Amber, Amber “Apples,” and Medicine

Amber from the Baltic Region of Europe has connected northern Europe with the Mediterranean cultures of the ancient worlds as evidence by the amber found in ancient Mesopotamia and Pharaonic Egypt. Its wondrous qualities of beauty, magnetic, and preservation of insect and other life from eons before endeared as a precious trade. Lapis lazuli from Afghanistan and amber from the Baltic were perhaps the earliest longest-distant trade articles, thereby linking continents. A Greek word for amber, λιγγούριον / liggourion, evidences the trade connection: Greeks received amber from Phoenician traders who bought it on the southern coast of present France (at or near port of Marseilles) where lived the Ligurians, who had traders from northern Europe. By reasonable supposition, a Greek asked “what is this?” to which a misunderstanding Phoenician replied “Ligurian.” To a Greek this sounded like λύγξ (=”lynx”) and οὐρον (=”urine”), thus “lynx urine.” From this connection the Greeks spun the tale that amber was lynx urine. Lynx, being a cat, was jealous of its urine, buried it, and it hardened into amber. Pliny the Elder, the Roman encyclopedist, said that he included a discussion of lyncurium (Latin transliteration of Greek letters) because of the pertinacity of certain authors who maintain its reality. Pliny expressed profound doubt about the truth of lynx story and outright disbelief that lyncurium existed in his day.

When Theophrastus, Aristotle’s star student, said that lynx urine was amber, the word was ἕλεκτρον (electron). The term electrum was first applied to a naturally occurring gold-silver alloy found in Anatolia. The Greeks used electrum for coins (although soon thereafter replaced by silver and other medals). Because the color for both the medal (electron) and ancient resin (electron) was similar, the Greeks called our amber electron, (Latinized as electrum). Because genuine amber has electrostatic qualities — Dioscorides’ “feather-attracting amber”— the term in most European languages (examples: English; Russian; German) for the magnetic quality derived from electron to electricity. Homer, the earliest Greek poet, refers to amber as when Eurymachus receives a gold necklace “strung with amber (electron) beads, bright as the sun (Odyssey. 18. 296 cf. 4. 73; 15. 460). As jewelry amber is well documented. What is little known is the importance of amber in medicine and medical theory.
Amber as Medicine

Using the Latin term for amber, *succinus*, Pliny the Elder wrote: “Amber is not without its utility in medicine; but it is not for this reason that women like it. It is beneficial for infants when it is attached to them in the form of an amulet” ([Natural History. 37.12.50](#)) A physician in a mid-nineteenth century medical journal connects Pliny’s amulet with medicine by reporting: “I know very well that women hang necklaces of amber on the necks of infants in order to protect them from the convulsions of their first teeth. Understanding amber’s historical use in jewelry and as an amulet is relatively easy to document not only by written records but by artifacts in archaeological findings. The ruins of Troy and ancient Babylon and remains of Etruscan graves preserved amber amulets and necklaces. Sources of Egyptian, Mesopotamian, and Assyrian materia medica reveal no certain indication of the use of amber in the wide range of these people’s pharmacopoeia. Sumerian medical texts name GAM.GA.ZI that modern scholars translate as “pulverized fir resin,” not necessarily amber. Not until the period of classical Greek and Latin do our sources reveal amber’s extensive medical use. Even the extensive works attributed to Hippocrates — the so-called Hippocratic Corpus (written ca. 450 BCE—330 BCE) — do not have amber, but its absence has clarification. Most Hippocratic works have little to no pharmacy and those treatises that do are largely confined to gynecological remedies (which are not where amber’s pharmaceutical qualities lie).

In antiquity amber’s primary use as a drug was for the stomach and diarrhea, so said Dioscorides, the “Father of Pharmacy” and lead authority until the sixteenth century. Dioscorides’ five-book work, called in Latin *De materia medica*, discusses predominantly herbal remedies, but he included smaller sections devoted to drugs derived from animals and minerals. Amber he placed in the animal drug section, the subsection on “urine,” thus: “The urine of lynx, which is called *lyngourion*, is believed to petrify as soon as it passes.” Adding to the statement is: “but this is nonsense.” Being one of antiquity’s best examples for rationality in contrast to superstition, Dioscorides clearly knew that amber was not lynx urine. It was “what people call ‘feather-attracting amber’, using another Greek word: ήλεκτρον (*electron*).

