

The Swedish Threshing Wagon

Until the emergence of the mechanical thresher, the flail was the predominant threshing implement in Sweden, as in the rest of Europe north of the Alps. Dag Trotzig considered that he could show that this ingenious implement was invented during the period of the Great Migration and that it then spread rapidly throughout its later distribution area (Trotzig 1943). As far as Sweden is concerned, a piece of reliable information dating from the early part of the 13th century has now turned up regarding the use of the „hole flail“. In 1971, in excavations carried out at Gamla Lödöse (the predecessor of the city of Gothenburg), a swingle was found bearing the Swedish word *prägel* (which is even today the dialectal word for a flail in these parts) carved in runes (Svärdström 1972). A great advantage of threshing with the flail was that it could be carried out under a roof in a relatively limited space, whereas the treading method and its derivatives, practised in more southerly countries, presupposed dry and warm weather conditions. At the same time, however, threshing with the flail had a great disadvantage – it required a considerable force of human labour.

Threshing with the flail might often go on for a long time in the new year, especially when there had been a good harvest. A contributory factor to this was that people generally waited for the coming of the cold weather, because they thought that at all events the grain (barley and rye) then came more readily from the ears. They explained in the same way why the threshing generally took place in the early morning (Valen-Sendstad 1964: 190). On large estates, the number of servants was not sufficient for this work and instead hired labour was used, which often came from parts of the country where the economy was less well developed. These „corn threshers“ were so called because they worked at piece-rates and drew their wages to a certain extent in the corn that they had threshed. On the other hand, there were several reasons for trying to get the threshing done as soon as possible. Amongst other things if it was stored too long, the threshed crop might be damaged by mice or birds. Besides, one could always count on getting a higher price if the crop was sold at an early date.

Edvard Carleson, a principal assistant secretary in the Diplomatic Service who also had farming interests, gave an excellent summary of the difficulties in 1751:

Among the heavy and slow jobs which a farmer has to do I reckon especially the threshing of the corn when it has been brought in from the fields, and this is consequently one of the most expensive jobs. When God blesses the land as abundantly as was the case last years, the ordinary workers have to be put to work for several month on threshing, and after all the corn threshers share with mice and rats the profit for which the farmer has worked throughout the year. Other urgent work has to be neglected, which

could easily have been done during the autumn, if the work in the barn had not prevented the servants from doing it. I pass over the risk of fire in threshing in the winter, as this is well known to all farmers (Carleson 1751).

Carleson, who lived for many years in Turkey while engaged in diplomatic missions, sought to overcome these difficulties by calling in a Bulgarian farmer, who gave a demonstration of threshing with the Turkish threshing sledge, which was drawn by a pair of bullocks, at Carleson's farm at Hacksta in Uppland. Similar experiments were also made at some other places in central Sweden, but it was soon found that the climatic conditions, amongst other things, were not very suitable for such an innovation (Berg 1982).

As early as the 17th century, we hear of German experiments with mechanical threshers, in which it was possible to reduce the contribution made by human labour. In this connection, different designs were used, primarily those which were closely related to the stamp mills, in which the stamp hammers replaced the swingles on the flails. Threshing machines of this kind were constructed also in Sweden by the eminent inventor Christopher Polhem (1661-1751) and others (Berg 1970). However, none of these mechanical devices achieved any great popularity, and it was not until Andrew Meikle produced his ingenious design with the swingle rotating in a casing that a definitive solution of the problem was obtained. All the subsequent developments were based on Meikle's principle, which is considered to have appeared in 1784.

However, a threshing method of an entirely different kind had been introduced into Sweden as early as the 1730s. Unlike the mechanical threshers, it came to have a wider distribution and therefore merits some attention.¹

In September 1730, Magnus Stridsberg, a senior master at Härnösand Grammar School, applied to the King-in-Council for the sole rights to and a patent for a „threshing and farm machine“ which he had designed. This application was granted in February of the following year for 10 years, and a fine was prescribed for anyone who built such a machine without paying a fee to the inventor. On account of the opposition of the Swedish Parliament, the granting of such sole rights had otherwise almost ceased at this period (Ekeberg 1904: 11 ff). No description of the invention was included in the application, but the Provincial Governor at Gävle said in an attached certi-

¹ I published as early as 1931 in Swedish a relatively detailed account of the Swedish threshing machine (Berg 1931, with a supplement in 1932). Later on, Dag Trotzig discussed the subject in his dissertation (Trotzig 1943), also in Swedish. In that connection, he was able to supplement my collection of materials on a number of points and also enriched his discussion with some new viewpoints. In the present paper, I have not thought it necessary to report in detail what can be learned from these two accounts. On the other hand, I have included a number of more recent discoveries, as well as references to such later literature as is of any importance.

ificate that Stridsberg had demonstrated his invention at the royal farm there „with all the success that could be desired“. It clearly consisted, on the one hand, of a large, covered rack for drying the corn and, on the other, of a threshing wagon of the type that we get to know about in later sources. As for its capacity, Stridsberg said that the threshing was done 4-5 times faster than with the flail, and the Provincial Governor mentioned that, with the machine, 100 barrels of corn (10-12 barrels per day) were threshed by 3-4 persons. Stridsberg would seem to have previously carried out similar experiments at his family's farm at Sundby in the parish of Boteå in Ångermanland. Two years later, he published a leaflet, in which he advertised his invention and gave information about its cost. He invited interested persons to apply to him for detailed information. He said that he had already made several improvements to the machine, so that now it was possible „with a horse and a few persons' assistance“ to thresh 10-30 barrels of corn per day.

