CHAPTER 4

CLASSIFICATION OF MOLLUSCA, TAXONOMIC AND MORPHOLOGIC
COMMENTS ON CERTAIN TAXA AND CHECKLIST

4.1 GENERAL STATEMENT

The Siwaliks, Karwas and the Late Pleistocene terrace deposits of the Indian subcontinent and their equivalent formations in Afghanistan and Burma have yielded a number of molluscan taxa. A review of works on these has already been given in Chapter 3. The classification adopted for gastropods described/recorded in this work is given in the article 4.2.a and the one adopted for bivalves is given in article 4.3.a.

There are a few diminutive gastropods belonging to the genera Vertigo Mueller and Gastroconta Wollaston which although belong to different families, are related in their morphologic features, especially the denticles in the aperture. These are here treated as a single group for the purpose of comparing their important morphologic characters along with taxonomic comments which appear in article 4.2.b in sequel to the classification on gastropods.

Among the bivalve taxa recorded here the unionids and the pisidia form two well defined groups for the purpose of
comparing morphologic features as also for taxonomic comments which follow the classification of Bivalvia. It is obvious from the review of works given in Chapter 3 that the unionids of the Siwaliks and their equivalent formations in Indian subcontinent and adjoining areas have been described/recorded as taxa belonging to the genera *Unio* Philipsson, *Lamellidens* Simpson, *Parreysia* Conrad, *Indonaia* Prashad and *Indopseudodon* Prashad. Brief taxonomic comments on the status of these genera are also included in article 4.3.b.

The Indian fossil pisidia recorded in this work have been assigned to different subgenera of the genus *Pisidium* on the bases of their morphologic features. Brief pertinent morphologic comments on this group of small bivalves are given in article 4.3.c.

4.2 GASTROPODA

4.2.a CLASSIFICATION

The classification adopted for gastropods in this contribution has been chiefly derived from Benthem Jutting (1956), Wenz (in Schindewolf, 1959-60, 1961, 1962) and Knight et al. (in Moore, 1964). Since the complete treatise dealing with the Gastropoda has not been published as yet, certain taxa of gastropods including *Hydrobioides avaryx* Annandale,
Amnicola (Alocinma) sp. cf. A. (A.) sistanica Annandale and Prashad and Tricula sp. cf. T. montana Benson have been included in the family Hydrobiidae following Annandale (1918), Annandale and Prashad (1919) and Prashad (1922a). In consonance with the classification of gastropods by Wenz (in Schindewolf, 1959-60, 1961, 1962), the suprageneric taxonomic positions of some gastropod taxa described by Bhatia and Mathur (1971, 1973, see appendices 2, 4) have now been revised as the works of Wenz were not available at the time of publication of the papers mentioned above. There is, however, no change in the generic and trivial identifications of gastropod taxa made by Bhatia and Mathur (1971, 1973). The present classification of gastropods is, however, liable to modifications which may become necessary with the publication of the complete treatise on Gastropoda. As a sequel, Carychium sp. has been transferred to the family Ellobiidae; Gyraulus convexiusculus (Hutton), G. singularis (Mousson), G. stewarti (Germain), Helicorbis sp., Polypyla sp. cf. P. kennardi (Bullen) and Indoplanorbis exustus (Deshayes) to the subfamily Bulininae of the family Planorbidae; Ferrissia sp. to the family Ferrissiidae; Pyramidula javana (Moellendorff) to the family Pyramidulidae; and Philalanka micromphala Benthem Jutting and P. nannophya Rensch to the family Endodontidae.
4.2.b TAXONOMIC AND MORPHOLOGIC COMMENTS ON THE GENERA
VERTIGO MUELLER, 1774 AND GASTROCOPTA WOLLASTON, 1878

