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NEW SYNONYMY AND A NEW NAME IN THE ANT GENUS *POLYRHACHIS* F. SMITH (HYM., FORMICIDAE)

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INTRODUCTION

Recent study of the types of some nominal species created by F. Smith, Donisthorpe and others in the genus *Polyrhachis* has brought to light a number of previously unsuspected synonyms and has allowed the unravelling of a number of tangles in the species-level nomenclature of the genus.

Polyrhachis is an extremely large genus, the second largest in the family Formicidae, and contains on recent count some 855 specific and infraspecific names. A study by the present author on the genus in the Ethiopian Region showed that less than 50 per cent of the names represented valid species and if this figure applies to the remainder of the genus then there will be about 400 distinct species of *Polyrhachis* in the Old World tropics and subtropics.

The present paper is intended as the first of a series in which new synonymy is established and which will pave the way towards revisionary studies of species group or larger units within this huge genus. The new synonyms recorded in this contribution are listed below and the museums in which types are deposited are abbreviated as follows:

BMNH.—British Museum, Natural History, London.
MHN, Geneva.—Museum d'Histoire Naturelle, Geneva.
NM, Vienna.—Naturhistorisches Museum, Vienna.
UM, Oxford.—University Museum, Oxford.

LIST OF NEW SYNONYMY

derecyna F. Smith
= *taurus* Donisthorpe
dives F. Smith
= *mutiliae* F. Smith
= *dives* var. *euclides* Forel
gab Forel
= *gab* var. *tripellis* Forel
= *crawleyella* Santschi
gracilior Forel
= *weberi* Donisthorpe
hector F. Smith
= *abdominalis* F. Smith
= *mutatus* F. Smith
= *malignus* F. Smith
hostilis F. Smith
= *hostilis* var. *intricata* Forel
= *hostilis* ssp. *hebes* Donisthorpe
illaudata Walker
= *latispinosa* Donisthorpe
= *duodentata* Donisthorpe
inermis F. Smith
= *bryanti* Donisthorpe
= *hosei* Donisthorpe
ithona F. Smith
andromache Roger
= *chaonia* F. Smith
lacteipennis F. Smith
= *simplex* Mayr
olena F. Smith
= *curvtus* F. Smith
rufipes F. Smith
= *exasperatus* F. Smith
= *phipsoni* Forel
= *exasperata* var. *oblisa* Forel
rufofemorata S. Smith
= *merops* F. Smith
sacvissima F. Smith
acantha F. Smith
= *acasta* F. Smith
zopyra F. Smith
= *moorei* Donisthorpe

Proposed new name

hungi **nom. n.** for *nitens* Donisthorpe, 1944.

Polyrhachis derecyna F. Smith

Polyrhachis dolomedes F. Smith, 1863: 16. Holotype worker. NEW GUINEA: Waigio Island (*A. R. Wallace*) (UM, Oxford) [examined]. **Nom. preocc.** [junior homonym of *dolomedes* F. Smith, 1863: 14].

Polyrhachis derecynus F. Smith, 1873: 316 [first replacement name].

Polyrhachis pseuadonyma Forel, 1886: 243 [second replacement name].

Polyrhachis (*Myrmatopa*) *taurus* Donisthorpe, 1937: 274 figs. 4, 5. Holotype female. NEW GUINEA: Sabron, Cyclops Mts., 2000 ft., iv.1936, at light (*L. E. Cheesman*) (BMNH) [examined]. **Syn. n.**

The distinctive, raised, strongly expanded lobes of the frontal carinae render this species immediately recognisable. In other series from Waigio Island the frontal carinae are rather more widely separated and somewhat less raised up than in the type of *taurus*, as is the case in the type of *derecyna*, but other characters are consistent.

Polyrhachis dives F. Smith

Polyrhachis dives F. Smith, 1857: 64. Holotype worker. SINGAPORE. (*A. R. Wallace*) (BMNH) [examined].

Polyrhachis mutiliae F. Smith, 1861: 39 pl. 1 figs. 7, 15. Syntype workers. SULAWESI: Tondano (*A. R. Wallace*) (UM, Oxford) [examined]. **Syn. n.**

Polyrhachis democles F. Smith, 1861: 40 pl. 1 fig. 9. Holotype female. SULAWESI: Tondano (*A. R. Wallace*). Synonymy by Forel, 1911b: 298.

