THE SPECIES DESCRIBED BY LORENTZ SPENGLER IN HIS "BESKRIVELSE OVER DET TOSKALLEDE CONCHYLIE-SLAEGT *MACTRA*". A TRANSLATION INT O ENGLISH

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LORENZ SPENGLER.
Aufseher der Königl. Dän. Kunst u. Natur Kammer
mitglied der Röm. Kayf. Zürcher u. Berl. Naturf. Gesellsch.

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ABSTRACT

Spengler (1802) described and discussed 34 species and 4 varieties of the genus *Mactra*. Twelve species were designated new species: *Mactra alata* (South America), *Mactra nitida* (Guinea), *Mactra striata* (Red Sea), *Mactra radiata* (Nicobars), *Mactra tripla* (Nicobars), *Mactra gallina* (Nicobars), *Mactra rostrata* (Guinea), *Mactra humilis* (Guinea), *Mactra depressa* (Guinea), *Mactra reticulata* (Nicobars), *Mactra anatina* (South America), *Mactra compressa* (Guinea). He also included 4 varieties: *Mactra stultorum* var. a (Guinea coast), *Mactra solida* var. a (Rhode Island of North America), *Mactra pellucida* var. a (Guinea), *Mactra oblonga* var. a (Tranquebar). The life of Spengler is summarised and discussed. Comments on Spengler's species by the Danish malacologist O.A.L. Mörch are included in annex.

INTRODUCTION

Knudsen & Hylleberg (1999) translated Lorentz Spengler's (1799) writings on the genus *Cardium*. This time we present a translation of his paper on mactrids. The original title of the paper runs as follows: "Beskrivelse over det toskallede Conchylie-Slaegt *Mactra*. af Lorentz Spengler, Konstforvalter. Oplaest den 7 Martii 1800 (Description of the bivalved shell genus *Mactra* by Lorentz Spengler, Manager of Art. Read on 7 March 1800). It was published in "Skrifter af Naturhistorie Selskabet in 1802" (Writings of the Society for Natural History, 1802, vol. 5: 92-128).

Lorentz Spengler was borne in Switzerland in 1720. He started an education as a wood turner when he was 14 years old. Five years later he was skilled craftsman and started to work in Germany and Switzerland until he moved to London in 1742. However, the following year he continued to Copenhagen because he was hired by the king of Denmark to work together with other artists on illustrations for a book on Egypt. He was hired as a Manager (or Keeper) of Art in 1769. The royal family appreciated his work and he liked Denmark, which became his home until he died in 1808.

He was never formally trained as a naturalist but he had a tremendous interest in conchology and he managed to become very knowledgeable in this field. It seems as if Petrus Forsskaal, a bright student of Linné, trained him in the Linnean System in 1760, when Forsskaal stayed in Copenhagen preparing for the Danish Expedition to the Red Sea and Arabian countries. The king launched this expedition with Forsskaal as an important participant on 4 January 1761.

Spengler admired Linné, nearly wor-

shipped him, and he followed the Linnean system completely in contrast to his friend, the 10 years younger J.H. Chemnitz, who was a German priest in Copenhagen and died in 1800. These two men often studied shells together, and Chemnitz probably benefited much from Spengler's experience with shells as shown in one of his vignettes (see reproduction in Knudsen & Hylleberg 1999, p. 416). However, it should be noted that Spengler was able to judge his own work, not as a trained scientist, but as a registrar of shells. He saw his own role as a person who could verify and check data, and update and complete checklists. Because he was careful these efforts have maintained value until present times. He has been praised for the description of many new species.

Maybe because of his most humble recognition of own scientific limitations Spengler has been called just an amateur (Gosch 1873, p. 313), albeit an honourable amateur. In comparison his friend Chemnitz was called an extreme dilettante! (Gosch op. cit.). However, the rough judgement by Gosch is not the common opinion. For example Gouk (1983, p. 411) stated that Lorentz Spengler was a man who epitomises the close relationship between art, craft and science found in eighteenth-century Europe.

Spengler lived and worked in Denmark during a highly religious period referred to as the pietism and he himself was a very devout member of the Reformed Church.

Shell collections were popular among the upper class of society, including the royal family. The beauty of shells and the variety in shape and colour were regarded as evidence of the immense power of the Creator. Spengler took care of the king's collection and he maintained a substantial private collection, which was later fused with the royal collection in 1804 and subsequently entered into the collection of the Zoological Museum in Copenhagen (Gosch op. cit.). Vararin Vongpanich (this issue) has re-examined some of the shells present in the Spengler Collection of the ZMUC.

In Spengler's works on molluscs he often stated the home of the shells to be places such as the West Indies, the Nicobars, Guinea (should rather be referred to as the Bay of Guinea), and Tranquebar. These localities are commonly represented in the collections because the Danish kingdom had trading posts or small colonies in those places. Danish ships called the ports and besides spices, sugar, and other commodities they brought precious shells back to Copenhagen.

Forts were constructed to secure the trading places. (See *e.g.* the back cover of 6th Proceedings of the TMMP 1995, showing "Dansborg" in Tranquebar). Spengler referred to a Danish fort in Guinea (see No.8

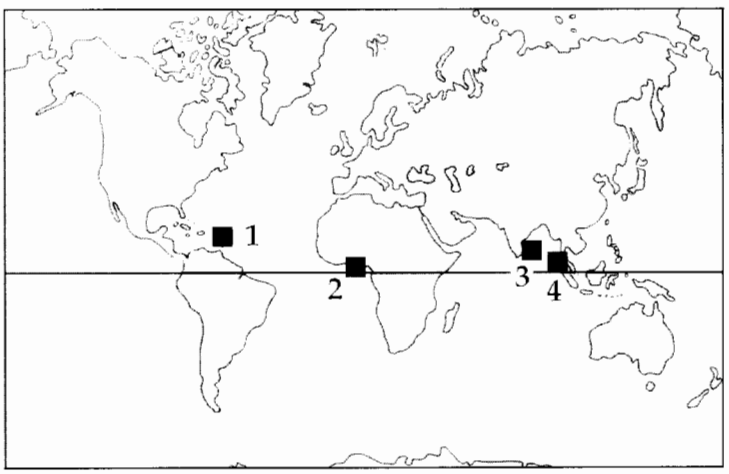


Fig. 1
(1) The islands St. John, St. Croix, St. Thomas, (US Virgin Islands), the Caribbean.
(2) Christiansborg, Ghana, the Bay of Guinea.
(3) Tranquebar, South India, the Coromandel Coast.
(4) The Nicobar Islands, the Andaman Sea.

Mactra nitida). The fort was Christiansborg, located near Accra on the Gold Coast, *i.e.* Ghana of present days. Fig. 1 shows old Danish territories (trading posts) in tropical seas.

