A Forgotten Giant: A Brief Look at Military Small Arms Production at Steyr, Austria 1864-1900

Samuel J. Newland, Ph.D

Professor, Military Education, United States Army War College, Carlisle Pennsylvania

The 19th century saw a transition in the western world from small shop and cottage industry manufacturing to the modern factory system. This industrial transition affected virtually every field of manufacturing, including the field of weapons production. In addition, the 19th century saw the development of major armament corporations which could not only supply the weapons of war to their native countries but also to other European nations and to nations around the world.

When the arms affection ado thinks about such worldwide arms corporations, names like the English firm, BSA–Birmingham Small Arms, Fabrique National from Belgium, Waffenfabrik Mauser from Germany or U.S. firms like Colt, Remington, and Winchester immediately come to mind. The production of these firms is, to say the least, legendary. But all to often the student of modern military arms forgets one of the most prolific and versatile arms companies of the last 125 years, Österreichische Waffen Gesellshaft, more commonly known by the city where it was and is located, Steyr, Austria. For in the last half of the 19th century Steyr was one of the world's giants in military Small arms manufacturing. This article is designed to give a basic overview of the development of this plant and its military production.

The city of Steyr is a relatively small community situated in eastern Austria on the Steyr River, at its confluence with the Enns River. While the specific firm covered in this article has only been in existence since the period of the American Civil War, iron working was a tradition in Steyr as early as the 13th century. Records indicate small arms manufacturing also has a long history in this community since as early as 1595, local craftsmen were manufacturing small arms. By the late 17th early 18th centuries, small arms manufacturing, particularly military small arms, had become a significant occupation for the burgers at Steyr.[1]

The origins of the modern manufacturing conglomerate Steyr, however, are rather recent and are directly associated with the Werndl family. Although as early as 1640, shops in Steyr produced small arms for the Emperor of Austria, it was the Werndl family that really put Steyr on the map for arms manufacturing, first in Austria and later

throughout Europe. The origins of this famous plant can be traced directly to one of Steyr's citizens, Leopold Werndl. In 1821, Leopold Werndl established himself as one of a number of Arms manufacturers in the city, producing Infantry rifles, rifle barrels, stocks, lance points, bayonets, and various other arms components. Werndl's factory grew and ultimately employed 450 workers. Through his efforts, the company expanded both in terms of production and facilities and had become a major area producer by the time of his death in 1855.[2]

Leopold Werndl had 16 children but of this number the most talented and the one who would ultimately succeed him as head of a successful company was his second son Josef.[3] After Josef studied 6 years in Normalschule in Steyr, the elder Werndl sent his son to Vienna to study under Ferdinand Frühwirth, (1844–1847) one of the best Austrian gunsmiths. In Vienna the younger Werndl became intrigued with modern manufacturing techniques, particularly powered machinery. His attitude was in contrast to his father's who regarded machines as the "enemy of mankind."[4]

His education on small arms manufacturing was furthered when he volunteered to serve with a Chervaux–Leger Regiment and was subsequently posted to the old State Rifle factory in Wein–Wahring.[5] At this facility he became acquainted with an American technician, who was working there, named John Pall. He had long conversations with Pall regarding machine technology and subsequently Werndl

Reprinted from the American Society of Arms Collectors Bulletin 85:59-64
Additional articles available at http://americansocietyofarmscollectors.org/resources/articles/

undertook a series of study trips to Suhl, Sommerda, St. Entienne, Liege, and finally the United States. While in the United States (1852–1853), he worked as a laborer in both the Remington plant in Ilion, New York and in Samuel Colt's factory in Hartford, Connecticut. During his work/study trip in the United States, Werndl paid particular attention to the concept of interchangeable parts and the use of machines, rather than craftsmen's labor, to produce stocks and firearms components.[6] Interchangeable parts were not the norm in Austria at that time. As anyone who has ever worked with Civil War vintage Lorenz rifles can attest, the Austrian Arms industry had not truly converted to interchangeable or machine oriented production of weapons.

