Chronique

The Journal of Chivalry

Articles, Essays, Reviews

Issue #13
The Knightly Sword

Chronique

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Great thanks to all the above contributors and to everyone who helped Chronique #13 into being!
THANK YOU!

Introduction

Welcome to *Chronique* #13! Thanks to the hearty efforts of our new assistant editor, Mark Courtney, this issue has been done in record time. And #14 is already in proofing!

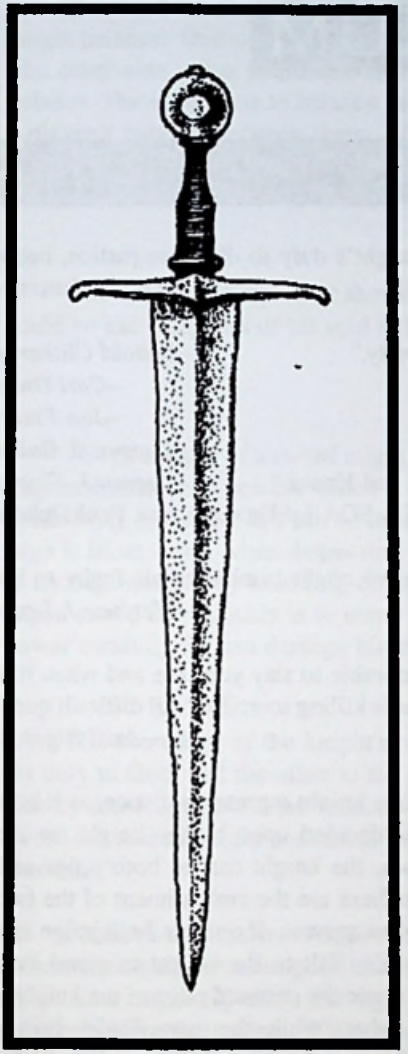
Much work has been done on our website at WWW.chronique.com--we are adding a children's section; glossaries for arms & armour; for chivalry, knights & the tournament. Web traffic is up--most of our FORUM responses are now submitted electronically through the web pages. For those of you without web access, we have a mailing list at chronique@lists.best.com--simply send us a message and you will receive the questions via email and also any new announcements.

The summer has seen the tournament companies being extremely active--here on the West coast there was a pas in April, May, June, July; there will be another at Pennsic and one in September, all sponsored by the Company of Saint George. The Grand Company of the Peacocks held their own pas d'armes; the Company of Saint Michael plans a grand festival of arms to be held at the upcoming Pennsic war.

Another new thing is the growing interest in *Chronique* amongst non-SCA groups. Some of the interest comes from other re-enactment groups in Australia, England, and even in France. There have been many inquiries from students and from teachers looking for information on knights or on chivalry; we are responding by adding the children's section to the website, a place where we hope to offer many resource materials for teachers and students alike. If you have things you might like to contribute to this effort, drop us a note through the regular mail or you can reach us through the email addresses on the front cover.

This issue focuses on the knightly sword. There is no symbol as evocative of the knightly station or mission as the sword. Double edged, used both in the attack and in defense, made in the image of the cross, the sword as remained as the pre-eminent symbol of knighthood.

What we offer you here is a sampling of material tracing the historical root of swords chiefly through the 13th - 15th centuries. Surprisingly, the sword underwent surprisingly little change. The swords used by the SCA resemble the ash and whalebone weapons frequently men-



tioned in the vespers tourneys, or the behourds, of 14th and 15th century England and France.

Lastly, we still have places for those who might want to assist us with the production of Chronique. We are in the process of building a virtual company, linked via the internet, to produce a publication. It is the first such arrangement that I've heard of; my paying job is as a software producer responsible for the production of virtual worlds. This is a small step.

Lastly, it is the summer, the time when combatants rev up their practice, when tournaments and shows are held in earnest.

We hope you enjoy this issue of Chronique, the questions are stimulating and have already created a good deal of discussion here in our own region. We are interested in your thoughts on these questions--please feel welcome to submit your thoughts and concerns to the editors—we invite gentles of all stations and experience to reply so we can enrich the discussions Chronique hopes to encourage.

FORUM

Question #1: What might the two edges of a knight's sword symbolize?

"Justice and Mercy. It is the Knight's duty to dispense justice, but it must be tempered with mercy." *—Leifr Johansson*

"Power: used properly or improperly." *—Harold Clitheroe*
"Might & justice." *–Carl Ontis*
"Justice & wisdom." *–Jan Frelin*
"Righteousness and Honor." *—Thomas J. Baker*
"The two edges would be Justice and Honor." *—Steven J. Finger*
--AKA SCA Ld Ettienne Jean Paul Dubois

"The two edges of a Knight's sword might symbolize his fealty to his liege, as fealty is bi-directional." *—Metthew J. Lecin*

"Justice vs. mercy. When is it honorable to slay your foe and when it is honorable to give him surrender? When is killing merciful? All difficult questions." *—Andi Bigelow*

"It is often said that the sword of the knight represents justice, as it is in effect the instrument of a punishment decided upon by the knight, or the sovereign to whom he answers. If then, the knight can be both judge and executioner then some may claim that these are the embodiment of the two edges. However, I find this as too easy an answer. If one can both judge and punish another individual does not it also fall to the knight to stand ever vigilant in judging his very judgment? I see the outward edge of the knight's sword bringing swift judgment upon others while the inward edge brings judgment upon the knight should he be found guilty of false judgment by himself or another. That double-edged blade is as sharp on both sides as the scales of justice are balanced." *–Daryle Pompeo*
—AKA SCA Sir Severin Visconti DiMilano
—Kingdom of Trimaris

"It could symbolize the life and death of Christ himself, being that the knights were deeply seated in the Christian faith. It may symbolize the two sides of the knight, the good and the bad. Another meaning could be the eternal battle between the good and the bad/the Christian and the pagan."
—Charles Lawson

"I think it could be representative of the two schools of though that a knight balance. One side is the warrior, the man of action, bravery and valor. The other side is his peaceful nature, the courtier, the man of honor and nobility. The knight has to balance these two aspects of his life, and there is a difficult balance between them. With these two aspects working in harmony—the man of peace fighting for his honor—he is a formidable opponent."

—*Jacob Heubner*

"One edge could represent sharpness of the warrior's wits, and the other could be the sharpness of his soul in his standing with God."

—*Brandon Moore*
—Middle Kingdom

"The two edges of a sword might be justice and honor: that is, one of the responsibilities and powers which a Knight must balance is his or her responsibility to be just and fair to those with less power. However, the other edge is honor: even when dispensing justice, the Knight must be careful not to damage himself by behaving dishonorably. To grasp the blade of a two-edged sword incautiously is to court injury; if a Knight does not handle his power carefully, he can damage himself as much as he hurts others."

—*Siobhan Medhbh O'roarke*

"The two edges of the knight's represent his duties. On side represents his duty to God, and the other to the people he protects. His sword reminds him of these duties and he remembers this every time he unsheathes his sword, so that he might not fail in these duties by for instance, harming an innocent." —*Jordie Jussup*

"I believe that the two edges of the knight's sword represent the line a knight must walk between good and evil. The edge that is facing away at any given time might represent the fight against evil, injustice, etc. within the person holding the sword. While the edge facing the knight, may represent his draw toward things that are evil." —*Harry Hackney*
—Internet response

"The two edges of the sword represent the paradox of responsibility for one's actions. When a knight acts he/she does so purposely. The consequences of those actions are always positive as well as negative. In this way the one edge of the sword symbolizes the cutting that is a gain. The other the cut that is a loss. It is said that the edge facing the knight must first be used to cut him/herself before it is raised in conflict with another." —*Mike Panian*
—Nelson, BC, Canada

"The two edges of a sword symbolize the body and the soul. One cannot exist without the other." *-John Corrales*

"The symbolism of the two edges of the knight's sword, though I admit I have no documentation for this, to my way of thinking, would be...

"First, Honor, a two edged blade of its own, that is at once compelled, and compels the knight to act, or perhaps not to act, placing the weal of others before his own. Second, Justice, to which the knight is servant, and master, dispensing the king's justice, and bound by justice to be impartial."

—Ld. Cailean MacAlasdair of Sinchlair, Esq.

"The first edge be that of love and loyalty, to thine own heart, thy loved ones and to thine code. The second edge be that of faith and fealty, to thine own God, and to the Crown, to protect and uphold the laws of both."

—Terri McLean

"The two edges of a Knight's sword represent the dual aspects of the 'ideal' chivalric warrior; the balance between ferocity and mercy. War is the flowering of chivalry. Only by great deeds of arms may a knight prove his valor. On the other hand, a good knight must be prepared to be merciful. To slaughter a fallen foe is disgraceful, and the act of a knave."

—John C. Martin

"The possession of a sword abd scabbard should represent prowess--you must have the ability the fight and to defend as required. The edges of the sword itself represent honor and glory--without these characteristics their is no victory." *--Cedric of Whetmoor, Errant, CSG*

"To me, the double edge of a Knight's sword symbolizes chivalry and all of the ideals of being a knight. To wield this sword means to carry it with respect for it could be dangerous if not treated properly.

"It is noble to want to run around and save people from oppression, whisk women off their feet, and be that dashing modern interpretation of Lancelot that everyone wants to be. Men in general tend to love to be thought of as someone's 'Knight in shining armor'. But if misused or mistreated by those who are either too eager or not knowledgeable enough to wield such a 'weapon', the shining armor that is the art of chivalry can be permanently tarnished for not just that one person, but for all men.

"Knighthood and chivalry must be treated with respect. If not, then that wonderful cutting edged weapon that a man holds in his hands can cut him just as easily as he cuts with it, with very little notice."

—Robert J. Marley

Question #2: Describe the qualities of a fine sword.

"A weapon that feels not like a tool in one's hand, but rather an extension to that person's arm. Beauty and elegance combined with the respect of a razor sharp edge. Balanced so that swinging it is effortless hour upon hour. One that strikes a combination of both awe and fear to any opponent when it is unsheathed. A substantial weapon of both size and quality that should last for generations." *—Robert J. Marley*

"A fine sword should always be sharp and free of rust. Also, the sword should be free of excess ornament, to be true to the knightly vow of humility." *—Jordie Jussup*

Editor: *Just a provocative question—should the sword of a king or a high nobleman look exactly the same as an ordinary knight?*

"Balance. Balance comes before all other things. Balance in motion and balance in appearance. Then comes polish and texture, in no specific order." *—Jan Frelin*

"To me, my sword also symbolizes my faith - so my sword has a straight quillon, the true cross. My sword is light (2-3/4 pounds or so) and "the right length" for me. It is not decorated, but rather plain - it is a weapon, not an ornament." *–Matthew J. Lecin*

"A fine sword has the following characteristics: a) it fits exactly, in size and balance, the stature and fighting style of its owner; B) It is constructed of high quality materials; and c) while not ostentatious, it is esthetically pleasing." *—Harold Clitheroe*

"Like a good knight, a good sword should be strong, and of fine temper. It should be well kept, with as much care to repairing disfigurement as possible, as straight as is possible and without unseen character flaws that could cause it to break under stress. And most importantly should never be used in anger but in defense of honor or country." *–Daryle Pompeo*

"A fine sword stays in its scabbard. A bad sword is ever in its owners' hand. Less poetically, A fine sword is flexible, but its edge is brittle enough to take a shapening." *—Leifr Johansson*

"A fine sword has a good luster, a ring like fine china, and it must be made of either steel from Toledo, Spain or from the heart of Britain." *—Charles Lawson*

"A good sword should have such qualities as: sharpness, balance, no rust, a well kept scabbard, and a 't' hilt to represent the cross of Christ."

—*Bandon Moore*

"The virtue of a sword lies in its balance. It should nestle comfortably in your hand, ready to respond to the slightest impulses from its owner. A good sword is one in which you feel as if it is as eager to engage your foe as you are. While decorations are a fine thing, they should never interfere with its primary purpose; I will take a plain, serviceable blade with good balance and a fine, flexible blade than the prettiest 'toy sword' in the realm."

—*John C. Martin*

"A sword should be well balanced between the blade and handle; finely tooled, the edge of the blade should not be overly sharpened; and most important, the user of the sword should feel comfortable with the weapon. The affect, to be as one in combat."

—*Thomas J. Baker*

"A fine sword must posses balance and timbre. It must feel sensuous in the hand and extend form from the soul. It must possess both a hard and severe as well as a flexible and plant quality. It must be beautiful to remind all of the beauty of responsible action. It can must be true to emphasize the absolute nature of choice."

—*Mike Panian*

"The qualities of a fine sword involve many things. The strength of the steel is not the most important, but the wielder's hand is. The edge is not the most important, but the mind behind it is. The temper of the blade is not the most important, but that of the hand that raises it against the foe. [illegible] the most important, but the wit [illegible] the purpose for which he raises it."

—*Terri McLean*

[illegible] swords came from some of the [illegible] principal traits of a fine [illegible] especially among the [illegible] sword and the strength [illegible] in edge. In a tale [illegible] *His Knights*, (not [illegible] The knight of the [illegible] sharpening his sword to

—*Jason Tyron*

[illegible] *the Green Knight* [illegible] *sharpening his*

"A fine sword should be both flexible and strong so that when an impact is made it flexes and penetrates or cleaves, but neither bends nor shatters. Also a fine and perfect sword should be well balanced with its user the blade being too long it would impede its own use, or too short and slight would lack range and or velocity and impact. The balance and overall weight of the weapon should be no more than the user can wield at maximum controllable velocity without sacrificing weight of impact. This would place the center of balance of the weapon 2-3 finger widths before where the hand meets the hilts. The tang of the blade should pass entirely through the grip to be fixed securely to the pommel and the grip should not rotate in any way or shift on the tang. To say that the grip shape should be comfortable seems unnecessary in the company of so many who use them, but I shall say that it shall match the hollows and mounts of the palm of its user so as not to betray it's master with blisters or an easily lost grip. Any decoration as does not interfere in ANY way with ALL of the above criterion may be justly applied (though I will keep my own weapon, pure and unadorned). Which brings me to the final quality of a fine and perfect sword, its name. Just as all the previous qualities describe the physical characteristics of the weapon so does the name describe its soul and purpose, the name of the sword binds it to its master more surely than the belt. Therefore when choosing a name for your sword meditate not lightly upon it for it is a grave matter (pun not entirely unintended)." —*Daryl W. Haaland*

—AKA SCA Ulf Ingbrandsson Sgt.of Borealis in Avacal.