Spengler, and other conchologists of the period, used different morphological terms than are used now (Table):

Spengler 1802	modern terms
Anterior	posterior
Anus	lunule
Breadth	anterior-posterior measurement (length)
Height	dorsal-ventral measurement (height)
Posterior	anterior
Vulva	escutcheon

Spengler referred to several papers abbreviated as follows (in alphabetical order):
Adanson = Adanson, M. 1757
Chemn. Tom. 6. = Chemnitz, J.H. 1782
Chemn. Tom. 11 = Chemnitz, J.H. 1795
Favanne = Favanne. 1780 see Argenville, Desalier d'. 1780.
Gualt. = Gualtieri, N. 1742.
Knorr Tom. 6 = Knorr, Georg Wolfgang. 1772
Linn. = Linné, Caroli a. 1767.
Lister Hist. Conch. = Lister, Martini. 1685.
Poli Tom.I. = Poli, Josepho Xaverio. 1791.
Schröters Einleitung 3ter B. = Schröter, Johan Samuel. 1786.
von Born = Born, I. von. 1780
Remarks. - Chemnitz, J. H. 1769-1795. Neues systematisches Conchylien-Cabinet, vols. 1-11, rejected for nomenclatorial purposes; Direction 1 by ICZN. (Hemming & Noakes 1958, p. 5). Knorr 1772 is also rejected for nomenclatorial purpose (not binominal).

Other abbreviations in Spengler's paper (1802):
B. = Bind = volume
fig. = figure(s)
Lin. = Linie (r) = 1/12 Tomme = 2.18 mm
pag. = page
T. = the old Danish measurement "Tomme" = an inch = 26.15 mm
Tom. = tomus = volume
tab. = tabula = plate

Spengler wrote long sentences in accordance with the tradition of his time. We have kept this style and also his original spelling of specific names where he used capital letters if the name referred to a person or a geographical area.

TRANSLATION OF SPENGLER'S ORIGINAL PAPER

According to the sequence, which I have adopted and hitherto followed in my papers read for the Society, this time I come to the peculiar genus *Mactra*. It is well known to naturalists that Linné, not until in the 12th edition of his Systema Natura, included this genus and placed it between *Cardium* and *Donax*; the reason for this was as follows. In the year 1764, I received from one of our ships, a number of uncommon shells from Muschelbay [modern locality = Mussel Bay, South Africa] in the vicinity of the Cape, rich in shells, I found among these three specimens of a bivalve which I had not seen before, and which also had not been described by anybody. I sent a specimen to Sir Linné, asking whether this strange shell, according to his system, belonged to the genus *Cardium* or *Donax?* As is his custom, I soon received an answer, in which the Sir informed me that he had examined this new shell species with surprise, and which he intended to introduce under the name *Cardium Spengleri* in the 12th edition of the Systema Natura, which would soon appear; but when, just before the printing of this edition, he compared the hinge of this shell more exactly with that of *Cardium* and found that in this respect there was only a very slight similarity between them, and that this one, on the contrary, had fixed and

definite characters in its hinge, which were not found in any another genus, he established a new genus with the name *Mactra*, to which he also referred the Cardia listed in the 10th edition, *corallinum*, *solidum*, *stultorum*, and *Mya lutraria*, which all belong to this genus on account of the structure of their hinge.

The indefatigable Linné could, in all Swedish shell collections, only bring together eight species with which he enriched the 12th edition of his Systema Natura. I hope therefore, with this paper, to do shell specialists and collectors a favour when I make known to them 26 other species (the eight Linnean species and the varieties not included) which all belong to my own collection.

The indispensable characters of this genus consist of the peculiar joining of the hinge, because, due to the great difference of the valves, these could not here (as in other genera) contribute anything to the generic definition, but since the characters of the hinge are very definite, it cannot be confounded with any other genus. Close below the tip of the umbo, on the interior side of both valves, a kind of tooth projects, triangular in shape, whose tip points upward and is open from below upwards; on the side of this tooth, namely towards the anterior part of the shell, a large excavated pit is found, extending obliquely upwards towards the tip of the umbo and gradually disappearing; this pit is completely filled with a brown elastic substance, which serves as a ligament or band for the valves. Furthermore, the margin of the valves closely above the pit, of the length of some Lines, is very narrow, but deeply incised, and when both valves are joined, this pit forms a long three-sided opening externally in their margin, namely from the umbo tips forwards; this opening is also filled with tough substance, like the above mentioned pit. This pit, and mainly the triangular tooth, are actually the unvarying and never missing parts, which characterise the genus *Mactra*. The remaining parts of this peculiar hinge consist of the lateral teeth, which on one side almost reaches the triangular tooth, and on the other side to the pit. They consist of oblong thin leaves, which project in the middle of a deeply incised groove on the margin of the valve, which by joining of the valves fits exactly in the opposite deep grooves in the other valve. The triangular teeth also are not only for ornamentation, but have the same function as the lateral teeth; it is pleasant to see, how one triangle, which in one valve is placed somewhat higher, encloses the other and is united with it, when both valves are joined. Regarding the lateral teeth it should be noted that not in all species, in proportion to the size of these, are they equally long or consist of equally many parts. Thus for instance, the first species, namely *Mactra Spengleri*, has a few narrow lateral teeth rounded on all sides. When Linné adopted the lateral teeth as a generic character in the genus *Cardium*, this action can explain why he placed *Mactra* in this genus to begin with.

Mr. Joseph Xaver [sic] Poli, tutor of the royal Neapolitan princes, with his indefatigable assiduity, obtained for the benefit of naturalists a safe knowledge of the inhabitants of the bivalves. In his exquisite work: Observation on the bivalved shells in the Sicilian Sea, etc., he has discussed this difficult and hitherto not sufficiently studied subject, and in the first volume tab.18, fig.1 pictured *Mactra glauca* with the animal [reproduced in the present translation p. 512] and in fig. 5 its anatomy with illuminated drawings. In this drawing the animal extends a long part of its foot out of the posterior end of its shell. Close to the shell, from where it appears, it is very thick and extended arrow-shaped to the extreme end. On the anterior part of the bivalve, outside the shell, a cylindrical body is seen, more than 2 T. long; this consists of two tubes which are connected, of which one serves to let the animal breathe, the other to discharge waste as well as the eggs. The margin of both anterior openings of this cylinder is set with hairs.

It is surprising that such a shapeless looking mass of flesh contains so many vital parts, indispensable to the animal, since, besides the membranes and the muscles, there is also the heart, the liver, the stomach with the intestines, the gills, the ovaries, the mantle, the siphon and several other parts which Mr. Poli distinctly showed in his anatomical and microscopic investigations.

Following Mr. Chemnitz, this genus can be divided into two subdivisions, viz.

A. Mactrae triangulares.

B. Mactrae ovato-oblongae.

No. 1 ***Mactra Spengleri*** ,

testa laevi, vulva plana, rima lunula hiante. Linn. Sp. 94, pag. 1124.

Chemn. Tom.6. tab. 6. fig. 199-201.

Schröter für die Litteratur und Kenntniss der Naturgeschichte. 1st B. p. 251. See the copper fig. 4. 5 .6.