During his travels and studies, Werndl was intrigued by the possibility that firms could quickly produce, with modern machinery, quality weapons at reasonable prices. In particular while in the United States he studied the potential of steam power for machinery to manufacture the metal components and stocks for weapons. Enthused, after he returned from his first American study tour he bought a polishing and grinding firm and began to acquire machinery to set up an arms plant. In 1855, while he was in the process of preparing to launch his firm, his father Leopold died. With the death of the elder Werndl, his widow placed the family business in the hands of Josef and his brother Franz.

As head of the family business, Josef continued to be intrigued with the possibilities offered by modern manufacturing techniques and particularly with concepts he had observed in the United States. Due to his continued interest in modern manufacturing techniques, in 1863, he again traveled to the U.S. in a trip that should be described as a research and buying trip. This trip was scheduled despite the fact that the United States was in the midst of a bitter and bloody civil war.

On this trip he was accompanied by his business manager, Karl Holub.[7] During this visit he returned to Colt and Remington factories where he again observed the latest manufacturing techniques and the latest machinery available for producing firearms. While in the United States, he learned about the latest developments in breech loading weapons and took particular interest in the Remington Rolling block system. He also was intrigued by developments in metallic cartridges, and when he returned to Austria, he took samples of some of the first rim fire metallic cartridges.

Although Josef Werndl (together with his brother) had managed his Father's firm since 1853, he was neither satisfied with this shop nor with its set up. The old Werndl business was based on manufacturing techniques of the first half of the 19th century. Having studied arms manufacturing both in the United States and in other European nations, he was determined to take a new path for the company. Therefore, on April 16, 1864, he opened Waffenfabrik Joseph und Franz Werndl & Co, using the modern techniques he had learned. Given his gunsmith training Josef focused on the design and manufacturing part of the operation and his brother on the financial side.[8] Although a modest beginning, this was the origin of one of the world's largest firearms manufacturing corporations.

In 1866, Waffenfabrik Josef and Franz Werndl was successful in landing its first major contract. The Austro–Prussian war in 1866 had conclusively demonstrated the advantages of breech loading weapons and, as a result, the Austrian government created a breech loading rifle commission. The design chosen was the Wänzel conversion, a trap door system, which would convert the obsolete percussion Lorenz, rifles to single shot breech loading rifles.[9] Since it was a conversion of a single shot percussion rifled musket, it was analogous to the systems developed post civil war in the United States.[10] The new Werndl factory J&F Werndl produced some 80,000 of these conversions.[11]

The Wänzel, however, was only a stopgap measure. A new rifle was needed for the Austrian Army. Karl Holub had developed a design for a new breech loading rifle which featured a unique rotating axle breech.[12] Initially Holub retained his patents on his rifle designs but ultimately Werndl purchased these rights from the man who was by this time his plant foreman. On July 28, 1867, Werndl/Holub achieved another success when the Austrian Army accepted their design and ordered 100,000 rifles. In the fall, the Austrian government ordered an additional 150,000 pieces from the Werndl factory. With this weapon, the 1867 "Werndl, the company scored its first major success.[13]

Fulfilling the contracts that would come from the Werndl/Holub design and subsequent models was not possible with existing resources, particularly fiscal resources. As a result, on August 1, 1869, the Firm of J&F Werndl ceased to exist and in its place the Werndl's formed a joint stock company called Österreichische Waffenfabriks–Gesellschaft (OEWG), with its headquarters in Vienna. It was under this name that "Steyr" would achieve its reputation.

Once the joint stock company was formed, successes began to multiply for the new firm, OEWG. The successes were fueled first by the need of many armies to convert to metallic cartridge breech loading rifles and, within a decade, the need to convert to repeating rifles. OEWG, with Werndl's emphasis on interchangeable parts and powered machinery to facilitate production, was in an excellent position to satisfy these demands. In 1873, The Austrian Army added further to the company's business when an improved version of the Werndl rifle, called the Model 1873, was developed. This weapon was essentially the same as the 1867 except that the hammer was no longer external on a percussion type lock plate.

