express a hope that this work will soon be in the hands of all British botanists.

Tijdschrift voor Natuurlijke Geschiedenis en Physiologie; edited by Professors Van der Hoeven and de Vriese; Vol. VI., Part IV. Leyden, 1839.

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PROCEEDINGS OF LEARNED SOCIETIES.

ZOOLOGICAL SOCIETY.

January 14, 1840.—William Yarrell, Esq., V.P., in the Chair.

Mr. Ogilby exhibited the skull of the Mangabay Monkey (*Cercopithecus Æthiops*, Auct.), and called the attention of the members present to the fact that this species, like the *C. fuliginosus*, differs from other Cercopithecids in possessing a fifth tubercle to the last molar of the lower jaw.

A variety of the common Hare (*Lepus timidus*, Auct.), shot in Sussex, and presented to the Society by Augustus E. Fuller, Esq.,

* [The *Bulla* here described is only a variety of *Bulla Velum*, which often has one, two, or three white bands.—J. E. GRAY.]

was exhibited: it differs chiefly in being of a smaller size, and in having the fur somewhat mottled with whitish and in parts rust colour.

Mr. Waterhouse exhibited a new species of Rodent from the river Gambia, constituting a most interesting link between the genera *Mus* and *Cricetus*: like the first of these genera, it has a long scaly tail, but it resembles the Hamsters in possessing large cheek-pouches. In the number of its molar teeth and the form of the skull it presents all the most common characters of the *Muridæ*, as defined by Mr. Waterhouse in the 'Magazine of Natural History*.'

The skull compared with that of the Common Rat (*Mus decumanus*, Auct.) differs chiefly in having the nasal portion more elongated: the anterior root of the zygoma, as in that animal, is in the form of a thin plate, but this plate is less extended in its antero-posterior direction, is directed obliquely outwards and upwards, and leaves a tolerably large and nearly round ant-orbital opening, thus differing from the Common Rat, in which the lower portion of this opening is in the form of a vertical slit: the zygomatic arch is less extended in the longitudinal direction, the incisive foramina are much smaller, and the auditory bullæ are rather smaller in proportion. The molar teeth are rooted; the foremost of these teeth in either jaw is the largest, and the posterior one the smallest: in the upper jaw, as in *Mus*, the molars present a central row of larger, and two lateral rows of smaller tubercles; and the molars of the lower jaw have two principal rows of tubercles; there are however some slight modifications in the structure of these teeth, which should be noticed. The front molar of the upper jaw has three central tubercles, three smaller ones on the outer side and two on the inner side, and besides these there is a small ninth tubercle on the posterior part of the tooth, which is not observed in the Black and Common Rats; the second molar has two small extra tubercles, one in front and one behind; the crown of this tooth therefore presents eight instead of six tubercles, as in *Mus* proper, and the last molar possesses one extra small tubercle, which is placed on the anterior and outer part of the tooth. The molars of the lower jaw very closely resemble those of *Mus decumanus*.

In the form of the lower jaw the present animal differs from that last mentioned, chiefly in the greater breadth of the descending ramus or angle, which is moreover somewhat raised, and so far approaches the Hamsters.

The name *Cricetomys* was proposed for this new subgenus, and that of *Gambianus* to distinguish the species, and to indicate the locality in which it was first discovered. The principal characters may be thus expressed:—

Subgenus ad genera *Cricetus* et *Mus* dicta affine, et inter hæc medium locum tenens. Criceto simile quoad saccos buccales, Muri simile quoad formam corporis et caudæ; hâc perlongâ et pilis brevibus vestitâ, inter quos squamæ in more annulorum positæ videntur. Pedes ut in Mure.

Dentes fere ut in Mure. Incisores compressi; molares radicati,

3—3
3—3.

CRICETOMYS GAMBIANUS. *Cri. magnitudine corporis duplo, vel plus, majore quàm in Mure decumano: colore ferè eodem: auribus mediocribus, pilis minutis vestitis; caudâ corpus cum capite æquante; pedibus mediocrè parvis; vellere brevi, adpresso, et subrigido; colore cinerescenti-fusco; pedibus partibusque inferioribus sordidè albis; caudâ ad basin, pilis intensè fuscis, ad apicem, albis, obsitâ.*

	unc.	lin.
Longitudo ab apice rostri ad caudæ basin	16	0
———— basin auris	2	9
———— tarsi digitorumque	2	6
———— auris	0	11
———— caudæ	15	0

The Gambia Pouched-Rat is about double the size of the common Rat (*Mus decumanus*); in its colouring and proportions it greatly resembles that animal; the fur is rather harsher, and more scanty: the general colour of the upper parts of the body is a trifle paler than in *Mus decumanus*. The head is tolerably long, and pointed; the ears are of moderate size and rounded form; the feet are of moderate size; the tail is nearly equal to the head and body in length, thick at the base, covered with small adpressed harsh hairs; but these are not sufficiently numerous to hide the scales; about one third of the tail at the base is of a deep brown colour, the hairs covering the remaining portion are pure white, and the skin itself has evidently been of a paler hue than on the basal part of the tail. The fur on the body is somewhat adpressed, and the hairs are glossy on the back; they are of an ashy-gray colour at the base; the apical half of each is brownish-yellow, but at the points many of them are brownish; many longer hairs intermixed with the ordinary fur of the back are almost entirely of a brownish-black colour. The whole of the under parts of the head and body and inner side of the limbs are white; the hairs on the belly are rather scanty, and of an uniform colour to the root: the fore feet are whitish, and the tarsi are white, but clouded with brown in the middle. The ears are but sparingly clothed with short hairs, which on the inner side are whitish, and on the outer brown.

