A COLOR STANDARD FOR TINCTURE OF CUDBEAR, N. F.*

BY L. F. GABEL.

This paper was instigated by the fact that occasionally a sample of cudbear is found on the market which produces a tincture that varies in depth of color from the average lot of cudbear.

A standard color for cudbear would be desirable and with this in mind experimental work was conducted. Due to the intensity of color of Tincture of Cudbear it was necessary to use a weak dilution of the tincture so as to permit detection of a slight variation in color. The color of the dilution is a lavender shade with a reddish tinge. Efforts to duplicate this color were confined to the use of inorganic chemicals that would produce the desired shade of color. The use of inorganic chemicals for color standards was prompted by Dr. Arny's extensive work in this field. He has pointed out the advantage of the inorganic chemicals for this work, namely, the stability of the color of these chemicals in solution and the ability to make standardized solutions of the inorganic chemicals based on their molecular weights. Cobalt chloride produces a red solution in water. The addition of an excess of ammonium carbonate changes it to a purple shade resembling that of cudbear. This purple shade is deeper than the dilution of the tincture and does not possess the red tint of the dilution. It was necessary to add potassium dichromate to the ammoniacal solution of cobalt chloride to effect the red tinted lavender color of the dilution of Tincture of Cudbear.

Samples of six large lots of Tincture of Cudbear were obtained and dilutions of the tinctures prepared by adding 1 cc. of the tincture to 15 cc. of alcohol and diluting to 2000 cc. with distilled water. Ten-cc. portions of these dilutions were transferred to small test-tubes of uniform diameter and a comparison of the diluted tinctures revealed four lots of similar shade of color, one of lighter and one of darker shade. The average tincture was taken as a standard although it was realized that this would be an arbitrary standard since only six lots of cudbear were under observation.

After numerous attempts to duplicate the color produced by the average diluted tincture (1 to 2000) with the chemicals mentioned above, a formula was finally established which duplicated the color of the diluted tincture. The formula of the standard is as follows:

0.90 cc. *N*/10 Cobalt Chloride (1% HCl)
3.0 cc. Ammonium Carbonate, T. S.
0.70 cc. *N*/200 Potassium Dichromate
q. s. Distilled water to make 10 cc.

It is necessary to add the ammonium carbonate to the cobalt chloride before adding the dichromate.

The comparison of depth and shade of color was made by placing the test-tubes, one containing 10 cc. of the diluted tincture (1 to 2000) and the other 10 cc. of the Standard against a white background and noting the shade and depth of color in the test-tubes by looking down through the liquid.

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The dilutions of the tincture change to a lighter shade of color on standing, therefore it is necessary to compare the dilution with the standard the day it is made. The standard changes to a deeper shade of color on aging. This necessitates the preparation of the standard the day it is used. The tenth normal cobalt chloride and two hundredth potassium dichromate are stable, so these solutions can be kept for a long period.

We believe the formula given above can be used for a standard color for Tincture of Cudbear though it may be necessary to modify slightly the amounts of cobalt chloride or potassium dichromate to conform to the average of a large number of samples of cudbear.

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SPONGE.*

ITS HISTORY IN MEDICINE WITH A BRIEF ACCOUNT OF ITS HABITS AND STRUCTURE.

BY J. T. LLOYD, PH.D.

The rapidity with which iodine and its compounds have recently sprung into prominence in therapy is apt to lead one to believe that the remedy is of modern introduction. Study of the literature, however, reveals that in many of its present-day uses, iodine in combination is about as old as traditional medicine. True, the isolated chemical element was not known to the ancients, but preparations of sponge (its richest natural source) were known and dispensed in substance partly burned, or by extraction of the ash in solution. By either method a concentration of natural iodides and other salts in complex combinations was obtained.

Even before the beginning of the Christian era, when the civilization of Greece was at its zenith, sponges occupied a recognized place in medicine. More remarkable still, considering the lack of lenses for observing minute structures, they were even then classed in the animal kingdom. At least, about 320 B.C., Aristotle, "founder of zoölogy," and probably the first Greek to state that the earth must be a sphere, placed them among the animalcula.

In medicine the Greeks used sponge, both fresh and burned. According to Dioscorides,[1] Greek physician and author of a treatise on materia medica—

> "Fresh sponges, and those most free from oils, are helpful for wounds, and to check tumors. With water or vinegar, they bind up (literally, glue together) fresh wounds, while cooked with honey, they join together old wounds. Old sponges are useless. But even these are of value in softening up callouses and separating ulcers that are growing together, if bound upon them, dry, with a linen cloth. Fresh sponges placed upon old ulcers full of corruption dry them up. They also check the flow of blood.
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> "Burned with vinegar, they are useful in inflammation of the eye; also where there is need of a detergent or astringent. But it is better to tincture the ashes with the remedies to be used for the eye. The ashes of sponges burned with pitch check the flowing of blood."—*Dioscorides, V:* 138.

If, as seems quite possible, the term translated "tumor," referred to the disease known to us as goiter, one present-day use of Spongia and its derivative,

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* Section Historical Pharmacy, St. Louis meeting, 1927.

[1] Translated and condensed by Miss Margaret Stewart, A.M.