

Note on an erect Sigillaria, from the South Liggins,
Nova Scotia — by M. Dawson, Esq.

The erect trees so frequent in this celebrated Coast Section, though ~~not~~ ^{often} distinctly ribbed, rarely show the minute markings of the leaf scars in a sufficiently perfect state to enable them to be compared with those of the flattened trunks found in the shales and ironstones. This arises in part from the circumstance that near the bases of their trunks the Sigillariae frequently want their characteristic markings; and in part from the unfavourable influence of an erect position in coarse and often laminated sediment. The specimen to which this note relates, and which I obtained in ^{on a sandstone in Group XIV of my section of the S. Liggins} 1859, is an exception to the generally imperfect condition of Sigillaria stumps, and as an undoubted species and an admirable illustration of several important points in the growth of these curious trees deserves I think a short notice.

The specimen measures three feet in height and is $10\frac{1}{4}$ inches in diameter at the base, 9 inches in the middle and $7\frac{1}{2}$ inches at the top, where it had been broken off abruptly as is usual with these erect stumps. At the base it shows the usual tendency to divide into four main roots, but these have been nipped off or flattened by pressure not having been filled with sediment. The trunk retains its cylindrical form ^{on one side, but on the other} ~~except that along one side the bark~~ has been rent a slit from top to bottom and has in part been folded inward. The interior is filled with fine gray sandstone. The outer bark up to a line in thickness is in the state of bituminous coal

Legallance Armenia

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[The following text is a dense, handwritten manuscript in Armenian script, written in a cursive style. It covers the majority of the page, with some lines crossed out. The script is difficult to decipher due to its cursive nature and the age of the document.]

(Addendum to Dr Dawson's paper on *Sigillaria Penns.*)

It may be well to add to this paper a short statement of the facts ascertained by Brongniart and Corda which form the groundwork of our knowledge of the structure of *Sigillariae* with those contained in the present paper and in that of last year on the "Vegetable Structures in Coal".

Brongniart's celebrated specimen of *Sigillaria elegans** is a young plant with the woody axis imperfectly developed, and it belongs to a type of *Sigillaria* not usually attaining to a great size and perhaps less complex in structure than the great ribbed species. Still its axis has a diameter equal to about one third or one fourth of that of the whole stem. It shows the outer woody zone of areolated and scalariform wood cells† with medullary rays and has a complex bark composed not only of parenchymatous cells but of elongated cells of the nature of bast tissue. My observations on the fragments of woody axes and bark contained in the extant *Sigillariae* of the Smith Collection show in addition‡ (1) That the pith was of the *Sternbergia* type; (2) That the tissue of the outer zone of the axis was often more largely developed and had more of the character of true disjunctive wood tissue than in Brongniart's specimen (3) That the bundles of vessels proceeding to the leaves passed between the wedges of this woody zone as in *Stegmaria*. (4) That in the bark a large quantity of elongated tissue comparable to bast tissue became developed, and I now possess specimens not yet

described which show that in its appearance under the microscope this tissue was not dissimilar from the coarse bast that exists in some pines, ~~and~~ as for instance in the thick bark of old trunks of Pinus strobus. In the decay of the stem this tissue though itself strong and durable probably fell to pieces owing to the dissolution of the cellular tissue in which it was imbedded. (5) That in young stems the rows of scars were few and were widened and the distance between them increased by the expansion of the stem while new rows and ribs were introduced from above.† (6) That in some species pauses in upward growth occurred at intervals marked by transverse bands of irregular and crowded scars. (7) That by the expansion of the bark the ribs and the finer markings of the scars were obliterated toward the base of the trunk. ¶ It results from all these facts undoubted evidence of which exists in my own collection that the Sigillariae were exogenous trees, with a pith an inner zone of scleriform vessels corresponding to a medullary sheath, an outer zone of woody wedges an enormously thick inner bark consisting both of cellular and bast tissues and a hard, ^{and almost indistinguishable} outer or corky bark which is often the only part of the whole structure preserved. These facts further remove all or nearly all the objections stated by de Hooker to the exogenous character of Sigillaria in his memoir of 1848 and separate by an insuperable barrier these plants from the Lycopodiaceae as represented by the Lepidodendra and Ulodendra, and indeed from all acrogenous plants. They appear to me to establish on the other hand a probable affinity to Ginkgo as

suggested by Brongniart, or at least to gymnosperms in general.

The structure of *Styracis* provides as figured by Corda is as Hooker remarks ^{on the changing character of the cells} a quite unlike that ordinarily met with in *Styracidae*, which generally present the scalariform tissue which Corda ascribes to *S. anabathra*. But since this oblique tissue is proved similar to that of some *Syllariae* there is nothing improbable in the supposition that such *Syllariae* may in some species have possessed similar tissue in their roots.