From the beginning of the same decade, the company began expanding its business beyond the borders of Austria. In 1871, the German government adopted a new single shot Infantry Rifle and although it was a Mauser design, Mauser and the other German firms were unable to produce the necessary number of weapons to convert the newly formed German Army from the Dreyse "Needle Gun" to a bolt action rifle firing metallic cartridges.[14] As a consequence, beginning in 1873, Steyr was contracted to produce a half million Model 1871 Mausers, the Mauser brothers first commercially successful design. In subsequent months Steyr would produce 1871, Infantry Rifles, Carbines, and Jägerbuchse.[15] With this contract Werndl had begun the process of establishing a world reputation for OEWG.[16] In addition, OEWG also picked up contracts to produce Bavarian Werder "Lightning" and convert captured French Rifles into Carbines, for use in the Bavarian Army. They also produced a short run of 1872 model Frühwirth Carbines for the Austrian Gendarmerie.

Following this success of the German contract, beginning in 1874, Steyr began working with the French government to procure weapons, resulting in the first of two French contracts which the company would win in the 1870s. The first was for the production of the French rifle Gras, Model 1874, together with an appropriate bayonet for the weapon. Producing both the rifle and bayonet became a standard practice for Steyr for the remainder of the nineteenth century. Though the Gras was originally a French design, Steyr also produced Gras rifles for Greece and Chile. This would be the first of several contracts for weapons hat Steyr would have with these three nations.

During this same time conflicts in the Balkans, the Russo Turkish War, caused the King of Rumania to search for a new infantry weapon for his army. The King preferred a Martinni-Henry action and when his original contractor could not produce them in a timely fashion, Joseph Werndl offered to manufacture the weapon and ultimately produced 13,000 11mm Martini Henry rifles and carbines, Model 1879, for the Rumanians.[17]

One might say that in the 1870s Steyr's business was literally booming because in 1877, an additional model, more an alteration of the 67/73 Werndl rifle, was developed for use with an improved 11mm cartridge. Before this design was replaced by the Straight Pull series, Werndls were being used by the Austrian Army, the tiny nation of Montenegro, and Persia. At the same time, Werndl worked with another Austrian designer, an artillery officer Captain Alfred Ritter von Kropatschek, to produce a repeating rifle which used a tubular magazine below the barrel. The first contact for this model, appropriately called the Kropatschek, was from the French government. Under this contract Steyr would produce a total of 25,000 French Marine Rifles, Model 1878. As this decade came to a close Steyr, originally a small manufacturing firm, had multiple manufacturing facilities, had expanded its workforce to 6,000 and as a result, its weekly production was 8,000 rifles.[18]

Designs from individuals like Holub and Kropatchek coupled with Werndl's energy and good business management caused the company to prosper. A large part of the reason for the company's success was their use of the latest modern production techniques, which allowed them to be competitive and to quickly produce a number of substantially different designs. At the 900 year jubilee of the city of Steyr's founding, Josef Werndl proudly stated . . .

> Through our technical performance we stand unrivaled in the production of quality weapons and when quality matters we need fear no competition.[19]

In many respects, the best was yet to come for OEWG. The best would come when a talented designer named Ferdinand Ritter von Mannlicher came to work with the firm.

Mannlicher was the second individual who should be credited with establishing Steyr as a giant in the field of small arms design. This famous Arms designer was not Austrian but rather German, born in Mainz in 1848. As a young man he moved to Austria where he initially studied engineering at Vienna's Technical University. He achieved his early success with the Austrian Imperial Northern Railroad and only later in life turned to firearms design. It was Mannlicher who really took Steyr from the age of the single shot breech loader into the era of magazine fed repeaters. In fact the name Mannlicher is generally better known throughout the world than Werndl or Steyr, the firm that produced his designs.[20]

Although Mannlicher began designing weapons at the onset of the 1880s, his first commercially successful weapon was not produced until 1885.[21] This was the first of Mannlicher's straight pull designs which, beginning in 1886, was produced using an 11mm black powder cartridge. In the years that followed, a profusion of designs were produced, both variations of straight pull designs and, at the same time, bolt action weapons with split rear ring receivers.

In the mid-1880s, as Mannlicher's successful designs were beginning to emerge, Werndl added yet another famed designer to his employ. He hired Otto Schönauer, who had served his firearms apprenticeship at the Vetterli factory in Neuhausen Switzerland and was later a technician in what is now Czechoslovakia. Schönauer began working for Werndl in 1886, and by 1889, he was the business manager for OEWG. His world reputation would come as the designer of the rotary magazine for bolt action rifles, mostly utilized for the world famous Mannlicher Schönauer hunting rifles. Although generally thought of in commercial applications,

this design would have military applications through contracts with the Greek government in 1903, 1913, and 1930.

