Selections.

On Artificial Alizarine.

At a meeting of the Glasgow Philosophical Society, Mr. J. Wallace Young characterized madder and its preparations as being among the most useful dye-stuffs used in calico-printing and dyeing. The importance of madder is due to the fact that with different mordants it gives a variety of colors—iron mordants giving all shades from black to delicate purple; those of alumina giving colors from a dark red to a fine pink; and a mixture of them giving various shades of chocolate. Madder root has probably undergone more chemical investigation than any other colouring matter—the investigators being Robiquet and Colin, Claubry, Persoz, Runge, Schunck, Higgin, &c. The most important colouring matter is Alizarine; from it may be obtained all the durable and brilliant colours yielded by madder itself. Mr. Young described the method by which alizarine may be obtained readily from madder root, and mentioned that the substance appears ultimately as a sublimate of fine orange red needles, which are slightly soluble in hot water, and readily soluble in boiling alcohol. Owing to the high price of madder and madder preparations, much interest attaches to every substance which purports to be a substitute for madder. A good substitute would be gladly welcomed. M. Roussin announced a few years ago that he had succeeded in obtaining artificial alizarine from napthaline, but further investigation proved that he had been mistaken. More recently, it had been announced in the *Chemical News* and elsewhere that artificial alizarine had been successfully obtained from anthracen.

Mr. Young then stated the results of his experiments upon two madder substitutes, one of continental manufacture, a thin dark-colored paste, containing 5.7 per cent. of dry residue, the other of English manufacture, supplied in the form of an opaque brownish liquid. The former contained a large amount of colored matter, but further purification was necessary before it could be used as a madder substitute. When mordanted cloth dyed with it was boiled with solution of soda, the colours were found to be rather fugitive. Cloth prepared for Turkey-red absorbed the dye-stuff readily, but the same want of fastness was observed. When mixed with iron and aluminous mordants, and printed on in the way in which madder extract is used, the colours were found to be dull and not sufficiently fast. A sublimate obtained from the dried paste closely resembled natural alizarine, but was rather lighter in colour. It dyed mordanted cloth well and withstood treatment with soap. The English made madder substitute yielded a red rather yellower than that yielded by natural alizarine, a black of equal, if not superior quality to madder-black, but the chief difference was in the purple, which was rather slate-coloured than anything else, contrasting most unfavorably with the fine shade of color given by madder. The yellowness of the red seemed to depend pretty much on the proportion of tin salt used in the clearing. As with madder and its preparations, the development of the colouring matter of the artificial alizarine is increased by tanning materials, as sumac, and deteriorated by chalk. The dried no seed of the brown artificial alizarine liquid yielded by sublimation a crystalline body of a yellower shade than that of the crystals of the natural alizarine. In order to compare the artificial alizarine with the natural substance and with purpurine, which is another madder extract, the author dissolved each of them in weak ammonia, and added barium chloride; they all yielded purplish precipitates. The natural alizarine precipitate was of a fine bluish-purple color, and the supernatant liquor was almost quite clear; that from the artificial product was much redder, and the supernatant liquid was highly colored; the purpurine precipitate was of a purplish-red color. The natural alizarine and purpurine precipitates did not seem to be much affected by being washed several times with cold water, but the artificial alizarine precipitate gradually dissolved in the washing water and finally disappeared. Mr. Young thoroughly tested the dyeing powers of the new alizarine by comparing the results produced upon mordanted cloth either with equal weights of sublimed alizarine obtained from the two artificial preparations and from madder, and of purpurine; he showed the specimens of cloth so treated. Instead of the dark full red given by the natural substance, the artificial alizarine yielded only a yellowish-red, much like that of the purpurine. Its purple was of a slaty tint, but the chocolate and black differed very slightly from those of the natural alizarine. The purpurine scarcely gave any purple, and the same is true of the Continental and English madder substitutes. Alcoholic solution of natural alizarine gives a fine purple color with copper acetate, and with the same reagent the artificial preparation gives a very red purple. No characteristic bands appear in the spectrum when artificial alizarine is used, and, therefore, purpurine is shown to be totally absent. The author was not aware if anything had been done towards establishing a formula for the new alizarine, but his opinion arrived at after performing many practical experiments, was that there was some essential difference between the artificial and the natural substance. He had found no superiority in the new substance. In a supplement to the paper of which the foregoing is an abstract Mr. Young said that the manufacture of artificial alizarine is carried out in two or three ways by continental chemists, and from the examination which has been made of the products, it would appear that some of them consist of a mixture of alizarine and purpurine, in different proportions, and some of alizarine, or of a substance intermediate between the two. It had been said that it was more advantageous to use the artificial alizarine as a dry paste, rather than in the dry state, but he could find no difference in the dyeing power. He had treated the artificial alizarine with boiling dilute sulphuric acid, as in garancine making, afterwards washing thoroughly and drying; he had also dissolved it in sodium carbonate, precipitating with acetic acid, washing and drying; but the colors given on drying did not seem to be modified in any way.

