Fig. 1. Signet of Q. Cornelius Lupus. On sard. In the Waterton Collection.
(Double the original size.)

Fig. 2. The Gallic Mars. From a Coin of Constantine.

Fig. 3. Combat between Romans and Gauls. From an Intaglio in possession of Mr. C. W. King.
(Double the original size.)

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SIGNET OF Q. CORNELIUS LUPUS.

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ANTIQUE gems, though chiefly valuable (in respect to their subjects) for their illustration of mythology, religious and poetical, often present us, besides, with important memorials of history preserved in them alone. Of such records, perhaps the most valuable that has ever come to my knowledge is the sard from the Waterton Dactyliotheca, here figured of twice the actual size (fig. 1). This gem, somewhat exceeding the customary dimensions of a ring-stone, is engraved in a singularly bold and large manner, with two distinct devices occupying the field: a horse's head and neck, bridled and couped (to use the heraldic term), and two large Gallic shields covered with barbaric ornamentation placed *en saltire*. In the field is deeply cut the legend Q. CORNELI LVPI.

That the shields can be no other than Gallic is certain, from their peculiar oblong shape, that perpetually strikes the eye in the various representations of armed Gauls or their spoils, so frequently affording the types upon the denarii of the Roman conquerors during the later ages of the republic. The *horse*, prancing at freedom in the field, was the established national emblem upon the autonomous gold coinage of the Gauls; one cannot help suspecting that in the design before us the *bridle* is purposely introduced to mark the subjugation of the fiery spirits who assumed him for their type. In their choice, it is not improbable that a rebus was intended upon the national appellation, either invented at the time or subsequently perceived and embraced—for *Gaul* is yet current in German for *horse*, though in a disparaging sense.

The duplication of the shields is intended, according to the

rule in such cases, to proclaim to the world that the trophy was won from *two* allied peoples of the Gallic stock. Now this circumstance it is, that, coupled with the family name of the owner of the signet, enables us to discover, with more than conjectural accuracy, the event commemorated by this remarkable intaglio.

As our starting-point, it must be assumed for certain that a member of the *gens Cornelia* would adopt for his own signet-device the glorious achievement of some ancestor of his own family, or, in preference, one wherein he had himself played the chief part—just as we know that the greatest of this very family, Sulla, took for his signet, first the "Surrender of Jugurtha," and afterwards the "Three trophies" commemorating his victories over Mithridates, the crowning glories of his ever successful military career—an example subsequently followed by Pompey.

These two conditions bring the attribution of the particular event within very narrow limits of time, for, on referring to Livy for the victories illustrating the Cornelian name in connection with the Gauls, we find none with which all the particulars of our gem exactly tally, except the great battle won by the Consul C. Cornelius Cethegus over the confederate Insubres and Cenomani, upon the banks of the Mincio, in the year B.C. 197. Of the Celts, 35,000 men fell in the action, having lost it partly through the foul play of the Cenomani, gained over the night before by the promises of the wily Roman, who had vowed a temple to Juno Sospita in event of his success.

In the same campaign his colleague, Minucius, reduced the Boii, who had made common cause with the Insubres, but had deserted them before the battle for the sake of protecting their own territory. Amongst the prisoners was Hamilcar, a Carthaginian, the prime mover of the revolt against the Romans.[1]

The duplication of the shields is conclusive evidence, as already pointed out, that the Gallic army was raised from two tribes combined, not from one singly. But for this restricting circumstance I should have assigned the occasion to the vastly more important victory gained some forty years later (B.C. 159) by another of the *gens*, the Consul P. Cornelius Scipio Nasica, over the single nation of the Boii.

[1] Liv. xxxii. 30.

Livy's account of the Boian spoils, as paraded through the streets of Rome upon his triumph, afford a truly interesting glimpse of the state of civilisation to which these Italo-Celts had thus early attained. In this triumph he carried in parade upon the Gallic waggons, the arms, the standards, and the spoils of every kind, gold vessels of Gallic make, and together with the prisoners of note were led in procession herds of the captured *horses*. The victor displayed 1,470 *torques* of gold, 245 pounds by weight of gold (coin); of silver, both in ingots and wrought up into plate after the native fashion, and by no means unskilfully, 2,340 pounds; and likewise of the coinage *bigati*,[2] 233 pounds by weight.[3]