With this much talent in one company, it is not surprising that the years from 1880 through the first decade of the 20th Century were perhaps Steyr's greatest years, in terms of firearms design and manufacturing. In the 1880s, improvements of Mannlicher's basic design for the straight pull rifles, which first emerged at the beginning of the 1880s, were produced in several basic variations and for numerous countries[22]: Austria, Bulgaria, Brazil, Chile, Portugal, Persia, and Siam all used versions of the 1886–1888.

While the original 1886 in 11mm and the 1888 in 8mm were being produced for the nations previously mentioned, Steyr showed its wide range of capabilities by developing two entirely different contracts with Portugal. Initially Steyr agreed to produce for the Portuguese government a unique falling block rifle known as the Guedes, even though it was actually obsolete at the time of its production. This was quickly followed by the production of Kropatschek rifles and carbines for Portugal.

An intriguing chapter for Steyr occurred when the German Army adopted the Commission Model 1888 rifle. Even a casual observer could see that the magazine system used in this weapon "borrowed" heavily on the Mannlicher design, infringing on Steyr's patents. As a consequence, the company initiated a patent infringement suit against the German government.[23] OEWG won the suit and, as a part of the settlement, they were permitted to manufacture Gewehr 88 rifles for the German government and for contracts with other nations as well. Therefore, beginning in 1889, OEWG began producing the model 1888 for the German Army.[24]

The decade of the 1890s saw yet another explosion of designs and contracts. Steyr began the decade with the manufacture of Model 1890 Carbine and Extracorps Gewehr for the Austrian Army. This was a significant improvement over the straight pull designs produced from 1885–1889, particularly as it related to the positive locking system provided by the two frontal rotary lugs. Using only minor alterations, this design became the 1895 model "Straight Pull". With the exception of the famed Mannlicher Schoenauer hunting rifles, this would be Mannlicher's longest production piece with these weapons being produced through 1938.[25]

This however was only a small portion of Steyr's production in the 1890s. Mannlicher designed and Steyr produced two versions of bolt action rifles for the Rumanian government, the models of 1892 and 1893. Mannlicher designs, produced by Steyr, resulted in a number of bolt-action variations for the Dutch. At the same time, Steyr also produced a run of Krag Jorgenson rifles for the Norwegians, a carbine for the Swiss as well as full-scale production for the Model 1895 straight pull.[26]

As the nineteenth century came to an end, the tremendous energy shown by Steyr seemed to slow. A significant factor was likely a series of deaths, which took some significant people out of the corporate ladder. Josef Werndl, the man who had founded the industrial giant, died on April 29, 1889. Fifteen year later, on January 30, 1904, Mannlicher died and in the next year on May 23, 1905, Karl Holub died. As these design and manufacturing geniuses expired, so passed Steyr's greatest period of productivity, at least in terms of firearms manufacturing.

Steyr's philosophy of production, as established by Joseph Werndl, would continue into the Twentieth Century. In a catalogue dated November 1914, Österreiche Waffenfabriks Gesellschaft stated with pride, ". . . all arms turned out from their works are produced in strict accordance with the principle of interchangeability of all parts." In addition the plant brochure stated that the Austrian Small Arms Factory was capable of turning out 750,000 arms of different systems per year. This represented an output of 15,000 arms per week and 2,500 arms per day.[27] Even though Werndl had been dead for 25 years, his philosophy remained.

BIBLIOGRAPHY

Baer, Fritz H. "Werndl versus Gasser—Pistole gegen Revolver: Ein Beitrag zur Waffen und Wirtschaftgeschichte", *Miltaria Austriaca* No. 5. (Wein: Gesellschaft fur Öesterreiche Heereskunde, 1989).

Steyr Mannlicher, Ges.m.b.H., *125 Jahre Waffen aus Steyr:* (Steyr Austria: N.P., 1989).

Hanevek, Karl Krag-Jorgensen Gevaeret (Halden: Hanek Vapen ANS, 1994).

Kernmayr Hans Gustl, *Leopold Werndl und sein Sohn* (Graz: 1949).

