

Klaus Herrmann, Hohenheim

# Milestones in Agricultural Engineering

*Since 1987, innovations in agricultural engineering have been presented here, which changed or at least significantly boosted the development of agriculture at their time. If one follows the mechanisation of agriculture along the milestones of agricultural engineering 25, 50, 75 years and even further back, one will be surprised to notice that many ideas and solution proposals are not as new as they seem.*

For thousands of years, farmers' work was characterized by the expression „land work is hand work“. It had taken long enough until the first technical aids were „invented“ which allowed the farmers' work to be slightly facilitated and made more efficient. Only rarely, however, did the „technical inventory“ available to the farmers go beyond hoe and hook, sickle and flail. And even this equipment was not durable. Wood remained the predominant material, whereas iron was used only in exceptional cases.

## 1803

This was the situation in central Europe 200 years ago. Three quarters of the people worked in the countryside or counted among the rural population, and it is not surprising that economists calculated that in 1803 three farmers had to work hard all year long in order to supply the additional food for one single city dweller. This could not continue permanently if industrial take-off was intended to succeed. Therefore, creative heads who thought about better work equipment for farmers entered the scene in Britain, the motherland of industry. Robert Ransome (1753 – 1830), a teacher's son from Wells, Norfolk, was one of them. His mind was like a fountain of new ideas. Since he was also a master of working with a hammer and anvil, he was able to design a ploughshare which sharpened itself during ploughing in 1803. At a time when every visit to the blacksmith's was expensive, this went over well with the farmers. Thus, Ransome's permanently sharp „patent plough“ became the hallmark of the British agricultural machinery factory „Ransomes, Sims & Jefferies“, Ipswich, for many decades.

In Germany, craftsmen were not yet so far. Here, educational work was required first. Max Schönleutner (1778 – 1831), who was born in Prüfening, counted among those who did not believe in platitudes like „What the farmer does not know, he does not eat“. On 14 October 1803, he took over the task of setting up a model farm and forestry operation in Weißenstephan, which developed into the modern university.

## 1828

In Hohenheim, it was up to a rural noble, Ludwig Freiherr von Ellrichshausen (1789 – 1832), to set new accents in agricultural engineering training 25 years later. As soon as he was appointed director, he had high-quality models of agricultural machines and implements manufactured in the agricultural implement factory and assembled them in the Hohenheim model collection, which became famous. They provided teachers and students with optimal illustration aids for the understanding of modern agricultural machines. During the entire 19th century, the models also proved themselves as instruments of technology transfer in agricultural engineering. No matter if at world exhibitions or other exhibitions of agricultural machines, models from Hohenheim almost always counted among the attractions. In a similar way, this also applies to the steeply turning fallow ploughs designed by the Bohemian cousins Veverka from Rybteví in the same year. As „ruchadlo“, they became particularly popular at locations where light and loose soils had to be cultivated. The patent granted to Samuel Lane from Hallowell, Maine, for a mobile threshing machine equipped with a mowing device has held up until today. The term „combine“ was „born“ here and has been present internationally up to our days, like the agricultural machinery factory Kuhn, which was founded in the French town of Saverne exactly 175 years ago.

## 1853

150 years ago, the development was calmer. Eckert, Berlin, and Sack (at that time still in Leoben near Lützen) strengthened their position as suppliers of agricultural machines either by presenting their own newly developed machines or by buying patents. In any case, several new ploughs, seeding machines, and hoeing implements were designed in both enterprises, which were increasingly supplied to the farmers via central distribution facilities. One of these facilities was founded 150 years ago by the „Agricultural Association for Rhenish Prussia“, which in

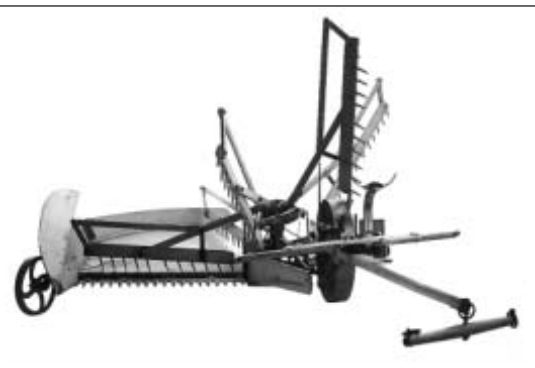


Fig. 1: Model of a US-mower of the collection in Hohenheim, which started back in 1828

Dr. Klaus Herrmann is in charge of the German Agricultural Museum in Hohenheim, Garbenstr. 9 and 9a, 70599 Stuttgart.

## Keywords

Mechanisation of agriculture, important inventions and events

particular represented the interests of Rhenish farmers.

### 1878

125 years ago, however, agricultural engineering exhibited a more pulsating development in central Germany than in the Rhineland. Friedrich Dehne from Halberstadt, for example, extended his agricultural machinery programme to comprise steam threshing machines and locomobiles from his own production and thus became one of the leading manufacturers. The agricultural machinery factory F. Zimmermann & Co., Halle/Saale, also opened up new markets by beginning the production of potato lifters. Finally, H. Laaß & Co., Magdeburg, started the construction of the two-share beet lifter developed by Paul Oliver Lecq, which caused a great sensation, not least due to its chisel-shaped shares, which featured an entirely new design. Berlin also once more lived up to its reputation as a centre of innovation in agricultural engineering. On 5 July 1878, Albert Fesca received a patent for one of the first milk centrifuges worldwide. Among its characteristics were the belt-driven agitator fork and the steam pre-heater for milk. Some new establishments show that agricultural engineering was becoming an increasingly more interesting field of activity. Bitter & Sohn, St. Annen-Melle, and Alois Hölz, Weiher near Wangen, can look back at a 125-year company history, during which they were able to set new trends with BISO choppers, slurry pumps, and other machines.