<u>Question #3</u>: The style of fighting done with a short sword is different than that of a long sword. It could be said that motions done with a longer weapon have the potential to be more graceful, while a shorter weapon yields more speed. Is this true?

"I suppose a longer sword might be considered to be more "graceful" though in truth I think it is the wielder that brings grace to a weapon. From a purely physical standpoint, a shorter weapon will "change ends" more quickly. During the height of its use, the gladius was the premier weapon of the Roman soldiery, and should be equated to the long sword used by knights of the high middle ages.

"What is *grace*? The Japanese katana is a weapon of supreme grace and beauty. It would do little against a knight armed in plate. A similar comparison could be made between the knight's sword, and that of the Turkish scimitars (using the term loosely to cover all of the curved swords of the middle east during the crusades).

"I think that the proper length of a sword is dependent upon the size of the wielder." —*Jason Tyron*

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–*Terri McLean*

"Throughout the medieval period fine swords came from some of the great arms and armor centers of Europe. Some of the principal traits of a fine sword could include: strength - Throughout history, especially among the warrior cultures of northern Europe the strength of the sword and the strength of the wielder were one in the same; and the ability to hold an edge. In a tale recounted by Steinbeck in his *Tales of King Arthur and His Knights*, (not period), but I think it tells true of attitudes of the period, The knight of the tale must fight a giant, and spends extra time on sharpening his sword to better face the giant." —*Jason Tyron*

Editor: *In the 14th century rendition of Sir Gawain and the Green Knight Gawain does indeed stumble upon the Giant who is also sharpening his sword.*

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"I would argue that the motion of a long sword may be more visually pleasing to spectators, but perfection in skill with any weapon determines gracefulness. And while a short sword would be easier than a long sword to move swiftly, I still wonder whether skill level with each weapon would determine which weapon would deliver the more effective blow."

—Greg A. Krohne

"It all depends on the wielder. I have seen someone with a rapier look like he clamored with a claymore and have also seen a person possess a broadsword as if it were a rapier." *—Robert J. Marley*

"It could be said that motions done with a longer weapon have the potential to be more graceful, while a shorter weapon yields more speed. Is this true? No, gracefulness only comes into play when your on the stage [theater] ! In a combat arena, one must be careful not to over use the long sword in the chance of fatigue. The short sword is lighter and you can use it more freely, but both are based on skill and either partly could win. Freely because of its weight." *–Thomas J. Baker*

"No the only difference is the length and with a shorter blade you have to be closer and thereby at times be negating the longer blade."

—Steven J. Finger

"Certainly classical physics would agree that the shorter weapon would, indeed, be faster, having a smaller moment arm. However, 'grace' is a subjective term. Depending on the wielder, any weapon can be used gracefully, or awkwardly." *—Lyle FitzWilliam*

"I am the *proud* owner of a two-handed claymore, 39 inch stainless-steel blade, brass pommel and downslope crossguard, with a walnut hilt. It is majestic, well-made, and has an aura of power. But graceful? No—its function over form, pure and simple. Its big, its dangerous, nuff said !"

—Anonymous Internet reply

Editor: *I've been struck with a claymore that was indeed wielded with such grace and elegance as to boggle by my meager defenses. Function? Certainly. Grace, yes, it is possible, and I think extremely valuable to achieve grace with such a weapon, partially because it is far, far more effective if wielded in a graceful manner.*

"I believe that the shorter sword can be just as graceful as the longer. At times, the longer sword can be more unwieldy due to its size, while the short sword does not suffer that encumbrance." *—Jacob Heubner*

"I believe the style a fighter adapts for his own depends heavily upon his stature, and the style of the fighter decides upon the length of his sword. A very effective style for tall knights is to use a sword of great length, say 35" - 45" and keep his opponent within his range but out of theirs. A shorter knight, say me for example, might use a shorter sword, perhaps the size of a good rapier or Italian short sword, since his chances of getting a ranged kill are greatly reduced. Very often smaller men gain victory over large opponents due to the speed with which they can close the gap between them. There are exceptions to all rules but I believe the style begets the sword, not the inverse." *–Daryle Pompeo*

"I myself can fight gracefully with any of my swords, whether they be a broadsword or a Claymore type sword. I think the Gracefulness of a sword battle depends greatly on the strength and swordplay skill of the two fighters, not on the size of the particular swords. I am still not ruling out the fact that a skilled swordfighter can fight faster with a smaller, lighter sword. I think all the answers that you will receive will depend on the fighter themselves." *—Charles Lawson*

"Not necessarily. A long blade may be quite quick. Witness a foil. In my own art of Ai-do, speed is foremost. A short blade, if it is heavy enough (e.g.: a falchion or cutlass) can be deemed a slow blade." *—Harold Clitheroe*

"There is an optimum balance between length, balance point, and weight of a sword. Short swords can be quicker. Long swords are not more graceful unless they are light and balanced close to the hand. Tip heavy swords are not graceful, but they do handle differently then short swords and thus cause one to fight differently." *—Leifr Johansson*

"No. The motions of short sword and long sword are related to one another and their differences are a function of the lines of power that are the most efficient relative to distance from your opponent.The long sword emphasizes extensive long arcs, the short sword emphasizes shorter, more intense arcs. To place one in a superior position over the other would be to choose between a rose and a cherry blossom. Both are complex, beautiful, involuted upon themselves and flowing. It is a matter of scale." *—Mike Panian*

"It is not necessarily true...a sword is a sword, whether long or short. It is not the size that counts, but how you use it." *—Jordie Jussup*

"The difference between a weapon being graceful or quick lies not in the length of the weapon itself, but in the length of the striking part of the blade. If a weapon, such as a spear, has only the point to hits with strikes will most often be quick and thrusting. Whereas a long sword with a cutting edge will

have more of a graceful stroke to make full use of the cutting edge."

—Brandon Moore

"The Romans would certainly agree with this statement! A short, light blade is ideal for formation fighting. The emphasis on the thrust facilitates a very rapid mode of attack which is more difficult to counter. The virtue of the Roman gladius lay not in the skill of its legions, but in the close formation and ability to lock shields. In single combat, only a VERY skilled swordsman would have much of a chance against an opponent with a longer weapon. {assuming the other combatant knows which end of the sword is the sharp one!}The longer sword had become more practicable with the rise of feudalism and the advent of the mounted knight. Even the Roman Cavalry used a longer sword, the spatha. By the late Middle Ages, the 'long' sword had become as much a symbol of rank and authority as it was a weapon. Personally, I find the short sword to be rather boring; the most graceful contests I've ever seen have been fought with Great swords." *—John C. Martin*

Question #4: Is there any virtue in seeking to fight gracefully, rather than just effectively?

"Absolutely. Fighting is an art, and should be done with style."

–Matthew J. Lecin

"Yes. It is, among all other things, more entertaining to fight against and to watch. It's nice to be able to say: this opponent is entertaining to fight. This said, people who know will realize my style is more slanted towards efficiency than grace." *—Jan Frelik*

"I think fighting gracefully has its place in the arena, but I also believe that if you are fighting to win you must sacrifice some grace to fight effectively. I personally try to fight with a balance of grace and effectiveness because I want to impress the viewers as well as disarm my opponent."

—Charles Lawson

"Fighting gracefully means moving without wasted motion. Flowing from stance to stance without bobing or losing balance. This is more effective, because you are always ready to strike a blow, and are less likely to be caught out of position. Yes, fighting gracefully is a good idea."

—Leifr Johansson

"If a person cannot fight effectively, he should not attempt to fight gracefully. However, if he is skilled enough to be effective and graceful, he has more than shown his prowess in battle. He has incoporated the other noble virtues in battle as well. If you watch someone who is merely effective, you have not seen a good fight, just a good warrior. But, if you have ever seen

grace on the battlefield, then you have seen not only a good warrior, but a good fight." *—Jacob Heubner*

"There are no points for style in a true melee.. you either survive or you don't. This was true when I was taking the King's shilling for a living. It was true when my grandfather (who was a WW1 British cavalry officer) was teaching me the art of the blade many years back. Style is for exhibition and developing the art. As Granddad used to say, 'there's no style in taking a man with edge instead of point, but don't let that stop you if the opportunity arises.'" *—Harold Clitheroe*

"The definition of graceful will probably be as different as the people you ask to define it. Literally it means "full of grace" and therefore brings religious aspects into it. Would a graceful fighter be one that is pious? Very often it is used interchangeably with agile. Is this a proper definition either? To me, a gracefulfighter is one who moves very fluidly, with very few wasted movements and has total control over his actions. A fighter like this will probably be a very effective one."

–Daryle Pompeo

"In my attempt to define the chivalric code of the Middle Ages and during the Renaissance, the question : 'Is there any virtue to fighting gracefully, rather than effectively?', calls to mind *The Book of the Courtier*, by Baldasarre Castiglione, in which he writes that everything must be done with a certain nonchalance; something he referred to as *sprezzatura*. By this, he meant, that any action performed was to be done so with such gracefulness as to imply a lack of effort and/or thought with which it was necessary to perform." *—Anonymous Internet reply*

"In the true martial sense, to fight gracefully is to fight effectively. The two can not be separated." *—Mike Panian*

"Absolutely! That is what the code of chivalry is all about. Anyone can swing a sword around and most likely kill someone. The point is not just to defeat your opponent with your sword, but to defeat him with your swordsmanship. Embarrass him for even thinking of challenging you to a match." *—Robert J. Marley*

"There is virtue in fighting gracefully, as when you do, your discipline and training show. Graceful battles show that one cares about how one fights, not just whether he wins or not." *—Jordie Jussup*

"If we agree that grace under fire is an admirable quality, then we should also presume that someone who displays the excellence of his skills, even under adverse conditions such as battle, has a certain virtuous quality in his skills."

—Greg A. Khrone

"I believe an experienced swordsman gives the impression of gracefulness due to his experience in the craft. But if in combat, you will find the most disciplined warrior resort to barbaric tactics to stay alive."

—Thomas J. Baker

"Yes. Is that virtue? Hard to describe. To me, it has to do with beauty of form and motion, with the difference of being a Master craftsman vs. being someone who can make something that is utilitarian but without any real pleasure to the user or the viewer." *–Lyle H. Gray*

"If fighting gracefully and not for the win , I tend to fight for the honor of the fight more. I try to pursue the code of honor and just fighting to win ,in my eyes, is not the way to fight." *—Steven J. Finger*

"In fighting gracefully a warrior could do honor to himself and his teacher by showing that he has well learned the techniques taught to him, whereas if he just fights effectively he does honor to the king by defeating his foes on the field. In any case a knight should fight with honor and chivalry whether graceful or not." *—Brandon Moore*

"Virtue is found in effectiveness not grace nor speed. A man at arms sees that a better has grace, and fights well. Tries to emulate him or her and is slain, therefore he saw not the whole picture likewise for the man at arms who sees speed, strength, craftiness, agility, mercy, timing, accuracy, dexterity, or indeed any one other quality that makes a perfect Knight, and concentrates on it alone to the detriment of the others. True effectiveness has a sense of grace and purity of purpose that goes beyond any one of the other qualities you might mention as Effectiveness is the measure of the virtues of a knight. For a man may be a battlefield murderer possessing all of the martial qualities of a Knight and indeed General yet lack any redeeming qualities off the field. To summarize, my feeling is this: that grace is a virtue more important off the battlefield than on. For this reason, arms are primarily martial and as in all things to deny the primary purpose of a thing is to weaken it until it is destroyed. This unresolved and unrecognized paradox of arms and the virtues of armsmen led to the fall of chivalry as a philosophy in the first place. Yet in keeping with this paradox a knight must carry with him all the virtues and flaws from off the battlefield and from on the battlefield.

"If that were true, then there would be no renown, no honor to be found in dying for a chivalric cause. And that is not borne by the history of the

chivalric idea. It was considered a great honor to have perished standing for virtue, be the virtue grace, courtesy, loyalty, generosity, or any of the rest."
—Daryl W. Haaland

"Chivalric combat, especially in tourney, is not about winning, but winning well. There may be no witnesses in the chaos of battle, but there certainly are in the tourney. When you consider that the combatants may be fighting for the honor of a lady, victory at any cost is poor reward for a favor. This manner of question devolves into a 'form versus function' dilemma. I certainly prefer the former. While there may be those that argue that a 'win is a win', I believe that the essence of chivalry is to combine grace and effectiveness. The tourney is very much a spectator sport; there is little noble in standing toe to toe and hacking wildly at your opponent. Strength is important; Wit and the ability to fluidly react to the changing nature of battle is what will win the day." *—John C. Martin*

Question #5: What is your favorite weapon style?

"Center-mount round shield and sword for its flexibility in defense especially for tournaments. The shield being 30 inches or elbow to elbow with the fists together at the solar plexus." *—Daryl W. Haaland*

"I find little which is more inspiring than the proper and skilled use of the greatsword. It is a magnificent weapon, and two skilled opponents make combat look like ballet. I personally feel that it will be some time before I use this form; the potential to injure an opponent is too high for me to trust myself yet. As I develop more skill, I do plan on using the weapon. There is a certain appeal in Florentine or two sword; I do question the historical antecedents of this style. I personally have grown to admire the axe; although its true damage potential is grossly underestimated in SCA combat, it was a VERY common weapon." *—John C. Martin*

"Greatsword-one weapon that serves many roles." *–Kaidu@aol.com*

"My personal favorite weapon style is sword and shield. I am the first to admit that in my period (late 15th c. Italian) the use of the shield was very minimal, but to me it not only is a superior fighting style, but it enhances the visual aspect of combat by involving the use of heraldry into the tourney. It helps to identify your opponent, and very often gives one a look into their personality." *–Daryle Pompeo*

"My favorite weapon style is one that emphasizes the 'four governors' of timing and distance, identifies the paths of efficiency and power, demonstrates rootedness and balance, and feels deeply the connection to the opponent. The weapon is not important." *—Mike Panian*

"While sword and board is certainly an early style, I must say that I favor it. Grace, balance, and skill are required to be an excellent shield man. Fortunately, just a little training allows one to be a competent one, which is all I would claim." —*Leifr Johansson*

"My favorite style is one handed swords. Its is the only weapon with which one can be graceful, and not just land hard blows as with two handed weapons, or be sneaky as with daggers and knives." —*Jordie Jussup*

"My favorite weapon style is Florentine and using axes."
—*Steven J. Finger*

Question #6: Should the use of two swords, sometimes called flourentine, be allowed in modern tournaments, even though their use in tournaments of the 14th and 15th century is difficult to document?

