August 11, 1840.

R. C. Griffith, Esq., in the Chair.

A paper entitled "Description of Shells collected and brought to this country by Hugh Cuming, Esq.," by W. J. Broderip, Esq., F.R.S., etc., was read.

"Mr. Cuming," observes the author, "the fruits of whose western voyage are so well known, left England on the 26th of February, 1836: he proceeded to the Philippine Islands, by the permission of the Queen Regent of Spain, and aided by powerful recommendations from her government, which opened to him the interior of the islands, and caused him to be received with a noble hospitality, equalled only by the warm interest which facilitated his pursuits wherever he arrived and made himself known.

"Mr. Cuming visited the whole group. His longest stay was in the island of Luzon, fifteen provinces of which were well ransacked by him. In the islands Mindoro, Negros, Panay, Siquijod, Zebu, Bohol, Camiguin, Mindanao, Leyte, Samar, Capul, Ticao, Masbate, Burias, Temple, Marinduque, Maracavan, and Ramblon, he reaped a fine harvest. He left the Philippines in November, 1839, proceeded thence to Singapore and Malacca, and returned to England in June, 1840, bringing with him, besides the living animals which he has liberally presented to this Society, a grand collection of zoological and botanical specimens, including more than three thousand species and varieties of shells, the greater part of which appear to be new to science, and among them are several new genera. The smaller islands were particularly rich in the pulmoniferous mollusca, which were found by Mr. Cuming principally in deep forests. We commence a notice of the labours of this active and zealous collector, with an attempt to describe a few of these terrestrial species. Mr. G. B. Sowerby, who liberally gives up his valuable time to assist in laying before the public the novelties of this part of the collection, will also begin his share of the task, by describing another branch of the same numerous family; and it is intended to submit descriptions to the Society from time to time till the whole of Mr. Cuming's stores are exhausted.

"Before, however, we commence our task, I must, in justice to him who has placed the materials in our hands, observe, that, to say nothing of the variety of new forms which he has been the means of bringing to light, those who cultivate this branch of zoology so highly interesting to the geologist, as well as the physiologist, owe him a large debt of gratitude, for information on a point of no small zoological importance. It is not very long since, that the localities ascribed to shells could in very few instances be depended upon.

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The cupidity of dealers, some years ago, not unfrequently prompted them wilfully to deceive those who gave extravagant prices for new shells on this point, and carelessness was generally the order of the day. Mr. Cuming, by his accurate notes, and the open publication of the places where every one of the multitudinous species and varieties collected by him was found, has mainly assisted in making a complete revolution in this department of the science, and has done more towards giving us data for the geographical distribution of the testaceous mollusca than any person who has yet lived.

“HELICIDÆ.

“When we consider what the genus *Helix* was when Linnæus wrote, and what it now is, we must be struck with the flood of new species which has been poured in upon us of late years. Already the vocabulary has been so drawn upon, that the mere finding names for the new species is attended with no small embarrassment, whilst the limits of each species are daily more difficult to fix. When a few forms only in a great natural group are known, they are easily defined. It is where multitudes are placed before the zoologist, marked with every variation that food and temperature and locality can impress upon them, that it becomes no longer easy to solve the problem, ‘Which is a species and which is a variety?’ Then it is that the pregnant question ‘What *is* a species?’ comes home to the mind. But our business now is to define, as well as we can, those forms which have been laid before us, and which, to us at least, are new. When the whole of the additions to this great tribe existing in Mr. Cuming’s collection have been studied, we shall perhaps have materials for something like a complete natural arrangement of the group.”

Genus *BULINUS**.

BULINUS MINDOROENSIS. *Bul. testâ ovatâ, ventricosâ, subprondâ, anfractibus sex, ultimo longè maximo, lineis incrementi obliquè striatâ, aperturâ subrotundâ, columella latâ, labio expanso.*

Var. a. valdè ventricosa, sordidè brunnea strigis irregularibus longitudinalibus varia; aperturâ subalbâ; labio nigro-brunnescente.

