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Dedicated to Mrs. W.S.S. van Benthem Jutting

Two new species of *Pratinus* Attems, with taxonomic notes on the genus and a redescription of its type-species (Diplopoda, Polydesmida)¹)

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Recently, in my paper on the Paradoxosomatidae of Borneo (JEEKEL, 1963), I discussed the taxonomy of the genus *Pratinus* Attems, 1937, and showed that the species of this genus in the wide sense as conceived by ATTEMS (1937, 1953) in majority belong to three other genera, viz., *Orthomorpha* Bollman, 1893, *Leiozonius* Jeekel, 1963, and *Gigantomorpha* Jeekel, 1963. *Pratinus* itself was restricted to a concept largely conforming to the idea held by POCOCK when he established this genus under the preoccupied name of *Prionopeltis* in 1895. Furthermore, attention was drawn to the fact that the two species of *Euphyodesmus* Attems, 1931, described from Ceylon, for which CHAMBERLIN (1941) created a separate subgenus *Ceylonesmus*, actually belong to *Pratinus*. In recapitulation, *Pratinus* was emended to embrace the following species: *P. planatus* (Poc., 1895), *P. taurinus* (Poc., 1895), *P. cervinus* (Poc., 1895), *P. greeni* (Att., 1936), and *P. vector* (Chamb., 1941).

A re-examination of the type-species of the genus, *P. cervinus*, the study of the two new species described in the present paper, and a review of the pertinent literature now has convinced me that the concept of *Pratinus* must still undergo a slight alteration to the effect that the Indochinese species which ATTEMS (1937, 1953) described in the genus *Centrodesmus* Pocock, 1894, should be reallocated in *Pratinus*. The type-species of *Centrodesmus*, *C. typicus* Pocock, 1894, from Sumatra is known only in the female sex. The other Sumatran species, *C. discrepans* Silvestri, 1895, also was based on a female. As regards the development of the lateral keels, these species bear a certain resemblance to some species of *Pratinus* and some of the Indochinese species which ATTEMS referred to *Centrodesmus*. However, such a similarity

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might as well be a case of evolutionary parallelism and not necessarily signifies congenerity. Moreover, POCOCK already considered the species of *Pratinus* generically distinct from *Centrodesmus*, and since he is probably still the only one who has seen the type-species of both genera, it seems better to follow tentatively his usually sound opinion. At any rate, the species referred to *Centrodesmus* by ATTEMS, on account of their gonopod structure cannot be kept separate from *Pratinus*.

Now, it is a far cry from the Orthomorpha-like lateral keels of Pratinus terae described below, to the bizarre, antler-shaped outgrowths of the metasomites of the Indochinese species. However, these species are already now connected by a chain of intermediate forms which likewise renders a generic distinction based on the shape of the lateral keels impossible.

The species thus added to Pratinus are: P. spectabilis (Att., 1937), P. pilosus (Att., 1937), P. asper (Att., 1937), and P. cervarius (Att., 1953).

In 1963 I pointed out some of the characters of *Pratinus*. In the gonopods it is particularly the reduced size of the tibiotarsus and the solenomerite which appears to be characteristic. In some species, however, the tibiotarsus is more elongate, approaching what is seen in *Orthomorpha*. The postfemoral region of the gonopods appears to be demarcated in some way in most of the species. The lateral keels are characteristic in having a tooth in front of the groove containing the pore, at least in the males.

Although *Pratinus* may be related most closely to *Orthomorpha*, some of its species approach *Anoplodesmus* Pocock, 1895, and *Chondromorpha* Silvestri, 1897, in the modifications of the femora of some of the anterior legs of the male.

Of importance to the status of *Pratinus* is the identity of *Hylomus* Cook & Loomis, 1924, based on *Hylomus draco* Cook & Loomis from China. In its fantastic appearance this form suggests relationship to *P. cervarius*, and undoubtedly *Hylomus* is closely related to *Pratinus*. However, the insufficiently detailed drawing appears to represent a somewhat different type of gonopods, and a re-examination of *H. draco* must be awaited before a definite conclusion as to the identity of *Hylomus* can be drawn.