January 14 and 28th, 1840.—William Yarrell, Esq., Vice-President, in the Chair.

Mr. Ogilby read his paper entitled ‘A Monograph of the Hollow-horned Ruminants,’ of which the following is an abstract:—

“In revising the history of the *Ruminantia*,” says Mr. Ogilby, “the zoologist who, like myself, has made a special study of these animals, must be forcibly struck with the confusion of synonyms, the carelessness and inaccuracy of description, the vague and indefinite limits of the generic and subgeneric groups, the trivial and confessedly empirical principles of classification, and, as a consequence, the great number of nominal species, and the general disorder which still prevail in this department of Mammalogy.” He proceeds to show that the views of the modern writers on this subject are no

more philosophical than those of their predecessors, and that as regards their generic distribution, the Ruminantia remain at present in very nearly the same state as that in which Ray left them a hundred and fifty years back.

The history of the classification of this group next comes under the consideration of the author, and the views of the various writers are given and commented upon, commencing with the publication of the 'Synopsis Methodica' of Ray, published in 1693. The genera *Ovinum*, *Bovinum*, and *Caprinum*, established by that author, Mr. Ogilby regards as strictly natural groups, but the characters by which they are distinguished, derived principally from the curvature of the horns, the existence of a beard or dewlap, the number of teats, and the woolly or hairy nature of the covering, he considers trivial, arbitrary, and uninfluential.

The 'Systema Naturæ' is next considered; and although arbitrary and empirical, the generic definitions of Linnæus (the author of the paper states,) possess all the logical correctness and simplicity which so peculiarly characterize the genius of that great man. Though neither natural nor scientific, his distribution was, at all events, exclusive and diagnostic, in reference to the small number of Ruminants then known. But whilst the zoology of the *Ruminantia* remained thus almost stationary in the hands of Linnæus, it was making rapid and brilliant progress under the auspices of his great rival and cotemporary, Buffon: even as early as the year 1764, two years before the publication of the 12th edition of the 'Systema Naturæ,' the French philosopher had described new forms, and indicated important relations among the hollow-horned Ruminants. The article 'Gazelles,' contained in the 12th volume of his great work, was the most important addition which had been made to the generic distribution of the Ruminants since the time of Ray, and must be considered as the first monograph of the genus two years afterwards founded upon it, and more formally proposed by Pallas under the name of *Antilope*.

The works of Pallas, Pennant, Allaman, Gmelin, Erxleben, Shaw, Illiger, Lichtenstein, De Blainville, and Col. Hamilton Smith, next pass under the notice of the author.

The consideration of the muzzle and lachrymal sinus was first introduced by Illiger, and his principles were quickly adopted, in successive monographs by Lichtenstein, De Blainville, and Hamilton Smith, to subdivide the Antelopes into something more nearly approaching natural groups than the old principles admitted. The publication of Illiger's 'Prodromus' may be considered therefore as an epoch in the history of these animals.

The monograph of Dr. Lichtenstein contains descriptions of twenty-nine species, and these are distributed into four groups, characterized by the presence or absence of horns in the females, and of lachrymal sinuses, the existence or non-existence of dewlap, and the comparative length of the tail. But the author was in many cases ignorant of the specific characters of the animals, and the composition of his groups is consequently faulty in proportion. The di-

visions, however, are exceedingly well imagined, and less encumbered with trivial characters than those of De Blainville and Hamilton Smith.

M. De Blainville, whose monograph of the genus *Antilope* was published in 1816, contented himself with separating from the main group successive detachments of what he conceives to be the most anomalous species, afterwards elaborating the characters of the subgenera thus formed from those of their component species. By this means he has unquestionably succeeded in forming a few natural groups, to which no other objection can be made than that they are considered as subdivisions of a primary group which is not itself a natural genus.

To the eight genera established by De Blainville, Desmarest added three others, two of which, viz. the separation of the Antelopes proper from the Koodoo and Boshbok, and of the Oryxes, were decided improvements.

The principal merit of Col. Hamilton Smith's monograph, published in Griffith's translation of the 'Règne Animal,' consists in the resolution of the residual group of De Blainville and Desmarest, which he subdivides into eight minor groups, in all respects more definite and natural than the original.

The next section of the paper is devoted to the consideration of the characters hitherto employed in the generic distribution of these animals.

The genera *Bos*, *Ovis*, and *Capra*, represented by familiar and well-known types, observes Mr. Ogilby, carried with them clear and definite ideas, and represented to the mind of the naturalist distinct and determined forms; but the genus *Antilope* not being exemplified by any common domestic species familiar to the observation of the student, every thing connected with the genus was vague and indeterminate; the only conception it enabled him to form was, that the animal, whatever else it might be, was neither an ox, a sheep, nor a goat. The characters, moreover, upon which this genus is established, are in reality so many negative traits, and merely served to distinguish all other hollow-horned Ruminants from the oxen, sheep, and the goats respectively, but they limit no positive group, and consequently cannot be received as the definition of a natural genus. The genus *Antilope* in a short time became an asylum for the reception of all hollow-horned Ruminants that could not be associated with the known genera *Bos*, *Ovis*, and *Capra*; and consequently the most incongruous forms and opposite characters were associated in the same genus; till, independently of its unphilosophical structure, and total want of character whether natural or artificial, the practical inconvenience arising from its undue extension forced zoologists to devise the partial remedies detailed above, and which all proceeded upon one common principle, that, namely, of dividing the genus *Antilope* into such subordinate groups as were conceived best calculated to obviate the inconsistencies, and approximate those species which most nearly resembled one another in habit and conformation. In thus subdividing the genus *An-*

tilope it is assumed by every writer on the subject to be a natural group, even whilst they confess that it has not a single character either exclusively appropriate to it or even common to the generality of its component species: far, therefore, from being a natural, it is not even entitled to be considered an artificial group. The diagnosis proposed by M. Geoffroy St. Hilaire regarding the nature of the core of the horns, and that broached at a meeting of the Zoological Society by M. Agassiz, to the effect that these animals are distinguished from *Bos*, *Ovis*, and *Capra*, by having a spiral twist of the horns turning from left to right, instead of the opposite direction, are founded upon hasty generalizations, inapplicable to at least three-fourths of the species.

