

be found, Crinoids, like the star-fish and sea urchins of to-day, and a host of other creatures, now extinct, existed. The Megalichthys, with teeth and jaws so formidable, with build so powerful, and like the torpedo in its speed, and thousands of other fish covered with beautiful enamel plates wantoned and gambolled in the shallow lagoons.

But what pen can portray the vegetable wonders of the forests of this age. The woods so thick, the gloom so impenetrable. Mosses 50 or 60 feet high and 5 feet in diameter. Thirty or forty different sorts existed at the same time, each with special characteristics, and starting many feet above these gigantic mosses were the Calamites, or horse-tails, with fluted joints and varied foliage, pines with berries large as crab-apples, and a rank abundance of dense underwood of small ferns.

And all the time there was a slow sinking or submerging of the land. The tides brought up silt and strewed it over the decomposing vegetation. Whole forests were buried, and after many years fresh forests covered the site of the older, to be buried in their turn. In South Wales no fewer than 100 such forests must have each in turn been buried, for there are to be found there 100 different seams of coal under each of which you may see the clay full of the roots and rootlets of the ancient vegetation.

Another change occurred—this time a chemical one. The buried masses heated and turned black, as hay will do when packed in a damp state, then it became a pulp, then a solid, sub-crystalline mass, and finally assumed the jetty semi-cubical character it now presents. But notice the associations which cling around a piece of coal. It represents a more solid condition of carbon than does mere wood. The ancient vegetation of the coal period grew by virtue of the stimulus of the sunlight, the heat and light induced growth, and even thus a piece of coal is so much fossil sunshine. Nay more—the very aniline dyes obtained from coal tar are the restoration of the primary colors stored up from the light.

Such is the history of the piece of coal, such the meditations of the passing hour, and no apology is offered to my readers, nor will any be needed from me if I have succeeded in showing that even in so commonplace a substance as coal there is a subject dear to the thinking mind.

E. J.

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Do not become impatient if thy arguments are not readily accepted.—*Gœthe*.