"Having a lady wife who is Florentine, I tend to frown on this as a term for combat with two swords. However, in this period (I refer almost entirely to the 15th c.) there is evidence for combat with a rapier (not what fencers refer to, but the real sword) in one hand and a short sword, or dagger in the other. Evidence for this I have seen, but not for the use of two long swords or even two swords, and especially not forms like mace and sword, or two hammers or the like. –*Daryle Pompeo*

"While I believe it would be impossible to supress "florentine" in the SCA, I would prefer it to be gone. I expect that the tournament companies (St. George, St. Michael in the East) will continue to ban it in their tournies."
–*Matthew J. Lecin*

"Flourentine should not be allowed, as most modern tournaments strive to be historically accurate, and since fighting with a weapon in each hand is hard to historically find, it would subtract from the historic realism of the tournament." —*Jordie Jussup*

"In my opinion, the SCA has two types of tournaments: those that recreate historical tournaments, and those that have evolved from SCA tradition. In the case of historical tournaments, if the florentine style was not used, then the knight marshal or knight of honor should disallow the weapon style. However, in the case of SCA tradition tournaments, i.e. Crown and coronets, the weapon style has traditionally been allowed and therefore should continue to be allowed. I believe that long lived organizations have a culture to themselves, and the SCA is in my opinion a long lived organization. The culture of the SCA gives us some traditions, and while they may not always

be 100% accurate historically, they are important to the organization."
—*Robert J. Hambrick*

"I feel flourentine should be allowed if a person feels that they can effectively use it." —*Brandon Moore*

"I've met people that trained in Kendo to prepare for tournaments. Who would suggest that they not use these skills? Flourentine style seems very much to me like another application of specialized skills."
—*Gregory A. Khrone*

"The use of two swords in a tournament should be discouraged. When using two swords, all grace is thrown to the wind for the sake of bloodletting. It is like a comparison of Muhammed Ali's style to that of George Frazier."
—*Brit Mundy*
—York, PA

"Yes. I don't believe in outlawing unperiodness. We should be inspiring people to change, instead. That said, I must admit a few of the most entertaining opponents I've fought have been fighting florentine." —*Jan Freli*

"I'm no expert on tournament styles, but I have seen the Florentine in number of illustrations taken from fighting manuals. It seems to me that a form taught was probably practiced and used in tourneys. Florentine, o. course, is the embarrassing style, as lots of people take it up and never get good enough at it to be anything but embarrassing to themselves."
—*Leifr Johansson*

"I think it should be used only in 'flourentine' specified tournament bouts. I don't believe that one person should be able to use two swords while the other may not have two swords to use." —*Charles Lawson*

"Although we cannot nor will we ever be able to document everything from the past to present. Improvisation was the key to combat in the past and is still true modern combat. The name of the game is to overcome. I'm sure a noble here or there, as is today, bent the normal to fit their needs. This isn't the red coats (all lined up in a row) against colonists 1776. Combat of this nature was not always based on the expected as in modern warfare the unexpected did arise, even in tournaments!"
—*Thomas J. Baker*

"Florentine can be a visual treat, and a tremendous amount of fun. The question of its eligibility is very thorny. I certainly haven't found much to support its use {numerous Irish myths notwithstanding}. It very much de-

pends on how important adherence to authenticity is; personally, I feel that until I see something to convince me of its existence in the 14th century, it is another modern affectation of the period." —*John C. Martin*

"I believe flourentine should be allowed in modern tournaments. I believe Duke Cariadoc, of the Middle Kingdom, stated it best in his Miscellany: Concerning the C in SCA; 'There are many dimensions to authenticity, and sometimes they conflict....close imitation is not essential to authenticity, but it is one of the ways in which artists learn their craft...' and 'as with most things in the Society, the important classifications are not right and wrong but better and worse. We cannot expect to do things perfectly even period songs are rarely played on exact replicas of period instruments....'"

—*Wil Arnold*
--AKA SCA Uileam Kith MacArley
--*Middle Kingdom*

Question #7: Two combatants are exchanging blows in a pas d'armes. One of the two gentles is disarmed, because he lost his grip on the weapon. What should his opponent do?

"In a pas d'armes, if one gentle loses the grip of his/her weapon, the other should lower his guard, step back, and wait until the opponent has regained his sword, and his defense." —*Brad Hedges*

"The gentle who retained his weapon should allow the other to pick up the dropped one. It should be so because chivalry demands that you fight with honor and fairness, as well as not attacking someone not equal to the challenge." —*Jordie Jussup*

"The opponent who is still armed should, out of chivalry, call a hold and give the person a chance to pick up his weapon." —*Brandon Moore*

"The opponent should give the one who is disarmed time to retrieve his weapon, or better still retrieve it for him." —*John J. Hale*

"Wait until he has time to rearm." —*Jan Frelin*

"In a tourney of peace, the unarmed opponent should be allowed to retrieve his weapon." –*Matthew J. Lecin*

"If your opponent loses his weapon fighting you Pas d'armes, let him pick it up and then resume." —*Leifr Johansson*

"Withdraw several paces and allow opponent to recover his weapon"
—*Carl Ontis*

"In my opinion, the pas d'armes is fought as a test of individual honor, more that brute prowess. It should be that the opponent retrieves the lost weapon, and the combat continues." —*Robert J. Hambrick*

"If the loss of an opponent's sword occurs during a pas d'armes, since this contest, in my opinion, is being held to further the goals of gentility and honor, I would leave the decision of whether my opponent received the right to continue the fight in the hands of the lady for whom I fought, or if that was impossible due to the traveling nature of the tourneying knight, the lady of the lord who sponsored the tournament. If he was then deemed worthy of continuing the match, I would return his weapon. If he was not, I would ask him to yield for ransom." –*Daryle Pompeo*

"The other combantant should back up and allow the first one to pick up his weapon." —*Steven J. Finger*

"His opponent should ask that he yield. If he chooses not to, his opponent should be gracious and allow him to retrieve his weapon so that they might continue." —*Lyle FitzWilliam*

"In my opinion, the pas d'armes is fought as a test of individual honor, more that brute prowess. It should be that the opponent retrieves the lost weapon, and the combat continues." —*Robert J. Hambrick*

"The one who looses his weapon should acknowledge his loss, his opponent should give him an opportunity to do so. A virtuous gesture would be to let the man rearm himself so as not to kill him in a helpless condition." —*Mike Panian*

"I would like to see the person be given the opportunity to retrieve his weapon. If I were in a fight, I would want to beat the person on my own skill, not my opponents lack of dexterity." —*Robert J. Marley*

"Winning is not everything. Chivalric conduct ***should*** be! A knight who would not allow his opponent to retrieve a weapon knocked from his grasp is, in my opinion, a knight who should seriously consider the meaning of his station. While it may be argued that "anything goes" in melee, the conduct upon the tourney field is another matter. I certainly wouldn't like to have to look my lady in the eye after having butchered a defenseless man in her honor!" —*John C. Martin*

Question #8: What if the same circumstance occurred during an emprise (a combat à outrance, or à la guerre). What then should the knight do?

"Ask the dissarmed man to yeild and take him for ransom."
—*Carl Ontis*

"The unarmed opponent should be forced to yield at swordpoint."
–*Matthew J. Lecin*

"Wait until he has time to rearm." —*Jan Frelin*

"He may if he so chooses give quarter to his opponent (what should be done in modern day tournaments) or 'kill' his opponent." —*Charles Lawson*

"I fear you have given away the answer. If your opponent loses his weapon while you are fighting "as war", then you should take advantage and subdue the individual." —*Leifr Johansson*

"If this same occurrence happened in a combat a outrance, or une guerre, where the intent of the combat is, though it may be honorable, victory, I would ask the knight to yield for ransom. To bring further violence upon an unarmed opponent is not an act of war, but murder and should be viewed as such." –*Daryle Pompeo*

"Both of these questions 7 and 8 can be answered with this question. What is the price you are willing to pay to achieve victory ? A virtuous knight's answer is different than a battlefield murderer's answer even if they answer similarly it is for different reasons." —*Daryl W. Haaland*

"The knight should do the same thing; chivalry does not end during a battle, in fact, it should be more stressed than ever." —*Jordie Jussup*

"War is different than the tournament list. While allowing your opponent to rearm himself in war may not be terribly smart {not to mention disobedience to the oath you have sworn to your Lord!}, allowing him the opportunity to yield is both honorable and practical. you have removed a foe from the field, and netted a ransom as well. In a truly desperate situation, if your foe has refused to yield, a knight's vow of service to his lord would compel him to slay his foe." —*John C. Martin*

"This depends to some extent on the cost of failure. If the knight were protecting his lady or community, it is sufficient for honors sake to use the minimum amount of force necessary to remove the threat. Removing the opponents sword, holding him helpless, punishing him until his spirit is broken, and killing him outright are all acceptable in real combat under these circumstances so long that the absolute minimum use of force is used to accomplish the objective of preventing harm to your lady or your community. This understanding is termed efficiency and generosity in combat."
—*Mike Panian*

"If a combatant loses his weapon during a combat 'à outrance', then his opponent should take him prisoner, if the rules allow. If the rules do not allow this, then his opponent should continue as if he were still armed."
—Lyle FitzWilliam

"In this instance, the one who still has his weapon should place his sword at the others throat, and ask him to yield." *—Brad Hedges*

"In my opinion, the outrance or la guerre level of a challenge is to settle an issue beyond the demonstration of personal honor. This level of a challenge is meant to be a test of brute prowess; therefore, if the challenger chooses to disallow the retrieval of the lost weapon, so be it. I base this on the key word la guerre - the French word for war." *—Robert J. Hambrick*
—AKA SCA Josef zum Murmeltier

Question #9: If you could be knighted by any gentles' sword, past or present, whose would you choose? Why?

"Marshal Boucicault. Not the least because not only was he a model of chivalry, he was also a good tactician whose ideas might have saved the French from Agincourt, had they been used." *—Jan Frelik*

"If I were to be knighted by any of the past's kings I would choose to be knighted by Arthur himself. I believe that I would be a great asset to the round table, but I would refuse to sit at the Siege Perilous...."
—Charles Lawson

"I was Knighted by HRM Timothy of the East at Pennsic XXIV, using the sword of my Knight, Duke Ronald Wilmot." *–Matthew J. Lecin*

"If I could choose a knight's sword to be dubbed by it would be that of Giovanni de la Bande Nere, the only member of the Medici family to take up the profession of condottiere, or mercenary captain. Most people cringe at the term mercenary, but it does not relegate one to dishonor or poor moral structure. Is is so dishonorable to choose the sovereign you choose to support, as opposed to the one who rules over the land you happened to be born into? Many were the tales of Giovanni de la Bande Nere's (which stands for the black bands he wore on his arms) honor and gentility as well as his prowess, despite his demise in his mid twenties. He brought a glimmer of chivalry to a banking family otherwise known for it's guile and deception."
–Daryle Pompeo

QUESTIONS

1: Do you think the gallery has an impact or influence on a tournament fight? Is this good or bad?

2: As a member of the gallery, what is the most interesting kind of fighting to watch?

3: Describe what you as a consort or as an observer of fighting consider to be chivalrous conduct on the field.

4: Which is more important concerning the outcome of a fight--the opinions of the combatants or of the gallery?

5: As a consort, how important is it that your champion defeat their opponent?

6: As a member of the gallery, what could be done to make fighting more interesting for you?

7: In a pas d'armes, two combatants reach a disagreement on the field. They bring the matter to you as "queen" to adjudicate. How might you resolve such a dilemma?

8: What is a good punishment for a combatant who really has publically slighted a lady of the gallery?

9: Sitting as a member of the gallery in the company of your Queen, a young squire comes to you with a bright heart, beseeching you to advise him on how he might become a gentle knight of great renown. What do you tell him?

Chronique questions are intended to spark discussions between tourneyers, consorts, and anyone else interested in knighthood. They are also posted at our web site at http://www.chronique.com, where you can email your responses directly to the editors!

Calendar

Company of Saint Michael Festival of Arms
Pennsic War, August 1996
Hugh T. Knight

CSG Pennsic Pas d'Armes
Pennsic War, August 1996
Brian Price 415.961.2187

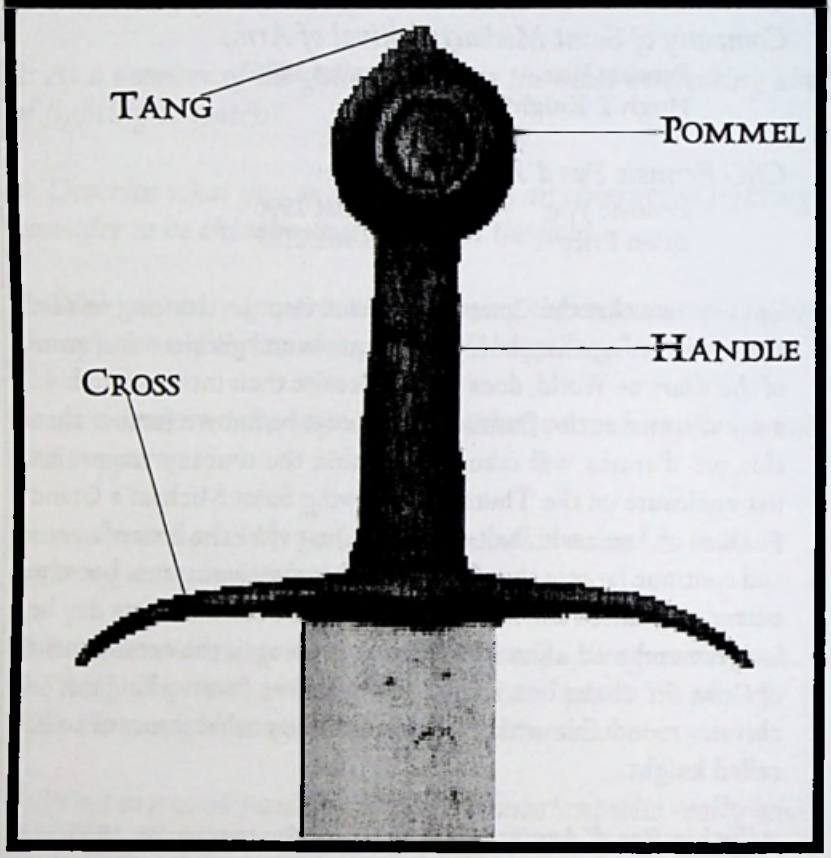
Be it known that the Company of Saint George, desiring to test their prowess against the knights, squires and gentlemen of arms of the Knowne World, does hereby decalre their intention to hold a pas d'armes at the Pennsic War. Let it be known further than this pas d'armes will take place within the tourney companies list enclosure on the Thursday following Saint Michael's Grand Festival of Armes. It shall commence just after the hour of nones and continue far into the afternoon. That the combatants become better acquainted and that the feats of prowess done this day be long remembered, there shall be that evening in the encampment of Duke Sir Eliahu ben Jacob, known also as "starry knights," a chivalry roundtable wherin we shall discuss what it means to be called knight.