Some of the gastropods belonging to the families Vertiginidae
and Chondrinidae possess interesting apertural features like
folds and lamellae. These small-sized gastropods belonging
to the genera Vertigo Mueller and Gastrocopta Wollaston have
been studied in detail by a number of workers including
Franzen and Leonard (1943), Leonard and Franzen (1944),
Leonard (1950, 1952) and Taylor (1960) who have described/
recorded a number of species of these genera mainly from the
Pleistocene deposits of America. On the other hand, these
fossil groups have not received much attention from Indian
palaeontologists, perhaps due to their diminutive size. From
the nearby Afghanistan region, Prashad (1937b) described
Gastrocopta sp. cf. G. huttoniana (Benson) from the rocks
doubtfully assigned a Miocene age. Recently, while studying
microfossils from the Karewas of Kashmir valley, Bhatia (1969a)
encountered a new species of Gastrocopta (G. (G.) kashmirensis).
Subsequently, Bhatia and Mathur (1971, 1973) described two
new species of Vertigo (V. pandei, V. tawarii) and two of
Gastrocopta (G. (G.) naidu, G. (G.) prashadi) from the Late
Pleistocene terrace deposits of Punjab and Himachal Pradesh,
and Bhatia (in press) recorded Vertigo ovata (Say) from the
Karewas of Kashmir. The suprageneric placements of the
genera *Vertigo* Mueller and *Gastrocopta* Wollaston have now been revised following Wenz (1959-60). Thus, the genus *Vertigo* has been transferred to the subfamily Vertigininae of the family Vertiginidae, and the genus *Gastrocopta* has been transferred to the subfamily Gastrocoptinae of the family Chondrinidae. A synopsis of the characters based on the apertural folds and lamellae of the five fossil species of *Gastrocopta* and *Vertigo* described/recorded from the Late Pleistocene terrace deposits is shown in Text Figure 19. The terminology used for the apertural denticles is after Franzen and Leonard (1943) and Leonard (1950). The different species may be distinguished on account of apertural denticles as detailed below:

The genus *Vertigo* Mueller is characterised by an ovoid shell and somewhat ovoid triangular aperture with a biarcuate indentation of the outer lip. *Vertigo pandei* Bhatia and Mathur is distinguished from *V. tewarii* Bhatia and Mathur by the absence of secondary suprapalatal and infrapalatal folds. Its basal fold is low and somewhat immersed as compared to a raised and crescentic basal fold in *V. tewarii*.

Another species of *Vertigo* which is closely related to the above mentioned taxa, recorded from Karewas of Kashmir by
Bhatia (1969a) is *V. ovata* (Say). It is distinguished from *V. pandei* Bhatia and Mathur in having a well developed basal fold and in having stronger horizontal columellar lamella. From *V. tewarii* Bhatia and Mathur it is distinguished by a strong, projecting palatal fold and an additional low, infraparietal lamella.

The genus *Gastrocopta* Wollaston is characterised by an ovoid to cylindrical shell and a somewhat quadrate aperture usually possessing a number of denticles. *Gastrocopta (Gastrocopta) kashmirensis* Bhatia has only five apertural folds and lamellae. It is distinguished from *G. (G.) naidui* Bhatia and Mathur in possessing a low, tubercular upper palatal fold and in lacking a suprapalatal fold and an infraparietal lamella.

From *G. (G.) prashadi* Bhatia and Mathur, it is distinguished by its well fused anguloparietal lamella, a moderately large, horizontal columellar lamella and by the absence of an infraparietal lamella. *G. (G.) naidui* is distinguished from *G. (G.) prashadi* in possessing an additional low secondary suprapalatal fold, an elongate, rounded, thick lower palatal fold which is more deeply immersed than in *G. (G.) prashadi*. Its basal fold is much raised, well developed and well immersed.
Further comments on the taxa mentioned above are omitted from the respective systematic descriptions of these taxa for the sake of brevity.

4.3 BIVALVIA

4.3.a CLASSIFICATION

The bivalves described in this work have been classified in accordance with the treatise on Bivalvia (Moore, 1969a,b). As a sequel, the taxonomic positions of some bivalve taxa described by Bhatia and Mathur (1973) have now been revised.

The unionids recorded in this contribution have been distinguished on the basis of shell outline, umbonal and surface sculptures and other characters. A synopsis of important characters of these taxa is given in Text Figure 20. An account of distinguishing features of various species is given in the sequel.

4.3.b TAXONOMIC AND MORPHOLOGIC COMMENTS ON SOME UNIONID TAXA

The genus *Unio* Philipsson is characterised by an elongate subelliptical shape, gently sloping posterior dorsal margin, coarse ridges on umbo which may be looped or broken, a usually smooth surface, and a somewhat prominent umbo. Although the present collection does not include any unionid
corresponding to this description, Gupta (1930) assigned two new species and two new varieties to this genus. These taxa namely *Unio edwini*, *U. edwini* var. 1, *U. edwini* var. 2 and *U. pilgrimi* were studied by the author during a visit to the Geological Survey of India and it was found that the characters of these taxa such as somewhat subrhomboid shape, prominent zigzag ribs on the shell surface meeting at their lower points favoured their placement in the genus *Parreysia* Conrad rather than in *Unio* Philipsson as was done by Gupta. One of the unionids in the present collection shows characters comparable with *Unio edwini* Gupta but is assigned to *Parreysia* (*Parreysia*) sp. on the basis of a heavy, inflated, subrhomboid shell, with prominent well developed closely spaced 'V'-shaped ridges present all over the shell, a slightly swollen midventral region, prominent ridge running from umbo to posteroventral margin, and a prominent posterior dorsal alation.

