Meded. Werkgr. Tert. Kwart. Geol. | 25(4) | 243-245 | | Leiden, december 1988

ADDITIONAL DATA ON THE ECHINOID GENUS *SCHIZASTER* FROM THE LATE OLIGOCENE OF THE LOWER RHINE DISTRICT (F.R.G.)

by

J.W.M. Jagt,
Venlo, The Netherlands

Jagt, J.W.M. Additional data on the echinoid genus *Schizaster* from the Late Oligocene of the Lower Rhine District (F.R.G.).—Meded. Werkgr. Tert. Kwart. Geol., 25(4): 243-245. Leiden, December 1988.

A previous article on the echinoid genus *Schizaster* from the Chattian (Late Oligocene) of the Lower Rhine District (F.R.G.) in the present periodical is briefly commented upon. It is concluded that the schizasterids from this area belong to a rather variable species, *Schizaster acuminatus* (Goldfuss, 1829), in agreement with previous authors.

John W.M. Jagt, 2de Maasveldstraat 47, 5921 JN Venlo, The Netherlands.

SAMENVATTING

Aanvullende opmerking over het echinidengeslacht *Schizaster* uit het Laat Oligoceen van het Nederrijns District (Duitse Bondsrepubliek).

Door een onvergeeflijke omissie van de redacteurs werd in het artikel van Jagt *in* Janssen (1987) in dit tijdschrift een eerder artikel (Von der Hocht, 1972; NB eveneens gepubliceerd in deze reeks!), waarin het voorkomen van het geslacht *Schizaster* in het Laat Oligoceen van het Nederrijns Gebied werd gemeld, over het hoofd gezien. Beide vondsten behoren, ondanks geringe morfologische verschillen, tot *Schizaster acuminatus* (Goldfuss, 1829), een bekende en in de literatuur goed gedocumenteerde soort.

Through an unfortunate and unpardonable lapse on the editors' part, an earlier paper on the echinoid genus *Schizaster* in the present journal (von der Hocht, 1972) was disregarded when describ-

ing an occurrence of this genus in reworked Late Oligocene concretions collected at Kamp Lintfort, Western Germany (Jagt *in* Janssen, 1987). In the present additional note von der Hocht's contribution is briefly commented upon. Despite slight morphological differences, both specimens described (von der Hocht, 1972; Jagt *in* Janssen, 1987) are apparently conspecific, and are to be referred to *Schizaster (Schizaster) acuminatus* (Goldfuss, 1829), a well-known species extensively recorded in the literature.

Von der Hocht's specimen came from an abandoned sandpit near Süchteln (Nordrhein-Westfalen, F.R.G.), some 32 km SW of Kamp Lintfort, where the fragmentary test described by Jagt (*in* Janssen, 1987) was collected. The former was found *in situ* in grey to yellowish-brownish, clayey, fine-grained sands of mid Eochattian age; the latter was discovered in reworked concretions of comparable age.

There are some points in von der Hocht's description that call for comment. The genus *Schizaster* L. Agassiz, 1836 should be assigned to the family Schizasteridae Lambert *in* Doncieux, 1905, and not to the Spatangidae L. Agassiz, 1836, as von der Hocht did. Seeing that his specimen was an internal mould, observations on test tuberculation and pore morphology were not possible. Despite this, the mould displays enough distinctive features to allow it to be compared favourably with the specimen illustrated by Jagt (*in* Janssen, 1987, pl. 3). Von der Hocht's specimen clearly shows two genital pores in the apical system; other test characteristics are also closely comparable to those of Jagt's specimen. There are very slight differences in the structure of the petals, but these are of no importance, since petal structure and course of spatangoids in general is very variable, see *e.g.* McNamara & Philip (1980) and Henderson (1975).

Von der Hocht's statement that the anterior notch of ambulacrum III could well have accommodated newly hatched offspring, lacks substantiation. As far as I know, among the schizasterids the only genus to be definitely marsupiate, is *Abatus* Troschel, 1851 (see Fischer *in* Moore, 1966, fig. 457/2a-c; Kier, 1969). The structure of ambulacrum III in spatangoid echinoids is highly distinctive and correlates directly with its function. Special adaptations are needed in these burrowing echinoids, in which the tuberculation and pore morphology of ambulacrum III provide clues as to their mode of life. For detailed descriptions of these characteristics the reader is referred to Smith (1980a, b; 1984). In view of the prime function of ambulacrum III it is highly unlikely that *Schizaster acuminatus* brooded its young.