"Lupus" was a favorite *cognomen* in the *gens Cornelia*: thus we find, in the year B.C. 156, P. Corn. Lentulus Lupus Consul, and he may very well have been son of the Q. Corn. Lupus, whose name is only preserved from oblivion by this gem. The latter was, in all likelihood, a near relative of the Consul Cethegus, and had held some important post under him in the army gaining that victory, the credit of which appears to have been in some measure ascribed to him by popular consent. Had it not been so, he would hardly have ventured to claim for himself so much of its glory as to appropriate its trophies for his own personal device. The peculiar execution of the intaglio also points to the same date as does its subject, for it exhibits the grandiose yet somewhat careless manner of the Campanian engravers, such as cut the dies for the first silver and gold coinages of the Republic.

Some observations upon the military equipment of the Gauls will not be out of place here, for the peculiar fashion of the shields upon our gem remarkably illustrates the description given by Diodorus Siculus of that portion of their defensive armour. Julius Cæsar has, strangely enough, omitted all mention of the arms or costume of his Gallic adversaries; he probably considered them too well known to his Roman readers to require any further notice in the sketch he gives of their institutions. But Diodorus, writing only a few years later, and in *Greek*, for the world at large, has fortunately, to gratify the curiosity of those more

[2] The primitive Roman denarius having for reverse a *biga*.

[3] Livy, xxxvi. 40.

remote, gone into the minutest particulars of the subject. His account applies equally well to the period of our Lupus, for the Gauls had merely been rendered tributary to Rome by Cæsar's victories, continuing unchanged in everything else until after the re-organisation of their country by the Emperor Claudius.[4] "They wear a curious kind of dress, dyed tunics ornamented with colours of every possible sort, and trousers, or, as they themselves call them, *braccæ*. Over these they wear, fastened by a fibula, large striped mantles (*sagi*), of a shaggy stuff in winter, of a smooth in summer, chequered all over in squares, of many colours set close together. For armour they use shields as tall as the man, and painted over after a peculiar fashion. Some of these shields have figures of animals in relief of bronze, not merely for ornament, but also for defence, and very well wrought. They wear bronze helmets, having lofty projections rising out of them, and which impart a gigantic appearance to the wearers; for upon some are fixed pairs of horns united, upon others the heads of birds, or of beasts, forged out of the same metal. They have trumpets of a peculiar form and of a barbaric fashion; these they blow and produce a hoarse sound, well suited to the din of battle. As for body-armour, some have shirts of iron chain-mail; the rest are content with that given by Nature, and go into battle naked. Instead of the sword (ξίφος) they have claymores (σπάθαι) hung from long iron or bronze chains, and depending along their right side. Their tunics they gird in with belts, overlaid with gold or silver. They carry spears, or, as they call them, *lances*, with heads of iron a cubit in length, and even more than that, the width of the blade being little short of two palms (6 in.). For their swords are as long as the darts used by other nations, whilst the heads of the spears they use are actually longer than other people's swords. Of these spear-heads some are forged of a straight pattern; others have a wavy indentation all along the edge, so as in striking not only to cut, but to mangle the flesh, and in the withdrawal of the spear to tear the wound."[5] The last sentence but one has been entirely misunderstood by M. Desor, in his Memoir on the Lacus-

[4] Who destroyed their nationality by making them all Roman citizens (he was their fellow-countryman in virtue of his birth-place), and abolishing the caste of Druids.

[5] Diod. Sic. v. 30.

trine Antiquities of Neufchâtel,[6] and by some other writers following him. Not perceiving the drift of Diodorus's comparison, they, very needlessly, have recourse to the usual expedient of supposing a corruption, or interpolation in the text. But it is obvious to me that the historian here intends to exemplify his previous remarks, by comparing the Gallic spear-heads with the Greek and Roman swords, never exceeding eighteen inches in the blade, and the long claymore, of a yard and more in the blade, with the total length of the javelins of other nations, in which latter point a little rhetorical exaggeration may well be admitted. The cut (fig. 2), taken from a coin of Constantine (formerly in my possession), minted at Trèves, exhibits the Gallic Mars, equipped with the national *lancea*, with its enormously dilated blade and cuspidated barbs: a singular proof of the persistence of the fashion. And again, on many other coins of his sons,[7] from the several Gallic mints, the cavalier on the obverse wields a lance fully two feet in the head, to judge from its relative proportion to the rest of the design. An incident in the boar-hunt, described by Apuleius, where the hero's horse is hamstrung by a blow from a *lancea*, informs us that this weapon was used for striking with as well as stabbing, like the mediæval Welsh glaive, or the Italian spontoon.