Corda has described under the general names of *Diplotyrum* and *Heterangium* certain trunks which may properly be *Syllariae*. *Diplotyrum elegans* has the arrangement of tissues seen in these plants but the medullary rays have been little developed and the external zone of wood seems to be scalariform. No radial section is however given and Corda calls it *Diplotyrum*. The stem itself is not unlike a fragment of a dicotyledonous *Syllaria* from near the root. *Heterangium paradoxum* is very like a fragment of the axis of a *Syllaria* with the greater part of the cells shortened and changed to pith and decay. I have often seen the wood of *Syllaria* in the state in erect trees and in stone nodules. ^{The pith given by the compressed axis of the stem is the same as that of the compressed axis of the stem.}

Somatoptychus and probably *Leptocarpus* if Corda have the structure of *Ulocladus* and it is interesting to see that the former has a path of stem-like structure so that the peculiar was in the last period shared by *Ulocladus* *Syllariae* & *Coniferae*.

Addendum
to paper on
Syllabia

[The following text is a dense, handwritten manuscript in cursive script, written in dark ink on aged paper. It appears to be a continuation or addendum to a previous work, as indicated by the header. The handwriting is highly stylized and somewhat difficult to decipher in many places due to the cursive nature and the age of the document. The text is organized into several columns, with some lines starting with capital letters, possibly indicating the beginning of new sections or paragraphs. The overall impression is that of a personal or working manuscript.]

have given a very monstrous character
to the art phrase of the coal period.
In this monstrous long state that
thyl you not been so patient
as to find a sign in print, yet the
mark of wear of completion of the
iron bridge, Philadelphia & Lancaster
with system make me to suspect
the thyl not been helped & sign,
and that the men have finished in
large works at the top of the stone.
I may further add no one of the
smaller of my still more or less
of the structure in the coal of the type
that the same coal of signs only
fruits of a kind of iron but to
what appears as signs in the hand
checked. ~~Of the stone we seem~~
~~at the jigs, an iron post the in~~
~~the top up of the stone above us in~~
~~put in up the in the top in~~
~~oh that feels recently a in the~~
~~and the number of iron off the in~~
~~and an so much less of character~~
~~by and as for the signs seems~~

Always x More especially in the smaller coal in the present
of the the conditions seem to have been little known to the present
of the the signs. In the hands stone are as there been the
number which the are in the hands of the present but the under
rears signs, so that the structures

of the last day in the month
that time is little left of my work
as it is a report I must do as
the night out!

Superior
Sagittarius
Mammie

1st July

of the last day in the month
that time is little left of my work
as it is a report I must do as
the night out!

then prostrate stems. The former of which
a few feet of the lower part the latter
usually the upper parts of stems.

5 The present specimen does not show
the interruptions to upward growth mentioned
on a former paper, ^{as far as I know} there may have been
connection to the upper part of the stems and
may have been connected with the prostrate
stems of prostrate.

6 The mode of growth illustrated in the
specimen may be almost named none applied
up to part of the Hydrariae, about 15 or
20 species of Hydrariae occur at the Tignes
of them the present sp. I denom. organum, allium
and a species allied to catenulata but with
the stems an inch a part distinctly & what the
in was S. ovalis were strongly ribbed stems
and of large growth and probably ex-
tend to the margin of the erect specimen.

Other species with narrow deep distinct ribs
None a leaf curled sciss as S. Chrys. Kunze
sulcatus, Savini do not appear to have
attained so great size and have been
more rarely seen erect. ~~These~~ species
destitute of ribs like S. Depannei & Menestieri
are rare & there not been any reproduction
of them erect. Within these groups there are
great varieties in the leaf size but all
seem to have long narrow leaves of the
Cyprina type, which with the somewhat
greater length of leaf & which must

In tracing the ribs downward some of them wedge out and disappear so that at the middle of the trunk there are only 22 with a breadth of about one inch and four tenths, and flatter than those at the top. The leaf scars are now widened transversely appearing on the cortical surface as irregular transverse marks while on the ligneous surface the ^{two} vascular impressions ^{of each scar} are twice as far apart as at the top. The vertical distance of the scars also diminishes to seven tenths of an inch.

In the lower third of the stem the ribs are quite obliterated and the whole surface is wrinkled with coarse and undulating striae due apparently to the expansion of the outer bark. The leaf scars still remain in regular series but are reduced toward the base to about 12 rows and the distance transversely from centre to centre of the rows is 2.8 inches while the vertical distance of the scars is still about .7 inch. In form the scars are now transverse furrows an inch or more in length and the vascular punctures are half an inch or more apart. At the base of the trunk the rows of scars appear to be reduced to only 9 in the whole circumference.

Of the roots I could obtain no specimens but the markings on the bark at the base of the trunk are pretty similar to those on many *Stigmaphyllon* roots found attached to leafy perfectly preserved trunks, and I think I can detect a few *Stigmaphyllon* areoles on the lower surface of the stump.

The woody axis has entirely disappeared. We does any mineral charcoal occur in the