

# The Unicorn in Medical History<sup>1</sup>

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... and he [the Unicorn] was going on, when his eye happened to fall upon Alice: he turned round instantly, and stood for some time looking at her with an air of the deepest disgust.

"What - is - this?" he said at last.

"This is a child!" Haigha replied eagerly. "We only found it to-day. It's as large as life, and twice as natural!"

"I always thought they were fabulous monsters" said the Unicorn. "Is it alive?"

"It can talk," said Haigha solemnly.

The Unicorn looked dreamily at Alice, and said, "Talk, child."

Alice could not help her lips curling up into a smile as she began: "Do you know, I always thought Unicorns were fabulous monsters, too? I never saw one alive before?"

"Well, now that we *have* seen each other," said the Unicorn, "if you'll believe in me, I'll believe in you. Is that a bargain?"

"Yes, if you like," said Alice.

From *Through the Looking-Glass*, by Lewis Carroll.

IN 1890, two years after she graduated from the Woman's Medical College of Pennsylvania, Dr. Kate Hurd Mead was working at Johns Hopkins and participating in the activities of the Johns Hopkins Hospital Historical Club led by humanist physicians like Drs. William Osler, William H. Welch, and Howard A. Kelly. These men, she wrote, "inspired me to search among the old archives for the story of women's place in the development of medicine." Thus commenced a life-long activity relating to her special objective, the history of women in medicine.

It is an honor for me to address you here this evening in memory of Dr. Hurd Mead. It seemed to me that perhaps the subject, the unicorn and medicine, might be appropriate for the occasion because of the important role

played by women in the capture of the animal whose horn was at a certain period in the past so highly valued in medicine. Although Dr. Hurd Mead has labelled unicorn's horn as "another quack remedy", which is certainly true when modern standards of judgment are applied, I am sure that if she had placed herself within the intellectual frame of reference of someone she admired like St. Hildegard in the Middle Ages, she would have included the unicorn in her history.

Probably most of you have seen the famous Unicorn tapestries at The Cloisters in New York which depict the best-known medieval legend of the unicorn. Executed for Anne of Brittany at the end of the 15th century, the seven panels portray the hunt and capture of the graceful white creature with the single spiralled horn, the creature which had come, during the Middle Ages, to symbolize Christ. The swift wild creature whose horn was an antidote to all poisons could only be tamed and captured by a lovely maiden in whose lap he docilely laid his head. The maiden represented the Virgin Mary in church allegory, but

these tapestries undoubtedly represent courtly love as well, since they were probably made to celebrate Anne's marriage to Louis XII in 1499.<sup>3</sup>

The first tapestry shows the beginning of the hunt. In the upper right corner a signal is being given that the unicorn has been sighted. The cipher of Anne occurs five times in the multi-flowered background. At least eighty-five of the more than one hundred plants in these tapestries can be identified by botanists. In the second tapestry the unicorn is seen kneeling beside a fountain and dipping his horn in the waters in order to purify them so that the other animals may drink. The huntsmen stealthily surround the spot, and the third tapestry shows the attack on the unicorn, who tried to flee from the huntsmen's spears. A fierce battle follows in the fourth tapestry. The unicorn kicks and pierces a dog with his horn. Unfortunately, only parts have survived of the fifth tapestry which portrays the capture by the maiden. The fragment here shows the smiling subdued beast with a maiden's hand on his neck, while her attendant motions to the huntsman that the hunt is over. In the sixth tapestry the savage attack of the spearman and dogs on the poor seduced animal occurs. He is then conveyed limping and bleeding on a horse's back to the castle. The last tapestry, which together with the first was executed later than the others and probably for Anne's daughter, shows the wounded unicorn in captivity, symbolizing both the risen Christ and the consummation of marriage, since the golden chain of marriage binds him to a pomegranate tree, a symbol for fertility, while the fenced enclosure in church allegory stands for the Blessed Virgin and the Incarnation. As we shall see, the erotic interpretation of the unicorn and the maiden probably antedated the Christian one.

Where did the unicorn originate? This is a question which has exercised scholars ever since the sixteenth century when doubts of its

existence began to be voiced.<sup>4</sup> The earliest literary report is that of Ctesias, a Greek physician from Cnidus on the coast of Asia Minor, who from around 405 to 397 B.C. served as court physician to the Persian King Artaxerxes. He was present at the battle of Cunaxa made memorable by Xenophon and took care of King Artaxerxes when he was wounded by his brother Cyrus. Ctesias wrote books on Persia and India the original texts of which are lost, but summaries were preserved by Photius, a ninth century Patriarch of Constantinople. In the *Indica*, which was based on travellers' tales, one reads:<sup>5</sup>

25. "Ctesias says that there exist in India some wild asses as large as horses and even larger; their body is white, their head purple, their eyes a dark blue. This animal has a horn in the middle of its forehead; it is a cubit long; the base of the horn near the forehead is all white for about two inches; the upper part, the tip of the horn, is a vivid shade of red; the intermediate part is black. Those who have drunk from these horns (for they make drinking vessels of them) are not subject, they say, to convulsions or the sacred disease and even poisons cannot harm them provided that either before or after the absorption of poison they have drunk wine, water, or any other beverage from these vessels. . . .

<sup>1</sup> See references in Carl Cohn, *Zur literarischen Geschichte des Einhorns*. Berlin, 1896, footnote p. 3 [Wissens-haftliche Beilage zum Jahresbericht der Eliten Städtischen Realschule zu Berlin, Ostern 1896].