Favanne catalogue systématique & raisonné Pl. 6. fig. 1501. pag. 308. une Came de toute rareté, nommée *Mactra Spengleri*, was paid with 72 Livres (Pounds) at the auction.

Hitherto no shell is known, which is similar to the present one, both as regards its special peculiar outward appearance, and its unusual ligament.

In outline it is triangular, and its peculiar umbo is placed almost in the middle. The shell in this place is thick and strongly vaulted so that the small narrow umbonal tips are placed at a distance of 8 Lines from each other. From this surface projects, from both umbonal tips, a crescent-shaped, deeply incised and hollowed line, extending towards the anterior part of the shell, which in the middle is 1/4 T. broad, connected with the internal pit of the hinge, forming a deep groove which, following the outline of the valve, represents a beautiful figure; this groove is completely filled with the brown elastic substance and serves as a ligament of the valves, this trait is not found in any other shell species. The anterior part of the shell, the so-called cleft, forms a straight line, is heart-shaped, and separated by a sharp edge from the surface of both valves, which in the middle is roundly reflected inwards. In its upper part it is equally broad as thick, and in this place the valves are not closely joined. At the posterior end (the anus) the margins are strongly rounded, and from both tips of the umbo a rounded heart-shaped depression extends to half the length of the valve. The broad external surfaces are provided with fine transverse lines. Part of the lower margin is covered with a thin yellow brown membrane (epidermis), which seems to be very firmly attached. Its colour is whitish yellow outside and inside. Its breadth is 3 1/2 T.; its height 2 1/2 T.

No. 2 ***Mactra plicataria*** ,

testa transverse rugosa olicata diaphana, vulva planiuscula, ano compresso oblongo.

Chemn. Tom.6. tab. 20. fig. 202-4.

Note. Linné described in detail this beautiful shell, likewise Mr. Chemnitz in the above-mentioned place, but a feature which adds to the beauty of the shell has remained unmentioned, namely: the sharp edges, separating the richly folded surfaces from the completely smooth and roundly elevated anterior part or gape, have an erect thin-shelled or membranous ridge which, however, usually is located on the ventral margin of shell, since these edges, which issue from the umbo, due to their fragility, could not possibly stand the action of the waves and the continuous rolling. An extremely large specimen, measuring 3 T. 2 Lin. in breadth and 2 T. 3 Lin. in height, is from the Nicobars.

No.3 ***Mactra striatula,***

testa laevis diaphana, umbonibus substriatis, vulva laevis impressa, carina circumscripta. Linn. Sp. 96. p. 1126

Chemn. Tom. 6 tab. 21. fig. 205-6

Knorr Tom. 6 tab. 34. fig. 1

Also in this shell there are traces of the lamellar border on the sharp edge, which on both sides encases the anterior part of the shell, as is described in the preceding species. This feature could not be stated by Linné, since his specimen, according to his own statement, was not bigger than a nut. It is obtained from Tranquebar and measures 3 T. 2 Lin. in breadth and 2 1/2 T. in height.

No.4 ***Mactra alata,***

testa laevi, vulva plana, carina alata ab umbonibus distincta, ano in carinam definente.

This very beautiful new species from South America is of a remarkable size. In outline it is triangular. Its anterior part is heart-shaped, flattened, rather broad, and goes obliquely down from the umbo to the margin of the shell; on its heart-shaped surface it has numerous unusually beautiful ornamentations, which are not found in any other shell species. In the middle, from the umbo downward, this is deeply excavated and heart-shaped encased, with an elevated border; behind this border follows a single, however narrow depression, which reaches to the lower tip, which is encased by an elevated sharp edge, bordering the surface of both valves. Towards the ventral part of the shell, this sharp edge is adorned with a very broad, finely curled, lamellar, far projecting rim, giving the shell a beautiful appearance. There are many traces clearly showing that the entire margin, upwards to the umbo, had been set with this rim, which due to its delicateness, had not been able to withstand the action of the waves, as I already mentioned above for the other species. The umbo is placed slightly eccentrically, somewhat nearer the posterior edge; its tips are small, low, and approach each other. The posterior part of the shell is rounded in a circular arc, and both valves fit closely into each other, raising them to a sharp cutting crest, which is as thin as the edge of a knife. The broad surfaces of both valves are shining smooth, below at the margin with fine transversal lines; both valves are not closely joined here, and the gape towards the lower end also has a wide opening, a trait which is often found in this genus. The locking mechanism is exactly as that described as in the generic feature. The muscle scars are very different, the posterior ones are formed as an oblong depressed groove, the anterior is just visible as a round shining spot. The shell is white inside as well as outside, and has rather thick valves. Its breadth is 3 1/2 T.; its height 2 1/2 T.

No.5 ***Mactra violacea ,***

testa subtriangulari, laevi, diaphana, transversim subtilissime striata, ex violaceo intus & extus elegantissime tincta, vulva dustincta lanceolata ,ano ovali oblongo. Chemn. Tom.6 p. 220

Chemn. Tom.6 tab. 22. fig. 213-14

It seems as if this beautiful shell is only found in the present shell cabinets, since it is not mentioned by any foreign author. In outline it is triangular. The very elevated umbo is placed in the middle of the shell. Inside and outside it is a beautiful violet, except the posterior part and the anterior, deeply incised side of the gape, which are white; this gives this shell an appearance which makes it one of the most beautiful among the bivalved shells. Otherwise, this *Mactra* is fairly roundly vaulted, thin-shelled, and strongly rounded at both ends. The locking mechanism in all its parts is the most complete, beautiful and admirable in this genus. The muscle scars are strongly depressed, shining and round. Its breadth is 3 T. 2 Lin.; its height is 3 T. 4 Lin. It is found near Tranquebar.

No.6 ***Mactra antiquata,***

testa subtriangulari, solida, alba, umbone violacea; vulva distincta lanceolata, ano ovali.

Chemn. Tom.11 tab. 200. fig. 1954

This large, magnificent *Mactra* is triangular in outline. The umbo is not placed in the middle, but towards the posterior part. It is thick-shelled. Its upper part and the umbo are violet, the remaining part of the valve is dirty white inside as well as outside. This species otherwise is very similar to the preceding one, however with the difference that this has the anterior side longer, and the posterior side much shorter. The gape is sharply incised as in the preceding one, but not equally deeply, and the anus in this one not so sharply depressed. The hinge is completely provided with all the parts belonging to this genus. Its breath is 4 T.; its height 3 T. From the South Seas.

No.7 ***Mactra glabrata,***

testa laevi diaphana umbonibus laevissimis, vulva anoque striatis . Linn. Sp. 97, p.1126

Linné has given a very clear description of this species. Here we get it from the coast of Guinea; Linné has his small specimen likewise from the African Sea. It is very seldom that so small specimens as the Linnean are met with, on the contrary the larger ones are frequent. From the East Indies a somewhat larger species is obtained, which has much similarity to the present one; they are often confounded by collectors, but on closer examination are found to be essentially different. The smallest of my specimens is 1 T. 1 Lin. broad and 3/4 T. high; the larger ones are 1 T. 10 Lin. broad, 1 T. 4 Lin. high.