The exact arms described by Diodorus are often displayed upon the consular medals, notably upon the very common denarius of the family *Furia*, which exhibits a trophy formed of the horned helmet, the mail shirt, and the peculiarly-ornamented oval shield, together with the huge wooden trumpet (*carnyx*), terminating in a horse's head. On another denarius (*Servilia*), a gigantic naked Gaul with the *horns* above-mentioned fastened upon his head, appears aiming, back-handed, with his long blade, his "swashing blow" at his diminutive Roman antagonist. This is the very scene so vividly portrayed by the old annalist, Claudius Quadrigarius, that the philosopher Favorinus declared he could never read it without becoming an actual spectator of the combat. The peculiar attitude of the Gaul, and his strange guard with his shield aptly illustrate the "status" and "disciplina sua" of that early author.[8] The "Cornuti"

[6] Les Palafittes du Lac de Neufchâtel, Paris, 1865, p. 79.

[7] As well as of the Gallic tyrants, Magnentius and Decentius.

[8] The whole passage is preserved by A. Gellius (ix. 13), and well deserves the encomium he passes upon it.

and "Braccati," as well as the "Celtæ," are named by Ammian as forming distinct corps in Julian's army, which had been chiefly levied in Gaul. The first appellative will at once indicate the origin of the unique *horned* head-piece in enameled bronze, found some years back in the Thames at Waterloo Bridge (now in the possession of the Conservators of the river), which, being mistaken for a mediæval relic, goes, in virtue of those appendages, by the name of the "Jester's Helmet." And, to conclude this part of the subject, I know of hardly any other historical monument due to the engraver's art more interesting than the spirited representation of a combat between Romans and Gauls, drawn by a contemporary hand, of which a very faithful copy is given in the woodcuts that accompany this memoir (fig. 3).

These unwieldy swords were made of untempered iron, as we learn from Polybius. "Their swords have only the first down-stroke, that is fatal; after this they immediately become unserviceable, bending both longways and sideways to such a degree that the second blow is entirely without effect unless the owners get the chance to retire, to press them against the ground, and straighten them with the foot. . . . The Gauls are only able to fight in loose order, because their sword has no point at all."[9]

The weapons[1] recently discovered in the fosses of the celebrated lines drawn by Cæsar around Alesia, afford a striking illustration of these passages of Polybius. Amongst them the swords are of incredible size according to Grecian notions, being of three feet and more in length. They are *pointless*, with their flat broad blades of the same width throughout; the body forged from a very stiff, or fibrous, iron ("très-nerveux,") hammered out lengthwise, on each side of which is welded a cutting-edge of *soft* iron, with the evident object that the owner might be himself able, after using it, to repair any damage done to the edge, by hammering it up again cold, exactly as our mowers do to their scythes when they get notched by striking against a hard substance.[2]

[9] Polyb. ii. 33.

[1] See Les Armes d'Alise, Annales Archéologiques for 1864, giving photographs of the most noteworthy examples.

[2] This discovery supplies the etymology of "acciaio," and of "acier," *steel*. In fact, *acies* must have been used in the same sense in classical Latinity; for Pliny, to express the superiority of the Indian iron, terms it "mera acies," an

On the other hand, the few Roman swords found mingled with them are of less than half their measure, have a rib down the middle, giving them great stiffness, and taper gradually from the hilt to the point.

The lance-heads accompanying the swords in naturally much greater numbers, fully justify Diodorus's astonishment at their magnitude and strangeness. Some are two feet long, and therefore exceed in that respect the old classic sword; and, above all, exhibit that configuration of the edge he so particularly remarks, many having a *flamboyant* outline of extreme elegance; others, again, the well-known myrtle-leaf shape of the primitive bronze sword.

