

‘Le jumart’: myth or mystery in animal reproduction?*‘Le jumart’: mythe of mysterie in de dierlijke reproductie?***¹P.E.J. Bols, ²H.F.M. De porte**¹Laboratory For Veterinary Physiology and Biochemistry, Department of Veterinary Sciences, University of Antwerp, Universiteitsplein 1, Gebouw U, B-2610, Wilrijk, Belgium²Department of Farm Animal Health, Faculty of Veterinary Medicine, Utrecht University, Utrecht, the Netherlands

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A BSTRACT

There was a time when science still had to ‘hatch’. An era during which man often extrapolated existing knowledge to a level beyond reality. That period is not as far behind us as we would like to believe. Breeding of animals has always stimulated man’s fantasy. Out of this, a very interesting myth - or is it a mystery? - was born: the existence of a hybrid between horse and cow, ‘Le Jumart’.

On top of the very well-known hybrids between horses and donkeys, the French ‘capitaine des haras’ Francois Alexandre de Garsault (1692-1778) describes the procedure of how to create a hybrid between a cow and a horse in his widespread and well known ‘Nouveau Parfait Maréchal’, first published in 1741. In depth research showed that he was far from being the only one who believed in the existence of such a crossover species. Other well-respected contemporary scientists even dedicate chapters in their textbooks on this animal, such as the French naturalist and medical doctor Jean-Pierre Buchoz (1731-1807) in his ‘Traité Economique et Physique de Gros Menu Bétail’ published in 1778. Even opinion leaders Charles Bonnet (1720-1793) and Lazzaro Spallanzani (1729-99) were convinced that these animals really roamed around in France during the 18th century. Finally, even the founder of the first ‘Ecole Vétérinaire’ in the world, Claude Bourgelat (1712-1779) testified in a letter to Bonnet to have admired the product of a stallion and a cow with his own eyes. Fortunately, the debate could count on important disbelievers as well, with Albrecht von Haller taking the lead by publishing a paper in the ‘Supplément à l’Encyclopédie ou Dictionnaire Raisonné des Sciences, des Arts et Métiers’ (1777), in which he calls the existence of the Jumart a ‘fable’. It would take another century for André Suchet (1849-1910) to publish an ‘Extrait des Mémoires de la Société Zoologique de France’ with the title ‘La Fable des Jumarts’ (1889). Extremely interested in hybridization, this 19th century politician and member of several scientific societies, faces the challenge to finally steer the scientific community to a general conclusion on this enigma. This paper describes in a chronological order the rise and fall of one of the most intriguing ‘fabula’ in reproductive medicine and how it took emerging modern science about 200 years to decide on ‘myth’ or ‘mystery’.

SAMENVATTING

Ooit was er een tijd waarin de wetenschap zich nog moest ‘ontpoppen’. Een tijdperk waarin de mens bestaande kennis extrapoleerde tot een niveau dat vaak de werkelijkheid oversteeg. Geloof het of niet, maar deze periode ligt niet zo ver achter ons. Voordat dieren in lactatie kunnen komen, moeten ze zich voortplanten. En de voortplanting van dieren heeft de fantasie van de mens altijd al geprikkeld. Uit deze fantasie ontstond een zeer interessante mythe – of is het een mysterie?: het bestaan van een kruising tussen een paard en een rund, ‘le jumart’.

Naast de alom bekende kruising tussen een paard en een ezel beschreef de Franse ‘capitaine des haras’, Francois Alexandre de Garsault (1692-1778), in zijn wijdverspreide en bekende ‘Nouveau Parfait Maréchal’, dat voor het eerst werd gepubliceerd in 1741, de kruising tussen een paard en een rund. Uit verder onderzoek blijkt dat hij niet de enige was die geloofde in het bestaan van een dergelijke

hybride soort. Andere gerespecteerde ‘moderne’ wetenschappers hebben zelfs volledige hoofdstukken in hun handboeken aan deze diersoort gewijd, zoals de Franse naturalist en arts, Jean-Pierre Buchoz (1731-1807), in zijn ‘Traité Economique et Physique de Gros Menu Bétail’ (1778). Ook de opinie-makers Charles Bonnet (1720-93) en Lazzarro Spallanzani (1729-99) waren ervan overtuigd dat deze dieren de weiden begraasden in het Frankrijk van de 18^e eeuw. Zelfs de oprichter van de eerste ‘Ecole Vétérinaire’ ter wereld, Claude Bourgelat (1712-1779), getuigde in een brief aan Bonnet dat hij een nakomeling van een hengst en een koe met zijn eigen ogen had mogen aanschouwen. Gelukkig kon het debat ook rekenen op belangrijke tegenstanders, met Albrecht von Haller als een van de belangrijkste voortrekkers. Von Haller publiceerde in de ‘Supplément à l’Encyclopédie ou Dictionnaire Raisonné des Sciences, des Arts et Métiers’ (1777) een bijdrage waarin hij het bestaan van de jumart als een fabel afdeed.

