

Holoptychius, whose evidence bore out the same conclusion ; and both fossils derive an importance from the light which they throw on the age of the bed of tuff which underlies the stratum in which they occur. At least this trap-rock must be as old as the fossiliferous layer which rests upon it, or rather, as shown by its underlying position, a little older : it must be a trap of the earlier Carboniferous period. Further, it must have been, not injected among the strata, but poured out over the surface,—in all probability covered at the time by water ; and there must have formed over it, ere another overflow of trap took place, a thin sedimentary bed charged with fragments of the plants of the period, and visited, when in the course of deposition, by some of its fishes.

Even among the vegetable organisms of our Coal Measures, already partially described and figured, much remains to be accomplished in the way of restoration. Portions of *Sphenopteris bifida*, for instance, a fern of the Lower Carboniferous rocks, have been repeatedly figured ; but a beautiful specimen on the table, which exhibits what seems to be the complete frond of the plant, will give, I doubt not, fresh ideas respecting the general framework, if I may so speak, of this skeleton fern, to even those best acquainted with the figures ; and an elaborate restoration of its contemporary, *Sphenopteris affinis* (see frontispiece) which I completed from a fine series of specimens in my collection, will be new, as a whole, to those most familiar with this commonest of the Burdiehouse fossils. From comparisons instituted between minute portions of this *Sphenopteris* and a recent fern, it has been held considerably to resemble a *Davallia* of the West Indies ; whereas it will be seen from the entire frond, that it was characterized by very striking peculiarities, exemplified, say some of our higher botanical authorities, to whom I have submitted my restoration, by no fern that now lives. The frond of *Davallia Canariensis*, though unlike in its venation,