CRITICAL REMARKS ON CERTAIN FORMS OF CHLORITIS, WITH DESCRIPTIONS OF TWELVE NEW SPECIES.

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PLATES IV AND V.

Several species of Chloritis, having been insufficiently defined, and not properly compared with their allies, are at present little understood; and, as a consequence, some confusion exists in collections containing them. One or two, considered identical with previously described species, have proved to be distinct; while others, thought to be distinct, have been found, on closer examination, to be indistinguishable. In applying myself to these matters, I have been enabled, owing to the kindness of Miss Linter, Mr. J. H. Ponsonby, Mr. E. A. Smith, and Messrs. Sowerby and Fulton, to study an extensive series of shells of this genus; and the collections thus examined, together with the material in my own collection, have been found to contain no less than twelve new species. Finally, the kind co-operation of Mr. Smith has enabled me to illustrate one of Pfeiffer's hitherto unfigured species.

CHLORITIS UNGULINA, L.

This, the earliest known species and the type of the genus, varies considerably in colour, in the excavation of the spire, and in size. In a series, placed at my disposal by Messrs. Sowerby and Fulton, the colour ranges from dark chestnut and sienna brown to pale ochreous. Typically, the spire is deeply immersed, each succeeding whorl projecting above its predecessor, except the last quarter of the last whorl, which is suddenly deflected in front and descends as far as the periphery. In some specimens, however, the whorls ascend much more slowly, and consequently the spire is much less immersed, the third quarter of the last whorl being below the level of the penultimate whorl, and the upper half of the last whorl, near the aperture, less sloping from the suture to the periphery, giving the shell a distinct aspect from above; two specimens, which possess the features indicated, measure only 30 and 32 mm. in diameter respectively, and thus they form a connecting link with

Var. minor, Martens (not Fér.),

which is represented by two specimens from Amboina, measuring 27-5 mm., one dark ochreous, the other blackish brown; the umbilicus is here much less excavated, and the angulation becomes obsolete. Two other specimens measure only 25 mm.

Another specimen, which was submitted by Mr. Fulton in 1898 to the late Professor von Martens, was accompanied by the following remarks from the latter's own hand: "ungulina, v. minor, of Férussac, Beck, Pfeiffer, and myself, but I should have no objection to-day
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to give it a new name." As the shell is quite distinct from *ungulina*, being much wider in proportion to the axis, having a much less immersed spire, and wider, but not excavated umbilicus, I propose to separate it from that species, and, in according it specific rank, I have pleasure in associating it with the much regretted Professor Eduard von Martens, in appreciation of his many valuable contributions to malacology.

**Chloritis Eduardi**, n.sp. Pl. IV, Figs. 1-1b.

**Chloritis ungulina**, var. *minor*, Ferussac: Histoire, pl. lxxvii, fig. 2 (not of Martens).

Shell umbilicate, discoid, light ochreous brown, paler beneath, finely and distinctly striated, a little shining; spire slightly immersed; suture rather deep. Whorls 5, rounded, increasing slowly at first, the last widening suddenly, slightly descending, and suddenly, but very shortly, deflected in front. Aperture crescentic, oblique; peristome slightly thickened and shortly reflected; margins approximate, united by a thin flexuous callus; upper margin slightly ascending at first, then arcuately descending, basal margin regularly curved, forming a slight angle with the columellar margin, which scarcely overhangs the moderate umbilicus. Diam. maj. 26·5, min. 22 mm.; alt. 15 mm.

**Hab.**—Moluccas.

*C. Eduardi* differs from *C. ungulina*, var. *minor*, in being smaller and less high in proportion to its diameter, by the less immersed spire; moreover, the last whorl is scarcely deflected in front, more rounded, not angulated below, and the umbilicus is a little wider, and not excavated. It agrees fairly with the figures in Ferussac’s work, pl. lxxvii, fig. 2, but that measures only 25 mm., whereas von Martens gives for var. *minor* 30 mm. (Ost-Asien, ii, p. 280).

No habitat appears to have been recorded, but the shell may be assumed to occur in the Moluccas.