Pas een eeuw later publiceerde André Suchetet (1849-1910) een ‘Extrait des Mémoires de la Société Zoologique de France’ met als titel ‘La Fable des Jumarts’ (1889). Deze 19^{de}-eeuwse politicus, die als lid van meerdere wetenschappelijke verenigingen een grote interesse toonde in hybridisatie, aanvaardde de uitdaging om de wetenschappelijke wereld naar een algemene conclusie over dit enigma te leiden.

In deze paper worden in chronologische volgorde de opkomst en val beschreven van een van de meest fascinerende ‘fabula’ in de voortplantingsgeneeskunde en een antwoord geformuleerd waarom de opkomende moderne wetenschap er tweehonderd jaar heeft over gedaan om te bepalen of dit een mythe dan wel een mysterie was.

INTRODUCTION

The debate on the existence of the ‘jumart’, a hybrid between the bovine and equine species, is one of the oldest, most intense but yet less known controversies in animal reproduction and veterinary medicine. Although well known in France, where it seems to be part of the ‘national heritage’, this myth is hardly known by nowadays scientists or veterinarians in the rest of the world. Apart from the major question ‘true or false’, the way the debate is conducted is very intriguing, with roles for the classical believers and non-believers and the extreme importance of the opinion leaders in contemporary science.

This long lasting discussion is held by a broad variety of actors, from the old ‘écuyers’ (riding masters) and ‘maréchaux’ (blacksmiths) over 18th century naturalists, biologists, physiologists, physicians and the founders of veterinary medicine. As can be expected, some information is available on the Internet with a few brief papers. However, hardly any references are made to original books and journals and one of the corner stone documents in this amazing story is completely missing, the dissertation written by André Suchetet in 1889. In the current paper, we will attempt to track down the origin and evolution of this myth - or will it turn out to be a mystery? - by referring to original written sources. While the dissertation of André Suchetet will be our leading thread, we will try to track the myth of the jumart chronologically and comment briefly along the way on the early ‘scientific’ literature in veterinary medicine. We will highlight the role of French écuyer François Alexandre de Garsault as one of the opinion leaders early and throughout the 18th century and mention other sources from mainly French contemporary literature. Further on, the role

of Claude Bourgelat, the founder of the first ‘Ecole Vétérinaire’ in the world seemed to be crucial for the evolution of the scientific opinion on this matter. But even long after his death, it will take the ‘final report’ of Suchetet to draw the ultimate conclusions.

Before to start this interesting discussion, let us define the subject of our study. During the 16th up to 19th century, people in certain geographical regions, mainly in France, adhered to the idea of the existence of a hybrid species that resulted from mating individuals of the bovine species (*Bos Taurus*) to equids (*Equus caballus* and *Equus Asinus*). This way, four different combinations are possible, all of which have been ‘seen’ by the believers: bull x mare, cow x stallion, bull x she-ass and cow x donkey. All these cross products are called ‘jumart, jumard, jourmart, jeremi, etc.’ depending on the region of origin. These are all clearly distinct from the well-known existing hybrids between horses and donkeys being the ‘mule’, as a product from a mare and a donkey (‘mule(t)’ in French, although the animal is sometimes called ‘bardot’ as well) and the ‘hinny’, as a result from the stallion and a she-ass (‘bardot’ in French).

THE JUMART IN THE (VETERINARY) LANDSCAPE IN FRANCE (16TH-18TH CENTURY)

Before going into detail on the specific arguments in favor or against the existence of the jumart, it might be interesting to comment on its position within the early history of the ‘veterinary landscape’. One of the possible approaches we used before (Bols and De porte, 2014a, 2014b) to get an idea of the available veterinary knowledge is to have a closer look into the relevant early French (veterinary) literature. As

wonderfully documented by the recent bibliography ‘Great Books on Horsemanship’ (Dejager J, 2014), the horse has been an important and preferred subject in the long tradition of book printing. Unfortunately, it is impossible to elaborate on this subject within the framework of the current paper.

