ribs and scars of Sigillaria or other coal-formation trees on its surface. In other words, the layers of fine coal are usually flattened trunks and branches of trees, or perhaps rather of the imperishable and impermeable bark of such trees, the wood having perished. A few very thin layers of shining coal we may also find to consist of the large-ribbed leaves of the plant known as Cordaites. This kind of coaly matter then usually represents trunks of trees which in a prostrate and flattened state may constitute more than half of the bulk of ordinary coal-formation coal. Under the microscope this variety of coal shows little structure, and this usually the thickened cells of cortical tissue. Intervening between these layers we perceive laminæ, more or less thick and continuous, of what we may call dull coal, black but not shining; resembling, in fact, the appearance of cannel coal. If we split the coal along one side of these layers, and examine it in a strong light, we may see shreds of leaf stalks and occasionally even of fern leaves, or skeletons of these, showing the veins, and many flattened disc-like bodies, spore cases and macrospores, shed by the plants which make up the coal. These layers represent what may be called compressed vegetable mould or muck, and this is by no means a small constituent of many coals. This portion of the coal is the most curious and interesting in microscopic slices, showing a great variety of tissues and many spores and spore cases. Lastly, we find on the surface of the coal, when split parallel to the bedding, a quantity of soft shining fibrous material, known as mineral charcoal or mother coal, which in some varieties of the mineral is very abundant, in others much more rare. This is usually too soft and incoherent to be polished in thin slices for the microscope; but if boiled for a length of time in nitric acid, so as to separate all the mineral matter contained in it, the fibres sometimes become beautifully translucent and reveal the tissues of the wood of various kinds of Carboniferous trees, more especially of Calamites, Cordaites and Sigillariæ. Fibres