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STORAGE AND THRESHING IN PREINDUSTRIAL EUROPE: ADDITIONAL NOTES

By

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In the overall picture of grain storage techniques I proposed in my paper in *Tools and Tillage* 1988, VI:1, some facts were missing, either because I overlooked them, or because I was not aware of them at the time of writing. Here are a few of them, with the comments I have felt induced to make.

1. Storage of grain with chaff

Owing to often incomplete descriptions, the importance of grain with chaff as a stored item may well be quite underestimated. An interesting example turns up in Thomas Jefferson's agricultural papers (Betts 1944, 1953), to which the editor has added an account by the duc de La Rochefoucault-Liancourt of a visit he paid to Jefferson at Monticello in June 1796.

In the country south of the Potomac river, east of the the Blue Mountains, USA, La Rochefoucault-Liancourt writes, wheat is exposed to a peculiar scourge a "worm" (insect) by which the harvest may be entirely destroyed if left unthreshed. Since, on the other hand, the grain would rot and spoil if stored in bulk, the only way left is to keep it mixed with chaff, and to put off the winnowing until it is to be sent to the mill or to the market. Here is how La Rochefoucault-Liancourt explains this mode of storage:

"... the heat occasioned by the mixture of grain with its envelope, from which it is dis-

engaged, but with which it continues mixed, destroys the vital principle of the egg, and protects the corn from the inconveniencies of its being hatched" (Betts 1944:243).

By modern standards, of course, this explanation explains nothing. But our information is too slight to enable us to go further. We do not even know what species of insect was responsible: Jefferson alludes to the Hessian fly and to "weavils", but in other contexts. The only certain thing is that wheat had to be kept in store threshed, but not winnowed. When he had a Scotch threshing machine installed at Monticello in 1796, a few weeks after La Rochefoucault-Liancourt's visit, Jefferson was careful to have the fanners removed, so that the grain could be threshed without being winnowed (Betts 1944:546, et 1953: 70, 201, 314). Prior to the coming of the threshing machine to Virginia, wheat was trodden out with horses.

2. Threshing by horse-treading, indoors

As I have tried to show in my paper, and as confirmed by the Virginian example, harvesting, threshing, winnowing and storage techniques are usually connected with each other, so much so indeed that it is virtually impossible to understand them separately. That is the reason why I proposed to identify several harvest-to-storage "systems" in preindustrial Europe.

EUROPEAN SYSTEMS OF THRESHING			
Time and place of threshing		Power used in threshing	
		Human power only	Animal power
Immediate	Open-air	Atlantic Coast	Mediterranean
	Indoors	–	North Hungarian
Delayed	Open-air	–	–
	Indoors	North European	?

The most historically significant of those systems were based on sickle reaping and the making of sheaves, and the main features necessary to distinguish them from each other were the following:

- immediate vs. delayed threshing, implying the storage of grain in bulk (threshed) or in sheaves (unthreshed) respectively;
- open-air vs. indoor threshing;
- threshing using human power vs. animal power.

These features can be combined in eight different ways theoretically, but in my paper, I described three systems only, which I called Mediterranean, North European, and Atlantic Coast system respectively. What about the five other combinations? The best way to make them out is to have a look at the table above, where all the theoretical combinations are gathered:

The combinations corresponding with the three boxes marked (–) are probably impossible, at least in European conditions. By its very nature, delayed threshing can hardly be executed in the open, except perhaps in completely rainless climates not to be found within the boundaries of Europe. And conversely, when threshing is done indoors by the use of human power only, there is no point in hurrying to thresh the whole harvest at once, since the very aim of the system is to

allow the work to be done day in day out. I know of no example to fill the three boxes left void, and my guess is that none will be found.

But having the grain trodden out by animals indoors is a combination that does exist, and since its importance is comparable to that of the Atlantic Coast system of Western France, I should not have ignored it in my paper. I have called this system “North Hungarian” because it is well documented in Northern Hungary and neighbouring Slovakia (Paládi-Kovács 1987, Selmeçzi Kovács 1976, Urbancová 1976). But there is also an example from as far away as Southern Chile (Golte 1973:61), suggesting that this system may have been practised in other European settlements overseas as well. I have supposed in the table that threshing by the North Hungarian system was done immediately after the harvest, and I have therefore left the other possible box for it (delayed threshing – indoors – animal power) with a question mark. But the fact is that I simply do not know, and further information is needed.