In this advertising leaflet in 1733, Stridsberg said that his machine was already in use in „several places in Norrland“. However, it also encountered criticism from, amongst others, Polhem, who in a letter in January 1734 made a detailed comparison with his own mechanical thresher. He found that it offered great advantages, above all, because all the labour was continuously engaged, as would not be the case when a threshing wagon was pulled by a horse to and fro across the barn and then there was an interval whilst the layer of corn was exchanged for a new one (Berg 1970: 50). Olof Broman (1676-1750), the veteran educationalist and clergyman, took a critical attitude to both Polhem's and Stridsberg's inventions in his great topographical work on Hälsingland. He stated that threshing with the flail was the common method used in that province, „because the suggestions and the machines which either Mr. Polhem or Mr. Stridsberg have produced strike a poor farmer as being too expensive for him to be able to pay with the annual crop, either in his own or in his grandchildren's lifetimes. For that reason, he has to jog to and fro, striking with the flail.“ (Broman 1911-54, 3: 102 ff).

Before entering upon the question of the appearance of Stridsberg's threshing wagon and its distribution, I should devote a few words to the inventor himself. He was born on 24 March 1696 at the above-mentioned farm at Sundby, the son of Lars Stridsberg, an assize-court judge. After studying at Uppsala University, he took his master's degree in 1725 with a thesis entitled *Nova agriculturam emendanda ratio* (a German translation was printed in 1732 in *Die oeconomische Fama*). A couple of years later, Stridsberg published a partly revised edition in Swedish under the title of *En grundelig kundskap om swenska åkerbruket* (A Thorough Knowledge of Swedish Agriculture), which in the following year was reviewed in three learned journals in Germany. In 1728, he became a teacher at Härnösand

Grammar School and in 1737 a senior master. When in 1761 he obtained permanent leave of absence on account of illness, he was given the title of professor. He died on 28 February 1772.

His magistral thesis and the book he published in 1727 are very theoretical but are not lacking in interest. They deal, among other things, with the question of the most suitable mixture of soils and with planting as an alternative to the method of sowing rye and wheat. Some of the experiments referred to had been performed on his farm. On the other hand, neither the thesis nor the Swedish book contain anything about threshing, which shows that the relevant questions had not yet been noticed by the author or at any rate had not yet been answered.

The circumstance that Stridsberg did not describe in detail the threshing method or the construction of the threshing wagon either in his application for the sole rights or in his advertising leaflet in 1733 was certainly due to the fact that they constituted the actual „patent“. On the other hand, he mentioned that drying contrivance on which the sheaves of corn were placed before threshing. This was what was called a „big rack“ and Stridsberg's contribution consisted in making the method more generally known and possibly also in his being the first to hit upon the idea of providing these racks with a roof to protect them against rain or snow. The question of whence he derived the model of his big rack has been the subject of lively discussion among ethnologists. Gunnar Granberg and Ragnar Jirlow assumed that this was a cultural borrowing from Finland, mediated by the Finnish population of Tornedalen and by the Finnish immigrants in central Sweden (Granberg 1937; Jirlow 1937). However, Erik Laid was able later to show that the distribution area of the big rack was by no means limited to the areas of Finnish immigration and that accordingly it could not have reached Sweden by that route (Laid 1952a and 1952b). In the Finnish part of Tornedalen, on the contrary, the use of the big rack seems to have been due to Swedish influence. Concerning the origin of the method of harvesting in Finland, Auvo Hirsjärvi declares, by way of summary, that it „evidently reached Finland both from the west and from the east“ (*Suomen kansankulttuurin kartasto*, 1976, Map 16). As we know, the big rack is extensively distributed, in forms surprisingly like those in northern Sweden, in the Alpine districts of central Europe (in the abundant literature on this subject, special reference may be made to Melik 1931 and Huber 1944; cf. also Moltschanowa 1972:232 f).