Allyshia Pas d'Armes September 28, 1996

Forthcoming issues of Chronique

#14--Consorts & The Gallery
#15--Fighting Techniques
#16--The Pas d'Armes Revisited
#17--War & Chivalry
#18--Fighting Garments

Parts of a Medieval Sword



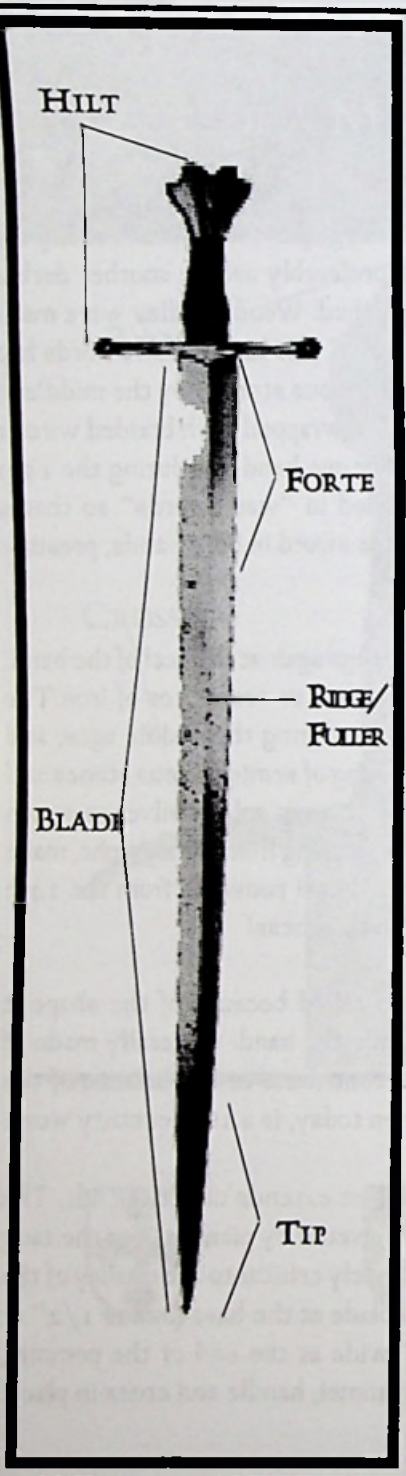
HILT: The handle of the sword, including the pommel, grip or handle, and cross, all covering the tang of the sword. Hilts could be plain or strongly decorated, depending upon the purpose of the blade.

HANDLE: The material that forms the grip of the sword. Usually the handle would be made from wood, preferably ash or another darker wood if it was to be finished and polished. Wood handles were made both in two pieces and in a single piece. A few ceremonial swords had handles of ivory, bone, or even semi-precious stones. By the middle of the 13th century the handles were often wrapped with braided wire or leather. Handles usually were made for one hand but during the 14th century they were commonly extended in "war swords" so that a knight could, when necessary, take the sword in both hands, presumably for extra power.

POMMEL: The counterweight that snugs against the heel of the hand. Generally they were made of latten (brass or bronze) or of iron. Th pommel varied wildly in terms of shape during the middle ages, was often decorated by engraving, setting of semi-precious stones enamels as a recessed disk, and by washing in gold or silver to m the cross. Most modern swordmakers, working from photographs, m the pommel far too narrow and light. Wheel pommels from the 14t century, for example, are often 2-3" in thickness!

CROSS (QUILLION): The cross, so called because of the shape it gives to a blade-down weapon, defends the hand. Generally made of iron, they matched the pommel and contribute to the balance of the weapon. The term "quillion," common today, is a 16th century word.

TANG: The end of the sword blade that extends under the hilt. The pommel, as an endcap, was generally riveted by piening over the tang as if it were a rivet. The tang is absolutely critical to the quality of the blade; it is generally as wide as the blade at the base (minus 1/2" or so) tapering to approximately 1/4" wide at the end of the pommel, where it is piened over to hold the pommel, handle and cross in place.



Blade: The cutting part of the sword, ranged in length from 28" or so during the 13th century to more than 36" from time to time during the 14th and 15th centuries. Sometimes blades were engraved and they were often recycled and rehilted according to the current fashion.

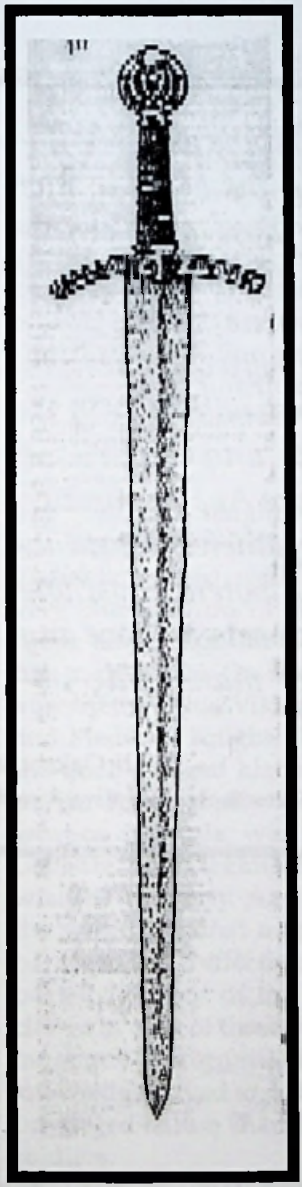
Fuller: During the early 14th C., a groove was added and the blade sometimes made in a diamond cross section. The fuller was added to make the blade lighter, not as a "blood channel."

Forte: The section of the blade nearest to the hilt, where it was generally thicker and thus stronger.

Tip: The point of the sword. Starting in the late 13th century, the point began earlier and worked to a sharper tip, indicating that the sword was more often used for thrusting, at least in war. In tournament thrusting seems to have generally been forbidden.

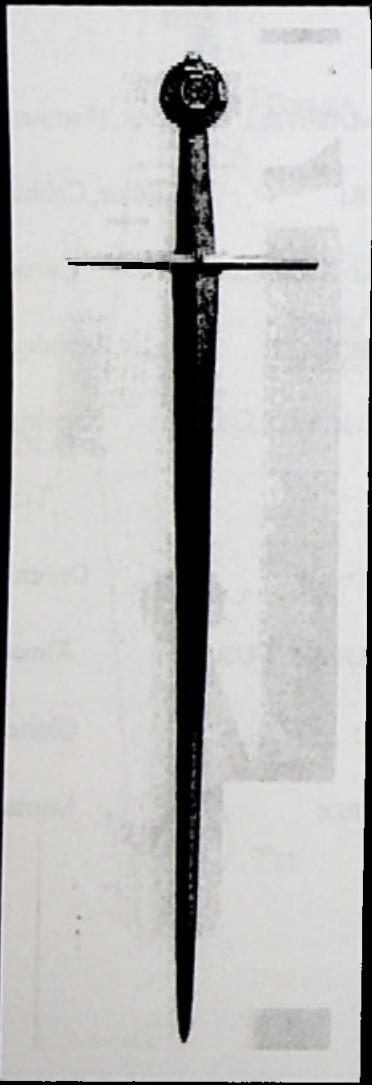
Sheath/Scabbard: A sheath is a leather sleeve in which a blade is stored and carried. A scabbard is a wooden piece for the same purpose. Often the leather was tooled and the wood covered and painted.

Medieval Swords in History, Legend & Romance



Charlmagne:	Joyeux, Flamberge
Arthur:	Excalibur, Caliburn
Edward Confessor:	Curtana
Sir Lancelot:	Arondight
Theodric the Great:	Nagelring
El Cid:	Tizon
Roland:	Durendal
Archbishop Turpin:	Almace
Oliver:	Glorieux
Siegfried:	Mimung

History of the European Sword



"Of all the weapons devised by Man in the long lapse of the centuries, the sword is the only one which combines effectiveness in defense with force in attack, and since the Bronze Age beginnings has gathered round itself a potent mystique which sets it above any other man-made object."

—Ewart Oakshott
Records of the Medieval Sword

Without doubt, no single *thing* summons the mystique of the medieval knight more effectively than does the knightly sword. Elegant, effective, puritanically simple and yet capable of nearly Baroque decor, the twin-edged sword of Europe has forever captured our imagination and become a summary for military virtue.

The medieval 'knightly' sword, spawned from the short Roman *gladius* and *spatha*, really changed very little in terms of its general shape and design for more than fifteen centuries. On the point of a sword the Celtic, Viking, Roman and Medieval Knight all agreed; the double-edged blade was superior to virtually any other weapon in battle, was light yet capable of extreme power if wielded properly. And because the sword required a certain expertise to wield effectively, it supported the *élan* of the military classes in each of these cultures, a mystique and guarded base of knowledge served to maintain the privileged nature shared by their soldiers.

Mediterranean Roots

In the heyday of Mediterranean culture, the sword was a popular weapon, yet it was not dominant. In ancient Egypt, Persia, and Carthage, we find evidence of double-bladed swords. Short, stout, and generally formed from bronze, these were the tools for close in fighting. The military elite of the time preferred a bit more distance from their foe, and thus the Greek favored the pike (later adopted by the Roman philum), while much of the Classical age soldiers wielded javelins rather than swords. Bronze was, perhaps, not a superior metal for swords. Considerably softer than iron or steel, bronze (copper & tin) could be hardened by hammering, but could easily be bent or chipped.

Bronze-age Celtic Swords

Bronze swords were also used in northern Europe amongst the Celtic tribes. Thanks to their habit of discarding the swords and equipment of their fallen foes, numerous Celtic bronze-age swords remain today, some perfectly preserved in peat bogs. These swords bear a striking resemblance to their later Roman counterparts—double-edged, averaging between 21" - 30" in length, the edges roughly parallel and coming to an abrupt point. Useful for close in work for both thrusting and slashing, they were probably backup weapons used when the primary spear or axe was too large to use. Little re-

mains today concerning the technique for using such blades, and although their use is recorded, the spear seems to remain the favored weapon. Unfortunately, little enough remains that a clear picture of battle in these days is gone, and all we have today are a few mail hauberks, some swords, a couple of shields, and a handful of spear tips.

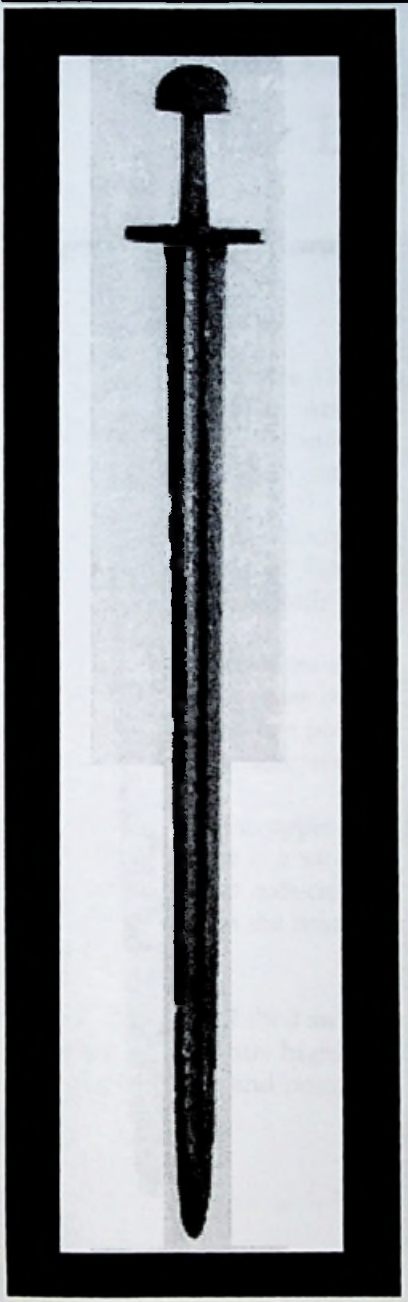
Roman Swords—
Gladius & Spatha

With the development of iron smelting technology, the Romans raised swordmaking to a new pinnacle. Factories produced thousands upon thousands of nearly identical blades. These blades were hilted with tailoring for each particular legion, offering distinction and uniformity at the same time. The 'edge' that iron gave to Roman armies is difficult to overstate; though not nearly as hard as modern steel (it is common to find references for Roman and Medieval soldiers stepping on their swords in battle to unbend them—something that seem antithetical to the raw power a sword is supposed to represent) it possesses a significant advantage over the bronze or leather armours then in use by the enemies of Rome.

Rome developed two distinct types of sword, each of which would have a significant effect on the development of swords in the Middle Ages. All Roman infantrymen, officers and soldiers alike, carried the *gladius*, a short thrusting sword no more than two and a half feet in length, with a blade less than four fingers across. These were good for both slashing and thrusting, yet were light and very effective for the close combat favored by legionaires. Roman legions would begin using the pila, or short thrusting spear, with a large oval or rectangular shield wielded in the left hand, keeping in tight formation. Crushing in upon the enemy, as the enemy broke against the wall of shields individual soldiers would draw their gladius, thrusting and slashing with the small weapon against the heaftier axe, spear, or club of their opponent.

Roman cavalry developed a longer sword, the *spatha*, for use from horseback. Here we can see a blade that would be easily confused for a 15th century sword. Perhaps 36-40" in length, these swords were also light enough to be wielded in one hand but were long enough to reach down to an opponent even given the cavalryman's advantage in height.