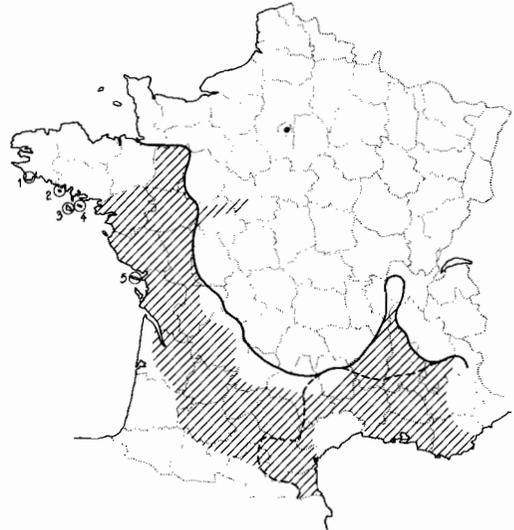
The Mediterranean and North European systems are diametrically opposed in many of their features. The Atlantic Coast and North Hungarian systems stand in between, like hybrids so to speak, and their rather limited areal distribution suggests that they were probably not optimal solutions economically. As I have already pointed out, their early history

is obscure. But in the case of the North Hungarian system, the following phrase from Varro's *Rural Economy* (51) shows that something like it was perhaps already in existence by the first century B.C.: *Non nulli etiam tegunt areas ut in Bagiennis, quod ibi saepe id temporis annui oriuntur nimbi* ("Some people even roof the threshing-floors over, as among the Bagienni, because showers always occur there at that time of the year"). Although very short, this description leaves little doubt that threshing was immediate. The Bagienni or Vagienni are said to have been a people inhabiting Liguria.

3. Threshing by animal-treading, Northern Europe

In my preceding paper, I have mentioned two cases of threshing by animal-treading in non-Mediterranean Europe: Oberschwaben (Germany), and Brittany (France). Both are documented from the first half of the 19th century. Did they come about during, say, the late 18th century, as part and parcel of the diffusion of new animal-drawn threshing devices that affected many areas of Europe at that time? Or may we suppose them to be earlier, and to have been more important in the past? What evidence is currently available?

I have no further information on Oberschwaben. But in Brittany, grain threshing by horse-treading in the early 19th century has now been reported from four sites, three of them isles; they are Groix and Houat,¹ in addition to Belle-Ile-en-Mer and the Penmarc'h Peninsula which I had already quoted (map). Until data from earlier periods have been found, no certain conclusion can be reached. But this rather strange geographical distribution does not fit well with the hypothesis of a recent origin. The new threshing methods making use of animal power that developed in many areas of Europe in the 18th and 19th centuries were usually promoted by enlight-



Threshing and storage systems, France, 19th century. North of — delayed threshing by man (mainly with flail) in barns, storage of grain unthreshed, in sheaves; North European system. Between — and --- lines immediate threshing by man (mainly with flails) in the open, storage of threshed grain; Atlantic Coast system. South of ---: immediate threshing by animal power (treading) in the open, storage of threshed grain; Mediterranean system. Shaded area: maximum extent of animal-drawn threshing devices (mainly stone and wooden rollers) after the mid-19th century. Places referred to in the text: (1) Penmarc'h peninsula (2) Isle of Groix (3) Belle-Ile-en-Mer (4) Isle of Houat (5) Isle of Ré. (After Parain 1937). □ Getreidedrusch. Nördlich der — : nachträglicher Drusch nur mit Hilfe menschlicher Arbeitskraft (vor allem mit Dreschflegeln) in Scheunen, Einlagerung des ungedroschenen Getreides in Garben; nordeuropäisches System. Zwischen der — und der --- Linie: Sofortiger Drusch nur mit Hilfe menschlicher Arbeitskraft (vor allem mit Dreschflegeln) im Freien, Einlagerung des ausgedroschenen Getreides; Atlantikküsten-System. Südlich ---: Sofortiger Drusch von Tieren (Austreten) im Freien, Einlagerung des ausgedroschenen Getreides; Mittelmeer-System. Schraffierte Fläche: größte Ausbreitung von Tieren gezogener Dreschvorrichtungen nach der Mitte des 19. Jahrhunderts.

ened landlords and administrators, by agricultural societies, etc.² That such people would have selected precisely the remotest and most agriculturally backward places they could possibly find in Brittany for furthering innovations does not appear very plausible. Besides, they would have promoted animal-drawn rollers or any other mechanical contrivances, but probably not the simpler technique of horse-treading, which as far as they were aware of it, most of them would have deemed primitive and wasteful. Indeed, what happened in another small isle off the French Atlantic Coast, the Ile de Ré, can be used as a kind of control, so to speak. There, horse-drawn threshing rollers are not heard of before a demonstration organised by the Société d'Agriculture de La Rochelle, as late as 1842. Afterwards, threshing rollers acquired some importance, but the flail was not given up before the coming of true threshing machines well into the 20th century. As far as our documentation goes (which is not very far, actually), horse-treading was unknown, either before or after 1842 (Tardy 1982).

