characteristics. Dried and powdered blood, other than being used in the food supply, has recently been marketed (usually admixed with other material) as a valuable product to increase the coagulation time of blood.

One of the most important uses of dehydrated products, a value which will be displayed more and more in the future, other than the fact that there is a reduction in bulk, a saving in handling and the preservation of material, is that preparations of simple and complex formulas of *accurate strength* will be quickly available by the addition of the proper amount of water and subsequent heating, baking or sterilization.

Mention was made (when foodstuffs were discussed) of the various formulas that are available in which puddings, desserts, and even ice cream and cake, can be quickly prepared; it remained for the bacteriologist to perfect dried products to a still higher degree of usefulness. He, in his search for simple formulas and short cuts in the technique of the many varied preparations that may be required in investigations, introduced the so-called "*Dehydrated Culture Media.*"

"Dehydrated Culture Media" are media in a dried powdered form ready to be prepared into various liquid or solid media by merely restoring the moisture with distilled water and sterilizing the end-product. The advantage of these products is in the fact that it is possible to obtain anywhere at any time any quantity of a medium of a constant adjusted reaction or hydrogen ion concentration, which will be identical in composition and reaction with all other lots of the same medium prepared on a previous occasion. The dehydrated media have also made possible the more extensive use of many of the media of special formulas or media fortified with natural fluids. As a dry powder, they are kept in containers which, if tight, will preserve the contents indefinitely.

The writer's thought in preparing this paper was to direct attention to the wide use of these dehydrated products, so that pharmacists would know more about the application of desiccation to products other than pharmaceutical.

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SOME NOTES ON THE ASTRINGENCIES OF RED ROSE AND PALE ROSE.*

BY JOSIAH C. AND BERTHA L. DE G. PEACOCK.

Last year a paper entitled "The Tannin of Red Rose" was read before this body. In it were discussed the properties of that astringent principle with the result that characteristic differences from other known astringent principles were shown.

Because of the interesting features of this constituent of Red Rose, an examination of Pale Rose was undertaken for report to this meeting.

Concerning the presence of a "tannin" in Pale Rose there seems to have been doubt, for, though some authors state positively its existence in small amounts, Maisch, in his "Manual of Organic Materia Medica," 1892, gives as constituents, "Little volatile oil, mucilage, sugar, tannin (quercitrin?), malates, etc." Certain it is that the matter had not attracted the necessary attention to decide this question.

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* Read before Pennsylvania State Pharmaceutical Association, 1921.

It is very natural to base one's inference regarding the presence and relative amount of "tannin" on the simple test of taste, as mentioned last year, when it was pointed out that the astringency and bitterness of Red Rose are experienced simultaneously and are about equally pronounced. This description, however, does not apply to Pale Rose, which is strikingly bitter rather than astringent.

It is desirable, for the sake of a proper understanding, to state at once that "the tannin of Red Rose" is present in Pale Rose as well, but in a very much less proportion.

A fair impression of this amount may be gathered from the fact that a kilo of Pale Rose did not yield sufficient to permit of the "tannin" being entirely separated from adhering matter, while the same weight of Red Rose gave an abundant sample of the purified principle.

In the case of Pale Rose, as in Red Rose, the presence and close association of much larger amounts of the "quercitrin" of other observers makes the isolation of the astringent principle both tedious and wasteful.

For a proper comparison of the following notes on Pale Rose, reference should be had to the article of last year on Red Rose.

When Pale Rose was boiled with successive portions of water, the reddish color of the material and the bitterness were entirely removed and they failed to reappear upon subsequent drying of the undissolved portion. The infusion was feebly acid to litmus. While the first impression made by this infusion on taste was of bitterness, the last was plainly of astringency. Diluted sulphuric acid developed a reddish color and a distinct opalescence in the infusion. Upon boiling, a precipitate of burr-like aggregates was formed, identical in appearance and properties with those obtained through like treatment of Red Rose.

Except for the much smaller proportion of astringency and the relatively greater bitterness, the physical properties of the infusions of the two roses were found to be very similar, while behavior toward reagents further demonstrated a similarity of ingredients. For instance, from the infusion of Pale Rose, as from that of Red Rose, hide powder removed all astringency and bitterness; all acidity to litmus; and all color except a straw-yellow. The resultant fluid was changed to pink by the addition of diluted sulphuric acid.

In an attempt to isolate and purify the astringent substance, the bulk of the infusion was concentrated, cooled and shaken with acetic ether, which solvent removed the greater part of the astringent principle, as subsequently found through the failure of diluted acid to produce in this liquid the burr-like aggregates upon heating.

The recovery of the acetic ether yielded a small amount of thick syrupy residue; it consisted of the astringent principle and the substance which others have called "quercitrin." Efforts to obtain the "tannin" in a porous condition were unsuccessful, in operating upon this quantity. But it was converted into scale form by dissolving in alcohol and evaporating with heat on an enameled surface.

Although the purification was not an entire success, the material by displaying the peculiar properties of "the tannin of Red Rose" in its behavior toward reagents, proved its identity with that substance. Especially was this fact established by the production of the burr-like aggregates when the solution of the principle was treated, hot or cold, with diluted mineral acids.

There is every reason to believe that this astringent substance is present in both drugs, but in very much smaller quantity in Pale Rose, perhaps less than one percent of its weight.

