

Case 999**F.A. Quenstedt's trinominal nomenclature (1845–1888): a proposal to stabilize the usage of the third names of ammonites and to place 34 important Quenstedt names of ammonites on the Official List of Specific Names in Zoology (Cephalopoda, Ammonoidea)**

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Abstract. The purpose of this application is to stabilize the usage of the third names of a number of ammonites established by F.A. Quenstedt (1845–1888) and to place 34 of his species-group names on the Official List. The problem has arisen from uncertainty as to whether Quenstedt's third names should be treated as subspecific, and therefore available, or as infrasubspecific and therefore unavailable under the Code. It is proposed that the Commission should rule that all Quenstedt's third names under the genus *Ammonites* are subspecific in rank and are therefore available names in the species group. It is also proposed that the Commission should rule that seven such third names that are junior homonyms, but are type species of genera or indices of standard chronostratigraphic Zones or Subzones, are not invalid by reason of being junior homonyms. It is proposed that these seven names, together with 27 other Quenstedt third names that are in current use as important zonal or subzonal index fossils or as type species of ammonite genera, are placed on the Official List of Specific Names in Zoology.

Keywords. Nomenclature; taxonomy; F.A. Quenstedt; trinominal nomenclature; ammonites; Jurassic.

1. A long-standing problem that has bedevilled the taxonomy of Jurassic ammonites arose from the introduction in 1845 of an idiosyncratic nomenclature by one of the major early contributors to the field, F.A. Quenstedt, working on the rich faunal successions of Swabia in southern Germany. It arose from his attempts in his morpho-descriptive taxonomy to differentiate between what he regarded as true species and what he thought were mere varieties within such species: what today we define as the distinction between taxa in the species group, whose nomenclature is governed by the provisions of the Code, and infrasubspecific taxa, which are not. His exposition of the difference between natural species and their variants was as clear in principle as one we would accept today, but its recognition in fossils has in practice to be subjective. Unfortunately, he chose to name his varietal taxa by the addition to

Linnaean specific binomina of third names having the same appearance as those for Linnaean subspecies. Moreover, he was not consistent in his application of the principles he had put forward. Nor did he state clearly case-by-case in which sense the third names were to be construed. The majority undoubtedly were intended to be varietal, and for this reason Quenstedt made no attempt to avoid homonymy within the genus *Ammonites*: the same third name could be used more than a dozen times, attached to different specific binomina. Subsequent revisers differed in their interpretations and as to what provisions of the Code should be applied; most revisers, who judged Quenstedt's trinominally named taxa to be specifically distinct, were faced with unending problems of homonymy, which were ignored in many cases, and the confusion has been vexing.

2. In July 1955 Prof Dr Helmut Hölder (then at the Institute and Museum of Geology and Palaeontology at the University of Tübingen, Germany) raised the problem of Quenstedt's ammonite nomenclature with the Commission's Secretary. Following correspondence, Professor Hölder outlined the problem in a paper published in *Paläontologische Zeitschrift* (Hölder, 1958) (an English translation of this paper made by Miss M.E. Lang in 1969 is available from the Commission's Secretariat). In this paper, Hölder proposed that Quenstedt's third names should, with a considerable number of exceptions for 'unique' names (i.e. those not pre-occupied and used only once by Quenstedt), be annulled on principle by being declared to be infrasubspecific, and therefore not available in the species group. For a number of reasons, including the intensive work then being done in formulating what was to become the first International Code of Zoological Nomenclature in 1960, no progress was made on Hölder's proposals, which have never been considered by the Commission. Hölder himself stated later (Hölder, 1972) that his proposals of 1958 were no longer entirely appropriate. It is now opportune for the case to be considered further under the provisions of the current (Fourth) Edition of the Code.

