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www.publish.csiro.au/journals/mr *Molluscan Research*, 2004, **24**, 123–130

New Taxa

Two new *Fusinus* (Mollusca : Gastropoda : Fasciolariidae) from Western Australia

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Abstract

This paper describes two new *Fusinus* species in the neogastropod family Fasciolariidae: *Fusinus wellsi* n. sp. and *Fusinus vercoi* n. sp., both from Western Australia. *Fusinus wellsi* n. sp. is similar to *Fusinus leptorhynchus* (Tapparone-Canefri, 1875) from the Red Sea and *Fusinus vercoi* n. sp. is most similar to *Fusinus tessellatus* (G. B. Sowerby, II, 1880), also from Western Australia.

Introduction

The fasciolariid genus *Fusinus* in the broad sense evolved in the Cretaceous period and Recent species are spread worldwide through temperate waters. These gastropods have an elongated shell with a tall spire and a long siphonal canal. Sculpture is typical of the family, with axial ribs that are usually prominent, crossed by spiral cords. There are no columnellar folds. Adults range in size from ~15 mm to more than 300 mm. The two new species considered here are endemic to south-west Australia, joining *Fusinus tessellatus* (G. B. Sowerby, II, 1880) and *Fusinus* (*Chryseofusus*) *westralis* Hadorn & Fraussen, 2003, the only other *Fusinus* species endemic to this area. Other *Fusinus* collected from south-west Australia range across southern Australia to New South Wales and often more broadly into the Indo-Pacific region. All names assigned to this genus are enumerated in Snyder (2003). These two species of *Fusinus* are typical of new fauna discovered in many areas by diving and dredging. Commercial fishermen occasionally collect molluscs as part of by-catch and salvage them for sale to collectors.

Methods

Shell dimensions were measured with vernier calipers to 0.1 mm. Shell length is the maximum dimension parallel to the axis of coiling. Shell width is measured perpendicular to the axis of coiling.

Institutional abbreviations

ANSP	Academy of Natural Sciences, Philadelphia, Pennsylvania, USA
SC	Snyder Collection, Villanova, Pennsylvania, USA
WAM	Western Australian Museum, Perth, Western Australia

Systematics

Family **FASCIOLARIIDAE** Gray, 1853

Subfamily **FUSININAE** Wrigley, 1927

Genus ***Fusinus*** Rafinesque, 1815

Type species: *Murex colus* Linnaeus, 1758, by monotypy. Recent, Indo-Pacific.

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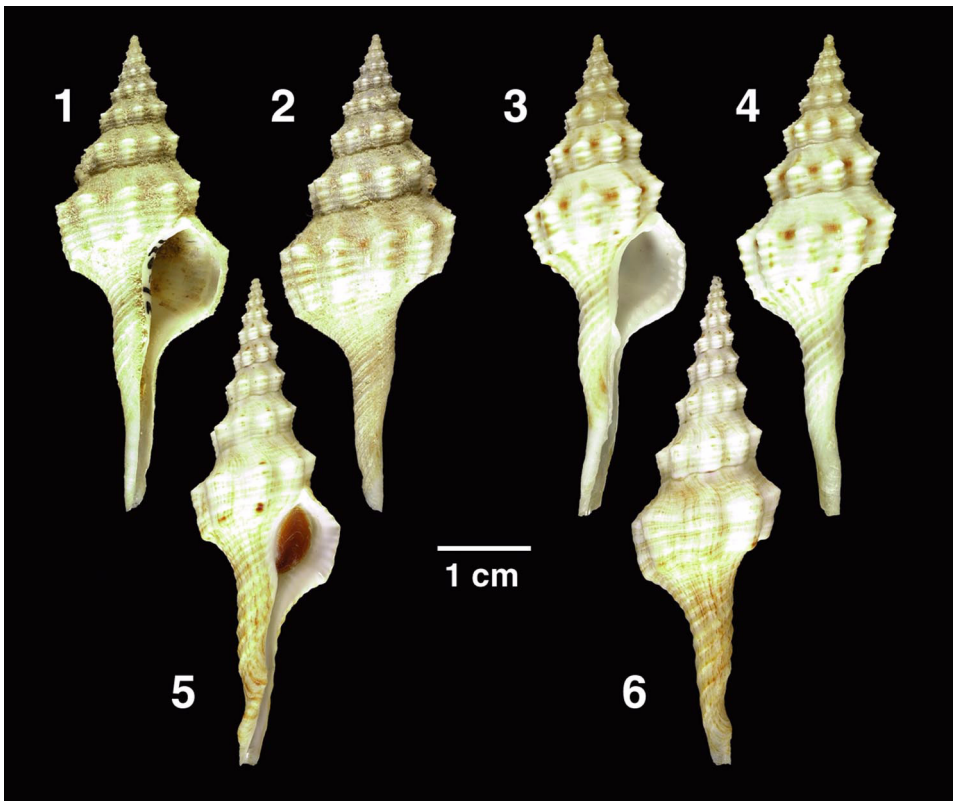