The 16th century was characterized by an enormous scientific progress and great advances in the field of book printing, democratizing learning and allowing faster propagation of new ideas. In that time, about fifty works were published on ‘veterinary medicine’. Scholars of different backgrounds participated in writing these ‘veterinary’ publications that mainly covered the horse. Philologists, physicians, equerries (‘écuyers’), noblemen, notable and politically important men, everyone started to publish books on ‘equine medicine’. As far as the matter of the substance was concerned, the works were all very much alike. However, in 1543, Andreas Vesalius caused a revolution when publishing an extraordinary tome known as ‘De Humani Corporis Fabrica Libri Septem’. The work was not only a landmark study on human anatomy but also an artistic work of high esthetic quality and would inspire many authors, the most famous of which probably Carlo Ruini (1530-1598), one of the most noted anatomists of the horse of the 16th century. Ruini’s ‘Anatomia del Cavallo’ (1590) was the first book to focus exclusively on the structure of a species other than man and its splendid images would often be plagiarized. In 1599, the French physician Jean Héroard, inspired by Vesalius and Ruini, wrote his ‘Hippostologie’. It was the same Héroard who introduced the term ‘vétérinaire’ in France and was referred to as ‘médecin en l’art vétérinaire de la grande écurie du roy’ himself.

Apparently, it was the Swiss medical doctor, naturalist and writer Conrad Gesner (1516-1565) who first mentioned the jumart in his ‘Conradi Gesneri medici Tigurini Historiae Animalium Lib. I de Quadrupedibus viviparis’ (1551). He studied, travelled and worked in the vicinity of Zurich, Montpellier and Basel and reported on a sort of mule produced in France, born of a she-ass and a bull and called jumart by the French. Additionally, he learned from ‘reliable’ sources that a foal was born from a mare served by a bull in the Swiss Alps close to Mount Spelugi. In the same work, he comments on veterinary knowledge of his time, such as the important position of the horse, its diseases and therapies, e.g. bloodletting, and its use in horse riding and related topics. He specifically devoted a chapter on hybrids, where he mentions the mule and jumart as well as a mythical animal that he called the ‘onocentaure’, a mixture between man and donkey. Gesner might have picked up the jumart story himself from the physician Jakob Ruf (1505-1558) who also used to live in Zurich and who mentioned the same individuals in his ‘De conceptu, et Generatione Hominis’ (1587). Other naturalists who published on the jumart in the 16th century are Scalliger, Cardan and Jean-Baptist Porta. Porta claimed to have

seen with his own eyes a mule-like animal with the head of a cow and signs of horn pits on its head. During the 17th century, additional testimonials in favor of the existence of the jumart appeared. One of the first accounts was published in the ‘Hist. nat. max. Nieremberg’ published in Antwerp in 1635: “a horse born from a bull and a mare ... and a fifth kind of mule is the one born from a she-ass and a bull.” While Zacchias happened to be the second eyewitness in his ‘Questiones Medico-Legales’ (1657), the most important source in this era was the French pastor Jean Léger. All later authors would cite him (on this subject) because of his description of the jumart in his ‘Histoire Générale des Eglises Evangéliques du Piémont’, published in Leiden in 1669. He considered the jumart as an exceptional hybrid between the bull and the mare (called ‘baf’) or the bull and she-ass (called ‘bif’). Both shared the malformation of the muzzle where the lower jaw happened to be much longer than the upper, resulting in an extreme form of prognathism causing severe problems for grazing. Head, with horn pits, and tail resembled those of a cow, while the rest of the animal looked like a horse or donkey. These animals were apparently extremely strong in relation to their height, consumed less food and had no problems in covering long distances. Léger used a jumart as a beast of burden, feeling more comfortable with it as compared to a horse. This positive description of the jumart would inspire many more believers that cited Léger’s experiences over and over again. The credulous doctor John Locke happily subscribed the existence of the jumart by considering it ‘as the mixture of a bull and a mare’ in an essay he had started to write in 1670, but which was only finally published in 1838, ‘An essay concerning human understanding’. From this period, one of the scarce drawings of a mating between a bull and a mare was preserved in the book of G. S. Winter de Adlersflügel (Nuremberg, 1672) (Figure 1).



Figure 1. Unnatural mating of a bull with a horse. From G. S. Winter de Adlersflügel, ‘Tractatio Nova de Re Equaria Complectens Partes Tres’ Nuremberg, 1672. The same volume contains plates of mythical horses and monsters (with human heads, six legs, etc.) (Dejager J., 2014).