3. The Quenstedt works under consideration are *Petrefactenkunde Deutschlands; Die Cephalopoden* (1845–49), *Der Jura* (1856–57) and *Die Ammoniten des Schwäbischen Jura* (1882–88); details of these publications are given in the References at the end of this application. Quenstedt placed all his ammonites in the genus *Ammonites*, a name that was suppressed by the Commission (Opinion 305, December 1954) for the purposes of the Principle of Priority, but not for those of the Principle of Homonymy, and not as the root of names of higher categories above family-group level, e.g. *Ammonitina*. A general account of Quenstedt's system of trinomial nomenclature as applied to ammonites is being published by Callomon, Donovan & Howarth (2004): many examples of Quenstedt's names for ammonites are given there, and their varying usage by revising authors is discussed at some length. The aim of the present application is to stabilize the usage of all the third names that Quenstedt proposed for the genus *Ammonites*.

4. When Hölder submitted his proposals in the 1950s, zoological nomenclature was regulated by the *Règles Internationales de la Nomenclature Zoologique* of 1905, but the formulation of the International Code of Zoological Nomenclature in 1960, followed by revised versions up to the Fourth Edition in 1999, allows the problem to be solved in a meaningful way that is more in keeping with the actions of the many later authors who have used Quenstedt's names. Article 45.6.4 of the current Code allows some freedom in deciding whether a pre-1961 third name is subspecific (and

therefore an available name in the species group), or whether it is infrasubspecific (and therefore unavailable). Authors are required to consider the wording and intentions of the original author and interpret the status of the third name in an appropriate manner. Many later authors have used Quenstedt's third names as those of full species, and some of them have become the specific names of important index fossils of standard chronostratigraphic Zones and Subzones or type species of ammonite genera. Under the provisions of Article 45.6.4, such subsequent usage of Quenstedt's third names up to the end of 1984 has already given them species-group status, dating from their first proposal by Quenstedt. Article 45.6.4.1 states that 'a name that is infrasubspecific under Article 45.6.4 is nevertheless deemed to be subspecific from its original publication if, before 1985, it was either adopted as the valid name of a species or subspecies or was treated as a senior homonym'. This has stabilized the many past usages of Quenstedt third names as valid species-group names, and it is the purpose of the present application to extend this to all Quenstedt's third names. All were proposed under the genus *Ammonites*, and their stabilization as species-group names implies that they will now come under the provisions of the Principle of Homonymy. Some of them are junior homonyms of earlier uses of the same specific name in the genus *Ammonites*. To resolve the homonymy, such names would have to be replaced when required by a replacement name bearing new authorship and date (e.g. *Amaltheus nodifer* Buckman, 1911, a replacement name for *Ammonites amaltheus depressus* Quenstedt, 1856, *non Ammonites depressa* Bruguière, 1789), or by their taxa being subsumed into older species as junior synonyms. In the cases of type species of genera or index species of Zones and Subzones, such changes would require major changes of deeply established names and usages, whose importance ranges widely outside the local purview of specific taxonomy.

5. We therefore propose that the Commission should rule that all the third names placed in the genus *Ammonites* in the three works of Quenstedt (1845–49; 1856–57; 1882–88) listed in the references below, are subspecific names of the species group, have availability and status dating from Quenstedt's first usage, and are available to be raised to full specific rank where such action is considered to be appropriate by a revising author. They would then be subject to the provisions of the Principle of Homonymy. This proposal does not apply to any of Quenstedt's fourth names, of which a few were proposed in the genus *Ammonites*. These are already covered by a sentence in Article 45.5, which states that all fourth names are infrasubspecific, and are therefore not available names in the species group. A consequence of these proposals is that any of Quenstedt's third names that are homonyms of existing species-group names in the genus *Ammonites* proposed earlier either by Quenstedt himself or by other authors, are junior homonyms, and need to be replaced if they are to be used subsequently. However, a number of important Quenstedt third names that are junior homonyms should be conserved on the grounds that they are type species of genera or are indices of chronostratigraphic Zones and Subzones. Details of such third names are given in List A. Under Article 67.1.2 'the name of a type species remains unchanged even when it is a junior synonym or homonym'; nevertheless, and particularly since one name is that of a zonal index, we propose that the Commission should rule that all the third names in this list are not invalid by reason of being junior homonyms and are available as species-group names from the dates of their first use by Quenstedt.