**Chloritis unguiculina**, Martens, var. *fusca*, n.var.

The shells in the British Museum referred to by the writer in Journ. Malac., vol. x, p. 48, and figured on pl. iii, fig. 4, appear to differ from the type in being much darker and smaller, and seem worthy of varietal rank. A specimen from Buru, in my collection, agrees with the Museum specimens.

**Chloritis Martensi**, Pfr. Pl. IV, Figs. 2-2b.


This hitherto unfigured species is now figured from the type in the British Museum by kind permission of Mr. Smith. A specimen sent to me by Messrs. Sowerby and Fulton, measuring diam. maj. 19, min. 16, alt. 9 mm., agrees with the type. A shell in Mr. Ponsonby’s collection is more solid, and measures diam. maj. 20, min. 16·5, alt. 10·5 mm. Pilsbry (Man. Conch., vol. vi, p. 245) gives the diam. min. as 14 mm., this being evidently a printer’s error, and should be 16 mm.
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Chloritis molliseta, Pfr.


Pilsbry unites this species with *C. circumdata*, Fér. (Man. Conch., vol. vi, p. 246). The two, however, appear to me to be distinct, for, apart from its larger size, *C. molliseta* has a narrower umbilicus, and the aperture is relatively higher, the spire more deeply immersed, and the hairs much more crowded.

Chloritis Ponsonbyi, n.sp. Pl. IV, Figs. 7-7b.

Shell discoid, thin, yellowish fulvous, with a few transverse, oblique paler streaks, and a slight trace of a paler band above, near the suture, paler below, finely striated, the penultimate whorl with a spiral row of superficial but very distinct interrupted sulci nearest the inner suture, and a few stray ones nearest the outer suture; the former continue indistinctly up the first half of the last whorl. Spire plane, suture impressed. Whorls 5, rounded, the earlier ones increasing regularly and slowly, the last rather suddenly, and slightly dilated towards the mouth, descending slightly and shortly in front. Aperture subovate, oblique; peristome whitish, thin, slightly reflected; margins approaching, regularly curved, columnar margin slightly overhanging the moderate umbilicus, receding a little at first, then ascending forward. Diam. maj. 22, min. 19 mm.; alt. 10·5 mm.

*Hab.*—Moluccas.

Type in Mr. Ponsonby’s collection.

The present species is allied to *C. unguicula*, Fér., but is smaller, thinner, and proportionately less high; the whorls are more rounded, the last descends less in front; the aperture is wider and the peristome thinner, and less reflected. The exact habitat is not known, but, as in the case of *C. Eduardi*, there can be little doubt that it belongs to the Moluccas.

Chloritis flexuosa, Pfr.


While examining the type of *C. flexuosa*, Pfr., in the British Museum, Mr. Smith called my attention to the resemblance of this shell to *C. Ceramensis*, and, on closer inspection, it was found that both undoubtedly belong to one species, the former being somewhat abnormal through having received some injury to the peristome while alive. The name *flexuosa* (1855) antedating that of *Ceramensis* (1861), the species must be known by the former name, the latter becoming a synonym.

Chloritis macrostoma, n.sp. Pl. V, Figs. 7-7b.

Shell narrowly umbilicated, discoid, somewhat thin, irregularly striated, dark chestnut colour, the penultimate whorl somewhat paler, shining, and showing traces of very fine spiral sculpture under a velvety deciduous cuticle. Spire subplane, suture shallow. Whorls 5, increasing regularly, the last rather suddenly, subcompressed above and below, slightly flattened and obtusely angulated near the suture,
rounded at the periphery; last whorl slightly descending, then suddenly and shortly deflected in front, and a little dilated at the mouth. Aperture rotundate-crescentic, oblique, light purplish livid within, margins approaching, united by a thickish light-purple flexuous callus, which bears, near the upper margin, a crescentic swelling; peristome pale purplish, becoming whitish at the columella; thickened, expanded, and reflected; upper margin shortly ascending at first, then rounded, basal sloping upward, columellar dilated above, ascending forward, and slightly overhanging the narrow pervious umbilicus. Diam. maj. 45, min. 37.5 mm.; alt. 24 mm.; apertura, lat. 26 mm.

