

# OS. Opificio della Storia

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# OS.

## Opificio della Storia

Bovini.  
Dall'allevamen-  
to tradizionale  
alla zootecnia  
industriale

*Cattle:  
from traditional  
breeding to the  
livestock industry*

Anno 2022  
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**BARBARA GALLI**

# Editoriale

## Editorial

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L'allevamento non rimase esente dal subire gli effetti dell'intensa ondata di modernizzazione che investì l'agricoltura occidentale durante il XIX secolo. Negli ultimi tempi da parte della storiografia internazionale si è sviluppato un crescente dibattito sulle trasformazioni ecologiche innescate dall'economia zootecnica. Infatti in alcune aree del pianeta le grandi mandrie trovarono particolari condizioni per imporsi come attività economica principale. Argentina, Uruguay, Stati Uniti, Australia sono alcuni degli scenari in cui l'allevamento brado di migliaia di capi bestiame si rese possibile grazie alla disponibilità di sterminati pascoli di pianura. A trarre beneficio da queste vantaggiose condizioni ambientali per l'allargamento delle frontiere dell'allevamento furono anche le società europee le quali grazie alla rivoluzione dei trasporti e alla scoperta della catena del freddo ebbero accesso a un costante rifornimento di carne congelata e in conserva a prezzi molto contenuti. Allo scadere del XIX secolo la carne divenne uno dei prodotti che contribuì alla globalizzazione dei traffici commerciali e dei consumi alimentari derivanti dall'industria.

Tali processi coinvolsero anche il vecchio continente afflitto da una cronica penuria di animali da grossa taglia a causa anzitutto della netta insufficienza di terreni d'adibire a pascoli. I pascoli di montagna risultavano decisamente inadeguati, destinati in larga parte alla pastorizia transumante e al sostentamento di piccole economie familiari. L'alternativa andava cercata in pianura con lo sviluppo di aziende zootecniche specializzate in grado di soddisfare la crescente domanda di carne e di prodotti lattiero-caseari provenienti dalle grandi città. L'Italia partecipò a tale processo di trasformazione e il presente numero monografico di OS. *Opificio della Storia* mira a cogliere il senso di tale cambiamento mettendo in evidenza una serie di casi di studio. Complessivamente i contributi che compongono il dossier *Bovini. Dall'Allevamento tradizionale alla zootecnica industriale* finiscono per comporre un quadro che consente di cogliere il passaggio da un allevamento tradizionale a un altro molto più attento all'incremento della produttività.

È vero che negli ultimi tempi la pratica intensiva dell'allevamento ha sollevato parecchie critiche in quanto accusata di essere una delle principali fonti di inquinamento e di consumo indiscriminato delle risorse naturali, a cominciare dall'acqua. Siamo in presenza, anche in un contesto di mutamento culturale, di influenti movimenti che propendono per un radicale ridimensionamento del consumo di carne. Nonostante attualmente ci sia una spiccata sensibilità verso l'impatto ecologico delle grandi aziende zootecniche, a metà del XIX secolo il quadro appariva radicalmente diverso. Allora il problema principale era quello del superamento dei vecchi e scarsamente produttivi sistemi di "tenuta delle bestie" attraverso la propagazione della cosiddetta zootecnia razionale. Processo

sostitutivo da collocare anzitutto in quelle aree del continente europeo più direttamente coinvolte nell'economia dell'allevamento stabulare.

Non a caso i saggi privilegiano quelle regioni dell'Europa occidentale contraddistinte dalla presenza di una solida base armentizia. L'Inghilterra, il nord della Penisola Iberica e l'area padana sono gli ambiti geografici indagati. Ovviamente rimangono fuori molte altre situazioni e ambiti geografici altrettanto interessanti da indagare, speriamo in prossimi numeri. Per il momento e considerando che da un punto di vista storiografico in Italia ancora la storia dell'allevamento, da tenere distinta da quella della pastorizia, appare meno esplorata, i contributi qui raccolti compongono una lettura d'insieme delle trasformazioni. Se i saggi di Álvaro Aragón Ruano e Luca Mocarrelli fissano il quadro di piena maturità raggiunto dalla zootecnia precedente al XIX secolo, gli altri contributi forniscono degli specifici approfondimenti in quanto evidenziano gli elementi innovativi accaduti a partire dall'Ottocento: la selezione delle razze indagata da Luca Barducci a partire dal caso concreto dell'azienda dei principi Torlonia di San Mauro di Romagna (Rimini); il consolidamento di una letteratura scientifica esaminata da Omar Mazzotti e la costruzione di impianti e stalle parte integrante di un ricco e variegato patrimonio architettonico rurale, così come si desume dai saggi di Anna Gallo e Barbara Galli. Rivoluzione della zootecnia ottocentesca da cogliere pure sul versante dei fertilizzanti chimici presentati in questa sede da Luca Andreoni. Infatti con l'arrivo dei concimi chimici allo scadere del XIX secolo gli agricoltori finalmente potevano liberarsi dai limiti derivanti dal dover fare ricorso ai concimi organici. Una trasformazione delle sostanze rigeneratrici dei suoli che diede la possibilità alla zootecnia di rendersi autonoma dall'agricoltura. La concimazione dei campi smette così di essere vincolata alla produzione di sostanze organiche animali e l'industria zootecnica, anche grazie al contemporaneo arrivo dei mangimi industriali, diventa uno specifico settore dell'economia agricola. Dunque emerge un quadro sfaccettato relativo a uno dei capitoli più ricco di conseguenze della rivoluzione agraria avviata dopo il XIX secolo.

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# Towards an industrial pattern: historical development of livestock and stockbreeding in Cantabrian Spain<sup>1</sup>.

