

ANIMAL DRUGS USED IN MEDICINE DURING THE MIDDLE AGES IN ENGLAND AND FRANCE.*

BY GEORGE G. MARSHALL.

Pharmacy in the Middle Ages, especially in Great Britain, has an extremely curious history. The whole subject is so closely bound up with the social progress of the country, that one finds himself perusing the annals of history for a better understanding of the art of mixing and compounding.

The successive invasions of the Angles, Saxons, Jutes and Danes, together with the Roman occupation of the country, had a most important bearing upon the subsequent social development. The Saxons, for instance, introduced a wealth of quasi-scientific learning into the land, while the Romans, in turn, brought culture and learning from the South. As a result we have such works as savor of both stimuli, but which may, at the same time, be said to stamp themselves as typically English in their intrinsic character. Here we first find the "leech." Perhaps it might be well to define the word itself before proceeding. "Leech," derived from the Anglo-Saxon *loece*, originally meant a physician, or one who healed. Later, through a transposition of the idea for the thing, the term has become confused with the blood-sucking animal, used often by the early doctors to relieve congestion, etc.

The first of these men we have any record of flourished about the time of Ælfric. As was the case with many of the mediæval practitioners, he was more or less closely affiliated with the church. This is easily comprehensible if we remember that the so-called "higher education" was an accomplishment possessed by few except the fathers of the church, and possibly a few of the royalty, who had laboriously acquired little more than a pretence at enlightenment in the realm of letters. Thus we are not surprised to find the various remedies composed partly of herbs and partly of charms, weird incantations and invocations to the Deity. Furthermore, it is not strange that the monks should have been so conversant with the medical knowledge, considering the wide breach existent, at that time, between the super-wealthy knight, who lived, on the one hand, by plundering travellers and, on the other, by "squeezing" the wretched tenantry, eking out their existence on what the lord overlooked in his magnanimity. These wretched people were often so poorly nourished that frequent calls upon the monasteries for food, treatment and medicine were vitally necessary.

Many noted religious men, such as John of Tours, Bishop of Wells (1088-1123), Grimaldi, and others, brought new medical skill into England just after the Norman Conquest. (Med. Eng., Bateson, p. 76.) Laymen were also known to have been leeches. Payne (Med. Eng. in the Anglo-Saxon Times, p. 13) offers an instance in the ballad, "Sir Cauline." Here a knight is brought wounded to the castle, whereupon the king cries:

"Come down, come down, my daughter dear,
Thou art a leech of skill."

* Presented before Section on Historical Pharmacy, A. Ph. A., San Francisco meeting. This excellent paper, comprising in its original form eighty-two pages, was presented by Mr. George G. Marshall as his thesis for the degree of Pharmaceutical Chemist in the Cleveland School of Pharmacy. While it is impossible to print it in full, the abstract presented will give an idea of the literary research work and the devotion to its pursuit shown by the author. There is no statement in this thesis that has not been traced back to the original writer, and the amount of correspondence and expense that Mr. Marshall undertook to collect his material is most remarkable. The bibliography attached to the thesis shows that he was not satisfied to copy from modern authors, but in every case he went back to the original.

This, apparently, points to the possibility of women leeches. An early English work of the fourteenth century gives a prescription said to have been used by Lady Beauchamp, the wife of the Earl of Warwick. The "new" women's movement is a very old one, after all.

Notwithstanding this seemingly democratic status of the "profession," we are safe to assume the religious orders to have had the monopoly, as it were, of the healing art. Within the cloister walls instruction was given the initiates into the priesthood along the lines of applied medicine, that they might aid the sick and starving. In this connection (Wellcome) the following is of note:

"Twig runes shalt thou ken
If thou a leech will be
And ken a sore to see
Of bark shall one then write

And a branch of wood whose
Limbs to east do lout."

The "Medicinale Anglicum," in referring to the leeches as "Leeches Know How," seems also to indicate a somewhat definite organization of remedies and doctors at that time. There likewise appears (Payne, p. 90, cross ref. to A. S. L., li, p. 83) in the recipe, "after the manner which leeches well know," following advice to the scarifying and poulticing of wounds, a further confirmation of the existence of a well-defined class of practitioners in that early period.