Hab. ad Puerto Galero in insulâ Philippinâ Mindoro dictâ.

Legit H. Cuming in sylvis.

Var. b. Pallidior, coloribus distinctioribus, fasciâ suturali brunneâ interruptâ; anfractu ultimo fasciâ brunneâ strigis longitudinalibus interruptâ cincto; labii margine castaneo-rufescente.

Hab. ad Mansilai in insulâ Mindoro.

Legit H. Cuming in sylvis.

Var. c. Gracilior, longitudinaliter brunneo et flavo sordido striata.

This comes very near in colouring, and approaches somewhat in

* “I have elsewhere (Zoological Journal, vol. iv. p. 222) given my reasons for writing *Bulinus* instead of *Bulimus*. Adanson’s *Bulin* was a *Physa*, and the word, however written, is very inapplicable to the forms to which Bruguière, Lamarck and authors generally have applied it.”

the shape of the aperture, to the two first varieties of *Bul. chrysalidiformis*. The markings of the young shell remind the observer of the eggs of some of the Plovers, and the shape assists the delusion.

Hab. ad Puerto Galero in insulâ Mindoro.

Legit H. Cuming in sylvis.

Var. d. Sordidè flavescens creberrimè longitudinaliter corrugata et strigata.

A brilliant *chatoyant* reflection, like Labradorite, is to be observed on the polished surface of the dark brown reflected part of the outer lip in fresh specimens.

Var. e. Subnana, gracilior, strigis et coloribus distinctioribus, clarioribus.

Hab. ad Puerto Galero.

Legit H. Cuming in sylvis.

This variety was the most abundant, and Mr. Cuming informs me that he detected it in the act of depositing its eggs on the leaves of trees in the forest where it was feeding. The eggs, which are white, oblong, and covered with a hard, granular shell, were attached to the leaves by a gummy substance. They are half an inch long, and nearly four-twelfths across in their widest part.

Var. f. Anfractu ultimo nigrescente, anticè flavo subsordido strigata vel maculata, fasciâ nigrescente basali.

Hab. ad Puerto Galero.

Legit H. Cuming in sylvis.

In this variety, the abrupt termination of the yellowish markings toward the basal portion of the body-whorl leaves the dark colour almost uninterrupted, in the shape of a dark band.

Var. g. Strigis distantibus, anfractu basali erga basin cincturâ moniliformi, interruptâ, albidâ vel flavescente ornato.

Hab. ad Mansalai in insulâ Mindoro.

Legit H. Cuming in sylvis.

Var. h. Pallida, strigis latis, anfractu ultimo fasciâ pallidiori subbasali cincto.

Hab. ad Mansalai.

Legit H. Cuming in sylvis.

Var. i. Strigis irregularibus, angulatis, frequentibus tota picta.

Hab. ad Mansalai.

Legit H. Cuming in sylvis.

Var. k. Cinereo-subvirescens, strigis pallidis angulatis, distantibus, brunneo-marginatis obscure ornata, anfractu basali fasciâ brunneo-rufescente subbasali cincto.

Hab. ad Puerto Galero.

Legit H. Cuming in sylvis.

Near the *umbilicus*, the *epidermis*, in those specimens of var. *k.* which I have seen, is worn off, exposing the rich red-brown ground colour of the shell. Indeed in all the varieties the dark colour generally appears to reside in the shell itself, and the lighter-coloured

markings, with few, if any exceptions, in the *epidermis*. In the largest variety (*a*) here described, the effect of the detrition of the *epidermis* is well shown. Var. *k*. comes very close upon var. *c*. of *Bulinus chrysalidiformis*. The length of this species is 6 inches and under, and the breadth from about 1 to $1\frac{1}{8}$ th of an inch.