*Verso un modello industriale: sviluppo storico  
della zootecnica e dell'allevamento del bestiame  
nella Spagna Cantabrica.*

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SH5\_8 Cultural studies, cultural identities and  
memories, cultural heritage

SH6\_12 Social and economic history

SH6\_9 Modern and contemporary history

## ABSTRACT

The aim of this paper is to analyse the effects in the long-term of the evolution of livestock and stockbreeding in Cantabrian Spain. Until the 17th century, when American crops spread at different rates throughout the Cantabrian region, stockbreeding was based on an extensive pattern. But, since then, due to, above all, maize-growing as well as the expansion of grasslands and meadows, stockbreeding shifted towards intensive methods, which allowed the modernisation of the sector, by means of technological progress and the introduction of industrial exploitation systems from the 19th century onwards, even though different degrees of specialisation (meat, milk, etc.) were implemented, depending on the area. For that purpose, we are going to utilize the significant amount of recent literature available.

## KEYWORDS

**Extensive/Intensive  
Livestock  
Stockbreeding  
Transhumance  
Cantabrian Spain**

## *The Medieval roots of an extensive stockbreeding*

The aim of this paper is to build an updated synthesis, covering the bibliography of the past forty years, regarding the evolution of stockbreeding in Cantabrian Spain (north of Spain), including, and comparing, Galicia, Asturias, Cantabria, the Basque Country and the Atlantic Navarre, from Medieval times to the 20th century, trying to discern how and why they progressed from an extensive to an intensive pattern.

<sup>1</sup>. Cantabrian Spain\_made  
by the author.





During the High and Late Medieval times, cattle, owing to its strategic impact on agriculture and human nutrition, and pigs were the most important livestock, economically speaking, however, generally, there was a quantitative balance with small ruminants. Nonetheless, from the 11th century in the Western-Central Cantabrian area the number of sheep considerably increased, when local nobility's consolidation led to the shaping of manorial domains, resulting in large flocks of sheep<sup>2</sup>. In the Eastern Cantabria (Biscay, Guipúzcoa, North of Álava and Atlantic Navarre), although sheep flocks predominated in the Navarrese Pyrenees and the Mediterranean slope, the process dated back to the 14th century, when sheep rearing flocks began to spread, becoming quantitatively predominant at the end of the 16th century<sup>3</sup>.

Until the changes caused by the spread of maize, among the different Cantabrian regions there was a confluence of different forms of pasture usage and stockbreeding regimes, depending on the natural conditions, political context, use and mobility managements undertaken by different social groups. Four principal systems of vertical and horizontal seasonal movements were: non-transhumant herding as a complement of agriculture, associated with the housed livestock of villages and short-distance or valley transhumance (2-5 km); a transterminance between nearby villages (5-20 km); a specialised stockbreeding, conducted by transhumant stockmen, who performed a middle-distance transhumance, coast-to-mountains (60-90 km), all of them related to cattle; and, finally, a speculative stockbreeding, tied to long-distance transhumance (hundred kilometres), from Central and Southern Iberian peninsula, connected to flocks of sheep<sup>4</sup>.

Housed or sedentary stockbreeding, which was practised seasonally through the valleys, meant the management of three different areas. Close to the villages, croplands, private or common, allowed livestock grazing stubble fields, once crops were collected -*derrota de mieses*-, in semi-collective enclosures (i.e. *erías*) and until they were again fertilised and prepared for sowing. Furthermore, from the aforementioned farming area, there were grasslands and meadows (i.e. *mortera*), under different exploitation regimes, private or semi-collective, usually used during spring and autumn, being some of them enclosure and devoted to oxen and cows for agricultural works. At a further distance, summer pastures, wide common open field areas of pasture as well as scrubland in upland commons, fed cattle, horses and sheep. Nearby, large woodlands, private or commons, were used for minor livestock and pigs. During winter the livestock remained housed or enjoyed *erías* and nearby grasslands, grazing during the day and spending nights in the stable. When spring arrived, from coastal and inland areas livestock moved to the intermediate pastures until summer, when they went up to the high mountain summer pastures, until autumn<sup>5</sup>.

In the case of Asturias, as a result of the aforementioned appropriation of pasture areas by the aristocracy, one of the most remarkable cases of extensive medium-distance transhumance was that of *vaqueiros d'alzada*, who appeared as an individualised group from the 16th century. Families moved with all their belongings and livestock from winter settlement to summer dwellings: they spent the winter at coastal or middle range mountainous locations, whereas during summer they went up to the uplands; they also worked as carriers and traders, during summer, between Asturias and Castile, obtaining enough money to buy cereals and textiles, and throughout Asturias in winter. Another significant case was that of *pasiegos* in Cantabria, who moved to summer pastures in spring, until the autumn (called *muda*) and were devoted to exporting cattle and milk products from Cantabria to the Castilian Meseta<sup>6</sup>.

However, Galicia and the Basque Country did not follow this pattern. Galicia remained practicing housed farming and short-distance transhumance around peasant's and lords' own properties and the complementary use of commons (villages' commons and *montes de varas* or *de voces*), enjoyed in co-ownership for pasture and firewood, throughout the Medieval and the Early Modern period<sup>7</sup>. Whereas, in the Basque area, including Biscay, Guipúzcoa, the North of Álava and the Atlantic Navarre, there was a short-distance transhumance, between the base and summit of the valleys, and a transterminance, between nearby towns, no more than 20 km away<sup>8</sup>.

With regards to the long transhumance, from the 10th to the 12th centuries, North-western Iberian monasteries started to acquire pastures, *brañas* and grazing lands, for cattle, connecting vast pasture areas in the north and the south of the Cantabrian Mountains, including mid-mountain areas and the coast. From the 13th century at least, sheep flocks and shepherds arrived in the Asturian upland pastures and rented them, hav-