<sup>2</sup> Bibliographical note: The most extensive study of the unicorn which has ever been made is that of Odell Shepard, *The Lore of the Unicorn*, Boston and New York, 1930, to which I am indebted for much of the material here presented. Humphrey Humphreys, *The Horn of the Unicorn, Antiquity*, Vol. 27, Mar. 1953, 15-19, first printed in the *Annals of the Royal College of Surgeons of England*, Vol. 8, 1951, is based on Shepard's book and adds no new material. Another recent study, noteworthy for its many illustrations, is Jean Bouillet, *La merveilleuse histoire de la licorne, Arsenale*, Vol. 42, Dec. 1959, 3-62. I have not been able to consult Willy Ley, *The Longfish, the Dodo, and the Unicorn; an Excursion into Romantic Zoology*, New York, 1948.

<sup>3</sup> Ctesias, *La Perse, l'Inde. Les Sommaires de Photius*, ed. by R. Henry. Brussels, 1947, pp. 80-81.

<sup>1</sup> Kate Hurd Mead Class of 1888 Lecture in History of Medicine (XII), Woman's Medical College of Pennsylvania, College of Physicians of Philadelphia, Section on Medical History, 19 April 1960.

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<sup>4</sup> James J. Rorimer, *The Unicorn Tapestries at the Cloisters. A Picture Book*. New York: The Metropolitan Museum of Art, 1955.

This animal is faster and stronger than any other. There is no other animal, whether a horse or any thing else, which is able to overtake it. It starts rather slowly, but as the course lengthens, its strength increases marvellously and it runs ever further and faster."

Aristotle, who had criticized Ctesias as an unreliable authority, nevertheless believed that two kinds of one horned animals exist, naming the Indian ass and the oryx, a kind of antelope found in Africa.<sup>4</sup> By the time of Pliny four hundred years later, there were three unicorns, for he added an Indian ox to Aristotle's list.<sup>5</sup> Finally Aelian, the second century contemporary of Galen, wrote a book on animals which became a basic text for fourteen hundred years, and here one finds the following detailed descriptions of the unicorn:<sup>6</sup>

III, 41. "India produces horses with one horn, they say, and the same country fosters asses with a single horn. And from these horns they make drinking-vessels, and if anyone puts a deadly poison in them and a man drinks, the plot will do him no harm. For it seems that the horn both of the horse and of the ass is an antidote to the poison.

IV, 52. "I have learned that in India are born Wild Asses as big as horses. All their body is white except for the head, which approaches purple, while their eyes give off a dark blue colour. They have a horn on their forehead as much as a cubit and a half long; the lower part of the horn is white, the upper part is crimson, while the middle is jet-black. From these variegated horns, I am told, the Indians drink, but not all, only the most eminent Indians, and round them at intervals they lay rings of gold, as though they were decorating the beautiful

arm of a statue with bracelets. And they say that a man who has drunk from this horn knows not, and is free from, incurable diseases: he will never be seized with convulsions nor with the sacred sickness, as it is called, nor be destroyed by poisons. Moreover if he has previously drunk some deadly stuff, he vomits it up and is restored to health. . . .

And these animals are far swifter than any ass or even than any horse or any deer. They begin to run, it is true, at a gentle pace, but gradually gather strength until to pursue them is, in the language of poetry, to chase the unattainable. . . .

Now the strength of these horns is such that nothing can withstand their blows, but everything gives way and snaps or, it may be, is shattered and rendered useless. They have in the past even struck at the ribs of a horse, ripped it open, and disembowelled it. For that reason the horsemen dread coming to close quarters with them, since the penalty for so doing is a most lamentable death, and both they and their horses are killed. They can kick fearfully too. Moreover their bite goes so deep that they tear away everything that they have grasped. A full-grown Ass one would never capture alive: they are shot with javelins and arrows, and when dead the Indians strip them of their horns, which, as I said, they decorate."

XVI, 20: "They say that there are mountains in the interior regions of India which are inaccessible to men and therefore full of wild beasts. Among these is the unicorn, which they call the 'cartazon.' This animal is as large as a full-grown horse, and it has a mane, tawny hair, feet like those of the elephant, and the tail of a goat. It is exceedingly swift of foot. Between its brows there stands a single black horn, not smooth but with certain natural rings, and tapering to a very sharp point. Of all animals, this one has the most dissonant voice. With beasts of other species that approach it the 'cartazon' is gentle, but it fights with those of its own kind, and not only do the males



FIG. 1. The Tibetan antelope, *Pantholops hodgsoni*. From Sven Hedin, *Central Asia and Tibet*, Vol. II, p. 255, and *My Life as an Explorer*, p. 305.

fight naturally among themselves but they contend even against the females and push the contest to the death. The animal has great strength of body, and it is armed besides with an unconquerable horn. It seeks out the most deserted places and wanders there alone. In the season of rut it grows gentle towards the chosen female and they pasture side by side, but when this time is over he becomes wild again and wanders alone. They say that the young ones are sometimes taken to the king to be exhibited in contests on days of festival, because of their strength, but no one remembers the capture of a single specimen of mature age."