The species of *Pratinus* have been sufficiently well described to warrant the correctness of their inclusion in the genus. The gonopods of *taurinus*, *planatus* and *vector*, however, are in need of a closer study. *P. taurinus* is clearly a distinct species, but in the descriptions of *planatus* and *vector* there is hardly anything which may serve to distinguish them from *greeni*.

Key to the species of Pratinus, based on male characters

- 6. Femur of the 6th, 7th and 8th legs with a strong ventral lobe. Sternite of the 5th segment with a pair of diverging processes between the anterior legs. Setiferous tubercles of tail inconspicuous. Width 2.3 mm. . . . P. cervarius (Att., 1953) Less without modifications

Pratinus cervinus (Pocock)

Prionopeltis cervinus Pocock, 1895, Ann. Mus. civ. Stor. nat. Genova, 34: 831, figs. 23-23a.

MATERIAL EXAMINED. — This species was based on two male specimens: one from Malewoon, South Tenasserim, collected by L. Fea, and one from Tenasserim, collected by E. W. Oates. In the Museum at Genova, in a vial together with other Pocock types of the Fea collection, there is a male labelled *Prionopeltis cervinus* Pocock which lacks the locality label. It has a pin running through the body, as so many specimens studied by Pocock have, and is almost certainly the cotype collected by Fea. In anticipation of the designation as holotype of the specimen collected by Oates in the British Museum, I have labelled this specimen as paratype.

DESCRIPTION. — Colour. — Pocock described the ground colour as piceous; this has now become rather dark castaneous.

Width. -3.0 mm; without the lateral keels 2.0 mm.

Head and antennae. — Labrum tridentate; the labral emargination moderately wide and moderately deep. Clypeus weakly convex, rather strongly impressed towards the labrum; the lateral border almost straight, weakly concave near the labrum. Headplate with a moderately dense setiferous punctuation up to the upper level of the antennal sockets, otherwise smooth and shiny; vertex hairless (?). Antennal sockets separated by somewhat more than the diameter of a socket, or by one third of the length of the 2nd antennal article. Postantennal groove rather wide and rather deep; the wall in front moderately prominent. Vertex rather convex; the sulcus well impressed, running downward to about the lower level of the antennal sockets. Vertex not demarcated from the frons. Antennae very long, rather stout, not clavate. Pubescence moderate in the proximal articles to rather dense in the distal ones. Length of the articles: 3 = 4 > 5 = 2 > 6, the 6th article about three quarters of the length of the 2nd, or nearly two thirds of the length of the 3rd article.

Collum. — Much wider than the head. Anterior border widely rounded, much more strongly convex near the base of the lateral keels. Anterior border of the lateral keels widely rounded, without notches. Posterior border faintly concave, convex a little at the base of the keels; the posterior border of the lateral keels faintly concave. Latero-posterior edge of keels acutely angular, projecting distinctly behind the posterior border of the middle of the collum. Marginal rim fine but distinct along the anterior and posterior borders of the lateral keels, almost fading away in the middle of the anterior margin. Surface dull, without tubercles or hairs, practically flat in the middle, moderately convex towards the base of the keels. The keels raised somewhat above the horizontal level, but not above the middorsal level.

Body segments. — Constriction rather strong. Waist broad, well demarcated from the prosomites, without sculpture. Prosomites dull, silky. Metatergites finely granulate. Transverse furrow well impressed, present from the 3rd to the 18th segment. Each metatergite with two transverse rows of flat tubercles: two tubercles in front of the transverse furrow, four tubercles behind the furrow. In the 2nd to 4th segments the anterior row has four instead of two tubercles. From the 17th segment onwards these tubercles are obsolete. Sides finely granulate. Pleural keels represented by distinct rounded ridges in the 2nd and 3rd segments. In the 4th segment these are only weakly indicated.

Lateral keels (figs. 1—2). — 2nd segment wider than the collum, and narrower than the 3rd. 4th segment also narrower than the 3rd, because the keels are a little more directed upwards. Keels of the 2nd, 3rd and 4th segments subsimilar, hornlike, raised well above the middorsal level. Lateroanterior margin with two notches. Keels of the 2nd segment arising from a slightly lower level than those of the 3rd. Keels of the 5th and subsequent segments also hornlike, all raised above the middorsal level, even in the 19th segment. The bases of the keels are conspicuously narrow in relation to the length of the metatergites. In the 14th to 17th segments the posterior points of the keels are particularly elongate. In the poriferous keels the pores are situated behind the second lateral tooth. The poriferous keels, except those of the 5th, 7th, 17th, 18th and 19th segments, have a minute tooth about halfway between the pore and the apex. Marginal rims fine, fading away towards the apex.