_Hab._—Bangaya, off East Celebes.

Type in the British Museum.

This new species can only be compared with _C. Gruneri_, Pfr., but that species, although considerably smaller, possesses half a whorl more, has a more elevated spire, a much more strongly developed peristome, bears a conspicuous tooth on the callus, and its aperture is more contracted laterally.

I am indebted to Mr. Smith for allowing me to describe and figure this handsome species. Mr. Da Costa possesses a specimen similar to the type from the same locality.

**Chloritis heteromphalus**, Pilsbry.


Two specimens, labelled _Chloritis_ sp., sent to me by Messrs. Sowerby & Fulton, appeared to agree with the above quoted figures of _C. heteromphalus_, a species as yet undescribed, and not included by Pilsbry in his "Guide to the Study of Helices." I therefore submitted one shell to Professor Pilsbry, who states that _C. heteromphalus_ agrees well with my shell in most respects, and he has no doubt that they are specifically identical; he adds that the description of his shell was omitted accidentally. As Professor Pilsbry has undertaken to supply a description of the type for these pages, I merely allude to the species _en passant_. The two specimens referred to measure: diam. maj. 29, min. 25, alt. 14 mm., and diam. maj. 30, min. 24.5, alt. 13.5 mm. respectively.

**Chloritis eustoma**, Pfr.


Considerable confusion appears to exist with regard to _C. eustoma_ and _C. erinacea_. Mr. Smith has expressed the opinion that the two names represent one species (_Proc. Zool. Soc._, 1885, p. 594), while Dr. Dohrn (Conch. Cab., _Helix_, vol. iv, 1879, p. 572, and 1881, p. 602) considered them distinct. Professor Pilsbry (Man. Conch., vol. vi, 1891, pp. 251, 253) concurs. Dohrn considered _C. erinacea_ closely allied to, if not identical with, _C. discordialis_, Fér., which view is adopted by Pilsbry; the latter species, however, is quite different, having relatively a much larger diameter and a wider aperture, and the hair-scars are much more crowded. A careful comparison of the types of
C. eustoma and C. erinaceus has convinced me that Mr. Smith’s view is the correct one. The statement that in C. erinaceus the umbilicus is not broadly funnel-shaped as in C. eustoma (Pilsbry, loc. cit.) is not borne out by Pfeiffer’s original diagnosis. The shell figured in Novitat. Conch., vol. ii, pl. xlvii, figs. 3, 4, and badly copied in Man. Conch., vol. vi, pl. lii, figs. 88, 89, cannot be the same as the type of C. erinaceus, which, it is true, is a little larger and has the spire a trifle more raised than C. eustoma, but a long series from various sources, kindly furnished by Mr. Ponsonby, shows the two extremes linked by intermediate forms. C. erinaceus, therefore, can only be accorded varietal rank.

The habitat “Marshall Islands” given by Pfeiffer has been called in question by Dohrn and Smith, with some show of reason, and as the species does not appear to have been found there by subsequent collectors, it may be advisable to delete this habitat.

In colour the species ranges from dull or dark ochreous yellow, with white or fuscous peristome, to pale or dark russet, with violaceous or fuscous peristome.

*Var. erinaceus*, Pfr.

Differs from the type by its larger diameter (25.5 mm.) and the slightly more raised spire.

**Chloritis Moellendorffi**, Ancey. Pl. IV, Figs. 4–4c.


Four specimens received from Mr. W. Schlüter and labelled “C. erinaceus, Tuam Island” appeared to me to agree with Ancey’s description of C. Moellendorffi, though not with the figure, which appears imperfectly drawn, and on my sending a specimen to M. Ancey he at once pronounced the shell to be his species. To supplement Mr. Ancey’s illustration, I add three views of the shell and one of part of the periostracum enlarged. The shell figured measures: diam. maj. 20.5, min. 18 mm.; alt. 14 mm. Another specimen measures 18 × 15 × 13 mm., while a more depressed specimen from Rubiana, New Georgia, in Mr. Ponsonby’s collection, measures 18.5 mm. in diameter, alt. 12 mm.

