©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

Ann. Naturhistor. Mus. Wien	68	273—278	Wien, November 1965

Further Studies on Species of Pyrgulifera[1])

JOHN T. C. YEN [2])

(Mit 1 Tafel)

Manuskript eingelangt am 24. März 1965.

Since the paper on systematics and distribution of the genus *Pyrgulifera* MEEK appeared in the „Annalen" (YEN 1958), several interesting contributions have been published in Europe relating various aspects of this genus. In that paper the present author has maintained, and still maintains that STOLICZKA proposed a combination of "*Turbo acinosus*" ZEKELI 1852 and "*Melanopsis pichleri*" HOERNES 1856 as "*Tanalia pichleri*" (STOLICZKA 1865, p. 56). He combined the two different forms on the ground of observing the correct priority law, since he considered the two forms to be specifically identical. Because of his authority, which was and is respected, this ill-combination has created complications in later years. His proposition was followed, and identifications of the species and genus were accordingly made elsewhere in the collections of different institutions.

Now let us note once more what is *Pyrgulifera* MEEK, of which genus „*Tanalia*" *pichleri* HOERNES is undoubtedly one of the species. The morphological features and habitat conditions have been clearly defined and discussed (YEN 1958, pp. 195—200). Its biostratigraphic records, including palaeoecological relationships, have been well demonstrated by BARTA (1962) in his elaborate studies of various phases of the Ajka coal beds, in which several species of *Pyrgulifera* were described and recorded. In other words, *Pyrgulifera*, which is presently assigned to the Family Pleuroceratidae, consists of a group of species which are characterized by their thick shell substance, produced and turrited spire, angular and shouldered whorls, sinuoused aperture with distinct but not always prominent notch and pronounced sculpture.

The genus has superficial resemblance of *Paramelania damoni* SMITH 1881, which was described from the recent Lake Tanganyika of Africa, and *Purpurina serrata* QUENSTEDT (Pl. 1, figs. 10—12), which was described from the

---

[1]) This work is a contribution from the Research and Development Division of Villanova University.

[2]) Professor of Geology, and Chairman of Department of Geology, Villanova University.

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

Oolitic bed in southwestern Germany. Their morphological differences have been pointed out (YEN 1958, p. 197), besides the facts that *Paramelania damoni* comes from a Recent lake and *Purpuriana serrata* from Jurassic marine bed evidenced by the presence of the Oolites filled inside of its shell aperture. For the illustrations of the Jurassic species, the author wishes to attend here his appreciation of the kindness of Professor HOELDER and Dr. H. SCHUMANN of Tuebingen then, who kindly supplied the photographs of this type-specimen 1957. Since the previous work was then already in press, they are now illustrated in this work.

Many species of *Pyrgulifera* have been described and recorded from both sides of the Atlantic, and a couple of them are said to be from Japan and Korea. Based on the specimens of original or primary sources, the present author recognized a score of species under consideration (1958). It must be noted that he has not seen the Far Eastern Asiatic material, besides, as far as its occurrence in the Japanese Cretaceous bed is concerned, a single specimen cannot be used to establish a record of distribution. It is up to their geologists and paleontologists to make the point. For the present, the distribution of *Pyrgulifera* must remain its present limit.

A number of species, which was described as *Pyrgulifera*, do not belong to this genus. For instance „*Pyrgulifera glypta*" REY 1958, which was described from „an Upper Cretaceous" bed in New Caledonia of the South Pacific in northeast of Australia. It should be noted here, however, that the present author has no intention of criticising M. l'Abbe REY's work in this instance. He merely cites this case as a classic example to illustrate how identification could be misled and therefore it could create confusion by over-simplifying the issues. There is no question that M. l'Abbe REY has discussed and demonstrated in all the necessary details to make his point, namly, his "*glypta*" to be a species of *Pyrgulifera*, but he missed it by comparing his specimens with those being described as "*Turbo acinosus*", and also trying to include "*spinigera*" as a species of *Pyrgulifera*. His "*glypta*" resembles in some aspects ZEKELI's "*acinosus*". Consequently, it does not require much imagination and deliberation in following the well established error for almost a century, to consider his New Calendonian fossils to be a species of „*Pyrgulifera*".