Now, we may ask, what were the one-horned animals which these ancient authors were describing? It is obvious that Aelian's "cartazon" of the last passage was a rhinoceros, and that it was a different animal from the wild white Indian ass with the tri-colored magic horn which he had discussed earlier. Aelian does not mention it, but belief in the

antidotal power of rhinoceros horn was a very ancient one in India, and Indian potentates had cups and beakers made from its substance, in order to protect themselves from illness. Continuing until modern times, this belief has brought the Indian rhinoceros nearly to the point of extinction.<sup>7</sup>

But what of Ctesias' and Aelian's unicorn with the long horn which was the prototype of the unicorn in the Cloister tapestries? There scholars can only guess. Like the abominable snow man, the unicorn may have originated in Tibet where the natives have long attributed magical powers to a small, fleet antelope, *Pantholops hodgsoni*, whose nearly straight horns are about two feet long. Seen in profile and at a distance by hunters, one might imagine that there were single horned animals in the herd. (Fig. 1) The horns of the orongo, as this antelope was called by the Tibetans,

<sup>7</sup> Lee M. Talbot, Marco Polo's Unicorn, *Natural History*, Vol. 68, Dec. 1959, 558-65.

<sup>4</sup> *Historia animalium*, Book VIII, 28; Book II, 1; *De partibus animalium*, Book III, 2.

<sup>5</sup> *Historia naturalis*, Book VIII, 30-31; Book XI, 45.

<sup>6</sup> Aelian, *On the Characteristics of Animals*, Trans. by A. F. Scholfield, Loeb Classical Library, Cambridge, Mass., 1958. Permission to quote Book III, 41 and Book IV, 52 has generously been given by the publisher. The translation of Book XVI, 20 is taken from Shepard, *op. cit.*, p. 36.

were carried away by pilgrims because of their magic value.<sup>8</sup>

Another fact which may have led western visitors to the belief in one-horned animals was the Babylonian-Assyrian artistic convention of representing animals in profile with only one horn showing. For example, at the royal palace at Persepolis in Persia there is a sculptured silhouette of a one-horned ox which Ctesias probably was familiar with, an art form which had been going on for over a thousand years, as single horned animals were frequently represented on ancient Mesopotamian cylinder seals.<sup>9</sup>

And how does one explain the tri-colored horn of the unicorn described by Ctesias and repeated by Aelian? One scholar has conjectured that the magical rhinoceros horns may have been artificially dyed after they were taken from the animal. In their natural state they are a reddish black in their thick portion and a dull red where they are thin. The white may have been a further decoration once they became an article of commerce.<sup>10</sup> Thus Ctesias' unicorn appears to have been a composite of fact and fancy, of Asian travellers' tales about an elusive fleet animal bearing only one horn, and with the magic properties of the rhinoceros horn engrafted on that of the more graceful mountain animal.

There is an additional literary source for the unicorn which was crucial for its importance during the Middle Ages and even later—the Bible. The King James English Version mentions the unicorn seven times, for example:

Numbers xxiii, 22: "God brought them out of Egypt; he hath as it were the strength of a unicorn."

Psalms xcii, 10: "But my horn shalt thou exalt like the horn of a unicorn: I shall be anointed with fresh oil."

<sup>8</sup> Reports of Lattier, Hue, and Prejevalsky, quoted in Shepard, pp. 210-11.

<sup>9</sup> See Eb. Schrader, *Die Vorstellung vom *μυρὸκερως* und ihr Ursprung. Sitzungsbericht d. kgl. preuss. Akad.* Berlin, 1892, pp. 573-81, Plate 5.

<sup>10</sup> Theory of Shepard, pp. 28-29.

Job xxxix, 9-10: "Will the unicorn be willing to serve thee, or abide by thy crib?"

"Canst thou bind the unicorn with his band in the furrow? or will he harrow the valleys after thee?"

Bible scholars have traced the word unicorn of the King James version to the *μυρὸκερως* of the Septuagint, the Greek translation of part of the Old Testament made by the Hellenistic Jews in the Greek-speaking community of Alexandria. They employed this word for the Hebrew word *Re'em*, the name of an animal with which they were unfamiliar. But from the characteristics named, the swiftness, fierceness, and the strength of its horn, they judged that *Re'em* must refer to a *μυρὸκερως* or unicorn with which they were familiar from Ctesias. Today it is thought that *Re'em* actually referred to a huge aurochs, a species of wild ox, *Bos primigenius*, which is now extinct but was fairly common in the ancient world and is regarded by some as the ancestor of our domestic cattle. Described by Julius Caesar as inhabiting the Hercynian Forest in Germany, they were depicted on Mesopotamian monuments, and the famous sculptured bulls of Nineveh have been identified as aurochs.<sup>11</sup> Incidentally, none of the Biblical passages refer specifically to one horn, and in most instances the plural was used in the original Greek.

There is still another ancient source for the lore of the medieval unicorn in the *Physiologus*, a group of animal tales assembled in the third century for the purpose of moral edification of the rapidly growing Christian communities. It is well known that objective, scientific descriptions of nature, whether of plants, or animals, or the heavenly bodies, were ignored by the Church Fathers and others who formulated the new Christian religion, and if the natural world was discussed at all, it was for didactic reasons only. Originating in Alexandria, the crossroads between the eastern and western worlds, the *Physiologus* or *Bestiary*, as it was also called in later centuries, was a hodge-

<sup>11</sup> Sir A. H. Layard, *Ninveh and Its Remains*. New York, 1849, Vol. II, pp. 326-27.

podge of stories about animals which served as allegories for instruction in Christian morality. The scientific value of the collection is illustrated by the story of the ant-lion:<sup>12</sup>

"Physiologus says that the ant-lion's father has the shape of a lion and his mother that of an ant. His father feeds on flesh and his mother on herbs. These two bring forth the ant-lion, which is a mixture of both, for his fore part is that of a lion and his hind part that of an ant. Being thus composed, he can eat neither flesh like his father nor herbs like his mother, and so he starves to death."