The publication of the first ‘veterinary’ handbooks ran parallel with the development of the art of equitation, a phenomenon that started in Italy, where court life began to flourish and noblemen started to qualify in horseback riding, nicely illustrated by an engraving in Antoine de Pluvinet’s ‘L’Instruction du Roy en l’Exercice de Monter à Cheval’ (1629). During the following two centuries, horses became extremely popular among the upper class, not only as a riding-animal but also as an indispensable member of the foxhunt and as a draught-animal of the most prestigious carriages. Wealthy citizens and noblemen started to found studfarms and riding schools, hence creating an unmistakable need for caregivers for their horses. These ‘écuyers’, most of which were highly educated themselves, gave rise to a new literary genre, the so-called ‘traités’ in hippiatrics. In these books, not only accurate anatomical descriptions, long lists of diseases and their treatments and descriptions of the harnesses could be found, but also instructions on how to breed, trade, handle, harness and ride horses. Another group of equine professionals were the so-called ‘maréchaux’ or blacksmiths. They were responsible for shoeing the horses and often performed first-line treatment of the horses as well. Although more practically minded than the equerries, they enjoyed the highest respect with the horse-loving nobility. Needless to say that this would result in discord between the two groups, the equerries on the one hand and the ‘maréchaux’ on the other hand, the effects of which would be felt until the 20th century.

The most influential hippiaters of the 17th and 18th centuries bequeathed some interesting books (cf. Mennessier de la Lance, 1915-1921 and de Musset-Pathay, 1810). In the first place, there was Jacques de Solleysel (1617-1680). With his ‘Le Parfait Maréchal’, he wrote one of the very first French standard works on hippiatrics. The book covers a wide variety of subjects, ranging from long lists of diseases and their treatments, anatomical descriptions, ageing by dentition, trade, maintenance, shoeing, breeding and harnesses, and would be reprinted dozens of times during the following century. The importance of ‘Le Parfait Maréchal’ is illustrated by the popularity of its successor, ‘Le Nouveau Parfait Maréchal’ written by François-Alexandre de Garsault (1692-1778) (Figure 2). In this book, lists of diseases and their treatments, detailed anatomical descriptions, a chapter on horse riding and a section on different breeds and breeding with the jumart in a prominent place can be found (see below). In 1734, father and son Jean and Gaspard de Saunier published their ‘Le Parfaite Connoissance des Chevaux’. This prestigious work contains over sixty illustrations, most of which were plagiarized, primarily from Carlo Ruini’s ‘Anatomia del Cavallo’.

While until halfway the 18th century, no ‘strict’ veterinary manuals were published with the exception of a few important standard books on horses and horsemanship (as described above), the jumart



Figure 2. Portrait of François Alexandre de Garsault (1692-1778), taken from ‘Le Nouveau Parfait Maréchal’. Second edition, 1746, Leclerc, Paris.

gained a lot of renewed attention from people with a heterogeneous but not always scientific background. The hybrid was described in the first encyclopedia, appeared in dictionaries and stirred up the attention of travelers, adventurers, naturalists, philosophers and veterinary and medical doctors. Authors such as Louis Liger (1658-1717) published some general works on agriculture, in which they devoted some pages to farm animals as well. While the jumart is not mentioned in the 11th edition of his ‘La Maison Rustique’ (1790), other authors, such as the French naturalist, physician and member of the Faculty of the University of Nancy, Pierre-Joseph Buchoz (1731-1807), dedicated an entire chapter to the jumart as clearly indicated in the table of contents of his ‘Traité Economique et Physique du Gros et Menu Bétail’ published in 1778 (Figure 3). Fortunately, the number of skeptics and non-believers increased substantially stressing the apparent need to choose sides in this debate.

In 1750, Claude Bourgelat, wrote his ‘Elemens d’Hippiatrique’. This work is generally considered as the first ‘real’ veterinary handbook and resulted in the fact that he earned the respect of the hippiaters. Although Bourgelat certainly wasn’t the most skilled hippiaters of that time, he was one of the few who understood the need for veterinary education. Indeed, most of the knowledge that had been gained up until

then was based upon empiricism and popular belief. Therefore, Bourgelat's first aim was to re-evaluate the 'pratiques de maréchalerie', some of which he considered to be harmful and even dangerous. Needless to say that he got into conflict with the 'maréchaux' or blacksmiths, with Philippe Etienne Lafosse as his most important opponent. Undoubtedly, the well-documented rivalry between Bourgelat and Lafosse resulted in the publication of Lafosse's absolute masterpiece 'Cours d'Hippiatrique' (1772).

