12. ibid. p. 46.
13. Neumann/Mohaupt p. 29.
14. Die Pfaffendorfer Brücke 1864 (nach Quellen im Landeshauptarchiv Koblenz). In: Pfaffendorfer Kirmes-Zeitung, 27 (1977), p. 1 ff.
15. Neumann/Mohaupt pp. 34/35.
16. ibid. p. 38. The "bridge which is so characterised by its light and pleasing form" was praised by contemporaries. cf. J. Wegeler: Beiträge zur Geschichte der Stadt Coblenz, Koblenz, 2.edition, 1882, p. 193.
17. ibid. p. 49.
18. K. Hoppstädter: Die Eisenbahn im Moseltal nach den Akten des Staatsarchivs Koblenz, published by the Bundesbahndirektion Saarbrücken 1973, p. 47/48.
19. The only photograph showing the towers is to be found in: K. Möhlig: Der Alt-Koblenzer Osterspaziergang. In: Mitteilungen des Heimatkündlichen Arbeitskreises Güls/Mosel 4, Güls 1969, illustration on p. 13.
20. As Note 10.
21. Neumann/Mohaupt, p. 46.
22. As Note 10.

IRON FURNITURE

Georg Himmelheber

Surrounded by all those giants of iron architecture to which the papers in this colloquium are primarily devoted, pieces of furniture do not only appear small and modest, but perhaps also out of place. However, I am very pleased to have the opportunity here of pursuing this subject further, because from time immemorial, the art of furniture construction has been very closely linked with architecture. Perhaps this symposium may help to throw light on the extent to which this opinion of mine is also indeed applicable in the case of iron furniture - assuming that it is possible for any conclusions at all to be drawn at the present stage of investigations, because I must admit that my own research in this field is still very new. My comments are in effect a commissioned work without any preliminary work, either by other researchers or by me myself. In the extensive range of literature on iron - including also what has been appearing recently and has also been dealing increasingly with the decorative parts of iron architecture - furniture is never touched.
I can thus only give a preliminary survey, which means that I can also not just restrict myself to the second half of the nineteenth century - although the greater part of the furniture to be covered dates from this second half.

Firstly the question arises: Why is there such a thing as iron furniture? How did the manufacture of iron furniture come about?
A decisive incentive for the manufacture of iron furniture is fear, namely fear in three forms:

1. fear of theft and fire,
2. fear of bugs and
3. fear of bad weather.

That is, of course, just one aspect which leaves out other motives, such as questions of skil, craftsman's pride, the pleasure in strange things which also induce the artist-craftsman to produce iron furniture. Nevertheless, I should like to keep to the three "categories of fear", because they do permit a certain degree of classification of the material.
Fear of fire and theft led to the production of iron receptacles as items of furniture, starting out from the iron chests of the Middle Ages down to modern safes.
Fear of bugsled to the production of iron beds which - something we tend to forget nowadays - were so widely spread and in general use in the nineteenth century, that the reintroduction of wooden bedsteads was only achieved with difficulty.
Finally, fear of bad weather led to the manufacture of iron garden furniture, the most extensive and widely spread form of iron furniture.

The first pieces of iron furniture we know of were, admittedly, produced for artistic reasons, for the sheer pleasure of using an unusual material for furniture. One of the most magnificent pieces of iron furniture in existence was produced in Augsburg in 1574 by the master cutler and instrument-maker Thomas Rucker, and was intended as a gift by the City of Augsburg to Emperor Maximilian II.(1) This elaborate piece of furniture is, of course, itself part of a tradition. Its cross members forming the seat proper and continuing up to form the back and arms are a development of the