These iron lance-heads resemble their bronze predecessors of the same kind in having the centre-rib, the prolongation of the socket, forged *hollow* (a masterpiece of the smith's craft), a make inseparable from all spear-heads *cast* of bronze. This arrangement diminished the weight, though not materially the strength, of these otherwise unwieldy weapons, which may, as above remarked, be compared in their character to the *spontoons* of the fifteenth and sixteenth centuries. The metal of them, upon analysis, proves to be true *steel*.[3]

These Gallic lances, retaining the elegance of form derived from much earlier ages, strikingly contrast with the Roman *pila* lying beside them—ill-favoured, murderous-looking weapons, whose only object was to kill. These likewise can still be accurately described in the words of Polybius, to be found in his dissertation upon the military system of the Romans. They are long solid shafts of iron, of a spit-like pattern, clearly exemplifying Virgil's "veru Sabellum," and the term "verutrum" given to the national weapon. These "spits" terminate in small solid pyramids (sometimes barbed at each corner of the base), sometimes in cones, or small heart-shaped points; the other end being a tang, either pointed or chisel-shaped, for sticking into the shaft, which to prevent splitting was secured by iron collars slipped over it. The latter demonstrate the diameter of the shaft itself to

expression exactly answering to our "sheer steel."

[3] The reader desirous of further information on this subject will find numerous examples of these weapons belonging to the Helvetic Celts of the same ages in Mr. Lee's valuable translation of Dr. Keller's treatises on the Lake Dwellings of Switzerland.

have been 28 mm., (about one inch) ; Polybius giving the same as τριὰ ἡμιδακτύλια, or $1\frac{1}{4}$ inch nearly.

It is curious to observe how completely the *pilum* went out of use under the Cæsars ; for, although it may be seen carved on certain monuments at Mayence of the reigns of Augustus and Tiberius, and has been found there in Roman sepulchres of the same date, yet on all public monuments of importance, like the triumphal arches and columns, the soldiers carry the long Greek spear, the Roman "hasta," which indeed from the beginning was the weapon of the second line in their battle array, hence termed "hastati." But, strange to say, in Byzantine times the old *pilum* reappears quite unchanged, in the distinctive arm of the Franks, the "angon," and secured to those barbarians the same success in war that in its pristine days it had brought to the Roman Legionaries. But so entirely obsolete had its form grown with their degenerate descendants, that Agathias describes it, and its direful efficiency, with unbounded wonder. His account, coupled with the specimens exhumed by the Abbé Cochet from the Merovingian tombs, leaves no doubt as to the identity of the angon with the former pilum.

It is almost needless to add, after what has been said above, that no bronze weapons accompany these relics of the times of Julius Cæsar. And, to go farther back, that the Gallic sword, at the time of their first irruption into Italy, was precisely the same as Polybius describes, is proved by the precautions taken by Camillus (detailed by Plutarch in the last chapters of his Life), in order to spoil its "soft-tempered and thin iron." Following his example, at the great battle described by Polybius in the chapter above quoted, the centurions armed the first line with the *hastæ* of the second, instead of their own missile pila, against which the Gauls bent their swords, and so being disabled gave an easy victory to the Romans. It is hard to imagine how these monstrous weapons so easily disabled in action, so useless at close quarters, came to supersede the elegant leaf-shaped, cut-and-thrust swords of the Bronze age ; the latter being certainly, both in material and figure, better edged and more efficient than their successors in untempered iron. Nevertheless the metal bronze for warlike purposes had gone out of use in Europe long before the period when authentic

history begins; Hesiod speaking of its employment for such purposes as marking the Age of Fable; and Lucretius following him to the same effect,—

> "Inde minutatim processit ferreus ensis,
> Versaque in opprobrium species est falcis ahenæ."

Though the Gauls had not in the age of Polybius learnt the art of tempering iron, yet their neighbours, the Celtiberians, were perfect masters of the secret when the Romans first came in contact with them, and borrowed from them the "Spanish sword" as the most perfect model of its class. Diodorus describes the Celtiberian sword as "so well hardened that nothing can withstand its stroke, neither shield, nor helmet, nor bone."[4] The process was simple enough,—to bury thin plates of iron in the earth until all the baser particles were consumed by the rust, and nothing but the pure metal remained.[5] Later, Bilbilis was as famous for its sword-blades as Toledo now; their excellence being ascribed to some peculiar quality in the icy water of its river, the Salo, as Martial informs us,—

> "Pugio quem curva signat brevis orbita vena,
> Stridentem gelidis hunc Salo tinxit aquis."