ing come from Extremadura or Salamanca, following the Leonese track, until October, when they came back to the winter pastures<sup>9</sup>. A similar long-distance transhumance was carried out after the 15th century and until the middle of the 19th century, from Extremadura and Castile to the Ancares mountains (Lugo), along the border between Galicia, Castile, Leon and Asturias<sup>10</sup>. Something similar occurred in Álava during the Early Modern period, when the Mesta's sheep herds began hiring pastures in Valderejo, Treviño and Rioja Alavesa, causing many conflicts from the end of the 16th century and increasing their presence during the 18th and the 19th centuries<sup>11</sup>. Medium and long-distance transhumance were also practised in the Basque and Navarrese Atlantic area during the Middle Ages and Early Modern period. From the 12th to the 14th centuries, Navarrese ecclesiastic institutions, such as the Cathedral of Pamplona or the Monastery of Orreaga-Roncesvalles set up a dense network of *seles* and meadows, where their cattle grazed, both during winter and summer, in Navarre, Guipúzcoa, Labourd, Low Navarre, Soule and Bearn, carrying out a long-distance seasonal transhumance, which allowed them to hold large livestock. Furthermore, annually, thousands of sheep and cattle from Pyrenean Navarrese valleys spent winter in the French plateau and Bardenas, coming back by summer, accompanied by herds of Navarrese Ribera<sup>12</sup>. At the same time, from the beginning of the 16th century, as a result of the Castilian conquest of the Navarrese kingdom, flocks of cattle and pigs from bordering villages of Guipúzcoa and Álava spent the autumn grazing on acorns in Navarrese woodlands, in order to be fattened; even, pig herds from Soria and Rioja arrived in Navarre, nearby the border of Guipúzcoa, for the same purpose<sup>13</sup>.

In general, thanks to the archives and archaeology, it is stated that during the Roman period and the High Middle Ages, the Cantabrian area, from Galicia to the Pyrenees, underwent a hard anthropisation -some scholars consider that the Anthropocene era in the Pyrenees began during the 12th and the 13th centuries<sup>14</sup>-, trying to spread agriculture and stockbreeding, which were complementary. Hence, from the 8th century at least, a deforestation process occurred, causing the disappearance of beech, oaks and pines, mostly in the mountain heights. By the 9th and the 10th centuries, the stockbreeding areas and mobility described seems to be well established: *prata* (grassland), *pascua* (pasture) and *branneas* (mountain heights' pasture areas or *seles*). These terms were usually related to monasteries and ecclesiastical lordship from the Castilian Meseta, mostly interested in cattle, which were managed by cow-keepers, noticeably from the 12th century onwards<sup>15</sup>. Cantabrian peasants usually were smallholders, with properties of no more than 3 hectares, including some meadows and very small number of animals, being forced to make use of commons. From the High Medieval period, the majority of peasants signed livestock shared farming agreements, called *comuña* in Asturias, in order to supplement their incomes, by reason of which they could make use of livestock as workforce and benefit from their fertiliser, milk, wool, etc., whilst in turn taking care of the animals and compensating the owner, in case of animals' death or loss caused by negligence. This type of agreement was also very common in the Basque and Atlantic Navarre case, from the 15th century, being signed by both a livestock owner and a farmer, who may have been neighbours or live in different villages, never more than 20 km apart, for a period of between three to eight years, enabling the transterminance and breaking of the limits imposed by short-distance transhumance. It seems that the importance of these kinds of agreements depended on the accessibility of the commons, cheapening the cost of breeding, which, in Cantabria, moved from oxen breeding and fattening to livestock rearing<sup>16</sup>.

From the 12th to the 16th centuries, the foundation of towns in Cantabrian Spain set up a process of appropriation and privatisation of pasturelands by the councils, diverting them from the common uses of the neighbours, which caused considerable trials and conflicts. In the case of the Western-Central Cantabrian area, the strengthening of a lay aristocracy, involved in the Council government, led to an increasing pressure on ecclesiastic entities, councils and small villages, in order to control summer pastures of the Cantabrian Mountains, with the aim of establishing a speculative stockbreeding related to the Castilian Meseta and other parts of the Cantabrian Sea coast, promoting extensive legal proceedings against councils and cow-keepers during the 15th and the 16th centuries. Consequently, this aristocracy favoured the presence of flocks from the Mesta's sheep. Additionally, all around the Cantabrian area a steadily weakening of old ecclesiastic lordships occurred, causing the leaving of their traditional economies

and focusing on more profitable activities. For instance, Western Asturian monasteries stopped acquiring new pasture areas, and during the 15th and the 16th centuries, they started renting their properties, and even converting them into croplands<sup>17</sup>. Similarly, in the Basque Country and Navarre ecclesiastic institutions, such as Orreaga-Roncesvalles, Saint John of Jerusalem or the Cathedral of Pamplona opted, firstly, at the end of the 14th century and the beginning of the 15th century, to delegate the management of their *seles* and pasturelands to local private agents, and later, at the end of the 15th century and the beginning of the 16th century, they chose to gradually leave their properties in the hands of the councils, by means of perpetual census or sales<sup>18</sup>.

In short, up until the introduction and generalisation of maize, the Cantabrian stockbreeding was an extensive and limited activity, complementary to agriculture, despite undergoing various improvements, in some latitudes, towards intensification and speculation, performed by smallholders, with some exceptions, combining vertical and horizontal seasonal movements.

### *The changes induced by maize: towards the intensification of agriculture and stockbreeding*

The effects of the introduction and wide spreading of maize, from the final third of the 16th century and the first three decades of the 17th century, were not always the same throughout Cantabrian Spain: while in some places it resulted in the decrease of livestock, in other areas its expansion was facilitated. Thus, within the different regions, there were a wide range of situations, considering natural and economic constraints: as in some places the introduction of maize led to the decrease of cattle and the increase of small ruminants, in others it resulted in the consolidation of cattle. In general, due to the combination of wheat and maize, agriculture and stockbreeding yields significantly increased.

In Galicia, from the 1630s the balance between the inland and coastal areas was disturbed. On the coast, where maize was introduced earlier and faster, the drop in livestock number was dramatic, while in the inland, it was more limited. Surprisingly, this reduction drew a growth of housed livestock in the coast, and of extensive livestock in those places located beyond 300 metres in altitude. Accordingly, two main processes were established: on the one hand, a progressive predominance of cows, over oxen, came about, being stronger in lowlands than in higher ones; and, on the other hand, as a consequence of the demographic growth, an atomization of agriculture and stockbreeding farms occurred. The progression of croplands gradually began to occupy the best pasturelands for cattle, whereas the privatisation of commons by oligarchies and the subsequent distribution among peasants in personalised leased batches (*foro*) caused the increase of peasants without livestock. In short, the changes underwent by Galician farming in the middle of the 18th century were the consequence of the spreading of maize and the subsequent expansion of croplands: transited from a silvopastoral economy, in which the extensive feeding of livestock abounded, to a cereal economy, where the smallholders just insured the animals they could feed in their own croplands and meadows<sup>19</sup>.