faldistorium, which itself had its origin in the chairs of the Graeco-Roman period which were cast in bronze. Metal is, of course, an obvious choice for the manufacture of an apparatus which is movable in itself, a folding chair. Thus a whole series of such ceremonial chairs have been preserved, as exemplified by the bishop's throne from the fourteenth century in the cathedral of Bayeux, or by an Italian example from the end of the sixteenth century.
In the Imperial Russian cloth mill in Tula, magnificent folding chairs made of steel were still being produced in the eighteenth century. Finally, in the second half of the eighteenth century, production of steel furniture was also begun there, something without parallel elsewhere. Chairs, tables and dressing tables in the choicest Louis seize forms are the finest examples of how it was possible to form an unusual material.
There is, however, no direct link between these examples and the iron furniture of the nineteenth century which is here the sole object of our attention here. It is rather those three categories mentioned at the beginning in which it is possible to observe genuine precursors for the cast iron furniture of the nineteenth century.
It is possible to deal with safes very briefly as there is a lack of preserved examples. Everybody knows the iron treasure chest with its only slightly varying form. Often, the blacksmith's skill is only revealed in the interior with the artistically designed safety locks, but can also appear on the exterior, such as is the case with a masterpiece by Johann Gottlieb Dittmann from 1733. There were also individual examples of smaller iron cabinets as early as the late Gothic period, but these would appear not to have had any successors later. The idea of producing iron cabinets apparently did not occur again until the nineteenth century. The earliest source which has been found up to now is from 1834. In that year, the London iron founder, William Marx, was granted a patent on the manufacture of iron fire-proof safes.(2) We do not know what these safes looked like, although similar ones were soon being advertised by the most varied manufacturers. At the various world exhibitions in the second half of the century manufacturers sought to outdo one another with appropriately magnificent examples, such as that from the Hauschild company from Berlin in London in 1862, a fantastic Gothic safe, or that from the Viennese company of Wertheim & Co. at the world exhibition in Vienna in 1873 which took a Renaissance cabinet as its model. It is a truly admirable work with its polished steel, its partly cast and partly carved ornaments, all gilded, burnished and tinted blue. This superb example was designed and produced by Anton Batsche.
Everybody who has dealt with furniture in any way knows that beds are among the rarest objects to have been preserved, as being the artefacts closest to the body, they are the most frequently exchanged. This is no less the case with iron beds which nonetheless played such a great role. We thus have to rely for the most part on written sources, the earliest of which dates from 1645. The English traveller and diarist, John Evelyn , reports from Italy in that year - full of admiration by the way - that the majority of beds there were of wrought iron,as it was impossible to keep wooden ones free of bugs.(3) Over 100 years later, in 1766, another Englishman, Samuel Sharp, writes full of admiration for Italian iron beds. He reports that bugs were being combatted in the great hospital in Florence by using simple iron bedsteads. (4) In the following year the Italian example was emulated in England, also in order to cope with the bug pest. Iron beds were installed in St Thomas's Hospital in London in 1767. (5) In 1761,the

Berlin master locksmith, Johann Friedrich Kochwasser, was granted a royal charter for the production of his iron travelling beds, which are described as being vermin-free and suitable for officers. (6)
But it was not only the sick and soldiers who suffered from the bug pest. On the 16th May 1784,an iron bed was commissioned for the Dauphin - because of bugs. (7) It would be easy to multiply the number of similar reports. Numerous crowned heads in the eighteenth and nineteenth centuries slept in iron bedsteads, something which is generally presented to us as a sign of self-discipline and unpretentiousness, but which was in fact solely in order to keep off the bugs. Goethe on his Italian journey also admired the iron beds and from then on himself slept in such a bed, as can still be seen today in Weimar. (8)
In the nineteenth century, the mass production of iron beds soon got under way. In 1823, the French government commissioned the mechanical engineer Piket to manufacture iron beds for use in army barracks, "because the soldiers", as Dingler's Polytechnical Journal reported, "had not been able to sleep properly since 1814 on account of the bugs". (9) Piket constructed an appropriate machine with which the mass production of bedsteads was commenced in Toulon arsenal. Soon afterwards, it was of course in England that the mass production of iron beds began. In 1849, there were eight factories in England producing between 400 and 500 beds per week. In 1866 there were twenty companies around Birmingham alone which together manufactured 5000 to 6000 beds weekly.
We do not know what these beds looked like. The main purpose of Piket's machines was to bore holes. He probably produced frames made by bolting together iron rods and bars, similar to the structure of brass bedsteads which were coming into production at about the same time.
A particularly fine example of a cast-iron double bed has been preserved in the Mariazell Foundry Museum in Styria, Austria. It was probably produced at the turn of the nineteenth century. With the simplicity of its forms, it is a masterpiece of classicism. The designer is unknown in this case as well, as - and that must be said with great regret - is the case with almost all cast-iron furniture. In this bed design, that same economy in the use of products prevails which we also know from the early products of iron architecture, such as the Ironbridge across the Severn, or early English conservatories.

