Chronological List of Important Dates in the History of the Fats and Waxes

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Introduction

Chronologies are of great value in presenting a unified and comprehensive survey of the historical aspects of a subject. Likening them to a river that is continually changing its rate of flow and direction one can visualize the effect and countereffect of events upon each other and the impetus or impedance which particular events have given to the progress and direction of the field as a whole.

The following tabulation briefly presents some of the more significant dates in the history of the fats and waxes. Both the scientific and industrial aspects of the subject are presented.

In general, emphasis has been placed on fats and waxes but some references to related fields have been included for orientation purposes. It is particularly interesting to compare this chronology with a historical chronology of domestic and world affairs. By such comparison one can note the effect of wars, treaties, trade pacts, embargoes, periods of depression and prosperity, etc., upon the progress made in this field.

Necessarily some of the dates are only approximate. The author will be pleased to have his attention directed to any omissions or errors of date or fact.

This chronology intentionally stops with the year 1915. Recent events are too close to have assumed historical perspective.

Prehistoric to 1600 A. D.

Prehistoric: Cottonseed oil obtained by primitive cooking and grinding methods in India and China.

259 B.C. Sesame, linseed and castor oil pressed in Egypt.

184 B.C. Screw and wedge presses, filters, and edge runner mills in use in Rome to facilitate oil extraction.

23-79 A.D. Pliny the Elder describes the accidental production of sodium silicate by sailors who took lumps of natural soda from their cargo to support cooking vessels over their fire on a sandy beach. Pliny also describes olive, rice, almond, sesame, grape, walnut and palm oil together with numerous animal fats.

79 Pompeii destroyed. (Recent excavations have revealed two buildings equipped as soap factories.)

100-200 First soap produced from wood ashes and fat.

800-850 Production of soap started in Germany.

800-900 Beginnings of the great soap industry of Marseille.

1300-1400 Beginnings of the soap industry of England.

1399 The Brothers Van Eyck use linseed oil as a vehicle for paint.

1600 to 1700

ca 1600 Increasing soap production in Marseille, Toulon, etc.

1600-1700 Oil extraction started in Holland.

1607 First cotton crop in North America grown in the Colony of Virginia.

1608 Manufacture of potash, tar and glass attempted in Virginia.

1623 Salt manufacture commenced by the Plymouth Colony in New England.

1631 Mill erected at Portsmouth, N. H., to saw lumber and make potash from the refuse.

1633 Eight and one-half pounds of soap equal to three-fourths of a pound of beaver skin.

1637 Mr. Browne, a "sopemaker" requested and was granted admittance to Salem in September, 1637.

1640 Van Helmont experiments with a solution of sodium silicate. Potassium silicate had previously been described by Georg Agricola (1494-1555).

1648 John Winthrop, Jr., commissioned to manufacture salt by the General Court of Massachusetts.
Glauber names sodium silicate "oleum silicium."

1652 Pascal enunciates his law, "The pressure applied at any point to a liquid in a closed vessel is transmitted undiminished to every portion of the vessel." Pascal's researches paved the way for the invention of the hydraulic press in 1795.

1658 Browne's "Hydriotaphia" mentions "coagulated large lumps of fat" of "the consistence of the hardest castile soap" found in a body buried ten years. This is probably the earliest reference to the material Fourcroy later studied and named "adipocere" in 1786.

1661 Boyle observes that fuming nitric acid thickens olive and almond oils.

1662 Manufacture of quicklime from limestone begun at Providence, R. I.

1665 Cottonseed oil used in the British West Indies as a medicament for old ulcers.

1670 Richard Wharton, of Boston, develops a process for making salt by solar evaporation.

1690 Whale fishing and the whale oil industry commenced on a large scale in New England.

1696 Otto Tachenius theorizes on the presence of a "hidden" acid in fats and oils.

1700 to 1800

1700 Liger calls attention to the high food value of oil press cake.

1707 South Carolina passes law to encourage manufacture of potash and saltpeter.

1708 Turpentine produced in Connecticut and then shipped to Boston in casks containing 112 pounds.

1716 Benjamin Franklin helps his father manufacture soap and candles in Boston.

1731 Rhode Island gives John Lucena (naturalized the same year) sole right to manufacture soap in that colony. Lucena had learned the soap business in the factory of the King of Portugal.