The form or curvature of the horns, the beard, the dewlap, the scopæ, the number of teats, and other such diagnoses hitherto employed to define the genera of Ruminants, according to the views of Mr. Ogilby, are purely trivial and accidental characters, which not only exercise no assignable influence on the habits or economy of the animals, but which may be modified to any extent, or even destroyed altogether, without in the slightest degree changing the generic relations.

Having demonstrated the imperfections of the actual distribution of hollow-horned Ruminants, Mr. Ogilby proceeds to the exposition of the principles which he proposes to make use of for that purpose, and to explain the nature and extent of his own researches. He insists upon the law of classification, that no generic characters should be admitted but such as are founded upon the necessary relations that subsist between the organic structure of animals and their habits and economy.

The next section of the monograph is devoted to the consideration of the horns of the *Ruminantia*. Under this head the author first treats of their substance; 2ndly, their permanent or deciduous character; 3rdly, their presence or absence in different genera and sexes; and 4thly, their number, forms, and flexures.

The distinctions between the horns of the stag tribe generally, and those of the hollow-horned Ruminants, are pointed out, and in the next place the various modifications observable in the horns and their core of the latter group. "In some cases the substance of this bony core is solid, or at least penetrated only by minute pores; in others, and they are by far the greater number, it is partially hollow, or filled with large cancelli, which communicate with the frontal sinuses. These variations are not confined to any particular groups, but are equally common to solid and hollow-horned genera. The giraffe, for instance, has very extensive cancelli; so likewise have the oxen, sheep, goats, and all the larger species hitherto classed among the antelopes: nor have I found the solid core, so much insisted on by MM. Cuvier and Geoffroy St. Hilaire, in any of these animals, except the *A. Cervicapra*, the *Dorcas*, and their allied species."

Speaking of the raised ridges and annuli on the horns, Mr. Ogilby states that the number of these added in a given time appears to be

very variable. "The common cow is generally supposed to acquire one ring on the horn every year after the third, but this is far from being a general law. Between the 20th of July and the 31st of October, 1833, the horns of a young Indian Antelope (*A. Cervicapra*), which I had marked for the purpose in the gardens of the Society, acquired an addition of no fewer than three rings, and an increase of length of a full inch and a half; and I have observed a similar phenomenon in other species."

The permanent or deciduous character of the horns is said to depend upon their hollowness or solidity; and the author, moreover, states that it is not correct to suppose that hollow horns are, strictly speaking, permanent; the hollow horn is shed, as well as the solid, but in a different sense. "Buffon has been much ridiculed for asserting this fact with regard to the domestic ox, but Buffon was a much better observer than his critics; and I have myself verified his observations on many other Ruminants. If the horns of any young animal be examined, it will be found that they are of a coarse, scabrous, spongy texture, very thick and blunt in proportion to their length, and hollow nearly to the point: let the same individual be examined when it arrives at maturity; the horns, especially towards the extremity, have a close, compact, and polished surface; they are much attenuated, end in a very fine point, and have the terminal third perfectly solid. These changes do not arise from the mere rubbing and polishing of the horn, as is commonly supposed. That hypothesis does not account for the difference of texture and solidity which distinguish the old and young horns; but the truth is that, as in the case of the second dentition, the permanent organ is developed under, or rather within the other, and by its growth gradually carries it upwards, and supports it like a sheath or scabbard. The young horn thus severed from the vessels which formerly supplied it with nutriment, dries up, bursts from the expansion of the permanent horn within it, and exfoliates in large irregular stripes, leaving the latter with the finely polished surface, and solid, sharp, attenuated points which distinguish them. As far as my observations enable me to judge, this exfoliation takes place only once during the life of the animal, and that at the period of adolescence, immediately before the appearance of the first annulus. Though it does not take place all at once, nor absolutely deprive the animal of horns for a certain period, it is nevertheless a true and actual shedding of these organs, and accounts satisfactorily for many phenomena which I found inexplicable before making these observations. The horns of the Oryxes, for instance, which in the adult state are remarkable for their straightness and extreme sharpness, have the points very blunt, and bent backwards, almost at a right angle, in the young animal; and the Koba, or Sing-Sing, whose permanent horns are partially lyrate, has the young organs nearly straight, as may be observed in the specimen now in the Society's museum. It is only necessary to observe further, that the young horn, which afterwards exfoliates, appears to be entirely the growth of the first year, though it generally remains a much longer time before being cast. A young *Leu-*

coryx in the museum at Frankfort, with horns eighteen or twenty inches long, has the points still blunt, exactly as in another specimen, where they are only two inches long." "Now this permanence or deciduousness of the horns—for in a general sense, and especially as contrasted with the solid organs of the deer kind, the hollow horn may be considered as permanent—is a constant and invariable character, which has a direct and powerful influence upon the habits and œconomy of the animals. The deer kind invariably affect particular localities at the period of casting and renewing their horns; their manners then undergo a complete change; from bold and daring, they become irresolute; they lose their flesh, abandon the open hills and upland plains for the thick cover of the forests, and foregoing their gregarious habits, desert their companions, and pass the period of weakness in solitude and seclusion. As soon, however, as the new horn acquires strength and solidity, the stag resumes his usual habits, and regains his former confidence. Hollow-horned Ruminants present no such phænomena; the habits and manners of the same species are similar at all seasons, and the differences which we observe in different species depend upon other causes, which shall be developed in the sequel. The modifications of organic structure which produce these different effects are too permanent and influential to be neglected among the characters of a natural classification of the Ruminants. Nor have they been overlooked by zoologists; it may be said, indeed, with truth, that they constitute the only really important characters hitherto employed to distinguish the genera of these animals."