FIGS. 1—4. Pratinus cervinus (Pocock), & paratype. — 1, right side of the 10th and 11th segments, dorsal aspect; 2, the same, lateral aspect; 3, right gonopod, mesal aspect; 4, distal part of the same, same aspect.

Sternites and legs. — Sternites of middle segments somewhat more than one and one quarter times longer than broad. Cross impressions rather well developed, the transverse furrow deepest. Pubescence moderate. Sternite of 5th segment with an erect process between the anterior legs about half as wide as the distance between the coxae, and about as long as wide. From a posterior view the sides are slightly converging in the distal direction, and the end is weakly bifid. The process has no particular pubescence. Transverse furrow and posterior part of the sternite of the 5th segment normal. Sternites of the 6th, 7th and 8th segments without particulars. Most of the legs of the specimen studied were missing; only those of the first two pairs were present. The first leg a little incrassate, but otherwise, like the 2nd, without modifications. No tarsal brushes. According to POCOCK the legs are very long, the posterior pair of the 5th segment and the anterior pair of the 6th segment have the femur swollen in the middle. Pubescence of the legs of the middle part of the body at least up to the femur moderate.

Anal segment. — Tail of moderate length, rather thick, rather broad at the base; the sides weakly concave, moderately convergent. Lateral setiferous tubercles distinct, the dorsal setiferous tubercles of the first and second rows smaller. End of tail rather narrowly truncate, with a pair of low, rounded terminal knobs. Ventral side of tail scarcely concave. Valves somewhat rugulose, the setiferous tubercles coarse but flat. Marginal rims of moderate width and height. Anal scale triangular to subtrapezoidal. Sides practically straight, the posterior border widely rounded. Setiferous tubercles small, scarcely projecting.

Gonopods (figs. 3---4). — Coxa short, cylindrical. Prefemur somewhat elongate, caudally produced, laterally distinctly, obliquely demarcated from the acropodite. Femur relatively elongate, rather slender. At the end an oblique chitinous line on the lateral side marks the postfemoral division. Solenomerite and tibiotarsus very short. Tibiotarsus consisting of a simply rounded lamina lateralis and a more complicated lamina medialis. Solenomerite stout, strongly curved, supported but not actually sheathed by the tibiotarsus. Spermal channel running straight along the medio-anterior side of the femur towards the base of the solenomerite.

Female. — Unknown.

REMARKS. — The re-examination of this species, and in particular the elucidation of its gonopod characters, confirm the correctness of the elimination from *Pratinus* of the many species which in the course of time have been referred to it.

Within the genus, *P. cervinus* forms a group of species with *P. delfae* and *P. greeni*. In particular with *delfae* the relation is quite close, as comes out well in the similarity of the gonopods. In *greeni* the lamina lateralis appears to be more reduced, but otherwise the gonopods of this species strongly resemble those of *cervinus* and *delfae*.

Pratinus delfae spec. nov.

MATERIAL EXAMINED. — Thailand: Bukit Besar, 2500 ft., 3.IX.1901, on leaves in clearing, late evening, 3 holotype; Bukit Besar, Nawnchila, 2500 ft., 29.IX.1901, crawling on low foliage in clearing, 2 3 paratypes, 1 9 paratype.

Holotype and two paratypes in the British Museum (Natural History), London; a 3 paratype in the Zoölogisch Museum, Amsterdam.

DESCRIPTION. — Colour. — According to the label of the paratypes the colour of living specimens was bright scarlet. The preserved specimens are

dirty brownish yellow to very pale brown. Antennae brown, the distal articles, in particular the 6th and the basal part of the 7th article, infuscate.

Width. — Holotype δ : 2.8 mm; paratype δ δ : 2.7, 2.8 mm; paratype φ : 2.7 mm.