More insight into how the ancients employed and, in some cases, confused the use of amber in medicine lies in the Phaethon legend: Phaethon, the son of Helios (the Sun), drove a celestial chariot flew too close to Helios and he was destroyed by plunging into a river (variously Eridanus, Padus). His sisters mourned by shedding tears into the river, thereby the tears hardened into amber. Dioscorides and other ancient writers used the word *aegeros*, meaning “black poplar,” but say this particular black poplar resin is amber (*electrum*). Its medicinal virtues are “checking diarrhea and fluid discharges from the stomach.” ([De materia medica. 1. 63, Beck transl.](#)). For entries, “lynx urine” and “black poplar resin”, Dioscorides specified that its
administration was ground or pulverized and taken by mouth. Dioscorides’ medicinal use for amber (in various terms) was consistent. Pliny, who denied amber’s existence in his day, at least that as lynx urine, in another section of his work gave a long list of cures for lynx urine. He was a poor editor: he had different medicinal uses for *sucinum* (Latin for amber) and for *lyncurium* (lynx urine, or amber).

In terms of volume of information, Pliny the Elder provided the greatest details about amber, using various terms in Latin and Greek, but lacked consistency. His encyclopedia, *Natural History*, varied according to what source he was using at time of composition. In a number of chapters, one very long, he commented on the origins, composition, and usages of amber and methodically quotes some twenty-nine writers, many of whom are known only through his mentioning of them.

**Amber Lozenge**

In the legacy of ancient medicine only the reputation of Galen (129 CE—post 205) can be compared to Dioscorides or the towering, largely legendary image of Hippocrates. Galen’s commentaries on Hippocratic works can be said to have manufactured Hippocrates, about whose actual life is little known. Galen’s prodigious display of medicine reveals insight into medical practice and theory. Galen’s pharmaceutical theory, as we shall explain later in this paper, connected with amber in the late medieval period. Galen’s relating amber’s actual medicinal usages, while important because of his influence, is somewhat muddled. For example, he related the medicinal uses for *aegeros* (black poplar resin) without connecting it with amber. Galen related recipes for what we would call standardized medicinal formularies which included the “Amber Lozenge” — in Roman letters for the Greek: *trochiskos o di elektrou*. The recipe for Amber Lozenge was: amber, saffron (*Crocus sativus* L.), mastic gum [*Pistacia lentiscus* L., a sweet-smelling resin], iris (*Iris spp.*), poppy (*Papaver somniferum* L.), and fleawort (mostly, *Plantago psyllium* L.). The Amber Lozenge was given for whooping cough, pulmonary consumption (which may include tuberculosis), expulsion of phlegm (mucous excreted in respiratory tract), suppuration of the coeliac (abdomen), dysentery, flatulency, and ear ailments. This Amber Lozenge does not necessarily expands the conditions for therapeutic address because amber is just one drug included in the recipe. Why the name Amber Lozenge? Galen would have used a common name because drugs, then as now, were sold by “brand names,” not the manufacturer but the name associated with a particular formulary. It was called “Amber” either because of the prestige amber afforded or, possibly also, a judgment that amber was the most active ingredient. Either way, although Galen wrote about it, likely the traditional name was market derived and driven. With some variations in ingredients, the Amber Lozenge is described for much the same
afflictions given by Galen in the following writers (among others): Marcellus Empiricus (fl. 410 C.E.); Caelius Aurelianus (fl. Ca. 430 C.E.); Paul of Aegina (6th c. C.E.). Areteaus of Cappadocia (2nd c. C.E.) prescribed just amber (electron) as a blood coagulator, similar to the same uses for the Amber Lozenge. Marcellus was more specific: blood coagulator that is being coughed or thrown up. He added that in liquid preparation with some of same ingredients it dissolved “the stone” (kidney; bladder?) and expelled the waist through the urine and, for a palpitating heart, amber was dissolved in boiling water and drunk over three days. For many centuries the Amber Lozenge was a popular remedy and, judging by the account of medical authorities, there was a consistency about usage.

