

tively the minimum charge asked by some pharmacists is ridiculously low; this is especially true in the country towns. Let me cite for comparison the minimum fee asked by some pharmacists in the Twin Cities and in the country towns with the prevailing charge for liquid preparations in various quantities.

	Country towns.	Twin Cities.	Prevailing price.
<i>1/2 ounce</i>	15 cents	25 cents	35 cents
or a difference of 20 cents in the country towns, and 10 cents in the Twin Cities from the prevailing price.			
<i>1 ounce</i>	20 cents	35 cents	50 cents
or a difference of 30 cents in the country towns, and 15 cents in the Twin Cities from the prevailing prices.			
<i>3 ounces</i>	25 cents	60 cents	75 cents
or a difference of 50 cents in the country towns, and 15 cents in the Twin Cities from the prevailing price.			
<i>4 ounces</i>	40 cents	75 cents	85 cents
or a difference of 45 cents in the country towns, and 10 cents in the Twin Cities from the prevailing prices.			

What has been said about the pricing of the liquids is equally true of the fees charged for compounding other kinds of prescriptions.

We have no reason to believe that the prices reported by some pharmacists were given to make comparison look ridiculous. The lowest and highest prices for each prescription named in many cases were reported by but few pharmacists; the prevailing prices are averages obtained in many instances from more than 100 questionnaires and may be considered as the usual fee for compounding such prescriptions. Pharmacists, in my mind, are underestimating their professional service by charging 20¢ to fill a prescription calling for one fl. oz. mixture.

It is our opinion that the prevailing prices given in the first column can be taken as a fair minimum charge for compounding prescriptions.

GMELIN, A GERMAN FAMILY OF PHARMACISTS, CHEMISTS AND BOTANISTS.*

BY OTTO RAUBENHEIMER.

German pharmacy and German pharmacists have led the way for centuries. Even France makes this acknowledgment, as LaChesnaye des Bois in his "Dictionnaire historique des moeurs, usages et coutumes des François," Paris 1767, Tome I, page 92 makes the following statement: "On dit communement Médécins d'Angleterre, chirurgiens de France et apothicaires d'Allemagne pour designer celles des nations qui excellent dans une de ces professions."

Among German pharmacists, chemists, botanists, physicians, naturalists and even lawyers, the name Gmelin is pre-eminent. That this family of scientists originated in an apothecary shop, which is still in existence to-day, in the university town Tübingen, Wirttemberg in the 17th century, is a credit to pharmacy, of which our profession can justly be proud. It is the ambition of every German

* Section on Historical Pharmacy, A. PH. A., Rapid City meeting, 1929.

pharmacist that his son, or one of his sons, shall be his successor, a rule which deserves adoption in our own country. During three centuries and as four generations the Gmelin family has owned this "Apotheke" in Tübingen, of which further particulars are given under Christian Gottlob Gmelin.

The following genealogical table or family tree gives a clear insight into the descendants of the Gmelin family beginning with Johann Georg, Sr., and the three branches of the family which I take up separately and in chronological order.

FAMILY TREE. JOHANN GEORG GMELIN, APOTHECARY IN TÜBINGEN 1674-1728.

I.		II.		III.	
JOHANN CONRAD GMELIN, Pharm. Phys. in Tübingen, 1707-1759.		JOHANN GEORG GMELIN, (Gm. or Gmel.), Botanist, St. Petersburg and Tübingen, 1709-1755.		PHILIPP FRIEDRICH GMELIN, Botanist and Chemist, Tübingen, 1721-1788.	
SAM. GOTTLIEB G., Botanist, St. Petersburg, 1743-1774.	CHRIST. GOTTLIEB G., Pharm.-Phys., Tübingen, 1749-1809.	CHRISTIAN V. G., Lawyer.	EBERHARD G., Physician, Heilbronn, 1751-1808.	JOHANN FRIEDR. G., Prof. Medicine, Göttingen, 1748-1804.	CHRIST. GOTTLIEB G., Lawyer.
FERD. GOTTLIEB V. G., Prof. Medicine, Tübingen, 1782-1848.	HERM. AUG. G., Lawyer.	CHRIST. GOTTLIEB G., Pharmacist, Prof. Chem. & Pharm., Tübingen, 1792-1880.	EDWARD G., Lawyer.	LEOPOLD O., Prof. Med. & Chem., Heidelberg, 1788-1853.	3 Sons, Prof. Med. & Chem., Lawyers.