The presence or absence of horns in species or sexes has been partially employed by naturalists for the distinction of genera; the importance of this character, however, in the opinion of the author, has not been duly appreciated. Its effects on the habits and œconomy of the species of Ruminants is pointed out. The gentleness and timidity of those species which have hornless females, their being either perfectly monogamous, or residing in small detached families, composed of a single adult male and variable number of females, and the circumstance of the males adhering throughout life to the same female, are all phænomena which are traceable to the defenceless condition of the females. These phænomena are contrasted with those exhibited by Ruminants, in which there are horns in both sexes; they are said to be extremely bold, to reside generally in large herds, and to have a community of sexual intercourse, and rarely attach themselves to particular individuals.

The number, form, and peculiar curvatures of the horns are next considered; and the author arrives at the conclusion, that all the various flexures of the horns, as well as their number, form, and direction, have no assignable relation to the habits and œconomy of animal life; they should not therefore be selected for generic diagnoses. On the other hand, the form of the upper lip, as well as its hairy or naked character, having a very decided influence on the habits and œconomy of ruminating animals, ought by no means to be neglected in the classification of this group. Other important characters may

be derived from the crumens and other glands, or certain pits or sinuses which open externally, especially in different parts of the head in ruminating animals. The most remarkable, as well as the most common of these are the suborbital, sometimes called the lachrymal sinuses, or tear-pits, but which Mr. Ogilby distinguishes by the name of *crumens*, a term applied to them by Dr. Flemming. These are situated at a short distance below the inner canthus of the eye, and received into a cavity of the lachrymal bone; at their bottom is a gland, opening into the crumen by a number of small apertures, and secreting a viscous substance, of the consistence of ear-wax. The various modifications of the form of these crumens in different Ruminants being pointed out in the paper, the author proceeds to the consideration of their functions and uses: he observed that the Gazelles and Antelopes in the Society's menagerie frequently protruded this crumen, and rubbed its inner surface against the rails of the compartments in which they were confined, seeming to take a pleasure in smelling and licking it afterwards. A male and female Gazelle, occupying contiguous compartments, were changed, and it was found that they immediately discovered the viscous deposit, and became restless and agitated; the male Gazelle was some days after made to change places with an Indian Antelope, but neither animal appeared to take the slightest notice, or to be aware of the presence of its predecessor. "This, to be sure," says Mr. Ogilby, "is but a single experiment, but it countenances the idea, highly probable in itself, that the deposit which the animals leave behind them by rubbing the crumens against the shrubs or stones of their desert and mountain habitats, (for it is only the inhabitants of such localities that are furnished with these organs, at least among the hollow-horned family,) may serve to direct them in their wanderings and migrations, when the storms and fogs incident to such places obscure all visible landmarks. But whatever it may be, the principles of sound philosophy and the great doctrine of design forbid us to entertain the notion that so remarkable an organ has been formed without some special and appropriate function in animal œconomy."

A superficial slit, situated in a depression of the maxillary bone, on either side, called by the author the maxillary sinus, is found in certain Ruminants hitherto classed among the Antelopes; its secretion is of a thin watery consistence, and thus differs from the secretion of the crumens. The situation of these glands, and their peculiar secretion, induces the author to regard them as distinct organs, and he doubts their coexistence with the crumens, though M. F. Cuvier and Colonel Smith have reported such sometimes to be the case.

The membranous sac which opens behind the ear of the *Chamois*, and the large gland which Mr. Hodgson describes in the nose of the *Chiru*, are of too partial occurrence to be made available in generic characters; there are, however, two large and deep sacs, situated one on each side of the udder, which are of pretty general occurrence, but their function does not appear to exercise sufficient influence over the animal œconomy to entitle them to be considered among the

generic characters. "The same observation may be applied to the odoriferous bags attached to the prepuce of the *Musk* and *Antilope gutturosa*; so that, upon the whole, the crumens, maxillary and facial glands, are the only organs of this nature which appear entitled to the rank of generic characters."

The modifications of the feet are considered as scarcely definite enough to be employed for generic definitions: "the glands or pores which open between the toes of many Ruminants afford much better characters for this purpose, and bear a very evident relation to the habits and geographical distribution of the animals. These glands are of greater or lesser extent in different genera, according to the nature of the localities which they frequent; in the *Gazelles*, *Antelopes*, *Bubals*, and *Oryxes*, which inhabit the burning deserts of Africa and central Asia, they are extremely large, and frequently occupy the whole interspace between the first and second phalanges; in the *Sheep*, *Capricorns*, and *Tragelaphs* again, which live on the open grassy downs and mountains of a less arid nature, they are of a much smaller size; whilst in the *Oxen*, *Calliopes*, &c., which inhabit the moist forests and swamps of tropical regions, or grassy meadows of temperate climates, they are altogether wanting.