For an identification of a systematic unit, whether it be a species or any higher category, considerations must first be given to morphological features, habitat conditions, geological range and stratigraphic position in addition to paleogeographical distribution. The range and distribution can be extended, when and if reliable and convincing material are available to establish the record. The fossil faunas of different geological ages provide no end of examples: some systematic units are restricted to one age, while others have longer ranges, they are all based on well studied records. The recent geographical distributions in different biotic provinces indeed lead paleontologists to give serious consideration in limiting distribution of faunas of geological ages.

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

It seems to be cosmopolitan in viewing that the specimens of New Caledonia could be a species possibly congeneric with a few species so far known along the 40th to 50th Parallel in the northern hemisphere merely by some resemblance of a mis-identified species. Such thought is not consistent with the system of natural distribution which is well defined in zoogeography. Such an attempt is therefore biologically not sound. It may be said that one can argue on the assumption that the paleozoogeographical distribution in Upper Cretaceous times might permit just such a range, but only if one could demonstrate the point with proved records.

Moreover, it is no solution to venture a suggestion of creating a new subgenus or any other systematic category, as an escape, to accommodate nonrelated forms of diversified habitat conditions, unless one has adequate material for a thorough study of the phylogenetic relationships of all the species and genera under consideration. Such thought cannot be causally suggested by a few bare sentences, which would merely cause confusion in literature.

The misleading identification of "*glypta*", in the opinion of the present author, was caused by the ill-combination of "*Turbo acinosus*" ZEKELI 1852 and "*Melanopsis pilcheri*" HOERNES 1856 by Stoliczka, as it was previously mentioned. Specimens of ZEKELI's "*acinosus*" were likewise identified as species of *Pyrgulifera, Tanalia, Hantkenia*, etc. They have been preserved in the collections of different institutions, and they were considered as unquestionably authentic for ages.

Unfortunately "*Turbo acinosus*" ZEKELI is definitely not a species of *Pyrgulifera*. The present author has examined all the available material in Vienna, and he is led to confirm his previous conclusion — a conclusion is based on two major factors: morphological and habitat conditions. The latter is evidenced by its biotic assemblages.

To settle an issue in morphological features, we have to base on authentic material of original sources. ZEKELI mentioned 5 localities for his "acinosus", when he described it from the well known Gosau beds in Austria. Some of his localities still yield useful specimens. It is not an uncommon species although well preserved examples may be rather rare. The shell is imperforate, having roundly convex but not shouldered whorls. The spire is elevated with a side angle of 65 degrees, but other differences plus the sculpture and apertural features have formed a different appearance from species of *Pyrgulifera*. After having examined the available material, the present author is led to suggest that ZEKELI's "*acinosus*" may belong to a different family, possibly Buccinidae, while species of *Pyrgulifera* belong to Pleuroceratidae, or Thiaridae in sense of THIELE (1929—1935) and WENZ (1938—1944).

Moreover, based on facts, not causal opinions, "*Turbo acinosus*" came from the Gosau beds of marine origin. It was found in association with predominantly marine biotic assemblages. Species of *Pyrgulifera* were found in the deposits of non-marine origin (freswater or brackish water). It should be noted that among the lists in the early literature, species of *Pyrgulifera*

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

were at times included in the forms of marine habitat, but those lists were catching-all records, and they are not delimited by biostratigraphic facies as those being presented in BARTA's work (1962). Therefore, forms in the same list in early days did not imply that they were collected from the same stratigraphic level, although they might come from the same outcrop of the same section. They did not mean that they belong to the same biotic assemblage.