This consideration brings us to a curious subject, but to which antiquaries seem to have paid very little attention. Every intelligent reader of Homer must have been struck at the facility with which his heroes' spear-heads of *bronze* (for only arrow-heads with him, and that but rarely, are made of *iron*) pierce through the cuirasses and shields of the self-same metal. Though something must be allowed for the superior strength of the Heroic sinews, yet the poet, a true painter of nature, would not have so frequently repeated the incident as he does had it set at defiance the daily experience of his hearers. The mention of it, therefore, shows that some method of tempering bronze almost to the hardness of steel was then commonly practised. And this inference is supported by examples actually remaining to us from Homer's age, however remote we please to throw that age back. Sir Gardner Wilkinson obtained a bronze

[4] V. 33.

[5] A method still recommended for obtaining a razor of most exquisite temper when reground after disinterment.

dagger, sheath, hilt, and all in perfect condition, from a mummy-pit, which rivals steel in hardness, sharpness, and elasticity: the last a quality that, in such a composition, astonishes the modern metallurgist.

A century ago the attention of Caylus[6] was arrested by this very subject, and he has detailed some interesting experiments he made as to the possibility of hardening not bronze, but the much softer metal copper. The question was first suggested to him by his observing the hardness and temper of some Celtic swords (but supposed by him, after the fashion of his times, to be Roman) found at Gensac, which, when analysed, proved to be nothing but copper with a small native alloy of *iron*, but no trace of tin. Upon this, on communicating with M. Geoffroi, the chemist, they found that precisely the same results could be obtained by combining copper with one-sixth of its weight of iron. Thereupon Caylus himself proceeded to try the result of tempering as well as of alloying copper, taking the first hint from a passage in Philo Byzantinus, where that writer directs the spring for a dart-thrower to be made out of pure copper mixed with one-thirtieth of tin, and afterwards well hammered when cold. Employing an intelligent brazier to carry out his theories, he was rewarded by finding he could make serviceable knives, scissors, and even razors,[7] out of brass and copper (*cuivre jaune, et rouge*): he did not try *bronze*, which was unfortunate for the completeness of the inquiry. The result was obtained merely by dipping the articles red-hot into a mixture of soot, sal-ammoniac, urine, and kennel-water.

I have somewhere seen it stated that Chantrey once tried what cutting instruments could be produced out of bronze, and actually succeeded in making a bronze razor, wherewith he was able to shave "after a fashion." He discovered that the best proportion for the alloy was that found pretty constant in Archaic-Greek, Etruscan, and Celtic weapons, viz., one-tenth part of tin added to the copper.[8] The metal was hardened by cold-hammering.

As for the case of surgical instruments found at Pompeii, all having their blades of *bronze* set in handles of iron, the

[6] Given in his Recueil d'Antiquites, vol. i., p. 242.

[7] To anyone acquainted with the *non*-cutting quality of French steel articles of the sort, especially as they were formerly manufactured, this success will not go for much.

[8] Feuerbach's analysis of the Helvetic bronze swords makes the proportion of tin vary from 5 to 25 per cent.

phenomenon may possibly be explained by a medical superstition, traces of which are preserved in the whimsical explanation the scholiast gives of εὐήνωρ, the favorite Homeric epithet of χάλκος, "*good for man*, because wounds made with that metal heal more readily than those made with iron." Though this "allopathic" property may have done something to retain the primitive metal in Roman surgical practice, yet, for all that, it must have been susceptible of a passable degree of keenness, otherwise, in spite of its reputation, it could not have maintained a place there, in an age when the best steel was as well known, and as commonly used as in our own. Another remarkable instance of the late use of bronze for cutting-instruments by the Romans, is known to myself: it is a pair of small shears, found at Caerleon, very neatly made, and retaining both their elasticity in the bend, and their keenness. See Mr. Lee's "Isca Silurum," pl. xxxiv., p. 66.

One is at first surprised to find that most ingenious invention of the armourer's, *chain mail*, enumerated amongst the accoutrements of so uncivilised a race as these Celts; but our wonder is increased by the circumstance that the Romans actually considered them as the true inventors of it. Varro, under "*Lorica*," states that it got its name from being at the beginning made out of leather, "*lorum*," but that the "Galli-lorica," formed of iron rings, had then completely usurped the appellation. In the fosses round Alesia, a few links still connected together suffice to attest its use at the time of the siege; but no considerable remains could be expected to have lasted under the circumstances, the ditches being filled with water, and the iron web by its nature extremely perishable.