After describing the uses of these digital pores, and pointing out the great influence they have on the œconomy and manners of the animals, the author observes that he is not aware of their having been noticed by any previous zoologists, and concludes by expressing the hope that the employment of this and other influential characters, which it is the object of this first part of his monograph to explain, will be found to establish a logical, scientific, and natural arrangement among the *Ruminantia*, instead of the prevailing arbitrary and artificial system.

LINNÆAN SOCIETY.

April 7th.—Mr. Forster, V.P., in the Chair.

Dr. Farre, F.L.S., exhibited specimens of a singular form of gall on the leaves of a species of oak from Mexico. The gall consisted of an aggregation of hollow cylindrical tubes, nearly an inch in length, and furnished with a fringed orifice. The tubes were remarkable for their elegance and uniformity; their colour was white, suffused with red, especially towards the apex.

Mr. Yarrell, F.L.S., exhibited a specimen of a satin-like mass of *Conferva fluviatilis*, which grew in a water meadow near Totness. A spring, which flows only in winter, rises in the meadow, and this substance is taken from narrow gutters, from one of which, twelve inches wide, a piece was taken up which measured seventy-nine feet in length, so firm and tough was its consistence; and another piece broke off at thirty-nine feet. In consistence and appearance it bore considerable resemblance to a piece of cotton wadding, but of a firmer texture. A portion was carefully examined under the microscope, and found to consist entirely of an interwoven mass of filaments of *Conferva fluviatilis*. The plant was compared with the authentic

specimen of that species preserved in the Linnæan Herbarium, and was seen to differ only in the greater length of the articulations. The under surface of the mass was of a bright green colour, but the upper surface was white from the effects of direct exposure to the air and light, which had caused the death of the plant at that part.

Read, a continuation of Mr. Smith's "Arrangement of the Genera of Ferns."

April 21.—The Lord Bishop of Norwich, President, in the Chair.

Read, a paper by John Blackwall, Esq., F.L.S., entitled "The Difference in the Number of Eyes with which Spiders are provided, proposed as the Basis of their distribution into Tribes; with the characters of a new Family and three new Genera of Spiders."

Mr. Blackwall begins by stating his objections to the bases of arrangement adopted by MM. Walckenaer and Dufour in the subdivision of the order *Araneidea*, and proceeds to give his reasons for preferring a division founded on the number of eyes; in conformity with which he proposes three tribes, viz. 1. *Octonoculata*; 2. *Senoculina*; 3. *Binoculina*.

In the first tribe he proposes three new genera, two of them belonging to a family which he characterizes under the name of *Cinifloridæ*: these genera he also characterizes under the names of *Ciniflo*, founded on the *Clubiona atrox* of Latreille, and *Operaria*, comprising the *Theridion benignum*, Walck., *Drassus exiguus*, Blackw., and *Drassus viridissimus*, Walck. The third genus characterized by Mr. Blackwall, is referred by him to the family of *Agelenidæ*, under the name of *Cavator*: it is founded on the *Clubiona saxatilis*, Blackw.

May 5.—The Lord Bishop of Norwich, President, in the Chair.

Read, "Additional Observations on some Plants allied to the natural order Burmanniaceæ." By John Miers, Esq., F.L.S.

These observations have reference chiefly to the relative position of the parts of the flower in the tribe of plants above-mentioned. The author remarks, that the stamina, placentæ, and stigmata in these plants, are disposed in the same line, and opposite the inner series of the perianthium. The placentæ are always invariably double; and the stigmata in such cases as the present are to be regarded as being made up of the confluent margins of the two adjoining carpel-leaves, as suggested by Mr. Brown in his learned Memoir on *Cyrtandree* lately published.

May 25.—The Lord Bishop of Norwich, President, in the Chair.

This day, the Anniversary of the birth-day of Linnæus, and that appointed in the Charter for the election of Council and Officers; the President opened the business of the meeting, and in stating the number of Members whom the Society had lost during the past year, gave the following notices of some of them:—

George, Duke of Marlborough, one of the Honorary Members, was distinguished for his botanical taste, and for his zeal in the cultivation of exotic plants; and the magnificent collection formed by him at White Knights was long one of the finest in this country, both in

regard to its extent, and the rarity and beauty of the specimens. His taste for Botany continued unabated to the last, and the collection established afterwards at Blenheim was chiefly cultivated under his own immediate superintendence.

John Bartlet, Esq.

John, Duke of Bedford, K.G.—This amiable and accomplished nobleman was a most munificent patron of the arts and sciences in general, and especially of Botany, in the cultivation of which he took great delight. We are indebted to him for several splendidly illustrated works, abounding in valuable practical remarks, on particular tribes of plants, of which he had formed extensive collections at his magnificent seat of Woburn Abbey.

William Beetham, Esq.

William Christy, Jun., Esq.—Few persons cultivated Botany and Entomology with more ardour than Mr. Christy, who, to the regret of his friends, and to the loss of science, was cut off at an early age. His zeal and success in the pursuit of science were only equalled by his readiness and liberality to impart to others a portion of the stores which he had collected. He had formed an extensive Herbarium of British and Foreign Plants, and for that purpose had made several extensive tours in the British Isles, and had also visited Madeira and Norway. His collection of dried plants, and books on Botany, he gave to the Botanical Society of Edinburgh, of which he was one of the institutors.

Lord Charles Spencer Churchill.

Richard Cotton, Esq.