LIST A

Pre-occupied Quenstedt third names that are to be conserved as valid species-group names by a ruling under the plenary power that they are not invalid by reason of being junior homonyms, being either type species of genera or indices of standard chronostratigraphic Zones or Subzones:

albus, *Ammonites anceps*, Quenstedt, 1857, p. 617; type species, by original designation, of *Ilovaiskioceras* Sazonov, 1960 [non *Ammonites canaliculatus albus* Quenstedt, 1846; nec *Ammonites triplicatus albus* Quenstedt, 1846].

anceps, *Ammonites contractus*, Quenstedt, 1886, p. 521; type species, by original designation, of *Epaxites* Mascke, 1907 [non *Ammonites anceps* (Reinecke) Zieten, 1830 (= *Nautilus anceps* Reinecke, 1818)].

bifurcatus, *Ammonites bplex*, Quenstedt, 1846, p. 163; type species, by subsequent designation by Spath (1931), of *Divisosphinctes* Beurlen, 1925 (= *Dichotomoceras* Buckman, 1919, subj., Enay 1966); index of Bifurcatus Zone, Middle Oxfordian [non *Ammonites bifurcata* Bruguière, 1789; nec *Ammonites bifurcatus* de Roissy, 1805; nec *Ammonites bifurcatus* Schlotheim, 1820; nec *Ammonites parkinsoni bifurcatus* Quenstedt, 1846].

macer, *Ammonites humphriesianus*, Quenstedt, 1886, p. 528; type species, by original designation, of *Skirroceras* Mascke, 1907 [non *Ammonites brevidorsalis macer* Quenstedt, 1883; nec *Ammonites bucklandi macer* Quenstedt, 1883; nec *Ammonites baculatus macer* Quenstedt, 1886].

numismalis, *Ammonites heterophyllus*, Quenstedt, 1845, p. 100; type species, by subsequent designation by Buckman (1912), of *Tragophylloceras* Hyatt, 1900 [non *Ammonites numismalis* Steininger, 1831].

obtusus, *Ammonites murchisonae*, Quenstedt, 1846, p. 116; type species, by subsequent designation by Buckman (1899), of *Cosmogyrta* Buckman, 1898 (= *Ludwigia* Bayle, 1878, subj.) [non *Ammonites obtusus* J. Sowerby, 1817].

ovalis, *Ammonites sowerbyi*, Quenstedt, 1886, p. 488; the zonal index species of the *Sonninia ovalis* Zone, Lower Bajocian [non *Ammonites alternans ovalis* Quenstedt, 1845 (= *Amoeboceras ovalis* (Quenstedt, 1845)); nec *Ammonites psilonotus ovalis* Quenstedt, 1882; nec *Ammonites insignis ovalis* Quenstedt, 1885].

6. List B shows details of Quenstedt's third names that are names of type species of genera, and List C gives details of Quenstedt's second names (ie. normal specific names in binominal combination) that are names of type species of genera or of indices of chronostratigraphic Zones and Subzones. None of the third names in List B nor the second names in List C are pre-occupied in the genus *Ammonites*. We propose that the Commission should place all the Quenstedt third names in Lists A and B, and the Quenstedt second names in List C, on the Official List of Specific Names, with the exception of *oxynotus*, *Ammonites* and *polymorphus*, *Ammonites*, which are already on the Official List (Opinion 575, December 1959).

LIST B

Quenstedt third names that are not pre-occupied and are names of type species of genera:

circumspinosus, *Ammonites inflatus*, Quenstedt, 1857, p. 609 (= *Amm. circumspinosus* Oppel, 1863 (subj.)); type species, by original designation, of *Physodoceras* Hyatt, 1900.