1736 Duhamel distinguishes between soda and potash.

1755 Joseph Black of Edinburgh recognizes magnesia alba to be distinct from lime.

1757 Benjamin Franklin investigates the calming effect of oil on rough water.

1759 Marggraf independently recognizes the distinction between magnesia and lime.

1768 Two hundred and twenty tons of whale oil exported from Boston to the West Indies and 4,000 tons to England.
Candle industry in New England developed to such an extent that 500,000 pounds of candles (spermaceti and tallow) were shipped annually to the West Indies besides large quantities to England.

1769 Dr. Otto, of Bethlehem, Pa., expresses first cottonseed oil and presents it to the American Philosophical Society for examination.

1770 North Carolina exports 88,000 barrels of tar, 21,000 barrels of pitch and 88,000 barrels of turpentine.

1775 Amiel Weeks, of Harwich, Mass., produces first salt on an industrial scale in the United States by solar evaporation.
Conradi discovers cholesterol.

1777 Achard investigates the effect of sulfuric acid on various fats.

1779 Scheele discovers glycerine by mixing olive oil with litharge and heating.

1782 Guyton de Morveau obtains washing soda from Glauber's salt.

1783 The Royal Society of Arts in London offered a gold medal to any planter in the West Indies who would express a ton of oil from cottonseed. The offer was renewed for six years but was not claimed.
Guyton de Morveau produces water soluble sodium silicate by fusing quartz and sodium carbonate together.

1785 The South Carolina Agricultural Society offered medals for the best yields of oil from cottonseed, peanuts, sunflower, sesame and other seeds.

1786 Eau-de-Javelle produced in Paris.

1788 Le Blanc soda process invented. First worked in England by Muspratt in 1824.
Gren discovers cholesterol in gallstones.

1790 Gowen refines rapeseed oil with sulfuric acid.

1793 John Harrison, of Philadelphia, begins first manufacture of sulfuric acid in the United States.

1795 The first hydraulic press constructed by J. Bramah in England.
A. N. Scherer offers the first explanation as to the cause of fat rancidity.

1797 Ammonia soaps mentioned by Darcet in the "Rapport" to the French Government.

1799 Commercial process for bleaching powder designed by Thénard and carried out by Tennant & Co., in England.

1800 to 1900

1801 The first cottonseed oil mill (United States) was established but the venture was a failure. The oil was used in paints and for illumination.

1806 Colgate starts soap production in factory situated at 6 Dutch St., New York City.

1807 Davy isolates sodium and potassium.
Thomas W. Dyott, apothecary of Philadelphia, starts domestic production of perfumes.

1808 As a result of Jefferson's embargo on foreign commerce price of potash in England and Canada rose from $100 to $300 per ton. Much potash smuggled into Canada.

1810 Chevreul commences work on the saponification of fats.

1811 Figuier calls attention to the bleaching effect of bone black.

1812 Peppermint oil produced in Connecticut.

1813 War of 1812 results in scarcity of salt and leads to first salt production on the Conemaugh and Kiskiminetas Rivers in Western Pennsylvania.

1814 Chevreul isolates butyric acid from butter.

1815 John Taylor manufactures illuminating gas by the destructive distillation of fatty oils.

1816 Chevreul establishes the constitution of fats as glycerides.
Distillation of peppermint oil begun in Wayne County, N. Y.

1817 Chevreul (with Braconnot) prepares stearic acid.

1818 Johann Nepomuk von Fuchs describes numerous industrial uses for sodium silicate.
Holland has 430 oil mills.

1818-23 Chevreul obtains valeric, caproic and impure oleic acid.

1819 Petroleum found in boring salt wells on the Muskingum River, Ohio.
The preparation of cottonseed for cattle food patented.
Poutet proposes the use of a mixture of nitric acid and mercury to classify fats.

ca 1820 Nutmeg oil used in the popular Bandanna or Banda soap.

1823 Chevreul publishes his "Recherches chimiques sur les corps gras d'origine animale."

1825 Chevreul and Gay-Lussac receive a French patent for the separation of fatty acids and their use in candle fabrication.
Gay-Lussac obtains a patent covering the distillation of fatty acids.

1828 Dumont discovers a method to re-activate bone black.
P. B. Smith, of New York, founds first varnish factory in the United States.

Gusserow discovers a method for separating the solid from the liquid fatty acids.

1829 Lefèvre observes that tallow under the influence of sulfuric acid yields fatty acids.
Tallow being supplemented by use of coconut oil.
Williams, an ex-governor of South Carolina, known as "Father of the Cottonseed Oil Industry," operated an oil mill at Robbins Neck, S. C., and fed the press cake to cattle.
Cottonseed oil quoted at 80c per gallon in Providence, R. I.

ca 1830 Jessie Oakley of Newburgh, N. Y., placed soap on the market in cake form, one pound in weight, and wrapped.