Allan Cunningham, Esq.—This eminent botanist and traveller was born in the beginning of the year 1791, at Wimbledon, where his father (who was a native of Ayrshire) held the situation of gardener. His father took great pains with his education, and placed him, along with his younger brother, Richard, at an excellent academy at Putney, then conducted by the Rev. Mr. Adams. About the year 1808 both brothers were engaged in the office of the Royal Botanic Gardens at Kew, at the period when the second edition of the '*Hortus Kewensis*' was passing through the press. In the autumn of 1814, having been appointed a Botanical Collector for the Royal Gardens, he left England, in company with Mr. James Bowie (who had also received a similar appointment), for the Brazils, where they remained two years, and among many other plants transmitted by them, were *Glorinia speciosa*, *Cereus speciosissimus*, *Jacaranda mimosifolia*, and *Calathea zebrina*, then new to the Gardens. The two companions now separated, Mr. Bowie having received instructions to proceed to the Cape of Good Hope, and Mr. Cunningham to New South Wales, where he arrived in 1817, and shortly after joined the expedition into the interior of that colony, under Mr. Oxley, the Surveyor-General. On his return to Sydney he embarked as botanist in the voyage of survey under the command of Lieutenant, now Captain Philip Parker King, of the Royal Navy. The survey continued four years, and during that period they circumnavigated Australia several times, and visited Van Diemen'

Land, Timor, and the Mauritius, at all of which places Mr. Cunningham formed extensive collections. After the conclusion of these voyages, Mr. Cunningham made several journeys into the interior of New South Wales, and subsequently visited Norfolk Island and New Zealand, where he remained several months. The fruits of his researches in the latter country are given in the 'Companion to the Botanical Magazine,' and 'Annals of Natural History.' After an absence of seventeen years, Mr. Cunningham returned to his native country, and continued to reside in the vicinity of Kew, until the melancholy tidings arrived of the death of his brother Richard, whom he was appointed to succeed in the quality of Colonial Botanist in New South Wales, where he again arrived in February 1837. In the following year he revisited New Zealand, and remained there during the whole of the rainy season, which produced serious effects upon a constitution already greatly debilitated, and on his return to Sydney his health visibly declined until the period of his death, which took place on the 27th of June last, at the age of 48. He was distinguished for his moral worth, singleness of heart, and enthusiastic zeal in the pursuit of science.

Davies Gilbert, Esq., F.R.S.—Mr. Davies Gilbert was distinguished by his high attainments in science and literature, his simple and gentle manners, and his amiable purity of heart. He was the son of the Rev. Edward Giddy, and was born on the 6th of March, 1767, at St. Erth, in Cornwall.

Davies Giddy was a child of early intellectual promise, but his health was feeble, and he received not only the rudiments but almost the whole of his education under the paternal roof, guided and assisted by a father whose classical learning was of a high order. For about a twelvemonth he was placed under the tuition of the Rev. James Parken, Master of the Grammar School at Penzance, to which town his family removed for that purpose; but he soon returned to Tredrea, which was long afterwards his favourite abode, to pursue his studies in a manner more congenial to his feelings. He had by this time formed a taste for mathematical investigations, in which he was aided by the knowledge, freely and kindly imparted, of the Rev. Malachi Hitchins of St. Hilary, a man whose name is well known and respected by practical astronomers. In the year 1782 he removed with his family to Bristol, and continued to cultivate the severer sciences with undiminished ardour. On the 12th of April, 1785, he entered as a Gentleman Commoner of Pembroke College in the University of Oxford, and soon attracted the notice of many of its Professors and Senior Residents. He resided pretty constantly there from his matriculation, except during the long vacations, till the year 1789, when he became an Honorary Master of Arts, but still continued to make long visits to his old College.

In November, 1791, he became a Fellow of the Royal Society, and formed a connexion with Dr. Maskelyne, Sir Joseph Banks, Mr. Cavendish, and other eminent members of that body, which terminated only with their lives. Though the sciences dependent on and connected with mathematics were the chief objects of his

early studies, he was far from inattentive to the claims of Natural History on a portion of his leisure. He cultivated chiefly that branch of it which embraces the vegetable kingdom; and an acquaintance formed in Cornwall with Dr. Withering, as well as his friendship with Dr. Beddoes and Dr. Sibthorp at Oxford, contributed to the same end. He became a Fellow of the Linneæan Society in 1792, in which year he also served the office of Sheriff for his native county. In the year 1804 he was chosen one of the representatives of the borough of Helston, and in 1806 was returned in a new Parliament for that of Bodmin. In this seat he continued till the year 1832, when he ceased to be a member of the legislature. During the whole time of his continuance in Parliament, he was the encourager and indefatigable supporter of every measure connected with the advancement of science; and by his representations and exertions many services were rendered to various scientific societies and institutions, in promoting whose prosperity and usefulness he was incessantly and zealously occupied. He took a prominent part in the inquiry relating to the currency, and published in 1811 a plain statement of the bullion question; and he was also very active both in the House of Commons and out of it in the arrangement of the standard of weights and measures.

In 1806 he married Mary Anne Gilbert, and in 1817 he assumed the name of her family, in pursuance of the injunction contained in a will of her uncle, Charles Gilbert, Esq., of Eastbourne, in Sussex. By this marriage he had seven children, of whom only four survived him; John Davies Gilbert, Esq., the present Sheriff of Sussex, and three daughters.

He became a Fellow of the Society of Antiquaries in 1820, and was likewise Fellow of the Astronomical and Geological Societies. He continued to perform the office of Treasurer of the Royal Society, till in 1827 he became President of that distinguished body. In the year 1831 he retired from the chair, and was succeeded by His Royal Highness the Duke of Sussex. In 1832 he received from the University of Oxford the Degree of Doctor of Laws, by Diploma.

His last visit to his native county took place in 1839. On leaving Cornwall he came through Exeter and Oxford to London, and returned after a few days to Oxford. This last journey, which was attended by some untoward circumstances, was too much for his sinking strength. On his return to London he fell into a state of lethargy, from which, though he was enabled to reach his home, he never fully recovered, but after lingering in this state for some time he expired, on the 24th of December, 1839, and in the 73rd year of his age.