The use of this species of defence can be traced back, obscurely indeed, to the remotest ages. There is even reason to suspect it was brought into Europe along with the Aryan immigrants from India, in which latter country it has ever been, and still continues, the sole kind of defensive body-armour known to the inhabitants. Although Homer never alludes to its use (his warriors, if not clad in plate, wear the cuirass of quilted linen, λινοθώρηξ[9]), yet

[9] The latter, as appears from Herodotus' description of the pattern one dedicated by Aniasis, king of Egypt, to the Lindian Pallas, Rhodes, was woven

heroes covered with what seems intended to represent a vestment formed of metal links appear on some Etruscan vases, and the archæologist, Virgil, could not have been without some ancient authority for making Æneas give as a valuable prize at the funeral games—"Loricam consertam hamis auroque trilicem"—"a coat woven out of rings, and fringed with a triple row of gold links." The Hon. R. Curzon states[1]—"Some years ago I saw at Naples the fragments of an ancient Greek shirt of mail of rings." And Livy,[2] describing the equipment of the Samnites, in the early ages of the Republic, has the singular expression, "spongia pectori tegumentum," where *spongia* is always interpreted as a soldiers' cant term for a mail shirt, in allusion to its porous texture.

To come down a little later in Roman history, Athenæus,[3] in describing the forces of Antiochus Epiphanes, mentions his 10,000 picked men, arrayed in mail shirts after the *Roman fashion.* "Ῥωμαῖον ἔχοντες καθόπλισμον ἐν θώραξιν ἀλυσιδώτοις." Although chain mail is not often represented upon Roman statues, yet I suspect it was all the while in general use under the Empire, but that the sculptor preferred exhibiting his heroes in the old Greek *thorax* of plate, imitating the exact conformation of the body underneath, on account of its superior picturesqueness. For if the latter kind of armour had been still in such general use as the monuments of the age would lead us to infer, why should Pausanias (in his description of the grand fresco by Polygnotus in the Lesche, Delphi) have taken so much pains to explain the nature of a suit of armour of this very make (γύαλα), stating in so many words, as the reason for his minuteness, that it had been for many ages out of fashion? Again, we should conclude that chain-mail had been the more usual form of armour in the time of Statius (the preceding century), for he notices amongst the other preparations for war[4]—

> "ferrum—quod mille catenis
> Squallentes nectat tunicas."

out of threads of many strands, the one in question having each thread composed of 365 others, all quite distinct.

[1] Arch. Journ., vol. xxii., p. 13.

[2] ix. 45.

[3] iii. 22.

[4] Achilleis, l. 431. His patron Domitian, however, preferred, says Martial, a novel and light yet arrow-proof cuirass made of scales of boar-hoof,—
"Texuit innumeri lubricus unguis apri."

Nevertheless we have some Roman statues clad in mail-shirts. I have observed a bust of Pertinax so covered in the Galleria, Florence; whilst Constantine, full length, in the triumphal procession upon his arch, Rome, wears a long shirt of mail very accurately represented. And yet the *same* prince, in his imperial statue, now standing in the portico of the Lateran, is accoutred in the time-honoured and elegant Homeric *thoraæ;* a circumstance strongly supporting the theory above advanced. A sepulchral bas-relief in the Museum, Mayence, exhibits a Dalmatian cavalier in a mail-shirt with short sleeves: and in digging a well for a house in the Schillerstrass there (1857) was discovered amongst a quantity of Roman sandals, broken tools and weapons, &c., part of a mail-shirt of iron rings. The links are of unusually small diameter, not exceeding a quarter of an inch, and *not riveted.*

Ammian[5] indeed describes the Persian cavalry, at the time of Julian's invasion, as completely covered with steel plates (laminæ) and wearing helmets fashioned into human heads with faces, only vulnerable in the perforations at the eyes and nostrils; whilst his contemporary, Heliodorus, gives a minute and valuable account[6] of the construction of this armour by the linking together with rings of a number of such small plates (iron or bronze), a hand's breadth each in size, the very "tegulated" armour[7] of the Norman crusaders, doubtless borrowed by them from their Saracen opponents. Nevertheless in the fine bas-relief of the Takht-i-Bostan, the cavalier, probably Sapor I., sculptured in the preceding century, is armed in a long mail-shirt having the hood drawn over a skull-cap and falling over his face like a veil, serving thus for a vizor, exactly as still worn by the Circassians. Such mail-clad *cavalry* were first introduced into the Roman service by Severus Alexander, who, after his Persian campaign, where he had learnt their efficiency, formed a body of 10,000 of them. "Cataphractarios quos illi clibanarios vocant decem millia interemimus, eorum armis nostros armavimus," says the victor in his letter to the Senate.[8] They speedily became the most important part of the army under the Lower Empire, like the *gens d'armes* in the mediæval service.