FRANÇOIS ALEXANDRE DE GARSULT, 18TH CENTURY OPINION LEADER

François Alexandre Pierre de Garsault was a French writer, designer and 'capitaine des Haras du Roy' (head of studfarms), born around 1692 and deceased in 1778. In his writings, he addressed the most diverse subjects. He was often sent out on a mission to study horse breeding and the practical organization of the French studfarm network. He thereby reported to the French government on this important branch of the French national economy. Breeding and training horses for military purposes was a constant concern during the 18th and the beginning of the 19th century. His most inspiring work in this context was 'Le Nouveau Parfait Maréchal' first published in Paris in 1741. This publication 'in-4' summarizes on 512 pages all available knowledge on horses in its broadest sense with chapters on the anatomy of the horse, horse breeding, dressage and horseback riding, diseases of horses, surgical interventions, the blacksmith and horse shoeing and finally an extensive list of therapies and available 'pharmaceuticals'. The importance of this work lies in the fact that it has been re-edited at least ten times with the final edition being published in 1843. Although the book is considered as a compilation of earlier knowledge and fragmented publications, it is valued because of its logical structure based on the methodological and meticulous attitude of de Garsault. He illustrated the book with 49 plates most of which he designed himself. Based on the numerous editions, it can be assumed that the book must have had a considerable impact on the contemporary equine literature, and most probably inspired many later authors. Some smaller additions were made along the years but most parts of the original texts were reprinted and distributed in their original form. More specifically, de Garsault explains us how to breed a jumart on pages 82-83 (Figure 4). He starts by explaining that the 'journarts' usually originate from a bull and a mare or a she-ass or a donkey and a cow. The animals are used as beast of burden and known for their extreme force, low food consumption and less vulnerable feet and hooves. The jourmart's head looks like a bull's head with a large front and nose, like a bull without the horns. Journarts are very common in the "Dauphiné". For successful mating, a cow has to be presented to a bull, and immediately before the

coitus, the cow has to be replaced by a mare'. Finally, de Garsault described different characteristics for the different kinds of jumarts, with for example the one originating from the donkey and the cow lacking front teeth in the upper jaw. Given the fact that descriptions like the one above have been widely spread for more than a century in a (veterinary) reference book, it is not surprising that the existence of the jumart was equally widely accepted in circles of animal or horse professionals. However, it would soon become clear that the rapid progress in science and general knowledge would finally outdate the 'Nouveau Parfait Maréchal'.

CLAUDE BOURGELAT, THE ULTIMATE BELIEVER?

As the 18th century continues, the number of non-believers gradually increased. The 'Journal Encyclopédique' (1762) denied the existence of the jumart because of a lack of direct proof. 'L'Encyclopédie de Félice' (1773) considered the hybrid as being a myth based on the dissections reported by cardinal de Lances who described the jumarts as common mules, without horns, being solid-hoofed ungulates, lacking classical ruminant stomachs and having a donkey's

T A B L E	
D E S C H A P I T R E S .	
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Figure 3. Table of contents of Pierre-Joseph Buchoz's 'Traité Economique et Physique du Gros et Menu Bétail.' published in Paris in 1778. As indicated, a small separate chapter is devoted to the jumart, basically citing most of the 'common' stories on the hybrid.