Polyrhachis dives var. *euclides* Forel, 1913: 202. Syntype workers, female, male. TAIWAN: Taihorin, Akau, Anping, vii.1911 (*H. Sauter*) (BMNH) [examined]. **Syn. n.**

P. mutiliae is a small worker of the common *dives*, and I am almost certain that this worker is from the same series as *democles*, the name given to the female by Smith in the same publication. In the variety *euclides* the workers are also quite small and have the gaster brown in colour, with the pubescence less distinct than is usual, but in view of the variability of the species separate status on these grounds is not advisable.

Polyrhachis gab Forel

Polyrhachis guerini ssp. *gab* Forel, 1879: 116. Syntype workers. AUSTRALIA. (*Saussure*) (probably in MHN, Geneva).

Polyrhachis gab Forel, Dalla Torre, 1893: 362 [raised to species].

Polyrhachis (*Chariomyrma*) *gab* var. *tripellis* Forel, 1915: 108. Syntype workers, females. AUSTRALIA: Kimberley Distr., Derby, Noonkanbah (*E. Mjöberg*) (UM, Oxford) [examined]. **Syn. n.**

Polyrhachis comata Crawley, 1915: 237. Holotype and paratype workers. AUSTRALIA: Northern Territory, Stapleton, 22.xii.1912 (*Hill*) (BMNH; UM, Oxford) [examined]. **Nom. preocc.** [junior homonym of *comata* Emery, 1911].

Polyrhachis crawleyella Santschi, 1916: 243 [replacement name]. **Syn. n.**

The varieties applied to *gab* by Forel, namely *senilis*, *aegra* and *tripellis* are founded wholly or in large part upon differences in density and coloration of the pubescence, which appears to be quite variable even in specimens from the same locality. Crawley's species *comata* is indistinguishable from *tripellis* apart from a more brassy tinge to the gastral pubescence.

The differences used to separate *aegra* are very minor and I presume that this variety is also synonymous with *gab*, but in the case of *senilis*

some anatomical differences are cited and a comparison of types will have to be made before a conclusion can be reached.

Polyrhachis gracilior Forel

Polyrhachis furcata race *gracilior* Forel, 1893: 25, 33. Syntype workers. INDIA: Trevandrum (*H. Ferguson*) and Assam, Sibsagar (*Wood-Mason*) (probably in MHN, Geneva). [Diagnosis in key.]

Polyrhachis gracilior Forel, Bingham, 1903: 388 [raised to species].

Polyrhachis (Myrmhopla) weberi Donisthorpe, 1943a: 206. Holotype and paratype workers. INDIA: Travancore, Tenmalai, 500–800 ft., 11–17.x.1938 (BMNH) [examined]. **Syn. n.**

This synonym is quite straightforward. Donisthorpe was obviously unaware of *gracilior* as in the original description he compares his species to the two closely related species *furcata* F. Smith and *exasperata* F. Smith, but does not mention *gracilior*. Two named specimens of *gracilior* from the Bingham collection (in BMNH) which matched the descriptions of Forel (1893) and Bingham (1903) were compared with the type-series of *weberi* and no significant differences could be found.

Polyrhachis hector F. Smith

Polyrhachis hector F. Smith, 1857: 62. Holotype worker. SINGAPORE. (*A. R. Wallace*) (UM, Oxford) [examined].

Polyrhachis abdominalis F. Smith, 1858a: 63. Holotype worker. BURMA. (BMNH) [examined]. **Syn. n.**

Polyrhachis mutatus F. Smith, 1858a: 64 pl. 4 figs. 12, 13. Holotype worker. BURMA. (Type presumed lost). **Syn. n.**

Polyrhachis malignus F. Smith, 1858a: 70 pl. 4 fig. 44. Holotype female. PHILIPPINES. (BMNH) [examined]. **Syn. n.**

Polyrhachis phyllophilus F. Smith, 1860a: 69. Holotype worker. SULAWESI: Makasar (*A. R. Wallace*). (UM, Oxford) [examined] [the synonymy *abdominalis* = *phyllophilus* by Forel, 1893: 24, 32].