Figs 1–6. *1*, *2*, *Fusinus wellsi*, n. sp., holotype (WAM S14312). *3*, *4*, *F. wellsi* n. sp., 59.1 mm, allegedly from fishing nets off Nha Trang, Vietnam (SC). *5*, *6*, *F. leptorhynchus* (Tapparone-Canefri, 1875), 53.8 mm, collected off Shab Broor, Egypt (Red Sea) (SC).

Fusinus wellsi n. sp.

(Figs 1–4; Table 1)

Material examined

Holotype. Western Australia, south-west of Dongara, 29°49′S 112°24′E, 128–132 m (WAM S14312).

Paratypes. **Western Australia:** 1, 160 km north of Perth, off Cervantes, 20 m, in crayfish pots (WAM S13908); 1, off Albany, trawled at 100 m (SC); 1, south-west of Jurien Bay, 30°40′S 114°28′E, trawled at 139–146 m (WAM S10908); 1, west of Rottnest Island, 32°02′S 115°22′E, trawled at 109 m (WAM S10929).

Other material examined. **Western Australia:** 2 (63.4 mm, 75.8 mm), 160 km north of Perth, off Cervantes, 20 m, in crayfish pots (SC). Twenty-nine lots of *Fusinus wellsi* n. sp. held in WAM were examined (specimen numbers greater than one in a lot are given prior to the locality; lots are grouped by locale, listed from north to south; F indicates a shell fragment): 2 + 2F, NW of Bluff Point, 27°40′S 113°03′E, 127 m, 1963 (WAM S10938); 2, W of Houtman Island, 28°52′S 113°53′E, 136–146 m, 1960 (WAM S10937); SW of Geralton, 29°05′S 113°56′E, 129–147 m, 1964 (WAM S10901); 29°07.5′S 113°57.5′E, 141 m, 1976 (WAM S10931); 1 + 2F, W of Dongara, 29°11.5′S 113°56.3′E, 137 m, 1976 (WAM S10904); 3, 29°15′S 114°01′E, 146 m, 1972 (WAM S10905); 19°14′S 114°04.5′E, 165 m, 1976 (WAM S10933); SW of Dongara, 29°28.2′S 114°11.1′E, 183 m, 1976 (WAM S10902); F, 29°33′S 114°19.5′E, 152–157 m, 1972 (WAM S10932); SW of Jurien Bay, 30°16.2′S 114°38.6′E, 137 m, 1976