BULINUS CHRYSALIDIFORMIS. *Bul. testâ valdè productâ, subpupiformi, subcylindrica, lineis incrementi obliquè rugosâ; aperturâ subauriculiformi, distortâ; columellâ subrectâ, amplâ, complanatâ; peristomate interrupto; labio interno expanso, labio externo expanso, subrecurvo, sæpiùs subconstricto; umbilico subobsoleto.*

Var. *a*. *Subgracilis, anfractibus 7 subventricosis, ultimo vix subventricosiori; pallidè castanea vel brunnescens strigis longitudinalibus, irregularibus sordidè flavis picta; aperturâ intus subalbâ; labio nigro-purpurascente.*

This variety is curiously marked. In the young shells the colours are more pure and distinct, but as the animal becomes aged they are more confused, and run into each other. In both states the upper whorls are transparent, and the two last opaque.

Var. *b*. *Pallidior, labio haud constricto, ex albido dilutè purpurascente.*

Hab. ad Puerto Galero.

Legit H. Cuming in sylvis.

The distortion and a shade of the constriction may be traced in the mouth of this variety.

Var. *a*. et *b*. habitant ad Puerto Galero.

Legit H. Cuming in sylvis.

Var. *c*. *subflava, anfractibus ventricosioribus, fasciâ suturali albâ et subpurpureâ tessellatâ; aperturâ amplâ, albâ, labii margine castaneo-purpurascente.*

The shells of this variety are much less thick than those of the two first, and are nearly transparent throughout; but it must be remembered that all which I have seen of this variety appear to be younger shells: the body-whorl is also much more ventricose in proportion.

Var. *d*. *Tota flavescens, labio albo.*

This variety, as well as the last, when held against the light, shows shadings of the longitudinal stripes.

Var. *c*. et *d*. habitant ad Mansalai.

Legit H. Cuming in sylvis.

* * *Bulinus chrysalidiformis* of G. B. Sowerby (Zool. Proc. 1833, p. 37) is a faded shell of var. *c*. or *d*. It is without *epidermis*, and entirely white, except the margin of the lip, which is brownish. The length of this species varies from $2\frac{7}{8}$ ths inches to $2\frac{3}{8}$ ths, and the breadth from $1\frac{3}{8}$ ths to $1\frac{1}{8}$ th.

“The shells which I have here attempted to describe were collected by Mr. Cuming in deep and dark forests of thick foliage, some upon, and others beneath, the leaves of trees. There were no palms in these forests.

"I cannot quit this group without acknowledging that I am not without doubts as to the specific difference of *Bul. chrysalidiformis* and *Bul. Mindoroensis*. If the shells at the greater intervals be taken, they appear to be distinct, but there are gradations in these numerous and motley Mindoro snails, that at least closely approximate the two sections into which I have divided them."—W. J. B.

Mr. Cuming exhibited the various species and varieties of shells described in the foregoing paper, and also a series to illustrate the memoir of G. B. Sowerby, Esq., which was next read: it is entitled "Descriptions of new species of the family of *Helicidae*, collected by Mr. H. Cuming in the Philippine Islands."

HELIX (COCHLOGENA De F.) POLYCHROA. *Hel. testâ obovatâ, tenui, nitidâ, anfractibus quinque, primis præsertim, ventricosis, obliquè lineis incrementi, striatis, ultimo majori, cæteris duplò longiori, fasciâ diversicolore, plerùmque albâ, prope suturam: aperturâ suborbiculari, peristomate plerumque albo, extus reflexo; columellâ albâ, rectiusculâ, anticè subcallosâ, subsinuatâ.* Long. 1·9, lat. 1·3 poll.

H. virido-striata, Lea secund. Jay.

Hab. in foliis arborum ad insulam Temple dictam Philippinarum.