**Confusion about Amber and Ambergris (=”gray amber”)**

Early medieval pharmacy continued to use amber in its pharmacy in much the same way as classical pharmacy. Confusion came when medical works in Arabic were translated into Latin beginning in the late eleventh century. Ambergris is a solid, usually soft, waxy substance, highly aromatic, that is excreted from the intestines of the sperm whale (Physeter cotodon) and washed up on the shores, generally in the Indian or Pacific Ocean regions. Chemically is far different from real amber. Ambergris contains a specific compound called ambreiene. Perhaps because both were found on beaches, the association began between amber and ambergris. The confusion had consequences. Abu Zakariya Yuhana ibn Masawaih (777—857 C.E.), known in the Latin West as Mesue the Elder, wrote an extensive medical work on aromatic substances giving prominence to ambergris, ambar in Arabic. When translations were made from Greek to Arabic, the translators employed a Persian word for amber, karabe. For example, Ibn al-Beïthar (13 c.) wrote that karabe came from Persian (Farsi) and meant in Persian “that which attracts straw,” sometimes called oarnel-bahr (“horn of the sea”) and misban ar-Roum (“lamp of the Romans”). He quoted Aetius of Amida’s discussion of amber using the word karabe, ignoring the various and confusing Greek and Latin terms. Similarly the Arabic writer known as Serapion “the Younger” (late 12the c.?) quoted Galen, Dioscorides, and Paul of Aegina on amber, but Serapion used the Persian word karabe, rather than Greek or Latin transliterations. Beginning with Constantine the African (d. ca. 1087) Arabic works were translated into Latin, this long before dictionaries as such. The translators rendered the Arabic ambra in Latin letters, ambra or amber. From the late eleventh century, many or most Latin readers assumed that the term meant amber, the petrified resin usually from the Baltic regions. Thereby, in medicine and popular usage amber and what we know as ambergris passed under the word, amber. A late fourteenth-century medical glossary asserts: “amber is called ambergris by the common people (karabe a vulgo dicitur lambra est). Even though the substances are different, the
medicinal usages were approximately the same, very approximately. Not until the later medieval period, roughly fifteenth century, did rank-and-file physicians and public realize that there were two substances passing under the same term, “amber.” When they did, they distinguished the two by color, amber and ambergris, “gris” meaning “gray,” thus “gray amber.” Ambergris was rare and expensive; amber was less expensive and rare, still not a common drug. The appearance of both in prescriptions, even though their formularies were related in texts, must have been infrequent but their inclusion would have added prestige. An expensive, rare drug must be potent by its nature. The details are difficult to follow because, when reading the written texts, the reader needs to know the meaning of the original text (in Arabic), the translator (Latin), and, above all, the medieval reader’s knowledge. One of the ways that this confusion emerged was the Pomum Ambrae, or “Amber Apple.”

The Amber Apple

Amber has an interesting, insightful history in connection with the Black Death, otherwise known also as the Bubonic Plague. This dreaded disease probably began in the 1330s in the Gobi Desert in bordering on China and spread from there, reaching southern Europe by 1348 and northern Europe including the Baltic regions by 1350. An infectious bacillus lived in fleas that infested black rats but could spread to humans. Whereas there was not “cure” as such, strangely amber was a drug that indirectly saved lives as people sought safety and protection. Earlier, much earlier, people realized that infectious diseases were often contacted through proximity with those already infected — what we call contagion. According to conventional wisdom, corrupted air caused the Plague to be spread to healthy persons. Prophylactic measures were two-fold: avoid the corrupted air through proximity and, if that is not possible, purify the air. In the medical works devoted to the Plague amber and ambergris are confused but less so than in most other written sources at the same time periods. Scores of original, usually short, tracts or treatises exist in medieval manuscript collections that were published by the German scholar, Karl Sudhoff, who gave them the name Pestschriften or plague tracts. The Pestschriften are relatively clear in the distinction between amber and ambergris by employing only the words ambra for ambergris and karabe for amber. Some Pestschriften have in its rubric or title: Pomum ambrae or the Amber Apple. The Amber Apple was for “protective medicine (preseruatiua medicinalia).” To quote one source: “In leaving the house hold before the nose, neck, face, mouth, and veins a linen cloth or a amber apple or something of its kind.” One tract advised: “one should carry in his hand something odoriferous, such as pomum generatum or pomum ambrae.” And, another: “before his mouth and nose one should hold pomum ambrae or a sponge soaked in wine, when going into the open air.
The various recipes differed for the Amber Apple but all recipes contained some aromatics: aloes, camphor, storax [a gum resin] calamite, musk, being the most prevalent. Some thirty-one prescriptions, containing either or both amber and ambergris, had a total of 448 items, involving some 126 separate ingredients. Ambergris, the substance that gave the “apple” its name, was not absolutely indispensable in all recipes although ambergris was found in by far the most recipes. Amber (karabe) appears in many recipes and is distinct from ambergris (ambra). A few Pestschriften expand the word ambra by adding the suffix, —grisse, meaning “gray.” The musk, ambergris, and, so it is said, amber (karabe) were ground and dissolved in water of roses (aqua rosata). Probably — because it is unsaid — the title of Amber Apple was based on the prestige and value of both amber and ambergris. Because of the very high cost of ambergris, some Apples omitted ambergris and had amber whereas a few tracts omitted both but retained the name “Amber Apple.” Whereas most Pestschriften were written in Latin, some were in the vernacular. Those written in German are more likely to write “ambra-grisse.” No German-language Pestschriften employs the German word Bernstein but, instead, use the Persian-Arabic derived word, karabe, even though other German medical works use Bernstein.