No.8 ***Mactra nitida,***

testa laevi, lactea, versus marginem striata, vulva plana rudiuscula, ano obsolete prolongato.

Schröters Einleitung in die Conchylienkenntniss. 3ter B. tab. 8 fig. 2, pag. 88

This magnificent dazzling white *Mactra* is completely triangular, since its umbo is placed in the middle of the shell. It is so similar to the preceding species that at a first glance it could easily be confounded with this, by a closer examination we find however that it clearly differs from *Mactra glabrata* in many essential features. The heart-shaped, finely streaked gape in sharply vaulted in this and rises above the lateral walls of the mussel from which it is separated by a sharp edge. On the other hand, according to Linné, *Mactra glabrata* should not have the cleft separated from the remaining part by a sharp edge, but by a very truncate border. The neatly curved umbo tips, also in this one, are placed at a greater distance from each other, and between them a small triangular opening is seen which represents the end of the internal hinge pit filled by the ligament. The anus is finely streaked, and the streaks run downwards along the shell to the lower margin. The shell is smooth, strongly shining except towards the lower margin, where part of the shell is finely streaked transversly. The hinge possesses all the characters of the genus. The muscle scars are strongly excavated, especially the posterior ones, which are pear-shaped; the anterior are rounded with a strong shine. Outside and inside the colour is snow-white, clear and transparent. Its breadth is 2 T. 2 Lin.; its height 1 T. 8 Lin. It is brought to Denmark from the Danish fort on the coast of Guinea.

No.9 ***Mactra striata,***

testa transverse striata, ovata, vulva plane depressa, nebulosa, ano latiore.

This shell too has some similarity with the two preceding ones. The most remarkable difference is that the umbo is not placed in the middle, but close towards the posterior part; the anterior part thus is very projecting. From the umbo downwards it is deeply impressed and below hollowly outward directed so that the anterior part forms a rounded flattened tip on the extreme margin. The posterior part is rounded in a circular arc, and, like the umbo, strongly vaulted and thickly inflated. The anus and the vulva are heart-shaped, deeply im-

pressed and longitudinally streaked. Both surfaces are distinctly and regularly streaked, only the umbo tips are shining smooth. The hinge is very beautiful and in complete agreement with the characters of the genus. The muscle scars are rounded and large without lustre. The colour of this shell is white inside, pale yellow outside, the vulva and the anus are violet and yellow variegated. My largest specimen is 2 1/4 T. broad and 1 T. 8 Lin. high. It is from the Red Sea.

No.10 ***Mactra corallina,***

testa laevi subdiaphana alba, fasciis lacteis. Linn. Sp. 98. p. 1125.

Chemn. Tom.6. tab.22. fig.220-21, which is the true *Mactra corallina.*

This species is distinguished from the preceding one by being much more inflated and strongly rounded at both ends. The vulva and the anus are not enclosed by any margin, and the anus is remarkable by rising steeply on both valves in the whole length in the middle. The valves are thin, white, but not transparent, but according to Linné, like white corals. Its breadth is 2 T. 2 Lin.; its height 1 T. 10 Lin. From the East Indies.

No. 11 ***Mactra stultor um,***

testa subdiaphana laevi , obsolete radiata, intus purpurascente, vulva gibba. Linn. Sp.99. pag.1126

Poli Observations on bivalved shells. Tom. I. tab. 18. fig. 10. 11. 12.

von Born on the vignette pag. 50.

Knorr Tom.6. tab. 5. fig. 1.

Adanson tab.17. fig. 16.

This, among different varieties, by the authors, very well known shell needs no new description, since it was already described in detail elsewhere. Its habitat is the Mediterranean.

Mactra stultorum* varietas *a.

This is almost twice as big as the preceding one, and roundly inflated from all sides. The vulva and the anus are very regularly streaked, and these streaks are not separated from the lateral sides by erect edges. Towards the lower margin the valves are very finely streaked transversally, the rest of the lateral areas are smooth and shining. Between the beautiful violet umbo tips - as found in several species of this genus - an oblong triangular opening is found, in which the ligament is placed. The mussel is covered by a fine pale brown membrane, which is closely united with the shell; when polished, the shell is white which looks well against the violet umbos. In some specimens pale brown rays are seen on the surface, which extend from the umbo to the lower margin, these are however only of a pale colour. Inside the valves are pale blue. The muscle scars are very large and rounded. The hinge has all the parts in the most beautiful order, which belong to this genus. Its breadth is 2 T. 2 Lin.; its height 1 T. 8 Lin. It is found on the coast of Guinea.

No.12 ***Mactra radiata,***

testa gibba, inaeqvilatera, antice protensa & angulata, postice radiata. Chemn. Tom. 6. pag. 229.

In French: La Tinete rayée, rariss. Hwass.

Chemn. Tom. 6. tab. 23. fig. 228.

This large and very rare *Mactra* has something unusual in its construction. Its highly erect umbo is exceedingly broad, rounded and thickly inflated, in addition smooth and shining; the tips are widely separated, and the umbo is placed very close to the posterior part of the shell, whereby the anterior part or the vulva seems to be far drawn out. The deeply impressed anus as well as the vulva are beautifully streaked with smooth, shining streaks; in addition is found, on the gape near the umbo, the often mentioned triangular opening, rather large for concealing the ligament. The external sides of the valves are smooth except for a rim along the lower margin, which is transversly streaked. On the outside this beautiful shell is pale

yellow with white rays, which extend from the umbo longitudinally downward. The inside is white, and at the lower margin covered with irregular elevated folds. The muscle scars are flattened, rounded and very large. The hinge is complete. It is 3 T. 1 Lin. broad and 2 T. 3 Lin. high. From the Nicobars.

No.13 ***Mactra tumida,***

testa subtriangulari, gibba laevi, natibus retrorsum incurvatis violaceis, interna cavitate umbomum purpurea. Chemn. Tom. 6. pag. 218.

Chemn. Tom. 6. tab. 12. fig. 210-12.

This new species is very thickly inflated and triangular. The lower part of the margin is circular; the two other sides are straight and united above at the very narrow pointed umbo, whereby this shell gets the appearance of a low pyramid. The umbos rise high above the valves, and the tips have an opposite position, which is most common in bivalve shells, for which reason this species can be regarded as belonging to the so-called Links-bivalves. The anus as well as the vulva, notably the latter, are very broad, and in addition finely streaked and separated from the lateral areas by a strongly rounded edge. The lateral surfaces, from the lower margin upward to half the breadth are covered by deep fine streaks; the remaining parts of the shells are quite smooth. The hinge in this species is also somewhat peculiar; the triangular tooth below the tip of the umbo, close to the pit, has an opposite and reversed position only in this *Mactra*. The depressions in the hinge, which are determined for receiving the large, broad, foliated paper-thin lateral teeth, are exceedingly deeply incised in the margin of the shell in order to enclose the said opposite large and broad tooth. Internally, from the umbo down to the middle, the valves have a broad crimson-red spot, the rest is white; below at the margin it is furrowed with small elevated folds; outside the valves are yellow; the red spots shining through the inner surfaces give the umbo a violet tinge on the outside, especially in young individuals, which are thin-shelled. My largest specimen is 3 T. 4 Lin. broad and 2 3/4 T. high. It is found at Tranquebar.

