BIBLIOGRAPHY

OF

CROCUS SATIVUS LINNE

By

Michael Plost

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Solomon, -. (ca 1000 B.C.)

(Saffron)

Canticles, Chapt. 4, v. 14. (Fluckiger & Hanbury, Pharmacographia, 1 ed., p. 602.)

(Under the Hebrew name Carcom, which is supposed to be the root of the word Crocus, the plant is alluded to by Solomon.)

Al-Istakhin, Al-Farisi. (Ns. 10C.)

(Safran)

Das Buch der Lander von Schech Ebn. Ishak el Farisi el Isztachin, 1844, p. -; (Fluckiger & Hanbury, Pharmacographia, 1 ed., p. 602.)

(Mentions that Saffron was cultivated at Derbend and Ispahan in Persia, and in Transoxania in the 10th century.)

---- (961)

(Safran)

Le Calendrier de Cardone de l'annee, 961; (Leyde, v. 33, p. 109, 1873; Fluckiger & Hanbury, Pharmacographia 1 ed., p. 602; Ibid., 2 ed., p. 663.

(States that there is evidence to show that Saffron was a cultivated production of Spain as early as A.D. 961.)

Edrisi, M. (ca 1100)

(Safran)

Geographic, p. -; (Fluckiger & Hanbury, Pharmacographia, 1 ed., p. 602.)

(Dissusses the cultivation of Saffron in Persia and Transoxania in the 10th century.)

Latrie De Mas, -. 1400.

(Safran)

Hist. de l'ile de Chypre, 3, p. 498; (Fluckiger & Hanbury, Pharmacographia, 1 ed., p. 602.)

(Towards the end of the 14th century, Saffron was one of the productions of Cypurs with which island France was then, through the princes of Lusignan, particularly related.)

Bock, H. 1552.

Crocus

Saffran

De Stirpium, etc., 1 ed., p. 763; (Fluckiger & Hanbury's Pharmacographia 1 ed., p. 602.

Gives a detailed description of Crocus with a full page illustration.

Hertodt, J. F. 1670.

(Safran)

Crocologia, etc., p. 279; (Woodville, Med. Bot., 2 ed., v. 4, p. 766; Tschirch, Handb. der pharm., 1 ed., v. 2, p. 1469.)

The original was not available.

Quincy, J. 1718

Croci, Saffron

Pharmacopoeia officinalis et extemporea, 1 ed., p. 164; Ibid., 2 ed., p. 163; (Proc. Am. Pharm. Assoc., 33, p. 511; Am. Jour. Pharm., 57, p. 496.)

Lists habitat, properties, therapeutical uses and preparations of Saffron.

De la Mare, -. 1719

(Safran)

Traite de la Police, v. 3, p. 428; (Fluckiger & Hanbury, Pharmacographia, 1 ed., p. 603.)

The original was not available.

Douglas J. 1723

A Botanical Description of the flower and Seed-Vessel of the Plant, called Crocus Autumnalis Sativus.

Phil. Trans., 32, p. 441; (Woodville's Med. Bot., 2 ed., v. 4, p. 763;

Gives a short botanical description of Crocus sativus.

---- 1728

(Safran)

Mem. de l'Acad. des Sciences de Paris, p. 100; (Fluckiger & Hanbury, Pharmacographia, 1 ed., p. 604; Woodville, Med. Bot., 1 ed., v. 4, p. 763.)

The original was not available

Douglass, J. 1728

An Account of the Culture and Management of Saffron in England.

Phil Trans., 35; p. 566; (Fluckiger & Hanbury, Pharmacographia, 1 ed., p. 603; Woodville, Med. Bot., 2 ed., v. 4, p. 765.)

Gives a detailed discussion of the cultivation and management of Saffron in England.

Alleyne, J. 1733

Saffron

English Dispens., 1 ed., p. 86.

Discusses the grade and narcotic qualities of Saffron grown in England and Austria. Lists several preparations that can be obtained from Saffron.

Alleyne, J. 1733

Bastard Saffron

English Dispens., 1 ed., p. 36; (Proc. Am. Pharm. Assoc., 33, p. 511; Am. Jour. Pharm., 57, p. 496.)

Bastard Saffron used as an adulterant of Saffron.

Linne, C. A. 1753

Crocus

Species Plant., 1 ed., p. 36; (Berg u. Schmidt,

Atlas, 3, T. 144, p. 35.)

Gives a descriptive name of Crocus sativus and several pre-linnean names with references.

Linne, C. 1754

Crocus sativus

Genera Plantarum, 1 ed., p. 55; (Woodville, Med., Bot., 1 ed., v. 4, p. 763.)

The original was not available.

Leu, H. J. 1760

(Saffron)

Allgemeines Lexicon, pt. 16, p. 14; (Schweiz. Wochenschr., 31, p. 467.)

(Gives specific instances of the early commercial importance of Saffron in Switzerland.)

Miller, P. 1760

(Saffron)

Figures of the most beautiful plants, T. 111; (Woodville, Med. Bot., 2 ed., v. 4, p. 763;)

The original was not available.

Lewis, W. 1761

Crocus

An Experimental Hist. of the Materia Medica, 1 ed.,

p. 231; (Woodville, Med. Bot., 2ed., v. 4, p. 765.)

Gives a detailed description, cultivation, uses and preparations of Crocus.

Allione, C. 1785.

(Safran)

Flora Pedemontana, etc., v. 1, p. 84; (Berg u. Schmidt, Atlas, v. 3, t. 144, p. 35.)

The original was not available.

Relhan, R. 1785.

(Safran)

Flora Cantabrigiensis, etc., p. 15; (Woodville, Med. Bot., 2ed., v. 4, p. 763;)

The original is not available.

Smith, J. E. 1790-1814.

(Saffron)

Engl. Bot. etc., t. 344; (Persoon, Syn. Plant., pt. 1, p. 41; Pharm. Boruss. offic. Gew., 1 ed., p. 92; Berg u. Schmidt, Atlas, v. 3, t. 144, p. 35.)

The original was not available.

Hudson, G. 1798.

Crocus

Flor. Ang., 1 ed., p. 13; (Woodville, Med. Bot., 1 ed., v. 4, p. 763.)

Gives a short description of the plant and part used and mentions several habitats of Saffron.

Willdenow, C. L. 1800.

Crocus

Linne's Species Plant., 4 ed., v. 1, p. 194; (Wood & Bache, Dispens., U. S. of Am., 2 ed., p. 268; Ibid., 3 ed., p. 258; Ibid., 4 ed., p. 268; Ibid., 5 ed., p. 284; Ibid., 6 ed., p. 284; Ibid., 7 ed., p. 284; Ibid., 8 ed., p. 284; Ibid., 9 ed., p. 293; Ibid., 10 ed., p. 300; Ibid., 11 ed., p. 312; Ibid., 12 ed., p. 336; Ibid., 13 ed., p. 346; Ibid., 14 ed., p. 360; Ibid., 15 ed., p. 501; Ibid., 17 ed., p. 454; Ibid., 19 ed., p. 407; Coxe, Am. Dispens., 4 ed., p. 197; London Dispens., 4 ed., p. 296; Hayne, Darstellung und Beschreibung der Arzneigewachse, v. 6, t. 25; Persoon, Syn. Plant., pt. 1, p. 41.)

Gives several scientific names with references of Saffron.

Withering, W. 1801.

Crocus Tourn.

British Plants, 4 ed., v. 1, p. 37; (Woodville, Med. Bot., 2 ed., v. 4, p. 763.)

Gives a detailed description of the plant Crocus sativus.

Roth, J. F. 1802.

Safran-Scham

Geschichte Nurnbergischen Handels, v. 4, p. 221; (Fluckiger & Hanbury, Pharmacographia, 1 ed., p. 604.)

Saffron industry started in Nurenburg in 1441. Gives various references regarding price, yield, uses as late as 1591.

Duncan, A. 1805.

Crocus Sativus

Edinb. New Dispens., Worcester, 1 ed., p. 209; (Am. Jour. Pharm., 57, p. 491; Woodville, Med. Bot., 2 ed., v. 4, p. 766.)

Gives a botanical description, part used, habitat, adulterations, preparations, medical properties and uses of Saffron.

Persoon, C. H. 1805.

Crocus

Synopsis Plantarum, v. 1, p. 41; (Hayne, Hanb. der Bot. Pharm., v. 6, t. 25.)

Gives a brief description of the genus Crocus and species sativus.

Committee 1808.

Crocus

Pharmacopoeia Mass. Med. Soc., p. 13.

Lists Crocus in the Materia Medica, giving the botanical origin and part used.

Lysons, D. 1808.

Produce

Magna Britannia, v. 2,pt. 1, p. 36; (Fluckiger & Hanbury, Pharmacographia, 1 ed., p. 603.)

States that in the parishes of Fulbourn and Hinton, a considerable quantity of Saffron was formerly cultivated, but its culture has been wholly disused more than thirty years ago.

Thacher, J. 1810.

Crocus Sativus-Common Saffron

Am. New Dispens., 1 ed., p. 115; Ibid., 2 ed., p. 201; Ibid., 4 ed., p. 202.

Gives a description of the drug, an account of the preparation used and the therapeutic uses of Saffron.

Woodville, W. 1810.

Crocus sativus

Med. Bot., 2 ed., v. 4, p. 763, t. 259; (Wood & Bache, Dispens. U. S. of Am., 2 ed., p. 268; Ibid., 3 ed., p. 258; Ibid., 4 ed., p. 268; Ibid., 5 ed., p. 284; Ibid., 6 ed., p. 284; Ibid., 7 ed., p. 284; Ibid., 8 ed., p. 284; Ibid., 9 ed., p. 293; Ibid., 10ed., p. 300; Ibid., 11 ed., p. 312; Ibid., 12 ed., p. 336; Ibid., 13 ed., p. 346; Ibid., 14 ed., p. 360; Ibid.,

15 ed., p. 501; Ibid., 17 ed., p. 454; Ibid., 19 ed., p. 407; Pharm. Univ., v. 1, p. 662; Tschirch, Handbuch der Pharmakognosie 1 ed., v. 2, p. 1454; Berg u. Schmidt, Atlas, v. 3, t. 144, p. 35.)

Gives the synonym, description of the flower, method of picking, habitat, preparations, properties and a full page colored illustration, with several references.

Bouillon-Lagrange, E. J. & Vogel, H. A. 1811.

Analyse du Safran

Annales de chim. et de phys., 80, p. 188; (Am. Jour. Pharm., 70, p. 390; Journ. de pharm. et de chim., 13, p. 397; London Dispens., 4 ed., p. 298; Hist. Natur. des Drogues Simples, 6 ed., p. 195; Trommsd. Jour. d. pharm., 21, p. 208; Tschirch, Handb. der Pharm., 1 ed., v. 2, p. 1462; Journ. de pharm. et de chim., 26, p. 218.)

A lengthy article discussing different methods of extracting the colatile oil of Saffron and lists a number of properties for this oil. Also a table listing the constituents of 100 grams of Saffron after being burned to ash.

Bouillon Lagrange, E. J. & Vogel, H. A. 1812.

Chemische Analyse des Safrans

Trommsd. Jour. d. Pharm., pt. 21, p. 206; (Dulk, Pharm. Borussica, 2 ed., p. 406.)

Makes a chemical investigation of Saffron and reports the methods and results naming the substances obtained and their relative amounts.

Bouillon-Lagrange, E. J. & Vogel, H. A. 1812.

Analyse du safran (crocus sativus)

Journ. de pharm. et de chim., 4, p. 89; (Journ. fur prakt. chemie, 101, p. 65.)

Describes methods for preparing liquid preparations of Saffron, namely, by tincture, infusion and distillation. Lists the results of mineral acids on Saffron.

Committee. 1816.

Crocus

Pharmacopoeia of the N. Y. Hospital, p. -.

Does not mention Crocus in the Materia Medica pages 11-28, but uses it in several preparations.

Romer, J. J. et Schultes, J. A. 1817.

Crocus

Linnes Systema Vegetabilia, v. 1, p. 369; (Hayne, Handb. der Bot. Pharm., v. 6, t. 25.)

Gives a short description of Saffron and the habitat in the Orient and England.

Ochs, P. 1819.

(Safran)

Geschichte der Stadt und Landschaft Basel, v. 3, p. 189; (Fluckiger & Hanbury, Pharmacographia, 1 ed., p. 602.)

(States that in Germany and Switzerland, where a more vigorous climate must have increased the difficulties of cultivation, the production of Saffron was an object of industry in many localities.)

Henry, N. E. 1821.

Procede pour obtenir l'hiule volatile de safran

Journ. de pharm. et de chim., 13, p. 400; (Am. Jour. Pharm., 70, p. 390; Journ. fur prakt. chemie, 101, p. 65; Hist. Natur. des Drogues Simples, 6 ed., p. 195; Tschirch, Handb. der Pharm., 1 ed., v. 2, p. 1462.)

Describes a process in which a yellowish volatile oil of Saffron is obtained. Several properties of the oil are listed.

Thompson, A. T. 1822.

Crocus

London Dispensatory, 3 ed., p. 267; Ibid., 4 ed., p. 296; (Am. Jour. Pharm., 57, p. 491.)

Gives the official synonym, botanical description, habitat, part used, adulterations, properties, qualities, medical properties, uses, dose and official preparations of Saffron.

Smith, J. E. 1823.

Crocus

Engl. Flora, v. 1, p. 46; (Persoon, Syn. Plant, pt. 1, p. 41.)

Gives a detailed description of Crocus sativus with several references.

Brandes, W. T. 1825.

(Crocus sativus)

Manual of Pharmacy, 1 ed., p. 72; (Am. Jour. Pharm., 57, p. 491.)

The original was not available.

Geiger, P. L. 1827.

Crocus (Safran)

Handb. der Pharm., 1 ed., v. 1, p. 399; (Proc. Am. Pharm. Assoc., 33, p. 508; Am. Jour. Pharm., 57, p. 492.)

Gives a description of the genus Crocus and species sativus its history, habitat, descrition of part used, yield, commercial varieties, constituents, adulterants, uses and preparations, with references.

Fee, A. L. A. 1828.

(Crocus Sativus)

Cours de Histoire Naturelle Pharmaceutique, v. 1, p. 341; (Am. Jour. Pharm., 57, p. 490.)

The original was not available.

Dulk, F. P. 1829.

Saffron

Pharm. Boruss. Comment., v. 2, p. 405; (Am. Jour. Pharm., 57, p. 491.)

Gives a description, properties, medical properties, preparations and adulterants of Saffron.

Voegelin, S. 1829.

(Safran)

Das alte Zürich, v. 1, p. -; (Schweiz. Wochenschr., 31, p. 467.)

(Mentions several specific instances of the early commercial importance of Saffron in Zürich, Switzerland.)

Merat & de Lens, A. J. 1830.

(Crocus sativus)

Dictionnaire de Materia Medicale etc., v. 2, p. 468; (Proc. Am. Pharm. Assoc., 33, p. 508; Am. Jour. Pharm., 57, p. 492.)

The original was not available.

Jobst, F. 1834.

Crocus

Buchner's Repert., 49, p. 458; (Am. Jour. Pharm., 57, p. 491.)

Several geographical types of Saffron were exhibited and information concerning each type is recorded as to appearance, availability and adulterations.

Kunth, K. S. 1834.

Crocus

Pharmacopoea Borussica officinellen Gewachse, p. 91.

Gives technical description of the genus and of the species sativus particularly of the flower and the stigmas, habitat of plant and adulterants of the drug Saffron.

Wood, G. B. & Bache, F. 1834.

Crocus. U. S.
Saffron

Dispens. U. S. of Am., 2 ed., p. 268; Ibid., 3 ed., p. 258; Ibid., 4 ed., p. 268; Ibid., 5 ed., p. 284; Ibid., 6 ed., p. 284; Ibid., 7 ed., p. 284; Ibid., 8 ed., p. 284; Ibid., 9 ed., p. 293; Ibid., 10 ed., p. 300; Ibid., 11 ed., p. 312; Ibid., 12 ed., p. 336; Ibid., 13 ed., p. 346; Ibid., 14 ed., p. 360; Ibid., 15 ed., p. 501; Ibid., 17 ed., p. 454; Ibid., 19 ed., p. 409; Ibid., 20 ed., p. 1350; Ibid., 21 ed., p. 392.)

Gives the official synonym, botanical description, habitat, part used, properties, preparations, adulterations, choice of Saffron, medical properties, uses and dose of the drug Crocus.

----. 1835.

Crocus

Pharm. Univ., 1, p. 55; (Proc. Am. Pharm. Assoc., 33, p. 508; Am. Jour. Pharm., 57, p. 492.)

Lists a number of different preparations into which Saffron enters, and the pharmacopoeias in which they are contained, as well as the ones in which Saffron is listed.

Guibourt, N. J. B. G. 1841.

La falsification du safran

Journ. de pharm. et de chim., 33, p. 315; (Proc. Am. Pharm. Assoc., 33, p. 511; Am. Jour. Pharm., 57, p. 495.)

Describes the adulterant, the florets of Calendula arvensis, found in four samples of Saffron of German origin.

Winckler, F. L. & Gruner, A. 1842.

Ueber die Verfalschung des Safrans durch Calendelblumen and Saflor.

Jahrb. f. prakt. pharm., 5, p. 73; (Archiv der Pharm., 38, p. 186; Ibid., 90, p. 173.

The adulteration of Saffron by means of Calendula flowers and Carthamus tinctorius flowers is best detected by treating a decoction of the suspected material with either silver nitrate solution or ferric chloride solution.

Nees von Essenbeck, T. F. S. (1843).

(Safran)

Geneva Plantarum, 3, t. 10; (Berg u. Schmidt, Atlas, 3, t. 144, p. 35.)

The original was not available.

Marquart, C. 1844.

Crocus sativus

Lehrb. der Pharmacie, v. 1, p. 335; (Am. Jour. Pharm., 57, p. 491.)

Gives the habitat of the plant, description, part official with the description, constituents, preparations, value and adulterants.