Polyrhachis achilles Forel, 1893: 24, 32. Syntype workers. BURMA (*Bingham*). [Diagnosis in key.] [The synonymy *abdominalis* = *achilles* suggested in Bingham, 1903: 398].

Polyrhachis mutata race *ajax* Forel, 1893: 24, 32. Holotype (?) worker. BURMA (*Bingham*). [Diagnosis in key] [The synonymy *mutata* = *ajax* in Bingham, 1903: 399].

Direct comparison shows *abdominalis* to be a synonym of *hector*, and *malignus* has proved to be the female of this species. *P. abdominalis* and *mutata* have traditionally been separated upon grounds of size, length of spines and strength of propodeal margination. Bingham (1903) utilised the presence of short spiniform bristles on the lower tibial margins of the legs as a diagnostic feature of *mutata*, despite the statement by Smith (1858a) that the legs were without spines. However, Bingham did recognise that the development of such spines was variable in *abdominalis* as he says that 'the tibiae in some specimens slightly spinose, in others smooth.' The legs in the type of *abdominalis* are without bristles below and in fact this specimen fits the descriptions of *mutata* just as well as those of *abdominalis*. Finally, series from the Andaman Islands show some specimens with spiniform bristles and some without.

With *hector* one is dealing with a variable species which has a wide distribution and appears capable of developing local populations in different parts of its range. However, these local forms are characterised only by minor differences of colour, spine length, sharpness of propodeal margination and similar features and all such characters are intergradient, often showing variation in different samples from the same area.

Polyrhachis hostilis F. Smith

Polyrhachis hostilis F. Smith, 1858b: 139. Holotype worker. INDONESIA: Aru Islands (*A. R. Wallace*) (UM, Oxford) [examined].

Polyrhachis hirsuta Emery, 1911: 532. **Nomen nudum** [junior homonym of *hirsuta* Mayr, 1876].

Polyrhachis hostilis var. *hirsuta* Viehmeyer, 1913: 58. Holotype worker. NEW GUINEA: Cyclone. [Description of *hirsuta* Emery] **nom. preocc.** [junior homonym of *hirsuta* Mayr, 1876].

[*Polyrhachis hostilis* var. *hirsutula* Emery sensu Santschi, 1916: 243. improper procedure—see below].

Polyrhachis hostilis var. *intricata* Forel, 1917: 727 [replacement name for *hirsuta* Viehmeyer]. **Syn. n.**

Polyrhachis (*Chariomyrma*) *hostilis* subsp. *hebes* Donisthorpe, 1941a: 62. Holotype and paratype workers. NEW GUINEA: Japan Island, Mt. Baduri, 1000 ft. viii.1938 (*L. E. Cheesman*) (BMNH) [examined]. **Syn. n.**

At its inception the name *hirsuta* Emery, besides being a *nomen nudum* was also a preoccupied name as *hirsuta* Mayr had been previously described in 1876. Viehmeyer's (1913) description of var. *hirsuta* appears to be based on Emery's original specimen, and Forel's var. *intricata* was proposed as a substitute name for this form.

Santschi (1916) gave *hostilis* var. *hirsutula* Emery as a senior synonym of *hirsuta* Viehmeyer, but in fact the name *hirsutula* was originally applied by Emery to a variety of *continua* Emery, a very different species. Santschi does not give any reason for his transference of var. *hirsutula* from *continua* to the unrelated *hostilis*, nor for his assumption that *hirsutula* was a senior synonym of *hirsuta*, and one must assume a mistake on his part.

Donisthorpe separated his subspecies *hebes* principally on the characters of the tooth at the base of the scape being blunter and more rounded; the pronotum being not nearly so transverse as in *hostilis*, and the pronotal teeth being shorter than in *hostilis*. The first of these characters shows some slight variation between *hostilis* specimens in the BMNH and the reduction of the tooth in *hebes* is not excessive. The statement that the pronotum is not as strongly transverse in *hebes* is incorrect as the pronotal width (PW) of the holotype and paratype are 2.10 and 2.36 mm respectively, whilst the PW of a type-compared *hostilis* worker is 2.34 mm, and that of another specimen from Aru Is. is 2.22 mm.

The length of the pronotal teeth is quite variable in the species and in fact in the holotype of *hebes* the tooth on the right pronotal corner is better developed than that on the left whilst in the paratype the teeth are scarcely more than slightly prominent angles.

