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PARIS GREEN.

G. W. SHAW, Ph. D., Chemist.
J. F. FULTON, B. S., Ass't Chemist.

Among the insecticides used in this State none is more common than Paris Green. The demand for this article has wonderfully increased of late, and as is always the case, the increased use of an article on the part of the people is followed by a demand for a lower price. If the article is already selling at a small margin of profit this will be met by a reduction in quality. That this is true is patent from the advertisement of certain firms to furnish Paris Green of any desired strength and at any price.

The adulteration of Paris Green is becoming so common that certain States have set a standard by statutory enactment.

It is not uncommon to hear complaints as to the results of using the poison as an insecticide, and this bulletin is issued to report the results of analysis of several samples of the article received at the Station last season.

PURE PARIS GREEN is a definite chemical compound known to chemists as copper aceto-arsenite. In the trade it is often called "Schweinfurth's Green," "French Green," or "Emerald Green." Scheele's Green, a plain arsenite of copper, is sometimes

sold for genuine Paris Green. Schweinfurth's, or Paris Green, is best and most frequently prepared by mixing solutions of copper acetate and arsenious acid (white arsenic) and allowing the resulting precipitate to settle. As thus prepared it has the following composition: arsenious acid (white arsenic), 58.65 per cent.; copper oxid, 31.29 per cent.; acetic acid, 10.06 per cent.

In commerce it is seldom possible to find an article of this normal composition on account of the varying methods of manufacture, but in no case should a pure article fall below 50 per cent. arsenious acid.

A good article of Paris Green should be of a bright green color, and examined under a microscope should appear as spherical granules of rather uniform size in any one sample. The measurements of the granules in each of six samples gave an average diameter of .0167 m.m. (=.0066 in.). The size of the granules in different samples often varies considerably, the minimum average diameter in the samples examined was .0116 m.m. and the maximum .0213 m.m. Paris Greens consisting of small granules are of a paler color than those consisting of larger granules, *yet the color is a distinct green.*

It is a well known fact that commercial Paris Green frequently contains considerable free arsenious acid owing probably to loose methods of manufacture. Samples analyzed at the Massachusetts Station were found to contain as high as 64 per cent. arsenious acid, and some analyses below show even more than this.

TABLE SHOWING ANALYSIS OF PARIS GREEN—1896-1897.

Lab. No.	Sent by—	Postoffice.	Arsenious Acid, As_2O_3.	Copper Oxid, CuO.
818	Graham & Wells	Corvallis	66.00	27.69
819	J. M. Wallace	Salem	58.96	33.56
820	Dr. Fry	Salem	68.58	28.16
821	German Apothecary	Salem	62.94	29.53
822	Gilbert & Patterson	Salem	46.86	29.16
824	J. S. Larkin	Newburg	68.75	30.48
827	E. C. Stewart	Medford	63.74	29.48
828	E. C. Stewart	Medford	57.60	29.97
829	J. W. Quick	Corvallis	37.80	27.88
830	J. W. Quick	Corvallis	62.10	29.39
831	Weeks & Orr	Medford	61.66	29.26
833	H. F. McCornack	Eugene	45.51	29.07
834	J. F. Peobles	Albany	45.08	.....
835	J. C. Standish	Halsey	40.98	.....
843	Snipes-Kinnersley Drug Co.	The Dalles	46.16	.....
854	Snipes-Kinnersley Drug Co.	The Dalles	34.10	.....
855	G. E. Landis	The Dalles	46.60	.....
856	G. E. Landis	The Dalles	66.30	.....

amination of the table reveals the fact that 44 per cent. of mples were adulterated. Other cases show a considerable amount of free arsenious acid, which, while it could not be called an adulterant, is undesirable in Paris Green that is to be used as an insecticide on account of the greater danger of burning the foliage.

The common adulterants are gypsum and sodium sulfate (Glauber salts). The Alabama Station reports one sample, probably made up entirely of Prussian blue, chrome yellow and clay—containing no arsenic at all. The effect of the adulterants on the appearance of the Paris Green is to render the color lighter, but if the adulterants have been added to a coarse grained sample there will be little difference between its appearance and that of a normal one of fine texture.