Muller, J. 1844.

Ueber Verfalschung des Safran

Archiv der Pharm., 40, p. 173; (Am. Jour. Pharm., 70, p. 391; Chem. Gazette, 3, p. 197; Wood & Bache, Dispens. U. S. of Am., 7 ed., p. 286; Ibid., 8 ed., p. 285; Ibid., 9 ed., p. 294; Ibid., 10 ed., p. 301; Ibid., 11 ed., p. 314; Ibid., 12 ed., p. 338; Ibid., 13 ed., p. 348; Ibid., 14 ed., p. 362; Ibid., 16 ed., p. 308; Ibid., 15 ed., p. 503; Ibid., 17 ed., p. 456; Ibid., 19 ed., p. 409; Ibid., 20 ed., p. 1350; King's Am. Dispens., 10 ed., p. 306; Ibid., 15 ed., p. 308; Ibid., 16 ed., p. 306; Ibid., 18 ed., p. 621; Merck's Report, 7, p. 529.)

The most satisfactory test for determining the purity of Saffron is with concentrated sulphuric acid. The effects of various adulterants on this color reaction are noted.

Parlatore, F. (1845).

(Safran)

Flora italiana, p. -; (Tschirck Handbuch der Pharmakognosie, 1 ed., p. 1454.)

The original was not available.

Conrad, -. & Waldeman, -. 1846.

(Historique, Culture, Falsifications et Emplois du Safran du Gatinais.)

Traite du Safran du Gatinais, 23 p. p. -; (Fluckiger & Hanbury, Pharmacographia, 1 ed., p. 602; Ibid., 2 ed., p. 664; Tschirch, Handb. der Pharmak., 1 ed., p. 1458; Archiv der Pharm., 108, p. 75; Buchn. Repert., 49, H. 3, p. 317; Journ. de Chim. Med., v. 3, p. 407.)

(Gives the History, description, cultur and adulterants of Saffron cultivated in France.)

Royle, J. F. 1847.

(Crocus sativus)

Mat. Med., Am. edition, p. 601; (Proc. Am. Pharm. Assoc., 33, p. 508; Am. Jour. Pharm., 57, p. 491.)

The original was not available.

Gasparin, A. E. P. 1848.

Safran

Cours d'agriculture, 4, p. 207; (Tschirch, Handbuch der Pharmakognosie, 1 ed., p. 1458.)

Gives a detailed discussion of the cultivation, tests for identification, description, method of collecting, several uses and price of Saffron.

Conrad, -. & Walldman, -. 1849.

On the Cultivation of Saffron in France and Austria.

Pharm. Jour., 8, p. 171; (Am. Jour. Pharm., 21, p. 37.)

Gives a detailed discussion of the cultivation of Saffron in France and Austria with its diseases, method of picking, adulterants, uses and several preparations.

Montagne, C. 1850.

De la maladie du safran, connue sons le nom tacon, etude micrographique.

Journ. de pharm. et de chim., 51, p. 41. (Wood & Bache, Dispens. U. S. of Am., 9 ed., p. 293; Ibid., 10 ed., p. 300; Ibid., 11 ed., p. 313; Ibid., 12 ed., p. 337; Ibid., 13 ed., p. 347; Ibid., 14 ed., p. 360; Ibid., 15 ed., p. 501; Ibid., 17 ed., p. 454; Ibid., 19 ed., p. 407.)

Discusses a parasite which destroys the flowers of Saffron and describes its process of destruction.

Inzenga, -. 1851.

(Safran)

Annali di Agricoltura Siciliana, 1, p. 51., (Fluckiger & Hanbury, Pharmacographia, 1 ed., p. 602.)

The original was not available.

Landerer, X. 1851.

On the Saffron of the East

Pharm. Jour., 10, p. 198; (Wood & Bache, Dispens. U. S. of Am., 9 ed., p. 294; Am. Jour. Pharm., 23, p. 85.)

Lists the amounts of Saffron produced and sold in different parts of Europe and Asia.

Quadrat, B. 1851.

Notizen uber einige Bestandtheile des Safrans
(Crocus Sativus)

Wiener Acad. Ber., 6, p. 543; (Annalen der Chem. und Pharm., 80, p. 340; Tschirch, Handb. der Pharm., 1 ed., v. 2, p. 1462.)

Reports on several substances isolated from the stigmas of Crocus sativus, the Saffron of Commerce.

King, J. & Newton, R. S. 1852.

Crocus sativus - Saffron

Eclec. Dispens., 1 ed., p. 146.

Lists history, properties, uses and official preparations of Saffron.

Quadrat, B. 1852.

Ueber einige Bestandtheile des Safrans

Ann. der Chem. u. Pharm., 80, p. 340; (Wood & Bache, Dispens. U. S. of Am., 10 ed., p. 301; Ibid., 11 ed., p. 313; Ibid., 12 ed., p. 338; Ibid., 13 ed., p. 348; Ibid., 14 ed., p. 362; Journ. fur prakt Chemie, 56, p. 68; Archiv der Pharm., 252, p. 143; Am. Jour. Pharm., 1 ed., v. 2, p. 1462.)

Lists the following constituents of Saffron: A dyestuff with its composition as lead, copper, lime and barium compounds. Volatile oil, ether extract, grape sugar, acid, and ash, the latter containing carbonates, sulphates, salicylates, phosphates, chlorides, lime, magnesia, potash and soda.

Chappellier, P. 1853.

(Safran)

Bull. Soc. Bot. de France, 20, p. 191. (Wood & Bache, Dispens. U. S. of Am., 17 ed., p. 454; Fluckiger & Hanbury, Pharmacographia, 1, p. 601; Tschirch, Handbuch der Pharmak., 1 ed., v. 2, p. 1454.)

(Crocus sativus is believed to be a native of Greece and Asia Minor, where it has been cultivated from the earliest ages. It is unknown in the wild state and as the French plant does not produce seed, the author asserts that it is a hybrid.)

Hayne, F. G. 1855.

Crocus Sativus

Darstellung und Beschreibung der Arzneigewaechse, v. 6, t. 25; (Schleiden, Handbuch der Botanische Pharmacognosie, 2, p. 337; Tschirch, Handbuch der Pharmakognosie, 1 ed., v. 2, p. 1454; Geiger, Hanb. der Pharm. v. 1, p. 400; Kohler, Mediz.-pfl. v. 1, t. 164; Die Pflanzender Pharm germ., 1 ed., p. 310; Dulk, Pharmacopoea Brussica 2 ed., p. 404; Berg u. Schmidt, Atlas, 3, t. 144, p. 35; Pharm. Boruss. offic. Gew., 1 ed., p. 92.)

Gives a botanical description, scientific synonyms with references, commercial varieties, adulterants and substitutes, composition and a full page colored illustration of Saffron.

Soubeiran, L. M. J. 1855.

Note sur une falsification du safran par les fleurs de Fuminella.

Journ. de pharm. et de chim., 27, p. 267; (Wood & Bache, Dispens. U. S. of Am., 11 ed., p. 314; Ibid 12 ed., p. 338; Ibid., 13 ed., p. 348; Ibid., 14 ed., p. 362; Ibid., 15 ed., p. 503; Ibid., 17 ed. , p. 456; Am. Jour. Pharm., 27, p. 318.)

States that due to the high price of Saffron

there are frauders who try to falsify Saffron with a cheaper plant, the flowers of Fuminella. Compares the ray florets of Fuminella with the styles of Saffron.

Daels, F. 1856.

(Saffron Adulterated with Potassium Borotartrate)

Jour. D. Pharm. d 'Anvers, 56, p. 417; (Yrbk. Brit. Pharm. Conf., 38, p. 163; Pharm. Jour., 66, p. 2; Dig. Crit. U. S. P. 7 Dec. Rev., Part 3, p. 70; Drugg Circ., 45, p. 9.)

(A sample of Saffron on inceration gave 26% of ash and upon examination showed that the substance added was potassium borotartrate.)

Lowther, W. H. 1856.

Production of Saffron in Kashmere

Pharm. Jour., 15, p. 226; (Am. Jour. Pharm., 28, p. 63.)

Discusses the cultivation of Saffron in Pampur with a list of prices according to the quality of the Saffron.

Lassen, C. 1857.

(Safran)

Indische Alterthumskunde, v. 3, p. 52; (Fluckiger & Hanbury, Pharmacographia, 1 ed., p. 602.)

(States that Saffron was an article of traffic on the Red Sea in the first century and was exported from Egypt to S. Arabia and from Barygaza in the Gulf of Cambay.)

Schleiden, M. J. 1857.

Stigmata Croci

Handbuch der Botanische Pharmakognosie, 2, p. 337; (Am. Jour. Pharm., 57, p. 491.)

Gives botanical origin, illustrations with references, parts used, description, cultivation, substitutes, commercial varieties and constituents.

Dorvault, F. L. M. 1858.

(Safran)

Revue pharmaceutique, p. 58; (Fluckiger & Hanbury, Pharmacographia, 1 ed., p. 603.)

The original was not available.

Landerer, X. 1858.

Safran de Perse

Repertoire de Pharm., 58, p. 356; (Am. Jour. Pharm., 30, p. 401.)

Discusses the several species of Crocus including sativus growing in the neighborhood of Tifflis and the Caucasus.

Martin, S. 1859.

Un mot sur une Alteration du Safran

Journ. de Chem. medic., S. 4, v. 5, p. 33; (Jahresb. d. Pharm., 28, p. 39.)

Describes several characteristics and chemical tests of Saffron. Also states that Saffron should be stored in a dry place in order to avoid fermentation.

Rochleder, J. 1862.

Crocus sativus.

Jahresb. d. pharm., 22, p. 11; Ibid., 28, p. 35.

Isolates crocin from Saffron which was previously known as polychroit.

Chapellier, P. 1863.

Sur le Safran

Repert de Pharm., 19, p. 84; (Drugg. Circ., 7, p. 106.)

Discusses the cultivation of Saffron in the provinces of Gatinais, France and Arragon, Spain.

Guibourt, N. J. B. G. 1864.

Sur une nouvelle falsification du safran

Journ. de pharm. et de chernie, 45, p. 469; (Proc. Am. Pharm. Assoc., 12, p. 113; Ibid., 33, p. 508; Am. Jour. Pharm., 36, p. 418; Ibid., 57, p. 492.)

Discusses several adulterants found in Saffron, namely, the stamens of other species of Crocus and the ligulate florets of the marigold. Gives methods of detection for the former.

Archer, T. C. 1865.

Cape Saffron

Pharm. Jour., 24, p. 462. (Wood & Bache, Dispens., U. S. of Am., 13 ed., p. 348; Ibid., 14 ed., p. 363; Ibid., 15 ed., p. 503; Ibid., 17 ed., p. 457; Ibid., 19 ed., p. 410; Ibid., 20 ed., p. 1350; Jahresb. 26, p. 33; Am. Jour. Pharm., 37, p. 187.)

Statesthat an extremely common plant, the flowers of which are called Geele bloemetiee found in some parts of Cape of Good Hope, resembles Saffron in all but its color. This plant has all the medicinal properties of Saffron. Hopes that some day it may be put on the market in place of Saffron.

Bourquelot, F. 1865.

(Safran)

Foires de la champagne, v. 5, p. 286; (Fluckiger & Hanbury, Pharmacographia, 1 ed., p. 602.)

(During the middle ages, the Saffron cultivated at San Gemignano in Tuscany was an important article of exportation to Genoa.)

Bentley, R. 1866.

On the Adulteration of Saffron with the Stamens of Crocus.

Pharm. Jour., 25, p. 452; (Proc. Am. Pharm. Assoc., 33, p. 508; Am. Jour. Pharm., 57, p. 491; Jahresb. v. 26, p. 32; Am. Jour. Pharm., 38, p. 225; Chem. & Drugg., 7, p. 36.)

Lists and describes several adulterants of Saffron, as the stamens of Crocus sativus, and gives an identification test for each.

Berg. O. 1866.

Crocus, Tournef.

Pharmazeutische Botanik, 5 ed., p. 210.

Gives a description of the genus, earlier history, technical description of Crocus sativus, distribution, cultivation and parts used.

Biroth, H. 1867.

Notes of Spanish Saffron (Crocus Sativus).

Am. Jour. Pharm., 39, p. 307.

Discusses several adulterants found in Spanish Saffron, with properties and tests for identity for each.

Heinitish, C. A. 1867.

Note on the Culture of Saffron in Pennsylvania.

Am. Jour. Pharm., 39, p. 38; (Wood & Bache, Dispens. U. S. of Am., 13 ed., p. 347; Ibid., 14 ed., p. 361; Ibid., 15 ed., p. 502; Ibid., 17 ed., p. 455; Ibid., 19 ed., p. 408; Ibid., 20 ed., p. 1349; Am. Jour. Pharm., 70, p. 391; Proc. Am. Pharm. Assoc., 14, p. 254; Tschirch, Handbuch der Pharmakognosie, 1 ed., v. 2, p. 1458; Pharm. Jour., 27, p. 28; Drugg. Circ., 12, p. 278; Merck's Report, 7, p. 529.)

States that Saffron was formerly grown in Lancaster County, Pa. Describes how Saffron should be planted and amounts to be received from different plots of land during the picking season.

Monthus, J. B. 1867.

Sur le safran.

Journ. de pharm. et de chim., 85, p. 54; (Wood & Bache, Dispens. U. S. of Am., 13 ed., p. 347; Ibid., 14 ed., p. 361; Ibid., 15 ed., p. 502; Ibid., 17 ed., p. 455; Ibid., 19 ed., p. 408; Proc. Am. Pharm. Assoc., 33, p. 509; Am. Jour. Pharm., 57, p. 493.)

States how and when the bulbs of Saffron should be planted. Gives directions for the preparation of tincture of Saffron.

Powell, B. H. B. 1868.

(Saffron)

Handbook of the Economic Products of the Punjab, v. 1, p. 449; (Fluckiger & Hanbury, Pharmacographia, 1 ed., p. 606.)

(Very little Saffron is collected at Pampur in Kashmir, under heavy imposts of the Maharaja.)

Weiss, B. 1868.

Ueber den Farbstoff des Safrans.

Jour. fur prakt. Chem., 101, p. 65; (Jahresb. d. Pharm., 3, p. 35; Wood & Bache, Dispens., U. S. of Am., 13 ed., p. 348; Ibid., 14 ed., p. 362; Ibid., 15 ed., p. 502; Ibid., 17 ed., p. 455; Ibid., 19 ed., p. 408; Chem. News, v. 2, p. 88; Archiv de Pharm., 252, p. 142; Berichte d. d. Chem. Gessel., 17, p. 2229; Journ. de pharm. et de chim., 26, p. 218.)

Discusses in detail, several constituents of Saffron. Describes the methods of their isolation and discusses several adulterants.

----. 1869.

Adulterated Saffron.

Deutsche Gewerbezeitung, 22, p. -; (Am. Jour. Pharm., 42, p. 218.)

Three adulterants namely the stamens of Crocus, glucose and gypsum, were found in a sample of Saffron.

----. 1869.

(Safran)

Bulletin de la Societe imperiale d'acclamation, v. -, p. -; (Fluckiger & Hanbury, Pharmacographia, 1 ed., p. 605.)

The original was not available.

----. 1869.

(Verfalschungen des Saffrans).

Deutsche illustrite Gewerbezeitung No. 22, p. -; (N. Jahrb. Phar., 32, p. 38; Am. Jour. Pharm., 57, p. 496.)

The original was not available.

Bachez, A. 1869.

Sur une nouvelle falsification du safran.

Journ. de pharm. et de chim., 89, p. 291; (Wood & Bache, Dispens. U. S. of Am., 14 ed., p. 362; Am. Jour. Pharm., 41, p. 323.)

Describes tests for the detection of calcium carbonate, an adulterant found in Saffron.

Galiffe, J. A. 1869.

(Safran)

Geneve, historique et archeologique, p. -; (Schweiz. Wochenschr., 39, p. 315.)

(Discusses the culture of Saffron in Switzerland in the 16th century.)

Guibourt, N. J. B. G. 1869.

Safran

Histoire Naturelle des Drogues Simples, 6 ed., p. 195; (Am. Jour. Pharm., 57, p. 490.)

Gives a botanical description, habitat, part used, adulterations and properties of Saffron.

Soubeiran, J. L. 1869.

Culture du safran.

Journ. de pharm. et de chim., 89, p. 297; (Am. Jour. Pharm., 42, p. 373; Proc. Am. Pharm. Assoc., 19, p. 295; Drugg. Circ., 14, p. 91.)

Discusses the cultivation of Saffron in France in the neighborhoods of (Gatinais) Loire and Orange and Carpentier (Vaucluse).

----. 1870.

Value of the Principal Articles (including Bullion and Species) Exported from Spain and the Balearic Islands, in each of the Years 1864, 1865 and 1866.

Statistical Tables Relating to Foreign Countries (Blue Book), v. 69, p. 286; (Fluckiger & Hanbury, Pharmacographia, 1 ed., p. 605.)

Lists the value of Saffron exported from Spain and the Balearic Islands in the years 1864, 1865 and 1866 as 1,900,620; 1,353,163 and 470,831 Escudos respectively.

Bretschneider, E. 1870.

(Sa-fa-land)
(Saffron)

Chinese Botanical Works, v. -, p. 15; (Fluckiger & Hanbury, Pharmacographia 1 ed., p. 602.)

(According to the Chinese, Saffron came from the Mohammedans. Chinese writers have recorded that under the Yuen dynasty (A.D. 1280-1368), it became the custom to mix Sa-fa-lang (Saffron) with food.)

Hanbury, D. 1870.

The Adulteration of Saffron

Pharm. Jour., 30, p. 241; (Wood & Bache, Dispens. U. S. of Am., 14 ed., p. 362; Am. Jour. Pharm., 42, p. 532; Yrbk. Brit. Pharm. Conf., 8, p. 102.)

Lists the different adulterants of Saffron especially stressing "carbonate of lime." Gives a test for this adulterant.

