





PRELIMINARY KEYS FOR THE
IDENTIFICATION OF THE SPECIES
OF THE GENUS GULELLA PFR.
OCCURRING IN EAST AFRICA

EXCLUDING THE
SECTIONS PRIMIGULELLA PILSBRY AND PLICIGULELLA PILSBRY

(Mollusca - Streptaxidae)

BY

B. VERDCOURT







PRELIMINARY KEYS FOR THE IDENTIFICATION
OF THE SPECIES OF THE GENUS GULELLA PFR.
OCCURRING IN EAST AFRICA



PRELIMINARY KEYS FOR THE
IDENTIFICATION OF THE SPECIES
OF THE GENUS GULELLA PFR.
OCCURRING IN EAST AFRICA

EXCLUDING THE
SECTIONS PRIMIGULELLA PILSBRY AND PLICIGULELLA PILSBRY

(Mollusca - Streptaxidae)

BY

B. VERDCOURT



INTRODUCTION

The writer has for several years been working on a Check List of East African non-marine mollusca. It has become apparent that although any type of list would be of great value, indeed will be a necessity for future progress, it is not possible to write a check list in the correct meaning of the term. Every genus needs revision, which in turn often involves dissection of topotypic material. The material and workers are not available for this task and any list which appears will be of a very preliminary nature.

The present paper will perhaps serve to render the identification of species, of what is quite probably the largest genus in the country, a little easier. It is meant for field use in East Africa. It mentions about 160 valid species and varieties, but considering the fact that only a fraction of the country has been examined by collectors looking for very small species of molluscs, it would not in the least surprise the author if the total number of species occurring was eventually found to be over 500. With a little stimulation it is believed that this group could be made popular with amateur collectors since the shells have definite shapes and characters rendering identification easier than in other groups e.g. Stenogyridae and Helicarioidae.

I have seen many of the types but further study will undoubtedly show that certain species accepted as valid are merely individual variants or races of others. Since the first draft of this paper was completed I have been fortunate enough to visit and study types in the Zoological Museum, East Berlin, the Laboratoire de Malacologie, Paris, and the British Museum (Nat. Hist.), London; these museums contain the holotypes of E. SMITH, E. VON MARTENS, L. GERMAIN, J. THIELE, M. CONNOLLY and several other authors and also numerous paratypes of H. PRESTON. It is regretted that several of the types preserved at Berlin have been more or less destroyed by J. THIELE in order to extract radulae. I have in certain cases added information about types *seen* to the index of species given at the end of this paper with the following abbreviations, B, Berlin; BM, British Museum; MT, Tervuren; P, Paris. Where two abbreviations are given the first institution holds the holotype, a dash in front of the abbreviations indicates that the institution or institutions mentioned hold only paratypes.

NOTES ON THE KEY

The key has been kept as simple as possible. Dates of publication and references are relegated to the end. Two groups have been omitted from the key since keys have already been published for these viz. the section *Primgulella* PILSBRY with 9 species and infraspecific variants (VERDCOURT and VENMANS, 1956) and the section *Plicigulella* PILSBRY with 14 species and infraspecific variants (VERDCOURT 1957). A popular, fully illustrated account has been published dealing with the *Gulellae* of the Usambara Mountains in N.E. Tanganyika (VERDCOURT, 1958). This area has been more thoroughly explored than most and the results give a good idea of the *Gulella* fauna of a montane rain forest. The scope of this present paper is confined to Kenya, Uganda, Tanganyika and associated islands. A few mentions of species at present known only from adjoining territories but likely to occur in East Africa are enclosed in square brackets []. When a record is possibly the first time the species in question has been recorded from East Africa, details have been added and an asterisk (*) appended. A number of new species are included and descriptions are given in a section at the end. Apart from these named new species, many have been seen which have been mentioned and sometimes figured but left unnamed due to various reasons. Since solitary type specimens are likely to be destroyed these days species have not been described when the available material is poor or further study of an already overelaborated group is desirable. This unnamed material is available in the Coryndon Museum, Nairobi for future students.

In compiling the key most use has been made of the number and position of the apertural processes as was done by CONNOLLY in his guide to the species occurring in South Africa (CONNOLLY, 1939). An isolated process has been called a denticle or tooth and a process which is flat and more or less entering into the aperture has been termed a lamella or fold. A wide variety of terms has been used by most authors, including the present one, with but little uniformity. The use of a formula for expressing the number of processes has already been explained in the paper concerning the section *Plicigulella* (VERDCOURT, 1957) but is repeated here. The formula gives the number of processes occurring on the parietal, outer, basal and columellar areas respectively, the areas being separated by a semicolon (;). The basic number of processes is given, and in brackets after this number an indication of the number of cusps e.g. 2; 2; 2; 2 means each area has two simple processes but 2; 1+1 (2); 2; 1 (3)+1 (2) indicates that there are two parietal processes, one simple outer process and one bifid one, two simple basal processes and a trifid columellar process and also a bifid one. Where doubt is likely to be experienced in ascertaining whether a process is bifid or whether it should be considered as two processes the species has been included in the key twice. Where one process is on the junction of two areas a bracket has often been added thus — 0; 0; 1; 0 indicates a solitary process

at the junction of the basal and columellar areas. L indicates a transverse lobe often deeply situated on the columella and bridging the columellar and parietal areas. Since the number of species is large a series of keys have been used.

ABBREVIATIONS

- B = collection of the Zoological Museum, Berlin
 BC = Republic of Congo (former Belgian Congo)
 BM = collection of the British Museum (Nat. Hist.)
 MT = collection of the Musée Royal de l'Afrique Centrale, Tervuren
 E = *Ennea*
 K = Kenya Colony
 L = internal lobe
 P = collection of the Laboratoire de Malacologie, Paris
 S = collection of the Natural History Museum, Stockholm
 T.T. = Tanganyika Territory
 U = Uganda Protectorate
 § = section of the genus *Gulella*

KEY 1

- A Shell markedly acuminate at the apex; apical whorls finely striate, body whorls coarsely lamellate, formula 1; 1 (2) + 1; 0; 1 + 2 (Plate 3, fig. 2) **cuspidata** sp. nov. (T. T., W. Usambaras)
 - Without above characters combined B
- B Aperture disconnected, « tubular » as in *Rhiostoma*, a marked sinus above the parietal tooth; 2.5 × 1.5 mm.; formula 1; 1; 1; 2 (**Mirellia** THIELE, 1933¹) = *Thaumatogulella* HAAS, 1951) **prodigiosa** (SMITH) (K, Mau, Ngong Hills)
 - Aperture not disconnected or only very slightly so in *lacuna* C
- C No processes in the aperture at all Key 2
 - One or more processes, often very small, present in the aperture D
- D A process on columella bifid (rarely trifid); shell not distantly lamellate nor with spiral striae on apical whorls (§ **Molarella** CONNOLLY) Key 3
 - Columella with no bifid process or if so then shell lamellate or with apical whorls spirally striate E

¹) This name appears to have been omitted from the Zoological Record; THIELE makes it a section of *Ptychotrema* but I am not at all convinced that that is correct.

- E Shell very narrow, three times as long as wide, apex smooth, rest strongly ribbed; shell 3×1 mm.; formula 1; 1; 0; 3 (§ *Silvigulella* PILSBRY)
 *osborni* PILSBRY * (K, Kakamega, in BM collection)
 - Shell similar but more than three times as long as wide, 3.4×0.9 mm.; formula 1; 1; 0; L *pisa* CONNOLLY, ²⁾ (K, N.F.P., Eusso Nyiro)
 - Shell not as in above two couplets F
- F Shell with well-spaced, conspicuous lamellae save on apical whorls which are smooth; whorls often angled giving a « pagodiform » appearance
 Key 4
 - Shell without conspicuous, spaced lamellae but often ribbed or striate (some species have been included in both groups owing to possible misunderstanding) G
- G Initial whorls conspicuously spirally striate, sometimes with transverse element as well Key 5
 - Initial whorls transversely striate or smooth or punctate (sometimes spirally) etc. not or only very obscurely spirally striate (once again certain species have been included twice). It must be emphasized that the sculpture can only be seen in fresh shells. H
- H Shell obovate - cylindrical, broadest at the apex and very blunt and flat, formula 1; 2; 1; L or 1; 1; 0; L, columella lobe or tooth has projection at its middle (placed here owing to variability) see *tudes* in Key 10 ³⁾
 - Not as above I
- I Aperture with one process Key 6
 - Aperture with two processes Key 7
 - Aperture with three processes Key 8
 - Aperture with four processes Key 9
 - Aperture with five processes Key 10
 - Aperture with six processes Key 11
 - Aperture with seven or more processes Key 12
- NB. In all the above the number *excludes* the deep fold or curve at the top of the columella situated internally which is present in very many species and is designated in the formula by L.

²⁾ A shell labelled *Streptostele ariel* PRESTON, apparently a manuscript name, appears to be a *Silvigulella* allied to *G. pisa* CONNOLLY. It is oblong, strongly costate and has a formula 1; 1; 0; L. It bears the locality Lake Mutanda in Uganda. I have not seen sufficient material to decide.

³⁾ I have examined the types of this species at Berlin and they vary as follows.- 1; 2; 1; L, 1; 1; 1; L and 1; 1; \pm 0; L; the upper part of the columella lobe is thickened at the edge and it is the termination of the lower part of this thickening which produces the central projection.

KEY 2

Species with no processes in the aperture.

NOTE. — Some small species at present referred to the genus *Marconia* BGT. could be confused here, in fact the generic distinctions are illusory when based on shells alone. Anatomical knowledge of all the species concerned would give rise very probably to a quite different grouping. *Ennea ingloria* PRESTON, a shell 4.5×2.5 mm., smooth save for coarse growth marks and a strongly crenellate suture might be referred to either genus (K, Mt. Nyiro, Ngong Hills leg. Polhill).

- 1 Shell over 8.5 mm. tall 2
 - Shell under 7.5 mm. tall 3
- 2 Shell cylindrical, finely arcuately striate, $8.1-9 \times 3-3.5$ mm., peristome very thick **Gonospira expatriata** (PRESTON)⁴ (K, Shimba Hills)
 - Shell oval-oblong, striate, 9.5×4.35 mm.; an extremely faint « bump » is present at the top of the columella ? **montium** (D'AILLY)
 (T. T., Kilimanjaro & Meru)
- 3 Labrum markedly expanded; suture rather crenulated; shell $5.5-7$ (- 7.5) mm. long (§ **Pupigulella** PILSBRY) **pupa** (THIELE)*
 (E. Congo, W. Africa, U, Entebbe, T.T., Mahari)
 (= *amicta* var. *brevior* VON MTS.)
 - Labrum not so conspicuously expanded 4
- 4 Shell over 6 mm. tall 5
 - Shell under 4 mm. tall, a slight angle on outer lip, or if up to 5 mm. tall then apical whorls finely spirally striate 6
- 5 Shell subcylindrical, obsolete striate, narrowly perforate, white with greenish-yellow epidermis, 6.5×3.3 mm.; a slight sinus at top of outer lip (there are faint traces of spiral striae) **amicta** (SMITH)
 (T.T., Mamboya)
 - Shell cylindrical, apex flattened, pale greenish and shining, 6.75×3 mm. (a minute trace of a parietal tooth) **rectangularis** (PRESTON)
 (K, Urguess, Mathews Range)
- 6 Shell 5×2 mm. cylindrical, thin, membranous and greenish-white; apical whorls finely microspirally striate; transverse striae appear on second whorl and rest are striate **simplicima** (PRESTON)
 (K, Mt. Kenya, Kinangop)
 - Shell under 4 mm. tall, oblong-ovoid; apical whorls not spirally striate, smooth or very finely transversely striate 7
- 7 Shell (3-) 3.7×2 mm., smooth **puella** CONNOLLY (K, Naivasha, Turi)
 - Shell $2.8-2.9 \times 1.6-1.7$ mm., very finely striate **cheranganiensis** GERMAIN
 (K, Cherangani Hills)

⁴) This species has recently been recollected at Malindi, Kenya by C.W.P. HARRIES; his specimens vary from 8.1 to 9 mm. in length and 3.2-3.5 mm. in breadth. Dr. MADGE has examined a duplicate and agrees with me that the species almost certainly belongs to the genus *Gonospira* Sw. Anatomical studies are needed to confirm this.

KEY 3 [§ MOLARELLA CONNOLLY]

One process on columella bifid, other dentition various.

NOTE. — This section is very artificial. CONNOLLY also includes *G. curvilamella* (SMITH) but in error. *G. shandae* CONNOLLY (see Key 9) has two close teeth on the columella and *G. lobidens* THIELE (Key 12) could also be confused with this section.

- 1 Shell with spiral sulcae and transverse ridges in the interstices, 6.25×3 mm.; formula 1; 2; 1; 1 (2) (the bifurcation of the columella process is slight)
..... **lima** (PRESTON) (K, Mathews Range, Urguess)
- Shell without spiral and transverse sculpture together on the main whorls 2
- 2 Two parietal processes; shell smooth 3.25×1.25 mm.; formula 2; 1 (?±2); 1; 1 (2) **malasangiensis** (PRESTON) (S. W. Uganda)
- Only one parietal process (the angular one), save in a variety of *consanguinea* which is striate and 2; 2; 1 inset; 1 (±3) 3
- 3 Shell over 10 mm. tall 4
- Shell under 10 mm. tall 6
- 4 Shell more or less smooth, $12-14 \times 6.5$ mm.; formula 1; 3; 1; 1 (2)
..... ⁵⁾ **ugandensis** (SMITH) (K, Highlands)
(a var. *obesa* (PRESTON) & a var. *majuscula* (PRESTON)
(= *E. optata* PRESTON)
- Shell striate 5
- 5 Aperture with deeply inset oblique process at angle of basal and outer lip; shell cylindrical-oblong 12×5.5 mm.; formula 1 (± 2); 2 + 1; 1; 1 (2) .
..... **usambarica** (CRAVEN) (T.T., Usambaras)
- Aperture not as above; shell ovoid 12×7 mm.; formula 1; 2; 1; 1 (2) (*e desc.*) **caroli** (KOBELT) (U or T.T., locality not known ⁶⁾
- 6 Shell striate or costulate 7
- Shell smooth or only the suture crenellate 9
- 7 Shell ovate-cylindrical, shining, striate, 6×3.25 mm.; small denticle at left of base under the 2-3-fid process; formula 1 (± 2); 2; 1; 1 + 1 (2-3) ..
..... ⁷⁾ **copiosa** (PRESTON)
(K, Urguess) (the var. *robusta* (PRESTON) is 7.75×3.75 mm.; K, Larogi Hills)
- Columella process only just bifid or if deeply bifid then a small denticle above the bifid process 8

⁵⁾ NOTE. — *G. sellae* (POLLON.) is often like *ugandensis* and intermediates seem to occur, but typical *sellae* is more cylindrical and more striate and the columella tooth is scarcely bifid.

⁶⁾ This species has been rediscovered by the Second Oxford University Tanganyika Expedition in T.T., Mahari Mts.

⁷⁾ NOTE. — also treated in the key to § *Plicigulella*.