Recipe books in manuscript form appeared, embracing hundreds of curious formulas. Every commentator added to the collection until the copy was one vast phantasmagoria of paganism, religion, fact and superstition. The "Medicina de Quadrupedibus" and the "Herbarium" of Apuleius Platonius, with formulas dating back to the tenth or eleventh century, are the most interesting. That these works enjoyed immense popularity is manifest. They persisted even down to the era of the printed page. In 1480 Johann Philippus de Lignamm printed the manuscript. In the treatise may be found the hart, dog, goat, lion, frog, bull, etc., together with sundry secretions and excretions from various animals.

QUACKS.

Such remedies are, in themselves, curious enough, but not altogether beyond our comprehension, since not only priests and leeches, but also fakes and quacks of every description, who masqueraded under the name of "herbalists," employed them. (Jusserand.) These fakers took their stand in the public places of a village, spread out their wares and proceeded to harangue the people, much as do our present-day quacks, who inveigle the gullible into buying patent "cure-alls." Even among the best doctors of the period we find remedies which must have had their source, certainly, among the fakes. The notorious Roger Clerk, who undoubtedly used such formulas as "Seven heads of fat bats," was, in 1631, sued for illegal practice of medicine in London. He had recommended that a highly preposterous charm be hung about a lady's neck as a sure cure for a suspected ailment. For a number of years a legal war was waged upon quacks, leeches, and pharmacists, because of their questionable methods and remedies. Finally, in 1542, a recognized pharmacopœia was established. The most flagrant discrepancies were struck out. Curiously enough, the book still embraced an astonishingly large number of quackeries and frauds. Crabs, oyster shells, secretions of human beings, etc., together with moss grown on the human skull, figured largely in the intricate

recipes. In fact, it was not until the year 1721 that such things as blind puppies and skulls were omitted from the London Pharmacopœia.

The persistence of so many animal ingredients may be looked upon by some as chronic professional unenlightenment. Were the matter looked upon purely in such a light, we might say the point well taken. Justification, however, is not hard to find for this apparent barbarism. So far back as man recalls, he has considered himself the supreme achievement of the Maker, and therefore the rightful measure of all things.

HUMAN BODY IN MEDICINE.

One need but to look into some of the old formularies to see what an important part the members of the human organism played in medicine as the positive cure for all manner of disease. Lemery's "*Dictionnaire Universel des Drogues Simples*," the early authority in France, as well as Pomet, contains a number of formulas based upon the above mentioned theory of man's physiological value as a remedy. In the *Histoire des Drogues*, seconde partie, pp. 1-8, are set forth the many virtues of human bones, secretions, etc., as well as their respective value as cures. Skulls, blood, urine, the nails of the fingers and toes, not to mention the secundine of woman, and much more, were employed as ingredients. Yet, these mediæval theories are not so unlike certain doctrines advanced by several present-day schools of medicine. Teaching, to-day, follows along much the same lines. Should a man show symptoms arising, primarily, from an organ not properly functioning, it is at once plain that that particular organ is weak. If this be so, it may be strengthened by supplying fresh vigor through the administration of the healthy counterpart of the weakened member. Thus, if a patient exhibits symptoms arising from abnormal thyroid secretions, due, perhaps, to an unhealthy condition of the gland, he is accordingly given a sufficient amount of the "prepared gland" to restore a normal anabolism. As it is the case now, so it was in the earlier times. To-day, however, medicine is in a state of much higher efficiency. At that time it was still darkened by superstition and unsubstantiated experiments.

Schroderus thus treats like with like—"The liquor distilled from the haire applied with honey causeth the haire to grow. The powder drunk helps the jaundice, applied with sheep's fatt it helps luxate the members, also it stops the hemorrhage in wounds." We find that the spittle of a fasting man was effective against the bite of a mad dog, while the filth of the ears, taken internally, is effective in colic. The falling sickness and rheumatism could likewise be cured, they thought, with mixtures prepared from human bone. "The blood of childbirth (Hartmann) helps the volatick scabb, being applied often with the secundine. Mummy resolveth coagulated blood. Taken it purgeth the head, helps obstruction of the menses and other uterine affections." This author then goes on to show the relatively greater merits of the Arabian mummy over the Egyptian, since the latter is prepared from bitumen and cheap preservatives, while the former is "a thick substance sweating out of dead bodies embalmed with aloes, etc." The torrefaction of dead bodies made a much inferior article, he points out, although such was the product usually palmed off as the genuine article. This was prepared from the body "of a red man (having thinner blood and better flesh) whole, fresh, unspotted, of 24 years old, dying of a violent death and not by disease, the muscular parts being cut in pieces and strewed with myrrhe and a little aloes, afterwards macerating it in the spirit of wine . . . leaving the pieces at length to dry in a dry aire and shadowy place, then will it be like flesh hardened in the smoke without stinking, etc." The tincture therefrom, they thought, relieved diseases of the breast. In fact, the exalted "oile of mummy is counted of such vivseck

quality that there is no particle into which it does not penetrate, nor corruption which it does not cure."