4. *Bat-blé and tribulum*

Finally, I would like to mention two points that may or may not relate to this topic.

The first is the presence, in the Pays de Caux (Eastern Normandy, France) of an implement called *bat-blé* (lit. "wheat-thresher") since at least the early 19th century. This implement was made of a number of old cart wheels mounted on the same axle, not unlike some of the threshing wagons invented in Sweden in the 18th century. But the problem is that these "wheat-threshers", not unlike the present-day *ringpakker* of Denmark, were exclusively used for rolling the fields over after ploughing, and there is not the slightest evidence for the moment that they may have been used for threshing. So the name *bat-blé*, on the significance of which

there is little doubt, is an enigma. Unfortunately, in the present state of research on these questions in France, we can only rely on chance for a solution.³

My second and last point relates to the tribulum. I wrote in my former paper that the archaeology of the tribulum was a mystery. I happened since to rediscover what may possibly be the only find in Europe for which an interpretation as remains of a tribulum was proposed. Here is how the author of the find, General Pitt-Rivers, describes it:

"Nothing was found until we came to the part beneath the crest [of the rampart] where 445 flint flakes were found lying on the old surface line, being contained within an oblong space of 4'6" by 2' [about 140 cm × 60 cm] [...] The flakes had for the most part bulbs of percussion and facets, and were undoubtedly prehistoric flakes, there being no possibility of mistaking them for flints fractured for road making. But they were not well-formed flakes such as might have been intended for use as knives; they were wasters or else flakes of the kind that might have been used in a tribulum for threshing corn. Indeed the oblong space in which they were found almost suggests the possibility of their having formed part of a tribulum [...] There was, however, no trace of wood, and the flakes in many cases were found touching one another.

"Two of these still in use in Cyprus and in Assyria, the survivals of similar ones used formerly by the Romans, are in my Museum in the village of Farnham, Dorset".

This is an extract of *Excavations in Cranborne Chase*, vol. II, p. 239 (1888), and the site of the find was Winkelbury Camp, South Wiltshire. The only thing to be added, perhaps, is that this number 445 is quite the average to be observed on modern tribulums. I have no idea of where those 445 flint flakes might be by now. Let us hope that some de-

tective-archaeologist will excavate them again from museum dust some time.⁴

5. Rat-guards

Rat-guards are stone or wooden discs inserted horizontally between the posts and the supporting beams of elevated buildings, in order to prevent the climbing of rodents. Since rat-guards were lacking in the descriptions and pictures of elevated granaries known to me in Africa and Southern Asia, I had accepted their absence from those regions as a working hypothesis.

Eastern Timor (formerly a Portuguese colony, now in Indonesia) is an important counter-example. Many of the numerous photographs of elevated houses and granaries published by Ruy Cinatti *et al.* (1987) show large and conspicuous rat-guards. The Timorese example is probably not unique. Other examples are to be expected from the Asian Archipelago. Pending further information it shows at least that rat-guards, if they are a detail, are a detail well worth studying.

Notes

- 1 I am indebted to M. François de Beaulieu for these details. It seems pretty certain that horse-treading was totally unknown in continental Brittany, except for the Penmarc'h peninsula.
- 2 This development of animal-drawn threshing contrivances occurred both in Northern and in Southern Europe, but it has been extensively studied in Northern Europe only: see Berg 1981 for the case of Sweden and the relevant literature on other countries. In France, the use of threshing rollers developed at the expense of both horse-treading (Mediterranean system) and immediate flail-threshing in the open (Atlantic Coast system); see Parain 1937, and Aubin & Eches 1985.
- 3 Information on the *bat-blé* has been gathered by Michèle Bachelet (1985, pp. 111-112). The instrument itself is described in 1820, but its name is not explicitly recorded before 1922.

4 I have presented General Pitt-Rivers' find at a symposium on "L'exploitation des plantes en préhistoire, documents et techniques", organised by Patricia Anderson-Gerfaud at the Jalès experimental farm (Ardèche, France), 14 to 18 June 1988. The occasion was a paper presented by Kathryn Ataman on "Threshing sledges and Archaeology". A modern tribulum from the Near East decorating the meeting room made the discussion quite lively.