Maisch, J. M. 1870.

Note on Adulterated Saffron.

Am. Jour. Pharm., 42, p. 390; (Wood & Bache, Dispens. U. S. of Am., 14 ed., p. 362; Proc. Am. Pharm. Assoc., 19, p. 295; Drugg. Circ., 15, p. 38.)

Describes the two adulterants, prepared chalk and gypsum, and gives several tests for the identification of the latter.

Martin, S. 1870.

Falsification du Safran.

Journ. de chim. med., s. 5, v.6, p. 655; (Pharm. & Chem., 3, p. 15.)

Discusses the adulteration of Saffron, the adulterants, their effect and gives tests for them.

Wittstein, G. C. 1870.

Zür Verfalschung des Safrans.

Vierteljahr. f. p. Pharm., 19, p. 91; (Proc. Am. Pharm. Assoc., 18, p. 274.)

Discusses the adulterants found in a sample of commercial Saffron.

Ingham, J. 1871.

The Adulteration of Saffron.

Pharm. Jour., 30, p. 624.

Discusses several adulterants of Saffron with tests of identity for each.

Kennedy, G. W. 1871.

Syrupus Croci.

Am. Jour. Pharm., 43, p. 54; (Wood & Bache, Dispens. U. S. of Am., 17 ed., p. 457; Yrbk. Brit. Pharm. Conf., 8, p. 405.)

Describes his method of preparing syrup of Saffron and gives his formula.

Hager, H. 1872.

Persischer und afrikanischer Safran.

Pharm. Centrhl., 13, p. 364; (Am. Jour. Pharm., 44, p. 539; Proc. Am. Pharm. Assoc., 21, p. 264; Pharm. Jour., 32, p. 486.)

In a sample of Saffron in the form of agglutinated cakes and possessing a fatty odor, a few stigmas of Crocus were found mixed chiefly with the narrow yellow petals saturated in oil. Lists several tests for the identification of these adulterants.

Jackson, J. R. 1872.

The So-Called African Saffron

Pharm. Jour., 31, p. 904.

Gives a detailed description, habitat and uses of Saffron grown in Africa.

Maisch, J. M. 1872.

On the So-Called African Saffron.

Am. Jour. Pharm., 44, p. 110; (Wood & Bache, Dispens. U. S. of Am., 14 ed., p. 362; Ibid., 15 ed., p. 503; Ibid., 17 ed., p. 456; Ibid., 19 ed., p. 409; Ibid., 20 ed., p. 1349; Proc. Am. Pharm. Assoc., 19, p. 506; Ibid 21, p. 487; Pharm. Jour., 31, p. 824, Yrbk. Brit. Pharm. Conf., 9, p. 79.)

Describes three so-called African Saffrons and discusses their properties.

(Editor) 1873.

Adulteration of Saffron.

Chem. & Drugg., 14, p. 239.

States that a quantity of Saffron was sold for "German Saffron" by a wholesale druggist. Upon examination this Saffron proved to be shreds of Campechy logwood and fustic ingeniously blended together and moistened with a little syrup.

Bellew, H. W. 1874.

(Saffron)

From the Indus to the Tigris, p. 304; (Fluckiger & Hanbury, Pharmacographia, 1 ed., p. 606.)

Mentions that Saffron is produced in Ghayn, an elevated mountainous region separating Western Afghanistan from Persia.)

Fluckiger, F. A. & Hanbury, D. 1874.

Crocus

Pharmacographia, 1 ed., p. 60; Ibid., 2 ed., p. 663; (Am. Jour. Pharm., 57, p. 491; Berg u. Schmidt, Atlas, v. 3, t. 144, p. 35; Tschirch, Handb. der Pharm., 1 ed., v. 2, p. 1469; Schw. Wochenschr. 40, p. 38; Pharm. Jour., 50, p. 337.)

Lists the botanical origin, history, description, microscopic structure, chemical composition, uses, adulteration, production and commerce of Saffron.

Muller, J. 1874.

Ueber eine Verfalschung des Safrans.

Arch. der Pharm., 205, p. 517; (Proc. Am. Pharm. Assoc., 23, p. 136.)

In two lots of Saffron there were found 25% of Calcium carbonate and 9% of barium sulphate, respectively.

Soubeiran, E. 1874.

(Crocus sativus)

Nouv. Diction. des Falsif., p. 494; (Am. Jour. Pharm., 57, p. 490.)

The original was not available.

(Editor) 1875.

Adulteration of Saffron.

Am. Jour. Pharm., 47, p. 208; (Proc. Am. Pharm. Assoc., 23, p. 510.)

In a sample of Saffron, two adulterants were found, namely, 25% of calcium carbonate and 9% of barium sulphate.

Groves, H. 1875.

Note on the Cultivation of Saffron in the Abruzzi.

Pharm. Jour., 35, p. 215; (Proc. Am. Pharm. Assoc., 24, p. 124; Yrbk. Brit. Pharm. Conf., 12, p. 562; Pharm. Jour., 91, p. 943.)

Gives a detailed discussion of the cultivation of Saffron in the Abruzzi with an adulterant, shredded beef, which previously had been dipped in Saffron-water.

Planchon, G. 1875.

(Crocus sativus)

Traite pratique de la determination des drogues simples, 1 ed., v. 1, p. 210; (Wood & Bache, Dispens. U. S. of Am., 19 ed., p. 408; Ibid., 20 ed., p. 1349; Ibid., 21 ed., p. 392.)

The original was not available.

(Editor) 1876.

Spurious Saffron.

Pharm. Jour., 35, p. 950.

Because of the inevitable costliness of Saffron, Carthamus tinctorius or "American Saffron," is commonly substituted for it.

Hardy, E. 1876.

Scientific Notes from Foreign Sources.

Chem. & Drugg., 18, p. 89.

Discusses the history, habitat, method of cultivation and adulterants of Saffron.

King, J. 1876.

Crocus sativus
Saffron

Am. Dispens., 6 ed., p. 360; Ibid., 10 ed., p. 306; Ibid., 16 ed., p. 306.

Deals with the description, history, properties, uses and official preparations of Saffron.

Stoddart, W. W. 1876.

Notes on the Colouring Matter of Crocus Sativus.

Pharm. Jour., 36, p. 238; (Zeitschr. d. osterr. apotheker-Ver., 15, p. 27; Pharm. Centralhl., 18, p. 115; Ischirch, Handb. der Pharm., 1 ed., v. 2, p. 1462; Yrbk. Brit. Pharm. Conf., 12, p. 494; Proc. Am. Pharm. Assoc., 26, p. 191; Drugg. Circ., 22, p. 87.)

Discusses the constituents of the coloring matter found in Saffron with a table of percentages for each constituent.

Fluckiger, F. A. 1877.

(Crocus sativus)

Schw. Wochenschr. fur Pharm., 15, p. 67. (Tschirch, Handb. der Pharm., 1 ed., v. 2, p. 1462.)

The original was not available.

Searby, W. M. 1877.

Commercial Products.

Proc. Am. Pharm. Assoc., 25, p. 354.

A superior looking sample of Spanish Saffron was found to be adulterated to the extent of 20% with chalk and glycerin.

----. 1878.

Colors for Confectionary and Food.

Drugg. Circ., 22, p. 87; (Chem. & Drugg., 20, p. 34.)

The police of Paris have directed that several substances (named) including Saffron be employed for coloring articles of food or confectionery.

Chapellier, P. 1878.

Crude Materials Applicable in Medicine and Pharmacy.

Pharm. Jour., 38, p. 21; (Pharm. Jour., 91, p. 942.)

Gives a short account of several samples of Saffron grown in China and Greece, with its uses.

(Editor) 1878.

Saffron

Chem. & Drugg., 20, pp. 34, 88 & 184.

Discusses its use in confectionery on p. 34, methods of examination on p. 88, and as a paste on p. 184.

Landerer, X. 1878.

Miscellaneous Contribution From the Orient.

New Remedies, 7, p. 297; (Proc. Am. Pharm. Assoc., 27, p. 144.)

Discusses the cultivation of Saffron in Greece and in the Hellenic Islands.

Patze, A. 1878.

On the Medicinal Value of Crocus Sativus.

New Remedies, 7, p. 78; (Proc. Am. Pharm. Assoc., 26, p. 192.)

Gives a comprehensive discussion of the medicinal values of Saffron.

Bontet, M. G. 1879.

Falsification du safran.

Repert. de Pharm., 7, p. 469; (Pharm. Jour., 39, p. 422; Ibid., 50, p. 337.)

States that a specimen of "Saffron," was found to contain 25% of true Saffron and 75% of adulterants, namely, sulphate of lime (25%), glucose (20%), coloring matter, water and the stalks and radicals of a dicotyledonous plant.

Brandes, W. 1879.

(Adulterations of Saffron)

Pharm. Ztg., 24, p. 506; (Am. Jour. Pharm., 51, p. 559; Ibid., 61, p. 608; Ibid., 70, p. 391; Ibid., 61, p. 608; Merck's Report, 7, p. 529.)

(A sample of Saffron was found to contain 50% of stems obtained from a plant belonging to the Grancineae or Caricineae. The stems were colored with calcium carbonate previously dyed with cochineal and agglutinated by a sugar solution tinted with Saffron.)

(Editor) 1879.

Means of Detecting the Adulteration of Saffron.

Chem. News, 52, p. 35; (Proc. Am. Pharm. Assoc., 27, p. 144.)

Lists many adulterants found in Saffron and gives methods of detection for each adulterant.

Martenson,-. 1879.

(Crocus)

Pharm. Zeit. f. Russl., 19, p. -; (Pharm. Jour., 39, p. 422.)

(States that a commercial specimen of Saffron was found to contain 39% of calcium carbonate, some foreign coloring matter and saccharine matter, probably honey.)

Stille, A. & Maisch, J. M. 1879.

Crocus, U. S. Br.
Saffron

Natl. Dispens., 2 ed., p. 475; Ibid., 3 ed., p. 519; Ibid., 5 ed., p. 894.

Discusses the botanical origin, description, constituents, adulterations, preparations, medical action and uses of Saffron.

Allen, C. B. 1880.

Note on the History of Saffron.

Pharm. Jour., 40, p. 449; (Yrbk. Brit. Pharm. Conf., 18, p. 160.)

Gives a short discussion of the history of Saffron.

Bentley, R. & Trimen, H. 1880.

Crocus sativus

Med. Plants, 1 ed., v. 4, p. 274; (King's Am. Dispens. 18 ed., v. 1, p. 619; Natl. Dispens., 2 ed., p. 475; Ibid., 3 ed., 519; Ibid., 5 ed., p. 554; Am. Jour. Pharm., 57, p. 491; Tschirch Handbuch der Pharmak., 1 ed., v. 2, p. 1454; Kohler, Mediz. - pfl., v. 1, t. 164; Die Pflanzen d. Pharm. germ., 1 ed., p. 310; Berg u. Schmidt, Atlas, 3, t. 144, p. 35.)

Gives a detailed description, habitat, official part and name, collection, preparation, varieties, adulterants, composition, medical properties and uses of Saffron with a full page description.

Holmes, E. M. 1880.

The Use of Saffron in the Pharmacopoeia.

Pharm. Jour., 40, p. 450.

Mentions that Saffron occurs in seven preparations of the British Pharmacopoeia and discusses the uses of Saffron in ancient times.

Bernbeck, A. 1881.

(Verfalschung von Crocus.)

Pharm. Ztg., 26, p. 732; (Am. Jour. Pharm., 54, p. 133; Jahresb. Pharmacog., 16, p. 82; Yrbk. Brit. Pharm. Conf., 19, p. 205; Ibid., 27, p. 467; Pharm. Jour. 50, p. 337.)

(Lists several adulterants, namely, carthamus and petals of the red poppy and gives several chemical tests for the identification of these adulterants.)

Crispo, M. 1881.

(Gross Falsifications of Saffron.)

Journ. de Pharm. d'Anvers, 81, p. -; (Chem. & Drugg., 23, p. 121.)

(A sample of fine Spanish Saffron sold to pastry cooks and housewives of Gand consisted of barium sulphate, 50 parts; water, 16; vegetable filaments of unknown origin, 13; and glucose, tincture of Saffron, and other substances, 21.)

Downes, -. 1881.

On the Growth of Crocus Sativus, the Source of Hay Saffron, in Kashmir.

Gardener's Chronicle, 15, p. 188. (Pharm. Jour., 41, p. 9; Tschirch, Handb. der Pharmakognosie, 1 ed., v. 2, p. 1458; Pharm. Ztg., 26, p. 437.)

Lists an adulterant found in Cake Saffron. Discusses the famous Saffron fields of Pampur, production from Kashmir to Laddahk, uses, cost and the plundering of the fields by the government officials.

(Editor) 1881.

Saffron

Chem. & Drugg., 23, p. 460.

A new method of adulterating Saffron consists in cutting the rootlets of onions and leeks into fine strips, coloring them, and weighting them with honey or glycerin and chalk.

Biel, J. 1882.

(Adulterated Saffron.)

Pharm. Zeitschr. f. Russl., 21, p. 815; (Am. Jour. Pharm., 54, p. 14; Ibid., 55, p. 177, Ibid., 20, p. 391; Chem. & Drugg., 21, p. 563; Yrbk. Brit. Pharm. Conf., 21, p. 214; Pharm. Jour. 50, p. 337; Dig. Crit. U. S. P. 6 Dec. Rev., Part 1, p. 55; Merck's Report, 7, p. 529.)

(Describes a sample of Saffron which was adulterated with calcium carbonate tinged with a red pigment, glucose, and probably honey. In this latter sample the ash content was 39.15% and in a pure sample of Saffron the ash content was 8%.)

Grote, C. 1882.

Verfalschung von Crocus.

Pharm. Centralhl., 23, p. 619; (Chem. & Drugg., 24, p. 451.)

Discusses the use of marigold (calendula) dyed red as an adulterant of Saffron and gives several methods for its detection.

De Candolle, A. P. 1883.

Safran-Crocus sativus.

Origine des Plantes Cultivees, 1 ed., p. 132; (Tschirch, Handb. der Pharm., 1 ed., v. 2, p. 1462.)

Gives a short account of the cultivation of Saffron in Italy, Sicily, Asia Minor, Kashmir and Persia.

Luerssen, C. 1883.

Crocus

Die Pflanzen Pharmacopoea germanica, 1, p. 309.

Describes the genus Crocus and the species sativus with references to illustrations and mention of the parts official and its preparations.

Schmidt, E. 1883.

Thonerdehaltiger Safran.

Arch. der Pharm., 221, p. 676; (Tschirch, Handb. der Pharm. 1 ed., v. 2, p. 1462.)

Reports the results of investigating samples of Crocus containing clay; gives his method and reports the total ash content.

Gehe & Co. 1884

(Saffron)

Handels-Ber., April, p. -. (Chem. & Drugg., 26, p. 245.)

(Saffron last year was a good crop, both in Spain and Gatinais, but the price was only slightly reduced because the supplies at Valencia were steadily bought up. Also mentions several adulterants such as chalk, gum, and young grass prepared with carmine.)

Hanausek, T. F. 1884.

Safran (Crocus)

Nahrungs. u. Genussm., 1 ed., p. 270; (Tschirch, Handbuch der Pharmakognosie, 1 ed., v. 2, p. 1458.)

Gives the botanical origin of Crocus, habitat, commercial distribution, varieties, history, constituents, adulterants, commerce with two illustrations.

Hart, J. 1884.

Note on a Sample of Sophisticated Saffron.

Pharm. Jour, 43, p. 738; (Am. Jour. Pharm., 70, p. 391; Am. Jour. Pharm., 56, p. 328; Yrbk. Brit. Pharm. Conf., 21, p. 214; Dig. Crit. U. S. P. 6 Dec. Rev., part 1, p. 55; Proc. Am. Pharm. Assoc., 32; p 129; Chem. & Drugg., 26, p. 124; Merck's Report; 7, p. 528.)

Lists several adulterants and amounts of ash obtained when samples of different saffrons were incinerated.

Kayser, R. 1884.

Ueber im Safran vorhandene Substanzen.

Berichte d. d. Chem. Gessel., 17, p. 2228; (Wood & Bache, Dispens. U. S. of Am., 17 ed., p. 455; Ibid., 19ed., p. 408; Ibid., 20ed., p. 1349; Ibid., 21 ed., p. 392; Am. Jour. Pharm., 57, p. 130; Jour. Chem. Soc. London, 48, p. 59; Helv. Chim. Acta, 5, p. 376; Archiv der Pharm., 252, p. 142; Tschirch, Handb. der Pharm., 1 ed., v. 2, p. 1462; Yrbk. Brit. Pharm. Conf., 22, p. 164; Pharm. Jour., 44, p. 423; Dig. Crit. U. S. P. 6 Dec. Rev., Part 1, p. 55; Drugg. Circ., 29, p. 38; Merck's Report, 7, 529.)

Lists a number of substances that can be obtained from Saffron such as Essential oil of Saffron, Crocin, Crocetin, Crocose and Picrocrocin (Saffron-bitter). Describes methods for the preparation of each substance.

Gehe & Co. 1885.

(Safran)

Handels-Ber., Sept., p. -; (Am. Drugg., 14, p. 212)

(Saffron both Spanish and French has advanced about 10% in price last July owing to a diminished cultivation in consequence of the Cholera.)

Kayser, R. 1885.

Substances Contained in Saffron.

Am. Jour. Pharm., 57, p. 129; (King's Am. Dispens., 18 ed., p. 620; Wood & Bache, Dispens. U. S. of Am., 19 ed., p. 409.)

Lists and describes several constituents that can be obtained from Saffron.

Maisch, J. M. 1885.

On the Adulterations of Saffron.

Analyst, 10, p. 200; (Yrbk. Brit. Pharm. Conf., 23, p. 194.)

Lists many different adulterants found in Saffron with tests recommended for each adulterant.

Maisch, J. M. 1885.

On the Purity of Commercial Spanish Saffron.