- longidens*, *Ammonites parkinsoni*, Quenstedt, 1886, p. 592; type species, by monotypy, of *Odontolkites* Buckman, 1925 (= *Garantiana* Mascke, 1907; subj.).
- parinodus*, *Ammonites striatus*, Quenstedt, 1884, p. 227; type species, by original designation, of *Parinodiceras* Trueman, 1918.
- ruga*, *Ammonites armatus*, Quenstedt, 1884, p. 206; type species, by original designation, of *Hyperderoceras* Spath, 1926.
- tegulatus*, *Ammonites pictus*, Quenstedt, 1887, p. 1051; type species, by original designation, of *Taramelliceras* (*Strebliticeras*) Hölder, 1955.
- tortus*, *Ammonites lineatus*, Quenstedt, 1885, p. 309; type species, by subsequent designation by Spath (1924), of *Derolytoceras* Rosenberg, 1909.
- unispinosus*, *Ammonites athleta*, Quenstedt, 1847 p. 190; type species, by original designation, of *Unipeltoceras* Jeannet, 1951.

LIST C

Quenstedt second names that are names of type species of genera or indices of chronostratigraphic Zones or Subzones, and are not pre-occupied:

- arenatus*, *Ammonites*, Quenstedt, 1886, p. 482; type species by monotypy of *Prepapillites* Buckman, 1927.
- baculatus*, *Ammonites*, Quenstedt, 1857, p. 402; type species by original designation of *Baculatoceras* Mascke, 1907 (non *Hamites baculatus* Quenstedt, 1857, p. 403; type species of *Apsorrocera* Hyatt, 1900).
- bidentosus*, *Ammonites*, Quenstedt, 1857; type species by original designation of *Trochiskioceras* Schairer & Schlamp, 1991.
- bifer*, *Ammonites*, Quenstedt, 1843, p. 160; type species by original designation of *Bifericeras* Buckman, 1913.
- bimammatus*, *Ammonites*, Quenstedt, 1857, p. 616; type species by original designation of *Epipeltoceras* Spath, 1924; type genus of EPIPELTOCERATINAE Donovan, Callomon & Howarth, 1981; index of the *Epipeltoceras bimammatum* Zone, Submediterranean Upper Oxfordian.
- biruncinatus*, *Ammonites*, Quenstedt, 1847, p. 260; type species by subsequent designation by Fischer (1882) of *Simoceras* Zittel, 1870.
- confusus*, *Ammonites*, Quenstedt, 1856, p. 127; type species by subsequent designation by Buckman (1924) of *Microceras* Hyatt, 1867 (non *Microceras* Hall, 1845 (Gastropoda)) (= *Hemimicroceras* Spath, 1925; subj.); type genus of MICROCERATIDAE Spath, 1926 (= EODEROCERATINAE Spath, 1929; subj.).
- fasciatus*, *Ammonites*, Quenstedt, 1848, p. 271; type species by original designation of *Lytogyroceras* Spath, 1925.
- ibex*, *Ammonites*, Quenstedt, 1843, p. 179; index species of *Tragophylloceras ibex* Zone, Pliensbachian.
- involutus*, *Ammonites*, Quenstedt, 1846, p. 165; type species by subsequent designation by Spath (1931) of *Involuticeras* Salfeld, 1913.
- laqueus*, *Ammonites*, Quenstedt, 1856, p. 43; index species of *Alsatites laqueus* Subzone, Liasicus Zone, Hettangian.
- latisulcatus*, *Ammonites*, Quenstedt, 1883, p. 85; type species by original designation of *Epammonites* Spath, 1922.
- microbiplex*, *Ammonites*, Quenstedt, 1887, p. 876; type species by original designation of *Microbiplices* Arkell, 1936.