Similarly, in Asturias, due to the clearing and deforestation of commons, the spreading of maize caused the decrease of horses, cattle and pigs, which began to be housed, as well as sheep. At the same time, the possession of cattle expanded among farm holders. Maize provided housed livestock with nourishment during winter, but without relinquishing natural pastures in the meadows and mountain heights. The stabling of livestock eased the growth of milk production, breeding and work capacity, and increased available manure, through which the reduction in the number of animal heads was compensated and agriculture was benefited<sup>20</sup>.

In Cantabria, indebted peasants lost their properties and were forced to sell their livestock. Until the end of the 16th century cattle predominated, although the difference with respect to minor livestock was higher in the inland and mountainous areas than in the coast. Despite this, from the middle of the 17th century onwards, livestock increased spectacularly, due to the expansion of maize and artificial meadows. Consequently, in coastal areas overall livestock tripled in number and in the inland rose as high as 65 per-

cent; however, the most remarkable process was the impressive rise of small livestock, which surpassed that of cattle, above all in the mountainous areas of the inland, as a consequence of the stabling of cattle and pigs, but also due to the emergence of surplus animals, which were then exported to Castile and other Cantabrian areas. The natural differences within Cantabria, caused a division of labour, through a specialisation between districts: an inland devoted to livestock breeding and meat, butter and milky production to be exported to the north of Castile (Leon, Palencia and Burgos), Biscay Guipúzcoa and Navarre; and the coastal areas barely able to maintain draught animals<sup>21</sup>. Finally, in Atlantic Navarre and the Basque Country the livestock number increased between 20 and 50 percent, above all minor livestock, and the number of livestock owners rose 40 percent. The climatic and orographic constraints caused a division of work: sheep underwent an impressive growth in Atlantic Navarre and the east of Guipúzcoa, until the 19th century, associated to a higher impact of maize, which allowed a greater stabling of cattle, abandoning partially or totally the upland pastures (semi-housed system), occupied by sheep flocks; whereas cattle, associated to a higher and longer continuity of wheat, remained predominating in many towns of the western part of Guipúzcoa and Biscay, up until 1865. Minor livestock's growth enabled the development of meat, milky products, leather and wool markets, with new possibilities from France due to Colbert's industrial policy, during the 17th century, when food habits began to change, with a higher consume of lamb meat, local or imported from France and Extremadura, milk, cheese and butter, exported to Biscay, guts and animal limbs. The conflicts caused by the clash between agriculture and stockbreeding forced the enclosure of some commons, which launched a prolonged process of privatisation of those areas. Even, as a result of changes performed by the generalisation of maize, finally, short-distance transhumance and transterminance turned into a middle-distance transhumance, from the coast to the mountain summits, from the 1750s<sup>22</sup>.

### *Progressive steps in favour of specialisation and industrialisation of stockbreeding*

During the 1750s, according to the Cadastre of the Marquis of La Ensenada, Western-Central Cantabrian area (Galicia, Asturias and Cantabria) concentrated 46 percent of Castilian Crown's cattle. Probably, these figures suffered from the epizooty occurred in 1774-1775. Even though Spanish authorities reacted quickly and co-ordinately -which explains why did not affected Spain as much as France- and banned the introduction of French cattle and the mobility of animals from one territory to the other, and veterinarians and surgeons practiced many necropsies, reported symptoms, remedies, results and proposals, and applied bloodlettings, enemas, washings, poultices, cleansings, cool water baths, etc., apart from Navarre, Alava, Guipúzcoa and Biscay, Santander, Aragon and Granada were also affected. Livestock in Galicia and Asturias had a major diversification and, along with cattle, sheep and pigs had a certain importance, whereas in Cantabria there was a higher cattle specialisation, due to the expansion of meadows. The aftermaths of the expansion of maize resulted in a cereal-oriented economy, the reduction, husbandry and selection of livestock, prioritising farming uses ahead of silvo-pastoral utilisation; i.e. a shift from an extensive farming system to an intensive one, based on maize, or the combination of maize, wheat, and fodder. At the same time, this process led to a specialisation and differentiation, depending on geographic constraints (humidity, altitude and slopes), between those districts devoted to a cereal economy and those better prepared for the harvest of grass, where there was an abundance of meadows, agriculture had a secondary position and stockbreeding was more diversified and connected to market demands. Partly, due to this specialisation and a more market-oriented economy fairs and markets began to proliferate throughout the 18th and the 19th centuries, but also due to the spreading of potatoes and artificial meadows, mostly in Galicia, Asturias and Cantabria, and, finally, as a result of the development of urban centres such a Ferrol, Coruña, Gijón, Santander, Bilbao or San Sebastian, that required a higher meat and milk consumption<sup>23</sup>.

The process of specialisation increased, during the 19th century, causing the expansion of artificial meadows and upland pastures in the Western-Central Cantabrian area, which were more abundant in the inland and mountainous districts than along the coast, and in Cantabria, including the Basque Country, than in Asturias or Galicia. Along with better feeding of livestock, foreign species were introduced and mixed with local ones, trying to improve yields, from England and France for meat and from Switzerland and Holland for milk. Consequently, there was a remarkable diversity among Cantabrian areas, with the exception of Galicia, where the small scale of lands, based on polyculture, were handicapped by the high rate of rents and taxes. In Asturias some districts were specialised in the production of meat and others in milk production, causing the development of small industrial manufactures of butter and cheese. From the 1880s, Cantabria opted for the production of milk - coinciding with the increasing rates and massive consumption of milk, due to the improvement of workers' salaries, the expansion of livestock and milk industries, and the fact that milk started being considered healthy - and the Basque Country specialised in meat manufacturing. According to a survey from 1865, Galicia's livestock was devoted to farming and selling elderly livestock heads for meat, whereas in Cantabria, and less in Asturias, they initiated a resolute specialisation, where most of the livestock was devoted to breeding and selling, and, due to the development of industrialisation and subsequent increase of income levels, Basque stockbreeding focused on meat production<sup>24</sup>.