JOHANN GEORG GMELIN (1674-1728).

The father of the family, usually named the "Older" or "Senior," was a pharmacist and after studying chemistry under the celebrated Urban Hiärne in Stockholm, Sweden, opened the apothecary shop in Tübingen, Württemberg. Urban Hiärne (1642-1724) was court physician, director of mines and also of a chemical laboratory, founded in 1683 by King Charles XI of Sweden, which was noted for its pharmaco-chemical researches. Johann Georg Gmelin was the author of a dissertation "Sperma Mercurii," our present Mercury Acetate.

He had 3 sons and for the sake of clearness I will treat them and their descendants in 3 chapters.

- I. Johann Conrad Gmelin.
- II. Johann Georg Gmelin.
- III. Philipp Friedrich Gmelin.

I. JOHANN CONRAD GMELIN (1707-1759).

He was the oldest son and successor to his father as pharmacist-physician in the Tübingen apothecary shop. His many papers on pharmacy and medicine are published in the "Commercium rerum litterarium ad rei medicæ et scientiæ naturalis incrementum institutum," a journal very popular in the first half of the century.

He left two sons, Samuel Gottlieb and Christian Gottlieb.

SAMUEL GOTTLIEB GMELIN (1743-1774).

Born on June 23, 1743, in Tübingen, where he studied medicine, graduated in 1763, went to Holland and formed a friendship with the celebrated Pallas in Leyden. In 1766 he was called to St. Petersburg as Professor of Botany. Upon the request of Empress Catherina II, he, together with Gùldenstädt, Lafuchin and Pallas, undertook a scientific expedition to explore the provinces around the

Caspian Sea during 1768–1774. On his return trip he was made prisoner by the Chan of Chaitaken, took sick, and died June 27, 1774 at Achmetkend in the Caucasus. He wrote two books, "Historia Fucorum," St. Petersburg 1768, and "Reisen durch Russland zur Untersuchung der drei Naturreiche," 4 volumes, St. Petersburg 1770–1774.

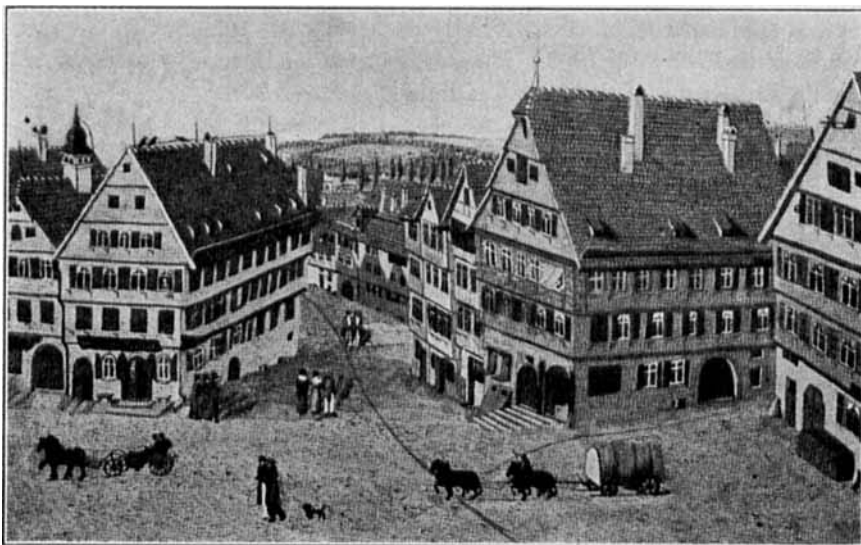
CHRISTIAN GOTTLIEB GMELIN (1749–1809).

Pharmacist and physician in Tübingen and successor to his father Johan Conrad in the apothecary shop.

He had 3 sons: Ferdinand Gottlieb, Hermann August and Christian Gottlob.

FERDINAND GOTTLIEB VON GMELIN (1782–1848).

