

4. **Ferns.** — Fig. 1042, scar of the Tree-fern, *Stemmatopteris punctata* Lx., Gate vein, Pa.; 1043, same of *Megaphyton McLayi* Lx., Ill.; 1044, scar of *Cyathea compta*, a species now growing in the islands of the Pacific; 1045, *Odontopteris Schlotheimi* Brgt., Pa., Ohio, Ill., Europe; 1046, *Alethopteris lonchitica* Brgt., most common in the Lower Coal-measures, Pa., etc.; 1047, *Sphenopteris (Hymenophyllites) Hildrethi* Lx., Kanawha Salines; 1047 *a*, same, enlarged; 1048, *S. Gravenhorstii* Brgt., R. I., Mo.; 1048 *a*, same, enlarged; 1049, *a*, *Neuropteris Loschii* Brgt., and 1050, *Neuropteris hirsuta* Lx., from figures by Lesquereux, common in the Upper Coal-measures, in Ohio and Kentucky, and the former particularly abundant in the Pomeroy bed; 1051, *Pecopteris arborescens* Brgt., Pa., Ohio; *P. cyathea* Brgt. and *P. unita* Brgt., common; 1052, *Neuropteris tenuifolia* Lx., Shamokin, Pa. In Arctic America, on Melville Island, impressions of a *Sphenopteris* have been observed in connection with the coal.

5. **Calamitids.** — Fig. 1056, *Calamites cannæformis* Schloth., Pottsville conglomerate and Lower Coal-measures; 1054, *Asterophyllites sublavis* Lx.; 1053, *A. equisetiformis* Lx., Pa., R. I.; 1055, *Sphenophyllum Schlotheimi* Brgt., through all the Coal-measures.

6. **Gymnosperms.** — *Cordaites borassifolius* Ung., a common Coal-measure species; Fig. 1057, *Cordaites costatus*, Lx., Cannelton, Pa.; 1057 *a*, fruit of same; 1062, *Cordaicarpus Gutbieri* d'Eury, Cannelton; 1063, *Cardiocrarpus elongatus* Newb., Ohio; 1065, *C. bisectus* Dn., Nova Scotia; 1064, *C. samaræformis* Newb., Ohio; 1058 *a, b, c*, *Trigonocarpus tricuspis* Newb., Ohio, representing the rind, the nut, and the kernel; 1059, nut of another Ohio species, figured by Newberry, but not described; 1060, *a*, *T. ornatus* Newb., Ohio; 1061, *Cardiocrarpus bicuspidatus* Newb., Ohio. Figs. 1066 and 1067 are made the type of the genus of Conifers, *Botryoconus* of Grand'Eury, being immature fruits. The specimens, and that of the fruit, Fig. 1068, are from the Lower Coal-measures of Youngstown, Ohio.

The Rhode Island coal region, according to Lesquereux, belongs to the Upper Productive Measures. See *Am. Jour. Sc.*, xxxvii., 229, 1880.

For lists of species of plants characteristic of the several subdivisions of the Carboniferous period, and their geographical distribution in America, see Lesquereux's Pennsylvania Report, No. P, page 855 and beyond, and also page 636. According to Lesquereux the following species commence in the Pottsville conglomerate, or the beds next above, and continue through the Coal-measures: —

The names of species not in the Conglomerate have a dash before them; those which have a dagger after them continue into the Permian; and those starred are also European.

*Calamites Suckovi* †\*, *C. ramosus* \*, *C. cannæformis* \*, *C. approximatus* \*, *C. Cistii* \*; *Asterophyllites equisetiformis* \*, *A. foliosus* \*, *Annularia longifolia* †\*, — *A. sphenophylloides* †\*, *Sphenophyllum Schlotheimi* \*, *S. longifolium* †, — *S. emarginatum* \*, *Neuropteris hirsuta* †\*, *N. fimbriata* †, *N. inflata*, — *N. angustifolia* \*, *N. Loschii* \*, *N. tenuifolia* \*, *N. capitata*, *N. Germari* \*, — *N. cordata* †\*, *Odontopteris Schlotheimi* \*, *O. sphenopteroides*; *Alethopteris Serlii* \*, *A. lonchitica* \*; *Pseudopecopteris nervosa*, *P. muricata* \*, *P. anceps*, *P. irregularis* \*, *P. nummularia* \*, *P. decipiens*, *P. latifolia* \*; *Pecopteris acuta* \*, *P. serrulata*, — *P. arborescens* †\*, — *P. notata* †, *P. pteroides* †\*, *P. erosa* \*; *Sphenopteris (Hymenophyllites) spinosa* \*, *S. furcata* \*, *S. tridactylites* \*; *Rhacophyllum lactuca* †\*, *R. filiciforme* \*; — *Lepidodendron Sternbergii* \*, *L. aculeatum*, *L. Veltheimanum* \*, *L. vestitum*, *L. clypeatum*, *L. dichotomum* \*, *L. obovatum* \*, *L. modulatum*, *L. rimosum* \*; *Ulodendron majus* \*, — *U. punctatum*; *Knorria imbricata* \*; *Lepidophloios laricinus* \*; *Sigillaria monostigma*, *S. Brardii* †\*, — *S. Menardi* \*, *S. tessellata* \*, *S. mammillaris* †, *S. Lescurii*, — *Cordaites diversifolius*, *C. borassifolius*.\*

The genera especially characterizing the Lower Coal-measures are: *Megalopteris*, *Tæniopteris*, *Neriopteris*, *Hymenophyllites* section of *Sphenopteris*, *Eremopteris*, *Knorria*, *Lepidophloios*, *Lepidodendron*, *Sigillaria*, *Cordaites*, *Whittleseya*.