It is particularly noteworthy that, in a limited area in Sweden, we also have the form well known in the Alps with the rack erected in the gallery of the barn (for its distribution in Sweden, see the *Atlas över Svensk folkkultur*, 1957, Map XVII). The connection between the Scandinavian and the central-European distributions must be regarded as still not elucidated. It is perhaps

not entirely impossible that Stridsberg knew of J.W. Valvasor's remarkable book *Die Ehre dess Hertzogthums Crain*, with its illustration of a big rack under a shelter, on which the sheaves of corn are being put up (Valvasor 1689:104f.).²

In 1754, Stridsberg published a paper in which he described a couple of new inventions in agricultural technology. In this paper, he got on to the subject of the actual threshing procedure, using the threshing wagon, though he did not describe this in detail (Stridsberg 1754). It is not until the paper which he published in 1761 that we get a fuller account of his invention and its development (Stridsberg 1761). It is clear from this that, after getting to know about other threshing machines and finding them impermanent and not very suitable for the purpose, he began to wonder „whether the corn could not be threshed by wheels, if one placed many wheels within each other, almost in a double triangle, and the barn was adapted accordingly“. He had such a wagon made with old cart-wheels and found that it was quite possible to thresh barley with it but that rye could not be threshed well in this way. He then made an improvement by placing two wheels on each hub and erected a proper threshing barn with a big rack under a roof on both sides. When this improvement did not suffice as far as rye was concerned, he increased the number of wheels to three on each hub, as may be seen in the picture reproduced here, which comes from Gideå in Ångermanland. As we know from other sources, the wagon wheels were sometimes shod with iron, but it was an advantage if both they and the barn floor were uneven, in which case the vibration facilitated efficient threshing. Later on, someone – Stridsberg or some other person – hit upon the idea of casting the entire wheels in iron. Erixon states that this was first done at the Galtström (not Galtströmmen!) foundry in the most southerly part of Ångermanland (*Atlas över Svensk folkkultur*, 1957, p. 41), but this is due to a misunderstanding that Stridsberg was a partner in this establishment. The casting was probably done instead at the Gålsjö foundry at Boteå in the same province. This had been owned by Stridsberg's father and was not far from Sundby (cf. on this point Söderlind 1975:43 f). Evidently, different opinions have emerged as to whether the latter modification was so important that Stridsberg could not be regarded as the inventor of the threshing wagon. In a letter to Peter Wargentin, the secretary of the Royal Academy of Sciences, dated 9 April 1760, Stridsberg himself answered an inquiry in the following words:

... the position is that no new threshing machine has been invented, either in this province or in Medelpad, but the present invention is one and the same as those which were built both at Gävle and at Ultuna near Uppsala. The improvement and the distinction between the former and the latter, which are used here and in many places elsewhere,

2 Valvasor's book is included in the collections of the Uppsala University Library (Aurivillius, 1814, p. 251).



Fig. 1: Big-rack with barn in the back-ground. Ume Parish, Province Västerbotten. Photo to Ragnar Jirlow 1920, Nordic Museum.

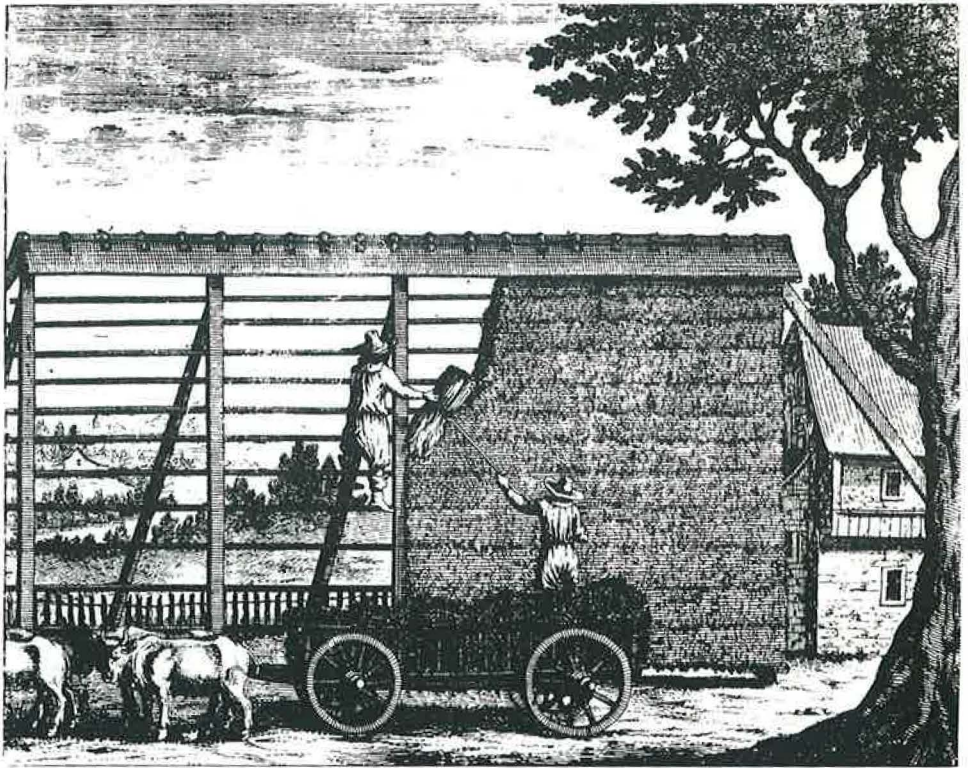


Fig. 2: Big rack for corn in Crain (Valvasor 1689).