- 8 Shell 7.5×4 mm., aperture squarish; columella process very bifid; formula according to Smith 1; 1+1 (2); 1;1 (2)+1 but type appears to be 1(3); 2; 1; 1 (2); basal lobe inset **consanguinea** (SMITH)
(T.T., Kidete and Mamboya also Lake Rukwa (B) ⁸)
- Shell variable in size, $4.75-8.5 \times 2.5-3.25$ mm., columella process very slightly bifid to entire, formula 1;2;1;1 (± 2) **funerea** (PRESTON)
(K, Turkana, N.F.P., U, Bugishu and in South West)
- 9 Shell cylindrical below, tapering upwards conspicuously, 3.25×0.75 mm., 1; 1 (2); 0; 1 (2) **careia** (PRESTON) (K, Gazi)
- Shell not tapering conspicuously 10
- 10 Suture crenellate; formula 1; 2; 1; 1 (2) **gwendolinae** (PRESTON)
var. nov. ⁹) (K, Turkana leg. C. F. Hemming)
- Suture not crenellate 11
- 11 Formula 1;1;1;1 (2); shell 4×1.5 mm. (3.5×1.5 mm. in var. *curta* PRESTON described from BC) **iridescens** (PRESTON) (U, Kigezi)
- Formula not as above 12
- 12 Formula 1; 1 (2); 2; 1 (2). Shell 3.5×1.25 mm. **intradentata** (PRESTON)
(K, Jombene Hills)
- Not as above 13
- 13 Slab-like process on outer lip trifid (rarely rather inconspicuously so), formula 1;1+1 (3);1; 1+1 (2); Shell 3×1.5 mm. **bonclensis** VERDCOURT
(T.T., E. Usambaras)
- Not as above 14
- 14 Shell more broadly oblong, $4.75-8.5 \times 2.5-3.25$ mm.; columella tooth only very slightly bifid; formula 1; 2; 1; 1 (± 2).... **funerea** var. **laevis** (PRESTON)
(K, N.F.P. and Turkana)
- Shell more cylindrical; columella tooth obviously bifid 15
- 15 Three teeth on outer lip 16
- Two teeth on outer lip or a single bifid one 17
- 16 Shell $4.75-5.25 \times 1.8$ mm.; formula 1; 3; $\overline{1;1}+1$ (2)
..... **gwendolinae** var. **mkusiensis** VERDCOURT (T.T., W. Usambaras)
- Shell 6×2 mm.; formula according to Smith 1;3;1;1 (2) but my sketch of the type aperture shows 1; 3; 2; 1 (3) and the species would probably be better placed in § **Plicigulella** **subflavescens** (SMITH) ¹⁰)
(T.T., Mamboya)

⁸) The Lake Rukwa specimens in B (leg. FÜLLEBORN) may represent a distinct variety; there is an additional parietal lamella and the columella process is obscurely 3-nodular; formula 2;2;1; 1 (± 3).

⁹) NOTE. — this species is very variable and several varieties have already been described. Until considerable material is available it would be as well not to bestow more names.

¹⁰) See appendix.

- 17 Shell 5.4×1.7 mm., formula 1; 2; 1; 1(2) *gwendolinae* (PRESTON)
 var. *gwendolinae* (K, Shimba Hills and nearby coastal forests)
 (var. *porrecta* K. PFR. described from Mombasa, shell 5.8×2 mm. and identical formula, seems indistinguishable
e desc.)
- Shell 4.1×1.6 mm., formula 1; 1(2) + 1; 1; ± 2 (very close)
 *gwendolinae* var. *scissidens* CONNOLLY (T.T., Dar-es-Salaam)
 - Shell broader, 6×2.5 mm.; formula 1; 2; 1; 1(2). Var. *addita* (VON MAR-
 TENS) (T.T., E. Usambaras) has formula 1; 2; 1; 1+1(2) and is 2 mm.
 broad *subhyalina* (SMITH) (T.T., Mamboya)

KEY 4

Species with spaced lamellae on the whorls. Angular process large, broad and sometimes bifurcate. Easily recognised once the group characters are appreciated.

- 1 Columella with no processes; upper whorls remarkably angled; shell 4.25×3 mm.; formula 1; 1; 0; 0 (§ *Mirigulella* PILSBRY) *mirifica* (PRESTON)
 (K, Mt. Nyiro and Mt. Kulal, B. VERDCOURT)
- Columella with processes 2
- 2 Angular process very large and curved; upper whorls slightly angled; shell $3.75 \times 2.25-3$ mm.; lamellae about 8 per mm.; formula 1; 3; 1; 2 (one behind the other) *aenigmatica* SMITH (T.T., North-East)
- Angular process smaller or characters not as above 3
- 3 Lamellae very spaced, only 7-8 visible on penultimate whorl; shell 4.25×2.75 mm.; formula 2; 1+1; 1; 1 *spatium* (PRESTON) (K, Larogi Hills)
- Lamellae more closely placed 4
- 4 Formula 1(2); 1; 1; 2; shell 4.5×2.5 mm. with coarser sculpture
 *pretiosa* (PRESTON) var. *pretiosa*
 (K, Nairobi, Central Province)
- As above but shell 5.75×3.25 mm. *pretiosa* var. *nyiroensis* (PRESTON)
 (K, Mt. Nyiro, Mt. Marsabit)
- Formula $\overline{1+1; 1+1(2); 1; 1}$ (slightly lobed); shell 5×3 mm. with finer sculpture *adjacens* (PRESTON) (K, Nyeri to Jombene Hills)

NOTE. — the BC *toticostata* PILSBRY, *langi* PILSBRY and *microtaenia* PILSBRY and COCKERELL belong here. See key of PILSBRY & COCKERELL, 1933.

KEY 5

Species with apical whorls conspicuously spirally striate and remainder ribbed.

- 1 Shell minute, 3.25×2 mm.; formula 1; 1; 0; 0; spiral element of sculpture visible on all whorls (§ *Avakubia* (PILSBRY) *avakubiensis* PILSBRY *
 (E. Congo, U, Entebbe leg. G. Hale Carpenter)
- Without the above combination of characters 2

- 2 A divided process or two teeth on the outer lip with end of parietal tooth interlocking between them but not touching; a tooth on far left of base. Shell $3.6-4.7 \times 1.8-2$ mm.¹¹⁾ **laqueus** (PRESTON)
 (K, Nairobi, Marsabit, Jombene etc.) (A form 6.25×3 mm. from Urguess has been designated var. *hercules* by PRESTON)
- End of parietal tooth more distant from those of outer lip 3
- 3 No teeth on the margin of columella but often with internal ridges and folds 4
- Teeth on the margin of the columella, sometimes near base 7
- 4 A lobe, often with two nodules, at top of columella within 5
- Two or three small internal folds in middle of columella 6
- 5 A distinct tooth at base of aperture, spiral element of sculpture visible on all whorls; shell 4.3×2.2 mm.; formula $1;1(\pm 2); 1; 2(2)$ [lessensis PILSBRY (E. Congo¹²⁾]
- A low oblique lamella at base of aperture; spiral element not on all whorls, restricted to apex; shell 3.25×1.8 mm.; formula $1;1(2); 1; L(2)$ (§ *Tortigulella*) (Plate 1, fig. 3) **impedita** CONNOLLY
 possibly only an ovate var. of *heteromphala* PILSBRY
 (K, Kakamega Forest)
- NOTE. — CONNOLLY described the apical whorls of this as smooth but his specimen is worn.
- 6 Formula $1;2;0; 2-3+L$ (very deep), lower labral tooth very large, upper one minute; shell $2.5-3 \times 1.5$ mm. (my original description omitted mention of the L) **lornae** VERDCOURT var. **lornae**
 (T.T., E. Usambaras).
- As above but larger, shell $4 \times 2-3.3$ mm. **lornae** var. **major** VERDCOURT
 (T.T., W. Usambaras)
- 7 A single tooth on margin of columella near base; some spiral element on shell; formula $1;1(2);0; 1+L$ or $1;2;0; 1+L$; variable in size and shape, ovate to oblong-cylindric, $3.1-4.5 \times 2-2.5$ mm. The U ones have an angular indentation in outer lip at middle sp. near *commoda* (SMITH)
 (K, Cherangani; U, Entebbe & Bwamba) A further ovate specimen from Kakamega is closely allied (plate 2, fig. 4)
- Processes restricted to middle of columella, two, or one, \pm divided 8 (§ *Conogulella*)

¹¹⁾ In *Basteria* 17, 42 (1953) the author mentioned that the apex of Nairobi examples of this species was smooth but although only finely striate or smooth in worn specimens there are undoubted spiral striae in fresh ones.

¹²⁾ Several specimens closely resembling this have been collected in E. Africa but have tooth at base of columella instead of on basal margin. They may be forms of *G. commoda*.

- 8 Two separate teeth on columella, shell 4.9×3 mm.; formula 1;1(2);1;2; marginal teeth of radula bifid **conospira** (VON MTS.)
var. **polynematica** PILSBRY (BC; U, Entebbe)
- One tooth (sometimes slightly binodulate) on columella; formula 1;1(2); 1;1(± 2) 9
- 9 Shell 6.9×3.7 mm.; basal tooth more marked; parietal tooth more oblique, more in plane of aperture **argyromontana** GERMAIN forma **arambourgi** (GERMAIN) (K, Elgon)
- Shell $6.8-7.2 \times 4.3-4.4$ mm.; basal tooth less marked; parietal tooth more erect and at 90° to plane of aperture ... **argyromontana** GERMAIN (K, Elgon)

NOTE. — The following species have some kind of regular or interrupted spiral striation on the shell and if specimens are not run down in this key should be compared with the following. In some species it is easily worn off.

Species	Referred to in key number
<i>cancellata</i> CONNOLLY	10
<i>claustrum</i> (PRESTON)	8
<i>commoda</i> (PRESTON)	8
<i>conradti</i> (VON MARTENS)	11 & 12
<i>curvilamella</i> (SMITH)	7
<i>decussatula</i> (PRESTON)	10
<i>galactochila</i> (CROSSE)	7
<i>greenwayi</i> VERDCOURT	8
<i>intrusa</i> VERDCOURT	12
<i>lautiuscula</i> GERMAIN	8
<i>lima</i> (PRESTON)	3
<i>monticola</i> (PRESTON)	8
<i>nyiroensis</i> (PRESTON)	8
<i>simplicima</i> (PRESTON)	2
<i>syngenes</i> (PRESTON)	8

KEY 6

Aperture with only one process, in parietal position. Note however that in Key 7 are species with only faintest traces of teeth on the outer lip.

- 1 Peristome slightly exerted, continuous; one tooth in middle of parietal margin; shell 2×1.75 mm., closely ribbed **lacuna** (PRESTON)
(K, Naivasha, Kijabe leg. Polhill)
- Peristome not as above 2
- 2 Shell 8.5×4 mm., finely striate, formula 1; trace; 0; 0
..... see *exogonia* in Key 7
- Shell smaller 3

- 3 Shell somewhat striate 4.75×2.2 mm. (not recollected)
 **inconspicua** THIELE (T.T., Usambaras)
 - Shell smooth, 3.6×1.4 mm.; columella with small lobe at apex
 **unidentata** K. PFR. (T.T., Usambaras)

KEY 7

Aperture with two processes, sometimes very small and sometimes a deep oblique lobe at top of columella in addition.

- 1 No internal fold present on the columella at top angle or only a faint trace 2
 - An internal fold present on the columella at top angle 9
- 2 One tooth on parietal and one on columella margin 3
 - One tooth on parietal and one on outer margin 5
- 3 Shell larger, about 8×3 mm. 4
 - Shell smaller, 5.75×2.5 mm., smooth, columella process almost an internal lobe; upper part of outer lip sinuate (var. *kilimae* has base of sinuation raised in small tooth, see Key 8) **percivali** (PRESTON) (K, Mt. Nyiro)
- 4 Both teeth minute, parietal one near junction with outer lip, shell 8×3 mm., smooth **lendix** (SMITH) (T.T., Mamboia)
 - Parietal tooth in middle of paries, shell 8×3.5 mm., smooth
 **suavissima** (PRESTON)¹³ (K, Mt. Nyiro, Mt. Kulal)
- 5 Shell extremely slender, with very crenellate sutures, 6×1.9 mm. Only one not quite adult shell is known and shows only trace of processes (Plate 3, fig. 1) sp. nov. (K, Kapenguria, leg. J.G. WILLIAMS)
 - Shell not so slender 6
- 6 Shell large, 8.5×4.6 mm., finely striate; tooth on outer lip very small or \pm non-existent **exogonia** (VON MTS.) (U, Ruwenzori)
 (= *aloyisii-sabaudiae* POLLON.)
 - Shell under 7 mm., tooth on outer lip larger 7
- 7 Aperture kidney-shaped under $\frac{1}{4}$ as wide as the shell; shell ovate, plicate particularly near the suture, 6.5×4.5 mm. (NB. the description mentions only one outer tooth but the plate shows a small additional one as well) (type not seen) **reniformis** (PRESTON) (K, Elgon)
 - Not as above 8
- 8 Shell broadly oval, 6×3.5 mm., striate, no spiral sculpture
 **brevis** (THIELE) (U, Migere, Butumbi)
 - Shell ovate, acute, 9.5×5 mm. strongly ribbed and with a spiral element in the sculpture as well; the parietal and outer lip teeth \pm enclose a

¹³) The columella is thickened above the denticle; there is also a faint thickening in the middle of the outer lip. The tendency for the shell to be broadest towards the apex is characteristic.

- small distinct sinus. (NB. there may be two extra minute thickenings in the columella at base and apex) *galactochila* (CROSSE) (T.T., Usagara)
- Shell cylindrical, 4.75×2.2 mm., faintly striate and suture crenulate, peristome thickened, a slight thickening on the outer lip and faint trace of a lobe at the top of the columella see *inconspicua* in Key 6
- NOTE. — if aperture has a barely perceptible oblique lobe or possibly a curve of the columella itself visible, continue on to couplet 9.
- 9 Tooth on the outer lip bifid; shell minute 2.7×1.3 mm., 11-12 ribs on face of body whorl *filix* CONNOLLY (K, Uasin Gishu, Elgon)
- Tooth on the outer lip simple; not as above 10
- 10 Shell large, 13.5×6 mm., cylindrical, strongly ribbed *meruensis* (D'AILLY) (T.T., Mt. Meru)
- Shell under 10 mm. tall 11
- 11 Shell minute 3.5 mm. or less in height 12
- Shell larger 16
- 12 Shell smooth, ovate-cylindrical, 3.5×1.5 mm., columella lobe and outer lip tooth both very minute *paucidens* VERDCOURT (T.T., Usambaras)
- Shell striate or ribbed 13
- 13 Apex with spiral rows of dots in very fresh specimens, rest of shell striate; shell 3.5×1.5 mm., ovate-cylindrical; outer lip with small distinct tooth, not a slab *handeieris* VERDCOURT (K, Kakamega, Mara, T.T., Usambaras)
- Not as above 14
- 14 Shell 3.5×1.7 , a small tooth on outer lip and one \pm near middle of paries sp. in BM with an MS. PRESTON name based on Taru (K, Taru)
- Not as above 15
- 15 Shell 2.6×1.2 mm., costate; labral slab very large, columella fold large and conspicuous, sides of shell rather straight (differs from typical form by teeth and in having 26 costae on body whorl) *filix* CONNOLLY var. *benetecta* CONNOLLY (K, Cherangani)
- Shell 3.1×1.8 mm., lirate; a tooth on outer lip forming a sinus with parietal tooth; columella fold deep and inconspicuous; faint traces of a basal fold present; sides of shell much more rounded (see also key 5) *impedita* CONNOLLY (K, Kakamega)
- 16 Shell with transverse striae and also faint traces of spiral striae; labral tooth tongue-like; shell ovate-conic, $6.7-8.3 \times 3.7-4$ mm. *curvilamella* (SMITH) (T.T., Mamboya)
- Shell with no spiral striae 17

- 17 Shell ovate with rounded sides, 8.5×4.75 mm., faintly striate; columella fold minute **ovalis** THIELE (U, Ruwenzori)
 - Shell \pm cylindrical with straighter sides 18
- 18 Shell $7-8 \times 3-3.2$ mm., faintly striate, parietal tooth near junction of labrum which is thickened at top and not connected with the base of the parietal tooth **kohl-larseni** (HAAS)¹⁴ (T.T., Ngorongoro)
 - Shell smaller and with parietal tooth nearer middle of paries save in Mrima species 19
- 19 Shell oblong-cylindrical, 4×1.8 mm., ribbed (very worn), formula 1;1;0; L, labral tooth prominent, in upper third, cutting off a sinus sp.
 (K, Kwale District, Mrima Hill, B. VERDCOURT, CM)
 - Not as above 20
- 20 Shell 4.5×1.75 mm. sculptured with wavy riblets; peristome reflected
 **tomlini** PRESTON (K, Naivasha)
 - Shell 5.55×2.5 mm., faintly striate; peristome thin **micans** K. PFR.
 (T.T., Kilimanjaro)

KEY 8

Aperture with three processes, with or without an additional interior lobe at top of columella.