There are some other records of indeterminate unionid taxa assigned to the genus *Unio* (*vide* Lahiri, in Fennor, 1934, 1935 et auctorum) which have neither been described nor illustrated. It is, therefore, difficult to comment upon these taxa.
The taxonomic position of the genus *Lamellidens* Simpson has been retained as such in the family Unionidae. This genus is characterised by an elongate elliptical shell, medium to large sized, rarely small, anterior margin broadly rounded, posterior somewhat narrowly so, generally with an acute posteroventral angulation, umbos with not so prominent curved radiating ridges which may be zigzag and concentric, gradually fading away from umbo and a well developed dorsoposterior wing which may be delimited ventrally by a shallow groove or ridge. Most of the species assigned to this genus show the above mentioned characters. However, as remarked by Vokes (1935, p. 47), *Lamellidens* sp. described and illustrated by Prashad (1930, p. 432, pl. 19, fig. 12, 13) on the bases of two casts from Chinji Formation, near Chinji (in Pakistan) has a subrhomboid shape, nearly central umbo, a ridge running from umbo to the posterior ventral margin. All these characters disfavour its placement in the genus *Lamellidens* Simpson. These specimens, deposited in the Museum of the Geological Survey of India (Catalogue Nos. 14791, 14792) were, however, not available to the author for study which makes it difficult to add any comment. However, as suggested by Vokes (1935, p. 47), this species of *Lamellidens* may be assigned to the genus *Parreysia* Conrad on the characters mentioned above. It is difficult to comment upon undescribed species assigned to
the genus *Lamellidens* from the Siwaliks (Das Hazra, in West, 1949).

*Lamellidens jammuensis* Prashad is distinguished from *L. lewisi* Vokes by its smaller size, narrower anterior and broader posterior margins and a prominent, well developed dorsoposterior wing. *L. proctori* Prashad differs in being much smaller in size, having a prominent ridge running from umbo to the posterior ventral margin and in having sharply angulated, anteroventral and posteroventral margins. *Lamellidens* sp. cf. *L. subparallelus* Vokes has a nearly straight dorsal margin which is almost parallel to the ventral margin. *Lamellidens* sp. indet. A has a distinct low bifurcating ridge which extends from umbo to posteroventral margin. *Lamellidens* sp. indet. B is much smaller in size and also differs from it in shape. *L. lewisi* Vokes differs in being the largest among all the species of *Lamellidens* recorded in this contribution. It resembles only slightly in shape *Lamellidens* sp. indet. A but differs in having only one low ridge running from umbo to posteroventral and in having a less well developed dorsoposterior wing. *L. proctori* Prashad is the smallest of all the species of *Lamellidens* described here. It resembles slightly *Lamellidens* sp. indet. B in overall shape but its sharper ridge, nearly straight dorsal margin and sharper
anterodorsal, posterodorsal and posteroventral angulations are its distinctive features. Lamellidens sp. cf. L. subparallelus Vokes differs from Lamellidens sp. indet. A in being more elongate and in having a much narrower anterior margin and nearly parallel dorsal and ventral margins. It differs from Lamellidens sp. indet. B in having a much larger size, less prominent, more widely spaced growth lines and comparatively more acute anterior margin. Lamellidens sp. indet. A differs from Lamellidens sp. indet. B in being larger in size, having a bifurcating low ridge and in its shape. Its growth lines are more widely spaced. Of the other known species of Lamellidens it differs from Lamellidens sp. Prashad (1930, pl. 19, figs. 8,9) in having a nearly straight dorsal margin, more inequilateral valves and in having a more prominent bifurcating ridge. From Lamellidens sp.n. C Vokes (1936) it differs in the more anteriorly placed umbo and in having a bifurcating ridge. Lamellidens sp. indet. B has a characteristic elongate elliptical shape resembling L. proctori Prashad. However, its more broadly rounded anterior margin, less acute posteroventral angulation and a broader ridge are fairly diagnostic.

