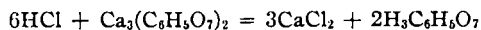


bonate, which, in the presence of the acidity of the gastric juice causes effervescence and hence disintegration. The second method incorporates from 10 to 20 per cent of dry starch to swell in the presence of moisture and cause disintegration. The objection to the first method is that a certain amount of effervescence frequently takes place before the tablets reach the consumer and with it a certain amount of disintegration. The objection to the second method is that starch will gradually take on moisture from the atmosphere, lose its hygroscopic properties, and hence its disintegrating power. Tablets containing starch must be kept in an air-tight container.

Many tablets require lubricants for compression, and lubricants have a marked influence upon solubility and rate of disintegration. Tablets have been found with enough hydrocarbons to render them impervious to water. Such a tablet cannot be expected to dissolve or disintegrate. It is believed that hydrocarbons have no place in tablets whatsoever.

A substance which lends itself perfectly as a tablet diluent is tricalcium citrate. It is a white, tasteless powder which is permanent, light and insoluble. It is compatible with most tablet ingredients. It granulates readily when granulation is required. It is available in coarse granular form which feeds into the die uniformly. When a lubricant is necessary 10 per cent of powdered cocoa may be added to the tricalcium citrate.

A tablet made with tricalcium citrate, as a diluent, may not disintegrate in water but it will disintegrate instantly in 0.3 per cent hydrochloric acid, at body temperature. Cocoa, as a lubricant, will not interfere with the disintegration. The hydrochloric acid of the gastric juice reacts with the tricalcium citrate, thus:



forming readily soluble compounds. A tablet so made is permanent under ordinary atmospheric conditions.

PHARMACEUTICAL LABORATORY,
UNIVERSITY OF IOWA,
IOWA CITY, IOWA.

THE APOTHECARY, A LITERARY STUDY.

BY EDWARD KREMERS.

28. UPAGUPTA, "SON OF A PERFUMER."

The modern rendering for *Ibn el-Attar* is "Son of the Apothecary"¹ though the original meaning of the Arabic *Attar*, our "Otto," *e. g.*, of roses, is that of a perfume. One of the mural paintings in the Casa Vettii,² which represents the perfumer expressing olive oil, rosating it, and selling his finished perfume to a society lady of Pompeii, is labeled "Farmacisti," at least on a modern Italian postal card.

¹ F. Wuestenfeld, *Geschichte der Arabischen Aerzte und Naturforscher*, p. XIII.

² See E. Kremers, *History of the Apothecary Shop*, V: The house of the Vettii. *Am. Dr. & Ph. Rec.* 68, 141.

When, therefore, in "Asoka:¹ the peerless monarch of India" we read of Upagupta, "son of a perfumer of Benares" we may not go far astray in assuming that we have a representative of one of the forerunners of the modern apothecary. The word *apotheca* was applied by the ancient Romans to their storage rooms. When used without modifying attribute, it designated the storage room for wine. The *apotheca librorum* was their storage room for books or library, the German *Bibliothek*, derived from the Greek βιβλος, book, and αποθηκη storage room. In the early development of European pharmacy during the renaissance, the word *Apotheke*, in German at least, was used to designate a storage room, more particularly the storage room for spices. We need but recall that the spices and aromatics were the true perfumes (from *perfumare*, to smoke through) of antiquity, being used in sacrificial offerings, originally as a means of covering the disagreeable odor of burnt animal offerings, later as a symbolic substitute therefore. The incense used in the Roman Catholic mass is a modern reminder of the ancient ritual referred to, and the *Candulae fumales* also the *Pulvis fumalis* of pharmaceutical formularies as well as the Chinese joss sticks and Sandal wood, clearly show us that even the modern drug store has not gotten away altogether from being a perfumer's shop in the sense of its ancient Hindoo prototype. *Szandalini* means dealers in sandal (szandal) wood and ben Szandalini is translated son of an apothecary.

