

The Swiss Institute of Arms and Armour

by Eugene Heer

Its Origins, Purposes, and Operations

1980 is a year of great importance for the Swiss Institute of Arms and Armour. Eight strenuous years have gone by since its founding on September 7th, 1972; eight years which brought not only many problems, but also a great deal of satisfaction.

It had taken not three years, as we had optimistically hoped would suffice to get the Institute on its feet, but five. Had it been worth the effort? Had we really reached our ambitious goal? In order to answer these questions it is necessary to look back critically. The original idea of an independent centre for the conservation and restoration of antique weapons and research into their history dates from the year 1961.

At that time, my professional activities were not yet entirely focused onto the field of museums, but the alarming situation, not only in museums but also in private collections, gave me much preoccupation.

Arms are of extraordinary historical importance. Over the centuries, they have influenced our civilization more than any other object. Whether for battle or sport, they have always stood at the forefront of technical and often also artistic development.

I could not, therefore, understand why so little attention was paid to them on any front, be it either social, technical or artistic. Despite the fact that some progress has been made, it cannot be denied that in many museums the subject is still given meager consideration.

Millions are spent on new buildings or on the modernization of existing collections; further hundreds of thousands are available for setting up exhibitions and elegant displays, but for the restoration and conservation of the objects themselves, there usually remains very little, and to date this attitude shows little sign of change. Few museums have the good fortune to have the necessary technical staff and equipment. Private collectors and antique dealers also have great difficulty in finding reliable specialists to undertake their restoration and conservation work. The fact that nine out of ten arms are restored elsewhere than in museums brings the responsibility of private restorers into the limelight. Collectors and museums are often unaware of the disastrous results of what I call "Sunday restoring," not only for the object itself but incidentally for its commercial value.

After numerous discussions with specialists in Switzerland and abroad, the plans for a Swiss Institute of Arms came into being. With suitable organization a centre could be set up to serve the interests of museums, collectors and antiquarians alike. The Institute could also be a means to fight against the aforementioned damage to the valuable historical objects.

After ten years' study in the museums of Frauenfeld, Zurich, Geneva, London, Vienna, Copenhagen and Graz, I chanced to meet Mr. George Filipinetti, the owner of Grandson castle on the shores of Switzerland's Lake Neuchatel. He was most en-



thusiastic about the idea, and not only provided premises in his beautiful mediaeval home, but also financed the necessary conversions. From then on we had to find our own financial support: the Institute has a completely independent administration.

Organization and Structure

It was obvious from the start that an Institute of this type must be run on a self-supporting basis. Subsidies are unreliable sources of income and can be very binding. It seemed indicated to have as much freedom of action as possible in order to develop in every direction. Furthermore, the Institute should prove itself *capable* of self-support. We could not turn to others for advice or help, for, as far as we know, we are unique both at home and abroad. On looking back over the activity since our foundation in 1972, the generally positive result is, in fact, even better than we had hoped for, though the way was harder than we expected; high costs and low income were the milestones along the road to independence. However, we have, so far, managed to get by without the support of either public or private subsidies and prospects are good.

The early reticence of certain museums for the private Institution in Grandson has gradually given way to an increasing appreciation of the value of our work. For some time we were considered as unorthodox competitors, but little by little, both private and public opinion has become extremely favorable towards our activities. Now that the value of our results can be assessed, we no longer hear the accusations that we are far too expensive; it was interesting to note a few years ago that the director of one of our national museums, on estimating the overall costs per hour of restoring in his own workshops, gave a figure far higher than that which we charge to our clients, in fact our prices are extremely competitive.

The Institute has now built up an excellent reputation in Switzerland and also at an international level, and in a few minutes I shall have the pleasure of projecting some slides showing details of our work.

Activities

Our activities can be divided into two main headings, firstly: restoration, conservation and exhibition techniques and, secondly: research activities and the translation of articles and books. Additional fields such as expert opinions and advice on the buying and selling of antique arms, etcetera, often require the collaboration of both sections.

Usually man hours and material are charged to the client, but research work may either be carried out on commission or for our own purposes, in which case the cost is partially, or entirely covered by the Institute Research Fund, about which I shall give further details later.

Our clientele is made up of collectors, museums, art dealers, gunmakers, publishers, editors, and also certain sections of industry. Outside Switzerland's borders, we have worked for customers in Germany, the United Kingdom, France, Holland, Iran, Israel, Italy and, of course, the United States.

Orders can range from restoration of a single item or the answering of a single question to setting up of a complete new arms museum, including editing of the catalogue.

In the research section our "masterpiece" is, without doubt, as you all probably know, the international historical-biographical reference work on gunmakers, gunstockers, arms manufacturers and crossbow makers from 1400 to 1900 . . . the *New Stockel*, with 36,000 entries, including 10,000 makers from the United States.

Today, our premises, offices, library, workshop, forge, laboratory and photographic darkroom cover about 400 square yards. We can deal with any problems concerning the conservation of metal, wood, leather, horn, bone, ivory and tortoise-shell.

The scientific aspect is very important for our restoration and conservation work; we are able to offer quite exceptional services in this field. The library includes 4,000 titles in 16 different languages. We also have a collection of 5,000 photographs and a further 3,500 negatives which are of great value, not only as "tools," but also for research.

In spite of numerous difficulties, our team is striving steadily over the years to reach its ambitious goal. We are ready to do our best insofar as it is materially possible for, of course, ideals can only become reality if they are economically sound. Set-backs and criticism have served to spur us on, indeed, we have sometimes had to face the unpleasant duty of pointing out lack of responsibility, or even ignorance in one of our customers, at the risk of losing him in the process. The Swiss Institute of Arms and Armour has won a well-deserved place in the field of preserving cultural treasures and memorials to the past.