**Chloritis subtilis**, n.sp. Pl. IV, Figs. 3–3c.

Shell umbilicated, thin, fragile, subtranslucent, pale fuscous, the latter part of the last whorl dark rufous, finely striated, and covered with rather crowded, short, stiff, blackish bristles, arranged in quincunx. Spire plane, apex slightly immersed, suture rather deep. Whorls 4½, rounded, increasing rather suddenly, the last descending slowly at first, then suddenly and shortly deflected in front, slightly constricted behind the mouth, and compressed round the umbilicus. Aperture roundly lunate, oblique, purplish inside. Peristome thin, shortly expanded and reflected, violaceous purple; margins approaching, upper margin ascending shortly at first, then descending, arcuate, outer and basal arcuate, columella almost straight, dilated above, and slightly
overhanging the moderate, deep umbilicus. Diam. maj. 22, min. 18 mm.; alt. 14 mm.

Hab.—German New Guinea.

Type in Mr. Ponsonby’s collection.

A thin fragile species somewhat resembling C. customa in contour, but the umbilicus is much narrower and not funnel-shaped, the last whorl descends more deeply in front, the suture is less deep, and the last whorl is slightly constricted behind the mouth. It also appears to be allied to C. Simbangensis, Kobelt (Nachrichtsblatt Deutsch. Malac. Ges., 1898, p. 93), to which I was at first inclined to refer it. I forwarded a specimen to Professor Boettger for comparison with the type of that species, if he had access to it, and he obligingly informed me that the type was contained in the collection of the late Bruno Strubell, part of which passed to Herr Bülow, who, however, cannot find it. From the description, C. Simbangensis appears yellowish white, the whorls plane near the suture, subangulated at the periphery, and descending deeply in front, which characters are wanting in the new species.

Chloritis tenebrica, Fulton.


The last portion of the penultimate and the whole of the last whorl are obtusely angulated, and flattened near the suture; the last whorl is also obtusely angulated below round the funnel-shaped umbilicus; these features, not mentioned in the original diagnosis, connect the species with C. customa. From Mr. Ponsonby I have received two specimens labelled “C. discordialis, New Ireland; ex Mus. Sydney,” which I refer to Mr. Fulton’s species; they are pale brown with a pale fuscous peristome, and one of them is slightly more depressed in the spire. Three specimens received from Mr. Fulton, “ex Dr. Cox’s collection,” and considered by him to pertain to C. erinaceus, I also refer to C. tenebrica. One is pale fuscous with a dirty whitish lip; it possesses 5 whorls, and measures 27 mm. in diameter, alt. 21 mm. The two others are darker with violaceous peristome; the angulation near the suture is less pronounced; they measure 22 mm. in diam., 15 alt., and 22 mm. diam., 16·5 alt. respectively. For these I propose the varietal name pallida.

Two bleached specimens, labelled “C. tenebrica, var., New Ireland,” also from Mr. Fulton, have the umbilicus narrower and the angulation obsolete, while the last and penultimate whorls are rounded above, not angulated. This form may be called var. tumida.

Chloritis fausta, n.sp. Pl. IV, Figs. 5–5c.

Shell widely umbilicated, depressed conoid, shining under a deciduous velvety cuticle, earlier whorls pale fuscous, becoming reddish brown on the last whorl, faintly striated, covered with slight tubercles arranged in quincunx, which, in fresh specimens, are furnished with short dark bristles. Spire plane, suture deep. Whorls 4½, increasing regularly, the last rather suddenly, tumid and subangulated above, rounded at the periphery, obtusely angulated
round the wide, funnel-shaped umbilicus, at first ascending a little above the plane of the spire, then descending gradually and rather deeply in front; the upper side of the last half flattened and sloping towards the periphery. Aperture ovate-lunate, oblique, violaceous purple inside, peristome purplish fuscous, slightly thickened, expanded and reflected; margins approaching, united by a thin callus, upper ascending at first, then descending, arcuate, basal and columellar margins slightly curved, the latter dilated and slightly overhanging the wide umbilicus. Diam. maj. 28.5, min. 22.5 mm.; alt. 17 mm.