A belt or gloves of human flesh were supposed to greatly facilitate labor and mitigate the throes accompanying childbirth. The "Liquor Cranii Human" sounds rather barbaric to us. It was, at one time, considered highly potent. This "Liquor" was prepared from the unburied skulls which one could so easily pick up anywhere on the roadsides of England during the period when she was crushing outlawry.

With this historical fact well in mind, the enormous variety of preparations made from the human body is somewhat more comprehensible to us. In the early seventeen hundreds, be it remembered, all England was infested with ruthless beggars, highwaymen and "wanted" characters. What punishment the law provided, when they were once apprehended, was as thorough as expeditious. Little wonder superstition somehow centred around the effectiveness of criminals' bones as remedies, when bones were such a common article. Thus, Pommet, in 1694, was informed by a certain Moses Charas, who had resided in England for some time, that, "The Druggists of England sell skulls of the dead upon which has grown a greenish moss, called 'Usnea,' because it resembles the moss growing on the oak." "The great majority of these bones," he states further, "came from Ireland," where there was much trouble at just this time. Pommet cites again from the above source, "They frequently let the bodies of criminals hang on the gibbet until they fall to pieces." No doubt this furnished an object-lesson to those tempted of the devil. Skulls at that time varied in price in direct ratio to the fluctuations of the London market, which, in its turn, was a barometer of the vigilance of the local watchmen and beadles. Desirable skulls have been known to bring from 8 to 11 shillings apiece. Especially coveted were the moss-covered specimens. They commanded a still higher price. The Germans had a marked preference for the heads of those who had died a violent death. They were used in "Sympathetic Ointments" and "Epilepsy" cures. Lemery speaks of a certain "Magistry of Human Skull," made by calcining and powdering the article into a fine state. He further adds, "This magistry is only a dead-head of no virtue unless you employ the skull of a young man who has died a violent death."

Sir Halford, in 1835, printed a paper "On the Deaths of Some Eminent Persons." Herein he gives one of the prescriptions, signed by four physicians on the death-bed of Charles II. It called for "Twenty-five drops of the spirit drawn from human skulls" as one of the principal ingredients. Mayerne's celebrated "Powder de Guttetta" contained, among other things, amber, vitriolated harts-horn, human skull vitriolated and crude, and the secundine of woman. Whether these curious and once popular remedies fell into disuse through any moral awakening on the part of the public conscience, or whether it was through the discovery of a more effective and proper substitute, or again, whether it was the result of an ever-increasing dearth of material as the policing of England became more far-reaching, is a question open to much moral speculation. The solution, I would venture to say, lies rather in the realm of Ethics than in that of Pharmacy. Suffice it to say, Culpeper, so early as the last part of the seventeenth century, either as an ethical or as a practical substitute, recommended instead, "The ashes of the head of a coal-black cat as a specific for such as have a skin growing over their sight."

Furthermore, competition set in between the chief executioner (Wootton, Chron. of Pharm.) and the apothecaries in an endeavor to supply better human fat. Naturally, the former had the advantage of propinquity, and the first choice; but the latter, thanks be to the skill of the worldly pharmacist, produced the finer article,

since, as Pomet points out, his was carefully prepared with aromatic herbs and hence made a more savory and marketable product withal.