### 1903

100 years ago, the construction of the Kaiser-Wilhelm Institute for Agriculture was begun on the eastern part of the Hempel field in Bromberg (today Bydgoszcz). For one million gold marks, an institution was built which during the 15 years of its existence mainly became known for basic research in

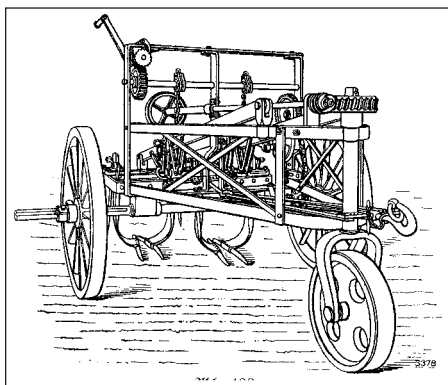


Fig. 2: The beet lifter by H. Laaß & Co. got a lot attention in 1878

the field of artificial irrigation. The patent for a flax fibre pulling machine granted on 9 November 1903 to the Kaehler siblings in Güstrow has had a lasting effect. The principle of its design featuring two endless belts running parallel which, using their upward inclination, gather the flax stems and pull them out of the soil, has not lost its relevance in the 21st century. In a special way, this also applies to the two-room milking cup developed by Alexander Gillies from Terrang in Australia. This milking cup allowed vacuum milking machines to simulate the calf's sucking successfully. Finally, the machinery factory J. Kemna in Breslau should be mentioned. Even though it had already been founded in 1867, it began the construction of steam plough engines exactly 100 years ago and soon set standards.

### 1928

75 years ago, the first assembly of the RKTLM members took place. 127 representatives of German agricultural engineering elected a ten-member board with Tilo Freiherr von Wilmowsky as president. Dr. Willi Schla-bach took over the management and henceforth organized the start into a new era of agricultural engineering. Activities ranged from practical tests of the first combines on farms in eastern and central Germany to the work of the „DEULA caravan school“, which brought technology directly to the farms. In addition, there was a large number of individual initiatives. The construction of a self-propelled grass mower driven by a petrol motor marked the successful beginning of tractor production by Georg Friedrich and Hermann Fendt in Markt Oberdorf. Stock, Berlin, presented the „Raupenstock“, a small caterpillar with 28 hp, and Holder, Metzingen, opened up unknown perspectives for plant protection with the self-propelled power sprayer „Autofix“. Finally, Dr. Bremer at Gebr. Röber, Wutha, was successful in constructing the first grain cleaner „Petkus“. The „vertical sifter“ installed in this machine brought the breakthrough for vertical wind conduction.

### 1953

50 years ago, the giant merger of the international agricultural machinery groups Massey Harris Ltd. and Harry Ferguson Ltd. caused surprise among experts. Tractor- and harvesting machine competence was intended to be combined in a global corporate group. Lanz, Mannheim, was more modest. On 9 February 1953, the 150,000th Bulldog left the assembly line and found its buyer in the town of Munzingen in Baden. At the 42nd DLG exhibition in Cologne, Lanz also

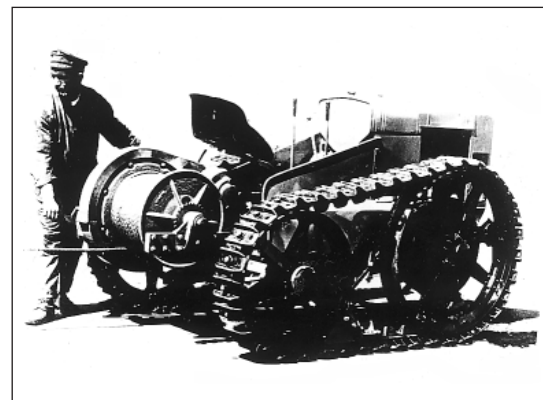


Fig. 3: Stock caterpillar tractor with rope winch from the year 1928

presented its first combine, the MD 180. However, it competed with the Claas-MD models Super Junior, Super, and Hercules. Among these, especially the latter caused a sensation as a self-propelled large combine with an hourly grain output of 30 dt. The question of the tractor-implement connection was also highly controversial. At the instigation of Rudolf Eberhardt and Dr. Wilfried Fahr, a committee was founded which as the „group of six“ led by the head designers B. Flerlage and R. Thaer started to work on the standardization of the mounting of implements to tractors.

The ALB Baden-Württemberg is also celebrating its 50th anniversary. Dr. von Engelberg from Reute near Radolfzell was one of those who had realized that farm construction and progress in agricultural engineering formed a close unit.

### 1978

25 years ago, KHD presented five models of the DX tractor series in the power range between 80 to 150 hp. BBG in Leipzig began the series production of the mighty semi-mounted one-way plough B 550. In a future-oriented essay, H. Heidt, Berlin, presented the various potential applications of the microcomputer around the house and the farm as well as in vehicles and self-propelled machines. A new era in agricultural engineering began to emerge even though one had predicted at the beginning of the 55th DLG exhibition in Frankfurt/Main: „The time of revolutionary innovations is over“. Once again, however, the augurs had been mistaken, which was not least caused by the fact that fresh young staff continued to move up into leading positions. In the journal „Landtechnik“, such a change took place exactly a quarter of a century ago. W. R. Blum, an editor-in-chief of great merits, was replaced by Dr. Rainer Metzner, who has henceforth made sure that the continuing progress in agricultural engineering has an attentively acknowledged forum for discussion.