- 1 An inset oblique lobe or shelf at top of columella (minute in *cacosystata*) 13
 - No inset oblique shelf at top of columella — a normal tooth may be present on the margin (Note, the columella itself may be visible slightly and appear like a minute lobe) 2
- 2 Labral tooth or slab grooved or bifid 3
 - Labral tooth or teeth not divided 4
- 3 Shell striate, ovate with an acute apex, 3.25×2 mm.; formula 1;1(2);0;1 (e desc.) **radius** PRESTON¹⁵ (K, Shimba Hills)

¹⁴) Mrs D. BROWN has found a shell 9×3.3 mm. with a thickening on the columella base and another with thickenings on columella and basal areas - these are only individual variations.

¹⁵) Several shells not agreeing with the description given by PRESTON (1; 1(2); 0; 1) have been seen but further collections and study are needed to elucidate their status. In the Paris collection a shell from Gazi which is typically pointed with smooth apex and costate body has the formula 1;1;2;1+L. The edges of the parietal tooth and palatal slab are parallel and cut off a narrow sinulus. The right hand basal tooth is inset; the columella and left hand elements are merely small raised nodules, the columella one being at the top on the peristome, above the deep internal fold which is produced in the middle. A shell in the type collection of the British Museum (Nat. Hist.) is very similar with a small angular sinus and three small broad folds one on the columella and two at the base; the lobe on the columella is obscured. In the general collection is a shell from Dar-es-Salaam (leg. M. CONNOLLY) which has a palatal rectangular slab with a tooth on its upper side, two inset basal teeth and a rectangular tooth on the columella.

- Shell smooth and shining, cylindrical, 3×1.2 mm.; from figure labral tooth appears to be grooved; formula 1;1 (2);0;1 **minutissima** THIELE (Zanzibar) (recollected recently by OSTHEIMER *et al.*)
- 4 Shell ovate, 6.5×4.5 mm., plicate especially near the suture; aperture kidney-shaped, small, about $\frac{1}{4}$ diameter of the shell (fide description but figure does not agree); formula 1;2;0;0 **reniformis** (PRESTON) (U, Elgon)
 - Not as above; formula 1;1;0;1 5
- 5 Shell smooth, or almost so, and shining 6
 - Shell finely to strongly striate 8
- 6 Shell narrowly cylindrical; $4.35-5.1 \times 2.05-2.1$ mm.; labral tooth slightly higher than columella tooth ¹⁶⁾ ¹⁸⁾ **percivali** PRESTON var. **kilimae** K. PFR. (T.T., Kilimanjaro, Marangu)
 - Shell ovate-cylindrical or oblong-cylindrical, over 2.5 mm. broad 7
- 7 Shell 6.75×3.25 mm., oblong-cylindrical; labral tooth slightly higher than the columella tooth. A form in the Ulugurus $6 \times 2.5-3$ mm. seems indistinguishable from this species ¹⁷⁾ (Plate 4, fig. 1) **pervitrea** (PRESTON) (K, N. Mt. Kenya)
 - Shell 5.5×2.5 mm., ovate-cylindrical, suture more impressed than in *pervitrea*; labral tooth slightly lower than columella tooth **eussoensis** (PRESTON) (K, Eusso Nyiro, Turkana)
- 8 Shell large, $9-9.2 \times 4.2$ mm.; ovoid-elliptic, very obtuse, very finely striate; columella denticle inset on slope of columella **seneciophila** GERMAIN (K, Aberdares)
 - Shell under 5 mm. 9
- 9 Shell 4.9×1.8 mm., cylindrical; summit very finely spirally and transversely striate, rest finely transversely striate; all teeth small **cacosystata** GERMAIN (= *lautiuscula* GERMAIN) (K, Elgon)
 - Not as above 10
- 10 Aperture equally 3-toothed, columella tooth and labral tooth opposite each other and parietal tooth more or less near middle of paries 11
 - Aperture with large labral tooth higher up than small tooth on base of columella; shell 3×1.5 mm., cylindrical, glossy and shining but \pm coarsely costulate **prestoni** CONNOLLY (= *E. delicatula* PRESTON) (K, Shimba Hills)

¹⁶⁾ If formula 1; trace 1;0;1+ trace L and shell 8×3 mm. see *G. lendix* in Key 7.

¹⁷⁾ There is a complex of « species » comprising *baccata*, *pervitrea*, *nepia*, *mweruensis* & perhaps *percivali*. I believe these may prove not to be distinct. In the Ulugurus 3- and 4-toothed shells occur which are undoubtedly the same species but with teeth variable.

¹⁸⁾ If formula 1;1;0; 1 + trace L and shell 6.5×2.3 mm. see *G. albogilva* in Key 9.

- 11 Shell cylindrical, $4.1-4.5 \times 2$ mm., aperture constricted at middle, the columella curved; columella and labral processes occupying most of the respective areas and closely constricting the aperture (Plate 1, fig. 4)
 **darthevellei** VERDCOURT sp. nov. (K, Turi)
 - Shell ovate or ovate-cylindrical, aperture more open with smaller processes 12
- 12 Shell 4×2.25 mm., ovate-cylindrical; aperture with \pm straight sides
 **princei** (PRESTON) (K, Mt. Kenya, Aberdares)
 - Shell $3.8-4.8 \times 2.5$ mm., ovate with rounded sides; aperture with rounded margins (only two specimens available, very different in shape, probably a new species) (Plate 2, figs. 1-2) sp. near *princei* (PRESTON)
 (T.T., Ulugurus, Bunduki, leg. BOND)
- 13 Labral slab bifid or trifid; formula $1;1(2-3); \overline{0;1}+L$ 14
 - Labral slab or tooth not divided or only very slightly grooved on upper side in species of couplet 31 21
- 14 Shell quite smooth, suture often margined 15
 - Shell at least with suture crenellate and some striation but usually distinctly striate 16
- 15 Shell with suture distinctly margined, 3.5×1.3 mm., formula $1;1(2); \overline{0;1}+L$, labral slab with pointed cusp at both ends **amaniensis** VERDCOURT
 (T.T., E. Usambaras)
 - Shell with suture not margined, $3.35-4 \times 1.4-1.5$ mm., formula as last but labral slab with large rounded cusp at top and narrower at bottom
 **translucida** K. PFR. (T.T., W. Usambaras)
- 16 Parietal tooth interlocking with cusps of labral slab or at least very closely placed to them; apical whorls in fresh specimens microspirally striate 17
 - Parietal tooth and cusps of labral slab quite distant 18a
- 17 Labral slab trifid; parietal tooth locking with top two denticles; shell ovate-elongate, 4×2 mm., apical whorls microspirally striate, rest striate (var. *hercules* (PRESTON) from K, Urguess is 6.25×3 mm.)
 **laqueus** (PRESTON)¹⁹⁾ (K, Jombene Hills)
 - Labral slab bifid 18
- 18 Shell ovate, closely ribbed, 4×2 mm., labral and basal teeth very inset, aperture very obliquely subquadrate **nyiroensis** (PRESTON)¹⁹⁾
 (K, Mt. Nyiro)
 - Shell ovate-cylindrical, costulate, 4.75×2 mm., aperture not so oblique nor teeth so inset **claustrum** (PRESTON)¹⁹⁾
 (K, Laikipia) (close to *commoda*)

¹⁹⁾ These three may well be variants of one species.

- Shell ovate-cylindrical, 4×2.3 mm., striate, aperture not oblique; formula $1;1(2);1;L$, perhaps not distinguishable from the last mentioned but further work is needed **syngenes** (PRESTON)
(= *consobrina* PRESTON *non* ANCEY) (K, Mt. Kenya)
- 18a Shell bluntly pointed, striate, 12×5.5 mm.; formula $1;1(2);1;L$; the lobe is near the peristome and is produced in the middle into a projection with a thickened margin **excavata** (VON MARTENS)
(U, Ruwenzori, Butumbi)
- Shell considerably smaller 19
- 19 Shell cylindrical, 4.25×2 mm., indistinctly costulate, suture markedly crenulate; labral tooth oblong, emarginate at the apex; formula $1;1(2);0;1+L$ **disseminata** (PRESTON)²⁰
(E.BC., U, K, Kakamega, Mara, Limuru)
- Shell ovate or oblong; labral slab with large tooth bearing denticle on upper side, apical whorls finely microspirally striate 20
- 20 Shell oblong, 3.75×2 mm.; « more cylindrical, more finely striate and having one whorl more than *commoda* » fide PRESTON; probably not distinct from following **monticola** (PRESTON)
(K, Larogi Hills, Turi, Laikipia, Nyeri)
- Shell ovate, 4×2 mm., (sometimes an additional denticle thus $1;1(2)+1;0;1+L$ **commoda** (SMITH) (K, Highlands, Mau etc.)
- 21 Formula $1;1;0;1+L$ or $1;1;0;1+L$ 22
- Formula $1;1;1;L$ or $1;1+1;0;L$ or $L+1;1;1;0$ (note if shell $10-14 \times 6-7.6$ mm. and columella lobe is near surface i.e. could be mistaken for a surface lobe or tooth see *excruciata* in next key) 27
- 22 Shell smooth and glossy 23
- Shell striate or at least the suture crenellate 24
- 23 Shell cylindrical, 7×3 mm.; formula $1;1;0;1+L$; parietal tooth near right hand angle **labiotuberculata** CONNOLLY
(T.T., Dabaga to Mtitu, leg. Wirth (these details were omitted in original reference but added by CONNOLLY to a reprint)
- Shell cylindrical, 3.9×1.5 mm.; formula $1;1;0;1+L$; parietal tooth in middle of paries **devia** CONNOLLY (U, Elgon)
(= *irregularis* CONNOLLY MS)
- 24 Shell narrowly cylindrical, very finely striate, $4.5 \times 1.9-2$ mm., teeth small, columella lobe minute **cacosystata** GERMAIN (K, Elgon)
- Shell not as above, columella lobe larger and conspicuous 25
- 25 Shell ovate-cylindrical, 3.3×1.6 mm., slightly striate but shining, teeth obstructing the aperture **strictilabris** ANCEY (T.T., Mamboya)
(= *E. microstoma* SMITH *non* MLLDF.)
- Shell cylindrical, suture crenellate 26

²⁰ Since there are traces of a very internal palatal fold this belongs to *Ptychotrema* § *Wilmattina* PILSBRY but I am not certain this generic transference is justifiable.

- 26 Shell cylindrical or oblong-cylindrical 4.25-4.5 × 1.75-2 mm. (var. *pusilla* (PRESTON) is 3.25 × 1.5 mm. **disseminata** (PRESTON)
 (E. Congo, U, Kigezi etc., K, Kakamega etc.)
 (= *E. ingeziensis* PRESTON = *E. burungaensis* PRESTON)
 - var. *mbararaensis* (PRESTON) is 3.5 × 1.75 mm. and seems distinctive since formula is 1;1;0; 1+L and the columella tooth almost overhangs the lobe.
 - var. *kekumegaensis* CONNOLLY is 3.8 × 1.7 mm. strongly crenellate at suture but otherwise weakly striate).
 - Shell narrowly cylindrical, basal tooth near base of columella see *candela* infra
- 27 Shell ovate, 4 × 2 mm., striate; parietal and labral teeth forming an almost circular sinus at right hand top corner of aperture; columella lobe « ± on the paries » when viewed from front; L+1;1;1;0 **peculiaris** (SMITH) (T.T., Mamboya)
 - Formula and sinus quite different 28
- 28 Shell smooth and shining, cylindrical, 4.75-5.1 × 1.85-1.95 mm., columella fold angular in the middle, parietal and labral teeth very small (note see also *columella* in next key since in that species the columella process is almost an inset lobe; shell 2.75 × 1 mm.) **ludwigi** VERDCOURT & VENMANS (T.T., W. Usambaras)
 (= *usambarica* K. PFR. non CRAVEN; = *caroli* VERDCOURT non KOBELT)
 - Shell striate, sometimes very faintly so 29
- 29 Apical whorls with faint delicate spiral striae, visible only in fresh specimens; shell oblong-cylindrical, 2.5 × 1 mm., younger whorls strongly ribbed; labral tooth very large in comparison with size of aperture (note my original description of this species is not entirely accurate) **greenwayi** VERDCOURT (T.T., W. Usambaras, Mkuzi)
 - Apical whorls not delicately spirally striate 30
- 30 Shell ovate-cylindrical with rapidly narrowing and acute apex, 4.5 × 2.1 mm.; apex smooth rest costate; formula 1;1 (faintly bilobed)+1 (inset);0;L **calva** CONNOLLY ²¹) (K, Taru, Malindi)
 - Shell blunter 31
- 31 Shell strongly striate, ovate-cylindrical, 7-7.5 × 3.4-3.5 mm., labrum angled in middle and its tooth with trace of cusp on upper side at base **conicodentata** K. PFR. (T.T., between ARUSHA & MOSHI)
 - Shell narrowly cylindrical, 4.3 × 1.4 mm., labrum not angled, tooth large and triangular, shell with faint striae an last three whorls **candela** CONNOLLY (K, Taru Desert)

NOTE. — var. *minor* CONNOLLY is 3.3 × 1.2 mm. A shell from Duharu Hill, Voi leg. ALEXANDER has a crenellate suture and is ± 3.4 × 1.1 mm.; it is probably a form of this species, plate 3, fig. 3. Malindi material (leg. HARRIES) is of typical size but also crenellate below suture and striate behind the aperture.

²¹) This is scarcely more than a variety of *G. radius* (PRESTON).

KEY 9

Aperture with four processes, with or without a deep inset columella lobe in top angle. If there is a labral triad see also *gouldi* var. *globulosa* in Key 11 since this might be presumed to have a trifid labral slab rather than three teeth.