After the fall of Rome, iron became more scarce. Spears, axes and swords were all favored, yet the sword began to acquire more mystique during this period than the other weapons; no one yet knows why, but it happened. We see in the Song of Roland Durendal, Count Roland's magical blade, which served him well right up to the end:

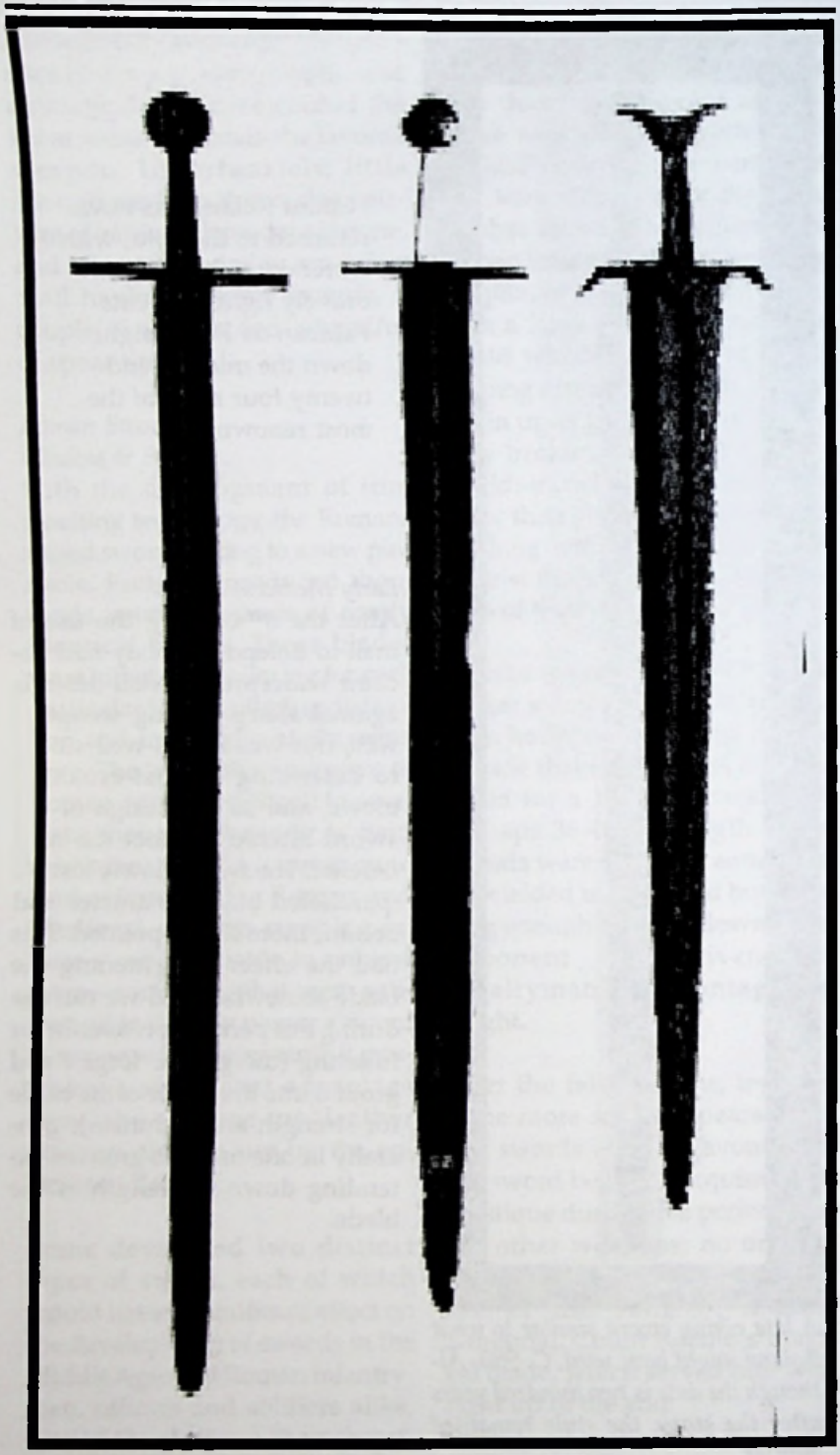


A late viking sword similar to what Roland might have used, C. 950. Although the date is two hundred years after the story, the style remained similar.

"Count Roland has now returned to the field, with Durendal in hand, he bravely fights. He cuts Faldrun de Pui straight down the middle, and twenty four more of the most renowned."

Early Medieval Blades

After the 8th century, the use of mail to defend the body had become widespread. Mail defends against sharp cutting weapons well, but was not as well suited to defending against crushing blows, and so the design of the sword altered to meet the new defense. The sword slowly lost it's 'paralleled blade' character and became more slowly pointed. This had the effect of lightening the blade somewhat, and we can see during this period a preference for fullering (the groove forged and ground into the center of the blade for strength and lightness), generally in one or more grooves extending down the length of the blade.



Swords from the 12th - 13th centuries

Throughout the 13th century, the construction of the sword changed little. Armour remained very stable during the period, mail providing the same excellent defense that had been popular for more than four hundred years.

These three swords, all in the Royal Armouries now located at Leeds, England (formerly at the Tower of London), show many features disctinctive to the swords of the period.

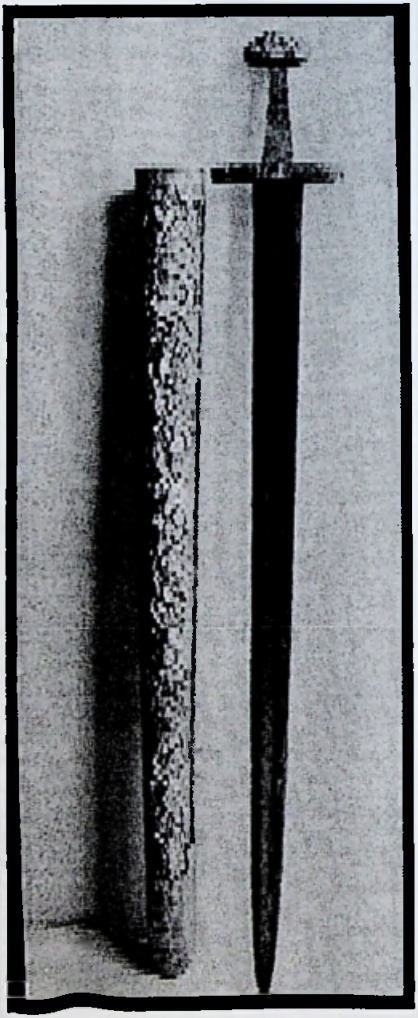
Left: The sword features a disc-pommel common to the period, long straight fuller, but more or less parallel blade lines. The tip narrows abruptly at the end to a point, and the quillions are straight. There is a heavy patina that indicates this sword might have been a river find.

Center: Dating from approximately 1200, the shape is still mostly parallel, though there is a more pronounced slope towards the point. A long central fuller reduces the weight of the blade. The pommel is vaguely shaped in the brazil-nut pattern, common even into the 14th century.

Right: Unusually hilted sword with a broad, sloping blade. The pommel and cross feature highly unusual turnings, a very rough effort at keeping the cross and pommel from interfering with the wrist.

Viking Blades

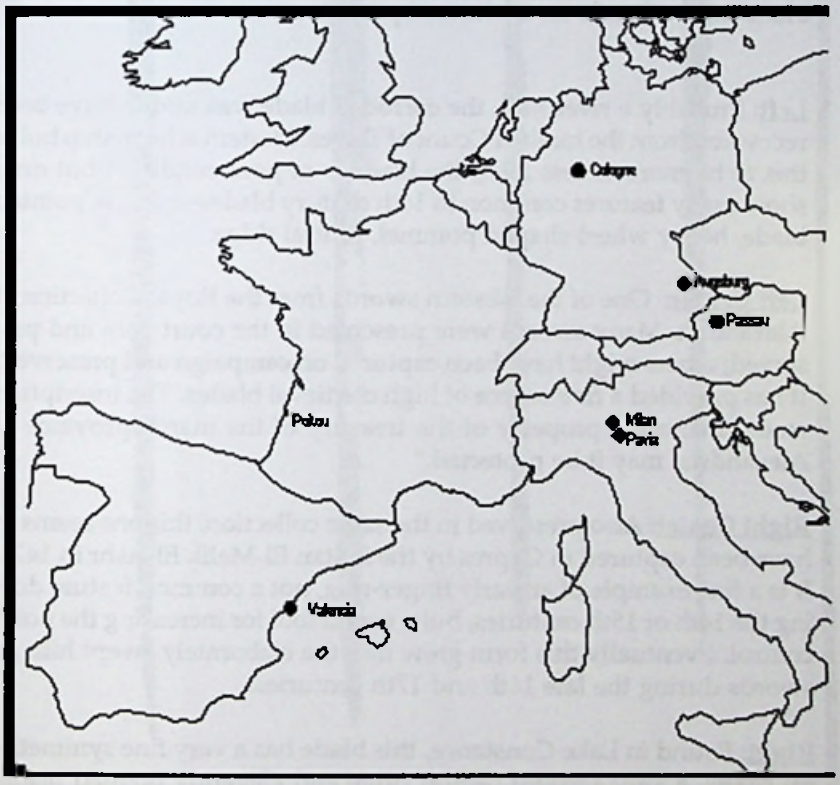
It was in the extreme North of Europe where the next advances were made. The "standard" design was maintained throughout Europe until the late 14th century, but in Scandanavia the material from which a sword was made was strikingly different. From the old Norse smithies, a technique of welding various irons, steels, and even other more exotic metals together was perfected. "Damascus" steel, so called for it was made in Syria as well as Scandanavia (and Japan) was made by folding different layers of iron, steel, and the other metals into billets that were in turn forged into blades. The resulting blade was extremely resilient, pliable and yet hard enough take a fine edge. Unfortunately, the technology to produce such blades was a closely guarded secret, and by the 11th century the knowledge had passed from Europe, though "damascus" blades were made in the Middle East continuously.



High Medieval Blades

During the late 14th century, the development of 'transitional' armour began to reduce the effectiveness of the older crushing swords. In response to the development of plate armours swords became more sharply pointed and suited to thrusting, though this was still usually forbidden in tournaments. There are references in Froissart and the other high medieval chroniclers referring to the famous sword-making centers of Europe, all of which were active by the middle 14th century: Cologne, Pavia, Poitou, Bordeau, Valencia, Passau, Solingen, Milan and Augsburg.

Sword making centers of the 14th century



Swords from the 14th Century

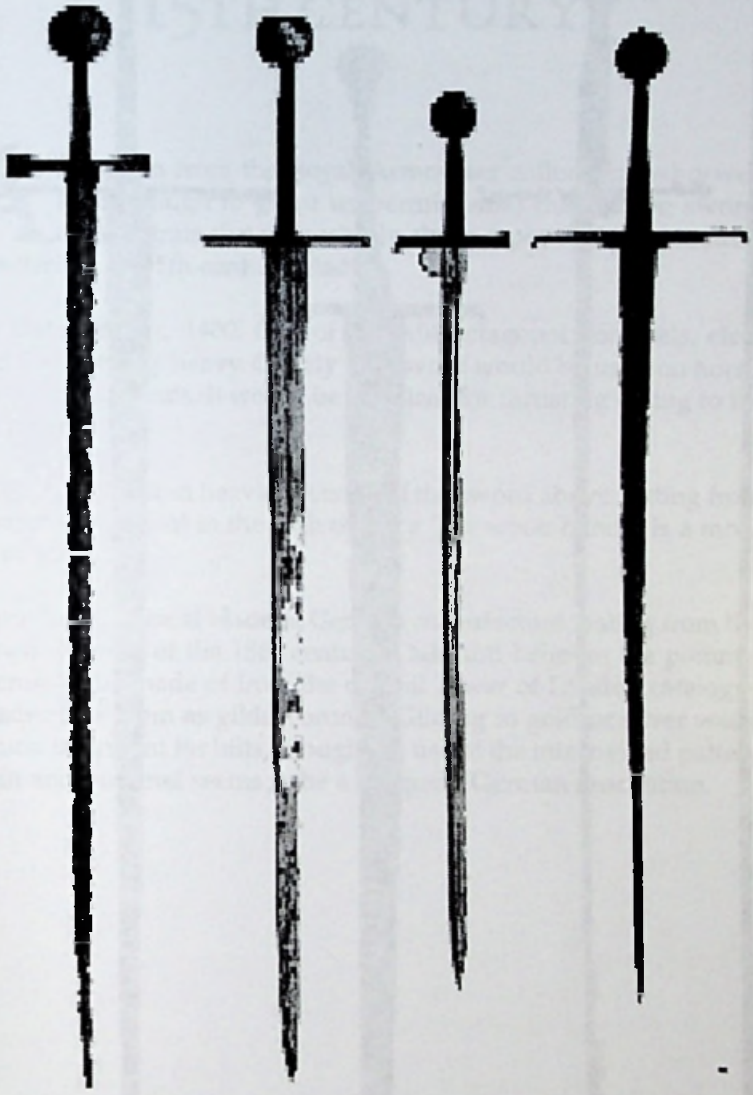
Four swords from the Royal Armouries collection show many of the changes. Swords were in general becoming lighter during the century, narrower and more pointed. This reduced the need for a fuller to lessen the weight. Additionally, the handles were often extended in length, probably to facilitate emergency grasping of the blade in two hands for additional power.