Am. Jour. Pharm., 57, p. 487; (Wood & Bache, Dispens. U. S. of Am., 17 ed., p. 456; Ibid., 19 ed., p. 409; Am. Jour. Pharm., 70, p. 390; Proc. Am. Pharm. Assoc., 33, p. 504; Am. Jour. Pharm., 59, p. 155; Pharm. Jour., 45, p. 663; Dig. Crit. U. S. P. 6 Dec. Rev., Part 1, p. 55; Merck's Report, 7, p. 528.)

Lists two kinds of Saffron, namely, Valencia and Ahcante. Describes the different adulterants found in these two kinds of Saffron and gives tests of indentification for each.

Ulrichs, C. A. 1885.

Die Saffrancultur in den Appenninen.

Archiv der Pharm., 223, p. 622; (Wood & Bache, Dispens. U. S. of Am., 17 ed., p. 455; Ibid., 19 ed., p. 408; Tschirch, Handbuch der Pharmakognosie, 2 ed., p. 1458.)

Gives an account of the harvesting, cultivation and marketing of Saffron in the Appenines.

Cazeneuve, MM. & Lincissier, G. 1886.

Sur la presence du rouge de roccelline dans un safran.

Journ. de pharm. et de chim., 122, p. 413; (Am. Jour. Pharm., 70, p. 391; Ibid., 59, p. 155; Proc. Am. Pharm. Assoc., 35, p. 108; Merck's Report, 7, p. 529.)

States that the properties of Saffron after being exhausted of its coloring matter and dyed with sulfo-conjugue sodique de la roccelline are almost the same as that of the natural Saffron. Lists several properties to corroborate his conclusion.

(Editor) 1886.

Crocus

Chem. & Drugg., 28, p. 365.

The quality of Italian Saffron appears to be satisfactory in appearance and resembles the natural Gatinais; but it has not been collected as carefully as the latter, and contains many white filaments.

Geering, T. 1886.

(Safran)

Handel und Industrieder Stadt Basel, p. -; (Schweizerische Wochenschrift fur Chem. und Pharm., 31, p. 466; Schw. Wochenschr., 40, p. 38.)

(Gives the historical data concerning the early cultivation of Saffron in Switzerland.)

Herz, J. 1886.

Safran

Repert. d. Analyt Chemie, 86, p. 384; (Archiv der Pharm., 224, p. 713; Am. Jour. Pharm., 70, p. 391; Proc. Am. Pharm. Assoc., 35, p. 108; Merck's Report, 7, p. 529.)

Compares color reactions of Saffron and sandal wood.

Maw, A. 1886.

(Saffron)

Monograph of the Genus Crocus, p. -; (Tschirch, Handbuch der Pharmakognosie, 1 ed., p. 1454; Berg u. Schmidt, Atlas, 3, t. 144, p. 35.)

The original was not available.

Moeller, J. 1886.

Safran

Mikroskopie der Nahrungs - und Genussmittel aus dem Pflanzenreiche, 1 ed., p. 60; (Zeitschr. Oster. Apoth. Ver., 41, p. 823.)

Gives a detailed discussion of the cultivation, habitat, constituents and adulterants of Saffron.

Berntrop, J. C. 1887.

A Remarkable Adulteration of Saffron.

Drugg. Circ., 31, p. 268.

Discusses an adulterant of Saffron which shows the structure of a monocotyledonous root, apparently the bulf of a leek and probably of Chives (Allium schoenophrasum)

(Editor) 1887.

An Adulteration of Saffron.

Am. Drugg., 16, p. 74.

The adulteration consists in coloring the exhausted stigmas with aniline. This fraud may be detected by the tint given to the watery infusion which lacks the characteristics of a Saffron - yellow hue, as well as by the absence of the odor.

(Editor) 1887.

Demand for Saffron.

Brit. & Col. Drugg., 12, p. 573; Ibid., 15, p. 352.

Due to an epidemic of measles there is a great demand for Saffron in penny packets for making "Saffron tea."

Kayser, R. 1887.

Adulteration of Saffron.

Chem. & Drugg., 30, p. 354.

A sample of Saffron was found to be free of tar dye but on analyzing the ashes 14% of barium sulphate was found as an adulterant.

Reber, B. 1887.

(Safran)

Der Fortschritt, p. 68; (Schw. Wochenschr., 40, p. 39.)

(Gives an account of the history of Crocus, with references.)

Wiederstadt, -. 1887.

Zur Safranverfalschung.

Archiv der Pharm., 225, p. 73; (Am. Jour. Pharm., 70, p. 391; Ibid., 59, p. 155; Proc. Am. Pharm. Assoc., 35, p. 108; Pharm. Jour., 46, p. 688; Wood & Bache, Dispens. U. S. of Am., 17 ed., p. 455; Ibid., 19 ed., p. 408; Ibid., 20 ed., p. 1349; Ibid., 21 ed., p. 392; Yrbk. Brit. Pharm. Conf., 24, p. 190; Pharm. Jour., 50, p. 337; Merck's Report, 7, p. 529.)

Discusses methods whereby various types of adulterations of Saffron may be detected.

(Editor) 1888.

The Spanish Saffron Trade.

Am. Drugg., 17, p. 125.

Gives a short discussion of the Saffron trade in Spain.

(Editor) 1888.

Saffron Testing.

Brit. & Col. Drugg., 14, p. 280.

Discusses the method of testing a sample of Saffron.

Mertens, T. 1888.

The Spanish Saffron Trade

Chem. & Drugg., 32, p. 726; Ibid., 33, p. 698.

Gives a detailed discussion of the Saffron trade in Spain.

Stolzissi, -. 1888.

Saffron in Olden Times.

Chem. & Drugg., 32, p. 625.

Gives a short account of the history and cultivation of Saffron.

----. 1889.

Substitute for Saffron.

Brit. & Col. Drugg., 15, p. 570.

In overhauling the contents of a druggist's shop in Germany, a bottle labelled "Saffron Substitute" was found. Upon examination it was found to consist of dimtrocresol a very poisonous substance even in small doses.

Adrian, T. A. 1889.

Nouvelle falsification du safran.

Journ. de pharm. et de chim, 128, p. 98; (Am. Drugg., 18, p. 70; Am. Jour. Pharm., 61, p. 608; Proc. Am. Pharm. Assoc., 37, p. 434; Yrbk. Brit. Pharm., Conf., 26, p. 158; Am. Jour. Pharm., 70, p. 391; Am. Drugg., 18, p. 70; Chem. & Drugg., 34, p. 543; Merck's Report, 7, p. 528.)

Lists and describes several physical and chemical tests for the identification of pure Saffron from adulterated Saffron.

Beringer, G. M. 1889.

Note on Adulterated Spanish Saffron.

Am. Jour. Pharm., 61, p. 607; (King's Am. Dispens., 18 ed., p. 621; Am. Jour. Pharm., 70, p. 391; Ibid., 61, p. 607; Pharm. Jour., 49, p. 504; Merck's Report, 7, p. 528.)

Lists and describes the adulterants found in two lots of Spanish Saffron.

(Editor) 1889.

Notes on Commercial Drugs, Chemicals and Essential Oils.

Am. Drugg., 18, p. 229.

Discusses the sale of Saffron which had been deprived of natural coloring matter, then dyed with dinitrocresol, and weighted with inorganic matter. The proportions of adulterant is said to have reached 40%.

(Editor) 1889.

Saffron as a Dye.

Brit. & Col. Drugg., 16, pp. 230, 325 & 333.

Discusses the increasing use of Saffron as a dye.

(Editor) 1889.

Saffron Adulteration.

Chem. & Drugg., 34, p. 533.

In an interesting case of the adulteration of

Saffron in Giessen; chalk, flowers of carthamis, tonka beans, bitter almonds, sugar, etc., were mixed with Saffron, and artificial coloring substances were also added.

(Editor) 1889.

Saffron in Spain.

Chem. & Drugg., 34, p. 708; Ibid., 36, p. 57.

Gives a list of sales of Saffron of the previous year in Spain.

Felter, H. W. & Lloyd, J. U. 1889.

Crocus (U. S. P.)
Saffron

King's Am. Dispens., 16 ed., p. 306; Ibid., 18 ed., v. 1, p. 619.

Lists the botanical source, history, description, chemical composition, adulterations, tests, actions, medical uses and dosage of Saffron.

Ferraud, E. 1889.

(Safran)

Revue Internat. des Falsificat. des Denrees aliment. 3, p. 42; (Yrbk. Brit. Pharm. Conf., 27, p. 172.)

(Describes a sample of Saffron yielding 26% of ash mainly composed of barium sulphate, and containing 11.12% of honey and a coloring matter, probably an azo color.)

Holmes, E. M. 1889.

A New Adulteration of Saffron.

Pharm. Jour., 48, p. 666; (Am. Jour. Pharm., 61, p. 608; Ibid., 70, p. 391; Proc. Am. Pharm. Assoc., 37, p. 434; Ibid., 38, p. 407; Yrbk. Brit. Pharm. Conf., 26, p. 158; Drugg. Circ., 33, p. 79; Merck's Report, 7, p. 529.)

Lists several adulterants of Saffron and gives four tests for their identification.

Kuntze, G. & Hilger, A. 1889.

Sur la falsification du safran.

Journ. de pharm. et de chim., 129, p. 98; (Am. Jour. Pharm., 61, p. 608; Ibid., 70, p. 391; Yrbk. Brit. Pharm. Conf., 27, p. 172; Pharm. Jour., 49, p. 504; Drugg. Bull., 4, p. 97.)

Lists several adulterants of Saffron. Gives tests for the identification of Saffron.

Proctor, B. S. 1889.

Saffron and Its Sophistications.

Pharm. Jour., 48, p. 801; (Proc. Am. Pharm. Assoc., 37, p. 434; Yrbk. Brit. Pharm. Conf., 26, p. 159; Drugg. Circ., 33, p. 125.)

Gives a detailed discussion of the colorimetric test for the detection of sophistications in Saffron.

(Editor) 1890.

How Drugs are Imported.

Am. Drugg., 19, p. 127.

The best quality of Saffron is exported from Valencia to this country in tin-lined cases of 100 lbs. each. The Alicante and Barcelona Saffron is loaded with calcium carbonate or bartya, made adherent with glycerin or some other sticky substance.

Kirby, W. 1890.

Note on a Sample of Adulterated Saffron.

Yrbk. Brit. Pharm. Conf., 27, p. 467; (Am. Jour. Pharm., 70, p. 391; Proc. Am. Pharm. Assoc., 38, p. 375; Yrbk. Brit. Pharm. Conf., 27, p. 172; Pharm. Jour., 50, p. 337; Brit. & Col. Drugg., 18, p. 248; Drugg. Circ. 34, p. 274; Merck's Report, 7, 529.)

Lists a number of adulterants and gives a detailed description of the microscopic characteristics of a fiber adulterant found to the extent of 41% in a sample of Saffron.

Pabst, G. & Kohler, H. 1890.

Crocus sativus

Medizinal-pflanzen, v. 1, t. 164; (Tschirch, Handbuch der Pharmakognosie, 1 ed., v. 2, p. 1454; Berg u. Schmidt, Atlas, v. 3, t. 144, p. 35.)

Gives names in several languages, a detailed description of the plant, its anatomy, time of flowering, distribution, its name, history, part official, commercial varieties, adulterants, constituents, uses, preparations, bibliography and a full page colored illustration.

Caesar & Loretz 1891.

Crocus

Apoth. Zeit., 6, p. 509; (Am. Jour. Pharm., 70, p. 391; Ibid., 63, p. 538; Proc. Am. Pharm. Assoc., 40, p. 617; Drugg. Circ., 35, p. 274; Brit. & Col. Drugg., 20, p. 394; Merck's Report, 7, p. 529.)

Detailed information concerning various commercial types of Saffron with data on moisture, ash content, various adulterants and color reactions.

Chapellier, P. 1891.

Saffron

Gardener's Chron., 9, p. 51., (Proc. Am. Pharm. Assoc., 39, p. 375; Pharm. Jour., 50, p. 665.)

By means of the malformation of Saffron flowers expects to increase the yield of stigmas and hence the yield of Saffron.

Collardot, E. 1891.

Saffron Sophistication.

Drugg. Circ., 34, p. 228; (Proc. Am. Pharm. Assoc., 40, p. 617; Pharm. Jour., 51, p. 85; Am. Jour. Pharm., 70, p. 391; Yrbk. Brit. Pharm. Conf., 29, p. 160; Merck's Report, 7, p. 529.)

Lists several adulterants found in several specimens of Saffron, namely, fine, dried and colored shreds of onions, paprika and honey.

(Editor) 1891.

Saffron Adulteration.

Chem. & Drugg., 39, pp. 516 & 663.

Upon examination several samples of Saffron were found to contain from 60 to 70% by weight of powdered red pimento (capsicum?) which adhered to the stigmas by means of honey. Another sample was adulterated by means of thin dried strips of onion scales artificially colored.

Fluckiger, F. A. 1891.

Crocus - Safran

Pharmacogn. des Pfl., 3 ed., p. 776; (Berg u. Schmidt, Atlas, 3, t. 144, p. 35; Arch. der Pharm., 266, p. 223.)

Gives a detailed discussion of the botanical origin, habitat, cultivation, description; constituents, adulterants and history of Saffron.

Hoffman, H. 1891.

Crocus - Saffron

Pharm. Era, 6, p. 360; (Proc. Am. Pharm. Assoc., 40, p. 617.)

Gives a detailed description of Saffron with a list of adulterants and methods of detection for each adulterant.

Simmonds, P. L. 1891.

The Medicinal Uses of Flowers.

Am. Jour. Pharm., 63, p. 200; (King's Am. Dispens., 18 ed., p. 620.)

Gives a comprehensive discussion of the uses and distribution of Saffron.

----. 1892.

Adulterated Saffron.

Brit. & Col. Drugg., 21, pp. 480, 529 and 554.

Discusses the arrest of several Saffron dealing firms for selling adulterated Saffron.

Meyer, A. 1892.

Crocus

Wissenschaftlicher Drogenkunde, v. 2, p. 343; (Zeitschr. Oster. Apoth. Ver., 41, p. 824; Berg u. Schmidt, Atlas, 3, t. 144, p. 35.)

Gives a detailed discussion of the habitat, cultivation, morphology, anatomy, adulterants, chemistry and history of Saffron with a full page illustration.

Moeller, J. 1892.

Crocus - Saffron

Pharmakogn. Atlas, 1 ed., t. 43, p. 170; (Archiv der Pharm. 226, p. 223.)

Gives a short discussion of Saffron with a full page illustration.

Vinassa, E. 1892.

Untersuchungen von Safran und sogenannten Safransurrogaten.

Archiv. der Pharm., 230, p. 353; (Bull. Pharm., 6, p. 615; Wood & Bache, Dispens. U. S. of Am., 17 ed., p. 456; Ibid., 19 ed., p. 409; Am. Jour. Pharm., 70, p. 390; Ibid., 101, p. 717; Proc. Am. Pharm. Assoc., 40, p. 657; Merck's Report, 7, p. 528.)

A lengthy detailed article with several tables and review of previous workers on the identity and adulterants of Saffron.

----. 1893.

Crocus

Schw. Wochenschr., 30, p. 314. (Tschirch, Handb. der Pharm., 1 ed., v. 2, p. 1469.)

On account of the unusually large crop of Crocus in 1890, prices have fallen lower than any previous price since 1885.

Hartwich, C. 1893.

Historisches uber die Cultur der Arzneipflanzen.

Schweizerische Wochenschrift fur Pharm., 31, p. 466; (Tschirch, Handb. der Pharmakognosie, 1 ed., v. 2, p. 1458.

Saffron has been cultivated in Europe since the middle ages, it was brought there by the Arabians through Spain. Mentions various early references and abstracts some of them.

Herz, F. J. & Hanausek, T. F. 1893.

Safranbestaubung mit Weizenmell.

Pharm. Zeit., 38, p. 40; (Am. Jour. Pharm., 70, p. 391; Ibid., 65, p. 134; Ibid., 93, p. 134; Proc. Am. Pharm. Assoc., 41, p. 656; D ig. Crit. U. S. P. 7 Dec. Rev., Part 1, p. 58; Merck's Report, 7, p. 529.)

Describes the adulteration of Saffron by dusting with wheat flour and the detection of this adulterant.

Barclay, J. 1894.

Standards of Purity of Saffron.

Pharm. Jour., 53, p. 692; (Am. Jour. Pharm., 70, p. 391; British and Colonial Druggist, 25, p. 197; Proc. Am. Pharm. Assoc., 42, p. 892; Yrbk. Brit. Pharm. Conf., 31, p. 161; Dig. Crit. U. S. P. 7 Dec. Rev., part 1, p. 58; Chem. & Drugg., 44, p. 275; Drugg. Circ., 38, p. 91; Merck's Report, 7, p. 529.)

Lists and discusses the amounts of moisture and ash found in 33 samples of Saffron.

(Editor) 1894.

Export Trade of Yezd, Persia.

Am. Drugg., 25, p. 428.

Saffron was sent into the Yezd, Persia market from Burugird and then exported to Bombay. Adulteration has produced the same result as in previous cases.

Brierre, -. 1895.

Ueber Safranverfalschungen.

Pharm. Post, 28, p. 568; (Dig. Crit. U. S. P. 7 Dec., Rec., Part 1, p. 58; Drugg. Circ., 59, p. 582.)

Discusses methods of detecting various adulterants of Saffron.

(Editor) 1895.

The Saffron - Crop.

Chem. & Drugg., 46, p. 251.

Lists the prices and discusses the Saffron crop grown in Spain.

----, 1896.

(Monthly Botanical Review)

---- (Bull. of Pharm., 10, p. 555.)

(Gives a detailed discussion of Saffron-growing in South Spain.)

----. 1896.

The Saffron Trade of Malaga.

Brit. & Col. Drugg., 30, p. 235.

Gives a detailed discussion of the Saffron trade of Malaga.

Chicote, C. 1896.