	Cattle	Sheep	Goats	Pigs	Draught animals
Galicia	763,554	1,536,304	308,231	588,579	112,245
Asturias	311,294	368,180	92,181	155,489	24,720
Cantabria	136,062	128,902	60,760	44,438	13,530
Basque Country	199,641	393,058	64,026	96,589	46,617

Table 1. Livestock distribution in Cantabrian Spain (1865)<sup>25</sup>.

In Galicia, the traditional farming structures fell into crisis during the 1840s, as a consequence of the serious difficulties undergone by the linen industry and the survival of the lease system, in a context of demographic pressure and transformations, which led the migration of people. Taking advantage of British markets liberalisation and the following demand of foreign food imports, and the beginning of certain specialisation of cattle, concentrated in coastal areas, close to ports, from 1842, but above all from 1869 to 1883, more than 25,000 fattened oxen were sold to England, and later, as a consequence of the American meat rivalry and the English market loss, exportations were reoriented to Portugal and Spanish cities, facilitated by the development of railway in the Iberian Peninsula -from 1873 to 1929 cattle railway transport increased around tenfold, primarily from Western-Central Cantabrian area towards, essentially, Madrid and Barcelona, and, secondarily, Rioja, the Basque Country and Castile, to provide then with meat, from Galicia, and milk and breeding cattle, from Cantabria<sup>26</sup>.

From 1886 to 1935 the stockbreeding ceased being a complementary activity to become a hegemonic one: the rise of the demand, and the improvement of communications and the resulting reduction of costs, forced the specialisation of cattle and pigs. However, the higher difficulties to nourish livestock led Galicia to specialise in meat, while milk production was still affected by low yields, due to a lack of technological advances. At the end of this period, a dense network of cooperatives rose up, which allowed ordinary peasants to have a better adaptation to the new conditions of a capitalist development. After the Civil War - when Franco's regime carried out a "counter-revolution", against the agrarian reform intended by the Spanish Second Republic, basically focused on agriculture, which restored lands to their previous owners, and almost marginalising the stockbreeding, though from the 1950s a major openness was applied, promoting the industrial or intensive stockbreeding pattern and the cereal production for fodder manufacturing, instead for humans -, a circumstantial stagnation occurred in all Cantabrian areas, hindering the process of intensification. From the 1960s, that intensive pattern, based on milk production and the appearance of industrial systems -on account of for-



eign investors-, was consolidated, resulting in a strong expansion of cattle and pigs. This resulted in the decline of working livestock (horses, donkeys, mules, etc.), because of the mechanisation of the meat and milk-oriented production, and the impressive drop of sheep, that was affected by a lack of shepherds, the migration of people and the expropriation of commons. Milk production remained growing until 1988, when European Economic Community rates caused a drop in cattle numbers<sup>27</sup>.

For its part, in Asturias the old farming structures broke down, slowly from 1840 until the Spanish Civil War and faster from 1940 until the entry of Spain in the European Economic Community. Two types of stockbreeding lived together: one advanced, relying on intensive exploitation of milk livestock; and traditional and semi-extensive the other, based on meat livestock. The stockbreeding orientation was encouraged by the élites, who controlled and were more interested in investing in meadows than in croplands, obtaining higher yields. Similar to the rest of Spain, from the middle of the 19th century minor livestock dropped and working livestock increased, being predominant by 1891. This process was helped by the introduction of foreign species, from Switzerland, which were mixed with local species, even though milk industries (Arias) were still small. Despite the fact that from the 1940s livestock increased, based on meat exportation to Madrid, Barcelona or Bilbao, it was not until the 1960s when the extensive pattern turned into an intensive stockbreeding, due to the settlement of milk industries (Clas, Lagisa or Nestlé) and dairy plants along Asturias -in 1966 there were 24 dairy plants in Spain-, and the expansion of livestock cereals and fodder, which caused an impressive growth of cattle. Specialisation increased since then, causing a progressive drop in the number and the concentration of exploitation units, enhanced by the admission of Spain into the Eec<sup>28</sup>.

Cantabria made a solid attempt in favour of intensive cattle livestock, from a workforce pattern to milk livestock, enhanced by the expansion of meadows and the introduction of foreign races, firstly from Durham, for meat, and, later, from Switzerland and Holland, for milk, becoming the principal centre of milk production in Spain, from the 1920s. During the 18th century, due to the opening of Reinosa's road, connecting the Castilian Meseta area with the Cantabrian Sea coast, stockbreeding was oriented to draught animals, whose demand kept on high rates, during the 19th century, due to the demographic expansion of the Castilian population and the demand from the construction of railroad. Once the railway was established, a new cycle, related to commercialisation of meat towards Spanish cities, began from 1860 to 1880. Later, the milk and breeding pattern was consolidated up to this day -even in the case of the Pas Valley, where peasants focused on breeding to sell young animals to the urban milk industries-, coinciding, firstly, with the development of small cheese industries around Santander and, later, with the settlement of milk industries from the beginning of the 20th century (Nestlé, Sociedad Lechera Montañesa or Sam). From the 1950s onwards, the expansion of milk industries continued, coinciding with higher rates, bearing in mind that during the 1960s and 1970s the milky products' consumption moved from 73 kg to 130 kg - being the chiefly milk, from 23 litres between 1865 and 1906 or 56 litres between 1906 and 1933, to 115 litres between 1950 and 1980-, tendency which changed and dropped from the 1980s until the 2000s -around 100 litres during the 1990s, when increased the ingestion of cheese, yogurt and milk desserts -<sup>29</sup>.