Franklin (p. 94) gives some rather careful directions for the proper selection of mummy. He says, "In the first place one does not excavate into any but the sepulchres of kings and noble personages, and then the mummy administered in a drinking potion has marvellous curative powers. But it is not advisable to open the coffins of the poor devils who have (Jean de Renou, p. 433) succumbed to death through leprosy or pestilence, because of the cadaverous rottenness with which the corpses drip, nor is it right to tell the article as true and legitimate 'Mumie.'" Tomlinson, in his translation of the works of the above author, says the apothecaries became so greedy to supply the enormous demands for mummy flesh, that they went so far as to throw salt and alum on the carcasses of the French who had died of leprosy infection, and then sell them for the genuine article. They even dared gather the corpses of those suffocated in the Arabian sands and sell them to customers as true "Mumie" to be taken internally. In fact, he says, "There are those still who have seen so little of the genuine they really believe mummie is the cadaverous and dry flesh of corrupted and putrid bodies." Such, he maintains, "is kept in apothecary shops to men's greatest peril, which wise men never use in medicine." For, to him, it was absurd to think the substitute efficacious for those "hurt by falling, for it would rather harm them." Posca and oxymel seemed infinitely better to him for such cases.

Wootton further infers that the employment of mummies as a medicine was not an overly ancient custom. To substantiate his claim he cites Chambers' *Cyclopedia*. Here may be found a remark to the effect that the first use of mummies was accredited to a Jew physician. Whether or not the article was introduced as a medicine maliciously against the Christians, appears to be an open question. Certainly the chief trade in this commodity was carried on by the Armenians and Jews. Pomet, it seems, knew a certain Guy de La Fontaine, royal physician, who once visited Egypt, and while there made observations on the subject. After some parance with a certain Jewish merchant, he was admitted into the recesses of the latter's shop. There he observed a number of bodies stacked one upon the other. The merchant volunteered they were corpses which he had procured, some having diseases and some being without contamination. These latter he carefully treated with drugs and pawned off to the "trade" as the genuine mummie.

The better to guide the prospective purchaser, Pomet warns him to choose the shiny, black powder made thereof and not the article which is full of bones. A good specimen, he states, is effective in preventing the coagulation of blood.

Pare, a predecessor of Pomet, also had misgivings as to the entire genuineness of the article as offered on the market. He thought most of the bodies were stolen from gibbets, opened and disentrained, then dried and dipped in pitch. That such a state of affairs was not wholly unknown to the mediæval druggist, is plain from a citation by Oswald Crollius, who goes so far as to offer a formula for preparing artificial mummie, viz., "A young red-headed man (since so many of the genuine had red hair) unburied and macerated in cold water for twenty-four hours," etc. This formed an excellent remedy for wasting of the flesh, ulcers, phthisis, so he states. A somewhat similar formula is cited by Handerson (in Baas' *History of Medicine*). Here a red-headed, uninjured specimen is again called for, with the variation that he is to have been broken on the wheel, or impaled, upon whom the moon and the sun have shone once, etc. It may be readily seen how closely these various formulas tallied with one another. This leads us to believe that they all took their origin from a common source.

There were, however, many other things, perhaps equally as popular, pertaining to the human body, of which much use was made. Secundine was often prescribed in cases of epilepsy. It was used in "Powder de Guttetta." The secundine is early referred to in the Anglo-Saxon books on leechcraft. . . . In France, Lemery felt he could recommend the article without reserve. . . .

Whatever apparent deductions the mediævals may have apparently made in such matters, they were merely of a felicitous nature and not conclusive researches based upon keen deduction and experimentation. As a good illustration of my point, I might cite the frog. In the middle ages, and, in fact, down to the eighteenth century, frog skins, and also toads, were employed in certain medicines. Whether they were then efficient or not, concerns us little here. We now know that in the skin of the toad there is to be found a digitalis-like principle, highly effective under certain conditions. That they knew nothing of this hidden property can, I believe, be proved unquestionably. The majority of the animals formerly used in medicine were prescribed for reasons based upon superstition, and, let us call it, mediæval unenlightenment. The few marked exceptions to this list were such as could hardly be overlooked even by the most ignorant. Cantharides, for instance, was known and correctly used from the modern standpoint. The propensities of the Hymenoptera for raising the mischief could scarcely be overlooked by even the most ignorant of peasants.

FROGS AND TOADS.