(WAM S10906); 3, 30°40′S 114°28′E, 139–146 m, 1972 (WAM S10908); 30°21′S 114°38′E, 165 m, 1976 (WAM S10921); 2, 30°29′S 114°40′E, 145 m, 1970 (WAM S10930); 3, 30°38′S 114°47′E, 109 m, 1970 (WAM S10934); 13, W of Guilderton, 31°32′S 115°01′E, 146 m, 1972 (WAM S10910); NW of Rottnest Island, 32°00′S 115°30′E, 145–165 m, 1962 (WAM S10911); 32°00′S 115°30′E, 173–175 m, 1962 (WAM S10912); 32°00′S 115°30′E, 145–164 m, 1962 (WAM S10913); 2, 32°00′S 115°08′E, 136 m, 1963 (WAM S10914); 1 + 1F, 32°00′S 115°30′E, 145 m, 1965 (WAM S10915); 32°00′S 115°30′E, 182–187 m, 1962 (WAM S10916); 2, 32°00′S 115°30′E, 118 m, 1962 (WAM S10917); 32°00′S 115°30′E, 155–173 m, 1962 (WAM S10918); 32°00′S 115°30′E, 145–164 m, 1962 (WAM S10919); 4, 32°00′E 115°30′E, 145 m, 1965 (WAM S10920); 32°00′S 115°30′E, 176–182 m, 1965 (WAM S10922); 32°00′S 115°30′E, 135–144 m, 1962 (WAM S10923); 32°00′S 115°30′E, 127 m, 1965 (WAM S10924); 32°00′S 115°30′E, 164 m, 1965 (WAM S10925); 2, 32°00′S 115°30′E, 138–144 m, 1962 (WAM S10926); 32°00′S 115°30′E, 127 m, 1965 (WAM S10927); 4, 32°00′S 115°15′E, 146–150 m, 1972 (WAM S10928); 4 + 2F, 32°02′S 115°22′E, 109 m, 1970 (WAM S10929); 2 + 1F, NW of Bunbury, 33°00′S 114°37′E, 219–221 m, 1972 (WAM S10903); 2, NW of Cape Naturaliste, 33°40′S 114°28′E, 136 m, 1973 (WAM S10909). **Vietnam:** 1, 53.3 mm, off Nha Trang, from fishing nets (SC) (Figs 3, 4) [doubtful record].

Description

Shell length to 75.8 mm. Shell fusiform, moderate size for genus, moderately broad and heavy, with prominent axial and spiral sculpture. Protoconch with 1.75–2 smooth, bulbous, white glabrous whorls with narrow riblets on last half whorl. Transition to teleoconch abrupt, with coarser axial sculpture and onset of spiral sculptured whorls; teleoconch with 8–10 whorls. Axial sculpture dominant, consisting of 9–11 strong, angular ribs per whorl, aligned with spaces between ribs of previous whorl. Ribs angular on all whorls, forming sloping sutural ramp. Minute axial ridges and grooves between axial ribs. Spiral sculpture of strong cords; 2–4 on sutural ramp, one crossing axial ribs above ramp, forming nodules, 2–3 on abapical side of whorl; on body whorl four strong cords across raised central portion of axial rib with three weak cords between, ~10 strong cords along sloping concave neck and towards abapical end of canal. Aperture ovate, with well developed posterior canal. Columella thin, smooth, shiny white, adherent. Outer lip with rounded lirae, 1–2 mm wide. Inner lip shiny, white, with lirations 1.0–1.3 mm apart, terminating ~2.5 mm from periphery of lip. Siphonal canal long, straight to slightly sinuous. Shell colour white with randomly placed brown spots between axial ribs, usually centred on spiral cords. Operculum typically fasciolariid, caramel brown, claw-like, with terminal nucleus. Animal unknown.

Measurements

See Table 1.

Habitat and distribution

Occurs in moderately deep water from north-west of Bluff Point to north-west of Cape Naturaliste, a range of ~600 km.

Remarks

Fusinus wellsi, informally described and illustrated as *Fusinus* sp. by Wilson (1994: 69, pl. 13, fig. 6), has been collected in moderately deep water off Western Australia from 165 km west of Eucla (misidentified by Verco (1912: 221) as *Fusus novae-hollandiae*, at depth of 182 m) to Dongara. The twenty-nine WAM lots of *Fusinus wellsi* contain shells of lengths ranging from 24.8 mm to 56.9 mm. Four other WAM lots (WAM S10907, WAM S10935, WAM S10936, WAM S10939) contain immature specimens that can only questionably be assigned to this taxon. Lot WAM S10935 is probably *F. wellsi* and was supposedly collected west of Broome. This would represent a range extension of ~1250 km to the north. The

Table 1. Shell dimensions of *Fusinus wellsi* n. sp. type material

	Length (mm)	Width (mm)	Length of aperture (mm)	Length of canal (mm)	Number of teleoconch whorls
Holotype					
WAM S14312	53.1	19.0	12	21	8
Paratypes					
WAM S13908	64.7	23.3	13	23	9
SC	59.1	19.3	12	22	9
WAM S10908	49.8	17.0	10	19	9
WAM S10929	44.7	15.8	8	17	8

species has allegedly been collected off Vietnam, but this may be a spurious record referring to a fishing vessel working from Vietnam.