Finally, in the Basque Country and the Atlantic Navarre changes towards a specialisation and improvement of stockbreeding yields dated back to the middle of the 19th century, due to croplands' expansion and the introduction of foreign cattle races (preferably from Switzerland), encouraged by regional governments' (*Diputaciones*) initiative, by the means of competitions, exhibitions, genealogic registration, stallions, and assurance management, allowing to improve, above all, milk yields. Notwithstanding the low reliability of sources, similarly to other Cantabrian areas, livestock, both cattle and sheep, grew from 1840 to 1856, and decreased around 1891, more in Álava or Biscay than in Guipúzcoa, and grew again from 1891 to the 1930s. Despite this, the most important change took place as a result of industrialisation, which boosted the growth of rents, enhancing, on the one hand, the milk products' demand from tourism and the indirect consumption of cookies and chocolate, and, on the other hand, the consumption of meat and milk by working-class families from the end of the 19th century. However, from 1865 to 1962, as a consequence of meadows' increase, cattle expanded and surpassed sheep, in Biscay -where the cattle specialisation was clearly higher- and Guipúzcoa -even

though Álava disguised overall figures-, being also prevalent in Pyrenees -where foreign races were introduced too, from 1936 to 1990, when they were overrun by pigs-, being specialised in milk production, mainly destined to fresh consumption. But, two decades later, sheep recovered its predominance again, until the present day. Sheep herds continued being very important, also dominant in the Pyrenees until 1936, owing to the extensive use of upland pastures, in spite of commons’ privatisation, producing meat for the human consumption and milk for the production of cheese. In any case, during the 1960s some dairy plants (Gurelesa in San Sebastian, Beyena and Ona in Bilbao) were opened supplying not only Basque cities, but also Madrid<sup>30</sup>.

	Cattle	Sheep	Goats	Pigs
Galicia	833,509	320,077	69,957	636,361
Asturias	274,193	80,431	20,362	94,283
Cantabria	229,492	89,081	21,539	24,441
Basque Country	180,101	194,272	8,044	49,255

Table 2. Livestock distribution in Cantabrian Spain (1962)<sup>31</sup>.

### Conclusions

Despite the modernisation and specialisation process felt by Cantabrian stockbreeding from the 18th century, shifting from a multifunctional livestock to one focused on the production of meat and milky products, mostly related to cattle, with the exception of the Basque Country that endures today, and from an extensive to an intensive and industrial pattern, currently two are the main problems of Cantabrian stockbreeding for the future: firstly, the extreme dependency of intensive stockbreeding on foreign raw materials to produce livestock feed; and, secondly, the small size and high number of exploitation unities, as well as the diversity of livestock species and activities, affected by the inefficiency and the lack of specialisation, unsuitable to compete in the European union, in terms of market profit. The rates system imposed by Eec is favouring the concentration of farm businesses, but also the abandonment of milk production. Nevertheless, technological change has been unequally applied and only some agents have been able to follow a proper specialisation rhythm. From the 1980s the tendency has been to reduce the number of producers, milk cows and milk production -coinciding with a shift in the consumption pattern, from an expansive but reduced array of milky products to an less expansive, but more diversified regime- and to increase the size of farms; in fact, the future seems to be headed by less, bigger, more efficient, with more productive animals, and less, but bigger, more modern and machine-aided plants, although a hard debate is arising around whether is more sustainable extensive stockbreeding or macro cattle and pigs farms, which have undergone a growth of between 9 and 13 percent from 2015 onwards<sup>32</sup>. On the last 35 years, since Spain joined the Eec, pig and cattle meat have impressively increased, whereas sheep meat appears to have stagnated. As a result of a reduction in the number of farms -cattle number has increased from 2015, but there are 7,500 farms less-, the average size of pig herds doubled cattle herds. This way milk production has been determined by the limitations imposed by the European community rates, by a deep restructuring, resulting in the reduction of farm numbers -almost a sixth part-, but, at the same time, in a size growth, and by a growing intensification. Currently, milk production is concentrated in Cantabrian Spain (60 percent), preferentially in Galicia (40 percent). Extensive farming for cattle meat keeps on being important, behind the Western of Spain, characterized by *dehesas*. Despite this expansion, stockbreeding products’ prices during the last 35 years have been evidently lower than consumer’ prices, surviving by virtue of European help. Spain primarily exports its domestic livestock productions, but the balance is negative compared with the imports of raw materials for animal food. Therefore, nowadays, the industry survives as an extensive pattern for cattle meat production, but as an intensive one for pork, poultry meat, and cattle milk production<sup>33</sup>.

<sup>1</sup> This study is part of the Basque University System's Research Group "The Basque Country, Europe and America: Atlantic links and relationships" (IT1241-19).

<sup>2</sup> Francisco Javier Fernández Conde, *Canadería en Asturias en la primera Edad Media. Algunas características de la economía castreña y romana*, in *Los rebaños de Gerión. Pastores y trashumancia en Iberia antigua y medieval*, coordinated by Joaquín Gómez-Pantoja, Casa Velázquez, Madrid 2001, pp. 143-148.

<sup>3</sup> Álvaro Aragón Ruano, *La ganadería guipuzcoana de Antiguo Régimen*, UPV-EHU, Bilbao 2009, pp. 201-219; Ramón Díaz de Durana, José Ramón and Jon Andoni Fernández de Larrea, *Economía ganadera y medio ambiente. Guipúzcoa y el Noroeste de Navarra en la Baja Edad Media*, in «Historia Agraria», n. 27, 2002, pp. 43-64; Susana Aparicio Rosillo (2014), *La cabaña de las órdenes religiosas en el Pirineo. Los intereses ganaderos de las órdenes religiosas en Ultrapuertos, Labourd, y el Béarn durante los siglos plenomedievales*, in «RIEV», n. 59, 1, 2014, pp. 8-35.

<sup>4</sup> Margarita Fernández Mier, Pablo López Gómez and David González Álvarez, *Prácticas ganaderas en la cordillera cantábrica. Aproximación multidisciplinar al estudio de las áreas de pasto en la Edad Media*, in «Debates de Arqueología Medieval», n. 3, 2013, pp. 202-209.