Certainly at that time there were a larger number of such simple, and in their form convincing pieces of furniture. There was soon, however, a fundamental change in the design of cast-iron furniture; a bed in the price list valid from 1827 to 1834 for the Gleiwitz foundry is an important example of this. This here is furniture in those forms of late Empire style such as we know from the richly carved furniture designs by Schinkel, Klenze or other architects. There is nothing to indicate that this furniture had necessarily to be made of iron.
A sentence by John Claudius Loudun is of the greatest importance for the design of cast-iron furniture in the whole of the nineteenth century. In his "Encyclopaedia of Cottage, Farm and Villa Architecture", which appeared in London in 1833, Loudon writes: "When carved work, or such ornament, is to be executed in furniture, cast iron will always be found cheaper than wood, even though a small number only of the article were wanting." This is the decisive sentence for the whole history of cast-iron furniture in the nineteenth century. The casting of a form, which can always be easily repeated, with a flowing material

which then hardened off (and which was also cheap and long-lasting) allowed every conceivable design, however rich and abstruse it might be, and it could also be produced in masses. There was also not the least interest in creating specific independent forms, typical for iron furniture, instead there is almost an intoxication from the possibilities which were now all available.
In this respect, iron furniture and the whole production of the cast-iron trade is perhaps one of the most important, although also most revealing witnesses to historism.
The immediate successors to the Gleiwitz bed are, for instance, those models to be found in the 1858 catalogue of the French foundry Barbezat & Cie in the Val d'Osne. In keeping with the taste of the time, the side boards of the frames are covered with ornaments in a fantastic mixture of Renaissance and Rococo designs, and that namely in extravagant forms such as never occurred in contemporary carved wooden furniture. However, in their overall form, they differ only slightly from the wooden bedsteads of the time.
The American bed, which probably also came into production in the eighteen-fifties, is more independent and more in keeping with the material. If the ornament forms of the sides still recall models in late Empire style, the foot and head boards are completely independent inventions making this bed a superb example of the use of iron casting in furniture construction.
The last form of the iron bed is, then, that type consisting of iron tubes with metal sheets in between. The large surface areas are predestined for painting, whereby the bottom is usually given an imitation wood finish. This method, which was popular well into the present century, came in for early criticism in England. In 1862, J.B. Waring wrote the following about such a product: "... the firm committed the error of painting their iron-work in imitation of oak, - a practice which shows utter disregard of the principles of decoration inculcated by all our best authorities on the subject of the last ten years." (10)

The beginnings of cast-iron garden furniture in Germany were under a lucky star. Here it was Karl Friedrich Schinkel who supplied the Prussian foundries with designs and commissions for the royal gardens. Not himself being averse to any novelty and always providing inspiration to the artistic craftsmen in all fields with his detailed designs and then keeping a watchful eye on the execution of his designs, right down to the final detail, he is the designer of a series of iron benches and chairs, of which some specimens are still extant even today. Probably his earliest piece of cast-iron garden furniture, a bench in a two-seater and a four-seater version, was probably produced about 1826 in connection with the construction of the New Pavillion in Charlottenburg. (11)
The designs for a bench and a chair which were produced for Glienicke Castle park are from about ten years later (12), probably in connection with the construction of the so-called "Great Curiosity" between 1835 and 1837. The individual forms, such as the animal legs, the eagles and the curved arms, are also to be found in other pieces of furniture by Schinkel from this period. The chair is included in the Gleiwitz Foundry price list compiled in 1834.
The iron garden furniture of that period attained a certain degree of perfection with a chair which is probably also based on a design by Schinkel and which was soon to be immensely popular in all its variants. A model from Sayn Foundry differs from one produced in Berlin only in the form of the webbing on the back. The chair was