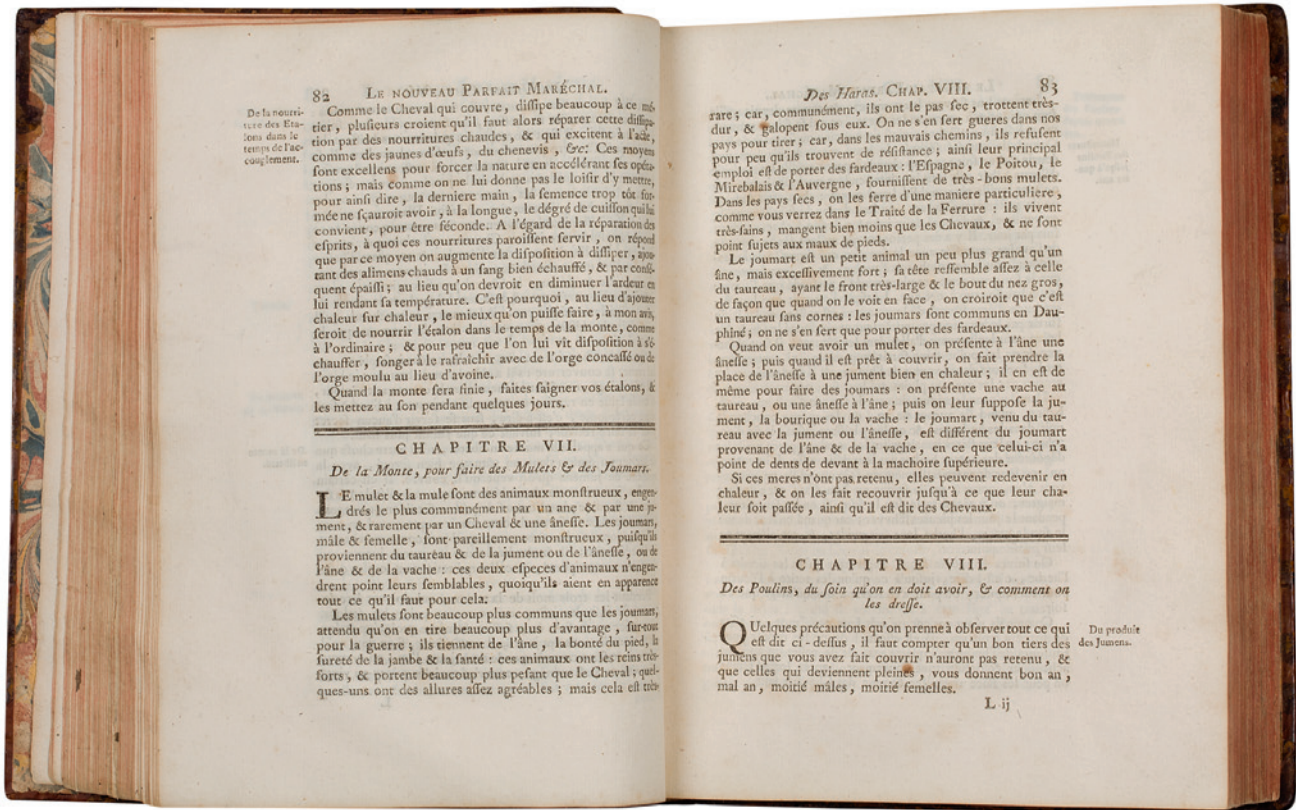


Figure 4. Pages 82-83 of the second edition of François Alexandre de Garsault's 'Le Nouveau Parfait Maréchal' (1746), on which he explains how to breed a jumart.

tail. This opinion was supported in Germany in the 'Commentarii de Rebus in Historia Naturalis et Medicina Gestis' (Leipzig, 1779) and by J.A.A. Meyer in the 'Magazin für Thiergeschichte'. A German visitor to the 'Ecole Vétérinaire' in Alfort near Paris expressed his feelings of disappointment when investigating the jumart. The animal being the purpose of his trip had already died upon his arrival and only the head and larynx were remaining for inspection. While only the mouth looked slightly bigger than the mouth of a horse, the soft tissues and teeth resembled those of an equid. Therefore, he concluded that if this was a jumart, it was nothing more than a horse to which certain bovine traits had been added through a vivid imagination. Also Blumenbach considered the jumart as a normal mule and described the animal as being a fantasy in the 11th edition of his 'Handbuch der Naturgeschichte', published in Goettingen in 1825.

However, once more, the importance of an opinion leader's conviction was illustrated. While several scientists on the European continent kept on proclaiming their believe in the existence of this remarkable hybrid (Voltaire, Réaumur, l'Abbé Prévost, François de Nîmes, Bourget, Bose, Mérolle, Shaw, etc.), it was the correspondence between two heavyweights that fired the believers: Charles Bonnet (1720-1792), a Swiss scientist and one of the most important naturalists of the 18th century, and Claude Bourgelat (1712-

1779), the founder of the first 'Ecole Vétérinaire' in the world (Lyon, 1762). Bonnet was updating one of his publications ('Oeuvres d'Histoire Naturelle et de Philosophie') when he read a paper on the jumart being dissected by Bourgelat in Lyon. To be absolute sure to have first-hand information, he contacted the 'Inspector General of the Ecoles Vétérinaires de France' in person. As stated on their website, a skull of a Jumart is indeed available in the collection of the Musée Fragonard d'Alfort, which is associated with the 'Ecole Vétérinaire' d'Alfort, founded a few years after the 'Ecole Vétérinaire' de Lyon (Figure 5). The skull goes back to an animal that was studied by Bourgelat himself, who described the animal in a correspondence with Bonnet as being very strong, with a forehead, muzzle and lower jaw from a cow but the teeth and internal organs being that of a horse. He even stated that he produced a jumart (that lived only for four months) by coupling a stallion to a cow and that the region of the "Dauphiné" was well known for the production of these animals. Later on, Bonnet (1779) also published his description of the animal based on the findings of Bourgelat. Given the enormous importance of Bourgelat in the early veterinary scene and being the most important professor of the faculty of the two first vet schools worldwide, it is not surprising that the existence of the jumart was broadly supported by the first batches of graduating veterinary