References

- Aubin, Marie-Christine, & Raymond Eches (1985) Le dépiquage des céréales dans la commune de Vidauban (Var) au siècle dernier et au début de ce siècle, in: M. Gast & F. Sigaut (eds): Les techniques de conservation des grains à long terme III (1):81-100.
- Bachelet, Michèle (1985) Techniques de labour et instruments aratoires, 1780-1880: Seine-Inférieure, Somme, Oise. Paris, Ecole des Hautes Etudes en Sciences Sociales, unpubl. diss.
- Berg, Gösta (1981) The Swedish threshing wagon, in: *Ethnologia Europaea*, 12, 2:174-186.
- Betts, Edwin Morris (1944) Thomas Jefferson's Garden Book, 1766-1824. Philadelphia, The American Philosophical Society. Reprint 1966.
- Betts, Edwin Morris (1953) Thomas Jefferson's Farm Book. Princeton, The American Philosophical Society & Princeton University Press.
- Cinatti, Ruy *et al.* (1987): *Arquitectura timorense*. Museu de Ethnologia, Lisboa.
- Golte, Winfried (1973) Das südchilenische Seengebiet. Besiedlung und wirtschaftliche Erschließung seit dem 18. Jahrhundert. Bonn, Ferd. Dümmler (Bonner Geographische Abhandlungen, Heft 47).
- Paládi-Kovács, Attila (1987) A nyomtatás helye 1900 körül (Platz für das Auftreten von Getreide durch Tiere um 1900) Map 61 from: Magyar Néprajzi Atlasz (Atlas der ungarischen Volkskultur), I. Budapest, Akadémiai Kiado.
- Parain, Charles (1937) Les anciens procédés de battage et de dépiquage en France, in: *Travaux du Premier Congrès international de Folklore*, Paris 1937. (Reprinted in *Outils, ethnies et développement historique*, Paris, Editions Sociales, 1979, pp. 17-27).

Selmezi Kovács, Attila (1976) Csürös építkezés és gazdálkodás Észak-Magyarországon (Scheunenbau und Scheunenwirtschaft in Nordungarn). Debrecen, Kossuth Lajos Tudományegyetem.

Tardy, Pierre (1982) Les blés dans l'île de Ré, in: Groupement d'Etudes Rétaises, Cahiers de la Mémoire, n° 8.

Urbancová, Viera (1976) Personal communication.

VORWORT *Fortsetzung von Seite 62*

nen wir vielleicht zu einer genaueren Interpretation der Terminologie beitragen. Wir können aber auch dadurch helfen, daß wir das Wissen um die Anwendungstechnik der Gerätschaften, so wie sie sich in ihren Funktionsteilen widerspiegelt, auf die Begriffe übertragen, mit denen die Sprachforscher arbeiten. Solche interdisziplinäre Zusammenarbeit ist wichtig für die fortschreitende Forschung auf dem Gebiet der materiellen Kultur und der Sprachen gleichermaßen.

Magdalena Beranová gibt uns einen Einblick in die Vorgeschichte Böhmens. Indem sie Belege für früheisenzeitlichen Bodenbau, für Erntegeräte und für Getreidemahlgerätschaften vorstellt, schafft sie einen Komplex von in sich zusammenhängenden wirtschaftlichen Tätigkeiten, die – weit über die Ebene des Haushalts hinausgreifend – Teil des allgemeinen Handels- und Tauschgeschehens werden. Die experimentelle Rekonstruktion einer frühen Sense und die Beurteilung ihrer

Tauglichkeit, über die die Verfasserin berichtet, ist genau so wie die Untersuchung von Wörtern ein wichtiges Mittel zur Interpretation der Realitäten vergangenen Lebens.

Was dieses Heft – wie andere Hefte zuvor – ganz generell zum Ausdruck bringt, ist die Tatsache, daß wissenschaftliche Erkenntnisse von gegenseitigen Verbindungen profitieren. Man kann die Feldbearbeitungsgeräte eines bestimmten Gebietes nicht angemessen verstehen ohne zu wissen, wie sie funktionierten und zu welchen Zwecken sie dienten. Und ein Gebiet fügt sich ein in andere Gebiete oder es kann parallele Erscheinungen besitzen. Eins führt zum anderen eins läßt sich vom anderen ableiten. Wir müssen alle Möglichkeiten ausschöpfen – Sprache, Sachgut, Zusammenhänge, Vergleiche usw. – um die Vergangenheit zu interpretieren und hinter die Gedanken derjenigen zu kommen, die die Geräte gebrauchten, mit denen sich unsere Zeitschrift befaßt.