

Yosinori SUGIHARA*: **Miscellaneous notes on the morphology of *Amentotaxus argotaenia* Pilger**

杉原美徳*: ウラジロイヌガヤの形態について

The genus *Amentotaxus* was described by Pilger (1916) as a monotypic genus in Taxales based on a species, *A. argotaenia* (Hance) Pilger. Until now the plant has been collected in Hongkong, Kwantung, Hupeh, Szechuan, Yunnan, Formosa and Tonkin. According to Li (1952), the genus includes at least four species distinguished by the leaf colour, the relative width of stomatiferous band of foliage leaves and the geographic distribution. However, the interpretation of Li, in general, is not an established view (Chuang & Hu 1963, Keng 1969). The present writer collected *Amentotaxus argotaenia* in Mt. Taririku near Taitung, Formosa, in June, 1941 and reported the general condition of the locality, the morphological observations of female strobili and some embryological notes (Sugihara 1946). In the present report some morphological observations are added.

1) Cotyledons and foliage leaves. In the locality mentioned above numerous seedlings were found; some of them had two epigeal cotyledons arranged at opposite sites of a node (Fig. 1). The cotyledon is caducous and sessile; the lamina is linear, about 25 mm in length, 2-3 mm in breadth at the broadest portion, acute in apex and entire in margin. The usual foliage leaves found on the seedling were oppositely in pairs. On the lower surface the foliage leaf has two white stomatiferous bands where numerous stomata are present. The long axis of stoma is parallel to that of the

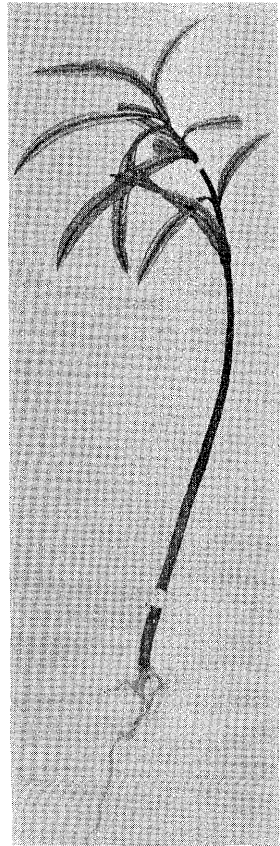


Fig. 1. Seedling. $\times ca$ 0.6.

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leaf. In the cross section of the foliage leaf a layer of epidermal cells was observed being covered by cuticle. The epidermal cell is not fibrous in shape and has somewhat thicker wall in the area directly below the cuticle. The hypodermis was not found. A notable resin canal was seen as in *Torreya* and *Cephalotaxus*. The vascular bundle is lunar in the cross section and surrounded by the protecting tissue which consists of long fibers. The long axis of the fiber is parallel to that of the leaf. The endodermis was not discernible. The transfusion tissue was observed on both sides of the xylem. The mesophyll comprised a layer of palisade parenchyma and some layers of spongy parenchyma. In the spongy parenchyma numerous lignified sclereids were found (Fig. 2a). The sclereid is filiform, tapered to both ends, simple or sometimes branched near the base and mostly branched near the apex (Fig. 2b, c). The sclereid is in

contact with the midrib at its base and extends to the leaf margin; thus, the long axis of the sclereid lies cross-wise to that of the leaf.

Foliar sclereids, as far as the writer knows, are not formed in *Torreya*, while osteo- or brachysclereids are known to occur in a variety of *Taxus baccata* (Rao & Sharma 1973). On their occurrence in *Pseudotaxus* and *Austrotaxus*, the writer has no information. On the other hand, foliar sclereids have been found in many genera in the Coniferae (Rao & Sharma 1973). For instance, astro-sclereids are found in *Sciadopitys verticillata* (Kitamura 1956, Rao & Sharma 1973) and osteo- or brachysclereids are found in some species of *Podocarpus* and *Araucaria* (Gray & Buchholz 1951, Rao & Malaviya 1965). Though Rao & Malaviya (1964) wrote that the sclereids were

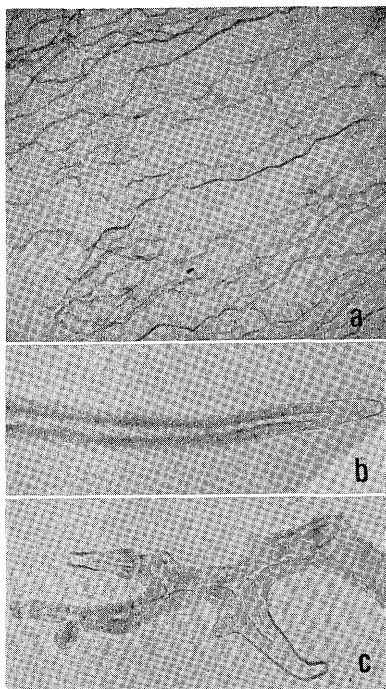


Fig. 2. Foliar sclereid. a. Cleared mount of leaf showing the distribution of sclereids. $\times 20$. b. Basal part. $\times 400$. c. Ramified apex. $\times 400$.

totally absent in the leaves of *Cephalotaxus*, the present writer observed macro- or osteo-sclereids in the palisade parenchyma immediately below the epidermis of the leaves of *C. Harringtonia* K. Koch var. *drupacea* Koidzumi; the long axis of the sclereid is parallel to that of the leaf (Sugihara unpubl.).