A discussion followed, in which several gentlemen took part. There seemed to be much doubt as to the mode of preparing the artificial alizarine, and if it could be produced in large quantity, considering the small amount of anthracen which exists in coal-tar. On that point, however, it was stated by Mr. Hogg that it could be supplied in considerable quantities and at such a price as would make it cheaper than madder.—*Chem. News.*

On the Estimation of the Alkaloids in Cinchona Barks.

Mr. H. Hager determines the total amount of quinine, quinidine, and cinchonine in cinchona bark, by precipitation with picric acid; the method unfortunately, does not surmount the great difficulty, viz., that of determinating the amount of quinine in presence of the other alkaloids. The author proceeds as follows:—Take 10 grammes of the bark coarsely powdered, add 130 grammes of water, and subsequently 20 drops of a solution of caustic potash, sp. gr. 1.3. Boil this mixture gently for fifteen minutes, occasionally stirring, and then add 15 grammes of dilute sulphuric acid, 1.115 sp. gr., boil for fifteen or twenty minutes; allow it to cool a little, pour it into a measure, and make up with water 100 c.c. A portion of the liquor is then filtered into a cylindrical glass vessel, graduated say for 60 c.g., and to this is added 50 c.g. of a solution of picric acid, saturated at the ordinary temperature; this quantity will generally be found sufficient to effect the complete precipitation of the alkaloids. The mixture is allowed to stand for half-an-hour, the precipitate collected on a weighed filter, carefully washed and dried at a temperature of 100° F. The proportion which would have been derived from the total quantity of liquor may be calculated from the weight of this precipitate, and hence the amount derived from 10 grammes of bark. According to the usual composition of the Calisaya bark, 10 grammes of this variety should yield at least 0.824 grammes of picrate, corresponding to 0.35 grammes of the mixed bases, quinine, quinidine, and cinchonine.—*Chemist and Druggist.*

Of what Sponges Consist.

The common washing sponge is still considered by many naturalists as a vegetable species, and in fact most people look upon it as of vegetable growth. Still, it seems now to be definitely established that it belongs to those low forms of animalculæ that are comprised under the term zoophytes. "Will you make us believe," here you exclaim, "that this fibrous net-work, in which one is unable to detect the least indication of anything that reminds us of animal life, is not a moss or something like it?" Exactly so. However, the sponge which you use daily in your ablutions, and which forms one of the most indispensable articles of the toilet, is not the animal as it lives and thrives, but only its horny substance, its skeleton, if you like to call it so. When cut loose from the submarine rocks on which it is found at considerable depth, the sponge presents itself to you as a black, jelly-like mass, which, when left in the air for only a few days, will give off a most disagreeable smell, originating from the gelatinous part in question. In the natural sponge, you have not one single individual before you, but a regular colony of animalculæ. The elastic, horn-like net-work of your toilet-table is then impregnated to its innermost parts with a slimy substance that is penetrated throughout by fine capillary tubes, not visible to the naked eye. Upon examining this curious being further, exceed-