students. This is nicely illustrated by the fact that even the later director of the ‘Ecole Nationale Vétérinaire’ de Lyon, Louis-Furcy Grogner (1774-1837), still believed that jumarts existed, though considering them rare. As a result, the controversy was again stirred up and many more believers cited reports of others without adding real evidence to the subject. Even the famous Italian anatomist and scientist l’Abbé Spallanzani (1729-1799) admitted without hesitation to be a believer, again strengthening Bourgelat’s conviction. Valmont de Bomaire, the first naturalist that published a ‘Dictionnaire d’Histoire Naturelle’ declared that two jumarts, male and female, could be visited in Alfort back in 1767.

Towards the end of the 18th and the beginning of the 19th centuries, again general opinions shifted toward doubt on the existence of the jumart, not in the least because important naturalists did not support the veterinarian’s point of view. The famous Comte de Buffon openly doubted, stating that although copulations between animals of the bovine and equine species are physiologically possible, based on the anatomy of the genital organs, and are often observed in free ranging animals, have never resulted in any offspring. The father of physiology Albrecht von Haller (1708-1777) was of the same opinion as reported in his ‘Elementa Physiologiae’. Again, some others were difficult to convince and kept on believing in the jumart as a crossbred species: Tupputi, Colonel Rottiers (1812), Cardini (1848) who based his opinion on Bourgelat’s, Lucas (1850) who was influenced by Valmont de Bomare, Malte-Brun, and again Grogner, even in his second edition of the ‘Cours de Zoologie Vétérinaire’ published in 1887.

ANDRÉ SUCHETET, THE FINAL REPORT

Finally, the ‘ultimate’ report was published by André Suchetet when he wrote ‘La Fable des Jumarts’ in the ‘Extrait des Mémoires de la Société Zoologique de France pour l’Année 1889’ (Figure 6). Indeed, most of the facts and testimonials described above are summarized in this ‘Extrait’. Suchetet (1849-1910) was a French politician, landowner and mayor of Bréauté (Seine-Maritime) and held several important positions at the local political level. Furthermore, he was a member of numerous scientific societies with a remarkable interest in hybrids and hybridization. He published several books on this subject and tried to finally clarify the myth of the jumart by an in-depth chronological study. In 1872, one of his contacts at the Société de Biologie de Paris, M. Hamy, indicated that ‘... there are still some scientific correspondents who believe there are Jumarts in the Drôme area. Contacts with Mr. Lepic and de Lubac even result in an agreement to send one of the animals to Paris ...’ The latter showed to be prepared to organize an inquiry that finally started in 1886. What follows is a regularly interrupted chain of interviews, eyewitness

reports and testimonies without any physical evidence of the existence of the hybrid. De Lubac noted down an observation of a veterinary surgeon working close to Nyons. He stated that jumarts appeared regularly as a result of the mating among free ranging horses and cows. Other witnesses however, specifically stressed the fact that such interactions never appeared spontaneously and that jumarts needed to be produced deliberately. However, none of the correspondents had ever seen a jumart ‘live’ and stories were always noted down based on second-hand information. In addition, the existence of the jumart was also questioned during the inquiry because many letters were received from people stating that the animals they had been investigating, did not differ from the classical ‘mulet’ or ‘bardot’.