It is from this source that the story of the maiden's ability to capture the unicorn originates. Although the numerous manuscripts vary in details, in general the animal is described as a small, graceful, kid-like creature which becomes fascinated by a lovely maiden, places his head in her lap, is captured and led away to the palace of the king. In later centuries there were many embellishments to these basic facts, for example St. Hildegard of Bingen in Germany wrote in the twelfth century:<sup>13</sup>

"The unicorn is more warm than cold, but its strength is still greater than its heat. It feeds only on plants and as it walks it nearly jumps. It runs from man as well as from other animals with the exception of those of its own species and for that reason it cannot be caught. It fears man very much and has an aversion to him; just as the snake at the first fall of man turned itself away from man and looked at the woman, so this animal also flees from man but follows women."

"There was once a philosopher who investigated the nature of the animal and he could in no way catch it, which was astonishing. One day he went on a hunt, as he often did, accompanied by women and maidens. This time the maidens separated from the others and played meanwhile with

flowers. The unicorn stopped when it saw the maidens, went gently, finally sat on its hind legs and continually gazed at them. When the philosopher saw this, he thought about it and recognized that the unicorn could be caught with the help of the maidens. He approached it from behind and caught it so by means of the maidens. The unicorn, you know, wonders when it sees a maiden from afar, that she has no beard, although she has the form of a man. And when two or three maidens are together, it wonders all the more and becomes all the easier to catch while it has its eye fixed on them. But the maidens with which one wishes to catch it must be aristocratic and not boorish, also not too grown up, but also not too small, but in the true bloom of youth, for this it loves because it recognizes this as gentle and pleasing."

What can be the origin of such a tale? The erotic implications are unmistakable: a beautiful young girl subduing an elusive fleet male beast. (Fig. 2) In the Syriac version of the *Physiologus* the probably pre-Christian origin is even more evident; for the unicorn not only places his head in the maiden's lap but is suckled at her breasts. The text continues: "Then the girl, while sitting quietly, reaches forth her hand and grasps the horn on the animal's brow, and at this point the huntsmen come up and take the beast and go away with him to the king.—Likewise the Lord Christ has raised up for us a horn of salvation in the midst of Jerusalem, in the house of God, by the intercession of the Mother of God, a virgin pure, chaste, full of mercy, immaculate, inviolate."<sup>14</sup>

This is another example of the successful syncretism of paganism and Christian beliefs. An ancient tale of the power of a virgin to subdue a fierce male is used to illustrate the power of the Virgin Mary. The captured unicorn symbolized the Incarnation of Christ, its single horn representing the unity of God the

<sup>12</sup> Quoted in Shepard, p. 46.

<sup>13</sup> St. Hildegard, *Tiere u. Arzneibuch*, trans. by Dr. Alfons Huber. Vienna, n.d., pp. 17-18.

<sup>14</sup> Shepard, p. 49, from a Latin translation of J. P. N. Land, *Anecdota Syriaca*, Leyden, 1870, Vol. IV, p. 146.



FIG. 2. The unicorn captured by the maiden. From an Italian manuscript of the 14th century. Royal MS. 973. 12, folio xiii, British Museum, reproduced in Shepard, *Love of the Unicorn*, Plate II.

Father and the Son, its small size the humility of Christ.

During the Middle Ages the unicorn was a universally accepted member of the animal kingdom. Isidore, Bi-hop of Seville, in the early seventh century included it in his *Etymologies*, an encyclopaedia of all the sciences which was slavishly copied for centuries, and his account occurs without significant variations in later medieval writers like Bartholomaeus Anglicus and Albertus Magnus.<sup>15</sup> Isidore was a genius in jumbling source material, and in the case of the unicorn he confused it with the rhinoceros described by Aelian, mentioning its great strength, cruelty, and its ability to kill an elephant with its horn. Then, in the next sentence, he added the maiden's ability to capture the beast. Fancy a

maiden holding the head of a rhinoceros in her lap! Thus unicorns lived on throughout the Middle Ages, firmly established in many texts, both pagan and Christian, and mentioned in the Bible itself. Of course no one ever saw one, but neither did they see elephants or the dragons in which they firmly believed. Such animals simply lived in remote parts of the world which were rarely visited by men from western Europe.

But what of the unicorn's connection with medicine? First of all, it should be noted that there was not a single reference to the unicorn or its horn in any classical medical author, such as Hippocrates, Galen, or Dioscorides. It entered medical literature only late in the Middle Ages. Although Ctesias and Aelian had described the alexipharmic value of the horn, Isidore did not mention it. St. Hildegard in the twelfth century was the first to associate the unicorn with human ailments, as follows:<sup>16</sup>

"Pulverize the liver of a unicorn, give this

<sup>15</sup> St. Hildegard, *op. cit.*, p. 19.

powder in fat prepared with yolk of egg and make a salve, and there will be no leprosy, of whatever nature it might be, which would not be healed, if you often rub it with this salve, except if death overtakes him who has it or God will not heal him. For the liver of this animal has a salutary heat and cleanliness in it and the egg fat is very valuable and esteemed as a salve. The leprosy comes of course oftentimes from the black bile and from the black stagnant blood.

"If you make a girdle from the hide of the unicorn and gird yourself with it, no plague however severe and no fever will harm you. Also if you make shoes from the hide and wear them, you will always have sound feet, sound legs and sound joints, and also will no pestilences harm you while you are wearing them.

"If a man is afraid of being poisoned, he should place the hoof of a unicorn under the plate on which the food is or under the cup which contains his drink, and if there is poison in it, they become boiling hot if they are warm, but if they are cold they will begin to steam and thus will he know that poison is mixed therewith."