No.14 ***Mactra tripla ,***

testa laevi, luteo tripliciter radiata, natibus violaceis.

This new species is shaped exactly as a pyramid, since the pointed umbo is placed right in the middle, and the anterior as well as the posterior side reach right up to it, which is unusual in this genus. The impressed anus and the flattened vulva are both finely streaked; between the umbo tips, the usual oblong narrow opening of the ligament appears. The surfaces of both valves are finely streaked transversly, nontheless they are smooth and shining. This *Mactra* is beautifully yellow all over, and from the umbo downward run partly quite narrow, partly broader, snow-white bands or rays. Inside the valves are white, except below the umbo, where a violet spot is found. The muscle scars are large, rounded and shining yellow. The lower part of the margin on the inside is covered with fine streaks. All parts of the hinge in this species are very distinct and sharply projecting. Its breadth is 1 3/4 T.; its height is 1 T. 5 Lin. From the Nicobars.

No.15 ***Mactra maculata ,***

testa subtriangulari, fragili, gibba, laevi, alba, maculis suscescentibus sine ordine dispositis maculata. Chemn. Tom. 6. pag. 217.

Chemn. Tom. 6. tab. 21. fig. 208-9.

In outline this new species is triangular, and its umbo is placed in the middle. It is strongly rounded and vaulted from all sides. The vulva or the gape is separated from the surface of the valves and sharply elevated in the middle, and from below upwards to above the middle, encased from both sides by a brown-red band. The anus is small and only slightly impressed. The mussel is

densely covered with a very thin yellow epidermis, on which are found a great number of small red-brown spots. When the membrane is worn off, the valves are white. Inside the valves are white. It is thin-shelled and quite transparent. All parts of the hinge are very beautiful. The breadth of this shell is 2 1/2 T.; its height is 2 T. It is found at the Nicobars.

No.16 ***Mactra cygnea,***

testa triangulari, gibba, tumida, candida, antice qvasi abscissa & truncata, laeviter rugosa, ano cordiformi & tenuiter striato.

Chemn. Tom. 6. pag. 217. tab. 21. fig. 207.

This beautiful, snow-white, shining rare *Mactra* is triangular, and since it is very narrow above, it is almost pyramidal. It is thick-shelled, strongly inflated, and posteriorly at the anus bluntly rounded. This anus and the vulva are both heart-shaped and finely streaked. The latter is very long and very broad and runs in a somewhat hollow, curved line to the lower margin, where it ends in a narrow rounded tip. The hinge is very complete. The breadth of the cockle is 1 1/4 T.; its height 1 T. From the Nicobars.

No.17 ***Mactra purpurea*** ,

testa laevi, cinerea, intus purpurea, vulva carinata, ano cordato.

Chemn. Tom. 6. tab. 22. fig. 215.

This peculiar and new species need not be described in detail, since it is completely similar to the preceding one in all respects, and is remarkable only by the colour, which makes it justifiable to be regarded as a distinct species. On the outside the colour is not very attractive; it is blue-grey with white transverse bands, its internal sides are the more beautiful, they are dark blue, with fine streaks, which are seen in almost all species of this genus. Its size is equal to that of the preceding one. It is found in the Nicobars.

No.18 ***Mactra gallina,***

testa glabra, striata, lactea, antice acuminata, vulva lata, minute striata, ano carinato.

This small exceedingly pretty *Mactra*, in spite of its small size, has so many beautiful traits that it cannot be indifferent to naturalists and collectors. One may call it triangular, although its posterior part is very short and confluent with the lower margin to the tip of the anterior part in a circular arc. The anterior part of the shell or the gape is heart-shaped and runs in a straight line into a tip from the umbo to the lower margin. This heart-shaped part is separated from both surfaces of the shell by a sharp edge. It is roundly vaulted and intricately enclosed by a small depression close to the sharp edge; but the most beautiful trait is that the entire anterior part of the shell even the narrow depression, in the most regular way, is covered with raised, rounded shining streaks; the surfaces are likewise finely transversely streaked, and these fine streaks run right up to the posterior part of the shell to the tips of the umbos. Instead of the anus both valves rise like the sharp edge of a knife. The valves are thin and flatly compressed, the umbo tips are smooth and shining, and in colour and shape look like two pearls. The colour is white on both sides. The valves are transparent. Irrespective of the small size of this shell, its hinge is very complete. Its breadth is 10 Lines.; its height 9 Lines. It is found at the Nicobars.

No.19 ***Mactra solida*** ,

testa opaca laeviuscula subantiquata.

Linn. S. 100. [sic = Sp. 100] pag. 1126.

Chemn. Tom. 6. tab. 23. fig. 229-30.

Knorr Tom. 6. tab. 8. fig. 5.

In fresh natural condition this shell is white or yellow, but when exposed to the effect of air, it is weathered and looses the outer part of its valves, and we find them both blue and brown-red streaked. The triangular tooth, the main character of the genus, is very

small as well as the otherwise very large pit, indeed of a very indefinite shape. Linné also made a note of that. Otherwise, this *Mactra* is triangular, with the umbo placed in the middle. Due to its whitish-yellow opaque shell it is very similar to the shells excavated near Crigneon in France. Although this shell is very small, it nevertheless has unusually large, strongly depressed muscle scars, which are united by a curved, depressed groove. Mr. Chemnitz' note is quite correct, namely that the foliated lateral teeth, seen under a magnifying glass, are finely ridged on the inside. The breadth of this shell is 1 T. 8 Lin.; its height 1 T. 4 Lin. From East Friesland and Holland.

***Mactra solida* . Varietas *a*.**

Chemn. Tom. 10. tab. 170. fig. 1656.

Due to its exceedingly large size only a small part of it is figured.

If the umbo on this giant shell was placed in the middle of the valve, it could not be called a variety, but the true *Mactra solida*, since all its parts, in proportion to its size, are exactly alike. The umbo is placed very close to the posterior part of the valve, which thereby becomes very shortened, while, on the other hand, the anterior part is exceedingly long. The outer appearance of the shell is calcareous opaque, exactly as in the small species described above. The pit of the hinge is wide and very broadly projecting. The triangular tooth at the pit is very indefinitely formed, as Linné notes for the small species; here too it appears as a narrow groove. The lateral teeth lack the fine ridges. The inner sides of the valves are smooth and shining white. Toward the margin they are irregularly folded. Also in this one the muscle scars are unusually large as in the true *Mactra solida* described above. Its breadth is 6 1/4 T.; its height 4 1/2 T. From Rhode Island in North America.