The structure of the foliage leaf of *A. argotaenia* is very similar to that of *Torreya* species, except for the presence of foliar sclereids. In Taxales and Coniferae, as far as the writer knows, *A. argotaenia* is an only species that has

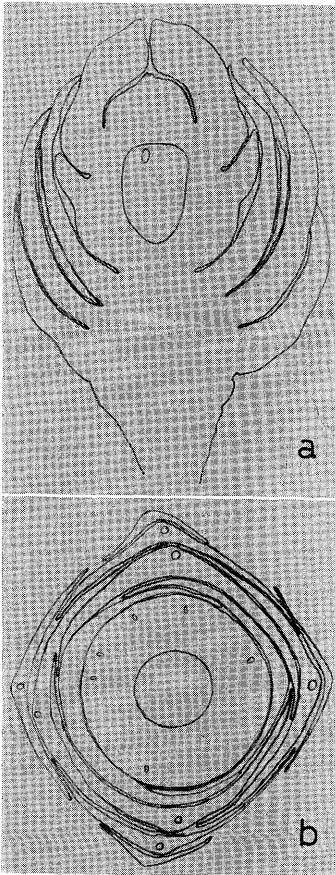


Fig. 3. Strobilus. a. Longitudinal section. $\times 10$. b. Cross section. $\times 10$.

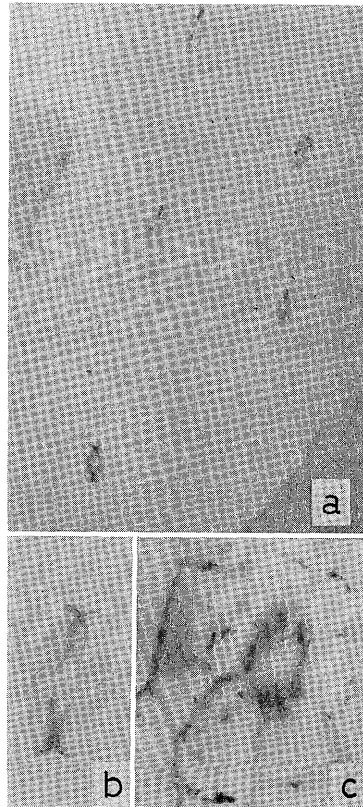


Fig. 4. Stomata in a sterile scale of the strobilus. a. $\times 100$. b. $\times 300$. c. Subsidiary cells of a stoma. $\times 300$.

filiform foliar sclereids arranged crosswise to the long axis of the leaf.

2) Ovulate strobili. Earlier stages of embryogeny of *A. argotaenia* were described in a previous paper (Sugihara 1946). The ovule is solitary, terminal on a long slender stalk and subtended by several sterile scales which are disposed in decussate arrangement (Fig. 3). The number of sterile scales in a strobilus is reported to be ten (five pairs) by Yamamoto (1927, 1932) and Florin (1944). Sugihara (1946) reported twelve scales arranged in six pairs; Keng (1969) reported five (or six) pairs. In the present study it was found that nineteen strobili out of twenty had twelve scales and one strobilus had fourteen scales. Thus it may be said that the number of sterile scales in a strobilus is typically twelve (six pairs), although it seems to vary between five and seven pairs.

On the adaxial surface of the sterile scale stomata were observed, usually five to fifteen (in some cases forty) ones being scattered irregularly on each half of the scale (Fig. 4, a). Florin (1931, 1951) described the stomata of the foliage leaf in detail but he reported that no stoma was found on the scale. The structure of stomata of the sterile scale is similar to that of the foliage leaf, but the number of the subsidiary cells is somewhat smaller (Fig. 4b, c).

3) Roots. Differentiation of xylem is diarch and exoarch. Conspicuous Casparian dots were observed in the endodermis.

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台湾産のウラジロイヌガヤ (*Amentotaxus argotaenia* Pilger) の芽生えには地上性・早落性の 2 枚の子葉が対生に生ずる。子葉は線形・全縁・無柄である。普通葉には葉肉の海绵状組織のなかに、きわめて特徴的な糸状の厚膜異形細胞がたくさん見られる。胚珠の珠皮は単一である。胚珠をつつみ十字対生に配列した 5-7 対の鱗片が見られる。この鱗片の向軸面には気孔があり、その形態は普通葉に見られる気孔と同型であるが副細胞が多少すくない。根の道管部は外原型・2 原型である。

□木村陽二郎・柴岡孝雄・益田芳雄・駒嶺 穆 (編) : 日本の植物学百年の歩み 280 pp. 1982. 日本植物学会. 非売品. 日本植物学会は明治15年に創立されてから昨年で100年目を迎えた。9月に祝賀式を行い、種々の催しをして盛会であった。また一年半の期間を求めて植物学会及び斯学の100年史を編み、祝賀会の折に会員に配ったのが本書であった。希望者には井上書店 (東京, 本郷. ¥4800.) で販売される。本書は先ず学会創立までの前景を木村陽二郎が書き、次いで学会の百年 (林 孝三), 大学・研究所の百年 (柴岡孝雄) が書いてあって、100年間の事項が手に取るように分かる。さらに分類学と形態学 (金井弘夫等が分担), 生理学と生理化学 (増田芳雄), 細胞学と遺伝学 (田中信徳), 生態学 (沼田 真) と各氏が分担し、細かいところまで述べている。次に林 孝三が学会を主にした百年史を細かく載せ、最後に木村及び金井弘夫が、明治以後の物故植物研究者の伝記文献を40ページにわたって記している。100年という短いとも思うが、人生からすれば永いもので、100年も経つと全く変わってしまってわからなくなる事が多いから夫々の記述は大変だったと思う。記して記念とし、さらに今後の発展を期待したいものである。
(前川文夫)