If one has a microscope capable of magnifying two hundred diameters it would be a comparatively easy matter to detect the admixture of these materials which could be present for no other purpose than adulteration.

There is really no *easy* and *sure* chemical method that can be applied by every one for detecting the adulteration. It is often said that pure Paris Green will dissolve perfectly in ammonia. This is true, but Paris Green adulterated with sodium sulfate will dissolve equally well in that liquid, hence the test is not adequate unless the adulterant happens to be gypsum or some other substance insoluble in ammonia. After a little experience the streak left upon glass by causing a small pile of green to slide over it may give some idea of the purity of the sample. To execute the test: with the point of a knife place a small pile of the Paris Green on a piece of glass held slanting; tap the glass lightly with the knife and the pile will move across the glass leaving a streak on the glass. If the Paris Green is pure this path will be bright green, otherwise it will be more or less white.

LIST OF BULLETINS

Published by the Oregon Agricultural Experimen Station to December 31, 1897.

*No. 1, 1888—History and Organization.....Grimm.
*No. 2, 1889—Horticulture.....Lake.
*No. 3, 1889—Entomology and Chemistry.....Washburn.
*No. 4, 1890—Agriculture, Horticulture, Chemistry.....
*No. 5, 1890—Chemistry, Entomology, Zoology.....Irish and Washburn.
No. 6, 1890—Chemistry, Zoology.....Washburn.
No. 7, 1890—Small Fruits and Vegetables.....Coote.
No. 8, 1891—Varieties of Wheat and Flax.....French.
*No. 9, 1891—Silos and Silage.....French.
No. 10, 1891—Entomology.....Washburn.
*No. 11, 1891—Grasses and Potatoes.....French.
*No. 12, 1891—Strawberries.....Coote.
*No. 13, 1891—Chemistry.....Shaw.
*No. 14, 1891—Entomology.....Washburn.
*No. 15, 1892—Horticulture.....Coote.
*No. 16, 1892—Varieties of Wheat.....French.
*No. 17, 1892—Sugar Beets.....Shaw.
*No. 18, 1892—Entomology.....Washburn.
*No. 19, 1892—Oregon Weeds.....Craig.
*No. 20, 1892—Pig Feeding.....French.
*No. 21, 1892—Soils of Oregon.....Shaw.
*No. 22, 1893—Horticultural Department.....Coote
*No. 23, 1893—Sugar Beets in Oregon.....Shaw.
*No. 24, 1893—Potatoes and Roots.....French.
*No. 25, 1893—Codlin Moth, Hop Louse.....Washburn.
*No. 26, 1893—Drainage.....Bloss.
No. 27, 1893—Plant Diseases, etc.....Craig.
No. 28, 1894—Pig Feeding, continued.....French.
No. 29, 1894—Horticulture, Pruning, etc.....Coote.
No. 30, 1894—Potatoes and Roots, continued.....French.
No. 31, 1894—Codlin Moth, Hop Louse.....Washburn.
No. 32, 1894—Five Farmers' Foes.....Craig.
No. 33, 1894—Tent Caterpillar.....Washburn.
No. 34, 1895—Fruits and Vegetables.....Coote.
No. 35, 1895—Pig Feeding, continued.....French.
No. 36, 1895—Composition and Use of Fertilizers.....Shaw.
No. 37, 1895—Experiments in Cattle Feeding.....French.
No. 38, 1895—Fruit Pests.....Washburn.
No. 39, 1895—Grasses, Chemistry.....Shaw.
No. 40, 1896—Prunes, Apples and Pears.....Hedrick.
*No. 41, 1896—Spraying.....Hedrick and Cordley.
No. 42, 1896—Feeding Sheaf Wheat.....French.
No. 43, 1897—Flax Culture.....French.
No. 44, 1897—Oregon Sugar Beets.....Shaw.
No 45, 1897—Prunes in Oregon.....Hedrick, Cordley and Shaw.
No. 46, 1897—Cicuta.....Hedrick.
No. 47, 1897—Cheat and Clover.....Shaw and French.
Circular No. 1—Dairying in Oregon.....Shaw, French and Kent.

Copies will be sent to applicants so long as the supply lasts. Those designated by an asterisk (*) are already exhausted.

Address THOS. M. GATCH,
Director of Experiment Station, Corvallis, Oregon.