On the Colouring Matters *of* Blue Decayed Wood. By H. C. Sorby, F.R.S.

Decayed wood, coloured blue by the spawn of *Peziza ærugnosa* (see 'Quart. Journ. of Science,' V, 222) contains several colouring matters. None of these are sensibly soluble in water, but they are dissolved by alcohol with varying facility, so that they may be separated with a little care. On digesting with the aid of heat a portion of the wood in a moderate quantity of alcohol, a solution of dull neutral tint is obtained, and the wood is left of a bluer green. On agitating the alcoholic solution with bisulphide of carbon, that liquid abstracts a small quantity of a yellow colour, which does not present any facts of particular interest. The alcoholic solution is a mixture of a claret colour, very easily dissolved by alcohol, and a blue, soluble with much greater difficulty, so that, on evaporating to dryness and redissolving in a little alcohol, the blue colour is left and the claret dissolved, which may be still further purified by evaporating to dryness and redissolving a second time. It is then of a decided claret colour, with no trace of blue or green, and the spectrum shows a strong absorption at the blue end, gradually becoming less towards the red. Adopting the scale and nomenclature described in my paper in the 'Proceedings of the Royal Society,'[1] the spectrum is about $3\frac{3}{4}...9 - - 11 —$. The addition of a little ammonia turns it green, and develops an absorption band in the orange, the centre being at 3. Citric acid restores it to the original state, unless so much ammonia has been added as to produce decomposition. Sulphite of soda has no effect on an acid solution, so that the colour may be described as C al_o am_1 (3). I have not yet met with such a colour in any other substance.

The blue colour may be obtained in greater purity by digesting the wood several times in fresh alcohol, so as to remove all the claret colour, when at length a clear blue-green solution is obtained, which, however, is only pale. The spectrum, as seen in a tube two inches long, shows a well-marked absorption band in the red at $1\frac{1}{4}$, with a small amount of the extreme blue partially obscured. On adding ammonia the colour is changed to a dull yellow, and the band removed; but it is evidently decomposed, since citric acid does not restore it to the former state. A small quantity of nitric acid added to the original only serves to make it a

[1] 1867, xv, 433.

clearer blue. Sulphite of soda has no effect on an acid solution, and, therefore, the colour is C al_1 ($1\frac{1}{2}$). I have not yet met with this in any other substance, and it is interesting as being one of the very few blue colours soluble in water or alcohol which belong to my group C. These are as follows:

Phyco-cyan[1]	C aq_2 ($\frac{2}{3}$ $4\frac{1}{2}$)
Blue colour from the flowers of *Salvia patens*	C aq_0 ($1\frac{1}{3}$ $3\frac{1}{2}$)
Aniline blue	C al_1 ($3\frac{1}{6}$).

When the alcoholic solution of the blue of the wood is diluted with water and agitated with ether it is precipitated from the solution, and collects at the line of junction of the water and supernatant ether; but when agitated with benzole this liquid rises to the top coloured blue. The solution may, however, be obtained in a more simple manner by digesting the wood in benzole, which dissolves more colour than alcohol, and it is of a fine green-blue tinge. The spectrum is the same as that of the alcoholic solution; but both of these fade in the course of a few days, even when sealed up in glass tubes, so that neither can be kept as a permanent object.

On the Epithelium *of the* Cornea *of the* Ox. By John Cleland, M.D., Professor of Anatomy and Physiology, Galway.

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It is well known that there are many appearances in stratified epithelia not easily explained by that simplest theory of their growth which is naturally first suggested, and is no doubt in all instances partially true; namely, that cells originating in a deep position pass gradually to the surface as they grow and alter in figure, while those superficial to them are cast or dissolved, and others behind them follow in their steps. Thus the elliptic cells in the deeper strata of the epithelium of the trachea can scarcely be supposed to be developed into the ciliated columns which lie over them; and it cannot be imagined that in the ureter the large and irregularly shaped cells are altered so as to form the smaller and flatter cells found on the surface.

[1] Cohn, 'Archiv. für Microskopische Anatomie,' 1867.