The Amber Apple was prominent in medieval medicine both a prophylactic and a curative (so it was asserted) by both ambulatory and bed-ridden patients. Probably many Europeans were saved from the Plague, not because the Amber Apple worked medicinally, but because it instructed its bearer to avoid contact with “corrupted air” caused by plague victims. To us, its effective function was prevention of contagious fleas. To medieval peoples, its fragrance purified the air. Data of this kind is impossible to find because we simply do not know nor can we. Speculatively also would be that the fragrance would repel fleas from jumping to a human, either by being repelled by it or the smell covered the attraction they find to human bodies. The Amber Apple probably saved people from death and not for the reasons its bearers thought.

Amber as Wonder Drug

From the late thirteenth century Latin medicine underwent a movement towards theory as the universities impacted empirical medical practices. Pharmacy was paramount in this movement and amber, never a dominant drug as such, had a special role, specifically as a wonder drug. To understand why, an understanding of Galen’s drug theory is necessary because it drove the formulations of prescriptions. Drugs were administered to balance humors. The four humors (black bile, blood, phlegm, and yellow bile) corresponded to the four elements (earth, air, water, and fire). Every substance (vegetable, animal, or mineral) has two qualities: passive and active. The
passive quality means it can be either wetting or moistening in effect or it can be drying, desiccating. Medically one gives a drug to balance a disproportional humor. Thus, if a patient is warm from a fever, a cooling drug is given. Quantity is vitally important. Giving a small quantify of cooling drug to a feverous patient results in a lowering of the fever. A little more and the effectiveness increases but a point is reached when an increase in quantity results is diminished or even harmful results. Physicians must know the amount (dosage, we would say), but there are many variables: intensity of fever, age and even personality (“temperamentum”), season, and even diurnal factors. Drugs can be weak or strong. Sense perception was faulty. For example, one’s senses inform us that ocean water is wet but, when taken internally, it is drying (because of the salt). Experience with drugs can inform us about its powers (dynameis).

According to Galenic theory, each drug has one of four degrees of action, corresponding to the four elements, but refinement of theory allowed subcategories of intensities called numeri. Say a middle age female patient has a high fever but she is also too dry and the cooling drug to bring down the fever also has a drying effect. In this situation the physician must give a drug to counter what we call the side-effect of drying, thus a moistening drug with an intensity stronger than the drying effect of the drug for fever. Balancing the qualities of drugs for any affliction became a formidable challenge for physician and apothecary alike. The result was a trend toward polypharmacy, that is to say, each prescription consisted of many ingredients, in some cases as many as a hundred or more. Obviously also there was an economic aspect to the movement: the family herbal garden was no longer the place to find a “simple” drug. One had to rely on the drug store, the neighborhood apothecary for the complicated prescription.

In Latin prescriptions, there were five root-words in circulation which meant “amber,” not ambergris: karabe (from Arabic)’ succinum (Latin); lynsurium (Latinized Greek); electrum (Latinized Greek); and Bernstein (from German). Two or more of these words could appear in the same recipe, each with a different amounts. Clearly an apothecary would not have five jars for each name for amber on his shelves. The recipe as written was little more than an intellectual exercise. The apothecary would use amber and perhaps be guided by the written pharmacy authority who provided the recipe. Amber’s use in the new polypharmacy is relatively unimportant. What became important in the history of ideas is amber as a wonder drug.

Actually following the intellectual precepts in compounding a prescription was too cumbersome. A theory developed that there were a few drugs’ whose potency was such that it could suspend the humors and cut across the passive/(dry;wet) and active (cold; warm) faculties and be administered without any more theoretical consideration. Among the few wonder or super drugs was amber. Certainly, based on
present knowledge of pharmacology and chemistry, we do not see amber as especially effective drug, its primary qualities probably deriving from the fact that it was a resin and, like resins, has antiseptic. What made amber important was the concept that potentially there were certain drugs whose medicinal effects were so wonderous that they could eradicate disease and suffering. We need only to discover them. Amber, the ancient resin traded from prehistoric times, had mysterious qualities and, strangely, amber was important in overturning the Hippocratic concept that a physician helped nature with its natural propensity to keep the body healthy. Drugs could overcome, even eradicate, diseases. Amber’s mysteries, so much a part of primitive imaginations, were a part of the development of modern science and medicine.