Other differences given by Donisthorpe such as abundance of hairs and sculptural variations are trivial in the extreme and only serve to emphasise the variation of individuals within the species.

Polyrhachis hungi **nom. n.**

Polyrhachis (*Hedomyrma*) *nitens* Donisthorpe, 1944: 65. Holotype worker. NEW GUINEA: Waigio Island, Camp Nok, 2500 ft. v. 1938 (*L. F. Cheesman*) (BMNH). **Nom. preocc.** [junior homonym of *Polyrhachis* (*Chariomyrma*) *nitens* Donisthorpe, 1943b: 464].

As Donisthorpe described two very different species as *nitens* a replacement name is necessary for the later name. A number of

homonyms still exist in the genus *Polyrhachis*, but they are all of forms described as varieties or subspecies. As such forms are usually synonymous with the species of which they are supposed to be variants the proposal of replacement names seems unnecessary. If however such forms are found to be distinct species replacement names can easily be decided by the revisor.

Polyrhachis illaudata Walker

Polyrhachis illaudatus Walker, 1859: 373. Holotype worker (not male). SRI LANKA. (BMNH) [examined].

Polyrhachis mayri Roger, 1863: 7, 45. [new species for *P. relucens* (Latreille) sensu Mayr, 1862: 685]. SRI LANKA. (*Dohrn*). Synonymy by Donisthorpe, 1932: 576.

Polyrhachis (*Myrma*) *latispinosa* Donisthorpe, 1942a: 460 pl. 2 fig. 1. Holotype female. INDIA: Travancore, Tenmalai, 500–800 ft. 11–17.x.1938 (BMNH) [examined]. **Syn. n.**

Polyrhachis (*Myrma*) *duodentata* Donisthorpe, 1942a: 461 pl. 2 fig. 2. Holotype female. INDIA: Malabar, Nadungayam, 200 ft. 16–22.ix.1938 (BMNH) [examined]. **Syn. n.**

Walker's original description was supposedly of a male, but his specimen was actually a worker, as pointed out by Donisthorpe (1932) and as is obvious from the original description where Walker states that this 'male' is apterous. The name *mayri* was given by Roger (1863) to a number of specimens from Ceylon described by Mayr (1862) as being *relucens*, but which were actually of a different species. *P. mayri* was thus the only known name of this quite common species until Donisthorpe (1932) rediscovered Walker's types and found *illaudata* to be a senior synonym. Ten years later Donisthorpe (1942a) founded two species, *latispinosa* and *duodentata*, on two females from southern India which were separable from each other only on the structure of the median dorsal prominence of the petiole and were separable from *illaudata* only by the supposed absence of such a prominence in this species. However, a number of females captured in southern India show a low prominence in the middle of the dorsal petiolar margin and in one case there is a distinct triangular tooth in this position, which is somewhat truncated apically. Thus the presence or absence of such a prominence and its degree of development is seen to be variable in otherwise similar specimens, and *latispinosa* and *duodentata* fall as synonyms of *illaudata*.

Polyrhachis inermis F. Smith

Polyrhachis inermis F. Smith, 1858a: 68 pl. 4 figs. 25, 26. Holotype worker. SULAWESI (BMNH) [examined].

Polyrhachis (*Myrma*) *bryanti* Donisthorpe, 1942b: 707. Holotype and paratype workers. BORNEO: Sarawak, Mt. Matang, 1.xi.1914 (*G. F. Bryant*) (BMNH) [examined]. **Syn. n.**

Polyrhachis (*Myrma*) *hosei* Donisthorpe, 1942b: 708. Holotype and paratype workers. BORNEO: Santubong, i.1907 (*J. Hose*) (BMNH) [examined]. **Syn. n.**

In the above publication Donisthorpe stated that, 'some myrmecologists would possibly treat all these ants [of the *inermis* group] as subspecies of one of the older species', but said that he preferred to regard them as separate. I have examined the types of the six named species in this group (not counting infraspecific forms) and find that they resolve into three reasonably distinct species, namely *inermis*,

with the synonyms quoted above, *vindex* F. Smith with *orsylla* F. Smith as a synonym, and *carbonaria* F. Smith.