- | | |
|---|---|
| 1 Shell very large, 17.7-22 × 11-11.3 mm., smooth and glossy, formula 1;2;1;L and also a ridge 2.7 mm. long, situated 3 mm. from the edge on outer lip | porcina CONNOLLY ²²) (U, Elgon) |
| - Shell smaller | 2 |
| 2 Shell over 10 mm. tall | 3 |
| - Shell under 10 mm. tall | 4 |
| 3 Shell ovoid or cylindrical-oblong, 10.5-13.9 × 6-7.5 mm. ± smooth but with growth lines and faint spiral striae; formula 1;2;1;L or 1;1;1;L; the columella lobe is near the surface | excruciata CONNOLLY
(U, Ruwenzori, K, Elgon, Kericho) |
| - Shell ovate, 11 × 5.6 mm., shining but striate behind labrum; formula 1;1;1;1; (VON MARTENS gives 2;1;1;1 and types show trace of a second parietal tooth high up and to the right of the main tooth) | newtoni (SMITH) non GIRARD (T.T., Mamboya) |
| 4 Formula 1;1;1;1; mostly smooth | 5 |
| - Formula not as above, sometimes 1;1;0;1+1 | 7 |
| 5 Shell oblong-obovate, broad at top, faintly striate, 8.5 × 4.5 mm., columella process a surface lobe | cruciata (VON MARTENS)
(T.T., Ukinga Mts.) |
| - Shell neither obovate nor so large | 6 |
| 6 Shell cylindrical, shining but with suture crenellate, 6 × 3 mm. | aequidentata (SMITH) (T.T., Mkata, Ukinga) |
| - Shell cylindrical, shining 2.75 × 1 mm.; columella process inset, almost a lobe (Plate 4, fig. 6) | columella (SMITH)
(K, Mau, Uplands, Ngong, Nairobi, Thika) |
| 7 Formula 1;1(2);1;1; shell ovate-cylindrical, acuminate, 7.8 × 3.3 mm., pale olive, apex with very faint spiral striae, remainder costulate; peristome thick | carpenteri CONNOLLY (U, Elgon) |
| - Not as above | 8 |
| 8 Shell ovate-cylindrical, striate. 6.5 × 3 mm.; formula 1;1(2);1;1+L. The lobe has a thickened edge | noltei BOETTGER (T.T., Moshi) |
| - Not as above | 9 |

²²) With the exception of *G. grossa* (VON MARTENS) and *G. usagarica* (CROSSE) both in § *Primigulella* this is the largest species in East Africa.

- 9 Formula 1;1(2)+1; $\overline{0;1+L}$; apical whorls spirally striate, rest striate; shell 4×2 mm. see *commoda* in Key 8
 - Not as above 10
- 10 Some kind of internal lobe present at top of columella, often small .. 11
 - No lobe present at top of columella 15
- 11 Shell cylindrical, minute, worn but smooth, 2.75×0.9 mm., formula 1;1;1;1+L (Plate 3, fig. 6) sp. nov. allied to *G. caryatis* & *G. candela* CONNOLLY (K, Machakos, leg. C.F. HEMMING M 53)
 - Without the above characters combined 12
- 12 Formula 1;1;0; 2+L 13
 - Formula not as above 15
- 13 Shell ovate-oblong, quite smooth save suture margined; 7.25×3.75 mm. (in description said to lack internal columella projection but shown in the figure) *odhneriana* DUPUIS (= *E. arthuri* PRESTON non DAUTZ.) (K, Jombene Hills)
 - Shell very faintly to more strongly striate 14
- 14 Shell oblong, finely striate, 6×3 mm. *baccata* (PRESTON)²³ (K, Mathews Range)
 - Shell elliptic-oblong, faintly striate but shining, 7×3.5 mm. *mweruensis* (PRESTON)²⁴ (K, Mweru & Jombene Hills)
- 15 Shell 8×4.3 mm., suture crenellate otherwise smooth; formula 1;1(2);1;1 *pevorum* PRESTON MS. in BM. annotated by CONNOLLY as being = *fortidentata* but not correct (K, Mweru)
 - Not as above; formula 1;1;0;2 or 1;1;0;1+1 16
- 16 Shell small, 2.75×1 mm., elongate-conic, tapering to a subrounded apex rather like a *Carychium* in shape; two large columella denticles close together and inset at middle *shandae* CONNOLLY (K, Cherangani Hills)
 - Not as above 17
- 17 Parietal denticle in mid position, shell cylindrical, smooth and glossy, 3.9×1.5 mm. (see also in 1;1;0;1+L in Key 8) *devia* CONNOLLY (U, Elgon)
 - Parietal process angular in position, shell larger 18

²³) VERDCOURT E G (T.T., Pienaars Heights, Kondo Rd., leg. P.R. HESSE) is 8.5×3.5 mm. and rather more striate. The single specimen, in Mus. Comp. Zool. Harvard, is probably a variant of *baccata* which belongs to the complex of species mentioned below (Plate 3, fig. 5).

²⁴) This belongs to a complex of species and is probably not specifically distinct from *G. pervitrea* and several other species only differing by small details of dentition.

- 18 Shell cylindrical or oblong with rather straight sides 19
 - Shell oblong-ovoid with more or less rounded sides, \pm smooth save near peristome, $5.2-6 \times 2.5-3.1$ mm. member of complex mentioned at end (T.T., Ulugurus)
- 19 Shell almost smooth but very finely striate, 6.5×2.3 mm., peristome thick, both columella denticles minute (e desc. but type is 1;1;0;1, see Key 8)
 *albogilva* GERMAIN (T.T., Moshi, Rau R.)
 - Shell almost smooth, save back of peristome, $3.5-5.3 \times 2-2.5$ mm., columella denticles obvious (merges with *marionae*) sp. probably a var. of *nepia* CONNOLLY²⁵) with extra denticle or *marionae* (PRESTON) (T.T., Ulugurus) (plate 4, fig. 5)
 - Shell oblong or oblong-cylindrical, $3.25-4 \times 1.5-1.75$ mm., smooth save back of peristome, lowermost columella denticle sometimes small
 *marionae* (PRESTON) (K, Shimba Hills and nearby forests)

There is a distinct complex of forms centred around *pervitrea*, *nepia*, *baccata*, *mweruensis* and *marionae*. The first two are 3-toothed and the rest 4-toothed, the additional denticle at the base of the columella being proved unstable by long series from Bunduki in the Ulugurus (leg. BOND) which vary enormously in size and are sometimes 3- and sometimes 4-toothed. This series can be sorted into a variety of species but from shells alone it is difficult to do more than suspect that only one polymorphic species is involved. *G. albogilva* GERMAIN may be in the same group. (See Plate 4, figs. 1-5). See also *foveolata* in Key 10 - could be considered 1;2;0;1+2L. The paratype I examined in BM appeared to be 1;2;1;L.

KEY 10

Aperture with five processes, with or without a deep inset columella lobe in top angle.

- 1 Sculpture \pm decussate, some microspiral element cutting the transverse lines throughout 2
 - No spiral element evident 3
- 2 Shell ovate-cylindrical, 11.75×5.5 mm., costulate and with spiral striae, suture crenellate, formula 1;2;1;1, the columella process lamelliform
 *decussatula* (PRESTON) (U, Kigezi)
 - Shell cylindrical, 6.5×3.0 mm., first two whorls with transverse microstriae; faint spiral striae begin on the 2nd. whorl and continue on the rest, cutting the fine transverse striae on the last 3.5 whorls; formula 1;2;1;1 (var. *minor* CONNOLLY measures 4.3×2.2 mm.)
 *cancellata* CONNOLLY (K, Larogi Hills)
- 3 Shell very small, under 3.7 mm. tall 4
 - Shell exceeding 4 mm. in height 5

²⁵) *G. nepia* has the formula 1;1;0;1 + trace L and is a member of the *pervitrea* complex and was described from Portuguese East Africa (smooth and 5.3×2.2 mm.).

- 4 Shell ovoid, more ovate than next species; aperture more rectangular and teeth stronger; 2.75×2.75 mm., formula 1;2;1;1 (Figure shows a shell 17.5: 10 and specimens identified *e desc.* are $2.75-3 \times 1.5-1.6$)
 **aberdarensis** (PRESTON) (K, Kinangop, Uplands, Karura)
- Shell oblong-ovoid, or ovate-cylindrical, striate, $3.5 \times 1.5-2$ mm.; formula 1;2;1;1 **insolita** (SMITH) (= *E. keniana* PRESTON)
 (K, Mau, Limuru, Naivasha)
- Note in Smith's figure the formula seems to be 1;3;1;2 but the formula from the description is 1;2;1;1 (*E. keniana* var. *parvula* PRESTON is 2.5×1.5 mm. (K, Jombene Hills-Nyeri) and var. *intermedia* PRESTON is 3×1.75 (K, Jombene Hills).
- 5 Shell smooth and shining, $7.5-11 \times 4.4-5$ mm., formula basically 1; $1+1;0+1;1$, upper columella lamella inset, upper tooth sometimes bifid 6
- Shell usually with at least suture crenellate or if smooth then smaller; teeth differently arranged (If formula 2;1;1;1 see *newtoni* in Key 9) 7
- 6 Shell $7.5 \times 3.8-9.2 \times 4$ mm.; formula 1;2; $0+1;1$ (the columella tooth is really a lamella in the middle of a lobe) **planidens** (VON MARTENS)
 (= *quinquedentata* (BOETTGER))
 (Congo, T.T., P.E.A. Nyasaland and Rhodesia)
- Shell $8.6-11 \times 4.5$ mm., formula 1;1(2)+1;0+1;1 **laevigata** (DOHRN)
 (= *E. karongana* SMITH)
 (T.T., Bagamoyo (B. VERDCOURT), Zanzibar (HAAS, 1929), Nyasaland)
- NOTE. — both SMITH & PILSBRY were in error in sinking *planidens* with *laevigata*).
- 7 Shell cylindrical, smooth and glossy, 5.9×3.1 mm., formula 1;2;1;1
 **duncani** CONNOLLY (K, Cherangani)
- Shell striate or at least suture crenellate 8
- 8 Shell over 12 mm. tall, formula 1; 2; 1; 1 9
- Shell under 10 mm. tall 11
- 9 Shell elongate-cylindrical, 12.5×4.25 mm., shining, irregularly plicate and suture crenellate **pergrata** (PRESTON) (U, Elgon)
- Shell oblong-cylindrical, not so narrow, striate or costulate 10
- 10 Shell 13×6 mm., striate (description gives 1;2;1; 1 but figure depicts 1;1;1;1 quite definitely) **excavata** (VON MARTENS)
 (U, Ruwenzori, Butumbi)
- Shell 12.25×5.75 mm., costulate (*e desc.* sounds similar to last)
 **viatoris** (PRESTON) (K, Mt. Nyiro)
- 11 Shell 4.25×1.5 mm., cylindrical, suture crenellate, rest smooth save for last part of last whorl; formula 1;2;0;2+L (note basal columella denticles are situated one behind the other) **foveolata** (PRESTON)
 (K, Gazi, Vipingo)
- Not as above 12

- 12 Shell ovate-oblong, 4.5×2.25 mm., acuminate at apex, covered, save apical whorls, with coarse curved costae. Formula 1;1;1;2+L, the two lowermost teeth are very inset and small; the upper columella process is merely a thickening of the columella margin; the columella lobe has a rounded prominent process in its middle (could be mistaken for 1;1;0;L or 1;1;1;L) **radius** (PRESTON) var. (K, Mrima Hill Forest)
 - Not as above 13
- 13 Shell obovate-cylindrical, with very blunt almost flat apex, smooth and shining save for \pm crenellate suture; 7×3.5 mm. Formula 1;2;1;1 the two small labral teeth very close (description from THIELE²⁶)
 **tudes** (VON MARTENS) (T.T., Kilimanjaro)
 - Shell not obovate-cylindrical 14
- 14 Outer lip with two teeth from a common base and a conspicuous lobe present at top of columella; formula 1;2;1;1+L, shell 5×2.6 mm., ovate, costate **soror** (SMITH) (T.T., Mamboya)
 - Not as above 15
- 15 Columella tooth thick, usually bifid or emarginate but occasionally \pm entire; shell cylindrical, costulate, $4.75-8.5 \times 2.5-3.25$ mm. (var. *laevis* is smooth). Formula 1;2;1;1 (± 2) (§ *Molarella*) **funerea** (PRESTON)
 (K, mostly in north)
 - Columella tooth not bifid nor thickened, shell usually wider and less cylindrical in outline 16
- 16 Shell ovoid-oblong, $5.5-7.5 \times 3.5$ mm., faintly striate and suture crenellate, striate particularly behind the labrum where faint spiral elements are also visible in the interstices, formula various, 1;2;1;1-3. The main midcolumella fold is never absent but either or both of the small denticles may be absent; the two labral teeth have a common base at the middle of the labrum (Plate 1, figs. 1-2) **ulugurensis** sp. nov.
 (T.T., Ulugurus, Bunduki, leg. BOND)
 - Not as above; two labral teeth separate 17
- 17 Shell oblong-ovoid, striate, 7×3.5 mm., formula 1;1+1(2);1;1, two labral teeth well separated, the upper one small and bordering the parietal tooth sinus; columella tooth situated on oblique fold **consociata** (SMITH)
 (T.T., Kidete)
 - Shell cylindrical, striate, $7.8-9.2 \times 3.5-3.7$ mm.; formula, 1;2;1;1, the labral and basal teeth very small, two labral teeth close and equal; peristome minutely punctulate (Plate 5) **kulalensis** sp. nov.
 (K, N.F.P., Mt. Kulal)

²⁶) THIELE shows the columella process as a pointed lobe at top of columella in angle i.e. could be 1;2;1;L or 1;1(2);1;L. I collected a shell on Kilimanjaro at 6500' with this very blunt obovate shape and an angled lobe-like columella process but only one small denticle on the outer lip i.e. 1;1;0;L but undoubtedly the same species. VON MARTENS shows a cylindrical shell and depicts the columella process as a tooth lower down and the labral teeth more separate. The types vary considerably; see description in footnote on page 4.

mula 1;2;1:1 or 2;2;1;1, labral and basal teeth well-marked and separated (Plate 3, Fig. 4) **fortidentata** (SMITH)
 (K, Elgon, Molo, T.T., Mamboya, Babati)

KEY 11

Aperture with six processes, with or without a deep inset lobe at top of columella in the angle.

- 1 Shell small 3.5 × 2 mm., ovoid-cylindrical; apical whorls spirally and transversely striate; formula 2;3;1;L, two upper labral teeth minute, the lower of the two on top of the main labral process; a marked sinus to right of angular lamella **conradti** (VON MARTENS) var. **reductidentata** VERDCOURT (T.T., E. Usambaras)
 - Not as above 2
- 2 Two parietal processes, one small and one large (the angular) 3
 - Only the angular parietal tooth present 5
- 3 Shell oblong-cylindrical, striate, 5.75 × 2.75 mm.; formula 2;2;1+1;0+L, columella lobe with projection in the middle **coeni** (PRESTON) (U, Elgon)
 - Shell larger with different dentition 4
- 4 Shell oblong-cylindrical, suture crenellate, 8.4-9 × 3.8-4.5 mm.; formula 2;2;1;1 **fortidentata** (SMITH) (K and T.T.)
 - Shell cylindrical, almost smooth, shining but very finely striate, 9.5-10 × 4.25-5 mm.; formula 2;2;1;1 **subsellae** HAAS (T.T., Oldeani, Ngorongoro)
- 5 Shell striate or at least with crenellate suture 10
 - Shell smooth save for growth lines, usually shining 6
- 6 Columella strongly curved inwards and with a « vertical » lobe at middle; shell oblong-ovoid, 2.75 × 1.25 mm., suture margined; formula 1;2-3;1;1 (description does not agree with figure) **curvicolumella** (PRESTON) (K, Jombene Hills - Nyeri)
 - Columella straighter and other details different 7
- 7 Shell large, ovoid-oblong, 18.25 × 9 mm.; formula 1;3;1;1; smooth save for growth lines. (lowest palatal denticle is very small) ... **hector** PRESTON (K, Jombene Hills - Nyeri, Mweru)
 - Shell much smaller 8
- 8 Shell cylindrical-oblong 9.5-10 × 4.5 mm.; formula 1;3;0;1+1, the lower labral one and lower columella one almost basal (var. *liederi* (VON MAR-

- TENS) ²⁷⁾ is 12 × 6 mm., with upper columella tooth stronger and with a protuberance (T.T., Kitochau) **sexdentata** (VON MARTENS)
 (= *E. hanningtoni* SMITH) (Zanzibar, Central T.T., Rhodesia)
- Shell very much smaller with different dentition, suture margined 9
- 9 Shell cylindrical, 3.5-4 × 1.5 mm.; formula 1;2;3;L, there being one large labral slab, a minute labral denticle in the sinus near parietal tooth, a large basal tooth and two minute inset denticles visible behind sinus connecting the basal tooth and labral slab (Plate 2, fig. 3) **bondi** sp. nov.
 (T.T., Ulugurus, Bunduki, leg. BOND)
- Shell cylindrical, 2 × 0.75 mm.; formula 1;1+4;?;L. The description does not make it clear if the four small teeth below the big labral slab extend on to the base or not **jod** (PRESTON) (K, Shimba Hills)
- 10 Outer lip with three teeth 11
- Outer lip with two teeth see *ulugurensis* in Key 10
- 11 Shell oblong-elliptic, 4.75-5.5 × 2.75-3.3 mm., strongly ribbed; formula 1;3;1;1, the parietal tooth almost bifid and the labral teeth forming a triad from a common base; the columella process is lobe-like
 **gouldi** (PFR.) var. **globulosa** (K. PFR.)
 (= *globulosa* K. PFR. = *gouldi amaniensis* VERDCOURT)
 (T.T., Usambaras)
- Shell oblong-cylindrical, 11.3-12.7 × 5.8-6.5 mm.; formula 1;3;1;1, labral teeth not forming a triad (columella one sometimes ± bifid?)
 **sellae** POLLONERA (U, Ruwenzories, Entebbe;
 K, Molo, Marsabit, Cherangani Hills, Kakamega, Naivasha)

KEY 12

Aperture with seven or more processes, with or without an inset lobe on columella at top angle.