- nodostrictus*, *Ammonites*, Quenstedt, 1885, p. 264; type species by original designation of *Holcolytoceras* Spath, 1924.
- nodulatus*, *Ammonites*, Quenstedt, 1888, p. 981; type species by original designation of *Presimoceras* Sarti, 1990.
- oxynotus*, *Ammonites*, Quenstedt, 1843, p. 161; type species by subsequent designation by Buckman (1909) of *Oxynoticeras* Hyatt, 1875; type genus of OXYNOTICERATIDAE Hyatt, 1875, index species of *Oxynoticeras oxynotum* Zone, Sinemurian (name already on Official List).
- pettos*, *Ammonites*, Quenstedt, 1843, p. 178; type species by subsequent designation by Buckman (1898) of *Coeloceras* Hyatt, 1867.
- planarmatus*, *Ammonites*, Quenstedt, 1856, p. 153; type species by original designation of *Parahyperderoceras* Schlatter, 1980 (as subgenus of *Hyperderoceras* Spath, 1926).
- polymorphus*, *Ammonites*, Quenstedt, 1845, p. 86; type species by subsequent designation by Buckman (1892) of *Polymorphites* Haug, 1887; type genus of POLYMORPHITIDAE Hyatt, 1887; index species of *Polymorphites polymorphus* Subzone, Jamesoni Zone, Pliensbachian (name already on Official List).
- septenarius*, *Ammonites*, Quenstedt, 1857, p. 614; type species by original designation of *Ceratosphinctes* Ziegler, 1959.
- spiratissimus*, *Ammonites*, Quenstedt, 1851, p. 355; type species by subsequent designation by Spath (1924) of *Vermiceras* Hyatt, 1889.
- transversarius*, *Ammonites*, Quenstedt, 1847, p. 199; type species by original designation of *Gregoryceras* Spath, 1924; index species of *Gregoryceras transversarium* Zone, Middle Oxfordian.

7. These proposals relate only to the names proposed by Quenstedt in the genus *Ammonites* and do not affect any other systematic group.

8. The International Commission on Zoological Nomenclature is accordingly asked:

(1) to use its plenary power:

(a) to rule that all the third names published in combination with the genus *Ammonites* by Quenstedt in the three works (1845–49; 1856–57; 1882–88) listed in the references below are subspecific names of the species group, have availability and status dating from Quenstedt's first usage, and can be raised to full specific rank under the Principle of Coordination (Article 46) where such action is considered to be appropriate by a revising author;

(b) to rule that the following third names are not invalid by reason of being junior homonyms:

- (1) *albus*, *Ammonites anceps*, Quenstedt, 1857;
- (2) *anceps*, *Ammonites contractus*, Quenstedt, 1886;
- (3) *bifurcatus*, *Ammonites biplex*, Quenstedt, 1846;
- (4) *macer*, *Ammonites humphriesianus*, Quenstedt, 1886;
- (5) *numismalis*, *Ammonites heterophyllus*, Quenstedt, 1845;
- (6) *obtusus*, *Ammonites murchisonae*, Quenstedt, 1846;
- (7) *ovalis*, *Ammonites sowerbyi*, Quenstedt, 1886;