Head and antennae. — Labrum tridentate, the labral emargination weak and moderately wide. Clypeus very weakly convex, rather weakly impressed towards the labrum; the lateral border practically straight. Headplate rather densely setiferous in the clypeal and frontal regions, vertex with four hairs; surface shiny, smooth. Antennal sockets separated by slightly more than the diameter of a socket or by two fifths of the length of the 2nd antennal article. Postantennal groove and the wall in front as in *cervinus*. Vertex rather convex, not or very weakly demarcated from the frons; the sulcus moderately impressed, running downward to about the upper level of the antennal sockets. Antennae as in *cervinus*, the pubescence rather dense to dense. The 3rd article a little longer than the 4th, the 6th article about two thirds of the length of the 2nd, or four sevenths of the length of the 3rd.

Collum (fig. 5). — Somewhat wider than the head. Anterior and posterior borders as in *cervinus*, but the anterior border of the lateral keels more strongly rounded and with two weak notches, and the posterior border of the keels distinctly emarginate; the latero-posterior edge projecting only slightly behind the posterior border of the middle of the collum. Marginal rim faintly indicated laterally, distinct only along the posterior border of the keels. Surface shiny; along the anterior border a few hairs may be present, a few tubercles are faintly indicated at the posterior border. Surface moderately convex in the middle, a little more strongly so towards the base of the keels; the lateral keels rather abrubtly raised to a horizontal level.

Body segments. — Constriction as in *cervinus*. Waist rather broad, without sculpture. Prosomites dulled by a fine cellular structure, not silky. Metatergites shining, smooth. Transverse furrow well impressed, present from the 4th to the 18th segment, weakly indicated on the 3rd. Metatergites with two transverse rows of rather small, flat, generally hairless tubercles: four in front of the transverse furrow, four behind the furrow. In the 2nd segment the tubercles of both rows are very weakly developed. In the segments of the posterior half of the body the tubercles of the anterior row become gradually smaller ,but remain visible as small granules. Sides rather dispersedly granulate, only in the 2nd to 4th segments the granulation is rather dense. Pleural keels as in *cervinus* but totally absent from the 4th segment onwards.

Lateral keels (figs. 5—7). — 2nd segment wider than the collum, 3rd and 4th segments each somewhat wider than the preceding segment. Keels of the 2nd, 3rd and 4th segments subsimilar, wing-like, raised above the horizontal level, but only those of the 4th segment raised above the middorsal level. Marginal notches distinct, the anterior margin distinctly shouldered at the base. Keels of the 2nd segment arising from a slightly lower level than those of the 3rd. Keels of the 5th and subsequent segments also winglike, up to the 18th segment raised somewhat above the middorsal level. Bases of keels only slightly narrower than the length of the corresponding metatergite. The



FIGS. 5—10. *Pratinus delfae* spec. nov., & holotype. — 5, left side of the head and the first four body segments, dorsal aspect; 6, left side of the 10th and 11th segments, lateral aspect; 7, the same, dorsal aspect; 8, second leg of the 5th segment; 9, right gonopod, mesal aspect; 10, apical portion of same, same aspect.

two marginal notches distinct; no distinct additional notch in the poriferous keels. Posterior edges not more elongate than those of the other segments. Anterior border of keels somewhat shouldered at the base.

Sternites and legs. — Sternites of middle segments one and a sixth times longer than broad. Cross impressions and pubescence as in *cervinus*. Sternite of 5th segment with an erect process between the anterior legs, which is as wide as three fifths of the distance between the coxae, and about half as long as wide. From a caudal view the process is parallel-sided and distally broadly truncate, faintly rounded. The process has no particular pubescence. Transverse furrow and posterior part of the 5th sternite normal. Sternites of the 6th, 7th and 8th segments without particulars. Legs very long, slender; moderately to, distally, rather densely setiferous. No brushes. Anterior legs comparatively short, gradually more elongate in the subsequent pairs to attain their definitive length in the 2nd pair of the 6th segment. Length of articles: 3 = 6 > 5 > 2 = 4. Femora of the legs of the 2nd pair of the 5th segment and the first pair of the 6th segment somewhat incrassate and with a well developed ventral swelling (fig. 8).

Anal segment. — Similar to *cervinus*. The scale broadly triangular, with the sides faintly convex, and the posterior edge obtusely angular. Setiferous tubercles of scale not projecting.