Von der Hocht's assumption that the specimen he described had anchored itself in the substrate with its projecting labrum calls for comment as well. Schizasterids are burrowing echinoids and as such they are, when alive, completely covered with sediment. It is therefore much more likely that the echinoid was washed out of its burrow before being deposited on the inside of a valve of the bivalve *Arctica islandica rotundata* Agassiz, 1845, as described by von der Hocht. This would mean transportation, but only on a very small scale indeed. An interesting, yet puzzling point was raised by von der Hocht when he stated that Eocene and Oligocene specimens differ as far as the angle between the anterior notch and the anterior paired petals is concerned. I cannot say that I have found any definite record of *S. acuminatus* of Eocene age in the literature (compare Ebert, 1889). It would undoubtedly be interesting to compare populations of *S. acuminatus* of Oligocene age from different localities and analyse tuberculation and pore morphology, in order to determine if these populations display morphological changes that reflect adaptations to the occupation of slightly different facies (compare *e.g.* McNamara, 1985, 1987). Naturally, such a study can only be carried out with sufficient, well-preserved material.

Despite slight morphological differences (which may be age-related), it seems best to refer both recently described specimens from the Chattian of the Lower Rhine District to *S. acuminatus*, a species rather variable in test characteristics (see *e.g.* Ebert, 1889, pl. 5, figs 1-6) and recorded previously from the area.

REFERENCES

Ebert, T., 1889. Die Echiniden des Nord- und Mitteldeutschen Oligocäns. — Abhandl. geol. Spezialk. Preuss, Thür. Staaten, 9(1): vi + 111 pp., atlas with 10 pls.

Fischer, A.G., 1966. Spatangoids. *In*: R.C. Moore (ed.). Treatise on invertebrate paleontology, U. Echinodermata, 3. Echinozoa-Asterozoa, 2. Boulder/Lawrence (Geol. Soc. Am./Univ. Kansas Press): U543-U628.

Henderson, R.A., 1975. Cenozoic spatangoid echinoids from New Zealand.—N.Z. geol. Surv., Paleont. Bull., 46: 1-90, 18 pls.

Hocht, F. von der, 1972. Ein Seeigel aus dem Oligocän von Süchteln/Niederrhein (Westdeutschland). — Meded. Werkgr. Tert. Kwart. Geol., 9(1): 3-7, 2 figs.

Janssen, A.W., 1987. Late Oligocene fossiliferous concretions of local origin from Quaternary Rhine-deposits at Kamp-Lintfort, Lower Rhine District, F.R.G., with a description of Schizaster (Schizaster) sp. (Echinodermata, Spatangoida) by J.W.M. Jagt. — Meded. Werkgr. Tert. Kwart. Geol., 24(4): 247-260, 3 pls.

Kier, P.M., 1969. Sexual dimorphism in fossil echinoids. *In*: G.E.G. Westermann (ed.). Sexual dimorphism in fossil Metazoa and taxonomic implications. Stuttgart (Schweizerbart), IUGS (A)1: 215-221, pl. 14..

McNamara, K.J., 1985. Taxonomy and evolution of the Cainozoic spatangoid echinoid Protenaster. — Palaeontology, 28(2): 311-330, pls 32-34.

McNamara, K.J., 1987. Taxonomy, evolution, and functional morphology of southern Australian Tertiary hemiasterid echinoids. — Palaeontology, 30(2): 319-352, pls 44-48.

McNamara, K.J., & G.M. Philip, 1980. Australian Tertiary schizasterid echinoids. — Alcheringa, 4: 47-65.

Smith, A.B., 1980a. The structure, function, and evolution of tube feet and ambulacral pores in irregular echinoids. — Palaeontology, 23(1): 39-83, pls 1-6.

Smith, A.B., 1980b. The structure and arrangement of echinoid tubercles. — Phil. Trans. r. Soc. London, (B)289(1033): 1-54, pls 1-22.

Smith, A.B., 1984. Echinoid palaeobiology. London (G. Allen & Unwin), x + 190 pp.

Manuscript received 2 November 1988