<sup>5</sup> Fernández Conde, *Canadería en Asturias*, cit., pp. 152-158; Margarita Fernández Mier and Catarina Tente, *Transhumant herding systems in Iberia*, in *Historical Archaeologies of Transhumance across Europe* edited by Eugene Costello and Eva Svensson, Routledge, London-New York 2017, pp. 225-226; Anna Maria Stagno, *Short- and long-distance transhumant systems and the commons in post-classical archaeology. Case studies from southern Europe*, in Costello, *Historical Archaeologies*, cit., pp. 171-172.

<sup>6</sup> Miguel Calleja Puerta, *La Asturias Medieval*, in *Historia de Asturias*, coordinated by Adolfo Fernández Pérez and Florencio Frieria Suárez, KRK Ediciones, Ovideo 2005, pp. 277-280; Manuel Corbera Millán, *Técnicas pastoriles y paisaje rural: origen y evolución de las praderías invernales en los valles del Nasa-Lamasón*, in «Eria», n. 71, 2006, pp. 301-318; Id., *Resistencia de un sistema milenario de trashumancia ganadera de corto recorrido en el valle de Cabuérniga (Cantabria)*, in «Scripta Nova. Revista electrónica de Geografía y Ciencias Sociales», Vol. X, n. 218, 2006; and Id., *El proceso de colonización y la construcción de paisaje en los Montes del Pas*, in «Eria», n. 77, 2008, pp. 293-314; David González Álvarez, *Traditional Pastoralism in the Asturian Mountains: an Ethnoarchaeological View on Mobility and Settlement Patterns*, in *Ethnoarchaeology: current research and field methods*, edited by Francesca Lugli, Assunta Alejandra Stoppiello and Stefano Biagetti, BAR International Series 2474, Archaeopress, Oxford 2013, p. 205.

<sup>7</sup> Pegerto Saavedra, *Trayectoria de la ganadería de la España húmeda en los siglos XVI-XIX*, in *Mesta y mundo pecuario en la Península Ibérica durante los tiempos modernos*, coordinated by Jerónimo López-Salazar Pérez and Porfirio Sanz Camañes, Universidad de Castilla-La Mancha, Ciudad Real 2011, pp. 175-179.

<sup>8</sup> Aragón Ruano, *La ganadería*, cit., pp. 46-73.

<sup>9</sup> Fernández Mier, *Prácticas ganaderas*, cit., pp. 174-179 and *Transhumant herding*, cit., p. 221; González, *Traditional Pastoralism*, cit., p. 207.

<sup>10</sup> Francisco Castillo Rodríguez, José Manuel Vázquez Varela and Marcos Valcárcel Díaz, *Contrastes climáticos y estrategias adaptativas entre montaña / meseta: la trashumancia tradicional entre Castilla / Extremadura y "a serra dos ancares" en el noroeste de la Península Ibérica*, in «Gallaecia: revista de arqueoloxía e antigüidade», n. 24, 2005, pp. 378-380.

<sup>11</sup> Álvaro Aragón Ruano, *Circulación de ganado y vías pecuarias en el País Vasco (español y francés) y Navarra durante la Edad Moderna*, in «Iura Vasconiae», n. 18, 2022, pp. 85-136.

<sup>12</sup> Aparicio, *La cabaña*, cit., pp. 13-26; Díaz de Durana, *Economía ganadera*, cit., pp. 47-54.

<sup>13</sup> Álvaro Aragón Ruano, *Relaciones ganaderas entre Navarra y Guipúzcoa durante la Baja Edad Media y el comienzo de la Edad Moderna*, in «En la España Medieval» n. 38, 2015, pp. 13-35; Alfredo Moraza Barea, *La trashumancia desde el sistema ibérico al Pirineo occidental: el pastoreo de ganado porcino entre la sierra de Cameros (Soria-La Rioja) y el País Vasco a fines de la Edad Media*, in *Les ressources naturelles des Pyrénées du Moyen Âge à l'époque moderne. Exploitation, Gestion, Appropriation*, coordinated by Aymat, Presses Universitaires de Perpignan, Perpignan 2005, pp. 221-238.

<sup>14</sup> José M. García-Ruiz et al., «Transhumance and long-term deforestation in the subalpine belt of the central Spanish Pyrenees: An interdisciplinary approach», *Catena*, 195, 2020 and Penélope González-Sampériz et al., «Escenarios, tempo e indicadores paleoambientales para la identificación del Antropoceno en el paisaje vegetal del Pirineo Central (NE Iberia)», *Cuadernos de Investigación Geográfica*, n. 45 (1), 2019, pp. 167-193.

<sup>15</sup> Fernández Conde, *Canadería en Asturias*, cit., pp. 141-150.

<sup>16</sup> Aragón Ruano, *Circulación de Ganado*, cit.; Ramón Lanza García, *Miseria, cambio y progreso en el Antiguo Régimen: Cantabria, siglos XVI-XVIII*, PubliCan, Santander 2010, pp. 144-150.

<sup>17</sup> Fernández Mier, *Prácticas ganaderas*, cit., pp. 187-191.

<sup>18</sup> Aragón Ruano, *Relaciones ganaderas*, cit., pp. 21 and 25-26.



<sup>19</sup> José Manuel Pérez García, *Niveles y transformaciones de la ganadería de Galicia en el siglo XVII*, in «Cuadernos de estudios gallegos», T. 33, n. 98, 1982, pp. 87-177, and *La España agraria septentrional durante el Antiguo Régimen (1500-1850)*, in «Studia Histórica. Historia Moderna», 29, 2007, pp. 97-98 and 100-105; Saavedra, *Trayectoria de la ganadería*, cit., p. 171.

<sup>20</sup> Baudilio Barreiro Mallón, *La introducción de nuevos cultivos y la evolución de la ganadería en Asturias durante la Edad Moderna*, in *Congreso de Historia Rural. Siglos XVI al XIX*, Universidad Complutense, Madrid 1984, pp. 287-318; José Manuel Fernández Álvarez, *Edad Moderna*, in Fernández Pérez, *Historia de Asturias*, cit., p. 400.