- 1 Shell elongate-ovoid, about 5-6 × 3 mm., striate; formula 3;3;1;3, mid-labral and mid-parietal teeth much larger than those on either side
 **subringens** CROSSE (= *E. ringens* CROSSE non ALBERS
 = *bourguignatiana* ANCEY MS) (T.T., Usagara)
- Aperture with less than 10 teeth 3
- 2 Formula 1+1(3);2;2, horizontal, one behind the other; 1(2); the left parietal denticle is on a small horizontal fold; shell ovoid-oblong, ribbed, probably about 12 mm. long but dimensions not stated
 **lobidens** (THIELE) (T.T., Ukami Mt.)
- Not as above 3

²⁷⁾ The main columella element in this variety is really an internal lobe with the thickened edge reaching right out to the peristome.

- 3 A marked sinus to the right of the parietal tooth; apical whorls both spirally and transversely striate and appearing faintly papillate or decussate 4
 - Not as above 5
- 4 Shell ovoid-oblong, $3.8 \times \pm 2$ mm.; formula 2;1+2;1;1+L
 **conradti** (VON MARTENS) (T.T., E. Usambaras)
 - Shell ovoid, $4.25-4.75 \times 2.5-2.75$ mm.; formula 1+1(2);3;1;1+L
 **intrusa** VERDCOURT (T.T., Usambaras)
- 5 Shell oblong-ovoid, finely striate, traces of spiral striae present, 7.5×4 mm.; formula 1;1;0-4;1-2+L, dentition variable**camerani** (POLLONERA) (U, Ruwenzori, Bwamba) (this would appear to be yet another member of the *baccata* complex previously mentioned)
 - Shell oblong-ovoid, suture crenellate, whorls slightly striate, more strongly so behind labrum where traces of spiral striae are also visible, $5.5-7.5 \times 3.5$ mm., formula 1;2;1;1-3 see *ulugurensis* in Key 10

SPECIES UNKNOWN

Pupa (*Ennea*) *sex-dentata* TAYLOR, 1880 (*non* VON MTS., 1869) described from Zanzibar.

Shell cylindrical, faintly striate, 4.83×1.9 mm., formula 1;2;1;1(2) or 2. Needs a new name. Reference to a figure is made with the description but none was ever published. Possibly near *G. gwendolinae*.

Pupa *turricula* TAYLOR, 1880 described from Zanzibar.

Shell brownish, fusiform, acutely pointed, with close regular transverse striae, those on the last whorl further apart and larger. Whorls 8, very convex, the antipenultimate broadest. Shell 3.43×1.9 mm., formula 1;1;1;1+L, the anterior, small, deeply seated, sometimes indistinguishable. Probably a *Gulella*²⁸⁾ but colour wrong. Not recollected as far as I know. The whereabouts of the types of the above two is unknown to me.

EXCLUDED SPECIES

Ennea boccatii POLLONERA (= *linguifera* VON MTS.) in Kobelt's list is error for *roccatii* POLLON.

E. insulsa PRESTON = *Gastrocopta klunzingeri* (JICKELI)

E. iota PRESTON = *Nesopupa iota* (PRESTON)

E. iredalei PRESTON = *Pupilla fontana* (KRAUSS)

E. kigeziensis PRESTON = *Ptychotrema kigeziense* (PRESTON)

E. masakaensis PRESTON = *Ptychotrema masakaense* (PRESTON)

E. mutandaensis PRESTON = *Truncatellina mutandaensis* (PRESTON)

²⁸⁾ PILSBRY, Man Conch. 27, Index to vols. 24 to 27, p. 368 also suggests that it is a *Gulella*.

- E. naivashaensis* PRESTON = *Truncatellina naivashaensis* (PRESTON)
E. rumrutiensis untraced MS. name²⁹).
E. sperabile PRESTON = *Ptychotrema sperabile* (PRESTON)
E. taylori GIBBONS = *Streptostele taylori* (GIBBONS)

DESCRIPTIONS OF NEW SPECIES WITH SOME
NOTES ON SEVERAL LEFT UNDESCRIBED.

***Gulella bondi* sp. nov.** (Plate 2, fig. 3).

Shell small, imperforate, cylindrical or slightly broadest near the apex, \pm shining, sides straight and parallel, apex very rounded. Whorls 7, almost flat, smooth save for occasional growth lines, very vague spiral scratches (completely smooth and shining under an ordinary lens) and a few transverse ribs just behind the peristome. Suture only slightly oblique, margined. Aperture quadrate, rounded below, obliquely truncate above, conspicuously at an angle to the longitudinal axis of the shell, peristome white, considerably thickened but ends not joined by a thick parietal callus. Aperture with 7 processes; angular lamella short, thick, rather curved, descending back into aperture and continuous above with the thick peristome; a small tooth in the sinus to the outside of the parietal lamella; main outer process large and rounded, corresponding to a large external pit behind the peristome, and with small « bumbs » on its top and bottom edges; basal lamella small, rather inset and corresponding to a small external pit; in the sinulus between the outer and basal processes are two deeply inset denticles; at the top of the columella is a large, very deeply inset fold with a thickened outer margin.

Height, (3.5)-4 mm., breadth, 1.5 mm.

Height of aperture, 1.3 mm., breadth of aperture, 1.1 mm.

Length of last whorl, (1.9-) 2.1 mm.

TANGANYIKA. Uluguru Mts., Bunduki, in debris on floor of evergreen forest, leg. BOND (Holotype, Musée Royal de l'Afrique Centrale, Tervuren, paratypes in Coryndon Museum, Nairobi and British Museum (Nat. Hist.)).

***Gulella kulalensis* sp. nov.** (Plate 5).

Shell cylindrical, with narrow umbilical pit, apex broadly rounded, dome-shaped. Whorls 7 $\frac{1}{2}$ -8, flattened, very slightly convex, suture lightly impressed, margined below; apical 2 $\frac{1}{4}$ whorls smooth, rest with very curved costulae which are rather irregular and strongest on the upper half of each whorl; under a strong magnification the last whorl is seen to be finely shagreened with a sort of trelliswork of minute raised lines which imparts a silky lustre at low magnifications. On the under side of the last whorl there is an additional sculpture element consisting of irregular very short lines

²⁹) A specimen of this in the Berlin Museum labelled as a paratype is oblong, striate and has the formula 1;2;1;1.

crossing the striae but not forming spiral lines, giving an effect rather like that of cut glass at low magnifications. Yet another form of sculpture is found in the aperture, the reflected part of the peristome and the teeth being very densely and very minutely punctulate. The aperture is subquadrate but with rounded outer and basal margins; the peristome is strongly reflected all round. There are 5 teeth, a distinct angular lamella hollowed out on the left side, two small but distinct nodular teeth in the middle of the outer lip, a similar but indistinct basal nodule and a strong, rather deeply set process on the columella.

Height, 7.8-9.2 mm., breadth, 3.5-3.7 mm.

Height of aperture, 3-3.2 mm., breadth of aperture, 2.75-3.0 mm.

KENYA. Northern Frontier Province, Mt. Kulal, in ground debris of *Olea - Teclea* forest, 7500 ft. July 1958, B. VERDCOURT (holotype and paratype, Musée Royal de l'Afrique Centrale, Tervuren) and paratypes in Coryndon Museum and British Museum (Nat. Hist.). The holotype is the only good specimen out of the six found, it is also the smallest, 7.8×3.5 mm. This species appears to be related to *G. viatoris* (PRESTON) from the neighbouring mountain of Nyiro but that is an altogether larger species.

***Gulella cuspidata* sp. nov.** (Plate 3, fig. 2).

Shell umbilicate, ovoid, extraordinarily acuminate and pointed. Whorls $7 \frac{3}{4}$, initial $3 \frac{1}{4}$ whorls forming a conical apex, slightly convex with scarcely impressed suture, very finely but regularly striate, appearing almost smooth to the naked eye, rest of the whorls with spaced lamellae; ± 10 , ± 20 , ± 20 and ± 24 being visible on the whorls when shell is held as figured, the whorls being counted from the fourth visible one downwards, lamellae strong and very curved, particularly at the bases just before they meet the suture. First two lamellate whorls convex, angled below, particularly the first, suture impressed, the next two convex with suture less impressed. Last $\frac{1}{2}$ whorl very compressed, keeled and grooved below, angled, more finely striate. Aperture narrowly oval, peristome reflected, not connected at top of aperture by a thick callus; parietal lamella short, obliquely bifid where it meets the body whorl, inrunning; main labral process large and inrunning, bearing a tooth above near its base which cuts off a small but distinct sinus, bounded on the other side by the free end of the parietal tooth. This sinus is best visible if the shell is held somewhat obliquely. There is a second, smaller, more deeply inset lamella (below the main process) which curves upwards and inwards and a similar one at the junction of the base and the columella. There is a third very similar lamella one third of the way up the columella and two thirds of the way up is an inset, much broader lamella which enlarges inwards. The dimensions of the three specimens found are

Height, 4.8, 4.7, 4.3 mm. Breadth, 2.5, 2.5, 2.4 mm.

Height of aperture, 1.5, 1.5, 1.4 mm. Breadth of aperture, 1.1, 1.1, 1.1 mm.

TANGANYIKA. W. Usambaras, Shume, Worlds View, in rather dry evergreen forest, Dec. 1956, leg. B. & L. VERDCOURT (Holotype, Musée Royal de l'Afrique

Centrale, Tervuren, paratype, Coryndon Museum, paratype, British Museum (Nat. Hist.).

I know of no *Gulella* which combines the strange characters of this species — the very pointed almost smooth apex, contrasting with the strongly costate, almost lamellate, later whorls and the very complicated dentition. It comes from an area which contains many endemic plants and is probably of ancient origin. It shows some resemblance to *G. pretiosa* (PRESTON) and its allies; and even more to *G. radius* (PRESTON) but that is much less cuspidate and the teeth are very differently arranged.

***Gulella dartevellei* sp. nov.** (Plate 1, fig. 4).

Shell cylindrical or oblong, narrowly umbilicate, slightly broader above, apex rounded, dome-shaped. Whorls $7\frac{1}{2}$ - $8\frac{1}{2}$, flattened, suture lightly impressed; apical $2\frac{2}{3}$ whorls almost smooth, rest finely costulate, interstices not entirely smooth but vaguely shagreened. Aperture subquadrate, constricted in the middle, peristome \pm reflexed; 3-toothed; a curved parietal lamella which is exerted slightly beyond the plane of the aperture, situated so that curved and opposite to each other. The former one is in the middle of the aperture is divided $\frac{2}{3}$; $\frac{1}{3}$. The columella and labral processes are large, columella and takes up one half of it. The labral process is in the lower third of the labrum and takes up nearly a third of it. These processes are merely the concave sides of deep pits on the outside of the aperture and are curved so as to cut off a sinus at the base of the aperture.

Height, 4.1-4.5 mm., breadth, 1.9-2 mm.

Height of aperture, 1.4 mm., breadth of aperture, 1.1 mm.

KENYA. Turi Forest, April 1953, D. C. THOMAS (holotype, Musée Royal de l'Afrique Centrale, Tervuren) and paratypes in Coryndon Museum and British Museum (Nat. Hist.).

I sent this species to Dr. DARTEVELLE some time before his death and he declared it to be a new species. I have checked this. The name he had suggested for it (*separata*) has already been used by STURANY. *G. curvicolumella* (PRESTON) has a rather similar columella but is otherwise quite different. *G. princei* (PRESTON) a larger shell, has teeth in about the same position but does not have the cylindric form and constricted aperture. Mr. D. C. THOMAS and his children have collected a large number of small species of snails including many I have been unable to work out.

***Gulella ulugurensis* sp. nov.** (Plate 1, figs. 1 and 2).

Shell oblong-ovate to oblong-cylindrical, with a deep depression in the umbilical area but no true umbilicus, \pm shining, sides straight or convex, narrowed to the apex which is rounded. Whorls $7\frac{1}{2}$, slightly convex, upper sculptured with rather irregular, indistinct ribs, lower with even more indistinct ribs, often only for a short way below the strongly crenellate, scarcely oblique suture; just behind the peristome the ribs are strong and regular for up to 1-2 mm. Aperture subquadrate or oval, narrowed below and some-

times narrowest at the middle. Dentition very varied; parietal lamella situated about $\frac{1}{3}$ of the upper breadth of the aperture from the top outer edge of the peristome, short, slightly curved and inrunning; outer lip process corresponding to an outside pit, bifid or looking like two folds with a common base; basal process minute or larger and lamelliform; slightly over half way up the columella is an often downwardly sloping lamella, below it an inset denticle not always present and above it, often but not always, a parallel thickening of varying strength crossing the actual peristome. A depressed ridge in the umbilical pit coincides with the main columellar lamella. The columella itself forms a curve at the top corner, deep within the aperture.

Height, 5.5-7.5 mm., breadth, 3.0-3.3 mm.

Height of aperture, 1.9-2.7 mm., breadth of aperture 1.5-2 mm.

Length of last whorl, 3-3.5 mm.

TANGANYIKA. Uluguru Mountains, Morogoro, Bunduki, debris on forest floor, leg. BOND (holotype, Congo Museum, Tervuren, paratypes in British Museum (Nat. Hist.), Coryndon Museum, and Museum of Comparative Zoology, Harvard).

The shell chosen as the holotype is oblong-cylindrical, 6.5×3.3 mm., with a bifid process on the outer lip, a trace of a denticle at the base and a similar trace at the bottom of the columella; the process higher up on the columella has an indistinct thickening crossing the peristome above it. Allied to *G. duncani* but with more teeth and a crenellate suture.

Gulella (Tortigulella) sp. near *G. commoda* (SM.), *G. cara* PILSBRY and *G. lessensis* PILSBRY.