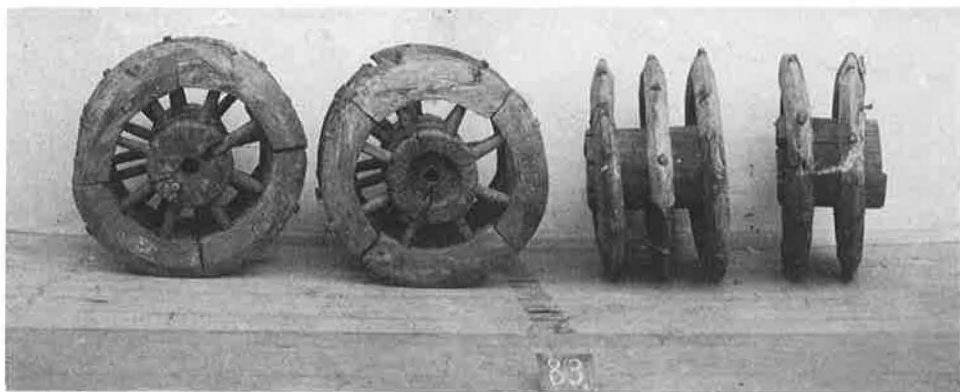


Fig. 3: Wheels for a threshing-wagon. Gideå Parish, Province Angermanland, Nordic Museum.

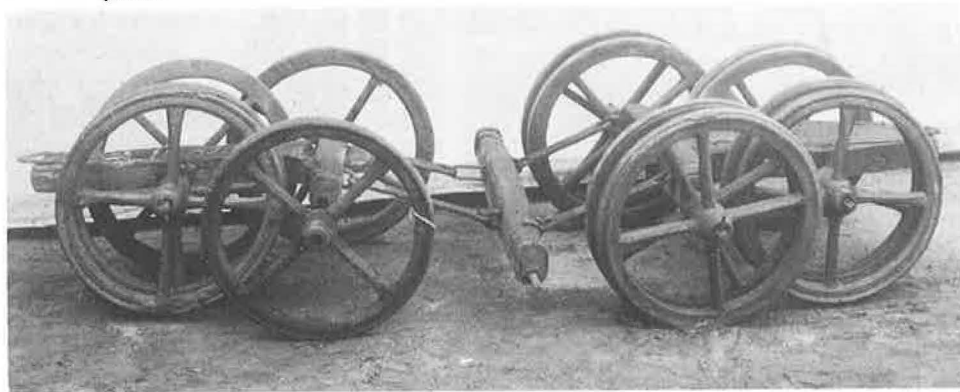


Fig. 4: Threshing-wagon with cast iron wheels. Selånger Parish, Province Medelpad, Nordic Museum.

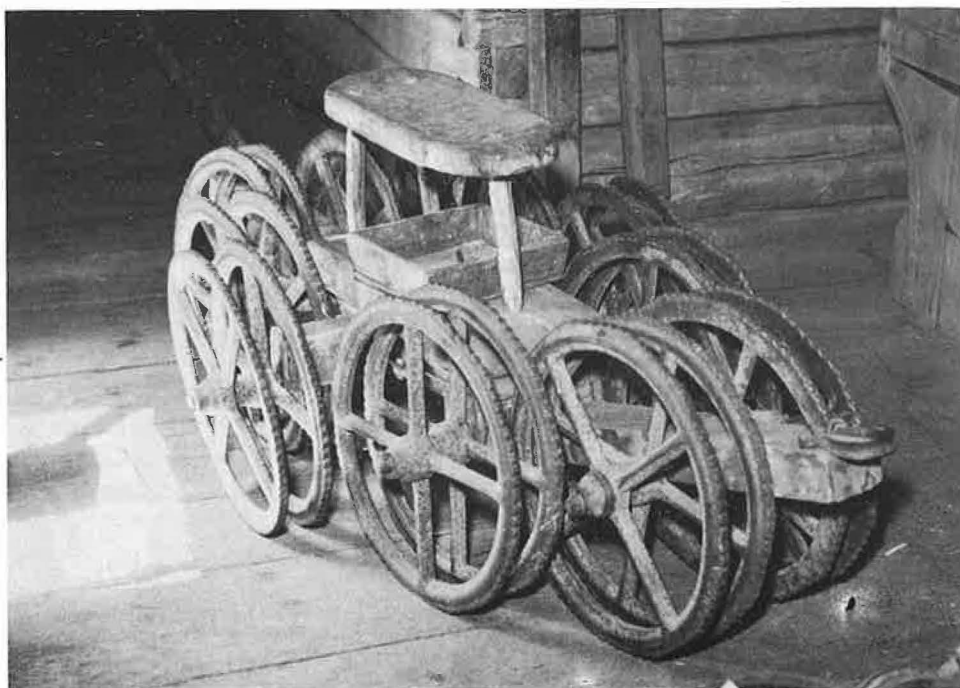


Fig. 5: Threshing-wagon with cast iron wheels. Province Medelpad. Medelpads fornhem, Sundsvall.