In addition to *Turbo acinosus*, there is another species that should be menttioned here, namely *Trochus spiniger*. The 2 questionable species were described and recorded from the Gosau beds, and both of them were referred to as species of *Pyrgulifera*. The present author has made an effort in examining the available lots of material in the existing collections, which are preserved in this Museum and the Geologische Bundesanstalt.

Turbo acinosus ZEKELI 1852

Pl. 1, figs. 1—6.

The morphological features and habitat conditions of the species have been previously summarized, ZEKELI's original description and illustrations are adequately given. Unfortunately the type-specimens of the species seem to be missing. However, there are five lots of specimens (Cat. nos. 8107, 8108, 8109, 8110 and 8114) to represent this species in the collection of Geologischen Bundesanstalt. They were collected in Muthmannsdorf or its vicinity. Muthmannsdorf is the first locality mentioned in ZEKELI's description, while Piesting and Dreistätten are close by in the north of Muthmannsdorf. The illustrated specimens (Cat. no. 8107) are contained in the lot which is labelled to be from Muthmannsdorf in the older collection. There is a faint red mark on one piece of the matrix which contains several specimens. It is not unlikely that this is one of the original lots of ZEKELI's. The specimens in this lot are hereby designated as the neo-holotype (figs. 1—2), and neo-paratypes of this species. Moreover, these specimens of various sizes evidently represent a series of developmental stages. The measurements of four representatives are given as follows:

Height of shell	23,2	20,3	16,0	13,0 mm.
Width of shell	15,3	12,5	11,0	9,0 mm.
Number of whorls	6+	6+	6+	6,0

The apical whorls are in most of the specimens decollated, except the last of the above mentioned four specimens, which is almost completely preserved, and which consists of 2 and one-half whorls.

The lot (Cat. no. 8114) was collected by PLOECHINGER of Geologischen Bundesanstalt. This lot bears stratigraphic significance. It came, according to the collector, from dark grayish sandy marls with slightly reddish tint when freshly cracked, which occurs stratigraphically several hundred meters

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

below the lighter colored Inoceramus-marls and the Orbitoiden sandstones. They also contain predominantly marine genera and species. They should be, therefore, considered to be of marine origin. The material in this and other lots matches well in sediments as well as fossiliferous contents with those lots in the older collections.

Trochus spiniger (SOWERBY) ZEKELI 1852

Pl. 1, figs. 7—8.

The name of this species was accredited by some authors to J. SOWERBY in SEDGWICK and MURCHISON 1832. It was nomen nudum with a figure, but it was adequately described and illustrated by ZEKELI 1852. The species is well characterized by its conical and trochoid outline, strong and sharp, distantly spaced ribs with its whorl-surface being angular both at the shoulder and also below the periphery. The basal surface is gently or slightly convex. In early publications, SOWERBY's figure looks like an imperfect and immatured specimen, but COSSMANN's (1915) are excellent for which he proposed *Tanaliopsis* (1915, p. 77, pl. 3, figs. 38 and 39) as a subgenus of Risella in Littorinidae, and WENZ (1938) restricted it to Amberleyidae (= Eucyclidae) of Trochonematacea.

In the Museum collection, there is one lot of some specimens, which were collected from Niedere Traunwand. The largest one measures 15,0 in height of shell, 10,0 in width with 5+ whorls; the smallest is 8,8 in height, 7,0 in width with 4 whorls.

In the Bundesanstalt collections, there are three lots, one from Gosau (Cat. no. 8113), one from Russbach (Cat. no. 8112) and one from Traunwand (Cat. no. 8111). These 3 localities are not distant from each other. ZEKELI noted that his material came from "Traunwand bei Gosau". There seems to be little doubt that Traunwand is probably the type-locality of this species. ZEKELI gave 15,0 mm in height, 12,0 mm in width, possibly with 5 whorls.