Kriegleder, Wolfram "Wiener Walze", *Visier: Internationale Waffen-Magazin* (November, 1990).

von Kromar, Oberst Konrad Edler *Repetier-und Automatische Handfeuer Waffen des Systeme Ferdinand Ritter von Mannlicher* (Wien: L.W. Seidel & Sohn, 1900).

Josef Mötz, "Das Mannlicher Waffen System Muster 1895, III Teil" *Deutsches Waffen Journal* (Mai 1987).

[27]Oesterreichische Waffenfarbriks-Gesellschaft, *The Mannlicher Schoener Repeating Sporting Rifle* (Steyr: Emil Prietzel 1914).

Olson, Ludwig "Mannlicher Rifles", *The American Rifleman* (November, 1959) p. 40.

Olsen, Ludwig *Mauser Bolt Rifles* (Montezuma, Iowa: F. Brownell, 1993) p. 23. Cited hereafter as Olson, *Mauser Bolt Rifles.*

Scarlatta, Paul and James Walters, "Germany's Gewehr 88 Commission Rifle: The Launching Platform for the

7.9×57 cartridge", *Shotgun News* (Vol. 56, no. 12, April 20, 2002) pp. 18, 19.

Steyr Mannlicher Ges.m.b. H, *Joseph Werndl 1831–1889: Leben und Werk.* (Steyr Austria: N.P. 1989), p. 2.

Voss, Wilhelm, *75 Jahre Steyr-Werke: Steyr=Daimler Puch+Aktiengesellschaft* Sitz: Steyr, Oberdonau. (No Place: Steyr Werke, 1939).

Walter, John, *The German Rifle: A Comprehensive Illustrated History of the Standard Bolt-Action Designs,* 1871–1945 (Ontario: Fortress Publications Inc, 1979).

NOTES

1. Steyr Mannlicher, Ges.m.b.H., *125 Jahre Waffen aus Steyr:* (Steyr Austria: N.P., 1989) pp. 1–3. Cited hereafter as Steyr, *125 Jahre Waffen aus Steyr.*

2. Steyr, *125 Jahre Waffen aus Steyr,* p. 3.

3. For the reader who seeks additional biographical information on the Werndls, see Hans Gustl Kernmayr, *Leopold Werndl und sein Sohn* (Graz: 1949).

4. Fritz H. Baer, "Werndl versus Gasser—Pistole gegen Revolver: Ein Beitrag zur Waffen und Wirtschaftgeschichte", *Miltaria Austriaca* No. 5. (Wein: Gesellschaft fur Öesterreiche Heereskunde, 1989) p. 19 Cited hereafter as Baer, *Werndl vs. Gasser.*

5. Steyr Mannlicher Ges.m.b. H, *Joseph Werndl 1831–1889: Leben und Werk.* (Steyr Austria: N.P. 1989), p. 2. Cited hereafter as Steyr, *Joseph Werndl.*

6. Baer, *Werndl vs. Gasser,* p. 19.

7. Karl Holub was a trusted and long term associate of Josef Werndl. He was born in what is now Czechoslovakia and initially worked as a locksmith. Before entering the Army he was apprenticed to the Austrian State Arsenal in Vienna where he became acquainted with Josef Werndl. He subsequently entered military service and when he completed his military duty, Holub began working for Werndl as the latter was developing his factory. As mentioned he accompanied Werndl on his second trip to the United States and collected information on modern manufacturing techniques, information which was used in the construction of the new arms factory that Werndl was building.

8. *Steyr 1964: The Steyr-Daimler-Puch Aktiengesellschaft in the Centenary Year of its Foundation,* p. 2.

9. The reader should note as well that there was considerable interest in this period in the Remington Rolling Block system, which in fact resulted in the production of a limited number or Austrian Rolling blocks.

10. In fact in his article, "Wiener Walze", *Visier: Internationale Waffen-Magazin* (November, 1990) p. 116. Wolfram Kriegleder stated The Viennese Gunsmith Johann Wänzel copied the "trapdoor" breech design by Erskin Allin.

11. The Werndl firm was only one of several companies that converted Lorenzes to breech loaders. According to factory publications, in a short time some 700,000 Lorenz rifles were converted to breech loaders. See Steyr, 125 Jahre Waffen, p. 5.