Wheeler (1919: 125) redescribed *vindex* and commented that the species was 'very close to Smith's *inermis* and *orsyllus*, especially the latter'. Later Wheeler (1924: 254) gave *orsylla* as a synonym of *vindex* and this synonymy is now confirmed.

Donisthorpe's species *bryanti* and *hosei* are inseparable from *inermis* and were originally differentiated from it only on trivial and intrinsically variable characters of spine lengths and thicknesses.

Polyrhachis ithona F. Smith

Polyrhachis hector F. Smith, 1858b: 142. Holotype worker. INDONESIA: Aru Islands (*A. R. Wallace*) (UM, Oxford) [examined]. **Nom. preocc.** [junior homonym of *hector* F. Smith, 1857].

Polyrhachis andromache Roger, 1863: 8, 46 [replacement name]. **Syn. n.**

Polyrhachis ithonus F. Smith, 1860b: 99 pl. 1 fig. 18. Syntype worker, female. INDONESIA: Batjan Island (*A. R. Wallace*) (UM, Oxford) [examined]. **Valid name.**

Polyrhachis chaonia F. Smith, 1861: 42 pl. 1 fig. 18. Holotype female. INDONESIA: Halmahera (=Gilolo) Island (*A. R. Wallace*) (UM, Oxford) [examined]. **Syn. n.**

Very closely related to *relucens* (Latreille), but separable by the lack of short, erect hairs on the leading edge of the scape and the dorsal surfaces of the posterior tibiae. In *relucens* these are always present. The two females described as *ithona* and *chaonia* are very similar, differing principally in the development of the dorsal petiolar spines which in the former are lower, broader and blunter than in the latter. The holotype of *hector* is quite a small individual, but larger specimens are present in the BMNH collection which link the relatively large *ithona* queen to the smaller *hector* worker.

Polyrhachis lacteipennis F. Smith

Polyrhachis laceteipennis F. Smith, 1858a: 60 pl. 4 fig. 40. Holotype female. NORTHERN INDIA (BMNH) [examined].

Polyrhachis simplex Mayr, 1862: 682. Holotype female. INDIA: Kashmir (probably in NM, Vienna). **Syn. n.**

Polyrhachis spiniger Mayr, 1878: 653. Syntype worker, male. INDIA (*Rothney*). [The synonymy *simplex*=*spiniger* by Forel, 1893: 36.]

Comparison of the type of *lacteipennis* with several queen-containing series of the common Middle-Eastern and Indian *simplex* shows that this well known name must fall as a synonym of *lacteipennis*.

Polyrhachis olena F. Smith

Polyrhachis olenus F. Smith, 1861: 39 pl. 1 fig. 8. Holotype worker. SULAWESI: Tondano (*A. R. Wallace*) (UM, Oxford) [examined].

Polyrhachis eurytus F. Smith, 1861: 43 pl. 1 fig. 24. Holotype female. SULAWESI: Tondano (*A. R. Wallace*) (UM, Oxford) [examined]. **Syn. n.**

After careful examination of the types of these two forms I am convinced that *euryta* is in fact the female of *olena*.

Neither the specimen labelled as type of *euryta* nor the original description of F. Smith matches the figure of the petiole of this species appended to the original description (fig. 24, not fig. 23 as stated in the text. The corrective note is given by Smith on page 66). According to Smith the petiole of *euryta* is 'widely emarginate above and subdentate at the angles.' This fits the specimen labelled as type, but the figure

shows a very different structure in which the dorsal margin of the petiole between the narrow, truncated dorsal teeth is raised into a broad, rectangular prominence. It is apparent that the description and the figure do not refer to the same specimen and as the female labelled as type of *euryta* fits the description I am prepared to accept it as the true holotype and assume the figure to belong to another species.

The figure of the petiole appended to the description of *olena* (fig. 8) is more or less accurate, with a pair of long dorsal spines subtended by a pair of lateral teeth, and the petiole configuration of *euryta* is a reduction of this, as is common in the genus.

Polyrhachis rufipes F. Smith

Polyrhachis rufipes F. Smith, 1858a: 66 pl. 4 fig. 28. Holotype worker. BORNEO: Sarawak (BMNH) [examined].