The 2 illustrated specimens from the lot (Cat. no. 8113) are given as follows:

Height of shell	19,0	13,5 mm
Width of shell	15,0	8,4 mm
Number of whorls	5+	6 (including 2 apical whorls)

Both generic and family positions of the above 2 species should remain as they are for the present. Any useful attempt to revise them has to be through a study of the phylogenetic relationship of all the available species of the genus and guided by their geological range and paleogeographical distribution, if possible, as well as their biotic assemblages. There is no question that ZEKELI's nomenclature needs a revision. It always does in the light of more new findings in the studies of systematics. It is a wonder when we look through the leading "Manuals" and "Handbooks", we find that the major systems of

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at

the faunas, take Mollusks for instance, have not been drastically altered, withholding those through individual errors, after studies of their fossil remains and anatomy of their recent forms for a century.

"In conclusion, the present author wishes to express his great appreciation of the full cooperation of Professor Dr. H. ZAPFE, Professor Dr. F. BACHMAYER and Doctor H. KOLLMANN of the Geologisch-Palaeontologischen Abteilung during his visit to the Naturhistorisches Museum. He is equally thankful to Professor Dr. R. SIEBER of the Geologischen Bundesanstalt in Vienna for his kind effort in locating the early collections of specimens, which indeed are valuable. They are immensely useful in this work with the illustrations provided by the administration of the Bundesanstalt."

References cited

BARTA, F., (1962): Examen biostratigraphique du complexe houiller du Cretace superieur de la partie meridionale de la montagne Bakony: Acta Geologica, Tom VII, fas. 3—4, pp. 359—398, 10 pls., Budapest.

MUNIER-CHALMAS, E., (1877): Terrain tertiaire de la Hongrie: Comptes Rendus des Seances de l'Academie des Sciences, pp. 125—128, (avec M. Herbert).

PLOECHINGER, B., (1961): Die Gosaumulde von Grünbach und der Neuen Welt (Nieder-Österreich): Jb. Geol. B. A., Bd. 104, pp. 359—441, map and figs. Vienna, (with Bardossy, Oberhauser and Papp).

REY, ROGER, (1961): Observations sur l'Espece Pyrgulifera glypta de Nouvelle-Caledonie et sur le genre Pyrgulifera: Jour. Conchy., vol. CI, pp. 7—60, 6 pls. Paris.

SCHAFFER, F. X., (1951): Geologie von Österreich, Vienna.

STOLICZKA, F., (1860): Über eine der Kreideformation angehörige Süßwasserbildung in den Nordöstlichen Alpen: SB. Akad. Wiss. math.-nat. Kl. v. 38, S. 482—496, 1 pl. Vienna.

— (1865): Eine Revision der Gastropoden der Gosauschichten in den Ostalpen: SB. Akad. Wiss. math.-nat. v. 52, 120 pp., 1 pl., Vienna.

SOWERBY, J., (1832): in Sedgwick, A., and Murchison, R. I., A sketch of the structure of the eastern Alps: Transc. Geol. Soc. London, 2nd Series, vol. 3, pt. 2, pp. 301—420, maps and pls. London.

YEN, J. T. C., (1958): Systematics and Distributions of Pyrgulifera Meek: Ann. des Naturhistorischen Museums in Wien, Bd. 62, pp. 193—209, 1 pl., Vienna.

ZEKELI, F., (1852): Die Gastropoden der Gosaugebilde: Abh. k. k. Geol. Reichsanst., v. 1, pp. 1—124, pls. Vienna.

Explanation of Plate

Figs. 1—2. „*Turbo*" *acinosus* ZEKELI — Muthmannsdorf, Neo-holotype, ×2.