Une nouvelle falsification du safran.

Journ. de pharm. et de chim., 142, p. 116; (Am. Jour. Pharm., 70, p. 391; Pharm. Jour., 56, p. 118; Chem. Ztg., 20, p. 88; Merck's Report, 5, p. 305; Ibid., 7, p. 529.)

Lists a new falsification of Saffron and gives several color tests of Saffron.

(Editor) 1896.

Saffron in Spain.

Pharm. Jour., 56, p. 64; (Pharm. Jour., 91, p. 943; Merck's Rep. 5, p. 602; Proc. Am. Pharm. Assoc., 44, p. 486; Dig. Crit. U. S. P. 7 Dec. Rev., Part 2, p. 47; Chem. & Drigg., 49, p. 87; Pharm. Rev., 14, p. 261.)

Gives a short discussion of the cultivation of Saffron in Spain.

Heim, L. 1896.

Proposed Substitute for Saffron.

Pharm. Jour., 56, p. 85; (Am. Jour. Pharm., 70, p. 391; Proc. Am. Pharm. Assoc., 44, p. 538; Chem. & Drugg., 29, p. 259; Dig. Crit. U. S. P. 7 Dec. Rev., Part 2, p. 48; Bull. of Pharm., 10, p. 274; Merck's Report, 7, p.529.)

It is proposed to employ the dried perianth of Tritonia aurea as a substitute for Saffron.

Knowlton, F. H. 1896.

Saffron and Safflower.

Merck's Report, 5, p. 165.

Gives a detailed discussion and description of Saffron and Safflower (False Saffron)

Lawrence, W. R. 1896.

The Cultivation of Saffron in Kashmir.

Pharm. Jour., 96, p. 272; (Tschirch's Handbuch der Pharmakognosie, 1 ed., v. 2, p. 1458; Proc. Am. Pharm. Assoc., 44, p. 537; Drugg. Circ., 40, p. 134; Dig. Crit. U. S. P. 7 Dec. Rev., Part 2, p. 47.)

Describes the cultivation of Saffron in Kashmir and gives several uses.

Ranwez, F. 1896.

Application de la photographie par les rayons Rontgen aux recherches analytiques de matieres vegetales.

Compt. rend., 122, p. 841. (Pharm. Zeit., 41, p. 401; Am. Jour. Pharm., 70, p. 391; Pharm. Jour., 57, p. 193; Merck's Report, 5, p. 360; Ibid., 7, p. 528.)

Successfully determined the presence of barium sulphate as an adulterant of Crocus by means of the Rontgen rays.

Bremer, H. 1897.

Verunreinigung des Safrans mit Fett.

Suddeutsche Apoth. Zeit., 37, p. 31; (Am. Jour. Pharm. 70,

p. 391; Pharm. Wschr., 2, p. -; Merck's Report, 7, p. 529.)

States that glycerin, honey and oil are used for the adulteration of Saffron.

Morpugo, A. 1897.

Adulteration of Saffron.

Drugg. Circ., 41, p. 129; (King's Am. Dispens., 18 ed., p. 621; Apoth. Ztg., 12, pp. 119, 264; Dig. Crit. U. S. P. 7 Dec. Rev., Part 2, p. 47; Drugg. Circ., 41, p. 129; Merck's Report, 7, p. 528.)

Describes the adulterant, Ba SO_4, found in Saffron. Prepared by soaking Saffron in a solution of a barium salt and then in a sulphate solution.

Sap, V. 1897.

Adulterated Saffron.

Pharm. Jour., 58, p. 223; (Am. Jour. Pharm., 70, p. 387; Merck's Report, 7, p. 527.)

Warns pharmacits to check up their stock of Saffron due to his finding of a 36% adulteration with Ba SO_4 in a sample of Saffron from a first class house.

Breedenraedt, -. 1898.

(Adulterated Saffron in Belgium.)

Journ. de Pharm. d 'Anvers, s. 4, v. 3, p. 241; (Pharm. Jour., 60, p. 40.)

(Reports on a sample of Saffron which consisted of over 37% of exhausted Saffron, colored with vesuvine and dressed with barium sulphate.)

Chappellier, P. 1898.

(Essais de cultur sur le safran.)

Bull. Soc. Nat. d'acclim. de France, p. -; (Tschirch Handbuch der Pharmakognosie, 1 ed., p. 1458.)

The original was not available.

Dowzard, E. 1898.

The Determination of the Colouring Matter in Saffron.

Pharm. Jour., 61, p. 443; (Am. Jour. Pharm., 101, p. 717; Chem. & Drugg., 53, p. 669; Brit. & Col. Drugg., 34, p. 494; Proc. Am. Pharm. Assoc., 47, p. 513; Dig. Crit. U. S. P. 7 Dec. Rev., Part 3, p. 70.)

Describes a method for determining the amount of coloring matter present in Saffron.

Hirst, F. B. 1898.

The History and Cultivation of the Saffron Plant.

Pharm. Jour., 60, p. 180.

Gives an interesting resume of the history and cultivation of Saffron and touches upon its uses and adulterations.

Hockauf, J. 1898.

Ueber Aschengehalte von Drogen aus dem Pflanzenreiche.

Zeitschr. Oest. Apoth. Ver., 36, p. 1; (Pharm. Rev., 16, p. 152; Dig. Crit., U. S. P. 7 Dec. Rev., Part 3, p. 70.)

Determines the total ash of Crocus stigmas to be 3.05%, 5.31% and 18.4%. The variation is due to the presence of adulterants.

Kraemer, H. 1898.

Note on Saffron.

Am. Jour. Pharm., 70, p. 386; (Wood & Bache, Dispens. U. S. of Am., 20 ed., p. 1350; Am. Jour. Pharm., 72, p. 121; Yrbk. Brit. Pharm. Conf., 36, p. 146; Proc. Am. Pharm. Assoc., 47, p. 513; Proc. Penn. Pharm. Assoc., 21, p. 100; Yrbk. Brit. Pharm. Conf., 38, p. 163; Pharm. Jour., 61, p. 325; Dig. Crit. U. S. P. 7 Dec. Rev., Part 3, p. 70; Am. Drugg., 34, p. 165; Chem. & Drugg., 54, p. 430: Drugg. Circ. 42, p. 275; Merck's Report, 7, p. 527.)

Describes the characteristic points of difference between Crocus, Carthamus and Calendula and gives several color tests for the identification of each.

True, R. H. 1898.

Saffron

Pharm. Rev., 16, p. 258; (Wood & Bache, Dispens. U. S. of Am., 19 ed., p. 409; Ibid., 20 ed., p. 1350; Am. Jour. Pharm., 70, p. 388; Merck's Report, 7, p. 528.)

Discusses the amounts of adulterants found in Saffron obtained from 7 wholesale houses from the West and 7 retail houses of Wisconsin.

Wauters, J. 1898.

Adulterations of Saffron.

Pharm. Jour., 58, p. 241; (Proc. Am. Pharm. Assoc., 47, p. 514; Yrbk. Brit. Pharm. Conf., 36, p. 146; Dig. Crit. U. S. P. 7 Dec. Rev., Part 3, p. 70; Brit. & Col. Drugg., 39, p. 363.)

Discusses a coal-tar derivative made by a German firm closely imitates the color of genuine Saffron, and is largely used as an adulterant.

Worlee & Co. 1898.

Uber neu eingegangene Drogen.

Ber. d. d. Pharm. Ges., 8, p. 27; (Am. Jour. Pharm., 70, p. 387.)

Among the number of newly introduced drugs reports the introduction of a large amount of Chinese Saffron which consisted chiefly of the ray florets of calenduda officinalis.

Berg, O. K. & Schmidt, C. 1899.

Crocus

Atlas, 3, t. 144, p. 34; (Tschirch, Handbuch, der Pharmak., 1 ed., v. 2, p. 1454; Kohler, Mediz. - Pfl. v. 1. t. 164; Luerssen, Die Pflanzen Pharm. germ., 1, p. 310.

Description of the genus Crocus and the species sativus, description of the several parts of the plant particularly the styles and stigmas with a full page colored illustration of the plant and parts and several references.

Brazier, W. N. 1899.

Occurrence of Excessive Amounts of Mineral Matter in Commercial Samples.

Chem. & Drugg., 54, p. 815; (Proc. Am. Pharm. Assoc., 47, p. 514; Dig. Crit., U. S. P. 7 Dec. Rev., Part 3, p. 70.)

Discusses the ash and moisture content in 11 samples of commercial Saffron, tabulating the data.

Caesar & Loretz 1899.

Crocus, Ph. G. 111.

Geschaftsbericht, Sept., 1899, p. 16; (Pharm. Centralh., 40, p. 611; Proc. Am. Pharm. Assoc., 48, p. 579; Pharm. Jour., 64, p. 228; Dig. Crit. U. S. P. 7 Dec. Rev., Part 3, p. 70.)

A detailed discussion of the tinctorial power of Saffron.

Vilcoq, M. A. 1899.

La culture du safran en France.

Schw. Wochenschr. fur Pharm., 37, p.18; (Tschirch Handbuch der Pharmakog., 1 ed., v. 2, p.1458.)

Lists the different parts of France where Saffron is grown and gives a detailed account of its cultivation. Discusses the separating of the stigmas from the styles by the family of the planter; also a detailed discussion of different parasites which destroy Saffron.

(Editor) 1900.

The Materia Medica of the Pharmacopoeia. Crocus.

Pharm. Jour., 64, p. 493.

Gives a botanical description, part used, habitat, adulterations, preparations, medical properties and uses of Saffron.

Fresenius, W. & Grunhut, L. 1900.

Safranfalschungen und Safranessenz.

Ztschr. f. Nahrungsm., 3, p. 810; (Pharm. Ztg., 46, p. 99; Yrbk. Brit. Pharm. Conf., 38, p. 163.)

Lists the amounts of adulterants found in 2 samples of Spanish Saffron.

Grunhut, -. 1900.

Ueber Safranfalschungen.

Pharm. Centralhl., 41, p. 604; (Merck's Report, 9, p. 558.)

Lists a number of adulterants found in samples of Spanish Saffron.

Holmes, E. M. 1900.

The Commerce of Drugs.

Pharm. & Jour., 64, p. 279; (Proc. Am. Pharm. Assoc., 49, p. 563; Dig. Crit. U. S. P. 7 Dec. Rev., Part 3, p. 70.)

Discusses the prices of cheap Saffron used in Cornwall.

La Wall, C. H. 1900.

Laboratory Notes.

Proc. Penn. Pharm. Assoc., 23, p. 161; (Proc. Am. Pharm. Assoc., 49, p. 661; Am. Jour. Pharm., 70, p. 378; Dig. Crit. U. S. P. 7 Dec. Rev., Part 3, p. 70.)

Lists the amounts of ash found in 9 samples of Saffron.

Moor, C. G. & Priest, M. 1900.

The Ash of British Pharmacopoeia Drugs.

Yrbk. Brit. Pharm. Conf., 37, p. 403; (Pharm. Jour., 65, p. 282.)

Mentions that Saffron has been adulterated for centuries, both with mineral and vegetable matters. Lists several tests for identification of adulterants.

Stewart, -. 1900.

Saffron in India.

Brit. & Col. Drugg., 37, p. 213; (Proc. Am. Pharm. Assoc., 48, p. 578; Drugg. Circ., 44, p. 77; Dig. Crit. U. S. P. 7 Dec. Rev. Part 3, p. 70.)

Discusses the cultivation and adulterants of Saffron in India.

Tschirch, A. & Oesterle, O. 1900.

Crocus

Anatomischer Atlas etc., t. 23, p. 91; (Am. Jour. Pharm., 70, p. 390; Tschirch, Handbuch der Pharmakognosie, 1 ed., p. 1460; Archiv der Pharm., 266, p. 223.)

Gives a detailed description of the plant, styles and stigmas, also the powder and color reactions with various reagents as compared with the same reagents on 12 other materials used as adulterants or substitutes with a full page plate of portions of Crocus sativus, calendula officinalis and carthamus tinctorius.

Weakley, W. S. 1900.

Crocus and some of Its Adulterants.

Am. Jour. Pharm., 72, p. 119; (Proc. Am. Pharm. Assoc., 48, p. 578; Dig. Crit. U. S. P. 7 Dec. Rev., Part 3, p. 70.)

Gives a detailed description of Crocus with a full page illustration.
Discusses at length the adulterants found in 12 samples of Crocus and describes the method of detecting each adulterant.

Beythien, A. 1901.

Bestimmung von Sandeholz in Safran.

Chem. Centrlbl., 72, p. 1174; (Yrbk. Brit. Pharm. Conf., 38, p. 163.)

The amount of the adulterant, ground red sandal wood, found in Saffron may be obtained by determining the amount of raw fiber present.

Blarez, -: 1901.

Falsification du Safran.

Ann. de Chim. analytique, 6, p. 182; (Chem. & Drugg., 58, p. 884; Drugg. Circ., 46, p. 59.)

Upon analyses, several samples of Saffron were found to have been soaked in some metallic solution.
Points out that the ash of genuine Saffron never contains boric acid, lime or magnesia while many adulterated samples do.

Burnet, E. 1901.

Essais d'acclimatation du safran en Siusse.

Schweiz. Wochenschr. 39, p. 314; (Tschirch, Handb. der Pharmakognosie, 1 ed., v. 2, p. 1458.)

Discusses the growing of Saffron in Switzerland during the 16th, 17th, 18th and 19th centuries.

(Editor) 1901.

A New Adulterant of Saffron.

Am. Drugg., 38, p. 71.

Discusses potassium borotartrate as an adulterant of Saffron. Saffron is treated drop by drop with a saturated solution of this salt and then heated on a water bath.

(Editor) 1901.

Ueber wilden Safran in der Krim.

Pharm. Ztg., 46, p. 381; (Pharm. Jour., 67, p. 61; Drugg. Circ., 45, p. 192; Merck's Report, 10, p. 214.)

Compares the wild Crocus grown in Crimea and that of the cultivated plant as to the tinctorial power and aroma.

(Editor) 1901.

Saffron in Burma.

Chem. & Drugg., 59, p. 506.

Discusses the cultivation of Saffron at Kuseik, about 10 miles from Papun, in Burma.

Glaser, L. 1901.

Weitere Beitrage zur Untersuchung von Drogenpulvern.

Pharm. Ztg., 46, p. 836. (Pharm. Jour. 67, p. 663.)

Lists the ash content of powdered and whole Saffron.

Kreis, H. 1901.

Mit Salpeter beschwerter Safran.

Apoth. Ztg., 16, p. 501; (Merck's Report, 10, p. 280.)

Discusses the adulterant, saltpeter, found in several specimens of Spanish Saffron.

Schuler, O. 1901.

Ueber die Bestandtheile des Safrans.

Bot. Centralbl., 87, p. 152. (Tschirch, Handb. der Pharm., 1 ed., v. 2, p. 1462.)

Gives a short discussion of the constituents of Saffron.

(Editor) 1902.

French Saffron.

Chem. & Drugg., 60, p. 637.

Lists the amounts of Gatinais (French) Saffron grown from 1875 to the present time with a diagram. Discusses 6 different adulterants with tests for identification of each.

Greenish, H. G. & Collin, E. 1902.

Saffron

Pharm. Jour., 68, p. 494.

Gives a detailed description of Crocus sativus.

Mansfeld, -. 1902.

Safran die Verfalschung mit Salpeter.

Apoth. Ztg., 17, p. 827; (Merck's Report, 12, p. 74.)

In 3 samples of Spanish Saffron, the adulterant, saltpeter, was found to be from 4.5 to 7.7%.

Mullett, J. 1902.

Saffron

Chem. & Drugg., 60, p. 148.

Gives a detailed discussion of the cultivation of Saffron in England, France and Spain with several tests for its identification.

Reber, B. 1902.

Der Safran in der Geschichte.

Schw. Wochenschr., 40, p. 37; (Tschirch, Handb. der Pharm., 1 ed., v. 2, p. 1469.)

Gives an account of the history of Crocus, with references.

Barclay, J. 1903.

Notes on Crude Drugs, Fixed oils, Waxes, etc.

Pharm. Jour., 70, p. 134.

Lists and discusses the amounts of moisture and ash found in 15 samples of Saffron.

(Editor) 1903.

Crimean Saffron.

Chem. & Drugg., 63, p. 835.

A special study is being made of the suitability of the Crimea for growing Saffron. The soil and climate have been declared excellent for the purpose.

Muller, R. 1903.

Ueber die vermeintlichen Oxalatkristalle im Safran.

Zeitschr. Oster. Apoth. Ver., 41, p. 823; (Tschirch, Handbuch der Pharmakog., 1 ed., v. 2, p. 1460; Pharm. Jour., 71, p. 431.)

Records the people who observed the occurrence of calcium oxalate in Saffron, giving the references with quotations and records his own observations and gives methods of precedure.

Tichomirow, W. 1903.

Untersuchungen uber den russischen Safran.

Archiv d. Pharm., 241, p. 656; (Wood & Bache, Dispens. U. S. of Am., 19 ed., p. 407; Ibid., 20 ed., p. 1348; Ibid., 21 ed., p. 391; Tschirch, Handb. der Pharmakog., 1 ed., v. 2, p. 1454.)

Describes the botanical source of several Russian Saffrons with illustrations with explanations and compares them with ordinary Saffron.

Caesar & Loretz 1904.

Crocus

Geschaftsbericht, Sept., 1904, p. 32; (Pharm. Ztg., 49, p. 791; Proc. Am. Pharm. Assoc., 53, p. 620.)

Gives a detailed discussion of the ash determination of Saffron.

Graham, W. 1904.

Spanish Saffron.

Proc. Penn. Pharm. Assoc., 27, p. 130; (Proc. Am. Pharm. Assoc., 53, p. 620.)

Five samples of Spanish Saffron were examined, all of which answered the requirements of the U. S. P. VIII.

Henderson, H. J. 1904.

An Adulterated Saffron.