_Hab._—New Mecklenburg.

Type in Miss Linter's collection.

The present species is allied to _C. discordialis_, Fér. (under which name it was sent out), but it differs by the less rounded whorls, the higher axis, wider and funnel-shaped umbilicus, less expanded peristome, relatively higher aperture, and much sparser hairs.

I have seen three specimens besides the type, one in the British Museum, one from Mr. Ponsonby, and one from Messrs. Sowerby & Fulton, the last measuring diam. maj. 26.5, min. 21 mm.; alt. 16 mm.

**Chloritis Gaimardi**, Desh.

_Helix Gaimardi_, Desh.: Guérin, Mag. de Zool., 1831, pl. xxix.

The specific limits between this species and _C. silenus_, Angas, were for some time obscure to me, Angas having omitted to compare his species with its ally. An examination of Mr. Ponsonby's rich series of this group, however, has disclosed the existence of two types of sculpture, one with rows of hair-scars much crowded, the other having these processes much sparser. One of each type was submitted to Dr. H. Fischer with a request that he would compare them with the type of _C. Gaimardi_ if it could be found in the Paris Museum, but to my regret he was unsuccessful in his quest. The only specimen found bore the label " _Helix_ . . . Nîle Irlande, MM. Lesson et Garnot." Dr. Fischer adds that on the occasion of a visit to the Museum by M. Ancey he filled in the blank with a pencil note, " _Gaimardi_, Desh."; but it is obvious that this specimen cannot be considered as the type. Fortunately Deshayes gave enlarged figures of the sculpture in the Mag. de Zool., 1831, pl. xxix, and in Ferussac's "Histoire," pl. lxxii, fig. 10, and these figures favour the view that his species is characterized by the more distant rows of hair-scars, while the type of _C. silenus_ in the Newcastle Museum (which, owing to the kindness of Mr. E. Leonard Gill, the curator, I have been able to inspect) demonstrated the fact that in that species the hair-scars are very densely crowded. Several specimens in Mr. Ponsonby's collection, however, combined the crowded hair-scars of _C. silenus_ with the contour of _C. Gaimardi_, and as I consider the sculpture of decided diagnostic value, I have no option but to establish a new species on these latter forms. _C. Gaimardi_ may be characterized as smaller (diam. 15 mm.) than _C. silenus_, less conoid, with the last whorl more convex above, less flattened at the side, the aperture with the outer margin more rounded, the basal margin less arcuate, and the hair-scars distant.
Chloritis silenus, Angas. Pl. IV, Fig. 6.


This species is generally larger than *C. Gaimardi* and has the last whorl compressed above, flattened and sloping towards the periphery; the aperture is more triangular and relatively higher, the outer margin straight, the basal arcuate, and the columellar sloping, while the umbilicus is more obliquely excavated behind the mouth. The hair-scars are very densely crowded. The enlarged sculpture (Pl. IV, Fig. 6) is taken from a specimen from New Ireland received by Mr. Ponsonby from Mr. Garrett. It measures diam. maj. 18, min. 15·5 mm.; alt. 11·5 mm.

**Chloritis conjuncta**, n.sp. Pl. V, Fig. 5.

Resembles *C. Gaimardi* in contour and size, but has the densely crowded hair-scars of *C. silenus*. It has the spire plane or slightly immersed. Diam. maj. 14·5, min. 13 mm.; alt. 9·5 mm.

_Hab._—New Ireland.

Type in my collection.

The following specimens are in Mr. Ponsonby's collection: three specimens labelled "*Gaimardi, ex Dr. Cox, Solomon Islands,*" diam. 16·5, alt. 10·3 mm., and diam. 15·5, alt. 10 mm.; one specimen "*eustoma, ex Dr. Cox, Solomon Islands,*" diam. 16, alt. 9·5 mm.; one specimen "*silenus, ex Garrett, New Ireland,*" diam. 15·5, alt. 9·5 mm.; two specimens "*silenus = ? Gaimardi, ex Dr. Cox, New Ireland,*" diam. 15·5, alt. 9·5 mm., and diam. 14, alt. 9 mm.; one "*New Ireland,*" diam. 13·5, alt. 9 mm.