The group of species allied to *commoda* will need sorting out when more critical studies are carried out on individual species of this large genus.

In Kakamega Forest, Kenya, I took a single ovate shell, 3.1×2 mm., very worn but with traces of spiral sculpture on the apical whorls and ribs on the lower whorls. This is illustrated in plate 2, fig. 4 which clearly shows the apertural dentition. (Coryndon Museum).

G. sp. aff. *adjacens* (PRESTON).

A single worn shell collected by C. F. HEMMING on Mt. Urageess in the Mathews Range appears to represent a new species. The shell is ovate-oblong, subobtuse at the apex, umbilicate, 4.5×2.5 mm., lamellate but with finer striae between the lamellae. There is a large central parietal lamella which is bent and bifid at the apex, a process deep within at the base of the columella and another at the base of the outer lip; the aperture is too damaged to be sure that there are no other elements.

Gulella sp. allied to *G. candela* CONNOLLY and also to *G. caryatis* (M. & P.) a South African species.

This species is smaller than *candela* and smooth, not crenellate; it also has an extra tooth. The shell is narrowly cylindrical, 2.75×0.9 mm. A single

specimen was found at Machakos, Kenya by C. F. HEMMING (HEMMING M 53). It is illustrated in plate 3, fig. 6. (Coryndon Museum).

Gulella sp. prob. var. of *G. baccata* (PRESTON).

Shell cylindrical, 8.5×3.5 mm., whorls $8 \frac{1}{2}$, first two smooth, next 4-5 somewhat ribbed, body whorl smooth and glossy, aperture subtriangular, rounded basally, peristome reflexed; a deep pit behind peristome, umbilical area depressed deeply, umbilicus narrow.

A single shell at Pienaars Heights, Kondoa Road at Babati in Tanganyika, leg. P. R. HESSE (VERDCOURT EG) (Museum of Comparative Zoology, Harvard). Illustrated in plate 3, fig. 5.

Gulella sp. near *G. princei* PREST. but larger and more ovate; and sides of aperture curved differently.

Shell ovate or ovate-globose, all but apical whorls costate. Two very differently sized specimens of this distinct species, one 4.8×2.5 mm. and the other 3.8×2.5 mm. were found at Bunduki, near Morogoro in the Uluguru Mountains in debris under evergreen forest by Mr. BOND. It is illustrated in plate 2, fig. 1 and 2. (Coryndon Museum).

Gulella sp. nov.

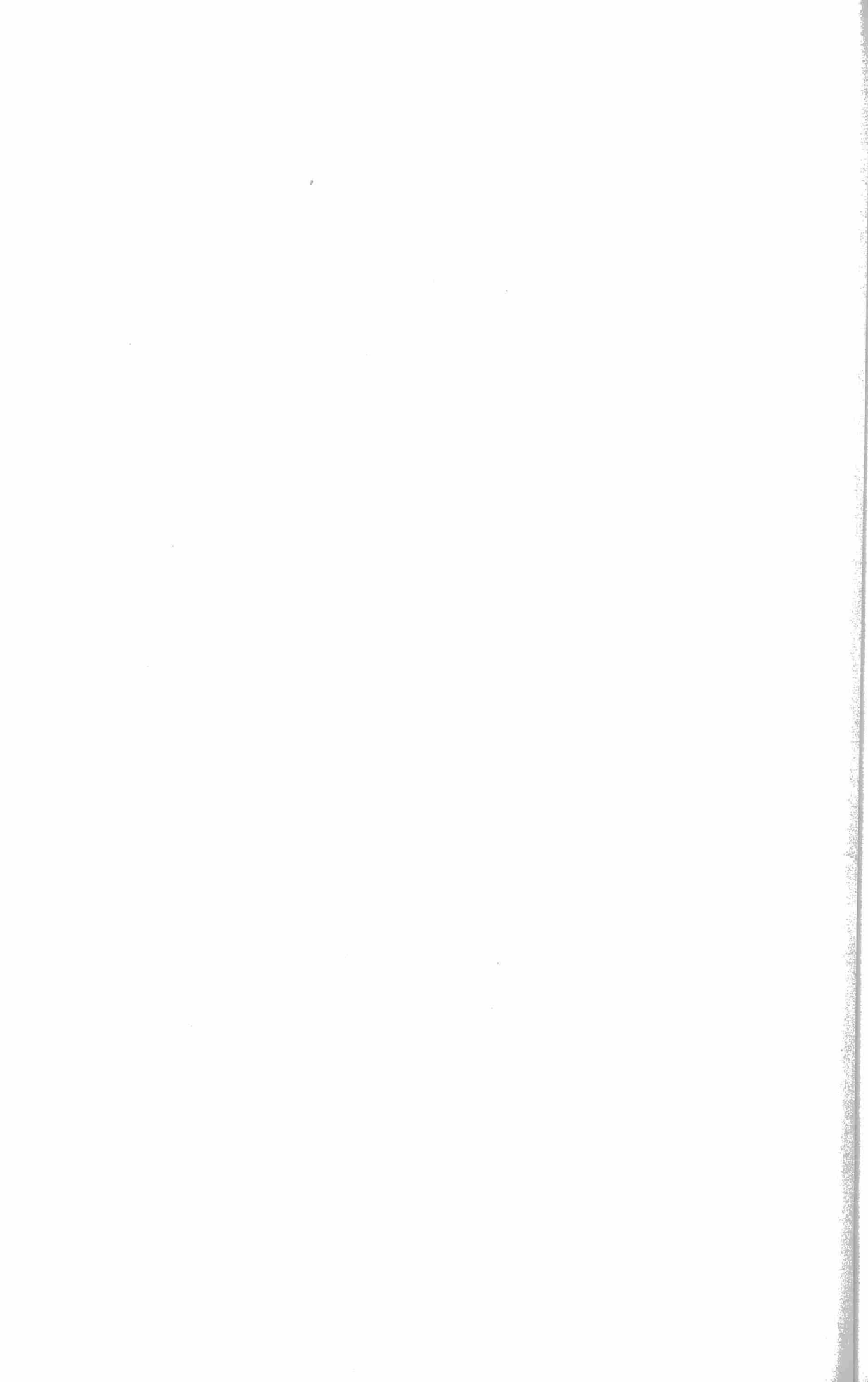
A remarkably long, cylindrical shell found in forest at Kapenguria, Kenya by Mr. J. G. WILLIAMS. Suture strongly crenellate, whorls with a few scattered striae. Aperture unfinished but showing signs of a mid-parietal and an outer lip process. Illustrated in plate, 3, fig. 1 (Coryndon Museum).

REFERENCES

- D'AILLY, A. (1910). — Mollusca in *Wiss. Ergebn. Schwed. Zool. Exp. Kilimandjaro Sjöstedt* 1, abt. 6.
- ANCEY, C. F. (?1901). — Notes Critiques et synonymiques sur quelques Mollusques. *J. Conchyl.* 49, 133-148.
- BOETTGER, C. R. (1913). — Descriptions of New Species of Land Shells from Africa. *Proc. malac. Soc. Lond.* 10, 348-353.
- BOETTGER, O. (1898). — Landschnecken von Kilima-Njaro, Deutsch-Ostafrika, *NachrBl. dtsh. malakozool. Ges.* 1898, 17-19.
- CONNOLLY, M. (1922). — Notes on African Non-Marine Mollusca, with Descriptions of many new species. *Ann. Mag. nat. Hist.* (9) 10, 485-517.
- CONNOLLY, M. (1929). — Notes on African Non-Marine Mollusca, with descriptions of many new species. *Ann. Mag. nat. Hist.* (10) 3, 165-178.
- CONNOLLY, M. (1930). — Descriptions of New Molluscs from Central Africa, with notes on other species. *Proc. malac. Soc. Lond.* 19, 37-48.
- CONNOLLY, M. (1931). — Description of new Non-Marine Mollusca from North, South, and Central Africa, with Notes on other species. *Ann. Mag. nat. Hist.* (10) 8, 305-321.
- CONNOLLY, M. (1939). — A Monographic Survey of South African Non-Marine Mollusca. *Ann. S. Afr. Mus.* 33, part 1.
- CONNOLLY, M. (1942). — New or Little Known Mollusca from Central Africa. *J. Conch.* 21, 328-335.
- CRAVEN, A. (1880). — On a Collection of Land and Freshwater Shells made during a short Expedition to the Usambara Country in Eastern Africa, with descriptions of seven new species. *Proc. zool. Soc. Lond.* 1880, 216-219.
- CROSSE, H. (1885). — Diagnoses Molluscorum novorum in regione Usagardicta, Africae orientalis collectorum. *J. Conchyl.* 33, 310-312.
- CROSSE, H. (1886). — Description de Mollusques inédits, provenant de l'Usagara (Afrique orientale). *J. Conchyl.* 34, 81-86.
- DOHRN, H. (1865). — List of the Land and Freshwater Shells of the Zambesi and Lake Nyassa, Eastern Tropical Africa, collected by John Kirk. *Proc. zool. Soc. Lond.* 1865, 231-234.
- DUPUIS, P. (1923). — Notes malacologiques concernant la faune de l'Afrique continentale et insulaire. *Ann. Soc. Zool. malac. Belg.*, 53, 80-83.
- GERMAIN, L. (1934). — Mollusques, terrestres nouveaux des régions montagneuses de l'Afrique Orientale (Mission de l'Omo, 1932-1933). *Bull. Mus. Nat. Hist. Nat.* 1934, 262-270 & 377-382 (for figures and repeat of descriptions see *J. Conchyl.* 92, 161-175, pls. 7-8 (1952)).

- HAAS, F. (1920). — Die Binnenmollusken der Voeltzkow'schen Reisen in Ostafrika und den ostafrikanischen Inseln. *Zool. Jahrb.* (System. Abteil.) 57, 387-430.
- HAAS, F. (1936). — Binnen Mollusken aus Inner-Afrika. *Abh. senckenb. naturf. Ges.* 431.
- KOBELT, W. (1913). — Landschnecken aus Deutsch-Ostafrika und Uganda. *Rev. suisse Zool.* 21, No. 2.
- MARTENS, E. VON (1869). — Conchylien aus Zanzibar, zwischen Sesamsamen. *NachrBl. dtsh. malakozool. Ges.* 1869, 142-156.
- MARTENS, E. VON (1892a). — Ueber die von Dr. Stuhlmann in Nordostafrika gesammelten Land — und Süßwasser — Mollusken. *S. B. Ges. naturf. Fr. Berl.* 1892, 174-181.
- MARTENS E. von (1892b). — *S. B. Ges. naturf. Fr. Berl.* 1892, 182.
- MARTENS, E. VON (1895a). — Neue Land-und Süßwasser-Schnecken aus Ostafrika. *NachrBl. dtsh. malakozool. Ges.* 1895, 175-187.
- MARTENS, E. VON (1895b). — Neue arten von Landschnecken aus den Gebirgen Ostafrikas. *S. B. Ges. naturf. Fr. Berl.* 1895, 120-129.
- MARTENS, E. VON (1897). — Beschalte Weichthiere in Möbius, Deutsch Ost-Afrika, 4, Abt. 1. Berlin.
- MARTENS, E. VON (1900). — Einige neue von Dr. Fülleborn in Deutsch-Ostafrika gesammelten Landschnecken, *S. B. Ges. naturf. Fr. Berl.* 1900, 177-180.
- PFEIFFER, K. (1952). — Neue Landschnecken aus Ostafrika. *Archiv. Molluskenk.* 81, 89-102.
- PFEIFFER, L. (1855). — Versuch einer Anordnung der Heliceen nach natürlichen Gruppen, *Malak. Blätt.* 2, 112-185.
- PILSBRY, H. (1919). — A Review of the Land Mollusks of the Belgian Congo. *Bull. Amer. Mus. nat. Hist.* 40, Art. 1.
- PILSBRY, H. & COCKERELL, T. D. A. (1933). — African Mollusca, chiefly from the Belgian Congo. *Proc. zool. Soc. Lond.* 1933, 365-375.
- POLLONERA, C. (1906). — Spediz. al Ruwenzori, Nuove specie di Molluschi. *Boll. Mus. Zool. Anat. Comp. Torino* 21, no. 538.
- POLLONERA, C. (1907). — Spediz. al Ruwenzori, Nuove specie di Molluschi. *Boll. Mus. Zool. Anat. Comp. Torino*, 22, no. 564.
- POLLONERA, C. (1909). — in Luigi Amedeo di Savoia Duca degli Abruzzi, Il Ruwenzori, Parte Scientif. 1, 181-205.
- PRESTON, H. B. (1910). — Additions to the Non-Marine Molluscan Fauna of British and German East Africa and Lake Albert Edward. *Ann. Mag. nat. Hist.* (8) 6, 526-536.
- PRESTON, H. B. (1911a). — Descriptions of thirty-six New Species of Land and Fresh-water Shells from British East Africa, chiefly from Mount Kenia and the neighbouring District. *Ann. Mag. nat. Hist.* (8) 7, 463-476.

- PRESTON, H. B. (1911b). — Descriptions of nine New Species of terrestrial Mollusca from Naivasha, British E. Africa. *Rev. Zool. Bot. afr.* 1, 218-221.
- PRESTON, H. B. (1913). — Diagnoses of New Species and Varieties of Agnathous Mollusca from Equatorial Africa. *Proc. zool. Soc. Lond.* 1913, 194-218.
- SMITH, E. (1890). — List of Land and Freshwater Shells collected by Dr. Emin Pasha in Central Africa with Descriptions of new species. *Ann. Mag. nat. Hist.* (6) 6, 146-168.
- SMITH, E. (1893). — On a Collection of Land and Fresh-water Shells communicated by H. H. Johnston, C. B. from British Central Africa. *Proc. zool. Soc. Lond.* 1893, 632-641.
- SMITH, E. (1901). — On Some Land Shells from British East Africa. *J. malacol.* 8, 93-96.
- SMITH, E. (1903). — Descriptions of New Species of Land Shells from Central Africa, *J. Conch.* 10, 315-319.
- TAYLOR, J. W. (1880). — Descriptions of New Species of Land Shells from the East Coast of Africa. *J. Conch.* 3, 142-144.
- THIELE, J. (1911). — Mollusken der Deutschen Zentralafrika-Exp. in Wiss. Ergebn. D. Z. Afr. Exp. (1907-08) 3, (1), Lief. 6.
- VERDCOURT, B. (1953a). — Notes on Some East African *Gulellae*. *Basteria* 17, 36-42.
- VERDCOURT, B. (1953b). — Five New Species and Varieties of *Gulella* from the Usambaras. *Proc. malac. Soc. Lond.* 30, 36-39 (and correction *ibid.*, 30, 153 (1953)).
- VERDCOURT, B. (1953c). — A New Species of *Gulella* (Mollusca-Streptaxidae) from Tanganyika Territory. *Ann. Mag. nat. Hist.* (12) 6, 862.
- VERDCOURT, B. (1956). — The Variation of *Gulella conradti* (VON MARTENS) and the description of *Gulella intrusa*, a closely allied new species. *Proc. malac. Soc. Lond.* 32, 69-71.
- VERDCOURT, B. (1957). — A Key to the East African Species of the Section *Plicigulella* PILSBRY of the Genus *Gulella* PFR. *Rev. Zool. Bot. afr.* 55, 125-131.
- VERDCOURT, B. (1958). — The *Gulellae* (Moll., Streptaxidae) of the Usambara Mountains, N. E. Tanganyika. *Tanganyika Notes and Records*, 47 & 48 (June and Sept. 1957), 92-102 with folding plate of 29 figures.
- VERDCOURT, B. and VENMANS, L. A. W. C. (1952). — A New Name for a Species of *Gulella*. *Basteria* 17, 50.
- VERDCOURT, B. and VENMANS, L. A. W. C. (1956). — A Synopsis of the Section *Primigulella* PILSBRY of *Gulella* PFR. (Mollusca, Streptaxidae). *Basteria* 20, 65-77.