Chem. & Drugg., 65, p. 833; (Proc. Am. Pharm. Assoc., 53, p. 620; Drugg. Circ., 49, p. 15; Merck's Report, 14, p. 50.)

Discusses the adulterants found in Saffron in hermetically sealed tins, from Spain.

Schelenz, H. 1904.

Fe(m)minell und Safranfalschung.

Pharm. Centralh., 45, p. 683; (Am. Drugg., 45, pp. 334 and 407.)

Under the name of fuminella there is sold in Germany, Calendula flowers which are colored and specially prepared as to resemble Saffron very closely. It cannot be distinquished from Saffron unless it is soaked in water.

Fromme, G. 1905.

Einfache Methoden zur Prufung einiger. Drogen

Pharm. Ztg., 50, p. 771; (Proc. Am. Pharm. Assoc., 54, p. 728.)

Gives a detailed discussion of the simple methods of determining the valuation of Saffron by tinctorial power, moisture and ash content.

Gadd, H. W. & Gadd, S. C. 1905.

The Testing of Drugs, Chemicals, and Galenicals by Dispensing Chemists.

Pharm. Jour., 75, p. 902; (Proc. Am. Pharm. Assoc., 54, p. 729.)

Mentions 2 simple tests for determining the quality of Saffron.

Krzizan, R. 1905.

Eine neue Art der Safranbeschwerung.

Pharm. Ztg., 50, p. 835; (Proc. Am. Pharm. Assoc., 54, p. 729, Pharm. Jour., 75, p. 553; Drugg. Circ., 50, p. 13.)

An adulterated Saffron yielded 32% ash, which was composed mainly of borax and potassium nitrate in the proportion 2:1.

Lemberger, I. L. 1905.

The Cultivation of Saffron in Lebanon County, Pennsylvania.

Am. Jour. Pharm., 77, p. 209; (Tschirch, Handbuch der Pharmakog., 1 ed., v. 2, p. 1458; Proc. Am. Pharm. Assoc., 53, p. 620.)

Gives a thorough discussion and description of the cultivation, picking and uses of Saffron in Lebanon County, Pennsylvania. Also discusses a disease of the plant and its prevention.

Nestler, A. 1905.

Zur Kenntnis der Safranverfalschungen.

Ztschr. f. Nahrungsm., 9, p. 339; (Proc. Am. Pharm. Assoc., 53. p. 621; Am. Drugg., 47, p. 37; Drugg. Cir., 49, p. 229; Pharm. Jour. 74, p. 789.)

Saffron adulterated with sugar would be very difficult to determine because Saffron contains 14% of sugar.

Smith, J. B. 1905.

Adulteration of Saffron.

Pharm. Jour., 65, p. 867; (Proc. Am. Pharm. Assoc., 54, p. 730; Yrbk. Brit. Pharm. Conf., 43, p. 68; Pharm. Jour., 75, p. 867.)

Discusses a sample of Saffron which had been adulterated with Rochelle salt.

(Editor) 1906.

Saffron

Chem. & Drugg., 68, p. 213.

Discusses several therapeutical properties of Saffron.

Koch, L. (1906).

(Safran)

Pulveratlas, t. 23; (Tschirch, Handbuch der Pharm., 1 ed., v. 2, p. 1460.)

The original was not available.

Liverseege, J. F. 1906.

Review of Past Analyses of Drugs Officially Bought in Birmingham.

Chem. & Drugg., 69, p. 177.

Discusses the adulterants found in 47 samples of Saffron.

Parks, A. E. 1906.

Adulteration of Saffron

Drugg. Circ., 50, p. 217.

Discusses the adulterants found in a number of Saffron samples.

Pfyl, B. 1906.

Uber ein neues Verfahren zur Wertbestimmung des Safrans.

Pharm. Ztg., 51, p. 851; (Proc. Am. Pharm. Assoc., 55, p. 762; Drugg. Circ., 50, p. 439.)

States that 5 Grams of pure Saffron (stigmas) contain reducing substances corresponding on an average to 170 milligrams of copper.

----. 1907.

(Saffron)

Chem. & Drugg., 74, p. 114.

(States the exports of Saffron from Alicante, Spain during 1907 amounted to 16,000 lb., against 14,000 lb. in the preceding year.)

(Editor) 1907.

Saffron - cultivation in France.

Chem. & Drugg., 70, p. 943.

A short discussion of the cultivation and production of Saffron in Gatinais, the exclusive production center of France.

Niece, F. E. 1908.

A Bold Attempt At Substitution.

Proc. Penn. Pharm. Assoc., 31, p. 274; (Proc. Am. Pharm. Assoc., 57, p. 158; Merck's Report, 17, p. 274.)

A parcel of Saffron labeled, "Spanish Saffron Alicanti," upon examination proved to consist wholly of calendula flowers highly colored with aniline red.

Parker, A. E. 1908.

Note on Saffron and Its Adulteration.

Pharm. Jour., 81, p. 267; (Tschirch, Handb. der Pharm., 1 ed., v. 2, p. 1463; Proc. Am. Pharm. Assoc., 56, p. 183; Yrbk. Brit. Pharm. Conf., 45, p. 172.)

Discusses the adulterants found in several samples of commercial Saffron with tables listing the amounts of adulterants found in each sample.

Pfyl, B. & Scheitz, W. 1908.

Eine Methode der Wertbestimmung des Safrans.

Pharm. Ztg., 53, p. 879; (Proc. Am. Pharm. Assoc., 57, p. 158.)

A detailed discussion of the valuation of Saffron.

Spaeth, E. 1908.

Die chemische und mikroskopische Untersuchung der Gewurze und deren Beurteilung.

Pharm. Zentralh., 49, p. 679; (Yrbk. Brit. Pharm. Conf., 46., p. 76.)

A lengthy article containing the chief published methods for the colorimetric valuation of Saffron, the detection of the adulterants, artificial colors and substitutes, also the chemical constituents of Saffron.

Weigel, G. 1908.

Neues vom Drogenmarkt.

Pharm. Zentralh., 49, p. 977; (Proc. Am. Pharm. Assoc., 57, p. 158.)

Lists the amount of ash obtained from 3 samples of Saffron which had been adulterated with sodium bicarbonate.

Bettink, H. W. 1909.

Zur Prufung einiger Arzneimittel und Drogen.

Pharm. Ztg., 54, p. 757; (Proc. Am. Pharm. Assoc., 58, p. 166.)

Lists 2 tests of identification for Saffron which had been adulterated with nitro-coloring matter closely resembling crocin in color.

Karstens, G. & Oltmanns, F. 1909.

Crocus

Lehrb. der Pharmakognosie, 2 ed., p. 197; (Tschirch, Handb. der Pharmakog., 1 ed., v. 2, p. 1460.)

Describes the plant from which Crocus is obtained, gives historical data, morphology and anatomy of the drug, method of collection, constituents and adulterants with two illustrations.

Beythien, A. 1910.

Zur Benrteilung des Safrans.

Ztschr. of Nahrungsm., 19, p. 365; (Pharm. Jour., 84, p. 788; Proc. Am. Pharm. Assoc., 58, p. 167.)

Discusses the percentages of moisture and ash obtained in 120 samples of Saffron.

Collin, E. 1910.

Le Safran et ses Falsifications.

Ann. des Fals., 3, p. 354; (Yrbk. Brit. Pharm. Conf., v. 48, p. 232; Drugg. Circ., 55, p. 11.)

Gives a profusely illustrated and detailed description of the microscopy and histology of pure Saffron and of its adulterants in the whole and powdered state.

Rubeck, H. 1910.

Saffron

Chem. & Drugg., 76, p. 89; (Tschirch, Handb. der Pharmakog, 1 ed., v. 2, p. 1458.)

Gives the part used, where Saffron is cultivated and an illustration describing the picking of the Saffron after the collection of the flowers.

Discusses the monthly decrease and increase of prices of Saffron from 1900 to 1910 with a table of the prices.

Lists the amount of Saffron exported from France and Spain to India and U. S. in 1807-8 and 9.

Caesar & Loretz 1911.

Crocus

Jahres. - Bericht, August, 1911, p. 97; (Dig. Com. U. S. P. & N. F. 1911, p. 322.)

Discusses the valuation of Saffron and presents a table showing the limitations for water and for ash given in various pharmacopoeias.

(Editor) 1911.

Rapport biennal de l'Inspection des pharmacies 1909-1910.

Bull. Soc. roy. pharm. Brux., 55, p. 231; (Jour. de Pharm., d'Anvers, 67, p. 519; Dig. Com. U. S. P. & N. F. 1911, p. 322.)

States that Crocus was found frequently to be a mixture of styles and stigmas. Sometimes Crocus is found charged with sodium boro tartrate and yielding 20% of ash.

(Editor) 1911.

The Question of Standards.

Bull. Am. Pharm. Assoc., 6, p. 5; (Dig. Com. U. S. P. & N. F. 1911, p. 322.)

Endorses the suggestion that the U. S. P. permit the presence of 10% of foreign materials in Saffron.

(Editor) 1911.

Zur Geschichte Safrans.

Suedd. Apoth., - Ztg., 51, p. 533; (Dig. Com. U. S. P. & N. F. 1911, p. 321.)

Deals with the history of Saffron.

Kebler, L. F. 1911.

A Practical Aspect of Standards.

Bull. Am. Pharm. Assoc., 6, p. 21. (Dig. Com. U. S. P. & N. F. 1911, p. 322.)

No product has presented more difficulties than Saffron due to its being liberally adulterated with various substances.

Masson, P. 1911.

Le safran en technique histologique

Compt. rend. Soc. Biol., 70, p. 573; (Dig. Com. U. S. P. & N. F. 1911, p. 322.)

Presents a note on technique in determining the histology of Saffron.

Parry, E. J. 1911.

The Analysis of Food and Drugs (Chemical and Microscopical.)

Brit. & Col. Drugg., 60, p. 471; (Dig. Com. U. S. P. & N. F. 1911, p. 322.)

Saffron is a much maligned article, and although it was at one time very much adulterated, it is difficult to get a record of any bad parcels at the present time.

Vanderkleed, C. E. 1911.

Note

Proc. Penn. Pharm. Assoc., 34, p. 129; (Dig. Com. U. S. P. & N. F. 1911, p. 322.)

Reports that the committee on unofficial standards of the A. Ph. A. has adopted a monograph on Saffron, in which the allowable percentage of styles among the stigmas has been fixed at 10%.

Whitney, D. V. 1911.

Drug Adulterations.

Proc. Missouri Pharm. Assoc., 33, p. 96; (Dig. Com. U. S. P. & N. F. 1911, p. 322.)

Reports a sample of labeled true Spanish Saffron that was found to contain 50% twisted petals, evidently stained.

----. 1912.

(Vegetable Drugs.)

Pharm. Post., 44, p. 462; (Yrbk. Am. Pharm. Assoc., 1, p. 140.)

(Discusses the adulterants found in Saffron by several analysts.)

Beringer, G. M. 1912.

Crocus - Saffron

Jour. Am. Pharm. Assoc., 1, p. 256; (Dig. Com. U. S. P. & N. F. 1912, p. 255; Ibid., 1915, p. 238.)

A proposed N. F. monograph for Saffron. "On drying, it should lose not more than 14% of its weight. On incineration it should leave not more than 7.5% of ash."

Caesar & Loretz 1912.

Tabellarische Zusammenstellung einer Anzahl bei uns erhaltener Untersuchungsresultate.

Jahres.-Ber., Sept. 1912, p. 103; (Dig. Com. U. S. P. & N. F. 1912, p. 255.)

A sample of Crocus yielded 5.01% of ash.

Caesar & Loretz 1912.

Crocus

Jahres-Bericht, Sept., 1912, p. 120; (Dig. Com. U.S.P. & N.F. 1912, p. 255.)

Gives an enumeration of the tests used for Saffron and the requirements embodied in the several pharmacopoeias.

(Committe) 1912.

Approved Monographs Submitted As Standards For Unofficial Drugs And Chemical Products.

Jour. Am. Pharm. Assoc., 1, p. 256; (Dig. Com. U. S. P. & N. F. 1912, p. 256.)

Gives description, taste, properties and method of preservation of Saffron.

(Editor) 1912.

Official Drug Analyses.

Brit. & Col. Drugg., 61, p. 62; (Dig. Com. U. S. P. & N. F. 1912, p. 256.)

Out of 33 samples of Saffron examined, 4 were found to be adulterated or not up to standard.

Gallois, M. 1912.

Sur quelques falsifications du safran.

Journ. de pharm. et de chim., s. 7, v. 5, p. 5; (Pharm. Ztg., 57, p. 155; Yrbk. Am. Pharm. Assoc., 1, p. 141; Dig. Com. U. S. P. & N. F. 1912.)

An account of the adulterants found in 3 samples of Saffron.

Grantham, R. I. 1912.

Saffron

Proc. Penn. Pharm. Assoc., 35, p. 309; (Am. Jour. Pharm., 85, p. 81; Dig. Com. U. S. P. & N. F. 1912, p. 255; Ibid. 1913, p. 255.)

Lists and discusses adulterants found in commercial Saffron with methods of detection for each adulterant.

Mockmann, E. 1912.

Zum Nachweis von Safranfalschungen.

Zeitschr. f. Nahrungsm., 23, p. 453; (Yrbk. Am. Pharm. Assoc., 1, p. 141; Pharm. Ztg., 57, pp. 411-412.)

Describes the reducing properties of sugar found in Saffron with a table listing the percents of sugar found in different samples.

Rippetoe, J. R. & Minor, R. 1912.

The Examination of Some Drugs With Special Reference to the Anhydrous Alcohol and Ether Extracts and Ash.

Am. Jour. Pharm., 84, p. 443; (Dig. Com. U. S. P. & N. F. 1912, p. 255.)

Lists 4 samples of Saffron as containing from 4.59 to 4.90% of ash.

Rusby, H. H. 1912.

Report of Committee on Drug Market.

Jour. Am. Pharm. Assoc., 1, p. 503; (Dig. Com. U. S. P. & N. F. 1912, p. 255.)

Gives a short account of the adulterants found in Valenica Saffron.

Schneider A. & Richter R. 1912.

Crocus

Pharm. Zentrahl., 53, p. 320; (Dig. Com. U. S. P. & N. F. 1912, p. 255.)

The Ph. Germ. V now permits the presence of 12% of water and requires that the drug be kept in well-closed containers protected from light.

Van Itallie, E. F. 1912.

(Safran)

Pharm. Weekblad, 59, p. 330; (Dig. Com. U. S. P. & N. F. 1912, p. 255.)

(Nine samples of Saffron were found to contain from 11.6 to 18.4% of water and from 4.1 to 4.9% of ash.)

Wasicky, R. 1912.

(Safran)

Pharm. Post, 45, p. 461; (Dig. Com. U. S. P. & N. F. 1912, p. 255; Drugg. Circ., 56, p. 458.)

(Discusses a new adulteration of Saffron, the ray florets of a variety of a compositae.)

Bulir, J. 1913.

Formaldehyd enthaltende Safrane.

Zeitschr. f. Nahrungsm., 26, p. 43; (Apoth. Ztg., 28, p. 590; Yrb., Brit. Pharm. Conf., 51, p. 44; Your. de Pharm. et de chim., s. 7, v. 9, p. 28; Pharm. Jour., 92, p. 139; Dig. Com. U. S. P. & N. F. 1913, p. 256.)

Formaldehyde was found in several samples of adulterated Continental Saffron. Suggests that the formaldehyde solution is added to preserve this adulterated Saffron.

Caesar & Loretz 1913.

Crocus

Jahres-Ber., Sept., 1913, p. 124; (Dig. Com. U. S. P. & N. F. 1913, p. 255.)

Discusses the valuation of Crocus, according to Pharm. Germ. V, includes the determination of moisture, ash content and coloring property. Methods for the several determinations are outlined.

(Editor) 1913.

Saffron Crop.

Pharm. Jour., 92, p. 124.

Lists the amounts of first and second grade Saffron grown in the Kozani district, 60 miles southwest of Salonica in the Balkan Peninsula and givescurrent prices for each grade.

(Editor) 1913.

The Spanish Saffron Industry.

Pharm. Jour., 91, p. 321.

Gives a detailed description, cultivation, habitat, preservation, and chemical constituents of Spanish Saffron.

Geare, R. I. 1913.

The Saffron Industry.

Merck's Rep., 22, p. 197; (Dig. Com. U. S. P. & N. F. 1913, p. 255; Am. Drugg., 62, p. 12; Yrbk. Am. Pharm. Assoc., 3, p. 272; Dig. Com. U. S. P. &.N. F. 1913, p. 255.)

Describes the plant, its cultivation, preparation and uses.

Hankey, W. T. 1913.

Report of the Committee On Adulterations and Sophistications of the Ohio Pharmaceutical Association.

Midl. Drugg., 47, p. 323; (Proc. Ohio Pharm. Assoc., 35, p. 60; Dig. Com. U. S. P. & N. F. 1913, p. 255.)

Eight samples of Saffron were found to yield from 4.00 to 7.5% of ash and as a result of which 4 were rejected.

Hockauf, J. 1913.

Ergebnisse von Gewurzuntersuchungen.

Pharm. Zentrahl., 54, p. 1057; (Chem. Ztg., 37; p. 1183; Dig. Com. U. S. P. & N. F. 1913, p. 256.)

Of 131 samples of Saffron examined only 41 complied with the requirements; 81 were grossly adulterated and the remaining number were somewhat less contaminated.

Holmes, E. M. 1913.

The Varieties of the Saffron Crocus.

Pharm. Jour., 91, p. 941; (Am. Jour. Pharm., 86, p. 139; Yrbk. Brit. Pharm. Conf., 51, p. 203; Dig. Com. U. S. P. & N. F. 1913, p. 255.)

Lists and discusses in detail with illustrations several varieties of Crocus sativus as to history, description, habitat and cultivation, with references.

Ingham, J. 1913.

Adulterated Saffron: A Coincidence and a Warning.

Pharm. Jour., 91, p. 206.