**Chloritis fraterna**, n.sp. Pl. V, Figs. 6–6c.

Shell moderately umbilicated, depressed conoid, pale ochreous, finely striated, covered rather sparsely with short, stiff, dark bristles, arranged in quincunx. Spire subplane, suture deep, apex not raised. Whorls 4, increasing slowly, rather tumid above, rounded at the periphery, obtusely angulated round the moderate funnel-shaped umbilicus; last whorl slightly dilated at the mouth, slowly descending, not deflected in front. Aperture ovate-lunate, a little oblique, pearly within; margins a little approaching. Peristome dirty whitish, somewhat thickened and expanded, slightly reflected; upper margin arcuate, outer and basal regularly curved, columellar triangularly dilated and slightly overhanging the umbilicus. Diam. maj. 16, min. 14 mm.; alt. 11 mm.

_Hab._—? New Ireland (ex Sydney Museum).

Type in Mr. Ponsonby's collection.

*Chloritis fraterna* is more elevated in the spire than *C. Gaimardi*, and has a narrower umbilicus; the last whorl is not compressed or sloping above, does not descend so deeply in front, and it has a more rounded aperture. *C. exigua* is more solid, and, although smaller, it possesses half a whorl more, while the hair-scars or pits are much more crowded. Another specimen measures diam. maj. 18, min. 15 mm.; alt. 12 mm. The shells were received by Mr. Ponsonby as *C. silenus*. 
Chloritis exigua, n.sp. Pl. IV, Figs. 8-8c.

Shell widely umbilicated, depressed, dark tawny, lightly striated, densely pitted. Spire subplane, suture deep, apex a little raised Whorls 4½, increasing rather slowly, rather tumid above, rounded at the periphery, obtusely angulated round the wide funnel-shaped umbilicus; last whorl shortly deflected in front. Aperture sub-circular, little oblique, dark within; margins a little approaching; peristome rosy fuscous, a little thickened, expanded and reflexed; upper margin ascending a little at first, then sloping down; outer, basal, and columellar arecate, the latter scarcely dilated. Diam. maj. 12, min. 10·5 mm.; alt. 7·5 mm.

Hab.—New Ireland.

Type in my collection.

A specimen which could not be referred to either of the preceding species has lain in my collection for years. It is smaller and darker than any of its allies, has the apex raised, and, compared with C. conjuncta, it has a more rounded aperture, and the hair-scaris are more crowded.

Chloritis Cumingi, n.sp. Pl. V, Figs. 1-1a.

Shell widely umbilicated, convex-conoid, solid, lightly striate, reddish-brown. Spire conoid, suture margined, apex obtuse. Whorls 6, convex, increasing regularly, with fine spiral sculpture under a deciduous cuticle, the apical whorl minutely pitted, the last dilated towards the mouth, shortly descending in front, its latter half scored with about six straight, obliquely descending furrows. Aperture obovate, oblique; peristome white, thickened and reflected, margins subparallel, converging near the body-whorl, united by a thin whitish callus; columellar margin ascending at an obtuse angle beyond the umbilical angulation. Diam. maj. 56, min. 45 mm.; alt. 36 mm.

Hab.—New Guinea (Mus. Cuming).

Type in the British Museum.

This new species is more elevated in the spire and more angulated than C. rubra, Albers. From C. concisa, Fér., it differs in the shorter furrows which are confined to the last whorl. I associate with this handsome and striking species the name of the celebrated collector, Hugh Cuming, of whose collection the three shells, on which I base the species, formed part. They were labelled C. concisa, Fér., until Mr. Ponsonby pointed out that they could not be referred to that species, and Mr. Smith, with his usual courtesy, now afforded me an opportunity of naming and describing them.

Chloritis brevipila, Pfr. Pl. IV, Fig. 9.


Several forms have been included under this name by authors, and from the numerous specimens labelled with this name kindly placed at my disposal by Mr. Ponsonby, and from those in my collection,