APPENDIX

Further notes on the subgenus *Plicigulella* PILSBRY.

Gulella vicina (SMITH)

Mixed with some? Miocene fossils from Mfwangano Island in Lake Victoria (Coryndon Museum lot MFW 769/55, leg. Dr. LEAKEY) two quite recent specimens of *G. vicina* were found. These were both large, 8.5-9 mm. long and 4 mm. wide and lacked the small parietal tooth and the two small, inset basal teeth.

G. vicina (SMITH) form *sambourouensis* (DAUTZENBERG)

CONNOLLY mentions the presence of a very small tooth just below the columella triad and I followed him in my key. This is not a constant character and the type which I examined in Paris does not show it. It has the formula 2;3;3;1(3). The second parietal denticle is small and all the basal elements are large. The shell is very strongly striate.

G. triplicina (VON MARTENS)

The type of this has been examined at Berlin. There is a large parietal lamella and a smaller mid-parietal denticle, three basal denticles, the two right hand side ones inset. The main labral slab has a broad base with a projecting central emarginate lobe; the ends of the slab appear as low nodules at the base of the central projection but otherwise the original figure of VON MARTENS is approximately accurate.

G. landianiensis (DAUTZENBERG)

The original figure of this does not clearly show the structure of the columella triad. I have examined the type at Paris. It is a crenulate shell without strong striae. The columella is plainly three-lobed; there are two basal denticles, the right hand one being broad and inset. The formula is 2;1(2); 2;1(3).

G. babaulti GERMAIN = *G. woodhousei* (PRESTON)

I examined the type of this species at Paris. The slab on the outer lip is long and undulate with 5 small eminences, the lower two forming a somewhat emarginate cusp. The formula is 2;1;3;1(3).

A good deal of further material collected by Mr. C. W. P. HARRIES on the Isuria Escarpment, Mara River, Southern Kenya has shown that still further reductions to synonymy may have to be made. In a series of 42 shells, 31 had one inset basal denticle and 11 two inset basal denticles; the size also varies considerably, the larger being $6.5 \times 2.5-3$ mm. and the smaller $4.5-5.5 \times 2.5$ mm. It therefore seems probable that *G. woodhousei* (PRESTON) is but a form of *G. landianiensis* (DAUTZENBERG), the earlier name. Further collecting will probably reduce the list of names still more.

G. subflavescens (SMITH)

This species was omitted from my account of the subgenus *Plicigulella* but on examination of the type I find it clearly belongs to that subgenus. A description follows. Shell cylindrical, 6×2 mm., smooth, formula 1;3;2;1 (3). The palatal teeth could also be considered 1(2) +1; the right hand basal tooth is more inset but the left hand one is situated on the peristome. SMITH's inset figure shows three basal teeth. In my original key it will key down to couplet 4 but is bigger than *G. aprosdoketa* and *G. vicina salutationis* and has a very different dentition.

CORRIGENDA

Gulella jod (PRESTON)

Prof. P. L. G. BENOIT kindly sent me a drawing of the holotype of this species. It measures 2.40 mm. in length and 0.87 mm. in width. The dentition is basically 1; 1; 3; 1+L, the parietal and outer lamellae longer than the smaller inset teeth on the base and columella. The flanking basal teeth are at the junctions of the basal area with the outer lip and columella respectively. To the left of the parietal lamella there appears to be a « bump », scarcely to be designated a tooth.

*
**

The following sectional names have escaped mention

Aenigmigulella PILSBRY, 1933, proposed for

Gulella aenigmatica (SMITH).

Costigulella PILSBRY, 1919, proposed for

Gulella langi PILSBRY covers all the species mentioned in Key 4 other than *mirifica*.

INDEX

	page numbers		page numbers
A			
aberdarensis PRESTON, 1913 (MT*, BM)	21	caroli KOBELT, 1913	6
adjacens PRESTON, 1913 (MT*, BM)	8,29	(<i>caroli</i>) VERDCOURT, 1953c <i>non</i> KOBELT	17
aenigmatica SMITH, 1890 (MT*, BM, B (spoilt))	8	carpenteri CONNOLLY, 1931 (BM)	18
aequidentata SMITH, 1890 (BM)	18	caryatis M & P, 1898	29
albogilva GERMAIN, 1934 (P)	20	cheranganiensis GERMAIN, 1934 (P)	5
(<i>aloyisii-sabaudiae</i>) POLLONERA, 1907)	11	claustrum PRESTON, 1913 (MT*)	15
amaniensis VERDCOURT, 1953b	15	coeni PRESTON, 1913 (MT*, BM)	23
amicta SMITH, 1890 (BM)	5	columella SMITH, 1903 (BM, MT*)	18
(<i>amicta</i> var. <i>brevior</i>) VON MARTENS, 1897	5	commoda SMITH, 1903 (BM, MT*)	9, 16, 19
arambourgi GERMAIN, 1934 (P)	10	conicodentata K. PFR., 1952	17
argyromontana GERMAIN, 1934 (P)	10	conospira VON MARTENS, 1892, var. <i>polyne-</i> <i>matica</i> PILSBRY, 1919 (MT*)	10
(<i>arthuri</i>) PRESTON 1913 <i>non</i> DAUTZ. (MT*)	19	CONOGULELLA	9
AVAKUBIA	8	conradti VON MARTENS, 1895a (B)	25
avakubiensis PILSBRY, 1919	8	conradti var. <i>reductidentata</i> VERDCOURT, 1956	23
B			
baccata PRESTON, 1913 (MT*, BM)	19, 30	consanguinea SMITH, 1890 (BM)	7
bomolensis VERDCOURT, 1953b	7	(<i>consobrina</i>) PRESTON, 1911	16
bondi VERDCOURT, sp. nov. (MT)	24, 26	consociata SMITH, 1890 (BM)	22
(<i>bourguignatiana</i>) ANCEY, MS (BM, MT*) .	24	copiosa PRESTON, 1913 (MT*, BM)	6
brevis THIELE, 1911 (MT*)	11	copiosa var. <i>robusta</i> PRESTON, 1913 (—, B) .	6
(<i>burungaensis</i>) PRESTON, 1913 (MT*)	17	cuspidata VERDCOURT, sp. nov. (MT)	3, 27
C			
cacosystata GERMAIN, 1934 (P)	14, 16	curvicolumella PRESTON, 1913	23
calva CONNOLLY, 1922 (BM)	17	curvilamella SMITH, 1890 (MT*, BM)	6, 12
camerani POLLONERA, 1906 (—, BM)	25	cruciata VON MARTENS, 1900 (B)	18
cancellata CONNOLLY, 1922 (BM)	20	D	
cancellata var. <i>minor</i> CONNOLLY, 1922 (BM) .	20	dartavellei VERDCOURT, sp. nov. (MT)	15, 28
candela CONNOLLY, 1922 (BM)	17, 29	decussatula PRESTON, 1913 (MT*, BM)	20
candela var. <i>minor</i> CONNOLLY, 1922 (BM)	17	(<i>delicatula</i>) PRESTON, 1910 (MT*)	14
careia PRESTON, 1913 (MT*)	7	devia CONNOLLY, 1931 (BM, MT*)	16, 19
D			
		disseminata PRESTON, 1913 (MT*, BM, B). 16, 17	
		disseminata var. <i>kekumegaensis</i> CONNOLLY,	
		1922 (—, BM)	17
		disseminata var. <i>mbararaensis</i> PRESTON,	
		1913 (as var. of <i>ingeziensis</i>) (MT*)	17

(* Specimen not seen).

	page numbers		page numbers
disseminata var. pusilla PRESTON, 1913 (as var. of ingeziensis) (MT*)	17	intrusa VERDCOURT, 1956	25
duncani CONNOLLY, 1930 (BM, B)	21	iridescens PRESTON, 1913 (MT*)	7
E		iridescens var. curta PRESTON, 1913 (MT*) . (irregularis) MS Name	7 16
eussoensis PRESTON, 1913 (MT*, BM)	14	J	
excavata VON MARTENS, 1892a (B)	16, 21	jod PRESTON, 1910 (MT)	24
excruciata CONNOLLY, 1931 (BM, B)	16, 18	K	
exogonia VON MARTENS, 1895a (B)	10, 11	(karongana) SMITH, 1893 (BM)	21
expatriata PRESTON, 1910 (MT*, BM)	5	(keniana) PRESTON, 1911a (MT*, BM)	21
F		(keniana var. intermedia) PRESTON, 1913 .	21
filix CONNOLLY, 1922 (BM)	12	(keniana var. parvula) PRESTON, 1913	21
filix var. benetecta CONNOLLY, 1930 (BM)	12	kigeziensis PRESTON, 1913 (MT*)	25
fortidentata SMITH, 1890 (BM, B)	23	kohl-larseni HAAS, 1936	13
foveolata PRESTON, 1913 (MT*, BM, B)	21	kulalensis VERDCOURT, sp. nov. (MT)	22, 26
funerea PRESTON, 1913 (—, BM)	7, 22	L	
funerea var. laevis PRESTON, 1913 (—, BM) .	7	labiotuberculata CONNOLLY, 1942	16
G		lacuna PRESTON, 1911b (MT*)	10
galactochila CROSSE, (1885) 1886 (MT*, BM?)	12	laevigata DOHRN, 1865 (BM, MT*)	21
(globulosa) K. PFR., 1952	24	laqueus PRESTON, 1913 (MT*, ?BM)	9, 15
(gouldi PFR., 1855 var. amaniensis) VERD- COURT, 1953a	24	laqueus var. hercules PRESTON, 1913 (MT*, BM)	9
gouldi var. globulosa (proposed as a sepa- rate species K. PFR., 1952)	24	(lautiuscula) GERMAIN, 1934 (P)	14
greenwayi VERDCOURT, 1953b	17	lendix SMITH, 1890 (BM, B?, MT*)	11
gwendolinae PRESTON, 1910 (MT*, BM)	8	lessensis PILSBRY, 1919 (MT*)	9, 29
gwendolinae var.	7	lima PRESTON, 1913 (MT*, BM, B)	6
gwendolinae var. mkusiensis VERDCOURT, 1953a	7	lobidens THIELE, 1911 (B)	6, 24
gwendolinae var. porrecta K. PFR., 1952 .	8	lornae VERDCOURT, 1953b	9
gwendolinae var. scissidens CONNOLLY, 1922 (BM)	8	lornae var. major VERDCOURT, 1953b	9
H		ludwigi VERDCOURT & VENMANS, 1953	17
handeensis VERDCOURT, 1953b	12	M	
(hanningtoni) SMITH, 1890 (BM)	24	malasangiensis PRESTON, 1913 (MT*)	6
hector PRESTON, 1913 (MT*, BM)	23	marionae PRESTON, 1910 (MT*)	20
heteromphala PILSBRY, 1919	9	meruensis D'AILLY, 1910 (S, BM, MT*)	12
I		micans K. PFR., 1952	13
impedita CONNOLLY, 1922 (BM)	9, 12	(microstoma) SMITH, 1890 non MLLDF. (BM)	16
inconspicua THIELE, 1911 (B, MT*)	11, 12	microtaenia PILSBRY & COCKERELL, 1933	8
(ingeziensis) PRESTON, 1913 (MT*, BM)	17	minutissima THIELE, 1911	14
insolita SMITH, 1903 (BM, B, MT*)	21	MIRELLIA	3
intradentata PRESTON, 1913 (MT*)	7	MIRIGULELLA	8
		mirifica PRESTON, 1913 (MT*)	8
		MOLARELLA	3, 6
		monticola PRESTON, 1913 (MT*)	16
		?montium D'AILLY, 1910 (S)	5
		mweruensis PRESTON, 1913 (MT*, BM, B)	19

	page numbers		page numbers
N		S	
nepia CONNOLLY, 1925 (BM)	20	sellae POLLONERA, 1906 (-MT*)	6, 24
newtoni SMITH, 1890 (BM, MT*)	18, 21	seneciophila GERMAIN, 1934 (P)	14
noltei O. BOETTGER, 1898 (B)	18	sexdentata VON MARTENS, 1865 (described first as var. of laevigata)	24
nyiroensis PRESTON, 1913 (MT*)	15	sex-dentata TAYLOR 1880 non VON MARTENS	25
O		sexdentata var. liederi VON MARTENS, 1897 (B)	23
odhneriana DUPUIS, 1923	19	shandae CONNOLLY, 1930 (BM)	6, 19
(optata) PRESTON, 1911a (MT*, BM)	6	SILVIGULELLA	4
osborni PILSBRY, 1919 (MT*)	4	simplicima PRESTON, 1911a (MT*, BM, P, B)	5
ovalis THIELE, 1911	13	soror SMITH, 1890 (BM, B, MT*)	22
P		spatium PRESTON, 1913 (MT*, BM)	8
paucidens VERDCOURT, 1953c	12	strictilabris ANCEY, 1901	16
PAUCIDENTINA	see key 7	suavissima PRESTON, 1913 (MT*, BM, P) ...	11
peculiaris SMITH, 1890 (BM, MT*)	17	subflavescens SMITH, 1890 (BM, B, MT*) ...	7, 34
percivali PRESTON, 1913 (MT*, BM)	11	subhyalina SMITH, 1890 (BM)	8
percivali var. kilimae K. PFR., 1952	11, 14	subhyalina var. addita VON MARTENS (B ± destroyed)	8
pergrata PRESTON, 1913 (MT*)	21	subringens CROSSE, 1886	24
pervitrea PRESTON, 1913 (—, BM, B)	14	subsellae HAAS, 1936	23
pevorum MS name	19	syngenes PRESTON, 1913 (MT)	16
pisa CONNOLLY, 1922, (BM)	4	T	
planidens VON MARTENS, 1892 (B, MT*)	21	THAUMATOGULELLA	3
PLICIGULELLA	2, 6, 7, 34	tomlini PRESTON, 1911b (MT*, BM)	13
porcina CONNOLLY, 1930 (—, BM)	18	toticostata PILSBRY, 1919	8
pretiosa PRESTON, 1911a (—, BM)	8	translucida K. PFR., 1952	15
pretiosa var. nyiroensis PRESTON, 1913 (MT*, B)	8	tudes VON MARTENS, 1895, (B, BM)	4, 22
prestoni CONNOLLY, 1922	14	turricula TAYLOR, 1880	25
princei PRESTON, 1911a (MT*, P)	15, 30	U	
PRIMIGULELLA	2	ugandensis SMITH, 1901 (BM, MT*)	6
prodigiosa SMITH, 1903 (BM, B, MT*)	3	ugandensis var. majuscula PRESTON, 1913 (as var. of optata) (MT*)	6
puella CONNOLLY, 1929 (BM)	5	ugandensis var. obesa PRESTON, 1913 (as var. of optata) (MT*)	6
PUPIGULELLA	5	unidentata K. PFR., 1952	11
pupa THIELE, 1911 (B, MT*)	5	ulugurensis VERDCOURT, sp. nov. (MT) ...	22, 24, 28
Q		usambarica CRAVEN, 1880 (BM)	6
quinquedentata C.R. BOETTGER, 1913	21	(usambarica K. PFR., 1952)	17
R		V	
radius PRESTON, 1910 (MT*, BM, P)	13, 22	viatoris PRESTON, 1913 (MT*, BM)	21
rectangularis PRESTON, 1913 (MT*, P)	5	vicina SMITH, 1899 (BM, B, MT*)	34
reniformis PRESTON, 1913 (MT*)	11, 14		
(ringens) CROSSE, 1885	24		
(rumrutiensis) MS name (BM, B)	26		

N.B. — A large proportion of PRESTON's holotypes are in the Musée Royal de l'Afrique Centrale.