Warns brother pharmacists to be on the lookout due to the high price of Saffron there is likely to be an adulterant present.

Kebler, L. F. 1913.

Report of the Committee On Drug Market.

Jour. Am. Pharm. Assoc., 2, p. 1103; (Dig. Com. U. S. P. & N. F. 1913, p. 255.)

Upon examination, 30 samples of Saffron gave from 3.9 to 6.85% of ash.

Krzizan, R. 1913.

Ueber das Vorkommen von Borsaure im Safran.

Apoth. Zeit., 28, p. 230; (Yrbk. Brit. Pharm. Conf., 50, p. 292; Dig. Com. U. S. P. & N. F. 1913, p. 256; Pharm. Zentrahl., 59, p. 121; Ztschr. offentl. Chem., 19, p. 90; Dig. Com. U. S. P. & N. F. 1918, p. 208; Drugg. Circ., 57, p. 623.)

Mentions boric acid as a natural constituent of Saffron.

La Wall, C. H. 1913.

The Petroleum Bezin Test for Saffron.

Drugg. Circ., 57, p. 190; (Dig. Com. U. S. P. & N. F. 1913, p. 255.)

Discusses the petroleum benzin test for Saffron, with a recommendation that because of its unreliability, this test be omitted from future standards, which may be established for Saffron.

Martini, C. 1913.

Detection of Saffron in Confectionery.

Analyst, 38, p. 206; (Staz. Sperim. Agrar. Ital., 46, p. 18; Pharm. Jour., 91, p. 47.)

Describes a method for the detection of Saffron in confectionery.

Miller, A. W. 1913.

Spanish Saffron Industry.

Proc. Penn. Pharm. Assoc., 36, p. 52; (Dig. Com. U. S. P. & N. F. 1913, p. 255.)

Gives a detailed discussion of the Saffron industry.

Nestler, A. 1913.

Crocus

Pharm. Zeit., 58, p. 328; (Yrbk. Brit. Pharm. Conf., 50, p. 293; Pharm. Ztg. 63, p. 343; Dig. Com. U. S. P. & N. F. 1918, p. 208.)

Gives a discussion and description of the adulterant, the small tubular florets of Onopordon acanthium, found in Saffron.

Pearson, W. A. 1913.

The Quality of Drugs.

Jour. Am. Pharm. Assoc., 2, p. 162; (Dig. Com. U. S. P. & N. F. 1913, p. 255.)

Several samples of Saffron were found which did not conform to the 1890 U. S. P. test for absence of coal-tar colors.

Spaeth, E. 1913.

Safran

Pharm. Zentrahl., 54, p. 795; (Dig. Com. U. S. P. & N. F. 1913, p. 255.)

Gives a review of the factitious coloring of Saffron.

Verda, A. 1913.

Contributions a l'etude des falsifications du safran, par une nouvelle reaction chimique et microchimique de cette drogue avec l'acide phosphomolybdique.

Schweiz. Apoth. Ztg., 51, p. 631; (Yrbk. Am. Pharm. Assoc., 3, p. 273; Drugg. Circ., 60, p. 144; Schweiz. Apoth. Ztg., 52, p. 350; Dig. Com. U. S. P. & N. F. 1913, p. 256; Ibid., 1914, p. 250; Chem. Ztg., 38, p. 325; Exp. Sta. Record, 32, p. 207; Drugg. Circ., 58, p. 617.)

Gives a detailed discussion of the phosphomolybdic acid test for Saffron.

Augustin, B. 1914.

Ueber Safrankultur in Ungarn.

Ztschr. allg. osterr. Apoth., 52, p. 287; (Pharm. Ztg., 59, p. 628; Yrbk. Am. Pharm. Assoc., 3, p. 273; Dig. Com. U. S. P. & N. F. 1914, p. 250.)

Discusses the cultivation of Saffron in Hungary.

Blaque, G. 1914.

Les varieties de Crocus a safran.

Bull. d. sci. pharmacol., 21, p. 176; (Dig. Com. U. S. P. & N. F. 1914, p. 250.)

Discusses the Saffron of commerce with an outline description of the methods employed in preparing it for market.

Caesar & Loretz 1914.

Crocus

Jahres-Bericht, Oct., 1914, pp. 12 & 63; (Caesar & Loretz, Jahrbericht, Dec. 1924, p. 252; Dig. Com. U. S. P. & N. F. 1914, p. 250; Apoth. Ztg., 29, p. 737; Yrbk. Brit. Pharm. Conf., 52 p. 193.)

Gives various methods for determining the value of Saffron with a tabulation of the data obtained.

Decker, F. 1914.

Beitrage zur Kennetnis des Crocetins.

Archiv der Pharm., 252, p. 139; (Helv. Chim. Acta, 5, p. 378; Tschirch, Handb. der Pharm., 1 ed., v. 2, p. 1462; Am. Jour. Pharm., 101, p. 717; Dig. Com. U. S. P. & N. F. 1914, p. 250.)

Discusses the coloring pigments and gives various tests of Saffron.

Dichgans, H. 1914.

Ein einfaches Verfahren zum Nachweise von Magnesium sulfat in Safran.

Apoth. Ztg., 29, p. 407; (Dig. Com. U. S. P. & N. F. 1914, p. 250.)

Describes a simple method for the detection of Magnesium sulphate in Saffron.

(Editor) 1914.

Adulterated Saffron

Pharm. Jour., 92, p. 200.

A sample of Alicante Saffron was found to be adulterated with 37% of borax.

(Editor) 1914.

Saffron

Brit. & Col. Drugg., 65, p. 146; (Dig. Com. U. S. P. & N. F. 1914, p. 251.)

Discusses the detection of adulteration in Saffron. Pure Saffron was found to contain from 4.2 to 6.3% of ash of the dry Saffron while the adulterated article was found to contain from 8.4 to 34.8% of ash.

Fromme, G. 1914.

Uber die Wertbestimmung von Safran und seine Verfalschung.

Pharm. Ztg., 59, p. 718; (Yrbk. Am. Pharm. Assoc., 3, p. 272.)

Lists and groups the adulterants of Saffron into 4 classes.

Gehe & Co. 1914.

Crocus

Handelsbericht, 1914, p. 69; (Pharm. Zentrahl., 55, p. 398; Dig. Com. U. S. P. & N. F. 1914, p. 250.)

The examination of several authentic samples of Saffron showed the presence of boric acid as a natural constituent.

Jensen, H. R. 1914.

Saffron

Evans' Analytical Notes, 8, p. 58; (Dig. Com. U. S. P. & N. F. 1914, p. 251.)

States that 22 samples of Saffron were examined, most of which were of average quality. One sample contained a marked amount of pollen, 4 showed variations of color intensity and another sample was heavily adulterated and dyed.

Lilly, J. K. 1914.

Report of Committee on Prevention of Adulteration.

Proc. Natl. Wholsale Drugg. Assoc., 40, p. 264; Oil, Paint & Drugg. Rep., 86, p. 35. (Dig. Com. U. S. P. & N. F. 1914, p. 250.)

States that several samples of Spanish Saffron consisted of the stamens of Crocus sativus instead of the stigmas.

Maines, E. L. 1914.

Ash Content of Crude Drugs.

Jour. Am. Pharm. Assoc., 3, p. 426; (Dig. Com. U. S. P. & N. F. 1914, p. 251.)

Saffron was found to contain from 4.52 to 6.98% of ash.

Mann, E. W. 1914.

Saffron

Ann. Rep. Southall Bros. & Barclay, 22, p. 22; Dig. Com. U. S. P. & N. F. 1914, p. 251.)

In only 1 sample out of 17 samples of Saffron tested, was any excess of mineral matter present; in this the figure was 8.14%. All others were included between 3.30 and 6.92% (calculated on the dry Saffron).

Nestler, A. 1914.

Ein einfaches Verfahren zum Nachiveise von Magnesium sulfat in Safran.

Zeitschr. f. Nahrungsm., 27, p. 388. Arch. Chem. u. Micros., 7, p. 67; (Pharm. Ztg., 59, p. 286; Yrbk. Am. Pharm. Assoc., 3, p. 271; Yrbk. Brit. Pharm. Conf., 51, p. 43; Dig. Com. U. S. P. & N. F. 1914, p. 250; Drugg. Circ. 58, p. 401.)

Discusses the adulterant, magnesium sulphate, found in 61 samples of Saffron and gives a simple microchemical test for its detection.

Nestler, A. 1914.

Eine neue Methode der Safranuntersuchung.

Zeitschr. f. Nahrungsm., 28, p. 264; (Dig. Com. U. S. P. & N. F. 1914, p. 250.)

Discusses a new method for the examination of Saffron with an illustrated description of microcrystals.

(Committee) 1915.

Report of Committee on Unofficial Standards.

Journ. Am. Pharm. Assoc., 4, p. 753; (Yrbk. Brit. Pharm. Conf., 52, p. 292.)

Gives a description, taste, preservation, properties and percentages of moisture and ash of Saffron.

(Editor) 1915.

Spanish Saffron.

Chem. & Drugg., 86, p. 85; (Yrbk. Am. Pharm. Assoc., 4, p. 153.)

The export of Spanish Saffron from Alicante during 1913 totalled 17,060 lbs.

Koch, F. J. 1915.

Source of Our Saffron Supply.

Pharm. Era, 48, p. 57; (Yrbk. Am. Pharm. Assoc., 4, p. 152; Dig. Com. U. S. P. & N. F. 1915, p. 238.)

Gives some of the findings of a government investigation of the Saffron supply and describes the methods of growing the plant and some of its most common adulterants.

Raubenheimer, O. 1915.

(Crocus)

Proc. New Jersey Pharm. Assoc., 47, p. -; (Dig. Com. U. S. P. & N. F. 1915, p. 238.)

(States that Crocus, Coccus and Cocculus may have some similarity in name but the drugs are entirely different from each other.)

Verda, A. 1915.

Contributions a l'etude des falsifications du Safran.

Schweiz. Apoth. Ztg., 53, p. 608. (Dig. Com. U. S. P. & N. F. 1915, p. 238; Yrbk. Brit. Pharm. Conf., 53, p. 80; Chem. Abstr., 10, p. 368; Repert. Pharm., 28., pt. 1, p. 24.)

Comments on the use of sulpho-phosphomolybdic acid for the detection of adulterations of Saffron.

Braune, F. R. 1916.

The Cultivation of Medicinal Plants.

Natl. Assoc. Retail Drugg. Jour., 21, p. 704; (Dig. Com. U. S. P. & N. F. 1916, p. 177.)

A short note giving information relative to the cultivation of Spanish Saffron in America.

Braune, F. R. 1916.

Practical Hints.

Merck's Report, 25, p. 189; (Yrbk. Am. Pharm. Assoc., 5, p. 217; Dig. Com. U. S. P. & N. F. 1916, 177.)

Recommends the storing of Spanish Saffron in a small glass-stoppered shelf bottle, with a pledget of moist cotton fitting into the hollow of the stopper.

Pierlot, G. 1916.

L'Analyse Des Safrans
Importance du dosage de l'Azote comme moyen d'evaluation de la Frande.

Ann. d. fals., 9, p. 24; (Yrbk. Am. Pharm. Assoc., 5, p. 217; Chem. Abstr., 10, p. 1690; Ann. fals., 16, p. 215; Ibid., 18, p. 454; Schweiz. Apoth. Ztg., 54, p. 490; Yrbk. Brit. Pharm. Conf., 53, p. 80; Ibid., 54, p. 60; Journ. Soc. Chem. Ind., 35, p. 595; Dig. Com. U. S. P. & N. F. 1916, p. 177.)

The nitrogen content of 40 samples of Saffron ranged from 2.22 to 2.437% and that the nitrogen seemed to be in the form of lecithins.

Tunmann, O. 1916.

Verfalschter Safran.

Apoth. Ztg., 31, p. 230; (Chem. Abstr., 11, p. 1250; Yrbk. Am. Pharm. Assoc., 5, p. 216; Chem. Zentr., 87, p. 282; Chem. Zentralbl., 2, p. 282; Dig. Com. U. S. P. & N. F. 1916, p. 178.)

In an allegedly pure sample of powdered Saffron from France numerous particles of anther walls without any indication of the amount of pollen were found.

Verda, A. 1916.

Recherche du saflor dans le safran.

Schweiz. Apoth. Ztg., 54, p. 322; (Chem. Abstracts, 10, p. 2783; Yrbk. Am. Pharm. Assoc., 5, p. 216; Yrbk. Brit. Pharm. Conf., 53, p. 79; Dig. Com. U. S. P. & N. F. 1916, p. 177.)

States that an old solution of phosphomolybdic acid reagent leaves intact the outer membrane of the pollen grains of the safflower, thus aiding in determining the amount of this adulterant present in Saffron.

Pearson, W. A. 1917.

(Saffron)

Simmon's Spice Mill, 40, p. 402; (Dig. Com. U. S. P. & N. F. 1917, p. 190.)

(Comments on Saffron, including methods of cultivating the plant and collecting and preparing it for market.)

Tschirch, A. 1917.

Crocus

Handbuch der Pharmakognosie, 1 ed., v. 2, p. 1452; (Helvetica Chimica Acta, 5, p. 376; Schweiz. Apoth. Ztg., 64, p. 482; Archiv. der Pharm., 226, p. 223.)

Gives synonyms, their etymology, plant yielding it, description of plant, diseases of plant, cultivation, varieties of the plant, morphology, anatomy, chemistry, adulterations, history, numerous references and several illustrations of Saffron.

----. 1918.

Falscher Safran.

Pharm. Ztg., 63, p. 343; (Dig. Com. U. S. P. & N. F. 1918, p. 208.)

Attention is directed to the adulteration of Saffron with Onorpordon acanthium L. The material is colored and also impregnated with certain nonvolatile salts. A sample of this material yielded 36.5% ash.

----. 1918.

Safranverfalschungen.

Deutsch Amerikan Apoth. Ztg., 38, p. 164. (Dig. Com. U. S. P. & N. F. 1918, p. 208;)

A review of the adulteration of Saffron.

Catillon, A. 1918.

Le safran de Kosani.

Bull. sc. pharmacol., 25, pt. 1, p. 302. Journ. de pharm. et de chim., s. 7, v. 10, p. 183; (Yrbk. Am. Pharm. Assoc., 7, p. 287; Dig. Com. U. S. P. & N. F. 1918, p. 208.)

Gives a detailed description of the cultivation of Saffron in Kosani, a section of Macedonia.

Tunmann, C. 1918.

Crocus

Apoth. Ztg., 33, p. 307; (Dig. Com. U. S. P. & N. F. 1918, p. 208; Drugg. Circ., 64, p. 297.)

Recommends that Verda's test (reaction with sodium phosphomolybdate) for the identification of Saffron be given in the new edition of the Pharmacopoeia Germanica.

----. 1919.

(Oriental Uses of Saffron.)

Pharm. Era, 52, p. 13; (Yrbk. Am. Pharm. Assoc., 8, p. 265.)

(Discusses the uses of Saffron in the Orient.)

Hart, F. 1919.

A Microscopial Method for the Quantitative Determination of Vegetable Adulterants.

Jour. Am. Pharm. Assoc., 8, p. 1032. (Dig. Com. U. S. P. & N. F. 1919, p. 218.)

A microscopial method for the quantitative determination of vegetable adulterants in Crocus is described and analytical data given.

----. 1920.

How Saffron is Shipped.

Drugg. & Chem. Markets, 7, p. 660; (Dig. Com. U. S. P. & N. F. 1920, p. 239.)

An account of how Saffron is packed and shipped from Spain, France, Italy and Cashmere.

----. 1920.

(How Saffron is Shipped.)

Pharm. Era, 53, p. 336; (Yrbk. Am. Pharm. Assoc., 9, p. 330.)

Discusses the habitat, method of shipping and uses of Saffron.

(Editor) 1920.

Spanish Thistles as Saffron.

Chem. & Drugg., 93, p. 1662. (Yrbk. Am. Pharm. Assoc., 9, p. 331; Drugg. Circ., 64, p. 458.)

Gives a detailed discussion of the use of the Spanish thistle, similar to the Scotch thistle, as a substitute for Saffron.

Baxter, F. H. 1920.

Cultivation of Saffron in Macedonia.

Com. Rep., v. 3, no. 194, p. 844; (Dig. Com. U. S. P. & N. F. 1920, p. 239.)

Gives a detailed discussion of the habitat, part used, uses, cultivation, preparation for market and method of shipping of Saffron. Macedonia Saffron is shipped mostly to France, some to England and very little to United States.

Morris, L. B. 1920.

Macedonian Saffron Crop Prospects for 1920.

Com. Rep. v. 3, No. 168, p. 365. (Dig. Com. U. S. P. & N. F. 1920, p. 239.)

It is reported that the Saffron crop of Macedonia for the year 1920 will not exceed 150 to 300 kilos which is considered below normal.

----. 1921.

(Saffron)

Jour. Roy. Soc. Arts, 69, p. 487; (Dig. Com. U. S. P. & N. F. 1921, p. 179.)

(A brief account of the cultivation of Saffron in Macedonia.)

Frazier, R. 1921.

Six Grades of Saffron.

Meyer Bros. Drugg., 42, p. 30. (Yrbk. Am. Pharm. Assoc., 10, p. 273.)

Reports that Spanish Saffron is divided into 6 grades based on color, odor, length and tenacity.

Viehoever, A. & Clevenger, J. F. 1921.

Fake Saffron.

Journ. Am. Pharm. Assoc., 10, p. 671; (Yrbk. Am. Pharm. Assoc., 10, p. 272; Yrbk. Brit. Pharm. Conf., 59, p. 207; Dig. Com. U. S. P. & N. F. 1921, p. 179.)

A sample of so-called Spanish Saffron was identified to be, by botanical and chemical tests, a species of Onopordon related to Onopordon sibthorpianum. This sample was artificially dyed and was adulterated with potassium nitrate, borax and glycerin.

Guerbet, M. 1922.