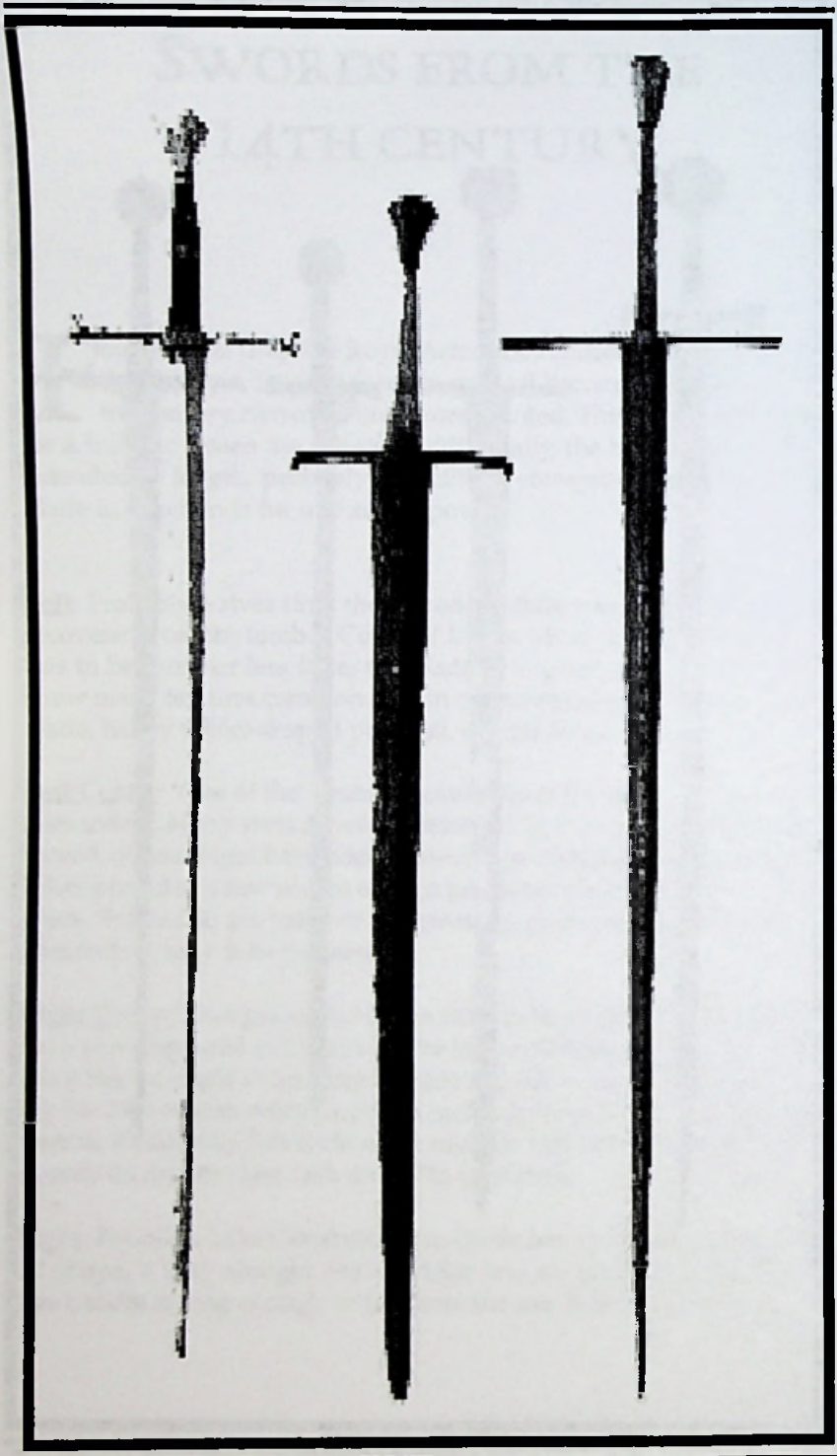
Left: Probably a river find, the corroded blade was said to have been recovered from the tomb of Count of Treves. Modern scholarship holds this to be more or less false; the blade is in poor condition but does show many features common to 14th century blades--narrow, pointed blade, heavy wheel-shaped pommel, central ridge.

Left Center: One of the Western swords from the Royal Collection at Alexandria. Many swords were presented in the court here and preserved; others might have been captured on campaign and preserved. It has provided a fine source of high medieval blades. The inscription reads "Inalieable property of the treasury of the march province of Alexandria, may it be protected."

Right Center: Also preserved in the same collection, this one seems to have been captured in Cypres by the Sultan El-Melik El-Ashr in 1424. It is a fine example of an early finger-ring, not a common feature during the 14th or 15th centuries, but a useful tool for increasing the point control. Eventually this form grew into the elaborately swept hilts of swords during the late 16th and 17th centuries.

Right: Found in Lake Constance, this blade has a very fine symmetrical shape, a very straight central ridge and elegantly pointed blade. The handle is long enough to facilitate the use in both hands.





Swords from the 15th Century

Also taken from the Royal Armouries collection (who were kind enough to grant us permissions) these three swords demonstrate the increasingly sharp taper and long handles characteristic of 15th century blades.

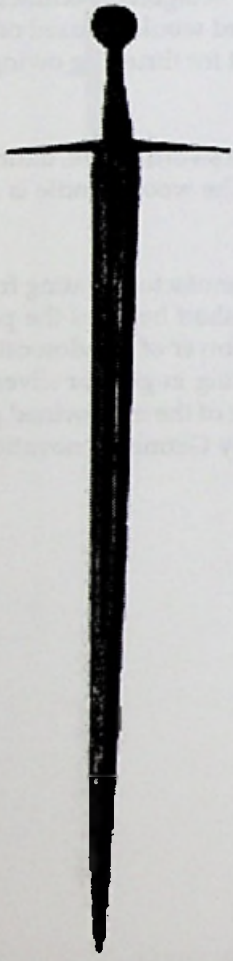
Left: Dates from c. 1400. One of the odd octagonal pommels, elongated and not very heavy. Clearly this sword would be used on horseback or in two hands. It would be excellent for thrusting owing to the long taper.

Center: A similar, but heavier version of the sword above, dating from the same early point in the 15th century. The wood handle is a modern restoration.

Right:A very unusual blade of German manufacture, dating from the last two decades of the 15th century. Oakshott believes the pommel and cross to be made of iron; the official Tower of London catalogue of blades lists them as gilded bronze. Gilding in gold or silver was a common treatment for hilts, though the use of the intertwined pattern for hilt and pommel seems to be a uniquely German innovation.

Swords & Fighting Style

Excerpted from an article by David Friedman



In Caid, as in some other kingdoms, there are mini-mum weight requirements for weapons and shields; in Caid, swords (including basket hilt and gauntlet) are to weigh at least one pound per foot and a 24" round shield is to weigh at least ten pounds. The latter requirement may, as I understand it, be waived in some circumstances.

I can see only two legitimate grounds for such weight requirements: safety and authenticity. So far as safety is concerned, minimum sword weight requirements tend if anything to make fighting more dangerous. Injuries are most likely to be inflicted by strong fighters, and in the hands of a strong fighter a heavy weapon is more dangerous than a light one. Heavy shields may protect somewhat better than light ones, provided the shield is not too heavy for the user to control. On the other hand, a heavy shield is more dangerous to the opponent, in case of accidents, than a light one. All things considered, I find it hard to see how such rules can be justified in terms of safety.

What about authenticity? One purpose of the Society is "to study the past by selective re-creation." To the extent that our rules permit, or still worse encourage, weapons whose handling characteristics are different from those of the real weapons they are intended to imitate, we fail in that purpose. If, for example, the

swords which are most effective in our fighting are so light that real medieval swords of similar weight and balance would either break or fail to penetrate mail, or if our shields are so light that in real combat they would survive only a few blows, it is reasonable to forbid both light swords and light shields and require something more authentic. So far as I know, however, those who support weight limits have never provided any evidence of what the characteristics of early medieval swords and shields really were.

Swords

Table 1 shows all of the broad swords for which length and weight are given in the three sources in which I have found such figures. Most are from the catalog of the Wallace collection in London; three are from ***Cut and Thrust Weapons*** by Eduard Wagner and 3 are from ***Treasures From the Tower of London***, a catalog compiled by A.V.B. Norman and G.M. Wilson. The final column gives the weight in pounds divided by the length in feet; a weapon for which this figure is below 1 is illegal in Caid unless the fighter's gauntlet adds enough weight to make up the difference.

Examining table 1, we find that a majority of the swords are too light to be legal in Caid; the average weight per foot is .89 pounds, also too light to be legal. If we add in a half pound gauntlet (many medieval gauntlets would have been lighter; remember that our fighting rules are based on medieval combat prior to the adoption of plate) we bring the average up to 1.05 lb/foot; even with this addition a third of the swords in the table fail to meet the requirement. The requirement corresponds more nearly to the average weight of period swords than to its minimum, hence it cannot be justified on grounds of authenticity.

Not only is the requirement unjustified, it also has at least two undesirable consequences. It provides an unreasonable barrier to the weaker fighters, especially (but not exclusively) women, by forcing them to use equipment that is too heavy for them. In addition, the requirement encourages weapons that are realistic in weight but unrealistic in balance. Since the weight of a basket hilt or counterweight counts towards satisfying the requirement, fighters can and do make swords which have light blades and heavy hilts; such swords handle quite differently from real medieval swords, which are typically blade heavy. Since it is the strength of the blade which determines whether a sword can cut armor without breaking, weight requirements, if any, should apply to the blade not to the whole sword. The present rule encourages unrealistic weapons (heavy swords balancing near the hilt) while forbidding some realistic ones (lighter swords balancing farther towards the point) thus defeating the whole idea of making rules that re-create actual medieval fighting.

What should be done? Lowering the weight requirement is only a partial solution; as long as the restriction is defined in terms of the total weight of the sword it encourges swords with unrealistic balance. The simplest solution, and the one I am inclined to favor, is to eliminate the rule; fighters will be discouraged from using unreasonably light swords by the difficulty of killing anyone with them. If that is not satisfactory, we should at least state the limit in terms of weight per foot for the blade, not for the sword; I would suggest about half a pound per foot. While it is usually impractical for the marshallate to measure blade weight directly by weighing the sword before the basket hilt, cross, or pommel weight is attached, the linear density of the blade (its weight divided by its length) can be estimated fairly easily by weighing the finished sword, locating the point on the blade at which it balances, and measuring the distance from the point of balance to the tip (P), from the point of balance to the hilt (H), and from the point of balance to the point where the additional weight (the basket hilt, cross, or cross plus pommel weight) is attached to the blade (W). In the case of a sword with a basket hilt or with both a cross and a pommel weight this point would be at about the center of the handle. In the case of a sword with a cross and no pommel weight it would be at the cross. The formula is: Density of blade x (1+(P-H)/2W) = Density of sword = weight of sword divided by length of sword.

Figure 1 shows this formula graphically; to find out whether a sword has a blade density of at least half a pound per foot one measures P,H, and W, calculates d=P-H, locates the corresponding values of d and W on figure 1, and looks at the nearest line to see what the density of the sword (its weight divided by its length) must be in order that its blade density be at least half a pound per foot. Once you have done it a few times it becomes quite easy.

Fighting Style

I have so far ignored one argument for weapon limits unrelated to issues of safety or authenticity. It is sometimes said that some type of weapon (most commonly a large shield) encourages "bad" style. Sometimes the claim is that the style really does not work, but novices adopt it because it is easier than learning to fight better and gives good results against other novices. In other cases the claim is that the "bad" style does work, but should not, that somehow it defeats and drives out "better" styles. It is rarely explained in what sense the losing style is better.

both of these arguments seem to me to be attempts by some fighters to use the rules to impose their views of how to fight on others, and as such indefensible. So far as novices are concerned, it is up to whoever is training them to ad-

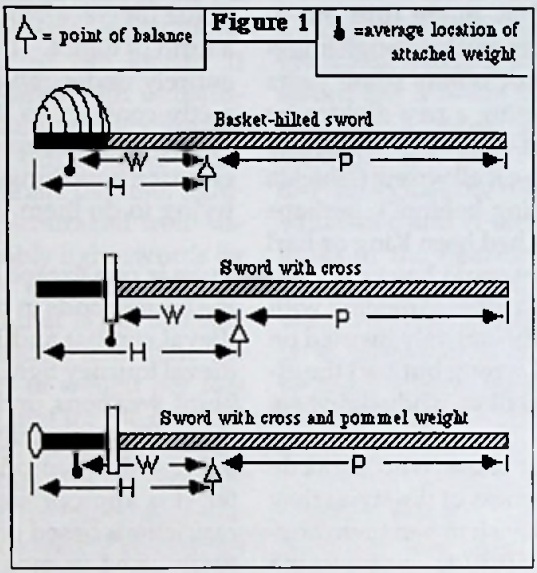
vise them as to what weapons and fighting style work; if they choose to ignore the advice that is their concern. They might turn out to be right. I can easily enough imagine myself or others some years back informing a new fighter by the name of Paul of Bellatrix that he was doing it all wrong ("shields are for hiding behind"); perhaps if one of us had been King or Earl Marshall we could have come up with rules capable of dealing with someone who not only insisted on fighting all wrong but had the effrontery to kill us while doing so.

What about those who concede the effectiveness of the styles they dislike and wish to ban them anyway? This attitude seems to me to be based on a misunderstanding of what fighting is about. It is true that good fighting is beautiful, but its beauty comes from the fighter pursuing a particular objective (killing his opponent) in an elegant, ingenious, and effective way. To claim that because certain styles of fighting are elegant they should be required even when they do not work is ultimately to argue for converting fighting into a form of dance. This seems to me entirely undesirable. It is also directly contrary to the idea of the Society as a group of people discovering how things were done by trying to do them.

There is one exception. Our fighting corresponds in part to real medieval combat and in part to medieval tourney fighting done with blunt weapons under restrictive rules. To the extent that we are interested in reproducing the latter, it is appropriate to introduce restrictions based on the rules actually used in medieval tournament. Since these rules varied from time to time and from place to place, such restrictions are probably most appropriate in special tournies held under rules based on the rules of particular historical tournaments.