One of the most beautiful, as well as one of the most variable species in colour. In its general form it is very near var. *b.* of Lamarck's *Helix galactites* (*H. mirabilis*, De F. Hist. Nat. Gen. et Part. des Mollusques terr. et fluvi. t. 31. f. 4 to 6), which has been called *H. Philippinarum*, but from which it may easily be distinguished by attention to the above characters. The following seven varieties in colour have been brought by Mr. Cuming: viz. var. *a.* bright green, with darker, longitudinal, oblique, slightly undulated lines and bands, and a white band at the suture: var. *b.* the same, with the addition of a narrow, very darkly coloured brown band immediately below the white sutural band, and a broad spiral dark brown basal band: var. *c.* the same, with two additional dark brown bands on the last volution: var. *d.* bright light brown, with green, slightly undulated oblique longitudinal bands, and a white sutural band: var. *e.* the same as var. *a.*, but having the sutural band of a light and dark brown colour varied: var. *f.* of chestnut brown, with a white sutural band: var. *g.* of a dark chestnut brown, with a light orange brown sutural band.

This species is *Helix virido-striata* of Lea, according to Dr. Jay; I know not if that name be published or not. I hope not, because it cannot be adopted, neither being consonant with the rules of nomenclature, nor with classic purity.

HELIX (COCHLOGENA De F.) FLORIDA. *Hel. testâ obovatâ, tenuiusculâ, haud nitente, anfractibus quinque ventricosis, tenuissimè obliquè striatis, ultimo majori, cæteris ferè duplò longiori; suturâ minutissimè crenulatâ, albâ; aperturâ suborbiculari peristomate latiusculo, reflexo, rotundato, albo; columellâ albâ, subincurvâ.* Long. 1·6, lat. 1·1 poll.

Hab. in foliis arborum prope Munsolai ad insulam Mindoro Philippinarum.

This, like the last, is a very beautiful species, and it is also subject to much variation in colour; its varieties, nevertheless, are not so numerous. It is principally remarkable for its surface being dull like the bloom upon green plums or grapes. The following varieties are exhibited by Mr. Cuming: viz. var. *a.* of an uniform green, becoming paler toward the apex, where it is white: var. *b.* green, with a brown band close to the white sutural band, and the apex of a reddish brown: var. *c.* green, with a dark brown band near the sutural band, and a dark brown spiral band close to the *columella*: var. *d.* the same, with two intermediate brown bands, both of which, however, are not continuous: var. *e.* brown, with a dark brown band next to the sutural white band, and the dark brown spiral band surrounding the *columella*. In all these varieties the narrow white sutural band is constant, and the anterior part of the last volution within the aperture is yellower than the outer surface.

HELIX (COCHLOGENA De F.) HYDROPHANA. *Hel. testâ obovatâ, tenuiusculâ, nitidâ, anfractibus quinque ventricosis, obliquè tennerrimè striatis, ultimo majori, cæteris duplè longiori, omnibus plus minùsve epidermide hydrophand indutis; aperturâ suborbiculari, peristomate albo, rotundato, reflexo; columellâ subarcuatâ, anticè in tuberculam indistinctam productâ.* Long. 1.35, lat. 1.05 poll.

Hab. prope Puerto Galero ad insulam Mindoro Philippinarum.

The ground colour of this extraordinary species is brownish yellow, and it has two, three, or four broader or narrower very dark brown spiral bands. A rather thinner variety, with three bands, is found in the island of Corregidor, in the Bay of Manilla. The most remarkable circumstance in its natural history is that it is more or less covered with a very thin, opaque, white *epidermis*, which becomes transparent on being wetted; the dark brown bands are then seen brilliantly contrasted with the yellowish brown general colour of the shell.

HELIX (HELICOSTYLA De F.) CEPOIDES. *Hel. testâ suborbiculari, tenui, spirâ subdepresso-conicâ; anfractibus senis, ventricosis, posticè depressiusculis, lineis incrementi striatis; suturâ distinctâ; aperturâ semilunari, peristomate posticè tenui, subreflexo, tùm crassiori, reflexo; columellâ in dentem obtusum productâ.* Long. 1.8, lat. 2.2 poll.

H. cepoides, Lea, M.S. secund. Jay.

Hab. ad insulam Luban Philippinarum.