Sur la caracterisation de la matiere colorante du safran; son emploi dans les recherches relatives a l'empoisonnement par le laudanum.

Journ. de pharm. et de chim., s. 7, v. 26, p. 218; (Yrbk. Am. Pharm. Assoc., 11, p. 369; Yrbk. Brit. Pharm. Conf., 60, p. 81; Dig. Com. U. S. P. & N. F. 1922, p. 178.)

Gives a short discussion of crocin, the coloring matter in Saffron and of the detection of Saffron in laudanum.

Tschirch, A. 1922.

Prufung des Crocus.

Pharm. Ztg., 67, p. 958; (Yrbk. Am. Pharm. Assoc., 11, p. 115.)

Discusses two well known dyes of Saffron namely the water-soluble crocin and the alcohol-soluble cleavage product of crocin, called crocetin.

Winterstein, E. & Teleczky, J. 1922.

Uber Bestandteile des Safrans.

Helvetica Chimica Acta., v. 5, p. 376; (Wood & Bache, Dispens. U. S. of Am., 21 ed., p. 392; Ann. der Chem. u. Pharm., 80, p. 340; Journ. de pharm. et de chim., 26, p. 458; Yrbk. Am. Pharm. Assoc., 11, p. 128; Zeits. Physiol. Chem., 120, p. 141; Yrbk. Brit. Pharm. Conf., 60, p. 81; Ztschr. Physiol. Chem., 120, p. 141; Dig. Com. U. S. P. & N. F. 1922, p. 179.)

Discusses the constituents of Saffron, recording the work of earlier investigators with references and isolates the color material picro-crocin which he proves to be a glucoside obtaining dextro glucose and a ketone ($C_{10}H_{14}O$).

Zimmermann, W. 1922.

(Saffron)

Sudd. Apoth. Ztg., 62, p. 115; (Yrbk. Am. Pharm. Assoc., 11, p. 100; Dig. Com. U. S. P. & N. F. 1922, p. 179.)

(Discusses the history of the cultivation of Saffron in Germany, Austria and Switzerland, with a list of adulterants.)

Guerbet, M. 1923.

(Identification of the Coloring Matter of Saffron.)

Repert. Pharm., 35, p. 9; (Yrbk. Am. Pharm. Assoc., 12, p. 340.)

(Discusses the identification of the substance crocin, the coloring matter of Saffron.)

Nestler, A. 1923.

Safranverfalschungen in den vergangenen 25 Jahren.

Pharm. Zentralh. 64, p. 148; (Yrbk. Am. Pharm. Assoc., 12, p. 124.)

Lists and discusses a number of common adulterants of Saffron.

Pierlot, G. 1923.

Le Safran et Ses Falsifications. Quelques exenysles d'analyses de Safran falsifie.

Ann. d. fals., 16, p. 215; (Ann. fals., 18, p. 464; Jour. de Pharm. et de chim., 29, p. 158; Yrbk. Brit. Pharm. Conf., 61, p. 293.)

Gives a detailed discussion on the adulterants found in several samples of Saffron.

Richard, F. & Malmy, M. 1923.

Safran

Jour. de pharm. et de chim., s. 7, v. 28, p. 119; (Yrbk. Brit. Pharm. Conf., 60, p. 333.)

Discusses the different grades of Saffron in French commerce.

(Editor) 1924.

Safran

Chem. Ztg., 48, p. 107; (Pharm. Jour., 112, p. 284.)

Discusses the production of Saffron in Spain and France.

Noel, A. 1925.

Saffron and Imitation Saffron.

Am. Jour. Pharm., 97, p. 425; (Yrbk. Am. Pharm. Assoc., 14, p. 96.)

Gives a detailed account of the habitat, method of gathering, present production and prices, export markets and export methods, adulterations and different methods in which Saffron is imitated.

Parry, E. J. & Bird, F. C. J. 1925.

The Adulteration of Saffron.

Chem. & Drugg., 103, p. 445; (Yrbk. Am. Pharm. Assoc., 14, p. 96.)

Lists and discusses the adulterants of Saffron imported into England.

Pierlot, G. 1925.

Sur Les Falsifications Du Safran.

Ann. fals., 18, p. 464; (Yrbk. Am. Pharm. Assoc., 14, p. 96; Ibid., 15, p. 101; Repert. Pharm., 37, p. 11; Bull. scienc. pharmacol., 33, p. 438; Drugg. Circ., 70, p. 617.)

Gives a detailed discussion of the adulterants found in Saffron.

Ericson, -. 1926.

(Uber die Prufung von Safran.)

Svensk. Farm. Tid, 31, p. 569; (Pharm. Jour., 119, p. 404; Pharm. Zentralh., 68, pp. 18, 284; Yrbk. Am. Pharm. Assoc., 16, p. 271.)

(Lists the amounts of several constituents found in the examination of pure Saffron.)

Witczek, E. 1926.

La culture du Safran en Valais au 20eme siecle.

Schweiz. Apoth. Ztg., 64, p. 482. (Yrbk. Am. Pharm. Assoc., 15, p. 93.)

Gives a detailed discussion of Valais Saffron in the Twentieth Century.

(Eberle, E. G.) 1927.

Editorial Notes

Journ. Am. Pharm. Assoc., 16, p. 378.

Mentions that Saffron culture is one of Spain's largest industries, devoting 30,000 acres and valuing the average output to be $500,000 annually.

Lingelsheim, A. 1928.

Pharmakognostiche Studien, inbesondere uber Drogen des 6. Deutschen Arzneibuches.

Archiv d. Pharm., 226, p. 218; (Yrbk. Brit. Pharm. Conf., 65, p. 459.)

Mentions the occurrence of tannin in Saffron and describes a test for its identification.

Wirth, E. H. 1929.

A Quality Standard for Saffron.

Am. Jour. Pharm., 101, p. 716; (Yrbk. Am. Pharm. Assoc., 18, p. 454.)

Gives a lengthy discussion of the effects of light, solvent tests on Saffron and conclusions.

List of Journals Consulted.

Am(erican) Drugg(ist), v. 13-21; 1884-1891.

Am(erican) Drugg(ist) & Pharm(aceutical) Rec(cord), v. 22-72; 1892-1924.

Am(erican) Drugg(ist), v. 73-82; 1925-1930.

Am(erican) Jour(nal) of Pharm(acy), v. 1-102; 1825-1930.

Am(erican) Perf(umer), v. 3; 1908; v. 9-26; 1914-1932.

Bull(etin of the) Am(erican) Pharm(aceutical) Assoc(iation), v. 1-6; 1906-1911.

Bull(etin of) Pharm(acy), v. 7-42; 1893-1928.

Brit(ish) & Col(onial) Drugg(ist), v. 12-84; 1887-1931.

Chem(ist) & Drugg(ist), v. 1-116; 1859-1932.

Dig(est of) Com(ments on the) U. S. P. & N. F., 1905-1922.

Dig(est of) Crit(icisms on) U. S. P. 1880-1900.

Drug Bull(etin), v. 50-53; 1928-1931.

Drugg(ists) Circ(ular), v. 1-73; 1857-1929.

Jour(nal of the) Am(erican) Pharm(aceutical) Assoc(iation), v. 1-20; 1912-1931.

Journ(al of) Mat(eria) Med(ica), v. 1-19; 1857-1880.

Merck's Archives, v. 1-16; 1899-1914.

Merck's Report, v. 2-39; 1893-1930.

Pharm(aceutical) Jour(nal), v. 1-127; 1860-1931.

Proc(eedings) Am(erican) Pharm(aceutical) Assoc(iation), v. 1-59; 1851-1911.

Quart(erly) Jour(nal) & Y(ea)rbook (of) Pharm(acy), v. 1-4; 1928-1931.

Y(ea)rb(oo)k (of the) Am(erican) Pharm(aceutical) Assoc(iation), v. 1-12; 1912-1929.

Y(ea)rb(oo)k (of the) Brit(ish) Pharm(aceutical) Conf(erence), v.4-64; 1867-1931.

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Guibourt, N. J. B. G. Histoire Naturelle des Drogues Simples, 6 ed., 1869.

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Kunth, K. S. Pharmacopoea Borussica officinellen Gewachse, 1 ed., 1834.

Linne, C. A. Species Plantarum, 1 ed., 1753.

Luessen, C. Die Pflanzen Pharmacopoea germanica, 1 ed., 1883.

Marquart, C. Lehrbuch der Pharmacie, 1 ed., 1844.

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Moeller, J. Mikroskopie de Nahrungs - und Genussmittle aus dem Pflanzenreiche, 1 ed., 1886.

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Molisch, H. Gundriss einer Histochemie der Pflanzlichen Genussmittel, 1 ed., 1891.

Pabst, G. & Kohler, H. Medizinal - pfanzen, v. 1, 1890.

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Romer, J. J. et Schultes, J. A. Linnes Systema Vegetabilia, v. 1, 1817.

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UNITED STATES PHARMACOPOEIA (O-X)

(1820-1920)

and

NATIONAL FORMULARY (I-V)

(1886-1926)

HISTORY

OF

CROCUS SATIVUS

U. S. P. 1820 P. p. 34.

Crocus. Crocus sativus. W. i. 194

Saffron. Stigmata. The stigmas.

U. S. P. 1830 (Phil.) P. p. 10.

Crocus. Crocus sativus. W. i.

Saffron. Stigmata. The stigmas.

U. S. P. 1830 (N. Y.) p. 31.

Croci Stigmata. Crocus Sativus.

Saffron.

Prop. Odour sweet, penetrating, diffusive; taste aromatic, warm,/ bitter; colour a rich orange red; colour and active qualities yielded to/ ether, alcohol, wine, water and vinegar./

Med. Oper. Stimulant, diaphoretic; seldom used but as a colouring/ material./

U. S. P. 1840 P. p. 20.

Crocus. Saffron.

The stigmas of Crocus sativus.

U. S. P. 1850 ..... P. p. 23.

Crocus. Saffron.

The stigmas of Crocus sativus.

U. S. P. 1860 ..... P. p. 27.

Crocus. Saffron.

The stigmas of Crocus sativus.

U. S. P. 1870 ..... P. p. 28.

Crocus. Saffron.

The stigmas of Crocus sativus.

U. S. P. 1880 p. 88

Crocus.

Saffron.

The stigma of Crocus sativus Linne (Nat. Ord., Iridaceae)./

Separate, or three, attached to the top of the style, about an inch and a quarter/ (3 centimeters) long, flattish - tubular, almost thread-like, broader and notched/ above; orange-brown; odor strong, peculiar, aromatic; taste bitterish and aro-/matic. When chewed it tinges the saliva deep orange-yellow./

Saffron should not be mixed with the yellow styles.

When pressed between fit-/tering paper, it should not leave an oily stain. When soaked in water, it colors/ the liquid orange-yellow, and should not deposit any pulverent mineral matter,/ nor show the presence of organiz substances differing in shape from that described./

Preparation; Tinctura Croci.

U. S. P. 1890 p. 102.

Crocus.

Saffron.

The stigmas of Crocus sativus Linne (nat. ord.

Irideae)./

Separate stigmas, or three, attached to the top of the style, about 3 Cm./ long, flattish-tubular, almost thread-like, broader and notched above; orange-/ brown; odor strong, peculiar, aromatic; taste bitterish and aromatic./

When soaked in water, it should not deposit any pulverulent, mineral matter,/ nor show the presence of organic substances differing in shape from that/ described./

On agitating 1 part of saffron with 100,000 parts of water, the liquid will/ acquire a distinct yellow color. No color is imparted to benzin agitated with/ Saffron (absence of picric acid and some other coal-tar colors)./

On drying Saffron at 100° C(212°F), it should not lose more than 14 per/ cent of its weight (absence of added water)./

When thus dried, and ignited with free access of air, 100 parts of the dry/ Saffron should not leave more than 7.5 per cent of ash (absence of foreign/ inorganic substances)./

Preparation: Tinctura Croci.

N. F. IV 1916 p. 290.

Crocus.

Saffron.

The stigmas of Crocus sativus Linne (Fam. Iridaceae), without the/ presence of more than 10 per cent of the yellow styles or other foreign/ matter. Preserve it in tightly-closed containers protected from light./

Stigmas 3, united or separate, attached to the summit of the style; usually about/ 25mm. in length, cornucopia-shaped, of a dark, rich red color, the margin dentate/ or fimbriate; styles about 10 mm. in length, more or less cylindrical, solid, yellowish./ Odor strong, peculiarly aromatic; taste bitterish, aromatic. When chewed it colors/ the saliva orange-yellow./

Under the microscope, the upper end of the stigma shows numerous cylindrical/ papillae about 0.15 mm. in length, among which occur a few spherical pollen grains,/ the latter being nearly smooth, and from 0.04 to 0.07 mm. in diameter; occasionally/ some of the pollen grains have germinated and show pollen tubes./

When placed in sulphuric acid, the stigmas are immediately colored blue, grad-/ually changing to violet, and finally become a deep wine-red color./

Add 0.01 Gm. of finely powdered Crocus to 100 mils of cold water, allow it to/ macerate for several hours and filter; on adding 10 mils of this filtrate to 100 mils of water, it gives a distinctly yellow-colored solution./

Macerate 0.01 Gm. of Crocus in 5 mils of methyl alcohol; a deep orange color is/ imparted to the liquid. Macerate 0.01 Gm. of Crocus in 5 mils of

acetone, alcohol,/ or dehydrated alcohol; a distinct, lemon-yellow color is produced. With correspond-/ ing quantities of Crocus and ether a very light lemon-yellow color is produced. With/ corresponding quantities of Crocus and chloroform a very slight, yellow tinge is/ imparted; and with corresponding portions of Crocus and xylene, benzene, carbon/ disulphide, or carbon tetrachloride, the solvents remain colorless./

When Crocus is pressed between filter paper, the paper does not display transparent/ spots due to the absorption of oil./

It loses not more than 14 per cent of its weight when dried at 100° C./

Crocus yields not more than 7.5 per cent of ash and the ash is not fusible.

N. F. V 1926 p. 316.

Crocus.

Saffron.

Saffron is the stigma of Crocus sativus Linne (Fam. Iridaceae)./

Saffron contains not more than 10 per cent of yellow styles, or more/ than 2 per cent of other foreign organiz matter and yields not more than 17.5 per cent of total ash./

Description and physical properties./ Underground Saffron: Stigmas 3, united or separate, attached to the apex of the/ style; usually about 25 mm. long, cornucopia-shaped, of a dark, rich red color, the/ margin dentate or fimbriate; styles about 10 mm. long, more or less cylindrical,/ solid, yellowish. Odor strong, peculiarly aromatic; taste bitterish, aromatic./ When chewed it colors the saliva orange-yellow./

Structure: Upper end of the stigma with numerous cylindrical papillae about 0.150/ mm. long, among which occur a few spherical pollen grains, the latter being/ nearly smooth, and from 0.040 to 0.120 mm. in diameter; occasionally some of/ the pollen grains germinated, and with pollen tubes./

Tests for identity and purity: When placed in sulphuric acid, the stigmas are/ immediately colored blue, gradually changing to violet, and finally become a/ deep wine-red color./

Add 0.01 Gm. of finely powdered Saffron to 100 cc. of cold water, allow it to/ macerate for several hours and filter; on adding 10 cc. of this filtrate to 100 cc./ of water, it gives a distinctly yellow-colored solution.

Macerate 0.01 Gm. of/ Saffron in 5 cc. of methyl alcohol; a deep orange color is imparted to the liquid./ Macerate 0.01 Gm. of Saffron in 5 cc. of acetone, alcohol, or dehydrated alcohol;/ a distinct, lemon-yellow color is produced. With corresponding quantities of/ Saffron and ether a very light lemon-yellow color is produced. With correspond-/ing quantities of Saffron and chloroform a very slight yellow tinge is imparted;/ and with corresponding portions of Saffron and xylene, benzene, carbon disul-/phide, or carbon tetrachloride, the solvents remain colorless. When Saffron is/ pressed between filter paper, the paper does not display transparent spots due/ to the absorption of oil./

Saffron loses not more than 12 per cent of its weight when dried at 100° C./

Preserve it in tightly closed containers, protected from light./

Preparations: Pilulae Antiperidicae, Pilulae Antiperiodicae sine Aloe, Tinctura/ Antiperiodica, Tinctura Antiperiodica sine Aloe, Tinctura Opii Crocata, Tinctura/ Croci.

Summary of Data of U.S.P. 1820-1920.

and N.F. 1888-1926.

When Official:

U.S.P. 1820, '30 (Phil.), '30(N.Y.) '40, '50, '60, '70, '80, '90, N.F. 1916, '26.

Official Latin (ized) Title:

Crocus, U.S.P. 1820, '30 (Phil.) '40, '50, '60, '70, '80, '90.

Croci Stigmata, U.S.P. 1830 (N.Y.)

Official English Title:

Saffran (U.S.P.) 1820, '30 (Phil) (N.Y.) '40, '50, '60, '70, '80, '90.

Official Synonym:

Official Abbreviation:

Scientific Name:

Crocus sativus, U.S.P. 1820, '30 (Phil) (N.Y.) '40, '50, '60, '70, '80, '90.

Natural Order or Family:

Iridaceae, U.S.P. 1880, '90, N.F. 1916, '26.

Part Used:

Stigmata: The stigmas U.S.P. 1820.

The stigmas: U.S.P. 1830 (Phil.) '40, '50, '60, '70, '80, '90.

The stigma N.F. 1926.

Impurity Limit:

Description:

U.S.P. 1880, '90; N.F. 1916, '26.

Official Preparations:

Tinctura Croci, U.S.P. 1880, '90 & N.F. 1926.

Pilulae Antiperiodicae, N.F. 1926.

Pilulae Antiperiodicae sine Aloe, N.F. 1926.

Tinctura Antiperodica, N.F. 1926.

Tinctura Antiperiodica sine Aloe, N.F. 1926.

Tinctura Opii Crocata, N.F. 1926.

Average dose:

Approved by W. O. Richtmann

Asscc. Prof. of Pharmacognosy