Oddly, Hildegard gives the hoof the magic power which had formerly been attributed to the horn, ascribing no virtue to the horn itself.<sup>17</sup>

We do not know the source of Hildegard's information or the literary route which established the unicorn horn in the European materia medica.<sup>18</sup> It seems to have been included among new drugs such as bezoar stone

<sup>17</sup> Shepard states (p. 289) that this was a later interpolation in the manuscript which Migne used for his edition.

<sup>18</sup> Shepard states (p. 121) that Albertus Magnus mentioned the horn's magic virtues, and that Peter of Abano "acquired a firm faith in the alcorn [horn of the unicorn] which he transmitted to many others" in his treatise on poisons, *De venenis* (first printed edition, Mantua, 1473). An examination of the texts cited does not yield this information. There is not a single reference to the medicinal value of unicorn's horn in either of these books, and Peter did not even mention the unicorn in his treatise.

and mummy which were added to the European pharmacopoeias from Arabic sources in the late Middle Ages. This same period is also that in which astrology became linked with medicine.

From the fourteenth century on, there are frequent statements about unicorn's horns in inventories of kings and princes. In 1303 a horn was stolen from the treasury of King Edward I of England; in 1388 the French king paid his goldsmith for decorating his unicorn's horn. In 1468 when King Edward IV of England gave a state dinner for the wedding of his sister to the Duke of Burgundy, the table was set with unicorn horns on each corner.<sup>19</sup> If poisoned food or drink were placed on the table, the horns would begin to sweat. During the Renaissance, which coincided with the great Age of Poisoning when no ruler felt safe without some protection against the poison of his enemies, it became customary to touch all foods served with a piece of horn before it was tasted, a practice which was abolished in the French royal household only by the Revolution in 1789.<sup>20</sup>

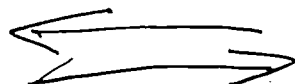
Complete horns were very costly and were owned only by churches, kings, or wealthy princes. One of the most famous was that of the monastery of St. Denis near Paris. It was seven feet long and was kept in a dark vault standing with one end in water, the drinking of which produced immediate sweating. Jerome Cardan, the colorful Italian physician and mathematician, a contemporary of Benvenuto Cellini, made a special trip to St. Denis to see this horn and was much impressed.<sup>21</sup> This too disappeared in the French Revolution. St. Mark's cathedral in Venice still owns three horns, two of which have been worn smooth by scraping to obtain the medicinal powder. The most famous English horn was that kept at Windsor by Queen Elizabeth and valued by a German traveller in 1598 at 100,000 pounds.

<sup>19</sup> Shepard, p. 110.

<sup>20</sup> Article, "Licorne," *La Grande Encyclopédie*, Vol. 22, p. 200.

<sup>21</sup> *De vita propria*, XXIX, in: *Opera omnia*, Lyons, 1663, Vol. I, p. 18.

<sup>15</sup> Isidore, *Etymologiarum sive Originum Libri XX*, Lib. XII, 2; Bartholomaeus Anglicus, *De Proprietatibus rerum*, XVIII, 88 [edition of Strassburg, 1485]; Albertus Magnus, *De animalibus*, Book XXII, tract. ii, Cap. 1, 106. He seems clearly to have had the rhinoceros in mind.



Another horn kept in the Tower with the Crown jewels was valued at 40,000 pounds in 1641. In 1574 the captive Mary Queen of Scots, fearing that she would be poisoned, wrote to the French Ambassador for fine unicorn's horn, referring to the powdered form.<sup>22</sup> In the seventeenth century Governor John Winthrop of Connecticut became the custodian of several horns, one of them sent by Governor Endicott.<sup>23</sup>

First used in Western Europe only as a detector of poison in food and drink, the unicorn horn gradually was extended to cure a wide number of ailments. Aelian had written that water made from the horn protected one from incurable diseases, convulsions, and epilepsy. The list was enlarged to include poisonous bites, whether of dogs or scorpions, fever, ulcers, and eventually the plague itself. By the late sixteenth and seventeenth centuries its use was no longer confined to those of high estate, for in its powdered or aqueous form it passed into general use as a panacea. Its great popularity is evidenced by the two unicorns in the coat of arms of the Society of Apothecaries of London, created in 1617, and the common use of the unicorn for apothecary shop signs in both Europe and America. The first apothecary shop to be established in Boston by Silvester Gardiner around 1735 bore the sign of the Unicorn and Mortar, while the earliest known pharmaceutical catalogue published in the British American colonies around 1760 described drugs sold in New York at "the Sign of the Unicorn and Mortar."<sup>24</sup> Of interest, too, is the very extensive use of the unicorn for water-marks on paper. Of all animals this was most frequently used, and Briquet's classical

catalogue of water-marks lists 535 different unicorn figures in paper from many parts of Europe.<sup>25</sup>

Unicorn horn was listed in official pharmacopoeias such as that of the College of Physicians of London which was first issued in 1618.<sup>26</sup> Here it was included as one of many ingredients of Aqua Bezoartica Langii and of "a great antidote of Mathiolus against poison and the plague," although hartshorn could be substituted if necessary. A London quack's advertisement dating from this same time extolled "A Most Excellent Drink made with a true Unicorn's Horn, which doth Effectually Cure these Diseases: viz. Scurvy, Old Ulcers, Dropsie, Running Gout, Consumptions, Distillations, Coughs, Palpitation of the Heart, Fainting Fits, Convulsions, Kings Evil, Rickets in Children, Melancholly or Sadness, The Green Sickness, Obstructions, And all Distempers proceeding from a Cold Cause. The Use of it is so profitable, that it prevents Diseases and Infection by fortifying the Noble Parts, and powerfully expels what is an Enemy to Nature, preserving the Vigour, Youth, and a good Complexion to Old Age: The Virtue is of such force, as to resist an Injury from an unsound Bedfellow; None can excel this, for it is joynd with the Virtue of a true Unicorn's Horn, through which the Drink passeth, and being impregnated therewith, it doth wonderfully Corroborate and Cure, drinking it warm at any time of the Day, about a quarter of a Pint at a time, the oftner the better, the Price is 2 s. the Quart."<sup>27</sup>