Fusinus leptorhynchus (Tapparone-Canefri, 1875) (Figs 5, 6) is the species that appears to be most closely related to *F. wellsi*. This Red Sea species is somewhat larger (to 76.4 mm), has fewer axial ribs (8–9 on body whorl), and sometimes has random brown dots of colour, but often on the abapical side of the axial rib rather than by the sutural ramp. Larger Indo-Pacific *Fusinus* collected in Western Australia include *Fusinus* (*Chryseofusus*) *westralis* Hadorn & Fraussen, 2003, *F. colus* (Linnaeus, 1758), *F. nicobaricus* (Röding, 1798) and *F. undatus* (Gmelin, 1791). These are all well known species, figured in Wilson (1994) (*F. westralis* is illustrated as *Siphonofusus chrysodomoides*, pl. 12, fig. 7a, b) and quite different in form from *F. wellsi*. The smaller *F. tessellatus* (G. B. Sowerby, II, 1880), also from Western Australia, is discussed in detail below. This species has a stubby siphonal canal whereas *F. wellsi* has a long canal and a larger adult size. *Fusinus tessellatus* has rounded axial sculpture; the axial sculpture of *F. wellsi* is angular. Finally, *F. australis* (Quoy & Gaimard, 1833) is an endemic shallow-water species attaining a larger size; it is also well figured by Wilson (1994) and is a much broader, heavier species.

Etymology

This species is named for Dr Fred Wells of the Western Australian Museum who has done much to elucidate the Australian molluscan fauna.

Fusinus vercoi n. sp.

(Figs 7–10; Table 2)

Material examined

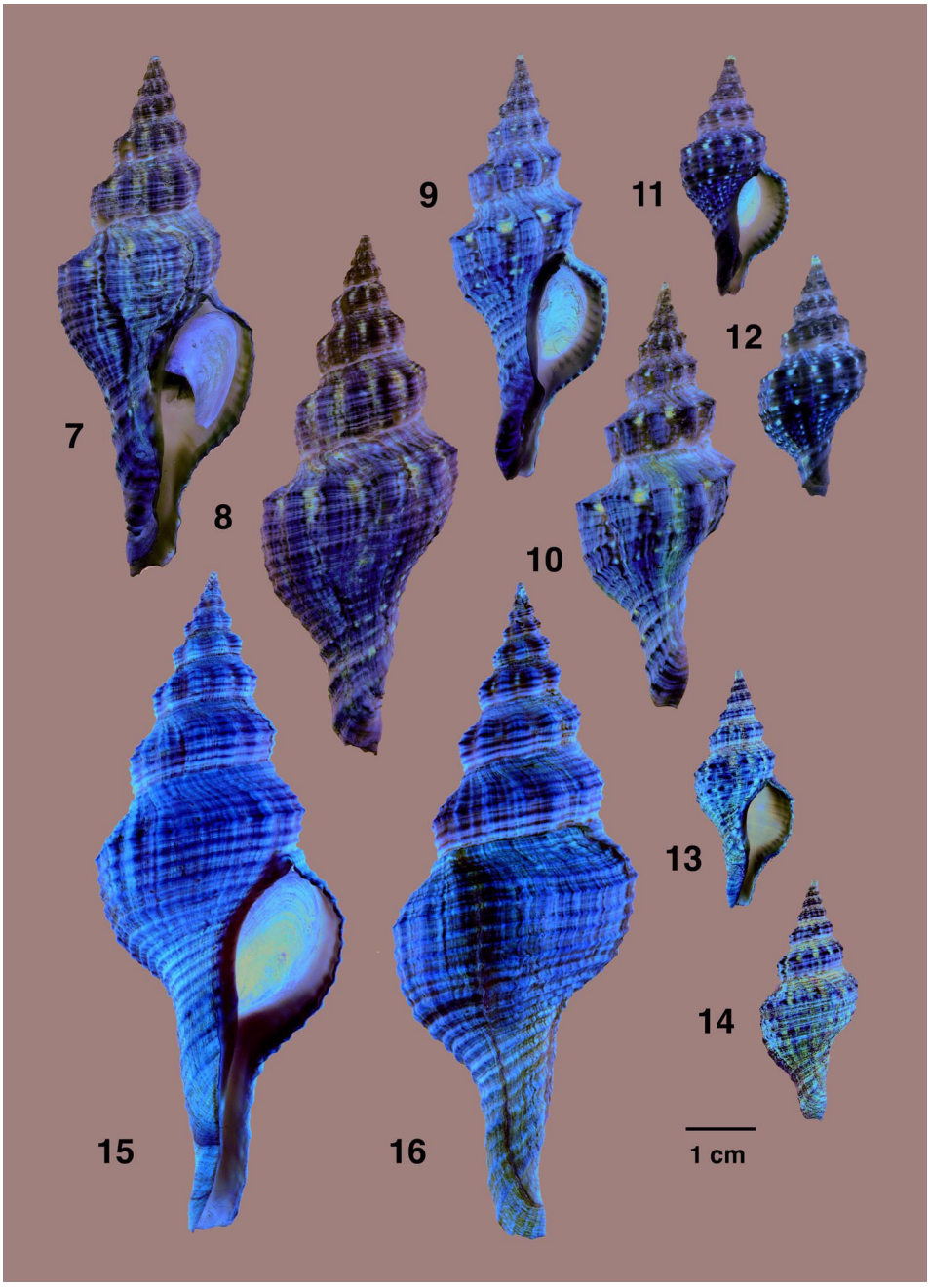
Holotype. Western Australia, off Albany, 30 m (WAM S13909).