Finally, Suchetet summarized all the information he described in his dissertation in five ‘observations’ in a logical order. Firstly, most correspondents originated from an era during which science was very eager to invent all kinds of fantastic hybrids and speculated on their fertility. In addition, eyewitnesses might have seen copulations between bulls and mares or she-asses, strengthening their conviction on the true existence of the jumart. Secondly, most of the correspondents reported facts that had previously been reported by others, without checking the origin of their sources. Thirdly, many scientists substantiated their own statements by the declaration of others. Opinion leaders strengthened mutual convictions, through which layman finally tended to accept assumptions as bare facts. The opinion of famous scientists proved to be enormously powerful. Fourthly, everybody used citations of opinion leaders without verification. If a leading scientist made a mistake, it was propagated easily through history. Finally, Suchetet stressed the heterogeneity of the information with opposite ideas emerging from small geographical regions. Most of



Figure 5. Picture of a ‘jumard’ skull, part of the collection of the Musée Fragonard d’Alfort, associated to the ‘Ecole Vétérinaire’ d’Alfort’, Paris, France. The skull is assumed to date back to the foundation of the school and was added to the collection started by Bourgelat himself.

the anatomical details collected on so-called jumarts referred to the horse or donkey, which is strange for a hybrid species. Bourgelat seemed to be the only one that ever possessed a jumart himself, a fact difficult to question in the era of this ‘master’. Suchetet wisely concluded that jumarts had never existed. He added to be convinced that hybrids could only be generated by the combination of very closely related species.

CONCLUSION

The discussion on whether or not the jumart has ever existed, might seem irrelevant in an era where assisted reproduction techniques (ART) can nearly literally ‘create’ everything. In vitro embryo production (IVP), intra-cytoplasmic sperm injection (ICSI), cloning and the quest for methods to assemble artificial chromosomes. We are probably closer to the creation of a jumart than we have ever been.

From a scientific point of view, barriers to hybridization can generally be classified into pre- and postzygotic. Prezygotic obstacles refer to problems that prevent the formation of a zygote and include among others temporal separation, i.e. species mate at different times of year, different mating rituals,

‘hostile’ intrauterine environment and lack of biochemical recognition between the oocyte and sperm cell. Postzygotic barriers on the other hand refer to problems that occur after the formation of the zygote, and are often the result of genetic incompatibilities that affect the development of the embryo. It is a common misunderstanding that chromosome number is a critical factor in the fact whether or not two species can crossbreed. Indeed, when animals are, from a genetic perspective, quite similar, they are likely to be able to produce viable offspring. The classic example of this is the mule, which is the product of a female horse (64 chromosomes) and a male donkey (62 chromosomes). However, if those genes are organized on different numbers of chromosomes, any resulting offspring will most likely be sterile. Taken all this into account, the chance that a jumart – as a combination of the bovine and equine species - has ever existed, is highly unlikely.

Finally, this interesting discussion on ‘true or false’ has been enormously influenced by the conviction of opinion leaders who did not always check their sources. Even opinion leaders make mistakes.

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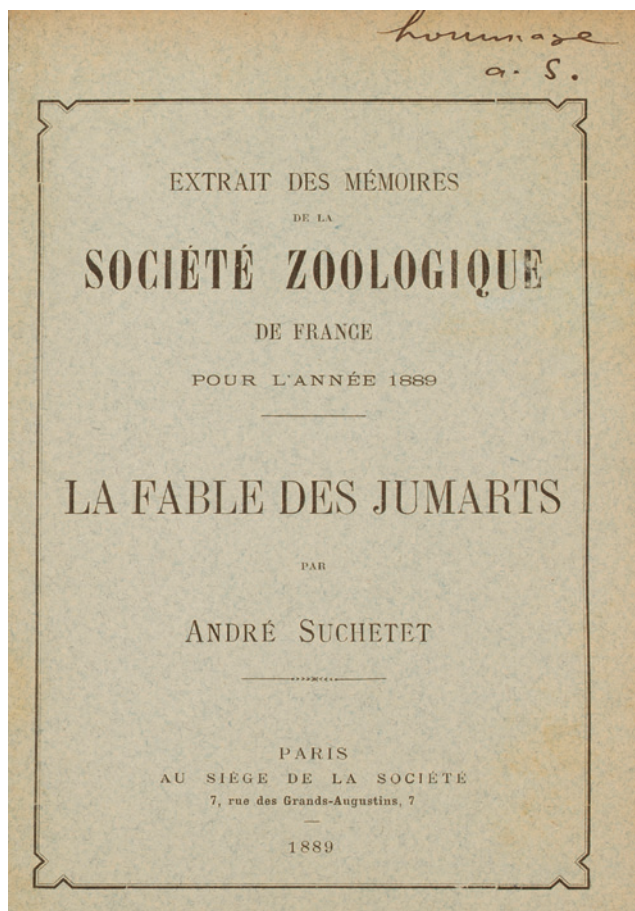


Figure 6. Title page of the report published by André Suchetet ‘La Fable des Jumarts’ as ‘extrait des mémoires de la Société Zoologique de France pour l’année 1889’, Paris, France.