Above, mention is made of the frog and toad. Tomlinson devotes an entire chapter to the setting forth of numerous recipes. A decoction of frog eased the toothache, and brought back, when used with pitch, the falling hairs. Skins were also antidotal for serpents' bites. Because of their breeding habits, an alchemist prescribed "water of frog's sperm for pimples and sore eyes." Others, at the same time, were rather skeptical on the subject, saying of him who searched for the spawn, "Whereas he might hunt, exenterate, dissect, exhaust and search the seminals of all the frogs in the kingdom of France and never get so much sperm as might wet the bottom of his metal pan." Pharmacopœia Londinensis says the "liver of a frog being dried, helps the quartan ague, or as the vulgar call it, the three-day ague." Lemery cites it as helpful in exciting sleep, viz., "Take 10 or 12 living frogs, cut them in pieces and place them in a pot." Another formulary bakes the toad and hangs it up in a linen bag about the neck as an amulet. A live toad, or one dried, does equally well, it tells us. Nose-bleed could be cured supposedly by clipping off the nails of a toad and hanging them around the neck of the patient, whereupon the quartan ague would be "rid away forever." This latter remedy evidently dates back to the precepts of Pliny. In the Pharmacopœia Extemporanea of Fuller, "frog spawn" forms a part of the styptic draught against hemorrhages, overflowing of the menses, and vomiting of blood. It was likewise used as a "refrigerating gargle" in cases of a burning fever. Of a more savory sound, if not of taste, was the "julep with houseleek," used to alleviate the thirst and check "the estuosity of the boiling blood."

Thus, in examining the various formulas, we are struck with the fact that, in many cases, although a general discrimination was drawn, frogs and toads were more or less interchangeable, so far as their reputed virtues went. In recent researches conducted on the physiological chemistry of the toad, the parotid glands have been found to contain the above-mentioned digitalis-like principles called "bufagin," together with a toxic principle in the skin, given the name of "bufonin." A further discussion of the respective properties of these drugs, together with

their pathological importance, lies rather in the field of chemistry than in a historical treatise.

Owing to the widespread popularity of the hundreds of animal parts and excretions, many druggists grew wealthy by taking advantage of their opportunities. A woman apothecary, in particular, availed herself of the chance.

Culpeper, so early as 1653, showed a marked aversion to the College of Physicians because they insisted in embodying these disagreeable recipes in the official pharmacopœia. While somewhat outspoken, this commentator, by his lively criticisms, did much toward modernizing the pharmacopœia. In looking through the old leech books, one is struck, not only with the oddness of the remedies, but with the rank foolishness as well, upon which they were based. To the prescription "*Oleum Vulpinus*," calling for a fat fox of middle age caught by hunting in the autumn, cut in pieces, Culpeper adds, "That was well put in therefore when you have caught a fox, bring him alive to the college and let them look in his mouth and tell you how old he is and so shall your Oyl be cum privilegio." He saw all too perspicaciously for his generation. He was far too sagacious for the follies of the Collegii Londinensis.

CONCLUSION.

A review of the whole field establishes, the more firmly, justification for my earlier remarks concerning the intellectual twilight pervading mediæval history in general, and the development of drugs in particular. Pharmacy labored under the yoke of superstition and mysticism until a comparatively late period. Many of the former remedies have been proved of some worth. Many more have been thrown out as worthless. The greatest error our ancestors made lay in their attempts to cure like with like. For instance, if a man became afflicted with a weak heart, they prescribed a remedy made from the beast whom they supposed must have the strongest organ. They therefore would commend the afflicted one to eat of the heart of the lion. Snake-bites were treated with pounded adder, and the bite of mad dogs, with worms taken from the tongue of the dog itself. At first thought we are very apt to believe these early physicians and pharmacists had some inkling of the modern toxin principles and theories. Yet, this is not at all the case. We may be certain that, whatever convictions they may have had in the realm of experimental medicine, their subsequent treatment was entirely without the cognizance of any of our present antitoxic practices.

Furthermore, from a list of over two hundred and fifty animal drugs (not to mention excretions and secretions numbering at least half as many more) of the earlier pharmacopœias to about two hundred by the year 1667, by 1710 the list had decreased to but seventy-five. This decrease has steadily been going on until there are now but a score. Whether to-day the pendulum is swinging back, is a question. To-morrow, who knows but we may be making "official" all manner of serums, etc. Already there have been several new serums added to the current pharmacopœia. We must not think this is a reversion to the primitive days of Dioscorides, Galen, Charas, Pomet and Hartmann. Quite the contrary is the case. Superficially, the trend may seem to be a recapitulation of the old animal drugs of mediæval England and France, but only superficially. Students of sociological development, and those interested in the curious animalic lore of early pharmacy, will find the subject the more entrancing, the more the breach between the ancients and the moderns is apparently narrowed in the eyes of the layman, and yet, in reality enormously widened to the investigator in bacteriology and organic pharmacy.

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