<sup>21</sup> Corbera, *Técnicas pastoriles*, cit., *Resistencia*, cit. and *El proceso de colonización*, cit., pp. 293-314; Lanza, *El crecimiento de la ganadería de Cantabria entre los siglos XVI y XIX: una temprana especialización regional*, in «Historia agraria», n. 23, 2001, pp. 79-118 and *Miseria, cambio y progreso*, cit., pp. 77-79 and 90-93.

<sup>22</sup> Aragón, *La ganadería*, cit., pp. 73-90.

<sup>23</sup> Saavedra, *Trayectoria de la ganadería*, cit., pp. 105-112; Fernando Collantes Gutiérrez, *La ganadería de montaña en España, 1865-2000: Historia de una ventaja comparativa anulada*, in «Historia Agraria», n. 31, 2003, pp. 151-154. Fernando Camarero Rioja, *Epizootia del ganado vacuno en Álava*, in *Libro del VIII Congreso Nacional de Historia de la Veterinaria*, Donostia-Bilbao, pp. 131-136.

<sup>24</sup> Fernando Collantes Gutiérrez, *La evolución del consumo de productos lácteos en España, 1952-2007*, in «Revista de Historia Industrial», 44, 2014, pp. 103-134; Saavedra, *Trayectoria de la ganadería*, cit., pp. 113-127.

<sup>25</sup> Bartolomé Valle Buenestado, *La ganadería española a finales del siglo XIX (Una aproximación geográfica a partir del Censo de 1865)*, in «Investigaciones Geográficas», n. 56, 2011, pp. 12-13.

<sup>26</sup> Miguel Muñoz Rubio, Miguel, *El transporte ferroviario de ganado y el mercado entre 1848 y 1913*, in «Historia Agraria», 67, 2015, pp. 85-91.

<sup>27</sup> Rafael Domínguez Martín, *La ganadería española, del franquismo a la CEE. Balance de un sector olvidado*, in «Historia Agraria», n. 23, 2001, pp. 39-51; Alberte Martínez López, *Perspectiva histórica de la ganadería gallega: de la complementariedad agraria a la crisis de la intensificación láctea (1850-1995)*, in *La vocación ganadera del norte de España: del modelo tradicional a los desafíos del mercado mundial*, coordinated by Rafael Domínguez Martín, Ministerio de Agricultura, Alimentación y Medio Ambiente, Madrid 1996, pp. 17-57; Saavedra, *Trayectoria de la ganadería*, cit., p. 127.

<sup>28</sup> Karoline Daugstad, Margarita Fernández Mier and Leonor Peña-Chocarro, *Landscapes of transhumance in Norway and Spain: Farmers' practices, perceptions, and value orientations*, in «Norwegian Journal of Geography», 68, 4, 2014, pp. 248-258; Fermín Rodríguez Gutiérrez, *La evolución del sector ganadero en Asturias (1750-1995)*, in Domínguez, *La vocación ganadera*, cit., pp. 59-87.

<sup>29</sup> Rafael Domínguez Martín and Leonor De la Puente Fernández, *Historia de un liderazgo: cambio técnico y trayectorias de la tecnología en la ganadería de Cantabria, 1850-1950*, in Domínguez, *La vocación ganadera*, cit., pp. 89-146.

<sup>30</sup> Ainz Ibarrondo, María José, *El caserío vasco en el país de las industrias*, Ministerio de Agricultura, Pesca y Alimentación, Madrid 2001, pp. 108 and 117-120; Aragón Ruano, *La ganadería*, cit., pp. 219-249; Victoriano Calcedo Ordóñez, *Crisis, evolución y cambio en la ganadería de vacuno de leche de la España húmeda (1950 al 2000)*, in Domínguez, *La vocación ganadera*, cit., p. 245; Collantes, *La ganadería de montaña*, cit., pp. 151-156; Ander Delgado Cendagortagarza, *Trabajo y vida cotidiana en la "otra" Bizkaia, 1876-1923*, Catarata, Madrid 2009, pp. 27-28 and 39-42; Ramón Lanza García, *La ganadería vacuna del País Vasco (1850-1950): principales caracteres y factores de su evolución*, in Domínguez, *La vocación ganadera*, cit., pp. 147-206; Fernando Mikelarena Peña, *Evolución demográfica y evolución del sector agrario en Navarra en el siglo XIX*, in «Gerónimo de Uztariz», n. 6-7, 1992, pp. 118; Enriqueta Sesmero Cutanda, *Clases populares y carlismo en Bizkaia, 1850-1872*, Universidad de Deusto, Bilbao 2000, pp. 97-99 and 112-124.

<sup>31</sup> Spanish National Statistical Institute (INE): <https://www.ine.es/inebaseweb/treeNavigation.do?tn=194576> (last consultation: January 28th 2022).

<sup>32</sup> Calcedo, *Crisis, evolución*, cit., pp. 269-282; Collantes, *La evolución del consumo*, cit., pp. 124-128; Daugstad, *Landscapes of transhumance*, cit.; Sandra M. Ríos-Núñez and Daniel Coq-Huelva, *The transformation of the Spanish livestock system in the Second and Third food regimes*, in «Journal of Agrarian Change», n. 15, 4, 2015, pp. 519-540; David Soto Fernández, Manuel González de Molina, Juan Infante-Amate, and Gloria Guzmán Casado, *La evolución de la ganadería española (1752-2012). Del uso múltiple al uso alimentario. Una evaluación de la fiabilidad de los censos y de las estadísticas de producción*, in *Instituciones políticas, comportamientos sociales y atraso económico en España (1580-2000): homenaje a Ángel García Sanz*, coordinated by Francisco Comín, Ricardo Hernández García, Javier Moreno Lázaro and Ángel García Sanz, Universidad de Salamanca, Salamanca 2017, pp. 423-442.

<sup>33</sup> Francisco Sineiro García and Roberto Lorenzana Fernández, *La ganadería en España: situación actual y evolución reciente*, in «Papeles de economía española», n. 117, 2008, pp. 127-134.

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