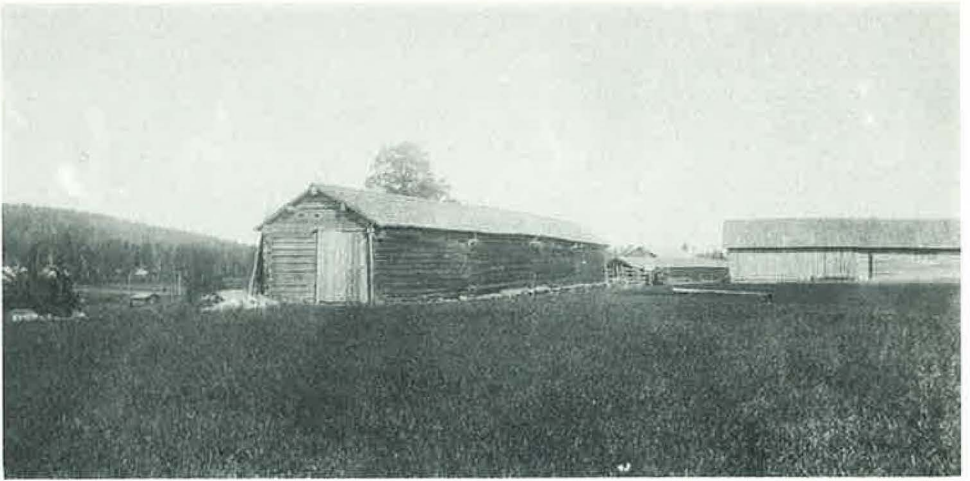


Fig. 6: Barn for threshing with wagon. Jörn Parish, Province Västerbotten. Photo Nordic Museum.

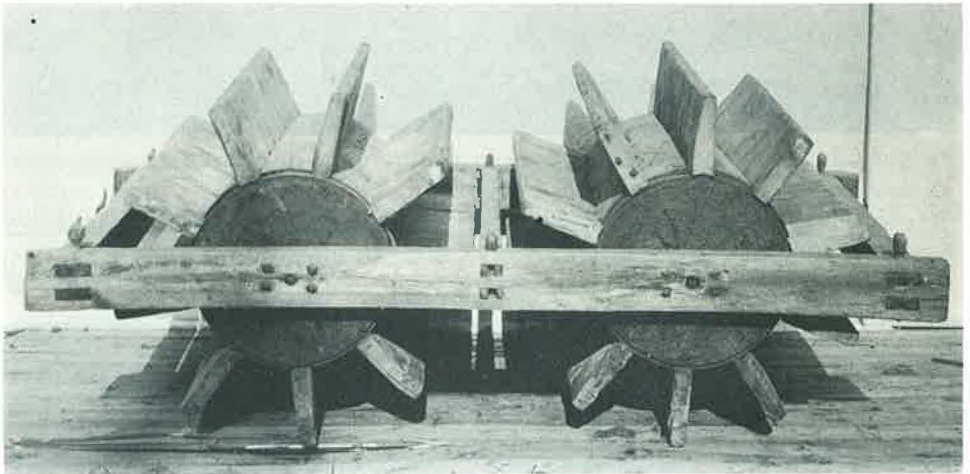


Fig. 7: Threshing-rollers. Nederlule Parish, Province Västerbotten, Nordic Museum.



Fig. 8: Threshing-rollers. Indal Parish, Province Medelpad. Nordic Museum.

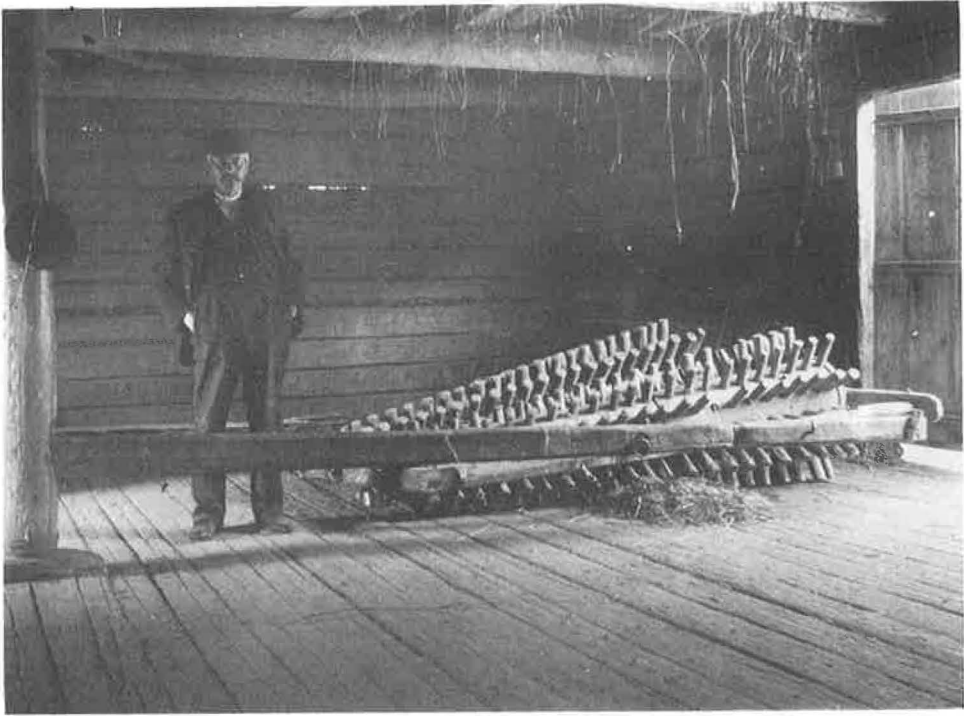


Fig. 9: Barn with conic threshing-rollers. Ljustorp Parish, Province Medelpad. Photo Nordic Museum.