This species most nearly resembles *H. unidentata*, Lam. Anim. sans Vert. VI. pt. 2, p. 74, from which it may easily be known by its more ventricose volutions, and its much narrower aperture. It differs also in colour, the *unidentata* being usually of a dark chestnut brown, while in the *Dolium* the spire and more than the upper half of the last volution are of a light brown, and the remainder lighter coloured still, and between the darker and lighter colour is a band

of nearly white. The *epidermis* in this species is very thin and pale-coloured, and it has alternating darker marks close to the suture. A variety occurs of a nearly uniform pale brownish yellow colour, though in other respects similar.

I gladly adopt Lea's manuscript name of *cepoides*.

HELIX (HELICOSTYLA ? De F.) ARATA. *Hel. testâ ovatâ, subcylindricâ, crassiusculâ, rufo-fuscescente, fasciâ antemedianâ albidâ; anfractibus senis, subventricosis, obliquè exaratis, subrugosis; suturâ distinctâ, crenulatâ; aperturâ ferè circulari, intùs albâ, peritremate expanso, subreflexo, fusco; columellâ albâ; umbilico mediocri.* Long. 1·7, lat. 1·1 poll.

Hab. ad insulam Tablas Philippinarum.

Variat testâ omninò pallidè lutescente, aperturâ peritremateque albis.

The two varieties of this remarkable species differ so much in colour that they might at first sight be regarded as distinct species; I do not, however, discover any real difference in their conformation, and therefore am compelled to unite them as varieties. The ridges between the furrows vary greatly in their distance from each other; they appear to be more and more frequent as the shell increases in age.

HELIX (HELICOSTYLA ? De F.) ADUSTA. *Hel. testâ oblongâ, subcylindricâ, castaneâ, lævigatâ, tenuissimè lineis incrementi striatâ, fasciâ antemedianâ pallidiori; anfractibus senis subventricosis; suturâ distinctâ; aperturâ ferè circulari, intùs albicante; peritremate levitèr expanso, reflexo, fusco; columellâ pallidâ; umbilico parvo.* Long. 1·8, lat. 1· poll.

Hab. ad insulam Tablas Philippinarum.

This species resembles the last in form as well as colour; it differs, however, in its general proportions, as well as in being entirely free from the numerous and deep oblique grooves so remarkable in that species; its *umbilicus* also is smaller.

HELIX (HELICOSTYLA ? De F.) BRACHYODON. *Hel. testâ ovato-subcylindricâ, tenui, castaneâ, fuscâ anticâ pallescente; anfractibus quinque ad sex subventricosis, lineis incrementi tenuitèr obliquè striatis; suturâ distinctâ, levitèr crenulatâ; aperturâ suborbiculari, intùs albicante; dente obtuso, antico, albo; peritremate subincrassato, reflexo, subexpanso, internè inter columellam dentemque sinuato; columellâ albâ, obtusâ; umbilico parvo.* Long. 1·95, lat. 1·3 poll.

Hab. in foliis arborum prope Puerto Galero ad insulam Mindoro Philippinarum.

Variat testâ breviori, colore saturatiori, striisque fortioribus. Long. 1·35, lat. 1·2 poll.

I have named this species *Brachyodon*, from a short white tooth placed at the inner and anterior part of the lip, and which appears to be constant. I do not hesitate to regard the shorter specimens as merely a variety, though they differ greatly in their proportions from

the typical variety. A single nearly colourless specimen is intermediate in its proportions.

HELIX (COCHLOGENA De F.) PULCHERRIMA. *Hel. testâ orbiculari, subglobosâ, tenuisculâ, haud nitente, spirâ plerumque subdepressâ, anfractibus* $4\frac{1}{2}$, *ventricosis, laevibus, striis solum incrementi tenuissimis insculptis, coloribus pulcherrimè ornatis, ultimo maximo, cæteris quadruplò longiori; suturâ distinctè impressâ; aperturâ rotundato-semilunari, intus albd, peristomate latiusculo, rotundato, reflexo, extus ad basin columellæ subsinuato; columellâ dilatâ, subplanulatâ.* Long. 1·5, lat. 2· poll.