Born March 10, 1782, graduated as Doctor with the thesis "Diss. inaug. sistens observationes physicus et chemicus de electricitate et galvanismo." Then



The Gmelin Apotheke in Tübingen, in 1825. (Left corner building, sign above first floor.) Family home of the Tübingen family. John George Gmelin, founder, 1674–1728.

he traveled in Germany, Hungary, Italy and France. In 1805 he became Professor extra ord. of Medicine in Tübingen, 1806 physician to the "Theological Seminary," 1810 Professor ord. of Medicine and Natural Sciences. In 1823 he received the "Kronorden" and was made baron. He died December 21, 1848.

Among his many literary works, I want to mention 2 books:

"Allgemeine Pathologie des menschlichen Körpers," Stuttgart and Tübingen, 1813 and "Kritik der Prinzipien der Homöopathie," Tübingen, 1835.

HERMANN AUGUST GMELIN.

He was a lawyer and is of no interest in this paper.

CHRISTIAN GOTTLÖB GMELIN (1792-1860).

Born October 12, 1792 in Tübingen, where he graduated at the University as M.D. with the thesis: "Diss. inaug. sistens analysin chemican venum hominis, vaccæ et felis." Together with his cousin, Leopold, who was about the same age, and who became the celebrated Heidelberg professor, he traveled in France, England, Norway and Sweden, where he studied under the immortal Berzelius. Upon his return to Tübingen in 1817 he was made Professor ord. of Chemistry and Pharmacy at the university.

He was one of the most noted chemists of his time, analyzed the minerals Helvin and Tourmalin, discovered the red flame of Lithium Salts and invented the artificial Ultramarine in 1828, a cheap substitute for the expensive "Lapis Lazuli." However, he did not receive the prize of 6,000 francs, which the Société d'encouragement created Nov. 10, 1824 and which it awarded to J. B. Guimet in Toulouse who claimed priority in having prepared artificial Ultramarine in 1824, which process he kept secret, so as to perfect it and cheapen it. However, Gmelin was the first to publish the process, as early as March 22, 1828.

Gmelin died May 13, 1860. He is the author of the well-known work "Eingleitung in die Chemie" 2 volumes, Tübingen 1833-1837.

Christian Gottlob (not Gottlieb as stated in many books and journals) is of the fourth generation of Gmelins, which owned the old Apotheke in Tübingen. After his death it was sold to one of his students, namely, Hofrat Dr. Wilhelm Mayer, who became Professor of Pharmacognosy at the University. His son, Wilhelm Mayer, is the present owner and to him acknowledgment is due for further particulars.

An old Register of Employees in this Apotheke from the year 1780 gives the name of Carl Friedrich Mohr, the originator of Volumetric Analysis and inventor of the Specific Gravity Balance, the Burette and Pinchcock, named after him. Another episode in this old pharmacy had a tragic end, as on a New Year's Eve the poet Albrecht von Haller, together with one of the drug clerks treated the night policeman on duty with such a large quantity of "Aqua Vitæ" (Brandy) that the latter died during the night. Haller was forced to leave the University on account of this incident.

In the time of the German inflation Apotheker Mayer discovered a large number of letters and poems from such celebrities as Göthe, Schiller, Uhland and Lenau directed to the Gmelin family. On account of the low value of money he was unable to acquire this treasure, which went into the hands of a Swiss firm.

In connection with the Jubilee celebration of the University of Tübingen in 1928 a memorial tablet was attached to the Gmelin Apothecary Shop. For this dedication about 70 members of the Gmelin family were present.

II. JOHANN GEORG GMELIN (1709-1755).

Named the "Younger" or "Junior," was the second oldest son of the Tübingen Apothecary Johann Georg, Sr. He was born June 12, 1709, began the study of Medicine in his native city at the age of 14 under Duvernoy and Cammerer, graduated in 1727, went to St. Petersburg, where he gained the good graces of Lorenz Blumentrost, the President of the Academy of Sciences, and in 1731 was made Professor of Chemistry and Natural Sciences.

In 1733, upon the request of the Emperor, he started out, accompanied by the geographer and astronomer Deslisle de la Croyère, the historian Gerhard Friedrich Müller and Captain Behring, on a scientific expedition in Siberia, from which he returned in 1743. After sifting and tabulating this valuable material with which he enriched the natural sciences, he returned in 1747 to Tübingen where he was made Professor of Botany and Chemistry in 1749, as which he died on May 20, 1755.