The author is unaware of record of any unionid taxon from the Siwaliks and their equivalents in the Indian subcontinent
and adjoining regions of Afghanistan and Burma that may have been or could be assigned to the genus *Oxynaia* Haas of the family Unionidae. This genus is characterised by an elongate somewhat elliptical shell of moderate to large size, somewhat broadly rounded anteriorly, tapering posteriorly with an acute posterior end, low, gradually sloping posterior dorsal margin, steeply sloping anterior dorsal margin with a prominent notch, prominent umbos with zigzag ridges towards older part and a low somewhat rounded ridge running from about middorsal to posterior end. There is only one shell in the present collection showing the above mentioned characters. *Oxynaia* sp. indet. differs from the genotype *O. jourdyi* (Morlet) in being larger in size and less distinct ridge. Not much can be added here owing to poor preservation.

A number of unionid taxa from the Siwaliks and their equivalent formations in Indian subcontinent and the adjoining regions of Afghanistan and Burma have been assigned to the genus *Parreysia* Conrad. However, its subgenera have not been distinguished in the earlier works (Vredenburg and Prashad 1921, Prashad 1927, Vokes 1935, 1936, et al.). In the present work, two subgenera of the genus *Parreysia* — *Parreysia* Conrad and *Radiatula* Simpson — have been recognised, following Treatise.
The genus *Parreysia* Conrad is characterised by a medium to small sized subrhomboid shell, narrow anterior margin, broad posterior margin, umbo with prominent zigzag ribs which usually extend all over the surface and the shell often possessing anterior dorsal and/or posterior dorsal alation. The subgenus *Parreysia* Conrad is distinguished by swollen midventral region, strong umbonal sculpture characterised by 'V'-shaped central ridges joining at lower points. Brief distinguishing features of the species assigned to this subgenus in the present work are given in the sequel.

*Parreysia* (*Parreysia*) sp. cf. *P. (P.) edwini* (Gupta) nov. comb. differs from *P. (P.) tatrotensis* Vokes by its smaller size, prominent 'V'-shaped ridges separated by deeper grooves on the shell surface, prominent dorsoposterior alation somewhat more obtusely angulated prominent sharp ridge from umbo to posterior ventral angulation and more acute anteroventral angulation. It differs from *Parreysia* (*Parreysia*) sp. indet. in shape, surface sculpture, dorsoposterior alation and ridge. From its nearest ally *P. (P.) edwini* (Gupta) it differs in being much smaller in size and having narrowly spaced surface ridges. *P. (P.) tatrotensis* Vokes differs from *P. (Parreysia) sp. indet.* in having a subrhomboid shape, prominent ridge from umbo to posteroventral margin, narrower
anterior margin and sharply angulated posteroventral margin. P. (Parrevsia) sp. indet. differs from the known species of the subgenus Parreysia in having a subcircular shape, nearly central umbo and anterodorsal and posterodorsal alations.

The subgenus Radiatula Simpson of the genus Parreysia Conrad is distinguished by a triangularly oval to subelliptical shape, inflated, a well developed ridge from umbo to posterior ventral margin, umbos having fine radiating or zigzag riblets extending on to the remaining shell surface and separated by concentric grooves into nodules. Since the genus Indonaia Prashad is also based on these external characters of shell, it has been considered as a junior synonym of the subgenus Radiatula Simpson. Indonaia bonneaudi (Bydoux) Prashad (1922b, et auctorum) has been transferred to Parreysia (Radiatula) bonneaudi (Bydoux) on the bases of umbonal ornamentation comprising low somewhat insignificant nodules arranged radially in a zigzag fashion and separated by low concentric grooves. The specimen in the present collection from the Upper Siwaliks near Chandigarh was compared with those described by Annandale (1924) from Oil Measures of Burma and deposited in the Museum of the Geological Survey of India (Catalogue Nos. 14105, 14106) and was found to resemble closely the smaller of the two (No. 14106).
Comments in addition to those given above are included in the systematic descriptions of individual taxa given in Chapter 5.