By this time we must all be asking the question: where did these horns come from? Travellers as recently as the nineteenth century claimed to have seen unicorns of various descriptions in remote parts of the world, in Asia, central Africa, or even America, but none

<sup>22</sup> C. M. Briquet, *Les Filigranes, Dictionnaire Historique des Marques du Papier*, Paris, 1907, Vol. III, pp. 519-36, Nos. 922-10457.

<sup>23</sup> *Pharmacopoeia Londinensis*, London, 1618, pp. 4 and 74.

<sup>24</sup> From a collection of tracts assembled by Anthony à Wood, preserved in the Bodleian Library at Oxford, reproduced as Plate XI in Shepard.

<sup>25</sup> M. H. Armstrong Davison, *The Maladies of Mary Queen of Scots and Her Husbands, Scottish Society of the History of Medicine, Report of Proceedings*, 1955-56, p. 32.

<sup>26</sup> *Mass. Hist. Coll.*, Ser. III, Vol. X, p. 20; Ser. IV, Vol. VII, p. 156.

<sup>27</sup> Henry R. Viets, *The medical education of James Lloyd in Colonial America, Yale J. Biol. Med.*, Vol. 31, 1958, 5; facsimile of titlepage of pharmaceutical catalogue in *Am. J. Pharm.*, Vol. 131, 1959, 19. My attention was brought to the latter by Dr. Fred B. Rogers.

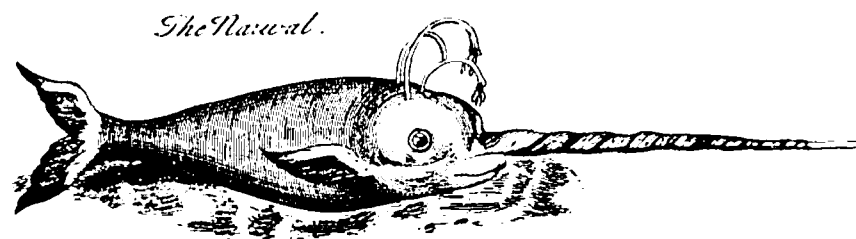


FIG. 3. The narwhal, *Monodon monoceros*. From Pomet, *Compleat History of Drugs*, London, 1725, Plate 81.

were ever seen in Europe. What was the source of supply of this drug which eventually became rather plentiful, either whole or in powdered form? The most famous horns were long, slender and spiralled like the one in the tapestries. From what animal were they obtained? The answer is that they were not obtained from any land animal at all, but from a mammel of the sea, the narwhal, *Monodon monoceros* which inhabits waters of the far north and is rarely seen south of Greenland. The male grows from ten to eighteen feet in length and bears a single long tusk on the left side of its upper jaw which may extend for more than half the length of the animal. (Fig. 3). It is not a horn, but an ivory tooth with a central cavity and with spiral grooves and ridges on the surface.<sup>28</sup> The first "horns" were probably found on beaches where they had washed up from the sea, like the famous "Horn of Windsor" found by Frobisher in 1577 in the Baffin Island bay which bears his name. As one of his men reported, they saw "a dead fish floating, which had in his nose a horne streight and torquet, of length two yards lacking two ynches, being broken in the top, where we might perceive it hollow, into the which some of our sailers putting spiders they presently died."<sup>29</sup>

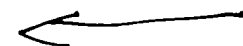
<sup>28</sup> Article "Narwhal," *Encyclopaedia Britannica*, Eleventh Edition, Vol. XIX, p. 243.

<sup>29</sup> Dionise Settle, *The second voyage of Master Martin Frobisher, made to the West and Northwest Regions, in the yeere 1577*, in: Richard Hakluyt, *The Principal Navigation Voyages Traffiques & Discoveries of the English Nation*, Vol. VII, New York, 1904, p. 219. See also the account of George Best: "Upon another small land here was also found a great dead fish, which as it

From the thirteenth century on the steadily increasing activities of Scandinavian seamen in the waters around Iceland and Greenland brought an ever greater number of "unicorn horns" to markets in Amsterdam and Copenhagen whence merchants distributed them all over Europe. Also in the sixteenth and seventeenth centuries the Portuguese brought rhinoceros horns from India, for their contact with the Indians whose faith in the power of rhinoceros horns was ages old served to amplify the popular belief in unicorn horns. Of course there were disputes about which of these horns were "true" unicorn horns, especially since one was black and the other white, but authorities for both types could be cited. More important was the necessity to avoid buying false horns, for the market was such a good one that many substitutes were proffered. Artificially straightened walrus or elephant tusks, fossil bones, or stalactites were sold as true horns, and the powdered form could be made from innumerable substitutes such as powdered bones of any kind, stag horns, or even clay.<sup>30</sup> Therefore it was necessary to have tests to determine whether or not the horn

should seeme, had bene embayed with yce, and was in proportion round like to a Porpose, being about twelve foote long, and in bignesse answerable, having a horne of two yardes long growing out of the snoute or nostrils. This horne is wreathed and strait, like in fashion to a Taper made of waxe, and may truly be thought to be the sea Unicorne. This horne is to be scene and reserved as a Jewell by the Queenes Majesties commandement, in her Wardrobe of Robes." *Ibid.*, p. 297.