Paratypes. **Western Australia:** 1, off Albany (type locality), 30 m (ANSP 410707); 1, off Fremantle, dredged at 25 m (SC); 1, Albany Harbour, 10–15 m, in weed and rubble (WAM S13910).

Other material examined. **Western Australia:** 4 (48.4–58.4 mm), Albany Harbour (SC).

Description

Shell length to 77.2 mm. Shell fusiform, moderate size for genus, broad and heavy, with prominent axial sculpture; spiral sculpture less prominent. Protoconch of two whorls, first 1 1/4 smooth, bulbous moderately depressed white with subsequent 3/4 whorl chocolate brown with fine axial line sculpture; early whorls slightly eroded and probably brown as well. Transition to teleoconch fairly well defined with coarser axial sculpture and onset of spiral sculptured whorls; 7–8 whorls in teleconch. Axial sculpture dominant, consisting of



Figs 7–16. *7*, *8*, *Fusinus vercoi*, n. sp., holotype (WAM S13909). *9*, *10*, *F. vercoi*, paratype (SC). *11*, *12*, *F. tessellatus* (G. B. Sowerby, II, 1880), 37.2 mm, collected on reef in sand pockets, low tide, at Yallingup, Western Australia (SC). *13*, *14*, *F. tessellatus*, 35.7 mm, collected with specimen in Figs 11, 12 (SC). *15*, *16*, *F. australis* (Quoy & Gaimard, 1833), 96.6 mm, collected at 5–6 m, in sand, at Hyponga Beach, South Australia (SC).

Table 2. Shell dimensions of *Fusinus vercoi* n. sp. type material

	Length (mm)	Width (mm)	Length of aperture (mm)	Length of canal (mm)	Number of teleoconch whorls
Holotype					
WAM S13909	77.2	30.2	25	18	8
Paratypes					
ANSP 410707	76.4	28.9	23	19	7
SC	63.4	23.9	19	16	8
WAM S13910	58.6	23.8	17	17	7

11–12 strong, angular ribs per whorl, aligned with spaces between ribs of previous whorl. Ribs angular on all whorls forming sloping sutural ramp; suture impressed. Fine axial ridges between and over axial ribs. Spiral sculpture of strong and weak cords; 2–5 weak cords between strong cords on sutural ramp, one crossing axial ribs above ramp, forming nodules; 3–4 on abapical side of whorl; on last whorl 9–10 strong cords to abapical end of canal. Aperture ovate, weakly developed anterior canal. Columella thin, smooth, shiny white, adherent in some specimens but often flaring at abapical end of aperture with prominent fold towards outer lip, constricting canal. Canal moderately long, slightly recurved away from plane of aperture, relatively closed. Outer lip with rounded dentations, ~1 mm wide, with brown colouration between dentations on most specimens. Inner lip shiny, white, with ~15–18 lirations stopping ~2.5 mm from periphery of lip. Shell colour mottled light-dark brown with white; dark brown spots often between axial nodules, towards sutural ramp, prominent on later whorls. Operculum typically fasciolariid, light to medium brown, clawlike, with terminal nucleus, filling aperture. Animal unknown.