No.20 ***Mactra rostrata,***

testa candidissima, subdiaphana, tumida, antice carinata & reflexa, umbonibus inflatis eboris instar politis.

Chemn. Tom. 12. tab. 242. fig. 4197.

This new species in this genus is remarkable by its high erect, thick, strongly inflated proboscis-shaped umbo with its freely standing tips, which are directed posteriorly. It is triangular, and its umbo is placed right in the middle. The anterior side with the cleft (vulva) forms a somewhat curved line, which is divided by a truncate edge from the surface of the valves; one part is round, highly elevated, deep and roundly excavated. The posterior part together with the anus is deeply impressed, on the posterior part strongly rounded and confluent with the lower margin of the shell in a circular arc. The end of the ligament is seen between the umbo tips in a rather large triangular opening. Otherwise this *Mactra* is quite smooth, strongly vaulted and thick-shelled; inside and outside it is quite white. Its breadth is 2 1/2 T.; its height 2 T. 2 Lin. It is found along the coast of Guinea.

No.21 ***Mactra humilis* ,**

testa glabra, obsolete striata lactea, vulva elongata rudi, ano latiore, natibus parvis.

This species too was hitherto undescribed. It is triangular. Its anterior side together with its small, almost invisible umbo runs in a straight line; in the posterior part, which is also straight, the umbo is only noticeable by a very small tip pressed backward. The cleft or vulva is somewhat depressed, very narrow and separated from the surface by a truncate, flattened edge. The anus is only slightly depressed behind the small umbo, and it is finely streaked. The surface of the valves is flat, thin, transparent and smooth, moreover without any ornamentation, for which reason I have given it the name *humilis* (the modest one.) The colour is white all over. The hinge is complete, however all parts are very thin and delicately fine. The muscle scars are rounded and depressed. Its breadth is 2 1/2 T.; its height 2 T. From the coast of Guinea.

No.22 ***Mactra glauca,***

testa subovata tenuis, convexa, apice glabra; area areolaque indistincta, tenuiter striata. von Born pag. 51. tab. 3. fig. 11, 12

Chemn. Tom. 6 tab. 23. fig. 232-33.

J.X. Poli: observations etc. Tom. I. tab. 18. f. 1. 2. 3

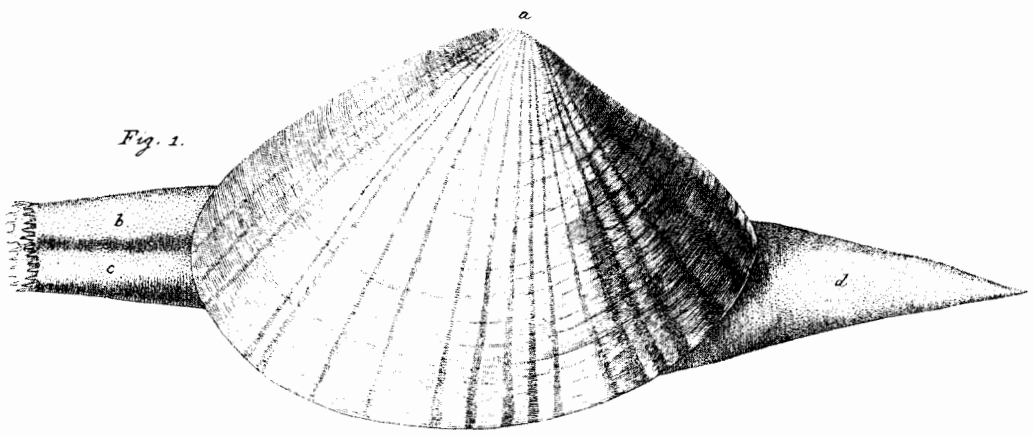
Humphrey. The large *Trigonella radiata* from Brazil.

This large, magnificent shell is triangular. The umbo is not placed in the middle, but somewhat towards the posterior side of the shell. The proportion to its size it is rather flat, moreover shining smooth and streaked only on the anus and the vulva. Both at the anterior part and below towards the posterior part, the valves are not closely joined, but have rather wide gape between them. The umbo tips are low and small, and between them the end of the ligament is seen in the oblong gape. The ground colour of this beautiful *Mactra* is white, but it is ornamented with pale-brown rays of different breadth, which run in a straight line from the umbo to the margin. The anus as well as the vulva on both sides are bordered by long red-brown spots. The internal surfaces of the valves are strongly shining white. The large round muscle scars are not depressed, but almost indistinguishable. All parts of the hinge are large, broadly projecting and in the most regular proportions. The large specimens have a breadth of 4 1/2 T. and a height of 3 1/2 T. It is found in Brazil, some specimens of the stated size have also been found in the Mediterranean, of which one with the animal is figured by Poli in tab. 18. fig. 1. 2. 3. [*Remarks.*- Spengler's plate of *M. glauca* is reproduced below: Tab.III.fig.1].

No.23 ***Mactra depressa,***

testa glabra, antiquato-striata, lactea, vulva arcuata, sulcata, ano lineato.

This triangular *Mactra* is also a new species. The flat, low umbo is situated in the middle. The cleft or anterior side is curved, narrow, and in the middle deeply excavated; likewise, the posterior part is quite narrow and somewhat depressed. The shell is, on the whole, flatly compressed so that the umbo tips touch each other. The valves are almost invisibly fluted across their surface, and not joined, neither in their anterior nor



Tab. III. fig.1
A. *Mactra glauca*
B.C. The two siphons of the animal, which anteriorly are set with hairs.
D. Part of its locomotion device or foot, in so far as this can be seen outside the shell.

posterior parts. The lateral teeth of the hinge are very short. It is quite white inside as well as outside. Its breadth is 1 3/4 T.; its height 1 T. From the coast of Guinea.

B. MACTRÆ OVATO-OBLONGAE

No.24 ***Mactra rugosa*** ,

testa ovato-oblonga, longitudinaliter dense striata & quasi costata, area antica & postica glabrata. Chem. Tom. 6. pag. 236. tab. 24. fig.236.

Abhandlungen einer Privatgesellschaft in Böhmen. Tom. 4. pag. 128. tab. 4. fig. 37. 38.

This *Mactra* is ovoid in outline; the broad strong umbo is placed close to the posterior part of the shell, and its tips are close together. The surface of the valves are covered with highly elevated round ribs, which are separated from each other by a groove, and run from the umbo straight to the margin; however, at the anterior, as well as at the posterior end of the valves, there is a broad, smooth rim, which is provided with strong transverse streaks across it. Both valves touch only in a few narrow places, and the anterior as well as the posterior parts are widely separated. The triangular tooth is open at the upper end in this rare *Mactra*. The lateral teeth are very short and situated near the pit. The muscle scars are large and rounded. Inside the valves are snowy white, and the margin is serrated; outside the valves are beautifully straw-coloured. Its breadth is 2 1/4 T.; its height 1 T. 10 Lin. It is found in the Mediterranean.