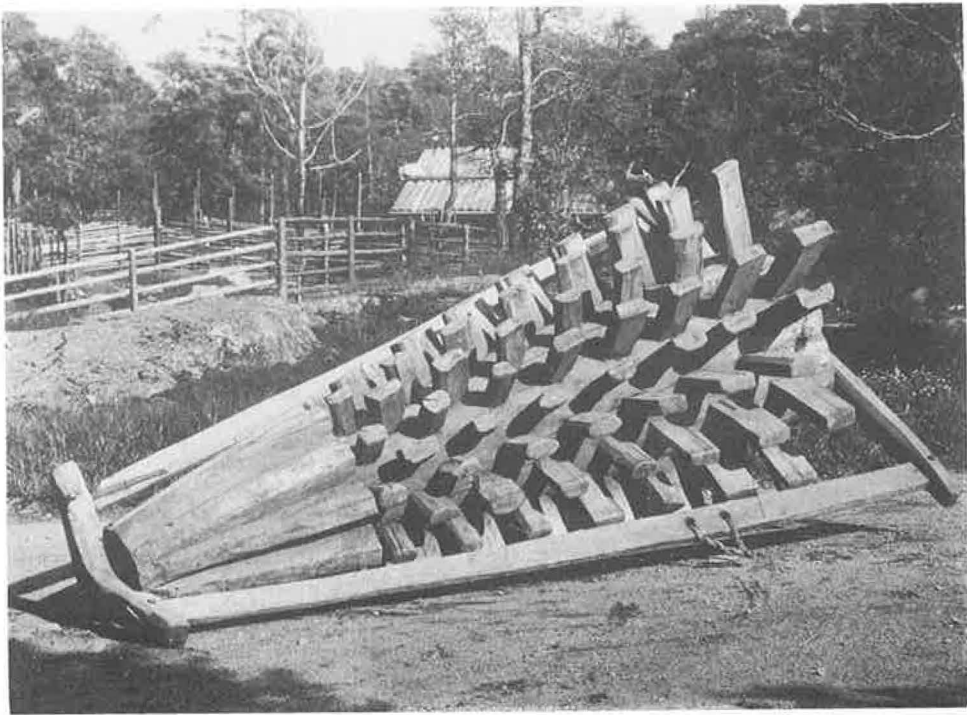


Fig. 10: Threshing-roller. Borgsjö Parish, Province Medelpad.

consist partly in the former having several smaller wheels, with a narrower run under the wheels, which cut the straw better, and partly in the actual material. I built some of this type around here and they had a far better effect than the former. On account of their reputation and after inspecting them, the farmers began to build them and thus they became more and more widely spread. I later improved the one made of cast iron so that, besides having a better effect on tough rye, it can also be used to process hemp and flax (Archives of the Royal Academy of Sciences).

Before I pass on to the question of how Stridsberg's invention was received and the significance which it came to have, I may devote a few words to the conditions under which it was made. The threshing wagons which existed in the Middle East and also in the Roman Empire show no such resemblance to the Swedish design as to enable us to imagine that they were the model. In addition, there is the difficulty of imagining any literary intermediary at this period and under the given circumstances. It therefore seems clear — however remarkable this may appear at first glance — that this senior master at Härnösand had made a real and original invention. But even for such an invention, the thoughts need to be directed by some external influence and, without leaving the domain of reality altogether, we may perhaps find a way in which an idea of this kind may have sprung forth. In this connection, I have pointed out a passage in the Bible which may have acted as a source of inspiration, namely Isaiah 28: 27-28, which runs as follows:

Dill is not threshed with a threshing sledge, nor is a cast wheel rolled over cummin; but dill is beaten out with a stick, and cummin with a rod.

Does one crush bread grain? No, he does not thresh it for ever; when he drives his cart wheel over it with his horses, he does not crush it.

The simile of the threshing wagon³ occurs once again in Isaiah 41: 15:

Behold, I will make of you a threshing sledge, new, sharp and having teeth; you shall thresh the mountains and crush them, and you shall make the hills like chaff;

Nicolaus Vestrin, a clergyman, who in 1761 put forward a proposal for a modified threshing wagon, refers, for his part, to both these passages (Vestrin 1761).