1832 Russel invents the hydraulic filter press.
Boudet discovers elaïdic acid while investigating the effect of Poutet's reagent on oleic acid.

1833 Milly and Motard saponify fats under pressure with lime.

1834 First establishment of cottonseed oil mills at Natchez, Miss., Mobile, Ala., Florence, Ga., and Petersburg, Va. These and other oil mill ventures of the period were not financially successful. The oil was used for illumination, soap, painting, and lubrication.
Runge prepares the first "sulfonated" oil by the action of sulfuric acid on olive oil.

1835 Manufacture of peppermint oil commenced in St. Joseph Co., Michigan.

1836 B. T. Babbitt starts soap production in New York City.
Hempel and Blundel suggest palm oil as a raw material for candle fabrication.

1837 William Procter and James Gamble establish the firm of Procter and Gamble in Cincinnati.

1840 Milled toilet soaps made in the United States for the first time by David S. Brown & Company.

1841 Varrentrapp observes that oleic acid fused with caustic alkali gives palmitic and acetic acids.

1842 Schmersahl patents method for the refining of cottonseed oil with caustic alkali.

1843 William G. Armstrong invents the hydraulic accumulator.

1844 Jules Haul, a Frenchman, starts production of perfumed toilet soaps on Chestnut St., in Philadelphia.

1845 Petroleum discovered at Tarentum, Pa., and an unsuccessful effort is made to refine it.

1846 Sobrero discovers nitroglycerine.

1847 Charles Lennig begins first manufacture of bleaching powder at Bridesburg, Pa.
Colgate and Company move to Jersey City.

1848 Kolbe studies electrolysis of fatty acid salts.
Masse and Tribouillet obtain the first patent for the distillation of fatty acids under vacuum.

1849 Claude Bernard discovers that the pancreatic ferment is capable of hydrolyzing neutral fats.
Darby discovers erucic acid.

1850 First imports of palm oil arrive in Europe.
Jesse Fisher of Birmingham, England, invents the extraction process for oil recovery.

1851 Milly constructs the first autoclave for the saponification of fats.

1852 Maumené publishes description of the test bearing his name.

1853 Wool fat investigated by Chevreul.

1854 Williamson and Kay synthesize glycol.
Tilghmann and Berthelot discover that fats can be hydrolyzed by water alone at temperatures between 180° to 200° C.

1855 S. M. Kier, of Pittsburgh, begins small-scale refining of crude petroleum.
Milly discovers that a very small amount (10% of theoretical) of lime suffices to saponify fats under pressure.
Wilson and Payne, in London, attempt to distill glycerol with super-heated steam.

1856 Borax discovered in California.
Deiss obtains English patent for the extraction method of obtaining oils.

1857 Cailletet suggests the determination of bromine values.

1858 Pasteur discovers on analysis of fermented mashes that about 3.5 per cent of the weight of the sugar in the mash is present as glycerol.
Bareswil deacidifies oils and fats with 30% caustic soda.

1859 Voelker describes injurious effects from the feeding of cottonseed meal to cattle.

1860 Walton obtains English patent for the production of linoleum from linseed oil.
Philadelphia at this early date had 17 establishments making perfume and fancy soap to the value of $710,000 annually, and 45 factories producing soap valued at more than $2,000,000 annually.
Berthelot synthesizes monoglycerides by heating fatty acids with an excess of glycerol in a sealed tube.

1861 Solvay ammonia-soda process is invented.. Adopted in 1874 in England at Brunner, Mond & Co.'s works.

1864 A Mr. Atkins, of Brooklyn, is said to have built the first soap press about this date.
Philadelphia Quartz Company starts manufacture of soluble silicates.

1866 Jünnemann shows that mutton tallow can be hydrolyzed by cold water alone (auto-hydrolysis).

1867 G. M. Mowbray begins manufacture of nitroglycerol at North Adams, Mass.
W. Gossage & Sons of Widnes, England, exhibit a soap containing 30% of a 20° Be. solution of sodium silicate.

1868 Strecker prepares lecithin from brain tissue.

1869 Mège Mouriés obtains English patent for the production of oleomargarine.

1870 Oleomargarine produced in Poissy near Paris by Mouriés.
First United States patent issued for the recovery by distillation of glycerol and salts from spent soap lyes.