No.25 ***Mactra reticulata,***

testa ovata, subdiaphana, lactea, longitudinaliter undatostriata, postice compressa.

Chemn. Tom. 6. tab. 24. fig. 237.

This thin, transparent, white shell is ovoid in outline. The umbo is placed towards the strongly rounded posterior end of the mussel, and the anterior part is consequently so much longer, therefore, somewhat round-incised anteriorly on the lower margin, whereby it obtains a narrow proboscis-shaped figure. The surface of the valves, from the umbo downward, is regularly covered with many very fine, sharply elevated ridges, which are separated from each other by roundly excavated grooves, which give the shell a beautiful appearance. Only at the anterior narrow end a broad smooth rim is separated from these surfaces by a truncated edge; the upper border of this rim forms the cleft or vulva, where the two valves do not join, but are widely separated. The valves gape a little, also at the posterior end. Internally, the margin, on which the hinge is placed, is narrow, and all the parts of the hinge are very fine, though very complete. Where the streaks on the outside are raised, they are depressed internally, and the grooves, on the other hand, elevated. This is most conspicuous at the lower margin. It is seen from this that this *Mactra* is very thin-shelled. Its breadth is 1 1/2 T.; its height 1 T. It is found at the Nicobars.

No.26 ***Mactra anatina,***

testa diaphana, transverse striata, vulva hiante, ano planato.

Although this shell, at a first glance, seems to have a very common appearance, a closer examination however reveals that it possesses many of the unusual features which are generally characteristic of the shells from the sea region where it occurs. It is exactly ovoid in outline. The umbo is low and small, and situated in the middle of the shell. Its anterior part is remarkable by the fact that it is widely open from the umbo tip to the lower margin like a wide-open duck's bill, and hereby has some similarity to the Linnean *Solen anatinus*. This open mouth becomes more beautiful, because the edges of the two valves are bent outward into a rim, by which the opening above obtains a kind of frame. Some Lines behind this rim, a raised longitudinal ridge is found, which is composed of small connected pearls,

which, from the lower margin run up towards the umbo, becoming gradually smaller. The anus has an oblong heart-shaped depression, which again raises in the middle and is framed by a rounded margin. The external surfaces of both valves is provided with widely spaced, narrow, elevated ribs, which run from the margin, where they are strongest, to the umbo, where they almost disappear. Both valves are joined, except at the above-mentioned place. In spite of its thin and delicate construction, the hinge is very complete. The above mentioned pearl-shaped ribs are depressed on the inside of the valves. The whole shell is white. Its breadth is 3 1/2 T.; its height 2 1/2 T. Its home is South America; it is rare.

No.27 ***Mactra papyracea,***

testa ovata, gibba, candidissima, pellucida, inflata, papyracea, fragilissima, transversim plicata, margine antico subreflexo.

Chemn. Tom. 6. tab. 23. fig. 231. pag. 233
This very thin transparent *Mactra* is ovoid in outline. The umbo is placed towards the anterior part of the shell. Both valves join, except at the anterior part or the cleft, where they are reflected somewhat backwards, thus forming an opening; this anterior part is also strongly rounded. The shell is strongly vaulted, and its broad surfaces are provided with many elevated circular ridges, running transversly from the umbo to the margin; internally these ridges are depressed, and the intermediate grooves raised. The hinge is small and delicate; the single lateral tooth on the anterior end reaches to towards the extreme margin, but the lateral tooth on the posterior part is short. The breadth of this rare shell is 13 Lin.; its height 10 Lines. From the Nicobars.

No.28 ***Mactra vitrea,***

testa ovata, candida, diaphana, fragilissima, transversim striata, plicata rugosa. Chemn. Tom. 11. pag. 219. tab. 200. fig. 1959-60
This fine transparent little *Mactra* is egg-shaped. Although it has much similarity to the preceding species, its umbo, however, has an opposite position, namely on the posterior end of the shell, for which reason this is very short. The lateral surfaces are transversly provided with broad, roundly elevated folds with intermediate, finely corrugated grooves. The anterior part, or the cleft, is narrow and deeply incised. The anus is straight and long. Both valves are finely joined. The external folds are depressed internally, and the grooves are elevated. The hinge, in spite of its delicacy, is nevertheless very complete. Its breadth is 10 Lin.; its height 8 Lin. It is from Tranquebar.

No.29 ***Mactra pellucida,***

testa ovata, diaphana, laevi, antice hiante.
Chemn. Tom. 6. pag. 235. tab. 24. fig. 234
This *Mactra* is egg-shaped. Its umbo is placed towards the posterior, circular, thickly inflated part. The long anterior part of the shell, which is gaping here, runs obliquely downwards from the umbo to the narrow, rounded anterior part of both valves. In the middle, from the umbo to the lower margin, the inflated part is separated by a deeply excavated groove. The surfaces of both valves are transversely ridged, white and transparent, and when they have just come out of the sea, they are covered with a thin, yellow epidermis. Internally, the hinge is most complete. The inside of the valves is shining white, and the external groove is here seen as an elevated fold. Young and small specimens are very thin and transparent, but traces of the above mentioned groove are recognizable. The large specimens are 1 T. 7 Lin. broad and 2 1/2 T. high. From the coast of Guinea.

Mactra pellucida* Varietas *a

The difference between this and the preceding one is only that the anterior part is directed downwards in a round, obliquely tip as in the tellins. Its breadth is 1 1/2 T. its

height 1 T. From the same area.

No.30 ***Mactra fragilis,***

testa ovali-oblonga, subcompressa diaphana, laevi, cum flexura notabili & manifeste in parte antica.

Chemn. Tom. 6. pag. 236. tab. 24. fig. 235.

This *Mactra* is oblong egg-shaped. Both ends are rounded, but the anterior end is somewhat broader than the posterior. The umbo is not placed exactly in the middle, but towards the posterior part. The cleft is narrow, deeply excavated and framed by a fine ridge. From both umbo tips, to the anterior margin, runs in a straight line one ridge, separated by an elevated streak, as is found in the tellins. Some irregular fine streaks, which run across the surfaces of the valves - except at the rim - are otherwise completely smooth, flat and slightly compressed. The pit of the hinge is very large so that the triangular tooth completely disappears here. The lateral teeth are short. The shell is thin, white, and transparent. When taken out of the sea, it is covered with a very thin epidermis. Its breadth is 2 T.; its height 1 T. From the coast of Guinea.

No. 31 ***Mactra compressa,***

testa glabra, planiuscula, lactea, vulva coarctata prominente, ano latiore.