Polyrhachis exasperatus F. Smith, 1861: 41 pl. 1 fig. 16. Syntype workers. SULAWESI: Tondano (*A. R. Wallace*) (BMNH; UM, Oxford) [examined]. **Syn. n.**

Polyrhachis phipsoni Forel, 1894: 399. Holotype worker. BURMA: Yé Valley (*Bingham*) (probably in MHN, Geneva). **Syn. n.**

Polyrhachis exasperata var. *oblisa* Forel, 1911a: 395. Holotype worker. WEST MALAYSIA: Malacca, Pahang, Batu Caves (*R. Martin*) (probably in MHN, Geneva). **Syn. n.**

Synonymy of *rufipes* and *exasperata* was attained by the direct comparison of types, the only mentional differences between them being details of length and thickness of the petiolar spines. In view of the variation of shape and size of these structures in other workers of the species such characters are of no value in differentiation.

Forel (1911: 395) pointed out that his species *phipsoni* was in fact nothing more than a variant of *exasperata*. Comparison of his description with specimens implies that *phipsoni* is inseparable from *exasperata*, and thus from *rufipes*. The very short original description of var. *oblisa* stated that it differed from the type of *exasperata* only in the narrower petiolar spines. As is now known, such forms fall within the limits of variation of this species.

Polyrhachis rufofemorata F. Smith

Polyrhachis rufofemoratus F. Smith, 1858b: 142. Syntype workers. INDONESIA: Aru Islands (*A. R. Wallace*) (UM, Oxford) [examined].

Polyrhachis merops F. Smith, 1860b: 98 pl. 1 fig. 17. Holotype worker. INDONESIA: Batjan Island (*A. R. Wallace*) (UM, Oxford) [examined]. **Syn. n.**

Emery (1898: 241) indicated that *merops* was a variety of *rufofemorata* and not a distinct species. Examination of the types of both species shows clearly that they are the same and differ slightly in the development of the dorsal pair of petiolar teeth which are more acute and longer in the type of *merops*.

Polyrhachis saevissima F. Smith

Polyrhachis saevissimus F. Smith, 1860a: 71. Holotype worker. SULAWESI: Makassar (*A. R. Wallace*) (UM, Oxford) [examined].

Polyrhachis acantha F. Smith, 1860b: 98 pl. 1 fig. 16. Holotype worker. INDONESIA: Batjan Island (*A. R. Wallace*) (UM, Oxford) [examined]. **Syn. n.**

Polyrhachis acasta F. Smith, 1860b: 100 pl. 1 fig. 23. Holotype worker. INDONESIA Batjan Island (*A. R. Wallace*) (UM, Oxford) [examined]. **Syn. n.**

Direct comparison of the types shows that these three forms are members of the same rather variable species, and I suspect that *acantha*

and *acasta* originated in the same series of specimens of the Wallace collection. I have also examined the type of *diaphanta* F. Smith and find it to be very close to and probably inseparable from *saevissima*.

Polyrhachis zopyra F. Smith.

Polyrhachis zopyrus F. Smith, 1861: 43 pl. 1 fig. 22. Holotype worker. SULAWESI: Tondano (*A. R. Wallace*) (UM, Oxford) [examined].

Polyrhachis (*Myrma*) *moorei* Donisthorpe, 1941b: 208. Holotype worker. PHILIPPINES: Luzon Island, Baguio, Waterfall Valley, under stone, 17.ii.1920 (*A. Moore*) (BMNH) [examined]. **Syn. n.**

The two types are very similar; *zopyra* is slightly more stoutly built with a broader and somewhat thicker petiole scale and with the lateral margination of the propodeum rather better defined than in *moorei*. On the other hand *moorei* has slightly thicker pronotal teeth and the pubescence is dense and fine over the entire dorsal surface of the specimen. It is not so dense in *zopyra*, but where it does occur it is apparent that much of the pubescence has been lost and the specimen when fresh was probably just as densely pubescent as the type of *moorei*. The anterior clypeal margin in *zopyra* is irregular medially whilst that of *moorei* is quite regularly arcuate apart from a small median impression. In spite of this and in view of the otherwise marked similarities of the two I am satisfied that the two names represent only a single species.

SYNOPSIS

Twenty-six new synonyms and one new name are proposed in the ant genus *Polyrhachis* F. Smith. Older synonyms are given where applicable and details of variation of the species are noted in some cases.

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