As I have already pointed out, Stridsberg was an experienced private farmer and had a good knowledge of agricultural conditions, especially those in the northern part of the province of Ångermanland. All the land there was owned and cultivated mainly by the farmers themselves. The only exceptions were the lands attached to the parsonages and the official residences, chiefly

3 The Hebrew word translated by the word *sledge* in the Revised Standard Version of the Bible is translated by the word *vagn* (wagon) in the Swedish Bible.

those of officers and other government officials. There was only one estate owned by a nobleman in the area, namely that at Holm in the parish of Överlänns. The principal cereal cultivated was barley; rye was cultivated chiefly on burn-beaten land. On the whole, the province was self-sufficient as regarded corn. Johannes Bureus wrote as early as the beginning of the 17th century: „The people of Hälsingland buy more corn than those of Ångermanland, for so many of them jostle each other for the homesteads (they have such small farms). Famine years compel the people of Ångermanland to buy corn, but those of Hälsingland buy it every year“ (Bureus 1886:197). The official sources show that, during the 18th century, the people could generally supply their needs with corn of their own growing. On the other hand, there seems to have been no surplus production, in contrast to the conditions in the province of Österbotten on the other side of the Baltic Sea (Åmark 1915: 24 f).

As regarded the methods of working, the farming practised in Ångermanland and other provinces in southern Norrland did not differ in any essential respects from that practised in most places in central Sweden. The crofter system – crofters were obliged to do day-work – which during the 18th century gained ground in central Sweden, not only on the large estates but also among the farmers, was used to only a slight extent in the north (Wohlin 1908, particularly the statistics on p. 29). This cut off one of the most important sources of casual labour. The migrations from underdeveloped areas in search of work, which occurred fairly generally in other parts of the country, affected these northerly districts to only a small extent.

In summary, it may be said that the limited supply of labour, especially in connection with the more extensive and time-consuming work, such as threshing corn, must have been felt to be especially troublesome in Ångermanland and the adjacent districts. This circumstance constitutes an important part of the background of Stridsberg's invention and of the general interest shown in the relevant questions up here even before the introduction of mechanical threshers.

As Dag Trotzig in particular has been able to show, Stridsberg's threshing wagon had a fairly considerable distribution among the farmers in the provinces of Ångermanland and Medelpad and also in the neighbouring districts of Västerbotten and Hälsingland. Right at the beginning of the 19th century, a French traveller noted that every farmer in Ångermanland seemed to have a long barn and a threshing wagon with 24 iron wheels (Latocnaye 1801: 60; cf. Arenander 1909). Many reports mention that the parish ministers led the way in introducing this innovation and that accordingly the threshing wagon first came into use on the farms attached to the parsonages. The threshing usually took place in long barns specially built for the purpose but sometimes on the floors of barns, with the sheaves laid out between two big racks

(*Atlas över svensk folkkultur*, 1957, pp. 46 f., where, however, the information given about the distribution of the threshing wagon is misleading, because it is based only on oral tradition). The area in which the threshing wagon gained ground was characterized in the middle of the 18th century by an upswing also in other fields of popular culture. Sigfrid Svensson has shown that this renewal must be explained by the incipient exploitation of the extraordinarily abundant forest resources (Svensson 1942: 55 ff).

Outside its original distribution area, the Stridsberg threshing wagon was also used in several other places in Sweden and also in Norway. However, here its use was exclusively associated with manorial estates, foundry estates and the like (Trotzig 1943: 157, where the statements about the distribution may well be supplemented).

While it is quite clear that the different variants of the threshing wagon with wheels are always traceable back to Stridsberg's invention, the circumstances are more complicated as regards a closely related implement, which may well be called the threshing roller. This was distributed over the same area as the threshing wagon but, in its final form, also outside it in adjacent districts.

The earliest threshing rollers consisted of two rollers with either incised grooves or inset slats. These rollers were held together by a framework, to which the pulling arrangement was attached. In this case also, the long barn or the long threshing floor was used. The idea of replacing the wagon with its iron-shod or cast-iron wheels by the double roller was, of course, fairly obvious. The first time that this is mentioned – in a somewhat different form, it is true – is in a thesis written in 1777 by Pehr Hellzén, another senior master at Härnösand Grammar School. He writes of the two implements as follows: „The late Professor Stridsberg, who lived in this province and was the original inventor of these threshing machines, both the wagon and the rollers, had, from experience, more confidence in the rollers“ (Hellzén 1777). Thus, there is much evidence that Stridsberg gradually realized the advantages which the rollers had over the wagon, above all, from the viewpoint of cost. An implement of this kind could, without any great difficulty, be made by any country carpenter and thereby have a different distribution from that of the wagon, with its wheels purchased from a foundry. Its use was, however, the same: the rollers were driven to and fro on the long track and the draught-animal, which in these districts was always a horse, had to be unhitched and re-hitched for each trip. It seems likely that the person who first hit upon the idea of replacing the wagon by the grooved rollers knew of the picture of such threshing which Agostino Gallo published in his famous work *Le vinti giornate dell'agricoltura* (1569), a book which was well known to Swedish economists in the 18th century.