4.3.c TAXONOMIC AND MORPHOLOGIC COMMENTS ON SOME PISIDIA

There are only a few records of the genus *Pisidium* Pfeiffer from the Siwaliks, Late Pleistocene terrace deposits and the Karewas of Indian subcontinent (see Chapter 3 on review of previous works). This group of small bivalves presents interesting characters of hinge and ligament which have helped in distinguishing various subgenera and species. A synopsis of important characters of various species of the genus *Pisidium* and assigned to the subgenera *Pisidium* Pfeiffer, *Afropisidium* Kuiper and *Neopisidium* Odhner is given in Text Figure 21. The terminology used for dentition is after Prashad (1925c). Pertinent comments on the characters distinguishing these taxa are given below.

The genus *Pisidium* Pfeiffer is characterised by small, globose or subtriangular, inequilateral shell with umbo placed posterior to middorsal, anterior and posterior lateral teeth double in the right valve, single in the left, ligament internal, external or internal visible externally through slight gaping, shell with closely or widely spaced pores, external surface with prominent concentric ridges and more...
prominent growth lines. The subgenus *Pisidium* Pfeiffer is further distinguished by an internal ligament. In the present material, four species have been assigned to this subgenus. *Pisidium* (*Pisidium*) *indicum* Bhatia and Mathur has a characteristic subcircular shape which distinguishes it from the other known Indian pisidia. In shape it resembles *P. langleyanum* Connolly described from South Africa. However, its strong, somewhat tongue shaped c.2 with round apex, nearly triangular c.4 projecting above the shell margin distinguish it from the South African as well as Indian pisidia.

Prashad (1925c, p. 407) doubtfully assigned *Pisidium mitchelli* described by him from Manasbal Lake, Kashmir to the subgenus *Bunisidium* Odhner, as the characters of the soft parts were unknown. However, as this subgenus is no more valid and that the soft part characters of this species are still unknown, the author suggests its placement in the subgenus *Pisidium* (s.str.) Pfeiffer, on the bases of shape and the internal ligament.

*Pisidium* (*Pisidium*) *mitchelli* Prashad has a subtrigonal shell, an arcuate, thin, lamelliform c.3, whose anterior part is parallel to the shell margin and posterior swollen, rather short ridge like c.2 and a longer lamelliform c.4 slightly
arcuate, curving over anterior of c.2 which distinguish it from its close ally *P. (P.) hydaspiocola* Theobald described originally from Sherpian, Kashmir and also recorded from the Karewas of Kashmir by Bhatia (in press). *P. (Pisidium)* sp. indet. A Bhatia and Mathur is distinguished from the other known species of the subgenus *Pisidium* by its large sized shell, thin, crenulate a.I and an equally thin, crenulate a.III with a wide socket in between the two, somewhat club shaped, very prominent c.3, and remarkably thinned hinge at the junction of anterior laterals and the cardinal. *P. (Pisidium)* sp. indet. B although resembles *P. (P.) mitchelli* Prashad in shape, its conspicuously projecting a.III over a.I and running parallel to it, its c.3 thickened at anterior edge but otherwise moderately thick and running parallel to shell margin, and its slightly thicker a.I and comparatively thin a.III with narrow socket in between, distinguish it from Prashad's species.

The subgenus *Afropisidium* Kuiper, is distinguished by the external ligament. Two of the pisidia described in this contribution have been assigned to this subgenus. Kuiper (1964, p. 81) suggested the placement of *Pisidium clarckeanum* Nevill and Nevill in his subgenus *Afropisidium* on the above mentioned character. *P. (Afropisidium) clarckeanum* (Nevill
and Nevill) differs from its nearest ally P. (A.) sivalensis (Bhatia and Mathur) nov. comb. in possessing an obliquely trigonal to oval shell, prominent, deeply notched, short c.3 slightly curved towards anterior edge, thick, prominent, sharp c.2, somewhat curved continuous with a.II and a lamelliform, sharp c.4. It resembles the African species P. (A.) pirothi (Jickeli) in shape but differs from it in the shape of cardinals and anterior laterals.

P. (A.) sivalensis (Bhatia and Mathur) has a characteristically flared up anterior dorsal margin, a projecting a.II, strong, prominently sigmoid, projecting c.2 and thin c.4 sharply angulated in the middle, which distinguish it from the Indian pisidia. It somewhat resembles P. (P.) costulosum Connolly in the overall shape and in the shape of the c.4, but its characteristic c.2, thin hinge, slightly more elongate anterior laterals and external ligament distinguish it from Connolly's species.