PLATES

PLATE I.

- 1a. *G. ulugurensis* VERDCOURT, Tanganyika, Uluguru Mountains, leg. J. BOND.
- 1b. ditto, variant; aperture only.
- 2a. ditto, variant.
- 2b. ditto, variant; aperture only.
- 2c. ditto, variant; aperture only.
3. *G. impedita* CONNOLLY, Kenya, Kakamega Forest, leg. B. VERDCOURT.
4. *G. dartevellei* VERDCOURT, Kenya, Turi Forest, leg. D.C. THOMAS.

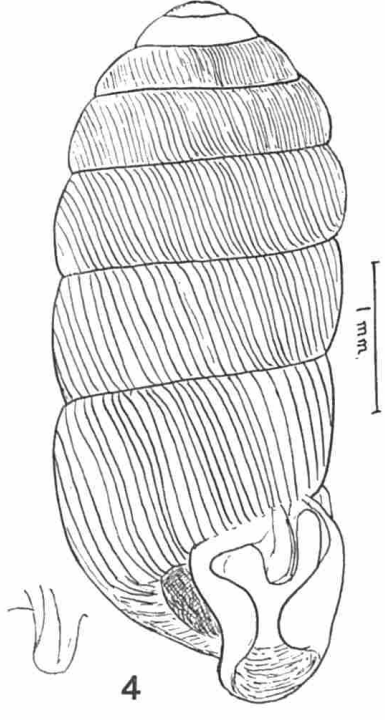
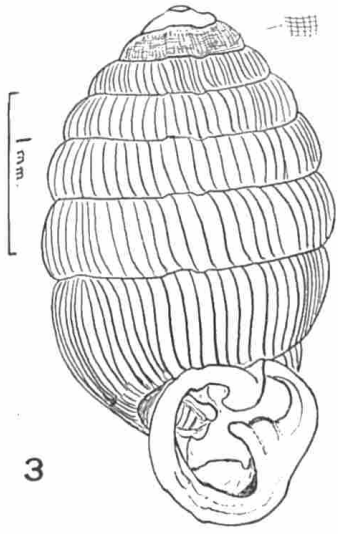
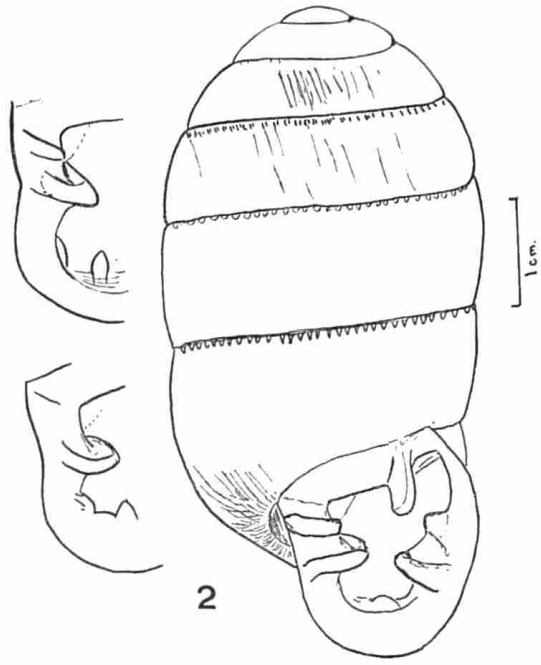
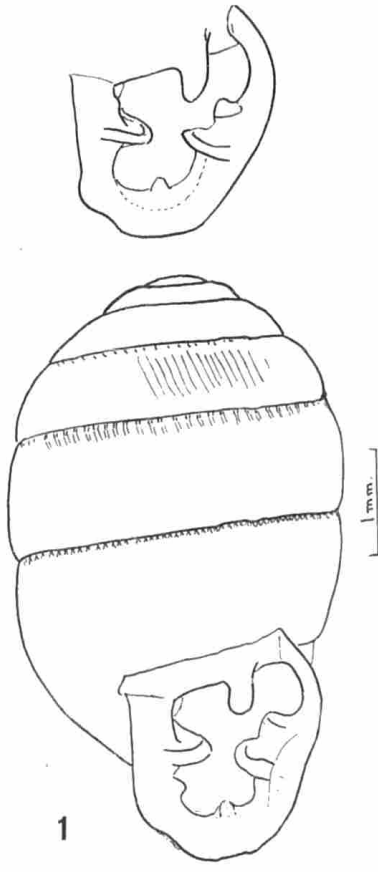




PLATE II.

1. *G. sp. near princei* (PRESTON), Tanganyika, Uluguru Mountains, leg. J. BOND.
2. ditto, short specimen, sculpture omitted.
3. *G. bondi* VERDCOURT, Tanganyika, Uluguru Mountains, leg. J. BOND.
4. *G. sp. aff. commoda* (SM.), Kenya, Kakamega Forest, leg. B. VERDCOURT.

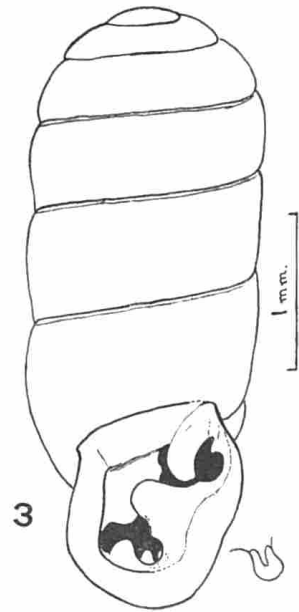
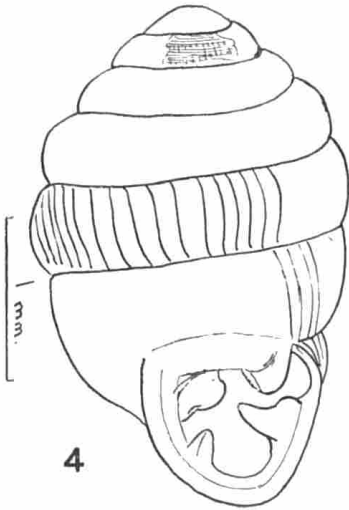
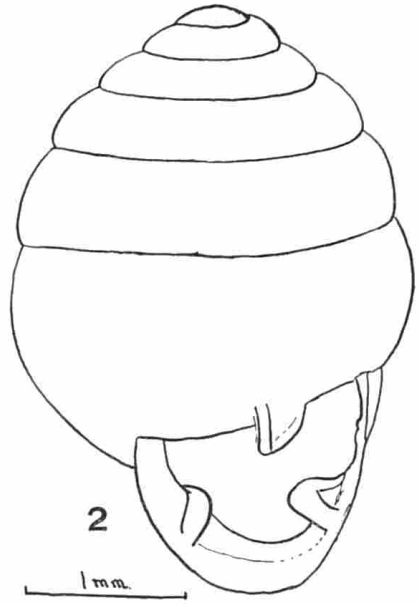
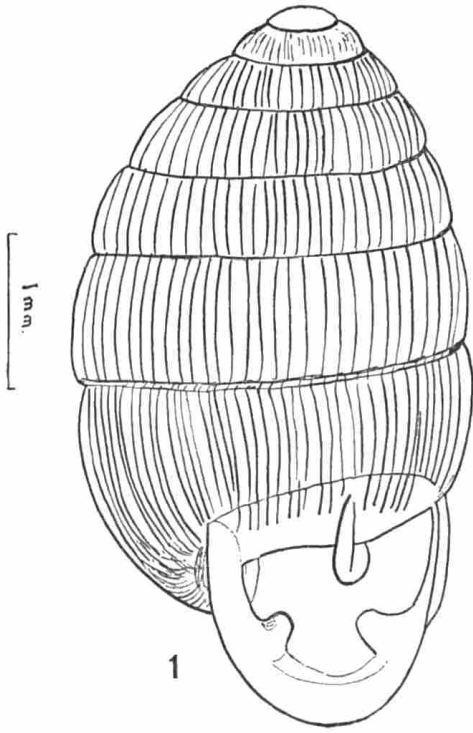




PLATE III.

- 1 *G. sp. nov.*, Kenya, Kapenguria, leg. J.G. WILLIAMS.
- 2 *G. cuspidata* VERDCOURT, Tanganyika, W. Usambaras, Shume, leg. B. VERDCOURT.
- 3 *G. candela* CONNOLLY var. *minor* CONNOLLY, Kenya, Voi, Duharu Hill, leg. J. ALEXANDER.
- 4 *G. fortidentata* (SM.), Tanganyika, Pienaars Heights, leg. P. R. HESSE.
- 5 *G. sp. near baccata* (PRESTON), Tanganyika, Pienaars Heights, leg. P. R. HESSE.
- 6 *G. sp. nov.?* Kenya, Machakos, leg. C.F. HEMMING.

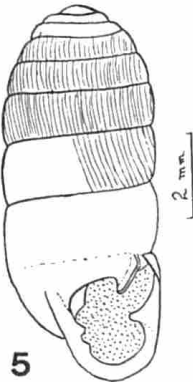
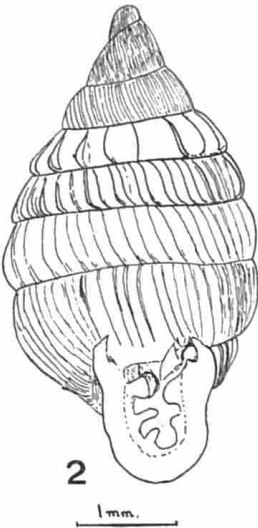
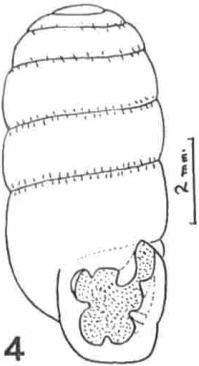
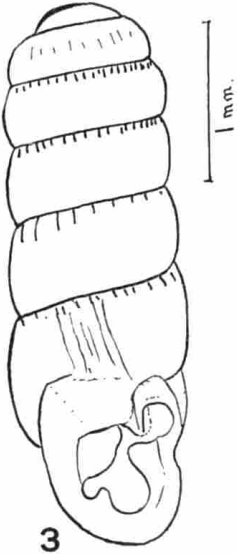
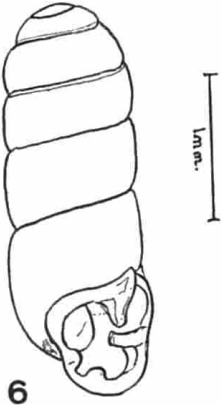
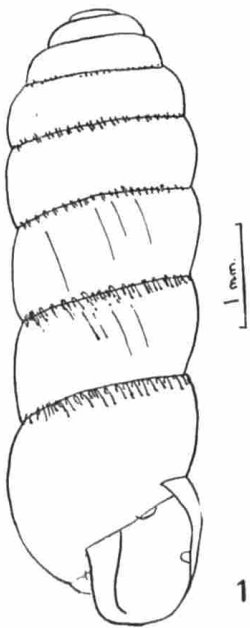




PLATE IV.

1. *G. pervitrea* (PRESTON).
2. *G. sp. cf. marionae* (PRESTON).
3. *G. sp. of pervitrea* (PRESTON) complex, 4-toothed form.
4. *G. sp. of pervitrea* (PRESTON) complex, 3-toothed form.
5. *G. sp. cf. nepia* CONNOLLY.
All above were collected by J. BOND in the Uluguru Mountains, Tanganyika.
6. *G. columella* (SM.), Kenya, Uplands, Bamboo Forest, leg. B. VERDCOURT.

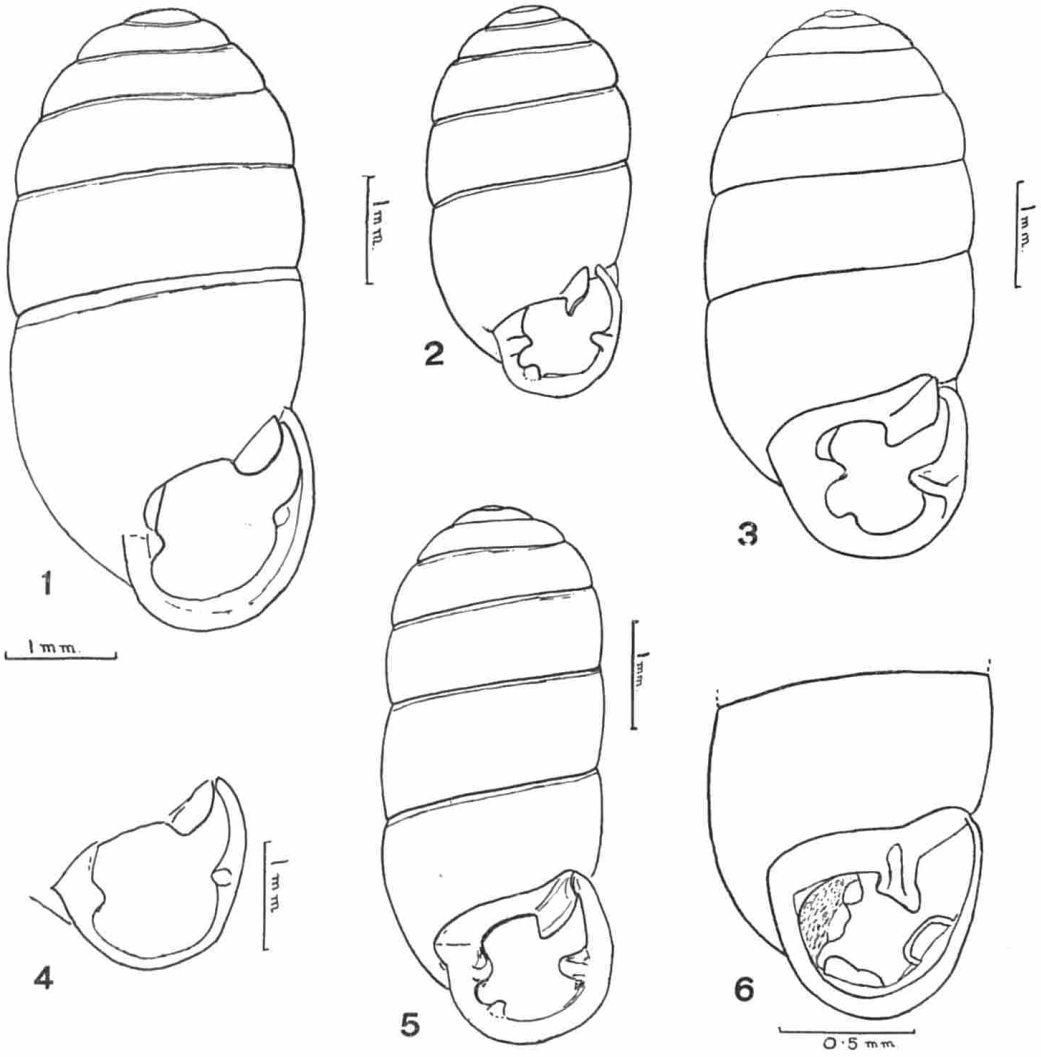




PLATE V.

1. *G. kulalensis* VERDCOURT, Kenya, Mt. Kulal, leg. B. VERDCOURT ($\times 19$).