produced in a somewhat more elaborate form with additional rams' heads and legs for the Roman Baths in Potsdam. These models soon appeared in the production of the Prince Rudolph Foundry in Dülmen, in Prussian Königshütte near Lauterberg, just as in that of the Rolls' Foundry in Klus near Solothurn, at the Sulzer Bros' works in Winterthur, in the Carlshütte Foundry near Rendsburg or in the Amalie Foundry in Bachzimmern. This uninhibited casting of other people's models is a phenomenon characteristic for the iron furniture production of the whole nineteenth century. From Coalbrookdale to Melbourne, from the Val d'Osne to New Orleans, the same models keep on appearing in the catalogues of all foundries. This does, of course, greatly handicap the task of the historian, just as much as the fact that models once in production were cast again and again for decades.

One of the most popular motifs for garden benches was naturalistic foliage. The idea for this came from the eighteenth century, from the age of the English garden, when nature was - apparently - left to herself. Garden furniture was also intended to be "natural", as though it was part of nature herself. A whole series of such designs, based on English originals, come from Johann Gottfried Grohmann's "Ideas Magazine for Garden Lovers" which appeared in Leipzig in 1796. This abstruse form, which had either to be made up of genuine collected branches or had to be laboriously carved, was, of course, almost predestined for carving. Whether Coalbrookdale was the first to cast this model about 1840 is something we can only guess at. Already in 1851 it was illustrated in the American periodical "The Horticulturist" as being one of the most popular garden bench designs of the day. This bench is to be found in the catalogues of two English foundries, one German one and eight American ones, and it was probably also produced in numerous other foundries. Such benches and chairs were soon being produced in infinitely many variations and reductions. They stood in almost all German parks until the great melting-down action of the Second World War.
One detail of this bench, the two snakes entwined around the legs and biting into the leaves of the seat, soon developed a separate existence of its own to such an extent, that it became the sole motif for the sides of garden benches. The earliest example known to me is from a catalogue dating from 1845 from the Georg Neher Company in Lauffen am Rheinfall. This model too was cast everywhere in the same form, or more elaborate or simple. In 1875, John Ruskin made fun of these benches: "The Devil's tail pulled off, with a goose's head stuck on the wrong end of it".
Motifs from nature also again and again inspired models for garden furniture. Particularly popular was the "Fern and Blackberry Seat", probably first cast in Coalbrookdale about the middle of the century, and soon copied, especially in America. There is a model created about 1858 by Wood & Perot in Philadelphia projecting a vine bower onto a Rococo sofa. The "Nasturtium Bench" and the "Horse Chestnut Seat" were created in Coalbrookdale in the eighteen-seventies. About the same time in Chicago, Mott produced the "Passion Flower Settee".
If it was branches, flowers, leaves and snakes which formed the appropriate motifs for garden furniture, then it is camels which surround Cleopatra's Needle on the Victoria Embankment in London, cast in Westminster in 1874.
But it was not just naturalism which was so popular at the middle of the century, determining the forms of iron furniture, but equally popular was Rococo, which provides a model in its wildest and

strangest forms. A chair design, probably created in the eighteen-forties, was again produced by numerous English and American foundries. On a bench, which was also cast in numerous foundries in England and America, and described, curiously enough, as a "Gothic Settee" in the catalogues, it is possible to find the whole range of forms of Rococo. The middle of the century was probably also the time of the creation of another bench which combines Renaissance forms with those of Baroque. Medalions showing the personified seasons of the year decorate the back of a bench probably produced in Coalbrookdale in the late eighteen-seventies and soon copied by Mott in Chicago. Here it is forms from contemporary jewellery which have simply been enlarged and alienated from their appropriate scale.