<sup>30</sup> Thomas Browne, *Pseudodoxia epidemica: or, enquiries into very many received tenents, and commonly presumed truths*, London, 1646, pp. 167-68.



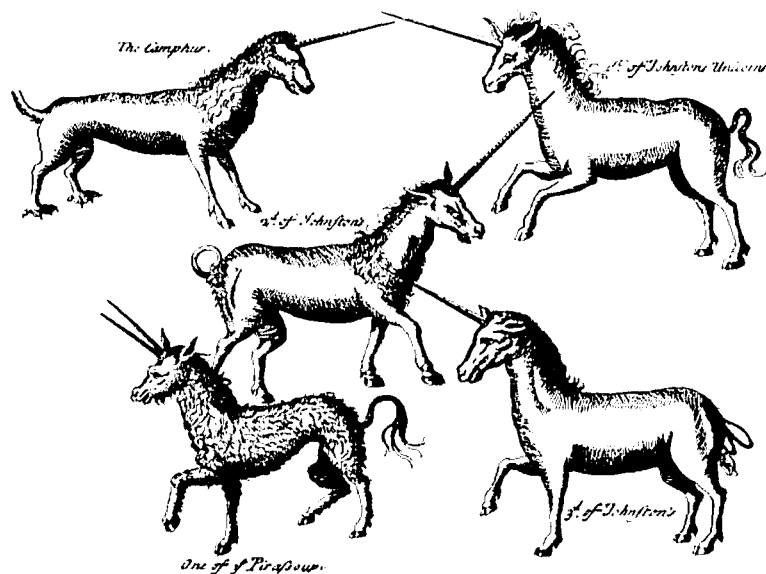


FIG. 4. Various kinds of unicorns. From Pomert, *Compleat History of Drugs*, London, 1725, Plate 70.

was genuine. Frobisher's sailors dropped spiders inside their horn to see whether or not they would die. True horn when put into water would cause bubbles to rise and the water would appear to boil even though cold; moreover live scorpions put into such water would die after a few hours. Or if one traced a circle with unicorn water and placed a scorpion, spider, or toad within this circle, it would die when it crawled over the edge.<sup>31</sup> In another test a pigeon which had previously been poisoned with arsenic could be revived by feeding it powdered unicorn horn.

A public exposure of the traffic in narwhal tusks took place in Copenhagen in 1638 when Professor Ole Worm, an anatomist of repute, presented a dissertation in Latin about the unicorn horns which the local merchants were selling, a dissertation, oddly enough, prepared at the request of the merchants themselves, who had become engaged in a dispute about

what these horns really were.<sup>32</sup> Professor Worm described the most famous horns of Europe and showed that they were all identical with narwhal tusks. He had personally examined a narwhal cranium and had seen that the tooth or tusk protruded from the left side of the upper jaw and not from the cranium, as a horn should. In spite of this dissertation, which few probably read anyway, confidence in the medicinal value of unicorn horn did not wane. Instead people simply transferred to the tusk of the narwhal, or sea-unicorn as it was called, the virtues which the terrestrial unicorn horn had had, and one writer praised God for providing from the sea such an abundant supply of a product which had formerly been so rare and costly that only princes could afford it.<sup>33</sup> As one might expect, the increased

<sup>31</sup> *An os illud quod vulgo pro cornu Monocerotis conditionatur, verum sit Unicornu.* The text is given in Thomas Bartholin, *De Unicornu Observationes*, Amsterdam, 1678, pp. 113-18.

<sup>32</sup> Paul Ludwig Sachs, *Monocerotologia, seu de Genitinis Unicornibus*, 1676, quoted in Shepard, pp. 263-64.

<sup>33</sup> Ambroise Paré, *Des Venues et morsure de chiens enragés* . . . Chap. LXI, in: *Oeuvres*, Lyon, 1641, p. 519.

supply brought the value of horns down considerably by the middle of the seventeenth century, but this does not signify that public interest or confidence was slackening. One of the chief sights of European travellers in this period was the famous throne made almost entirely from unicorn horns which was used for the coronation of the Danish kings.<sup>34</sup>

However there were also sceptics who had been speaking out for some time. "Great account and much profit is made of Unicorns horne," wrote Sir Thomas Browne in 1646, "at least of that which beareth the name thereof; wherein notwithstanding many I perceive suspect an Imposture, and some conceive there is no such animall extant."<sup>35</sup> Browne was referring to a controversy about the unicorn which had begun in the middle of the preceding century. Conrad Gesner had included a detailed account based upon traditional sources in his *Historia animalium* of 1551, but two years later Pierre Belon, the French naturalist who had travelled in parts of the world where the unicorn was supposed to live, was sceptical about the animal and the presumed powers of its horn. He judged that most of the European horns were from marine animals, an area of knowledge in which he was a competent judge.<sup>36</sup>

In 1566 an Italian physician named Andrea Marini wrote a book "Against the False Opinion of the Unicorn"<sup>37</sup> which thoroughly criticized the belief that such an animal as the unicorn existed and that any of the so-called unicorn horns had any medicinal value whatever. He blamed the Arabs for having intro-

<sup>34</sup> "But of these Unicorns Horns no man sure hath so great a Collection as the King of Denmark; and his Father had so many, that he was able to spare about an hundred of them, to build a Magnificent Throne out of Unicorns Horns." Edward Browne, *An Account of several travels through a great part of Germany*, London, 1677, p. 20.