He wrote a great number of medical dissertations: *De Rhabarbaro*, *De Febre Miliari*, *De Tactu Pulsus*, *De Viis Urinæ*, *De Corticis Peruviani in Febris Intermittentibus usu*, etc. His two master works, which spread the knowledge of Siberian plants, are "Reise durch Sibirien," 4 vol., Göttingen 1751-52 and "Flora Sibirica," 2 vol., St. Petersburg, 1648-49. In 1911 The Verlag Otto Gmelin in München published a memorial volume of 146 pages "Johann Georg Gmelin, Der Erforscher Sibiriens," ein Gedenkbuch, which should be consulted for further particulars.

His name has become immortal through the botanical abbreviation Gm. or Gmel. He left 2 sons: Christian von Gmelin, a lawyer and Eberhard, a physician.

EBERHARD GMELIN (1751-1808).

Born May 1, 1751 in Tübingen and died 1808 as physician in Heilbronn. He deserves mention as he was instrumental to popularize Mesmer's Theory of Animal Magnetism together with a scientific explanation, through his 3 books: "Über tierischen Magnetismus," Tübingen 1787, "Neue Untersuchungen über den tierischen Magnetismus," *Ibid.*, 1789 and "Materialien für die Anthrapologie," 2 vol., *Ibid.*, 1791-1793.

III. PHILIP FRIEDRICH GMELIN (1721-1788).

He was the youngest son of the Tübingen apothecary Johann Georg Gmelin, Sr. At the age of 15 he began the study of medicine, traveled in Holland and England in 1750 was made extra ordinary Professor and 1755 ordinary Professor of Botany and Chemistry at the University in Tübingen, where he died May 9, 1788. He is the author of about 20 papers on Botany, Chemistry and Medicine.

Two sons survived him: Johann Friedrich and the lawyer Christian Gottlieb, which latter left 3 sons, all of whom became lawyers.

JOHANN FRIEDRICH GMELIN (1748-1804).

Born in Tübingen on August 8, 1748, died in Göttingen on November 1, 1804. He began the study of Medicine, Botany and Chemistry under his father at the age of fifteen and graduated as M.D. in 1769. After further studies in Holland, England and several German Universities, he returned to Tübingen when he delivered lectures on Botany and Natural Sciences. In 1772 he became Professor of Medicine and in 1775 President of the Philosophical Faculty. In 1780 he accepted a call as Professor of Medicine at the University of Göttingen, where he received his Ph.D. and in 1790 the title "Hofrat." His special studies and lectures comprised Natural History, Chemistry, Botany and Mineralogy. As chemist he was a devoted phlogistonist and consequently an apponent of Lavoisier.

His literary works are very numerous, the "Abhandlungen der Göttinger Societät" alone contains 21 of his researches. He is the author of the following books: "Grundsätze der Technischen Chemie." Halle 1786: 2 ed. 1796; "Onomatologia Botanica completa" 9 vol., Ulm 1771-77, a complete botanical dictionary based upon Linné's System; "Grundriss der Pharmazie (1792), der Mineralogie (1790); "Geschichte der Chemie" 3 vol., Göttingen 1797-9; Geschichte der Gifte," 3 vol. 1776-7, of which the second volume "Geschichte der Pflanzengifte" had a 2nd edition in 1801; "Linné's System a Naturæ," Leipzig, 1788-93, Lincke's *Materia Medica*," 1785-1800. (This biography is condensed from the one written by the eminent Göttingen pharmacologist Theodor Husemann.)

Johann Friedrich Gmelin left 2 sons, Edward, a lawyer and Leopold, who became Professor of Chemistry and Medicine at the University Heidelberg.

LEOPOLD GMELIN (1788-1853).

Born in Göttingen on August 2, 1788, where he received his Ph.D. with the Thesis: "Diss. inaug. chem. physiol. sistens indagacionem chemicam pigmenti nigri oculorum taurinorum et vitulinorum, adnexis guibusdam in id animadversionibus physiologicis (edit. nova, Heidelberg 1814—German in "Trommsdorff's Journ. Pharm.," 1814). In 1813 he established himself as docent at the University of Heidelberg, where he advanced to Professor extra ord. in 1814 and in 1817 Professor of Medicine and Chemistry. He resigned in 1851 and died on April 13, 1853.