[5] xxv. 1.
[6] ix. 12.
[7] Such as Milo of Gloucester, *temp.* Hen. I., wears on his seal. Archæologia, vol. xiv., pl. 47, p. 276.
[8] Lamprid. 55.

Constantius II. had 30,000 cataphractarii at the battle of Mursa, who with their armour of proof and long heavy lances broke the brave Gallic legions of Magnentius.

I cannot but allude to that groundless theory broached by Sir S. Meyrick, and adopted without question, upon his authority, by many subsequent writers, our sagacious friend, Mr. Hewitt, perhaps, alone excepted, upon mediæval armour. It is the name "edge-mail" coined by him as the appellation of that seen upon knightly effigies previous to the time of Edward I., with his explanation that this kind of defence was formed by sewing the rings *edgeways* upon a basis of stout canvas. One would have thought that their own common-sense *might* have suggested to some at least of his readers that links thus arranged would not serve in the slightest degree to keep out the *thrust* of a weapon, or even the cut of one, should its edge chance to alight between any two parallel rows, in which case it is evident it would encounter no other resistance than that of the canvas substratum. But so it is; no one seems ever to have troubled himself to bestow a moment's thought upon the senselessness of such a contrivance, but each writer in his turn has gone on indorsing this self-condemning hallucination of the far from sagacious antiquary. Yet a vestment so composed would be much more due to the tailor than to the smith, who, as in Aldhelm's well-known enigma on "*Lorica,*" and by all others after him, is ever named as the fabricator of mail-shirts. The author of this untested theory has taken infinite pains to collect passages from Norman writers to support it, but they are all totally irrelevant to the question.

His mistake seems to have arisen from his observing the parallel rows into which the surface of a mail-shirt naturally falls in all cases where its links are not *riveted;* and the regularity of which rows is again somewhat heightened in mediæval sculpture and drawing, for the sake of facilitating the work. It seems certain that, up to the end of the thirteenth century, the links were not *riveted*[9] (a process to

[9] A remarkable exception to this rule has lately been brought to light. In the find of arms and armour, dating from the Lower Empire (denarii of Severus occurred amongst them) extracted from the Thorsbjerg Moss, Flensberg, certain pieces of chain mail were met with, most carefully riveted, some in alternate, some in every link. The author of the description, however, doubts of their being of equal antiquity with the rest: so the discovery can hardly be deemed sufficiently complete to decide the question.

be explained farther on), but merely bent up into rings. These rings were slipped, or *hooked*, one within the other, whence the propriety of the Virgilian term *hami* for them is obvious. In such a mode of uniting them into a continuous texture, it is evident that these rings must necessarily be of very stout wire, and of small internal diameter, otherwise the vesture would be liable to tear asunder by its own weight, as we see in the carelessly-wrought mail-shirts made in London for the African trade that occasionally find their way into sale-rooms in Town as the "armour of Runjeet Singh." A Circassian, however, once informed me that his countrymen still prefer the unriveted mail to the riveted, because it allows the musket-ball (if not repelled by it) to enter by its links opening before the blow, so that none of the wires are carried with it into the wound: that fatal objection to the use of chain-armour, and which banished it from the camps of Europe upon the introduction of hand fire-arms.

But this open-linked mail,[1] from the necessary stoutness of the wire used, was of enormous weight, as is shown by those rare examples still preserved; for instance, the suit now in the Hon. R. Curzon's armoury. The same thing is attested by the manifest efforts of the porters who carry the single suits suspended upon poles, two men to each, in the Bayeux Tapestry. Again, it is mentioned as a proof of William's gigantic strength, that, though himself so clad, he carried the mail-shirt of a disabled comrade, who, having fallen into a quagmire, was unable to extricate himself, until he was relieved by the Duke from his cumbrous envelope.