<sup>35</sup> Thomas Browne, *Pseudodoxia epidemica*, p. 166.

<sup>36</sup> *Plurimum singularium & memorabilium rerum in Graecia, Asia, Aegyptu, . . . observationes*, Antwerp, 1589, Lib. I, cap. 14 (pp. 35-38). First published in French in 1553.

<sup>37</sup> *Discorso de Andrea Marini, Medico, Contra la Falsa Opinione dell' Alicorno*, Venice, 1566.

duced many false drugs, such as unicorn horn or bezoar stone, and he branded such usages as based upon groundless superstitions, human credulity and gullibility. In addition to using a method of comparing texts in order to demonstrate the innumerable contradictions in the descriptions of the supposed animal, (Fig. 4) Marini performed experiments with the horn itself, as did the great French surgeon, Ambroise Paré, shortly afterwards. Paré's "Discourse on the Unicorn" of 1682 reinforced all of Marini's arguments.<sup>38</sup> It is interesting to note that Paré's religious faith prevented him from denying that unicorn animals exist, since they were named in the Holy Scriptures, but as there was no mention in the Bible of any alexipharmical virtue of the horn, Paré was free to disprove this with all possible experiments and logic.

Both Marini and Paré provoked response by unicornists, as we may call them, whose arguments demonstrate the resourcefulness of the mind in providing arguments for wishful thoughts. One author, for example, insisted that the reason that the unicorn is never seen is because it is so rare, and being so rare it is all the more valuable.<sup>39</sup> An opponent of Paré appealed to the weight of time and authority for belief in the unicorn. It must exist because for centuries so many people and so many famous authors had said so. This brought forth Paré's famous statement that he "would prefer to be right entirely alone than to be wrong not only with the wise men but even with all the rest of the world. For the excellence of truth is so great that it surpasses all human wisdom."<sup>40</sup>

Another interesting attitude is observed in those who defended the unicorn: the notion

<sup>38</sup> *Discours d'Ambroise Paré, Conseiller, et Premier Chirurgien du Roy. A Sçavoir, De la Mumie, De la Licorne, Des Veinus, et de la Peste*, Paris, 1582. This treatise was discussed in a recent article by Boyd Howard Hill, Jr., Ambroise Paré: Savonnes or Scientist? *J. Hist. Med.*, Vol. 15, 1960, 52-56.

<sup>39</sup> Andrea Bacci, *Discorso d'Allicorno*, Florence, 1582, pp. 36-37.

<sup>40</sup> *Réplique d'Ambroise Paré, . . . à la réponse fautive contre son Discours de la Licorne*, in: *Oeuvres*, p. 522.



FIG. 5. Frontispiece of the second edition of Thomas Bartholin's *De Unicorni Observationes*, Amsterdam, 1678. By courtesy of the National Library of Medicine.

that even though it might be true that the unicorn horn is valueless as a detector or antidote to poison, nevertheless it is good for the state to have people believe in it, since this prevents evil men from committing crimes by

poisoning.<sup>41</sup> Paré tried to dissuade the physician of King Charles IX from the ceremony of dipping a piece of horn into the King's drinking

<sup>41</sup> Bacci, *op. cit.*, passage translated by Shepard, p. 167.

cup. The physician replied that he knew that it was a useless custom, but since everyone believed in it so thoroughly he could not stop it. When asked why physicians prescribed powdered unicorn horn to patients when they knew it was worthless, Paré said, "It is because the world wants to be deceived and physicians are very often forced to prescribe it, or rather, to permit their patients to use it because they want it."<sup>42</sup>

The unicorn literature was brought to a suitable climax with the efforts of the three Bartholins, Caspar, Thomas, and Caspar the Younger. The 1628 treatise by Caspar which gave a sober critical examination of the issue was extended by his son Thomas to a volume which is both a serious and a comic encyclopedia on the unicorn. The second edition of this work by Caspar the Younger contains references to nearly six hundred books and practically exhausts the subject of one horned creatures, whether insect, fish, animal or man.<sup>43</sup> (Fig. 5) The general position taken by all the Bartholins was that the unicorn animal does exist in nature, but its horn is valueless

<sup>42</sup> *Oeuvres*, p. 520.

<sup>43</sup> *De Unicorni Observationes Novae*, 1645; 2d edition, Amsterdam, 1678.

in medicine. This remained the commonly accepted belief of educated people. So long as the word unicorn remained unexplained in the Bible, the existence of the animal had to be accepted by the pious, and so long as there were unexplored parts of the world, one could never be sure that the classical unicorn might not some day be found.

Slow as the popular opinion was in changing, it is clear that by the end of the seventeenth century no self-respecting practitioner would prescribe unicorn horn. Quincy's *Dispensatory* of 1722 dismissed the drug as follows: "The strange Conceits of the Medicinal Virtues of this Drug are both too numerous and too ridiculous to mention here; and both this and the following [bone of a stag's heart] are now justly expelled [from] the present Practice."<sup>44</sup>

In the Western Reserve University Library catalogue the cards for "Unicorn" are immediately before those for "Unidentified Flying Objects." Could anything be more suitable, expressing as they both do man's perpetual desire for the miraculous, the unattainable, for freedom from the commonplace, and for the means of escape from illness and death?

<sup>44</sup> John Quincy, *A Compleat English Dispensatory*, 4th ed., London, 1722, p. 185.

# TRANSACTIONS & STUDIES

*of the*

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