1871 Oleomargarine production started in Holland.

1873 Oleomargarine production started in Austria.
Silicate solutions popular in France for making rigid surgical bandages.

1874 E. Abbe announces a refractometer with heated prisms.

1875 Walter Crum prepares sulfonated castor oil.
Braun advocates the use of carbon tetrachloride in fat extraction. Carbon tetrachloride

had previously been discovered by Regnault in 1839.

Larkin Company established in Buffalo, N. Y.

1876 Oleomargarine production started in Germany.

1878 Candles made from palmitic acid derived from oleic acid by Varrentrapp's reaction exhibited at the Paris Exhibition of 1878.

1879 Koettstorfer describes the "saponification value" of fats and oils.

1880 W. B. Albright develops manufacture of lard substitutes from cottonseed oil.

Mineral oils of Pennsylvania first utilized as lubricants.

W. B. Albright and H. Eckstein, of the N. K. Fairbank Company, Chicago, introduce fuller's earth for refining cottonseed oil.

Cottonseed oil production reaches 27,000 tons.

1881 Solvay process for soda put into operation in Syracuse, New York.

1882 Armandy distills glycerol under vacuum.

1884 Association of Official Agricultural Chemists organized and publication of its Proceedings begun.

Hübl describes the "iodine number" of fats and oils.

1885 Castner-Kellner electrolytic manufacture of caustic soda introduced.

1888 C. Engler produces "synthetic petroleum" by the effect of heat and high pressure on fish oil.

1889 Blyth and Robertson demonstrate the existence of a mixed glyceride in cow's butter.

1890 Castner commences electrolytic manufacture of metallic sodium.

1891 Spitz and Hoenig describe their method for the determination of unsaponifiable in fats and oils.

Eckstein develops deodorizing process (steaming) for cottonseed oil.

1893 "Estrayer Cylinder" used in Marseilles to express oils.

Fuller's earth mined in Quincy, Florida.

E. A. Le Sueur begins manufacture of caustic soda and bleaching powder by the electrolytic decomposition of sodium chloride at Rumford Falls, Me.

1896 Hargreaves-Bird electrolytic soda process introduced.

Heise isolates oleo-distearin from the fat extracted from the seeds of the tallow tree, thus being the first chemist to separate and definitely identify a mixed glyceride.

1897 Geitel advances the theory, subsequently confirmed, that during the saponification of triglycerides with alkali, mono- and di-glycerides are formed.

Sabatier and his co-workers start research on catalysis, thus laying the foundations for fat hardening by hydrogenation.

1898 Wijs method for determining iodine value described.

Twitchell process discovered.

Mathieson Alkali Works at Niagara Falls, N. Y., and Dow Chemical Co. at Midland, Michigan, begin the manufacture of bleaching powder from electrolytic chlorine.

Bömer publishes his analytical method for the detection of phytosterol.

Hehner and Mitchell describe their hexabromide test for drying oils.

1899 Gossypol isolated and named by Marchlewski.

1900 to 1915

1900 David Wesson introduces his improved vacuum process for deodorizing cottonseed oil.

1902 Connstein discovers the fermentation process for hydrolyzing fats in which an enzyme (lipaise, occurring in castor beans) is employed.

Normann applies the Sabatier process of catalytic hydrogenation to liquid oils permitting fats of any desired hardness to be prepared.

1904 Polenske describes his method for estimating the volatile insoluble fatty acids (Polenske value) which distill in the determination of the Reichert value.

1906 Enactment of the Federal Food and Drugs Act.

M. Tsujimoto discovers clupanodonic acid in the mixed fatty acids from Japanese sardine oil.

1909 Charles Baskerville and W. A. Hamor investigate oil shales of America.

1910 Procter and Gamble introduce the Sabatier-Normann-Kaiser process for hydrogenating vegetable oils.

First example of a poisonous fat discovered through poisonings in Germany resulting from the use of margarine to which Indian maratti oil (chaulmugra fat) had been added.

The Society of Cotton Products Analysts organized. In 1921 this society became the American Oil Chemists' Society. In 1924 the latter society began publication of the "Journal of the Oil and Fat Industries," which became in 1927, "Oil and Fat Industries," and in 1932, "Oil and Soap."

1911 Procter and Gamble Co. offer Crisco to the retail trade.

1914 Connstein and Lüdecke investigate the production of glycerol by fermentation.

1915 Withers and Carruth discover the toxic properties of gossypol.

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