12. It should be noted that while Werndl produced several different models of long guns, based on this design, the firm also offered a single shot pistol based on this same breech loading design. In the end, however, the Gasser revolver, M 1870, would be adopted by the Austrian military forces. See, Baer, *Werndl vs. Gasser,* pp. 21–41.

13. Ibid, p. 5. It should be noted, however, that the Werndl Fabrik was not the sole firm producing these 1867 Werndl/Holub designed rifles. In the years that followed numerous companies in Austria produced "Werndls" and, in addition, another facility was established in Hungary to handle the increased business.

14. The German Army was a newly formed Army since the German Army only came into being with the 1870–1871 Franco Prussian War. The basic problem for the German manufacturers trying to meet the contract was that some of the new machinery needed to produce the rifles did not arrive in time and, in addition, the more exacting tolerances for the 1871 were difficult for some of the arsenals attempting to manufacture the 71s. John Walter, *The German Rifle: A Comprehensive Illustrated History of the Standard Bolt-Action Designs, 1871–1945* (Ontario: Fortress Publications Inc, 1979) p. 53. Walter states that the actual production figures from Steyr were 474,622 rifles, 60,000 carbines, 150,000 bolts, 55,963 receivers, and 52,000 barrels to Prussia and Saxony.

15. Wilhelm Voss, 75 *Jahre Steyr-Werke: Steyr=Damiler Puch+Aktiengesellschaft Sitz: Steyr, Oberdonau.* (No Place: Steyr Werke, 1939). Pp. 25,26. Cited hereafter as Voss, 75 *Jahre Steyr.*

16. According to Ludwig Olson, OEWG also furnished 70,000 rifles to China, Japan, Honduras, Uruguay and Transvaal. See Ludwig Olsen, *Mauser Bolt Rifles* (Montezuma, Iowa: F. Brownell, 1993) p. 23. Cited hereafter as Olson, *Mauser Bolt Rifles.*

17. Voss, *75 Jahre Steyr,* p. 27.

18. Steyr, *125 Jahre Waffen aus Steyr,* p. 6.

19. Voss, *75 Jahre Steyr,* p. 28.

20. A brief biography on Mannlicher and his background can be found in "Erfinderpersonlichkeiten", Steyr, *125 Jahre Waffen aus Steyr,* p. 12.

21. Ludwig Olson, "Mannlicher Rifles", *The American Rifleman* (November, 1959) p. 40. Olson notes that the 1885 was really the first Mannlicher design to get beyond the experimental stage.

22. Mannlicher's pantent drawings for the last two decades of the 19th century can be seen in Oberst Konrad Edler von Kromar's *Repetier-und Automatische Handfeuer Waffen des Systeme Ferdinand Ritter von Mannlicher* (Wien: L.W. Seidel & Sohn, 1900).

23. Note that this Mod 88 was a commission product NOT a Mauser. Thus, Olson notes that the Mauser factory was very busy with other contracts and did not produce any 88 Commission weapons. Furthermore, Paul Mauser, who was not in any way involved in the Mod 88 production, was relieved that he did not have to pay royalties to his major rival for using the Mannlicher magazine design. Olson, *Mauser Bolt Rifles,* p. 41.

24. Paul Scarlatta and James Walters, "Germany's Gewehr 88 Commission Rifle: The Launching Platform for the 7.9×57 cartridge", *Shotgun News* (Vol. 56, no. 12, April 20, 2002) pp. 18,19.

25. The exact number of M-95s produced may never be known. In 1945, the Russians took or destroyed most of the production records. Wartime (WWI) show that between 1914–1918 at Steyr and Budapest a total of 3,593, 475 M-95s were produced. See Josef Mötz, "Das Mannlicher Waffen System Muster 1895, III Teil" *Deutsches Waffen Journal* (Mai 1987) p. 793.

26. According to a Norwegian publication, Norway contracted with Steyr, November 21, 1895 to manufacture 20,000 Norwegian Krags. In August 1896, a further 9000 were ordered together with 4500 for civilian shooting associations, Karl Hanevek, Krag-Jorgensen Gevaeret (Halden: Hanek Vapen ANS, 1994) p. 127.

27. Oesterreichische Waffenfarbriks-Gesellschaft, The Mannlicher Schoener Repeating Sporting Rifle (Steyr: Emil Prietzel 1914), p. 5.