The links, the *hami* of the Romans, had, in making the shirt, each to be slightly opened, and so passed into its neighbour; the wire, being steel, closed firmly again of itself, and secured the continuity of the whole net-work. Hence Anna Comnena describes the armour of the Norman crusaders as a "tunic, ring interwoven upon ring," χίτων, κρικὸς ἐπὶ κρικῷ περιπεπλεγμένος: and this, be it observed, at a

[1] The Bedouin suits above alluded to weigh 40lb. each, to which weight must be added that of the thickly-padded tunic required underneath to prevent its rough texture galling the wearer. The suits, however, made for the Venezuelians, only designed to keep out Indian flint-headed arrows, are as light as 25lb. But the Norman had to encounter the shock of the steel lance-head driven with all the impetus of his adversary's charge on horseback.

time (1081—1118) when, as Meyrick would make us believe, nothing was known but his "edge-mail" of rings stitched upright on canvas.

As the next step towards improvement, the junction of the wire in the links was secured by *brazing*, an addition supplying a vast increase of resisting force to the steely web; and of this an example is preserved in the shirt of Philippe le Bel, dedicated by him, about the year 1307, at the Cathedral of Chartres. There can be no doubt that in other cases, where the great additional labour and expense were not taken into account, other mail-shirts perhaps long before had had their defensive power similarly augmented.

This led to the final and great improvement in the manufacture of mail, viz., the *riveting* of every link at the opening, by beating out each end of the wire forming it, making one overlap the other slightly, piercing both, and driving a rivet through them, thus rendering the joint the very strongest place in the whole ring. By this ingenious invention, due no doubt to the sagacity of some Saracenic armourer, it was found that the mail-shirt could afford equal protection with half its former weight of metal, inasmuch as the diameter of each ring in it could now be doubled, all danger of their gaping being in this way obviated. In fact, we see the links now an inch in diameter over all, when made of stout wire as in the old Turkish, and about half that diameter when slighter wire is employed, the customary size for European suits. When woven after this fashion the whole texture lies flat upon the person, and no longer assumes the parallel-ridged surface of the former thick and rigid mail of unriveted links, to which indeed the name of "edge-mail" was in one sense applicable, for the small internal diameter of the rings, and their little play one within the other, rendered the thickness of the fabric exactly equal to the width of the links composing it.

Such armour, light and easily concealed under the clothes, long continued in use (although far from being musket-proof), but more especially as a "privy coat" against the dagger or pistol of the assassin.

> "Had not my *coat* been better than thou deemedst,
> That thrust had been my enemy indeed,"

exclaims Michael Cassio. Cellini and his apprentice Ascanio are equipped with such in their ride from Paris back to

Florence. Anselm de Boot, physician to Rudolf II. (1576-1612), writes of such armour (*sub* "Smiride") as being then common;[2] and even as late as Elizabeth's times it occasionally appeared on the battle-field, Spenser describing the Irish "galloglasses" as wearing long shirts of mail: and, in the glorious old ballad of that reign "Mary Ambree,"—scene, the war in Flanders,—we have—

> "She clothed herself from the top to the toe,
> In buff of the bravest, most seemly to shew:
> A faire shirt of mail then slipped on shee:
> Was not this a brave bonny lasse, Mary Ambree."

There is no saying when its use as a "concealed defence"—in the parlance of the day "a secret"—came to a complete end. Late in the seventeenth century (1657) Monaldeschi, Queen Christina's faithless and indiscreet paramour, was so provided when put to death by her orders in the garden at Fontainebleau, on which circumstance Ludolf, in his "Schaubühne der Well," published immediately after, coolly remarks that "he suffered very much, but it was entirely *his own fault*, for, wearing armour under his clothes, they were obliged to despatch him by stabs in the face and neck!"

[2] See the notice of this use of emery in De Boot's "Gemmarum et Lapidum Historia," lib. II., cap. ccx. De smiri lapidi. "Ad loricas annulatas emundandas et a rubigine liberandas vasi rotundo cum loricis imponitur, quod frequenti rotatione commotum, ac hic inde jactata lorica, smirisque pulvere per annulos sæpius decidente partesque illius affricante, ita lorica abstergetur ut nova videatur." In the time of Edward III., mail-armour was cleaned by rolling it in a barrel, with sand probably, or emery. See the "Dover Castle Inventories," Arch. Jour., vol. xi., pp. 382, 386.