As it is becoming more and more evident that astringency is not a characteristic of any one substance, no more than the property of bitterness is indicative of any single material or group of them, we question the desirability of continuing to apply to such principles (other than gallotannic acid) the names "tannic acid and tannin." Instead, as a means of obviating a possibly improper terminology, the suggestion is offered that such plant substances may well be grouped under the name of "astringents," with a prefix to indicate the source; as for example: quercastringent; rosastringent; etc.; until they are chemically classified, and even then a name so practical as these may be preferable to an intricate one which details the chemical structure of the substance.

EFFECT OF MILDEW UPON RED ROSE AND PALE ROSE.

Another feature of the paper presented in 1920 was a reference to a crystalline principle which seemed to develop under the influence of mildew growth upon an unstrained infusion of Red Rose. By means of an ether extraction of these materials this substance was obtained in fine white or colorless crystals, but in very small amount.

To further study this matter, and more especially at this time to confirm this behavior, about 500 grams of Red Rose were exhausted with ether to remove any preëxistent ether-soluble contents.

This treatment revealed the presence of fatty and waxy constituents and of a crystalline substance having the same appearance and solubilities as the one being sought.

Continuing the experiment the ether exhausted residue (unchanged in appearance) was freed of this solvent, and mixed with water into a mush, which was exposed to induce a growth of mildew.

In the course of two weeks, the surface was covered with a thick layer of mycelium. This covering was removed with as little of the Red Rose as possible, and extracted with ether; which removed but a trifle of the crystalline substance.

The mush was then strained to separate the aqueous portion and this clarified by further straining. This liquid was of deep wine-red color, strongly acid to litmus, astringent, bitter, and decidedly musty, but still strongly suggestive of rose. Ether shaken with this fluid removed the crystalline principle, thus confirming its formation under the circumstances arranged for. From this portion of the mush, the yield was several times what ether extracted directly from the Red Rose.

It is presumable that this crystalline substance is derived from some water-soluble constituent of the rose, whether the "tannin" or not. To examine this subject, the solid portion of the mush was washed with cold water while every color was removable; then mixed again with water and the resulting mush exposed to induce mildew as before. The development of mildew was very slow and sparse compared with its appearance and amount in the previous experiment. The watery portion was found to contain none of the crystalline principle.

The same experiments were carried out on Pale Rose with the result that a small quantity of a crystalline substance apparently the same as that from Red Rose was directly extracted by ether; while a less amount was obtained in the experiment with mildew.

These experiments will be repeated to determine whether the crystals will develop in the mush without the appearance of mildew.

It is within the bounds of probability that this crystalline substance is related to the astringent principle.

The solubility of this crystalline principle in chloroform distinguishes it completely from the substance which forms the burr-like aggregates when the solution of the astringent principle is treated with acid.

The burr-like aggregates melt when heated and sublime in the same crystalline form, tending to assume this peculiar manner of association.

PEYOTE, THE NARCOTIC MESCAL BUTTON OF THE INDIANS.

BY W. E. SAFFORD, PH.D.*

Peyote is a small, fleshy, spineless cactus which has been used for centuries by aboriginal Americans in connection with their religious rituals and as a magic plant believed to have the power of inducing supernatural visions. By most laymen the name cactus is loosely applied to almost any spiny plant of the arid regions of our Southwest. Indeed, the Greek κακτος, from which Linnaeus adopted the name cactus, was the spiny wild artichoke, or cardoon (*Cynara cardunculus*) not at all related to the botanical family Cactaceae, which is essentially American and had no representatives in the Old World until after the discovery of America. Plants are classified by the structure of their flowers and fruit, not by their general appearance or their habit of growth; the peyote, though quite devoid of spines, is a true cactus. It was first referred to the genus Echinocactus, afterward to Anhalonium, and finally was made the type of a new genus, Lophophora. The various generic names are probably the cause of the erroneous idea that a number of species of narcotic cacti are used by the Indians. As a matter of fact there is but one species, *Lophophora williamsii*, so used. This species varies in the arrangement of its tubercles. One form of it was called *Anhalonium lewinii* by Hennings in 1888; but the latter was shown by Professor Coulter to be only a variety of *Lophophora williamsii*, a species first described under the name *Echinocactus williamsii* in 1845 by Lemaire, the distinguished authority on Cactaceae.

Dr. Thomas S. Blair,[1] chief of the Bureau of Drug Control, Pennsylvania Department of Health, recently published a paper in *The Journal A. M. A.* in which he states that he has not succeeded in finding a botanic description of the narcotic peyote plant in any of our American works on botany. For a description of this plant, of both the typical form *Lophophora williamsii* and its variety *lewinii*, I would refer the reader to a paper by John M. Coulter.[2] In this paper Dr. Coulter

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* Economic Botanist, Bureau of Plant Industry, United States Department of Agriculture. Reprinted from *Journal A. M. A.*, Oct. 15, 1921.

[1] T. S. Blair, "Habit Indulgence in Certain Cactaceous Plants among the Indians," *J. A. M. A.*, 76, 1033, April 9, 1921.

[2] J. M. Coulter, "Preliminary Revision of the North American Species of Cactus, Anhalonium, and Lophophora," Contributions from the United States National Herbarium 3, 91–132, June 10, 1894.