- (2) to place on the Official List of Specific Names in Zoology the following names:
- (a) *albus*, *Ammonites anceps*, Quenstedt, 1857 (specific name of the type species of *Ilovaiskioceras* Sazonov, 1960);
 - (b) *anceps*, *Ammonites contractus*, Quenstedt, 1886 (specific name of the type species of *Epalxites* Mascke, 1907);
 - (c) *arenatus*, *Ammonites*, Quenstedt, 1886 (specific name of the type species of *Prepapillites* Buckman, 1927);
 - (d) *baculatus*, *Ammonites*, Quenstedt, 1857 (specific name of the type species of *Baculatoceras* Mascke, 1907);
 - (e) *bidentosus*, *Ammonites*, Quenstedt, 1857 (specific name of the type species of *Trochiskioceras* Schairer & Schlamp, 1991);
 - (f) *bifer*, *Ammonites*, Quenstedt, 1843 (specific name of the type species of *Bifericeras* Buckman, 1913);
 - (g) *bifurcatus*, *Ammonites biplex*, Quenstedt, 1846 (specific name of the type species of *Divisosphinctes* Beurlen, 1925);
 - (h) *bimammatus*, *Ammonites*, Quenstedt, 1857 (specific name of the type species of *Epipeltoceras* Spath, 1924);
 - (i) *biruncinatus*, *Ammonites*, Quenstedt, 1847 (specific name of the type species of *Simoceras* Zittel, 1870);
 - (j) *circumspinosus*, *Ammonites inflatus*, Quenstedt, 1857 (senior subjective synonym of *Ammonites circumspinosus* Oppel, 1863; specific name of the type species of *Physodoceras* Hyatt, 1900);
 - (k) *confusus*, *Ammonites*, Quenstedt, 1856 (specific name of the type species of *Microceras* Hyatt, 1867);
 - (l) *fasciatus*, *Ammonites*, Quenstedt, 1848 (specific name of the type species of *Lytogyroceras* Spath, 1925);
 - (m) *ibex*, *Ammonites*, Quenstedt, 1843;
 - (n) *involutus*, *Ammonites*, Quenstedt, 1846 (specific name of the type species of *Involuticeras* Salfeld, 1913);
 - (o) *laqueus*, *Ammonites*, Quenstedt, 1856;
 - (p) *latisulcatus*, *Ammonites*, Quenstedt, 1883 (specific name of the type species of *Epammonites* Spath, 1922);
 - (q) *longidens*, *Ammonites parkinsoni*, Quenstedt, 1886 (specific name of the type species of *Odontolkites* Buckman, 1925);
 - (r) *macer*, *Ammonites humphriesianus*, Quenstedt, 1886 (specific name of the type species of *Skirroceras* Mascke, 1907);
 - (s) *microbiplex*, *Ammonites*, Quenstedt, 1887 (specific name of the type species of *Microbiplices* Arkell, 1936);
 - (t) *nodostrictus*, *Ammonites*, Quenstedt, 1885 (specific name of the type species of *Holcolytoceras* Spath, 1924);
 - (u) *nodulatus*, *Ammonites*, Quenstedt, 1888 (specific name of the type species of *Presimoceras* Sarti, 1990);
 - (v) *numismalis*, *Ammonites heterophyllus*, Quenstedt, 1845 (specific name of the type species of *Tragophylloceras* Hyatt, 1900);
 - (w) *obtusius*, *Ammonites munchisonae*, Quenstedt, 1846 (specific name of the type species of *Cosmogyrria* Buckman, 1898);
 - (x) *ovalis*, *Ammonites sowerbyi*, Quenstedt, 1886;

- (y) *parinodus*, *Ammonites striatus*, Quenstedt, 1884 (specific name of the type species of *Parinodiceras* Trueman, 1918);
- (z) *pettos*, *Ammonites*, Quenstedt, 1843 (specific name of the type species of *Coeloceras* Hyatt, 1867);
- (aa) *planarmatus*, *Ammonites*, Quenstedt, 1856 (specific name of the type species of *Parahyperderoceras* Schlatter, 1980);
- (bb) *ruga*, *Ammonites armatus*, Quenstedt, 1884 (specific name of the type species of *Hyperderoceras* Spath, 1926);
- (cc) *septenarius*, *Ammonites*, Quenstedt, 1857 (specific name of the type species of *Ceratosphinctes* Ziegler, 1959);
- (dd) *spiratissimus*, *Ammonites*, Quenstedt, 1851 (specific name of the type species of *Vermiceras* Hyatt, 1889);
- (ee) *tegulatus*, *Ammonites pictus*, Quenstedt, 1887 (specific name of the type species of *Taramelliceras* (*Strebliticeras*) Hölder, 1955);
- (ff) *tortus*, *Ammonites lineatus*, Quenstedt, 1885 (specific name of the type species of *Derolytoceras* Rosenberg, 1909);
- (gg) *transversarius*, *Ammonites*, Quenstedt, 1847 (specific name of the type species of *Gregoryceras* Spath, 1924);
- (hh) *unispinosus*, *Ammonites athleta*, Quenstedt, 1847 (specific name of the type species of *Unipeltoceras* Jeannel, 1951).

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Copies of the paper by Callomon, Donovan & Howarth to be published in *Palaeontology* (2004, vol. 47) can be obtained from the I.C.Z.N. Executive Secretary (e-mail: iczn@nhm.ac.uk).

Comments on this case are invited for publication (subject to editing) in the *Bulletin*; they should be sent to the Executive Secretary, I.C.Z.N., c/o The Natural History Museum, Cromwell Road, London SW7 5BD, U.K. (e-mail: iczn@nhm.ac.uk).



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