Date	Length lb/oz	Weight lb/ft	Origin	Wt/length	Source
9-10th c.	30 1/8"	2/8	Nordic	1.0	Wallace
1150-1200	32 3/8"	2/10	German	.97	Wallace
13th c.	33 3/8"	1/8	unknown	.53	Wallace
1340	33 3/4"	2/8	French?	.98	Wallace
1375-1400	30"	3/0	French	1.2	Wallace
14th c.	29 3/8"	2/1	unknown	.84	Wallace
1350-1400	29 3/16"	3/3	French	1.31	Wallace
1375-1400	23 5/8"	2/8	unknown	1.27	Wallace
1380	31 1/8"	2/1	unknown	.8	Wallace
1400	34 3/8"	2/12	unknown	.96	Wallace
1460	34 3/4"	2/15	Italian?	1.01	Wallace
Early 16th	36 1/8"	3/2	German	1.04	Wallace
9th-10th c	75.5 cm	.5 kg	Nordic	.44	Wagner
9th-10th c?	89.5 cm	1.42 kg	unknown	1.06	Wagner
11th-13th	92 cm	1.0 kg	Prague?	.73	Wagner
<1432	41"	1/11	Italian	.49	Tower
1480 c.	43.2"	2/12	German	.76	Tower*

*The last entry is for a 'hand and a half' sword


= point of balance
Figure 1
=average location of attached weight
Basket-hilted sword
W
P
H
Sword with cross
W
P
H
Sword with cross and pommel weight
W
P
H

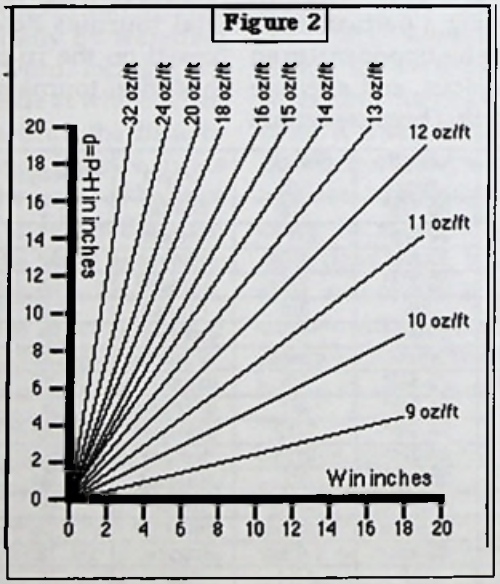


Figure 2
32 oz/ft
24 oz/ft
20 oz/ft
18 oz/ft
16 oz/ft
15 oz/ft
14 oz/ft
13 oz/ft
12 oz/ft
11 oz/ft
10 oz/ft
9 oz/ft
d=P-H in inches
W in inches
0
2
4
6
8
10
12
14
16
18
20

Iron and Steel in the Making of Armour

Theodore F. Monnich
Curator, South Carolina State Museum

Introduction

The theme of this article is the presentation of the basic materials used in the manufacturing of armour in late Medieval and Renaissance Europe; their production techniques and their properties as they relate to modern materials. This information, along with some understanding of the innovations in armour production is achieved through examining samples of metal from armour in museum collections. The analytical techniques of *metallography* (microscopic examination of a metal's crystalline structure) and *spectroscopy* (technique for determining the metal's composition) were used to determine the composition of the iron ore, and the process through which it was refined into a workable metal. The techniques used in converting the iron to steel, and then fabricating it into armour are discovered by examining the metal's *ferrite, pearlite,* and *martensite* crystal structures, and slag content. The amount of carbon present in the metal, and the manner in which the armour was heated. This research was conducted by the author, with assistance of Gary L. Hines and in comparison with the work of A.R. Williams.

Metallurgical Overview

Wrought iron is the name generally given to iron sufficiently free of carbon and other impurities. It is produced through the reduction of iron ore, or the refining of cast iron. This is done at a temperature so low that it is obtained in a pasty condition mixed with considerable amounts of *slag* (an impurity, which in medieval armour is composed primarily of iron oxides and silica, created when the heated ore reacts with the furnace's clay lining).[1] In the uneven (heterogeneous) structure of medieval iron slag causes a sloughing off of surface layers called delamination. Under magnification slag appears as dark streaks or globules separating iron layers. The shape and formation of the slag inclusions help determine the manner and temperature at which the iron was worked. Elongated formations indicate hot-working. Fractured elongations indicate hot-working followed by cold-working (i.e.: plannishing). Wrought iron has a microstructure of large white grains of ferrite (the crystals themselves are not visible, only the irregular lines of the grain boundaries).[2] Most munitions-grade armours (those mass produced for the common soldier), as well as most armours from the late 16th and 17th century were made of wrought iron. Wrought iron is useful, but relatively soft. To harden it required converting it to *steel.*

Brought iron is converted to steel by mixing it with very small amounts of *carbon*. The amount of carbon determines the hardness, as well as the brittleness, of steel. The amounts of carbon present in the steel from which armour was made varies from 0.1% to 0.6%, low to high carbon steels by modern standards.[3] Hardness was also controlled through heat treating the finished armour. This process was only barely understood in the Middle Ages and Renaissance. The use of heat treating can be detected through metallography. If the armour was cooled slowly after forging it will exhibit a lamellar structure known as pearlite (unhardened iron carbide). A moderate rate of cooling, achieved through slack quenching (quick immersion and withdrawal in water or oil) produces an acilular structure known as *bainite* (partially hardened iron carbide), harder than pearlite. Very rapid cooling, achieved by fully quenching the heated metal, results in a fully hardened, lath-like structure known as martensite (hardened iron carbide).

Processing Techniques

From pre-Roman times (Hallstatt Age 900-500 BC) through the Middle Ages and Renaissance iron ore was converted to wrought iron through *Direct Reduction* or *Bloomery Process*.[4] The ore was heated in a low, cylindrical shaft furnace, constructed f stone, fueled with charcoal, and fanned with a bellows, to a temperature of 1100-1200°centigrade and reduced directly to a spongy lump, or bloom of iron (the iron was never melted in this process; the melting point being 1550° C.) Large quantities of slag were produced at the same time. Most was allowed to run off, but a small quantity of slag remained trapped in the iron.

The resulting wrought iron could be converted to steel by leaving the bloom in the furnace for a longer period, or by using a larger shaft furnace, or *Stuckofen* so that the iron spent longer in contact with the carbon monoxide gas.[5] The bloom would absorb varying proportions of carbon thus converting it to steel (figure 1).

Another more readily controllable method for creating steel was to pack a wrought iron bar, plate or finished piece of armour in charcoal, or other carbonaceous material, and heat it for a considerable time.[6] The carbon monoxide given off by the heated charcoal would slowly diffuse into the surface of the solid iron. Known as case-carburizing, this technique was described by Theophilus in the 12th century.[7]

Another alternative in the production of steel was described by Biringuccio in *Pirotechnia* (1540) as the "Brescian" method.[8] This process was similar to the production of "Wootz" or Damascus steel in the Middle East. Wrought iron blooms, weighing between 15 to 20 Kg

were stirred in a bath of molten cast iron (a material of high content, made in a larger furnace at a higher temperature containing 2% carbon and melting at only 1150° C) for 4 to 6 hours. The dissolved carbon in the cast iron would come out of the solution and be absorbed into the surface of the heated wrought iron.[9]

Cast iron was a normal by-product of the high-bloomery (stuckofen) with its higher temperatures provided by water-powered bellows and greater air blast.[10] This liquid iron, called *Graglach,* was initially considered undesirable.[11] However it was found that by letting it drip through an air blast onto a charcoal hearth a portion of the carbon would be oxidized and run off. The liquid iron would be converted to forgeable steel. This partial decarburization of cast iron, and the resulting production of steel, is known as the *indirect* or "Walloon" process (see figure 2). The process was in use in northern France and Germany by 1451.[12] This process was also known as the "Lancashire" and "Catalan" process, and represented the first industry established in North America during the 17th century (Saugus Ironworks, Massachusetts). The production of cast iron required a larger, and more specialized furnace. The *Stuckofen* thus developed into the *Flossofen,* and eventually, in 16th century Germany, into the blast furnace, or *Hockofen* (figure 1).[13]

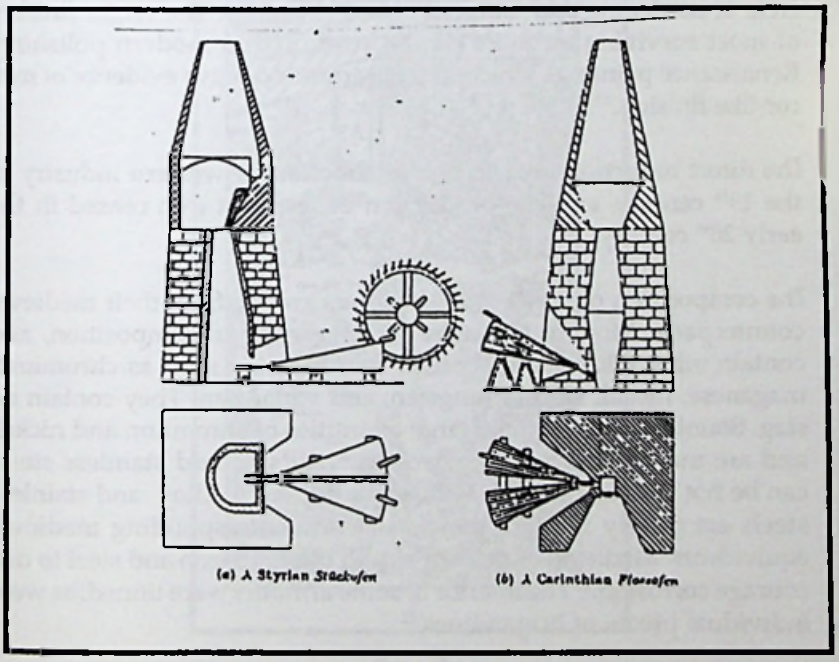


Figure 1:
Profiles of reduction furnaces
From Walzel

Comparison with Modern Steels

Both the direct and indirect process yield very heterogeneous steels (uneven distributions of carbon). These might be folded and reforged several times to homogenize (even out) the carbon content.[14] Prolonged refolding would eventually accomplish this, as the Japanese swordsmiths found.[15] The slag inclusions present in this iron and steel is unique to these processes, and results in delamination.[16] The heterogeneous nature contributes to inconsistent forging properties and performance.

The color of the polished armour, whether a gray or a bright white, made from these materials, is affected by their quality. It has been speculated by Ffoulkes that the silvery color of Maximillian-style armours, as well as their superior hardness was due to the high content of chromium and maganese in the Austrian iron ores. Such a maganese alloy steel was responsible for the superiority of Innsbruck iron, and armours from Innsbruck.[17] Spectrographic analysis has determined that the quantity of maganese and chromium trace minerals in Innsbruck armour is actually less than the amount of lead present (lead alloy would actually contribute to a softer steel). The quality and hardness of the armours produced in Innsbruck is actually due to the Innsbruck armourers' understanding of the jealously guarded secrets of hardening and tempering (heat treating). The bright finishes of most surviving armours can be attributed to modern polishing. Renaissance paintings which include armour do give evidence of mirror-like finishes.[18 19]

The direct reduction process was abandoned by western industry in the 19th century, and the production of wrought iron ceased in the early 20th century.

The composition of modern steels differs greatly from their medieval counterparts. Modern steels are homogeneous in composition, and contain other alloys to affect their performance, such as chromium, maganese, nickel, silicon, tungsten, and vanadium. They contain no slag. Stainless steels contain large quantities of chromium and nickel, and are mostly resistant to corrosion.[20] All standard stainless steels can be hot worked, though with some difficulty. Alloy and stainless steels are purely modern metals with no corresponding medieval equivalents. Medieval craftsmen would often tin iron and steel to discourage corrosion.[21] The interior of some armours were tinned, as were individual pieces of brigandines.[22]

Modern low carbon steels (mild steel) are produced in "mini-mills" utilizing induction-arc furnaces. Enormous crucibles containing steel

scrap (crushed auto bodies, etc.) are measured amounts of flux and alloying metals are subjected to an electric arc which melts the metal. The crucible containing the molten steel is removed from the arc furnace, and the metal poured into a continuous casting machine. This rolls the steel into continuous sheets or bars which are then cut to length. Mild steels are available in hot- or cold-rolled depending upon the thickness and tolerance requirements. Cold-rolled steels are slightly harder due to cold-working. Steel are available in thicknesses measured to a gauge system (Brown & Sharp, American Standard), i.e.: ...20, 18, 16, 14... gauge, thinner to thicker. This modern form of measurement was unknown in the Middle Ages. Armour was made in varying thicknesses, even over a single piece, and was hammered out of a thicker plate or billet.

Iron and Steel in Armour

Mail was the earliest kind of metal armour developed, and it remained in widespread use for centuries. In Europe mail was made until the end of the 17th century. Its use almost outlived plate armour. Such longevity lies in its ease of production, flexibility, and the protection it offered against cutting blows.[23] Its disadvantage was in the lim-

Figure 2:
Iron workers transform iron into steel using the indirect process as illustrated in Agricola c. 1556.

ited protection it offered against impact weapons, such as the mace or halberd, and missile weapons, such as the crossbow. The craft of making mail was quite separate and distinct from that of plate armour. In the German language the distinction carried over into the name for each craft, *Panzermacher* for mail-maker, *Plattner* for plate-armourer.[24]

European mail is made from iron wire, flat or rectangular in section (figure 3). This was produced by drawing a forged iron rod, or strip cut from a thin plate, through successively smaller holes in a steel draw plate (figure 4). This would be done with the iron cold so as not to affect the hardness of the draw plate. The resulting wire would be wound around a rod of the diameter of the required ring (about ¼" interior diameter being usually found), producing a long coil.[25] The ends of each ring were then flattened, punched with a hole and rivetted shut with a small wire after linking to the associated rings in the usual one-through-four pattern. Solid links, punched from iron sheet, where often interspersed with the riveted rings.

The iron rings remained soft, and could be cut by the hardened edge of a weapon. To harden and temper the mail it was prescribed by

Figure 3
A wire drawer
Hausbuch der Mendelschen Zwolfbruderstiftung, 1435-36
Stattliche Kunstsammlungen, Augsburg

Della Porta in ***Natural Magick*** (1589) to heat the finished mail garment on an iron plate over a fire (this would prevent the mail from oxidizing in the fire). When heated to a bright red (the iron's critical range, 900° C) the mail would be plunged into a vat or urine.[26] In the resulting chemical reaction carbon and nitrogen were absorbed from the urine into the surface of the mail forming a hard, *carbonitrided case-hardening*. Nitrided steels are produced in modern industry for their strength and resilience.[27]

In the production of plate armour billets or plates of wrought iron or steel were obtained by the armourer from the iron founder. These would be forged to a more workable thickness depending upon the armour to be made. Initial shaping would be done hot over stakes and anvil (figure 5). Refinement and plannishing would be done cold. The armour would be inspected by the master, and perhaps the guild for quality (Ed: See ***Chronique*** #6), before being sent to the polisher (usually a separate contractor).[28] It would then again be inspected and stamped by the Master armourer and guild, and then assembled. It would finally be passed to a finisher who would install straps and internal textile linings.