Gonopods (figs. 9—10). — Strongly resembling *cervinus*. Coxa slightly longer in relation to width. Postfemoral region laterally demarcated by a weak furrow, but not by a chitinous line.

Female. — Aside from the usual characters differing from the male as follows. Antennal sockets separated by half the length of the 2nd antennal article. Antennae distinctly shorter; length of the 2nd to the 5th articles subequal, the 6th article about three quarters of the length of the 2nd. Constriction of body segments weaker. Lateral keels relatively much less expanded, their posterior edges pointing backward or even inward a little. Latero-anterior border more narrowly rounded. The marginal notches weaker, those in front of the pores often obsolete. Keels horizontal, not projecting dorsad of the metatergites. Sternites almost as wide as long. Legs shorter, the 2nd and 5th articles of equal length, somewhat longer than the 4th article. No modification of the femora. Pubescence as in the male.

REMARKS. — By evidence of the gonopods this species must be quite closely related to *Pratinus cervinus*. It is, however, at once distinguished from that species by its colour, the sculpture of the metatergites, the outline of the lateral keels, the details of the gonopods, etc.

It is named for Miss Dr. Delfa Guiglia, first curator of the Museo Civico di Storia Naturale at Genoa and distinguished hymenopterologist, in grateful appreciation of her friendly cooperation and assistance which greatly facilitated my works at that Museum.

Pratinus terae spec. nov.

MATERIAL EXAMINED. — Malaya: Perlis, Kaki Bukit, near Kampong Wang Tangga,

19.XII.1958, leg. Mrs. W. S. S. van der Feen-van Benthem Jutting, 3 holotype, 1 9 paratype, 1 fragment of 9 paratype.

Type material in the Zoölogisch Museum, Amsterdam.

DESCRIPTION. — Colour. — Head black, the labrum yellow. First article yellow turning to brown in the distal half. Third and following articles black. Collum black; a narrow band along the anterior margin and the whole of the lateral keels yellow, the keels with a faint, isolated, triangular, brown streak in the middle. Body segments black; the tubercles in front of the posterior margin of the metatergites and the lateral keels, ventrally and dorsally, from their base outward yellow. Dorsal side of lateral keels in the middle with a triangular brown or black spot, entirely free from the margins of the keels as well as from the black colour of the metatergites. Sides black fading to brown below. Venter pale brown. Sternites pale brown to yellow. Legs proximally yellow, brown distad of the middle of the femur. Anal segment blackish brown, the tail yellow. Valves blackish brown, the margins yellowish. Anal scale yellowish.

Width. — Holotype &: 3.8 mm; paratype 9 9: 4.2, 4.3 mm.

Head and antennae. — In general similar to *cervinus*. Clypeus rather weakly impressed towards the labrum: the lateral border faintly convex, very weakly emarginate near the labrum. Headplate somewhat dull; the vertex with two hairs. Length of antennal articles: 3 > 2 = 4 > 5 > 6, the 6th article nearly three fifths of the length of the 2nd, or slightly more than half the length of the 3rd.

Collum (fig. 11). — Much wider than the head. Anterior border widely rounded, a little more strongly rounded near the base of the lateral keels; the anterior border of the keels again more widely convex, with two distinct notches. Posterior border as in *cervinus*, but the posterior border of the lateral keels more distinctly emarginate. Surface dull, coriaceous subgranulate in the middle to finely granular laterally. Behind the middle a weakly defined transverse depression, in front of which there are some coarse longitudinal rugae. Near the anterior margin a transverse row of six hairs, which may be partly rubbed off, the lateral pair placed on low tubercles. Surface moderately convex, a little flattened in the middle. The keels raised to about a horizontal level, the apices curving very slightly ventrad.

Body segments. — Waist rather broad, dorsally faintly striate, laterally smooth. Prosomites dulled by a fine cellular structure, but not silky. Transverse furrow well impressed, present from the 3rd to the 18th segment, weakly indicated on the 2nd and 19th segments. Anterior row of tubercles composed of four; they are somewhat smaller than those of the posterior row. In the posterior third of the body they become much smaller, and in the 19th segment they are obsolete. The posterior row of tubercles is present

FIGS. 11—15. Pratinus terae spec. nov., & holotype. — 11, left side of the head and the first three body segments, dorsal aspect; 12, left side of the 10th segment, dorsal aspect; 13, leg of 7th segment; 14, right gonopod, mesal aspect; 15, apical portion of same, same aspect.



in all segments; in the 3rd and 4th segments the lateral pair of the four is subconical. Pleural keels distinct only in the 2nd and 3rd segments, absent from the 4th segment onwards. Granulation of dorsum and sides as in *cervinus*.