The Rev. Joseph Goodall, D.D., Provost of Eton College.—Dr. Goodall was ardently devoted to the study of Natural History, but more especially to Conchology, with which science he was thoroughly acquainted, and his collection in that department was regarded as one of the most valuable in this country. He was ever a warm and zealous friend of this Society.

The Reverend Patrick Keith.—Mr. Keith long and successfully

cultivated the interesting department of Vegetable Physiology, to which he published an Introduction in 1816, under the title of 'System of Physiological Botany,' in two volumes, 8vo. The work contained the fullest and best account of the subject at that time in the English language, and was, moreover, enriched by numerous original remarks. Mr. Keith was likewise the author of a Botanical Lexicon, published in 1837, and three separate Memoirs, printed in the 11th, 12th and 16th volumes of the Society's Transactions; the first on the Formation of the Vegetable Epidermis, the second on the Development of the Seminal Germ, and the third on the Origin of Buds. Several papers on botanical subjects, from the pen of Mr. Keith, occur also in the Philosophical Magazine and Annals of Natural History.

Mr. Keith had long been suffering from severe illness, which terminated in his death on the 25th of January last, at the age of 71, at the parsonage of Stalisfield, in Kent, of which parish he had been for many years vicar. He was a native of Scotland, and received his education at the University of Glasgow.

William Kent, Esq.—Mr. Kent was a zealous botanist and horticulturist, and formerly possessed an extensive garden at Clapton, where, among many other choice plants, he successfully cultivated the beautiful *Nelumbium speciosum*, and other tender aquatics, of which he was a liberal distributor to his friends. His health obliging him to retire to Bath, he lost the means of indulging his inclination to horticulture on so large a scale; but of his garden on Bathwick Hill, it might truly be said that there never perhaps were so many rare plants cultivated together in so small a space. Notwithstanding he laboured under a painful complaint, he was also happily able to amuse himself by landscape painting; and at the same time he was ever active in promoting useful institutions, moral, scientific or literary.

Don Mariano Lagasca, Professor of Botany, and Director of the Royal Botanic Garden at Madrid, was a native of the province of Arragon, where his father followed the occupation of a farmer. He was sent at an early age to the Gymnasium of Tarragona, and after pursuing the course of study prescribed at that institution, he repaired to Madrid to complete himself for the medical profession, for which he had evinced a predilection. At Madrid he had the good fortune to attend the lectures, and to acquire the friendship, of the celebrated Cavanilles, at that time Professor of Botany in the Spanish capital, and these circumstances laid the foundation of the eminence to which he afterwards attained. In 1822, on the assembling of the Cortes, he was returned Deputy for his native province, and on the overthrow of the constitutional form of government in November of the following year, he was obliged to consult his safety by flight, first to Gibraltar, and afterwards to this country, where his high moral character, amiable disposition, and eminent talents, gained him universal esteem and respect.

Spain, long famed as the granary of ancient Rome, is known to surpass all other countries in the great variety of those grasses which are cultivated for human food, such as wheat, barley, rye and

oats : and many of those whom I am now addressing may remember the extensive and interesting collection of Spanish *Cerealia* cultivated by Professor Lagasca in the garden belonging to the Society of Apothecaries at Chelsea. The publication of a 'Ceres and Flora Hispanica' had long been a favourite object with him, but which he did not live to accomplish. He departed this life in the 58th year of his age, on the 23rd of June last, at the palace of his early friend and school associate, the present Bishop of Barcelona, who hearing of his infirm state of health, had invited him to partake of his hospitality and kindness, in the hope that the milder air of Catalonia might be the means of restoring him. His remains were honoured with a public funeral, and an oration was pronounced over him by his friend Don Augustin Yanez, Professor of Natural History at Barcelona.

It was in Systematic Botany that Professor Lagasca had more particularly distinguished himself, and he has added greatly to our knowledge of various families of plants, such as *Umbelliferae*, *Dipsaceae* and *Compositae*, of one of the groups of which, the *Labiatiflorae*, he may be regarded as the founder.

James Dottin Maycock, M.D.—Dr. Maycock is deserving of notice as the author of a Flora of Barbadoes, in which island he had long resided. The work forms a catalogue of the indigenous as well as cultivated plants of that island, and contains besides a number of interesting notices on their œconomical uses. The author has fully established the identity of the species which affords the Barbadoes aloes, with the *Aloe vulgaris*, accurately figured in the 'Flora Græca.'

William Mills, Esq.

Sir John St. Aubyn, Bart., F.R.S.—A distinguished cultivator of the science of Mineralogy, and who possessed one of the most extensive and valuable collections in that department of Natural History ever formed in this country.

James Sharpe, Esq.

The Rev. Thomas, Lord Walsingham.

Amongst the Foreign Members occur—

John Frederick Blumenbach, M.D., Professor of Medicine in the University of Göttingen, Foreign Member of the Royal Society of London, and Associate of the Royal Academy of Sciences of the French Institute, was pre-eminently distinguished by his important researches in General Anatomy and Physiology, which he continued to prosecute during a long life ardently devoted to the advancement of science. He was equally remarkable for the extent and variety of his knowledge and the philosophical sagacity of his views. Professor Blumenbach died on the 22nd of January last, at the advanced age of 88.

Joseph Francis, Baron Jacquin, Professor of Botany and Chemistry, and Director of the Imperial Gardens at Schoenbrunn, near Vienna, to which appointments he succeeded on the resignation of his father, the celebrated traveller and botanist. He was author of *Eclogæ Plantarum*, a folio work, containing descriptions and coloured figures of the new and rare plants which flowered in the gardens under his care, and also of a valuable work on birds.