As we have seen, Polhem had already pointed out, in his criticism of the Stridsberg threshing wagon, the disadvantages associated with the long barn, in which the draught-animal had continually to be unhitched and re-hitched to the wagon. At an early stage attempts were made to solve this problem by making the threshing track circular. In this connection, there was a link with earlier designs, in which the threshing wagon was driven by water-power. There are examples of the use of the two rollers within a framework also in a round barn, but this soon changed to making the roller cone-shaped and connection it to a post in the middle of the barn. It is instructive to learn that the oldest known conical roller was built at the end of the 1760s at Undersåker parsonage in Jämtland by a „master of the art“, i.e. an engineer (Burman 1930: 39). In this form, these threshing machines had a great popularity within a much larger area than the earlier designs. In parallel with this, it was decided at a relatively early stage to substitute teeth cut into the roller for the grooving and the inset slats, which proved to be a very practical modification. The relatively low, initial outlay and the considerable durability made this standardized form of the threshing roller very much appreciated, even on small farms, where it kept its status for a long time, even after the mechanical threshers had otherwise made their triumphal progress through the country after the middle of the 19th century. (For the distribution of the conical threshing-roller, see *Atlas över svensk folkkultur*, 1957, Principal Map XVII and Map 31, in which, however, the notes are not entirely satisfactory).

It may be asked how it came about that neither the threshing wagon nor the threshing roller spread into the adjacent parts of Finland. In parts of Österbotten, corn production in earlier times played a considerable part in the economy and permitted exports to be made to other parts of the kingdom. One of the reasons may have been that the cultivation of corn there was concentrated on rye, while in northern Sweden it was primarily barley that was cultivated. Rye was generally dried in a kiln and not, as in the northern Swedish provinces, in the open air. Stridsberg's objections to the kiln drying of corn were not only the consumption of wood and the general danger of fire but also that the straw was spoiled by the smoke and became less suitable as fodder (Stridsberg 1754: 171). However, there was also a general opinion that rye was more difficult to thresh than barley, which meant that often, in unfavourable harvesting conditions, the use of the threshing wagon had to be supplemented by a certain amount of threshing with the flail.

On the other hand, the occurrence of the threshing roller in other European countries has long been noted. Several reports on this subject have been compiled by Trotzig, but new material has appeared since and can undoubtedly be supplemented by even more information. It is significant that it may be

noted that the occurrence of the threshing roller in all northern European countries seems to be clearly later than in Sweden. This applies, for example, to its occurrence in the eastern Baltic states, where it began to be used on the country estates after the beginning of the 19th century and did not spread also among the farmers until the middle of the century (on the distribution, the most recent work is Merkienė & Milius 1979: 140). In this part of the world, the idea was mediated via the literature and probably through the news of the Swedish agricultural discoveries which was circulated by German specialist journals and in other ways. There is nothing to indicate that this distribution took place „under influences from south-eastern Europe“ (Sigurd Erixon in *Atlas över svensk folkkultur*, 1957: 47). The occurrence on Själland in Denmark may quite certainly, as Trotzig thinks, be traceable back to a Swedish model, mediated via the literature. Only further research can explain in detail how the distribution took place in Germany and Holland, where we have, under all circumstances, also to reckon with inspiration via the literature.

G. Wiegelmann has charted the occurrences of the conical threshing roller in the East Frisian Islands and pointed out that it penetrated in there from the West Frisian Islands, in the Netherlands (Wiegelmann 1969, Map 9 and p. 246). In this connection, he refers to ter Laan (1961: 32), who says that the implement was in existence in 1812, and to van der Poel (1962), who states that a threshing roller in the Open-Air Museum at Arnheim is dated 1730.⁴ However, the roller which he reproduces differs in size and appearance from the Swedish and Danish rollers (cf. the one in the Cloppenburg Museum in *Museumsdorf Cloppenburg* 1980: 146). The threshing roller seems to have been adopted also in Schleswig-Holstein at the end of the 18th century and the beginning of the 19th (Schleswig-Holsteinische Provinzialberichte, 1791, p. 310; Krieg, 1931, p. 51). The iron threshing rollers which occurred in south-western Germany are quite certainly of later origin (Wiegelmann 1969; Bentzien 1980, p. 175).

B.H. Slicher van Bath has rightly pointed out that there has „seldom been a wider gap between theory and practice than in the agriculture of the eighteenth and to some extent the nineteenth century. In the books and pamphlets, in the dissertations of the learned societies, there are all sorts of luminous ideas for improvements and innovations.“ And he adds: „Many of these often brilliant ideas were never realized. . . . Even when farming improvements were put into practice, it was often only as experiments to be proudly reported later in the treatises of the learned agricultural societies. It did not take long for all this learning to sink back into oblivion“ (Slicher

⁴ It seems likely that this is the same threshing roller as is depicted in use for threshing rape out of doors at Wirdum in Groningen in Matschoos & Lindner's book (1932, Fig. 125, p. 76).

van Bath 1963:239). The Swedish threshing wagon is one of the exceptions, in so far as it acquired a not entirely unimportant distribution and satisfied an obvious need for a comparatively long period, before better developed mechanical aids began to be adopted. The same applies to the threshing roller, whose origin is more complicated and which established itself in various forms in succession to the real threshing wagon.

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