Lateral keels (figs. 11—12). — 2nd segment distinctly wider than the collum, very little narrower than the 3rd. The 4th segment a little wider than the 3rd. Keels of the 2nd, 3rd and 4th segments subsimilar, winglike; those of the 2nd segment raised a little above the horizontal level, but not above the middorsal level, those of the 3rd and 4th segments raised well above the middorsal level of their respective segments. Marginal notches distinct, the anterior margin distinctly shouldered at the base. Keels of the 2nd segment arising from almost the same level as those of the 3rd segment. Keels of the 19th segment, raised above the middorsal level. Bases of the keels only slightly narrower than the length of the corresponding metatergites. Marginal notches distinct, but in the poreless keels the distal tooth may be practically obsolete. Poriferous keels without an additional notch. Posterior edges in the 14th to 17th segments somewhat elongate, although not as conspicuous as in *cervinus*. Anterior border of keels weakly shouldered at the base.

Sternites and legs. — Sternites of middle segments about one and a half times longer than broad. Cross impressions well developed, the transverse furrow deeply impressed. Pubescence as in *cervinus*. Sternite of the 5th segment with a process between the anterior legs which is directed ventrad and a little caudad. The width at the base is equal to about four fifths of the distance between the coxae. The process is about half as long as broad. From a posterior view it is trapezoidal, with the sides rather strongly convergent and the end with a weak median incision. The process is almost hairless. Transverse furrow rather weakly impressed, the posterior part of the sternite practically normal. Sternites of the 6th, 7th and 8th segments without particulars. Legs (fig. 13) long and slender. Those of the anterior pairs short but not particularly incrassate, becoming gradually more elongate to reach the full length in the 2nd pair of the 5th segment. All legs without modifications. Length of articles: 3 = 6 > 5 > 4 > 2. Pubescence moderate in the proximal articles, becoming rather dense in the tarsi. No brushes.

Anal segment. — Tail rather short, rather thick, broad at the base; sides practically straight, rather strongly convergent. Setiferous tubercles as in *cervinus*. End of tail rather narrowly truncate, faintly emarginate, without distinct knobs. Ventral side of tail scarcely concave. Valves smooth, the setiferous tubercles coarse and flat. Marginal rims narrow and low. Anal scale trapezoidal, the sides widely emarginate, the posterior border straight. Setiferous tubercles strongly developed and projecting well caudad of the posterior margin.

Gonopods (figs. 14—15). — In general features as in *cervinus*; the coxa a little more slender; the prefemur slightly shorter. Tibiotarsus rather conspicuously different: the lamina lateralis reduced, the lamina medialis presenting a distinctive outline.

Female. — Aside from the usual characters differing from the male as follows. Antennal sockets separated by three sevenths of the length of the 2nd antennal article. Antennae relatively shorter. Descending order of length of the articles as in the male, but the differences somewhat less conspicuous. Constriction of the body segments weaker. Lateral keels relatively somewhat less developed, their posterior edges pointing a little more caudad. Keels all raised above the horizontal level, but just not projecting dorsad of the middorsal level of the corresponding metatergites. Sternites one and a quarter times longer than broad. Legs relatively shorter; the 2nd and 5th articles of equal length, somewhat longer than the 4th. Pubescence as in the male.

REMARKS. — In the shape of the lateral keels this species, more than any other of the genus *Pratinus*, looks rather "normal", and approaches what is seen in *Orthomorpha*. However, the gonopods, not to mention numerous other details, clearly show its true relationship. In addition to the characters of the lateral keels and the konopods, *P. terae* is at once distinguished from the other species of *Pratinus* by its striking coloration.

I take great pleasure in dedicating this nice little creature to its collector, Mrs. Tera van der Feen-van Benthem Jutting, the distinguished curator of Mollusca of the Zoölogisch Museum at Amsterdam, at the occasion of her retirement from office.

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