are three or four copper veins in a ravine behind Whitehaven Mill, one of which has been tried some twelve or fifteen fathoms below the surface." Baryta, also, has been found, I am told, above the source of Whitbeck, in the mine above mentioned.

It will be seen that the arsenic in the water of Whitbeck is thus most probably derived from the veins of arsenical cobalt ore through which it percolates.

The arsenical water is *habitually used for every purpose* by the inhabitants of the little village of Whitbeck, and, as far as I can learn with beneficial rather than injurious results. But it is remarkable that Whitbeck, though in every respect suitable for trout, is the only stream ie the neighbourhood from which that fish is absent; eels, however, have been found in it. Ducks will not live if confined to this arsenical water. When the railway was being carried past Whitbeck, the first use of water quickly produced the usual marked effect on the throats both of the men and horses employed on the works. The soreness of the mouth from which they at first suffered, soon, however disappeared, and in the horses gave place to that sleekness of coat assigned as one of the effects produced by the administration of arsenic. It is a question how far the rosy looks of the Whitbeck children, and the old age which a large proportion of the inhabitants of the village attain, are to be attributed to the arsenic present in the water they drink.—*Chemical News, London.*

NOTE ON SOME VEGETABLE COLOURING MATTERS.

BY M. FILHOL.

Chemists and botanists have repeatedly investigated the nature of the matters which give to the corollas of flowers their brilliant and varied tints. Robert Boyle, Humboldt, Marquart, Berzelius, Macaire, Pruisep, Schübler and Franck, De Candolle, M. Caventou, Robiquet and Chevreuil, M. Hope, M. Hugo, Mohl, Mulder, M. Morot, MM. Frèmy, and Cloez, have successively published on this subject works of the highest interest.

It would take too long to recall here the part which each of the above-named distinguished men has taken in the development of this department of science. I shall content, myself by saying, that notwithstanding the high value, of the researches which they have severally made, some points in the history of vegetable colouring matters still remain obscure and demand new investigations. I will, in a very short summary, make known the facts which I have observed, and in order to render them clearer, I will devote a special article, to each kind of colouring matter.

White Flowers.—There are no flowers of a pure white existing. The celebrated painter Redout, noticed this a long time since. Flowers which appear to us white have nearly always a light-yellow, rose-coloured or blue tint. All these flowers become of a fine yellow when dipped in ammonia. Acids restore their primitive colour. Ether removes from white flowers a substance which possesses the following properties:—

It is solid; of a clear yellow colour; soluble in water, in alcohol, and in ether; it is uncrystallizable; pure chlorohydric acid communicates a pure deep yellow very vivid colour to it, which disappears upon the addition of water. Alkalies also colour it yellow. This matter furnishes very beautiful lake colours with metallic oxides, and can be used for dyeing fabrics of a bright and very durable yellow. Its presence in flowers has been noticed by several authors, and especially by M. Hope, who has given it the name of *xanthogene.* No one had isolated it and pointed out its remarkable analogy, with *luteoline.*

Red, Rose-coloured, and Blue Flowers.—All chemists agree in admitting that red, rose-coloured, or blue flowers owe their colour to the same proximate principle, which will be blue in flowers with a neutral juice, and red, or rose-coloured in those where the juice is acid. This proximate principle has received several names, which I shall not repeat here. MM. Frémy, and Cloez, have called it *cyanine.*