The subgenus Neopisidium Odhner is distinguished by a single gill on each side, a single siphon and the simple organisation of the nephridium. Prashad (1925c, p. 410) suggested the placement of P. nevillianum Theobald in this subgenus on the bases of these characters. P. (Neopisidium) nevillianum (Theobald) has an arcuate c.3 with posterior part thickened,
anterior part very thin, slightly curved, p.III recurved over p.I, triangular, fairly large c.2 and sharp lamellar c.4 which distinguish it from other Indian pisidia.

In the respective systematic descriptions (Chapter 5) of these pisidia the above mentioned taxonomic and morphologic comments have been omitted for the sake of brevity.

4.4 CHECKLIST

4.4.a GENERAL STATEMENT

In the present work, a total of forty-nine molluscan taxa from different horizons of the Siwalik Group and the Late Pleistocene terrace deposits of parts of Himachal Pradesh, Punjab and Haryana have been described/recorded and illustrated (Text Figure 22). The molluscan taxa described earlier by the author (vide Bhatia and Mathur, 1971, 1973, see appendices 2,4) have been included in this contribution for the sake of completeness and also due to the fact that with the help of more pertinent literature that is now available, the taxonomic positions of some of these have been revised (see 4.2.a,b and 4.3,a,b,c). The molluscan fauna includes thirty gastropod taxa and nineteen bivalve taxa. Among the gastropods, twenty-four taxa are known to literature, while six others have been left under open nomenclature for
want of adequate, well preserved material and/or pertinent literature. Of the bivalves, twelve taxa are already known to literature and seven taxa have been left under open nomenclature due to poor preservation, paucity of material and/or lack of pertinent literature. The taxa being described/commented upon in this work for the first time from the Siwalik and/or the Late Pleistocene terrace deposits are shown with an asterisk (*) in the checklist.

4.4.b GASTROPODA

Viviparus bengalensis (Lamarck)
V. dubiosus (Annandale)
*Hydrobioides avarix Annandale
*Amnicola (Alocinma) sp. cf. A. (A.) sistanica Annandale and Prashad
Tricula sp. cf. T. montana Benson
Melanoides tuberculata (Mueller)
Carychium sp.
Lymnaea sp. indet.
Gyraulus convexusculus (Hutton)
G. singularis (Mousson)
G. stewarti (Germain)
Helicorbis sp.
Polypylis sp. cf. P. kennardi (Bullen)
*Indoplanorbis exustus (Deshayes)
Ferrissia sp.
Pyramidula javana (Moellendorff)
Vertigo pandei Bhatia and Mathur
V. tevarii Bhatia and Mathur
Gastrocopta (Gastrocopta) kashmirensis Bhatia
G. (G.) naidui Bhatia and Mathur
G. (G.) prashadi Bhatia and Mathur
Pupilla himalayana (Hutton)
Sucoinea sp. indet.
Philalanka micromphala Benthem Jutting
P. nannophya Bensch
Euaustenia cassida Hutton
Eulota radicicola (Benson)
* Sitala sp. indet.
Caeciloides (Geostilbia) bensonii Gude
Gulella (Huttonella) bicolor (Hutton)

4.4.0 BIVALVIA

Lamellidens jammuensis Prashad
L. lewisi Vokes
L. proctori Prashad
Lamellidens sp. cf. L. subparallelus Vokes
Lamellidens sp. indet. A
*Lamellidens sp. indet. B
*Oxynaia* sp. indet.

*Parreysia* (Parreysia) sp. cf. *P. (P.) edwini* (Gupta) nov. comb.

*P. (P.) tatrotensis* Vokes

*P. (Parreysia)* sp. indet.

*P. (Radiatula) bonneaudi* (Bydoux) nov. comb.

*Corbicula* (Corbicula) sp. indet.

*Pisidium* (Pisidium) *indicum* Bhatia and Mathur

*P. (P.) mitchelli* Prashad

*P. (Pisidium)* sp. indet. A

*P. (Pisidium)* sp. indet. B

*P. (Afropisidium) clarkeanum* (Nevill and Nevill) nov. comb.

*P. (A.) sivalensis* (Bhatia and Mathur) nov. comb.

*P. (Neopisidium) nevillianum* (Theobald)

4.4.4.4 REPOSITORY

One hypotype each of the known and the indeterminate species described/recorded in this contribution has been deposited in the Museum, Centre of Advanced Study in Geology, Panjab University, Chandigarh under numbers CASGF 128 to 133, 135, 142, 209 to 238 and 423 to 439.