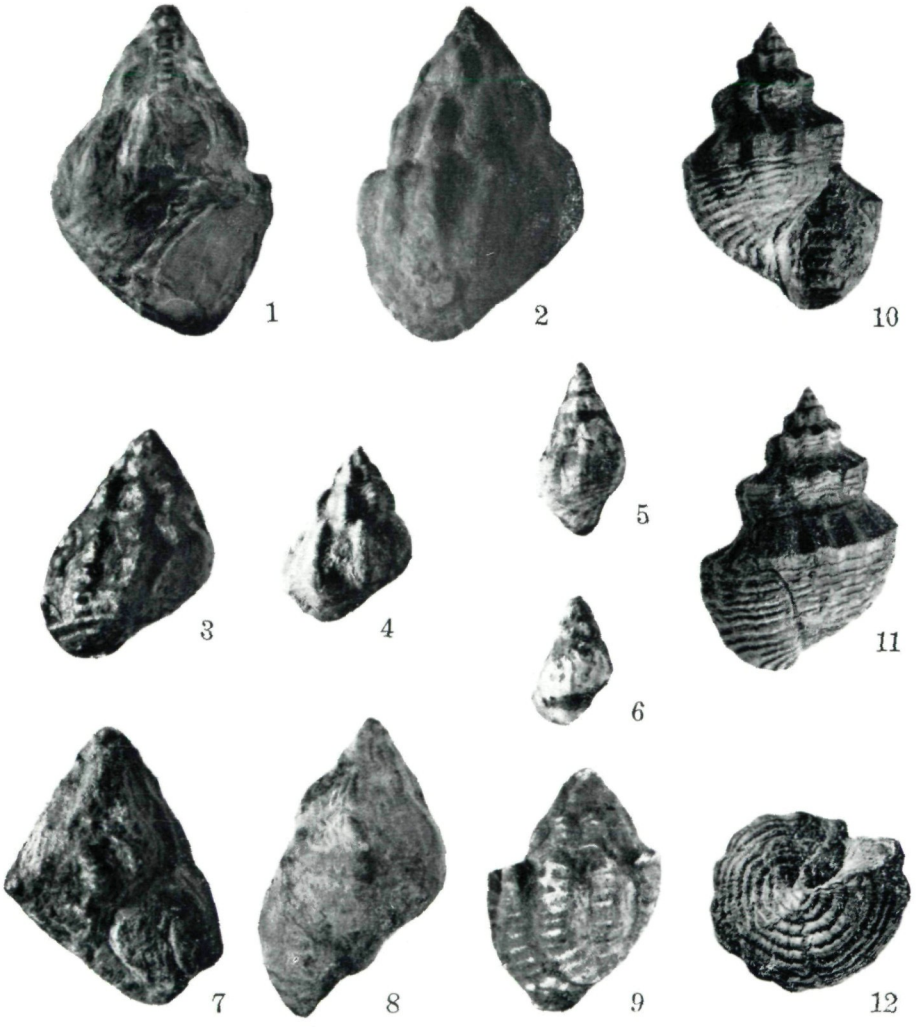
Figs. 3—6. „*Turbo*" *acinosus* ZEKELI — Muthmannsdorf, Neo-paratypes, ×2.

Figs. 7—8. „*Trochus*" *spiniger* ZEKELI — Traunwand, ×2.

Fig. 9. *Pyrgulifera Pichleri nassaeformis* SANDBERG — Brandenberg, ×2, for comparison.

Figs. 10—12. *Purpurina serrata* QENSTEDT — Jurassic marine bed, SW Germany Natural size.

©Naturhistorisches Museum Wien, download unter www.biologiezentrum.at



ZOBODAT - www.zobodat.at

Zoologisch-Botanische Datenbank/Zoological-Botanical Database

Digitale Literatur/Digital Literature

Zeitschrift/Journal: Annalen des Naturhistorischen Museums in Wien

Jahr/Year: 1965

Band/Volume: 68

Autor(en)/Author(s): Yen John T.C.

Artikel/Article: Further Studies on Species of Pyrgulifera. (Tafel 1) 273-278