In our study of the apothecary in literature and his prototypes of past periods of history we may well, therefore, include Upagupta, "son of a perfumer in Benares." Though himself not a perfumer, but a preacher, we may devote a moment's attention to him as we did to Hans Christian Andersen's "Two sons of a Danish apothecary,"² the one a great physicist and the other an important statesman. Unfortunately, we have no Indian Hans Christian Andersen to tell us about the father and mother of Upagupta and the influence they exerted upon this great reformer.

Chandragupta was the grandfather of Asoka. After the death of Alexander the Great in 321 B. C., he had defeated the Greeks and made himself undisputed master of the Behar, the ancient Indian Empire. The story told by Gladys Burrell Kirby and Frank M. Rich begins with the description of a tiger hunt by the grim old monarch on which he was accompanied by his grandson Asoka. As the gorgeous cavalcade passes a cemetery, the attention of the young prince is attracted to a group that pays no heed to the royal splendor but listens eagerly to a young man. The prince discards his royal robes and mixes incognito with the group and learns upon inquiry that the preaching young monk is Upagupta, the son of a perfumer of Benares. The speaker makes a deep and lasting impression upon the royal scion, but it is not until many years later that he acts in accordance with the impression the words make upon him. In a war, he has destroyed several hundred thousand men, women and children. As he triumphantly enters the conquered city, he is shocked at the sight of the ravages he has wrought and is reminded of the words of Upagupta. Upon his return home, he calls for Upagupta and has him tell what he knows about the sayings of Gotamo, the Sakya sage concerning the "Enlightened One."

Now he acts upon the teachings of Upagupta. It is said of him that he is "the only military monarch on record who ever abandoned warfare after victory."

¹ By Gladys Burrell Kirby and Frank M. Rich, *The Open Court*, 40, 577.

² *JOUR. A. PH. A.* (July 1918), 620.

"Through the dim distance of the ages, we glimpse the noble figure of one of the greatest kings of history—a strong man of high ideals, unflagging diligence and pious devotion. Reared himself in an atmosphere of colossal intrigue, cruelty, extravagance, voluptuousness and oppression, he became a paragon of honor, humanity, simplicity, purity and service."

"Former kings," he says of himself, "have brought divers blessings to mankind as well as I. My special thought has been to educate man to a devotion to principles of honor. What are these principles of honor? Reverence, useful labor, kindness of heart, liberality to others, loyalty to fact and personal integrity."

His last words were: "Through exertion comes the great reward, it cannot be obtained by position or influence. The humblest man, if he will exert himself somewhat, can win great future bliss."

Such were the results of the teachings of the monk Upagupta, the son of a perfumer of Benares, three centuries before the birth of Christ.

HOW PHYSICIANS CAN HELP THE INCREASING TREND OF PROFESSIONAL PHARMACY AWAY FROM COMMERCIALISM.*

BY FREDERICK J. WULLING.¹

After I had given six of the series of twelve radio talks which I am broadcasting over Station WLB, the University station and known as the "Voice of the Campus," one letter among the many letters that my hearers sent me inquired whether pharmacy had an association comparable with the American Medical Association in so far as the latter represents the totality of interests of the medical profession, and if pharmacy had no comparable organization, in what manner it was organized. That suggested to me to draw a certain comparison between organized medicine and organized pharmacy, and I think it will be entirely consistent for me to tell you this evening something about the organizations of pharmacy for the purpose of laying a foundation for what I will say later about the improvement in purely professional pharmaceutical service that now can be found by those who look for it, contrary to the belief of so many that professional pharmacy has surrendered to commercialism.

Pharmaceutical activities are so much more numerous and diversified than medical practice is that so far pharmacy has not been able to unify itself in such a way that a single association could adequately represent all of its activities and aims and purposes. In the practice of medicine there is much more cohesion and less diversity and also a more pronouncedly professional spirit and a more general and unified adherence to professional ideals, while in pharmacy the professional practice is diluted and attenuated with other activities, especially commerce. In medicine the practitioners of the various medical and surgical fields all are engaged exclusively in giving a professional service. In pharmacy the service ideal is paramount and ranks first, but there is a secondary activity not found in medicine, namely, the engagement in commerce, which activity is motivated by the desire or in certain cases the necessity for greater material gain than it is thought can

* A paper read before the Hennepin County Medical Association, February 6, 1928.

¹ University of Minnesota.