Tables, of course, also form part of garden furniture, and here Schinkel once again created a prototype: three-footed with a central support and a round, perforated top, a form which can, in the last resort, be traced back to English foundries of the late eighteenth century. In the second half of the nineteenth century, one model then became very popular, the three legs of which swing up into the perforated frame, and which are linked by a tray bolted in beneath. At the top end of the legs there is usually a medalion with a head, such as Britannia, Queen Victoria, or even W.G. Grace, England's great cricketer.

An important part of the production of all foundries was made up, finally, by clothes and umbrella stands, objects for which the designers' fantasies knew no limits. If clothes stands, such as a fine American example from the middle of the century, were developed mainly from floral or purely ornamental concepts, umbrella stands, in particular, stimulated figurative representation, such as a sweet little child, which could be used equally well on a grave, carrying the object proper; or the huge sickle of the reaper, or even the serpent, which young Hercules is overwhelming, served as a stand for the umbrellas.

That is enough on examples for now! Perhaps it is possible to gain a few notions on the production of cast-iron furniture in the nineteenth century from this initial survey.

The production of cast-iron furniture seems to have begun in the eighteen-twenties. The first designs in Germany - and Germany was apparently at that time the leading country for artistic iron casting - were by an artist: Karl Friedrich Schinkel. The iron euphoria, which had broken out everywhere, led to unrestrained casting and copying all over the place. The production increased from a few casts at the beginning - in the eighteen-twenties the Gleiwitz foundry often sold only one table a year - to vast quantities after a few decades. After Schinkel (with one exception to be mentioned below), there was no other real artist supplying the foundries with designs. That is, indeed, the tragedy of the historism of the nineteenth century. The artists turn their backs on industry, indeed they see in industry the guilty party for the decline in artistic quality. Instead of supporting the producers, they sought their salvation in enthusiasm for all things medieval and are only concerned about the superb individual item, created by an artistic craftsman with his hands.

The multiplicity of production probably reached its zenith in the eighteen-fifties and 'sixties. Of course, new models were appearing all the time. But these were not really a further development, just a further elaboration. All models remained available until well into our own century.

There was one artist who did take the problems of iron casting seriously in the late nineteenth century: Christopher Dresser. Dresser, born in 1834 and died in 1904, is justifiably regarded as having been the first "designer" in the modern sense and designed a series of models for benches, chairs, clothes stands and umbrella stands in the mid-eighteen-seventies for Coalbrookdale which were qualitatively on a par with Schinkel's designs of fifty years earlier. His pointed-thorny ornaments based on plant forms seem appropriate for the techniques of iron casting, as they evoke something of the hardening material in the eye of the observer. Dresser, who became a promoter of art nouveau with his pottery work, and who seemed to leave the same far behind with his metal vessels, showed with his few models what iron furniture could also have become in the second half of the nineteenth century.

Notes

1. cf. Welt im Umbruch, exhibition Augsburg 1980, Catalogue Vol.2, No. 894.
2. Hermann Berger, Die deutsche Stahlmöbelindustrie. Düsseldorf 1939, p.78.
3. The Diary of John Evelyn. Ed.by G.S. de Beer. Oxford 1955.Vol.2, p.471.
4. Samuel Sharp, Letters from Italy. London 1767. p. 238 ff.
5. cf. L.O.J. Boynton, The Bed-Bug and the "Age of Elegance". In: Furniture History 1, 1965, p.25.
6. cf. Berger, note 2, p. 71.
7. Archives Nationales O^1 3302, page 78. I am grateful to Mrs. Frances Buckland of the Wallace Collection, London, for drawing my attention to this.
8. Goethe, Italienische Reise. 31.5.1787. Gedenkausgabe Vol. 2, Zürich 1950, p.374.
9. cf. Berger, note 2, p. 72 and Dingler, Poytechnisches Journal 30 (1828), p. 81-83.
10. J.B. Waring, Masterpieces of Industrial Art & Sculpture at the International Exhibition. London 1862. Pl. 122.
11. Karl Friedrich Schinkel Lebenswerk. Johannes Sievers, Die Möbel. Berlin 1950, p. 40 ff., Fig. 63.
12. ibid. Figs. 62, 65.