This flat, compressed *Mactra*, smooth on all sides, is egg-shaped. Its umbo is placed almost in the middle; from this to the lower margin, on the anterior part of the shell, there is a narrow raised edge, which separates a hollowed rim, about 2 Lin. wide, from the surface of the shell. The valves are widely separated from each other at both ends. On the anterior part the cleft is quite narrow and deeply impressed. The anus is heart-shaped depressed and raised in the middle. The hinge is complete in all respects. The valves are snow-white on both sides, transparent, but rather thick. The breadth is 2 1/4 T.; the height 1 T. 7 Lin. From the coast of Guinea.

No.32 ***Mactra lutraria,***

testa ovali-oblinga, laevi, dentibus lateralibus nullis.

Linné pag. 1126. Sp. 101.

Lister Hist. Conch. tab. 415. fig. 259

Chemn, Tom. 6. tab. 24. fig. 240-41

Since this *Mactra*, which is found in the European waters, was described in detail by many authors, not only by Linné, a new description is quite superfluous. A feature should however be noted, which the many authors overlooked - namely two large impressed muscle scars; mainly the posterior one is of a peculiar shape, resembling a retort [*i.e.* vessel with long tapering neck]; in the internal margin of the shell, a deep furrow runs in an undulating line which united with the other muscle scars on the anterior end. When this *Mactra* is fresh, a thin brown coat covers it densely. My largest specimens are 5 T. broad and 2 1/2 T. high. They are from the Mediterranean.

No.33 ***Mactra oblonga,***

testa scabra, transversim inæqualiter striata, hians. Cardo prope extreminatem.

Chemn. Tom. 6. pag. 27. tab. 2. It is incorrectly stated as a species of the genus *Mya.*

Gualt. tab. 9. fig. A.

This oblong, egg-shaped shell is rounded at both ends, however broadest in the anterior part of the mussel. The umbo is placed close to the posterior end. Just as the lower margin of this *Mactra* is circular, the upper margin or edge or the back is, however, excavated from the umbo to the anterior margin. The surfaces of both valves are provided with transverse, irregularly elevated streaks. This one, as well as the preceding species, lacks the lateral teeth. When taken out of the sea, it is generally covered with a thin brown epidermis. Its breadth is 2 3/4 T.; its height 1 T. 4 Lin. From the Nicobars.

***Mactra oblonga* Varietas *a*.**

This shell deviates in several parts from the species described above. In this variety the most distinct traces are seen of its growth. Since the shell has grown one year after another, the valves [sic ? a printer's error for layers] are seen lying above each other, always larger in accordance with their age: this makes the surface very rough. The umbo, which is so small that it is hardly visible, is placed - like the hinge - near the posterior part of the shell. It is narrower than in the species describe above, because its lower margin is not rounded, but almost straight, as well as the upper part or the back. The lateral teeth are missing also in this one. Outside the valves are yellow, inside white. Its breadth is 2 3/4 T.; its height 1 1/4 T. From Tranquebar.

No.34 ***Mactra planata,***

testa ovali-oblonga, valde plana, transversim intus & extus inequaliter subplicata & subtilissime striata. Chemn, Tom. 6. pag. 238. tab. 24. fig. 238-39

This peculiar *Mactra* is oblong egg-shaped, at both ends rounded and almost of equal breadth, in addition, very flat. The umbo is small, and not placed quite in the middle but somewhat towards to the posterior end. The surfaces of both valves are transversly provided with many, unequally large, elevated folds, which are separated by intermediate furrows; these folds and furrows are again covered with fine, thin, parallel streaks. Since the valves are very thin, all these folds and furrows are distinctly seen on the inside. The hinge is complete, only the lateral teeth are lacking; in their place, on the upper part or the back, is a hollow seam reaching the rounded ends of each shell. The two valves are joined above only at the umbo, and below to the middle of the margin, the remaining part is gaping. The valves are pale yellow outside, white inside. Its breadth is 2 1/2 T.; its height 1 1/4 T. It is found at the Nicobars.

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ANNEX

The well-known malacologist O.A.L. Mörch (the Natural History Museum in Copenhagen) published in 1870 studies on specimens described by Spengler (1802) as well as by Chemnitz (1782, 1795). However, Chemnitz did not apply the Linnean system 100% in contrast to Spengler. Therefore, Spengler's species are valid today while a direction issued by ICZN rejected Chemnitz's works for nomenclatorial purposes (Hemming & Noakes 1958).

In this annex we present Mörch's remarks (originally published in German) to the identity of Spengler's species.

No.4 ***Mactra alata*** Spengler
South America. *Mactra carinata* Lam. and *Mactra striatula* L. Hanley.

No.8 ***Mactra nitida*** Spengler
apud Schröter Einl. 3rd Vol. p. 88 t. 8. f. 2. - *Mactra corallina* Chemnitz. V. f. 218-19. Guinea.

No.9 ***Mactra striata*** Spengler
Red Sea. *Mactra olorina* Phil.

No.12 ***Mactra radiata*** Spengler
Maxima de Mactiis radiatis Chemnitz. VI f. 228. *Le Tinete regia* Hwass. The Nicobars. *Mactra grandis* Lam.

No.14 ***Mactra tripla*** Spengler
T. laevi, luteo tripliciter radiata, natibus violaceis (radiis albis). The Nicobars. Chemnitz VI. f. 226 non absimilis. Length 45 mm; height 35 mm. Resembles *Tivela corbicula* in form, and *Cytherea affinis* in colour.

No.18 ***Mactra gallina*** Spengler
T. glabra, striata, lactea, antice acuminata,

...ta lata, minute striata, ano carinato. Length 22; height 18 mm. The Nicobars. Related to *Mactra cuneata*. It is more flat than *Mactra cygnea*.

No.20 ***Mactra rostrata*** Spengler
T. candidissima, subdiaphana, tumida, antice carinata et reflexa, umbonibus inflatis, eboris instar politis. Length 65 mm, height 55 mm. - Chemnitz XII. t. 242. f. 4197. (inedit). *Mactra subplicatae* aff. Guinea. *Mulinia*, which is related to *M. Rodatzii* Dkr.

No.21 ***Mactra humilis*** Spengler
T. glabra, obsolete striata, lactea, vulva elongata rudi, ano latiore, natibus parvis. Length 48 mm, height 60 mm. Guinea. This species is close to *Mactra violacea*.

No.23 ***Mactra depressa*** Spengler
T. glabra, antiquato-striata, lactea, vulva arcuata, sulcata, ano lineato. Guinea. Reeve Jamaica, f. 67. After a specimen purchased at the Yoldian Auction.

No.25 ***Mactra reticulata*** Spengler
M. rugosa indiae orientalis Chemn. VI f. 237. The Nicobars.

No.26 ***Mactra anatina*** Spengler
South America. *Labiosa* Schum. Ess. t. 8. f. 1. *Anatina pellucida.*

No. 31 ***Mactra compressa*** Spengler
Guinea. Length 59 mm; height 40 mm. It occurs to me as being a very old specimen of the previous [No. 30 *M. fragilis*]. *M. brasiliana* Lam. occurs to me as being different.