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These for the conifers, so important a spot, treat first in those of the geological age after the next following group, in the under coal-formation with *Arucarites* *Burritianus* - (Flora de t. 35.) Next one of the second formation of our Prototypus *Buchana*, whose proserchymatous cells show broadly-drawn scalariform, frame like spot, however in accordance with the simple resin veins & most simple Medullary rays. (see tables 59, Fig 4. 6.) Fig. 4. Cross section with proserchymatous wood cells, b. one through Aragonite crystals filled up the place of with rims of wood cells, c. The medullary rays. Fig. 5. Centrum or medullary rays, long-section, a. to wood cells a.a. brought out, marked with the cross elliptic, without surrounding spots, b. the spotted medullary rays, b. the simple resin vessels. All the figures are drawn throughout from close examination.

Fig. 6. Length of the bark, or tangential section a. the wood cells, b. medullary rays in the customary order, only, in c. an intimation of the coming before of the two cell rows.

The conifers of the above or younger coal-formation, have always the spots of the modern *Arucaria* & also single or one-storied medullary-rays like *Aruc. Burritianus*, with the exception of four kinds of English coal formation, of which are seen two by two till five rows are made, two with many-rowed medullary rays. Each agrees with Brongniart's (*Traité des genres des plantes fossiles* p. 77) under *Palaeoglen*, these Witham has pointed out already under *Pitus*, which kind Endlicher has later named *Pissadendron*.

P. primitive & ancient (the latter, gener. plant. Suppt. 2. p. 27) The representation of *Pissadendron prismacuum*, we put together after the best review of this remarkable structural relation, taken from Witham's above mentioned work. Taf. 59. Fig. 7. cross-section. a. the spotted wood cells, b. those with more cell-rows consisting of medullary rays. Fig. 8. medullary rays, or central long cuts, a. the wood cells with spiral like, after the kind of *Araucaria*, arranged with wood cells, b. the medullary rays. Fig. 9. Bark length for the tangential sections a. the wood cells b. the many-celled rows or much hardened medullary rays.

The body of pith itself, is in this kind also, very distinct a. cone-formed collection of the wood layers but it is not yet observed. It also appears very interesting in these of mine in the Permian Formation *Saxony's* discovered wood. Which <sup>are</sup> in a remarkable way, like existing wiriferous structures, namely placed together proenymatous cells (without admixture of vascular) many-rowed or much hardened medullary rays like *Pissadendron* & proenymatous cells, with, we perceive, scalariform spots, like those possessed by *Prototypus*, also those irregular joined together in themselves which both these species of the past & modern conifers separate below. Long, did I remain undecided whether I ought not however, to place this remarkably (out of Taf. 58) structured wood among the conifers, till the accordance of the same with the correlative structure of the earlier *calamites*, *bistriata colla*, now

*Arthropitys hirsuta* caused the calamities to be reckoned together & included as one species, which through their outside the long-streaked with verticillate branches around the stem. Equisetes remind me by their inner single-celled construction of conifers, whilst the scalariformly striped, nature of the cells does include fern-likeness, the placed together medullary rays, show that from the first to the later formation species is after the proportion of the large quantitative multitude already mentioned very insignificant, yet in reality perhaps yet more insignificant when we are able placed in our present position. There is endless difficulty in distinguishing the mere structural relations of the species sharply from each other. On that account I have not been able to come to a conclusion between one or the other, placing them perhaps only to make a weak species, I have however ~~my~~ <sup>spoken out my</sup> doubts every time about writing it with others, Immediate union will perhaps take away from (weaken) them. Whichever from his own experience knows the difficulty of this inquiry, will make some allowance for the work of another, not to be closely criticize it. With regard to the concentric rings or the so called year-rings, those in the modern conifers never were missed, I well know that I have found them nearly always in conifers of Palaeozoic formation. For in the more modern they were not held in doubt, for the nature of the rocks would at any time promote

their preservation & therefore also <sup>(in the case of)</sup> mine  
(that) they have been still <sup>in</sup> tact, which  
also corresponds more to the universal  
law of vegetation. Often are they built  
up out of a few feet thick (chaudly?)  
cells that under the microscope sometimes  
almost disappear, when we also try  
to dis-criminate with the naked eye from  
the stone.

Schacht's whole mistaken assertion  
that these were wanting in the wood  
of *Araucaria Brasiliensis*, I have con-  
futed still another wrong assertion  
of the same, z. B. the significance of  
of the spiral arrangements of spots.  
For the characterizing, by another author  
(the forest-rocks Beckmann & Schubert  
1859 p. 5) Whether these concentric layers  
correspond to year rings. I cannot assert  
only I will state the presence of such  
marks of periodical growth.

Whenever also in a fossil wood  
concentric rings, <sup>appear</sup> not regular at the  
first glance, it is shown by further  
examination to be always better to say - con-  
centric rings obscure, & inconspicuous  
as nothing.

Faintly  
see plants  
well