14th Century Armour

Throughout the 14th century iron plates were used to reinforce mail. By the end of the century the body was almost entirely enclosed in plate armour. Armour of this period, consisting of bascinet helmet, cloth-covered breastplate, plate covered arms and legs, and hourglass-shaped gauntlets, is described as the "International" style, as it was used throughout Europe. Most surviving examples are made of wrought iron, with finer pieces in steel.

The great helm of Ritten von Kornberg, made in Nuremburg c. 1350 (Germanisches Nationalmuseum, W2801) is of wrought iron.[29] Its microstructure reveals ferrite grains with slag inclusions. The great helm of Sir Richard Pembridge (d. 1375), probably made in England prior to 1375 (Royal Scottish Museum, no. 1905-489), is made of wrought iron which has been case-carburized (probably, but not necessarily, after fabrication).[30] The helm was then slack quenched to form a steel outer skin with an unaffected core. According to published data on case-carburization, this helm would have taken 2 to 3 hours at 900° C. The great helm in the Royal Armouries, formerly in the Tower of London, (TLA IV.600) is almost identical to the Pembridge helm (figure 7). It is probably of English manufacture, c. 1370. It is made from low carbon steel, made through folding a heterogeneous steel (0.2% carbon) and held at an elevated temperature in an attempt to homog-

enize it. After fabrication an unsuccessful attempt was made to harden it through quenching.[31]

The velvet-covered breastplate, of Milanese construction c. 1380-1400 (Bavarian Nationalmuseum W195) is made of a medium carbon steel that underwent heat treating, and an abbreviated slack-quenching following fabrication.[32] This is a high quality piece of armour for the period. The hourglass gauntlet of late 14th century manufacture (GNM W1019) is made of steel.[33] Its microstructure reveals a breakdown of pearlite into ferrite and carbides as a result of being heated for too long a time. A German bascinet with klappvisier, c. 1380 (Kolnisches Stadtmuseum, W2) was hot-forged from a steel of variable carbon content (up to 0.5% near the surface).[34] The helmet might have been case-carburized, or made from a heterogeneous piece of steel.

Most armour from the 14th century displays little more than wrought iron composition. Such pieces analyzed include the Braybrook helm, English c. 1390, a bascinet (Sion Ed: See Chronique #12), and another bascinet (Veste Coburg). Where the armour was of steel its origin in most cases was case-carburization of wrought iron with possible subsequent folding.

15th Century Armour

The 15th century saw the full flowering of the armourer's art. It is referred to as the "White Period," in reference to the brightly polished surface of the full suits of armour. At this time the production of steel represented the highest form of technology. The greatest refinement of this technology was the development of arms and armour.[35]

After the first quarter of the century regional styles became more pronounced. Italian armour reflected the humanist sentiments of the growing Renaissance. This can be seen in the rounded, utilitarian and robust appearances. German armours of the period remain rooted in the "gothic" tradition of the Middle Ages with their vertical linearity, wasp-waist, and sprays of elaborately embossed ridges (flutes).

While munition-grade armour continued to be made of wrought iron, most finer armours were forged from steel. There is some evidence of case-carburization following fabrication. Most, however, are made from folded heterogeneous steel made through direct reduction. During this period the armourers of Innsbruck and Augsburg took the lead in armour-making technology with their closely guarded understanding and application of heat treating.

A pig-faced bascinet, of Italian workmanship c. 1400 (GNM W1562) is

fabricated from wrought iron.[37] Both the skull and visor were analyzed. An Italian armet c. 1440 (Metropolitan Museum of Art, 42.50.2) was manufactured of a heterogeneous low to medium carbon steel that showed some degree of quenching, but not controlled heat treating.[38] This indicates that the helmet was probably forged hot and quenched prior to completion. It appears to be a folded, and reforged, bloomery steel. A barbuta with cinquefoil makers-mark, Italian c. 1460-80 (GNM W1272) is made from a heterogeneous, low carbon steel (0.2% C) which shows signs of improper long term heating.[39] Following hot-forging this piece was probably allowed to air cool. A kettle hat, Italian from the second half of the 15th century (MMA 14.25.582) was manufactured from a heterogeneous, medium carbon steel (0.4% C).[40] The presence of elongated slag inclusions indicate possible hot-forging. Like the barbuta, this helmet was kept at an annealing temperature (600° C.) for some time following fabrication. It may have been the practice of some Italian armourers to allow the just forged plate to remain in the hot charcoal of the forge, perhaps to relieve the stresses formed during forging (normalizing). A sallet, probably Milanese c. 1460-1480 (TLA) formerly at Churburg, is made of a heterogeneous, low carbon steel (Figure 8).[41] The helmet was forged hot, and quenched to harden after fabrication. The distinction of this helmet being quenched for hardening is based on the martensitic microstructure. No other heat treating followed.

A breastplate, German, c. 1480, formerly in the Morton Hall Collection (TLA), is made from a mostly homogenous steel (Figure 9). Some

Figure 5:
Emperor Maximilian I visiting Conrad Seusenhofer in the court workshop
Woodcut by Hand Burkmair, 1514

isolated slag is present, but no discernible signs of folding.[42] This may be a stuckofen steel, or one created through the Walloon process. A sallet, German mid-15th c. (TLA), is manufactured from a fairly homogenous, medium carbon steel (0.6%C).[43] The helmet was forged hot and allowed to cool slowly. As with the breastplate, only a small amount of slag is present. A visored sallet, probably made in Wiener Neustadt c. 1490 (TLA IV.499) was fabricated of wrought iron, then case-carburized on its outer surface to form a steel skin.[44] This was hardened by heating (to approximately 900° C) and fully quenching in water. A couter (elbow defense) from an armour made by Lorenz Helmschmied, for Archduke (later Emperor) Maximilian I, in Augsburg c. 1495 (Mann collection), was fabricated from a medium-high carbon steel (0.6% C).[45] After fabrication it was hardened by quenching at a rather low temperature (perhaps 700° C) and then carefully reheating to temper it. This two-stage heat treatment was the key to the superiority of the German armour at the time, and displays the use of this technology in the renowned Helmschmied workshop.

The German armourers of the 15th century achieved an understanding of the technology of controlled heat treatment of steel enabling them to produce armour of superior hardness. The Italian craftsmen utilized steel in their manufacturing, and their work exhibits signs of quenching to harden the steel. However, there is no evidence of the use or understanding of the more complex two-stage hardening and tempering.

16th Century Armour

As the Italian Renaissance spread into northern Europe the German and Italian styles merged. Provincial centers of manufacture began having more of an impact on the armour market. Transplanted German and Italian armourers established workshops in Flanders and Greenwich, being lured into the courts of Burgundy, France and England. The quality of steel produced improved with the use of the indirect process. In 1550 a rolling mill, for producing sheet metal, was erected in Nuremberg.[46] Throughout Europe, however, iron and steel continued to be produced through direction reduction. Wrought iron continued to be used in the production of munition armour. In the late 16th and throughout the 17th century wrought iron was used in the fabrication of most armour; a clear distinction of the decline of the armourer's craft.

The armet from the silvered and engraved armour of Henry VIII is of Italian or Flemish manufacture c. 1514 (TLA II.5). It was hot forged from heterogeneous steel.[47] The steel was probably made by piling together pieces of iron and steel and forging them into a bar. During the

silvering process the armour was heated for a considerable time to 600° C. weakening the steel structure. A visor from an armet of Flemish make c. 1520 (TLA IV.579) is made from a similar heterogeneous steel with varying carbon content (0.2% - 0.7% C).[48] The structure of the steel contains very elongated slag inclusions indicative of hot-working, as well as folding to homogenize the steel. A square-toed foot defense, from an armour of Henry VIII, manufactured in Greenwich c. 1530 (TLA), was made from a fairly homogenous medium carbon steel (0.6% C) which was air-cooled after fabrication.[49] Present in the structure are a number of large, elongated slag inclusions. These are somewhat indicative of bloomery steel.

The right gauntlet from a garniture, made for King (later Emperor) Ferdinand I at Innsbruck by Jorg Seusenhofer in 1537 (BNM W.648), was made from a homogeneous medium-carbon steel which, after fabrication, had been quenched and then carefully reheated to temper the hardened steel. This, again, indicates an understanding of the closely guarded two-stage heat treating process. This armour was compared to the hardness of three others in the Imperial Armoury in Vienna by Helmschmied c. 1505 (A240), Conrad Seusenhofer c. 1511 (A244), and the *Aldergarniture* by Jorg Seusenhofer c. 1547 (A638). The hard-

Figure 6:
Armor Polisher
Hausbuch der Mendelschen Zwolfbruderstiftung, 1571
Stattliche Kunstsammlugen, Augsburg

ness was similar in all four armours, and indicated controlled heat treatment.[50]

A crinet (neck defense) from a horse armour, made in Nuremberg by Valentin Siebenburger c. 1540 (BNM W644) was hot forged, then air cooled. It is fabricated from low carbon steel (0.2% C).[51] The armour of Duke Albrecht V, made by Stefan Rormoser in Innsbruck c. 1560 (BNM W1479), was made from a relatively homogenous steel of medium to high carbon content. Following fabrication the armour was hardened by quenching, and then tempered (two-stage process).[52] The blued and gilded foot-combat armour, one of a group of twelve, a Christmas present from Electress Sophie to Elector Christian I of Saxony in 1591, was made by Anton Peffenhauser of Augsburg (Figure 10). The armour is made from a heterogeneous steel, which after forging was decorated with etching, bluing and gilding. The bluing and gilding involved heating the armour to 300° C (the temperature at which steel oxidizes to a deep blue). The mercury in the applied gold amalgam would also volatize causing the gold to adhere to the steel. The armour could have additionally been tempered in this process.

The early 16th century Flemish pieces displayed similar folded iron/steel structures. The Greenwich toe/cap displayed a steel similar to that produced in Innsbruck. Records indicate that Innsbruck steel was imported into England in the 16th century.[53] Its use would almost certainly be found in the royal armour workshop at Greenwich. Those pieces manufactured in Innsbruck and Augsburg consistently display the use of quality steel, and two-stage heat treating technology. Evidence of the use of this technology by Italian craftsmen remains lacking.

Conclusion

The production of iron and steel for use in armour evolved throughout the Middle Ages and Renaissance. Medieval iron and steel is different from modern steels. The closest equivalents are mild steel (less than 0.25% C) through medium-high carbon steel (0.26% to 0.6% C), free from alloys present in other commercial steels. The differences between the Medieval and modern steels affect the forging properties and performance of the metal. These differences are a result of the manner in which the steel was produced.

Theodore F. Monnich is curator for the South Carolina State Museum, is an active member of the SCA, and is an armourer as well.

Notes

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[18] David Edge and John Miles Paddock, *Arms and Armour of the Medieval Knight* (New York: Crescent Books, 1988), 106.

[19] The editor of Chronique would like to add that the Milanese armours in the Sanctuary of the Madonna delle Gratze in northern Italy have added a key component to our understanding. Many full 15th century harnesses were found in the rafters of the sanctuary, undisturbed since the 15th century. When the armour was taken apart for cleaning, several armets were found to have been mirror-polished, evidenced by the brow area under the reinforce. The original finish remained even through four centuries.

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[53] Ffoulkes, 38.

The Company of Saint George

Be it known that the Company of Saint George, desirous of testing their prowess, courtesy and eloquence in the lists at Pennsic War, do hereby offer challenge unto the noble men who would meet them upon the field.

First: That this passage of arms is to be held for the joi de combat, for honor, rather than for the base spirit of simple victory.

Item: : That the Company of Saint George will hold themselves ready for combat on Thursday, August 15th, at the hour of Noon at the side of the battlefield, surrounded by the wooden list enclosure.

Item: That all who might seek out a challenge with the Company record their challenge during the morning, so that a time might be given.

Item: All combats shall take place according to the rules to be posted along side the field--knightly weapons only, single-part challenges facing one of our number over the barrier, in a series of counted blows thrown (3, 5, 7, or 9), in the field in a traditional SCA style, or to a group combat.

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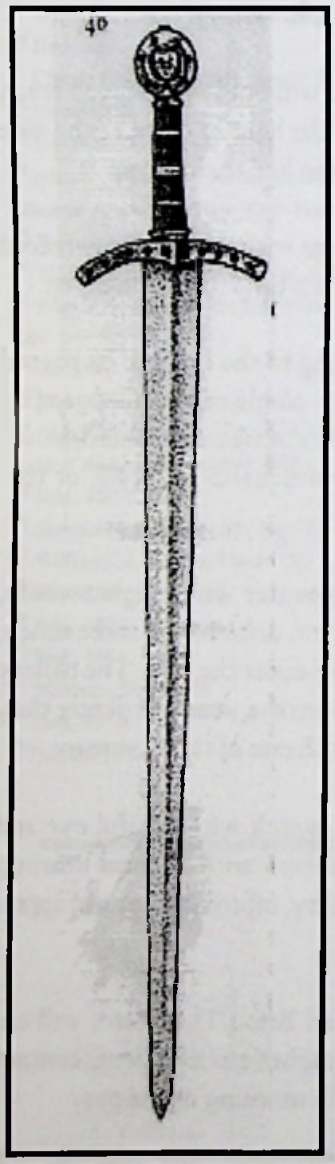
Item: The Chancellor of the Company, Earl Brion Thornbird, will encamped with Duke Elihau in the Starry Knights encampment, contact him for more information or register on the morning of the pas.

Reveiw

Records of the Medieval Sword

Ewart Oakshott



Published in 1991 by the redoubtable Boydell Press, this useful book provides the most comprehensive pictorial archive of medieval swords available to the re-enactor or medieval scholar.

Three hundred pages of material offer Mr. Oakshott's classification of swords, based largely on hilt types. Each blade is presented on it's own page, placing it within a family of swords, a technique that assists in dating. The photographs are exellent; drawn both from swords in private and public collections.

The reader will find a special treat in the appendices--there is a long, accurate piece that discusses the forging process of swords, drawn from the experiences of several very fine reproduction artisans.

Additionally, there is a long, detailed analysis on the 'supposed' sword of Edward III, sold a few years ago by Ralph Parr. I had the pleasure of handling this very blade at the Park Lane Arms Faire in London; it was completely astounding; graceful in the extreme, yet deadly serious--a tool one could use all day. The pommel, thicker than you might expect, balanced out the blade perfectly. It had been believed that this blade was a composite forgery, an 18th or 19th century hilt, of outstanding quality, attached to a very very nice 14th century blade.

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