His "Handbuch der Theoretischen. Chemie," 3 Parts, Frankfurt A. M. 1817-19 was an epoch making master work and even to-day is the most complete handbook. By order of the Cavendish Society, H. Watts translated this work into English. The German work consists now of 8 volumes and the English translation of 18 volumes.

He also wrote: *Lehrbuch der Chemie*, Heidelberg 1844, a well-known chemistry book.

In 1822 he discovered Potassium Ferricyanide $K_3Fe(CN)_6$, still known as Gmelin's Salt, the red potassium prussiate, by oxidizing the yellow potassium ferrocyanide $K_4Fe(CN)_6$ with chlorine. The mineral "Gmelinite," Sodium and Calcium Aluminum Silicate, used for the manufacture of soda, aluminum salts and metallic aluminum, is named after him. Through his analysis of minerals, his cousin Christian Gottlob Gmelin was enabled to prepare Artificial Ultramarine in 1824. Credit is also due to Leopold Gmelin for the discovery of Selenium in Germany and the preparation of Boron and several of its salts. Due to Gmelin's researches, his student, H. Fehling, succeeded in perfecting the Glucose Reagent, which bears his name. The same is true of Ferric Hydroxide as Arsenical Antidote, introduced by his successor Robert W. Bunsen in 1852.

Epoch making were his physiologic-chemical researches together with Friedr. Tiedemann, published as: "Versuche über die Wege auf welchen Substanzen aus dem Magen und Darmkanal ins Blut gelangen, über die Verichtung der Milz und der geheinen Harnwege," Heidelberg 1820. "Die Verdauung mach Versuchen," 2 vol., *Ibid.*, 1826; "Einige Neue Bestandteil der Galle des Ochsen," Poggendorffs *Annalen* 1827.

"Gmelins Bile Reaction" was first published in his work "Verdauung nach Versuchen," vol. I, page 80. This reaction consists in the slow oxidation of Bilirubin to Biliverdin, therefore the green color.

CONCLUSION.

This story of the Gmelin Family, whose cradle stood in an apothecary shop, and the members of which family were pharmacists, chemists, botanists, physicians, naturalists and even lawyers with a world-wide reputation, should be of interest to every pharmacist who truly loves his profession. All those desiring further information, I beg to refer to the book "Stammbau der Familie Gmelin," Karlsruhe, 1877, which book, however, was not at my command, so I was forced to compile my information from many other sources.¹

In conclusion, let me express three hopes:

1. Let me hope that this story of the Gmelin Family and their genealogy will clear up the existing confusion in the names of members of the Family especially as to Christian Gottlob and *not* Gottlieb (1792-1860), of Ultramarine fame.

2. That it will instil into the average pharmacist, young and old, more love for his profession. Let the Gmelin Family show him what has been done and what can be done to create professional pharmacy.

3. That the story will prove to some pharmacists what an interesting, what a fascinating subject History of Pharmacy is. Let the Gmelin Family be followed by biographies or collections of biographies of other families of pharmacists.

THE APOTHECARY IN LITERATURE.

BY EDWARD KREMERS.

NO. 37. TOM, THE "DOCTOR'S" APPRENTICE.*

At the Baltimore meeting of the A.A.A.S. in 1908, Professor Hynson conducted several of the attending pharmacists to a restaurant for luncheon. The writer had the pleasure of sitting next to the genial Baltimorean who, judging by the number of fellow citizens who greeted him, was a popular man. Almost invariably he was addressed as "doctor." After this had happened a number of times, he turned to the writer, saying: "Now you see why I want pharmaceutical graduates to be given the doctor's degree." I had been opposed to granting the pharmaceutical graduate a doctor's degree unless he met the requirements usually demanded for the Ph.D. at our best universities. Professor Hynson had advocated the granting of the degree of Doctor of Pharmacy with much lower standards. No doubt, he had been driven, as it were, to this position by the almost universal practice in the south of calling the druggist by the title doctor, as in Kentucky everyone who once shouldered a musket is honored with the title of colonel. As a self-respecting man he did not want to be called "doctor" by his friends unless that degree had been

¹ An addition to this was published in 1922 by a descendant, Otto Gmelin, a well-known publisher of medical works, in Munich "Stammbau der Familie Gmelin, Jüngere Tübinger Linie," by Dekan Eduard Gmelin, which is also illustrated.

* Section on Historical Pharmacy, A. Ph. A., Rapid City meeting, 1929.