Baron Jacquin possessed an amiable and obliging disposition, and was distinguished for his urbanity and kindness, especially to strangers; and few cultivators of science visited the Austrian capital without partaking of his good offices and hospitality. He died at Vienna, on the 10th of December, in the 74th year of his age.

The President also announced that seventeen Fellows and four Associates had been elected since the last Anniversary.

It was then moved by the President, and unanimously agreed to by the meeting, That the cordial thanks of the Society be given to Dr. Boott on his retirement from the office of Secretary, for the incessant attention which he has shown to the duties of that office, and the ability, zeal, and urbanity with which he has discharged those duties.

At the election, which subsequently took place, the Lord Bishop of Norwich was re-elected President; Edward Forster, Esq., Treasurer; John Joseph Bennett, Esq., Secretary; and Richard Taylor, Esq., Under-Secretary. The following five Fellows were elected into the Council in the room of others going out; viz. Thomas Bell, Esq., George Loddiges, Esq., Gideon Mantell, Esq., LL.D., Richard Horsman Solly, Esq., and Sir George Thomas Staunton, Bart.

June 2.—Mr. Forster, V.P., in the Chair.

Mr. George Francis, F.L.S., exhibited a portion of the trunk of the *Lepurandra saccidora* (Graham Cat. Bomb. Pl. p. 193.), from Western India, of the bark of which sacks and bags are made.

Mr. Rauch exhibited a specimen of the fruit of *Salisburia adiantifolia*, which ripened last year in the Imperial Gardens at Schöenbrunn, near Vienna.

Read, "On the reproductive Organs of *Equisetum*." By Mr. Joseph Henderson, Gardener to Earl Fitzwilliam, at Milton Park, communicated by the Rev. M. J. Berkeley, F.L.S. Mr. Henderson's observations were made on *Equisetum hyemale* and other species, and embrace the entire period of development of the sporæ and of the thecæ containing them. The theca is in the first instance filled with cells of extreme tenuity, in the interior of which the sporæ afterwards take their origin. After the appearance of the sporæ the containing cells gradually become thickened, and separate from each other; and at a still later period their walls are marked by spiral sutures, by means of which they are subdivided into two narrow bands with broad and rounded ends. As the sporæ approach maturity these bands separate at the sutures, and the containing cell is thus resolved into its component parts, the supposed filaments and antheræ of Hedwig. The sporæ, when ripe, have a double membrane, which is rendered evident by the addition of tincture of iodine. In the immature state of the thecæ, up to the time when the spiral lines become distinctly marked on the integument of the sporæ, they form transparent membranous reticulated bags, the meshes of which have different directions in different parts. When the sporæ have attained their full size, a new deposit of vegetable matter is added, and spiral vessels are formed within the flattened cells of which the membrane is composed, and the

outlines of which are indicated by the meshes on the surface. In some situations these vessels are true spirals, in others they partake more of the character of the annular.

While making these observations, Mr. Henderson was not aware that he had been in part anticipated by Treviranus, Bischoff and Meyen. They differ, however, in some particulars from the observations of those physiologists, who also differ from each other.

MISCELLANEOUS.

NOTE ON MR. HASSALL'S CATALOGUE OF IRISH ZOOPHYTES.

The following corrections upon the above communication, in our present Number, have been received from Mr. Hassall.

P. 169. "It is stated, that *Campanularia dumosa* is now ascertained to be the *Cornularia rugosa* of Cavolini—an opinion formerly held by Dr. Johnston and Mr. Gray. I have just been informed by the former that he is now assured it is *not* so."

P. 174. "Dr. Johnston considers *Melobesia pustulata* of Lamouroux, which is given, p. 174, as a synonym of *M. lichenoides*, to be this species in a *young* state; *Millepora lichenoides* Dr. J. also considers to be a condition of *Millepora polymorpha*, and that this again is nothing but the calcareous base of *Corallina officinalis*. To this I may further observe, that *M. lichenoides* is often found in situations in which the latter is, I believe, never met with; the one being usually adherent to fuci, the other always growing on rocks."—A. H. H.

OBITUARY:—PROF. WIEGMANN; MR. VIGORS.

We have the painful duty of recording the decease, during the past month, of N. A. Vigors, Esq., M.P., F.L.S., &c., whose exertions in the department of Zoology are well known;—and of Dr. A. F. A. Wiegmann, Professor in the University of Berlin, which sustains a heavy loss by his death. Our readers are aware of the great value of the 'Archiv für Naturgeschichte' conducted by him, of the contents of which we have often availed ourselves.

RED-BREASTED SNIPE.

We learn from Mr. J. H. Gurney that a specimen of the Red-breasted Snipe was killed near Yarmouth, early in October. Our informant adds, that it was a male, and had nearly completed its change from the summer to the winter plumage.

HOOPOE.—LITTLE STINT.

No. 7, Somerset Place, Stoke.

To the Editors of the Annals and Magazine of Natural History.
GENTLEMEN,—The following interesting facts are, I think, worthy of record in your Annals.

A very fine specimen of the Hoopoe was shot at Swansea the latter end of May last, and another specimen the latter end of last month; and yesterday, Sept. 7th, I was out shooting with a gentleman of this neighbourhood (the Rev. J. Hoar), when we succeeded in shooting no less than *ten* of the *Tringa minuta*, or Little



1840. "Proceedings of Learned Societies." *The Annals and magazine of natural history; zoology, botany, and geology* 6, 219–236.

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