Hab. prope St. Jaun in provinciâ Cagayan insulæ Luçon Philippinarum.

The usual ground colour of this very pretty shell varies from a pale yellowish brown, through orange brown, to dark chestnut brown; some of its varieties are of a nearly uniform colour, others are very elegantly varied, with narrower or broader, and more or less numerous interrupted bands of opaque white *epidermis* (which are transparent when wetted), and which gives them a very brilliant and captivating appearance, to which it is indeed impossible in words to do justice.

This species is usually about the same size as *Helix Pomatia*, differing from that, however, very greatly in form and proportions, and varying, moreover, greatly in size. It is nearly orbicular, somewhat globose, with a slightly depressed obtuse spire. It is of a thin substance, and its surface is dull. Its volutions are four and a half, of which the first is rounded, and the last is very large, being four times as long as the rest, and very ventricose; they are smooth, being closely covered with the very slender lines of growth; the suture is very distinct, inasmuch as that the posterior part of the next volution is nearly horizontal, and the anterior part of the last volution nearly perpendicular to it. The aperture is large (not so large in proportion as Deshayes's *Helix Cailliaudi*, Mag. de Zool., 1839, 'Mollusques,' Pl. 5.), of a rounded semilunar form, and white within: the peristome is rather broad and thick, rounded and reflected; in some varieties it is quite white, in others it is delicately coloured of a rose tint, and sometimes of a brownish red: the *columella* is dilated and rather flattened, usually quite white, though occasionally tinged with rose.

The following are the twelve principal varieties which have occurred to Mr. Cuming, viz.

Var. *a.* General colour dark chestnut brown; apex brownish scarlet; edge of the peristome purplish crimson; body covered with broader and narrower white interrupted bands, set nearly close together.

Var. *b.* The same, only not having so many of the white bands, the ground colour is seen in broader bands.

Var. *c.* General colour dark chestnut brown, with numerous interrupted bands of light brown *epidermis*; apex brownish scarlet; edge of the peristome purplish brown.

Var. *d.* Ground colour orange brown, with numerous white interrupted bands ; peristome white.

Var. *e.* Dark chestnut brown, with only three or four light-coloured interrupted bands, so that the dark brown ground colour appears in broad bands.

Var. *f.* Light yellowish brown, with the apex red, and the edge of the peristome rose colour ; numerous close-set, interrupted, nearly white bands ornament this variety.

Var. *g.* The same ground colour as the last, with a light buff-coloured edge to peristome, and a single white scarcely interrupted band, forming the circumference of the shell.

Var. *h.* With a chestnut brown ground colour, a red apex, and orange-coloured edge to the peristome, and one white band, forming the circumference.

Var. *i.* With a chestnut brown ground, a red apex, and an orange-coloured edge to the outside of the pink-edged peristome, and without any white band but a slender white sutural line.

Var. *k.* With a yellowish brown ground colour, the apex and the back of the peristome bright orange-red ; peristome and columella rose-coloured ; without a band, but with a slender white suture line.

Var. *l.* Of an uniform yellowish brown, with white peristome.

Var. *m.* Of an uniform pale brownish yellow, with white peristome.

The most beautiful varieties are most abundant on the leaves of bushes and young trees at St. Jaun, where also all the other varieties are found. Some of the lesser painted varieties are also found at Abulug in the same province. The species has not been found in any other part of the Philippine Islands.

Since this paper was read two other varieties have been found by Mr. Cuming in his packages ; they are

Var. *n.* Of a very rich dark chestnut brown, with a scarlet apex, four very narrow interrupted white bands of *epidermis*, a white suture, and orange-coloured outer edge to the white peristome.

Var. *o.* Of a rich light brown colour, with a yellowish band forming the circumference of the shell, and another band of the same yellowish colour in front, near the *columella* ; peristome white, its edge pink, and back of the lip orange-yellow.