Measurements

See Table 2.

Remarks

This species is closest to *Fusinus tessellatus* (G. B. Sowerby, II, 1880) (Figs 11–14), also from Western Australia, which, in addition to its smaller adult size, has a stubby, widely open siphonal canal. In most examples of *F. vercoi*, the columella is detached from the canal, folding towards the lip of the canal, restricting and almost closing the canal. On *F. tessellatus* the less prominent axial sculpture usually becomes obsolete on the last whorl. The prominent axial sculpture of *F. vercoi* remains pronounced on the last whorl, in many cases showing its strongest expression. The columellar shield is adherent in *F. tessellatus*, very rarely forming a slit-like sinus towards the abapical end of the canal. The protoconch of *F. tessellatus* is usually dark brown whereas the first embryonic whorls of *F. vercoi* are white. *F. tessellatus* is found intertidally among algae-covered rocks and collected from shallow reef tops. *Fusinus vercoi* is apparently confined to moderately deep water. Comparison may also be made with *F. australis* (Figs 15, 16). This variable species has a protoconch of nearly three whorls rather than two, has similar early-whorl sculpture, which becomes obsolete on the body whorl, and attains a much larger size, to 139 mm. *Fusinus australis* never has the dark brown spots between the axial knobs, as is usually the case in *F. vercoi*.

There is an additional taxon, which deserves consideration here: *Fusus philippii* Jonas, 1846. This species was briefly described, with no illustration, by Jonas (1846: 129) and

stated to be collected '*in litore occendentali Novae Hollandae*' (the western shore of Australia). The length and width of the shell is stated to be 15 lines (22.7 mm) and 6 lines (13.1 mm) respectively (for conversion factors see Abbott 1974: front flyleaf). The species is included by Philippi (1847: 191) and figured there (*Fusus* pl. 4, fig. 1). I believe that there is no extant type material of Jonas' taxon, and I have been unable to find any *Fusus* material of Philippi in either Germany or Chile. According to Dr Frank Koehler (Humboldt University, personal communication), the bulk of Jonas' material was held by the Hamburg Museum, which was completely destroyed in World War II. Conceivably one could use Philippi's figure for a lectotype designation of *Fusus philippii*, but the figure is not conclusively distinct. The figure more closely resembles *F. tessellatus* than *F. vercoi* and that observation coupled with the stated small size suggests that *F. philippii* may be the senior name of *F. tessellatus*. I think it is unlikely that this name could refer to the deeper-water *F. vercoi*. *Fusus philippii*, in any case, is probably best treated as a *nomen dubium* unless type material is subsequently discovered.

Etymology

This species is named for Sir Joseph Verco (1851–1933) who carried out numerous dredging expeditions along the southern and western coasts of Australia and first illustrated this species.

Discussion

The history and present view of the biogeography of Australia is discussed by Ponder and Wells (1998). The Australian marine species on the northern coast are part of the tropical Indo-West Pacific fauna, with low endemicity. *Fusinus vercoi* belongs to the southern Australian warmer temperate fauna (extending roughly as far west as Albany) where one finds many endemic species and it is likely endemic to that region. *Fusinus wellsi* belongs to the western overlap region where the southern temperate and northern tropical fauna meet. This widely distributed species is probably endemic to western Australia, although species occurring in the western overlap zone are reported to have lower endemicity than those found in the southern Australian temperate region. In each of these regions there is only one other endemic representative of the genus *Fusinus*, although the more widely distributed *F. australis* also occurs in the south-west.

Acknowledgments

The author thanks Dr Winston Ponder for bringing Verco's (misidentified) record and the WAM material of *F. wellsi* to his attention. Two anonymous referees offered helpful suggestions. Paul Callomon assisted in the attempt to find Jonas' type material.

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