Restoration of a Wheel-lock Pistol

Rebuilding the missing parts of an antique gun is one of the most delicate operations undertaken by a restorer. Apart from the decision as to whether the rebuilding is to be carried out or not, this type of work presents many other problems. The ethical aspects should be given detailed consideration, but it *must* be stressed that however beautifully the replacements of the missing or incomplete parts are made, they are valueless if they do not correspond with the form, the execution and the character of the original work. Technical skill and craftsmanship do not suffice to qualify a restorer: a thorough knowledge

of arms is essential, the library and the photograph collection being of equal rank in his tool-kit with the hammer and pliers. There is nothing miraculous about a restorer's work; sound knowledge and sufficient time are the only means by which he can hope to achieve a worthwhile result.

The following account gives in chronological order the various steps which make up a complete mission. The general order of events can, of course, be applied to other cases.

Three basic questions must be answered, whatever the nature of the object, before any intervention can be considered: first, what type of arm is it? Secondly, exactly what did it look like when it left the armourer's or gunsmith's workshop? The third question is, what damage has it suffered since then?

Let us consider the first point. In this instance we are concerned with an iron-stocked wheel-lock pistol dating from the second half of the 16th century, but where was it made? Was it the only one of its kind, or were such pistols mass-produced for the army? Was it intended for sport, or merely as a decorative addition to the splendid collection of some ostentatious duke?

Now the second question: what was its appearance when first made? Was the surface of the metal blued, browned, blackened, oxidised, grey-etched or highly polished? Is it possible that it was tin-plated, silver-plated, gold-plated or even painted? And the stock . . . was it etched, polished, varnished or merely boiled in linseed oil? Can we find and identify any maker's marks or other markings? If there are any dates to be seen, do they correspond with the genuine date of manufacture? Does the form and the material of which the ramrod is made lead one to conclude that it is original? Were the engravings made with a stylus, a chisel, or were they etched?

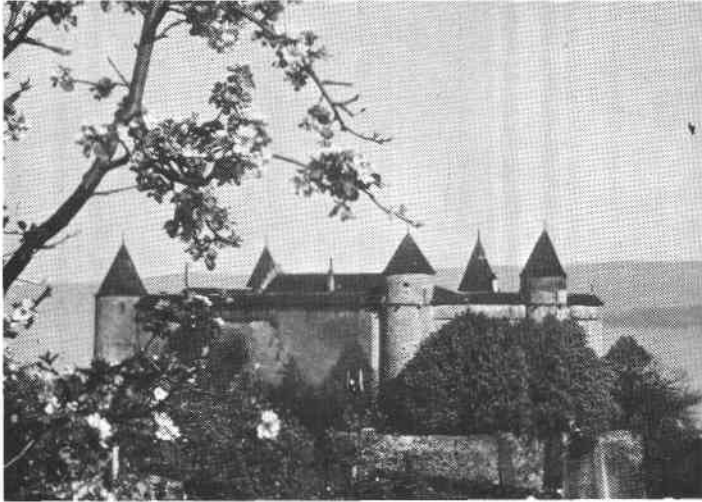
Thirdly, what damage is there? Normal wear and tear, perhaps? When did this damage occur, soon after manufacture, or more recently? Are any parts missing? Has it at any time been altered or converted? Are there any signs of previous (good or bad) restoration work?

Finally comes the question: is the gun genuine? We feel that one of the important aspects of the restorer's work is to warn customers of possible fakes.

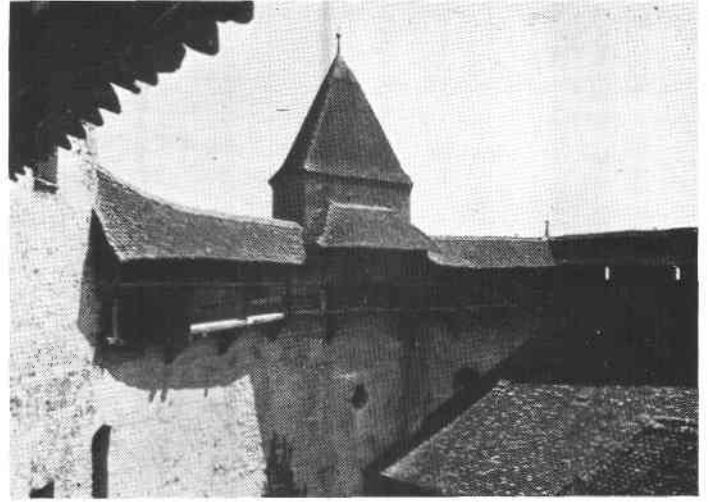
All these considerations make it clear that work on a valuable antique firearm should not be contemplated by an amateur restorer. If the professional restorer cannot answer most of these questions with certitude, he should, on no account, embark on the work. It goes without saying that the gun must, as far as is possible, be dismantled for inspection, but even this operation should not be undertaken lightly.

To return to our first question, this is an iron-stocked wheel-lock pistol probably made in the Braunschweig area, Germany, dating from 1570 to 1580. The absence of maker's marks is typical of firearms produced in this town under Duke Julius; indeed this has often been considered sufficient grounds for placing a gun. The stock, made of sheet-iron and brazed with copper, is decorated with etchings which are characteristic of the Braunschweig style. The pearl motif along the borders is also significant. The hound and leaping hare were also commonly found on armour made in Braunschweig. It is possible that the pistol was intended as a personal weapon for a mounted officer or a wealthy sportsman. In any case, it is an arm of above-average quality. The metal spur generally known

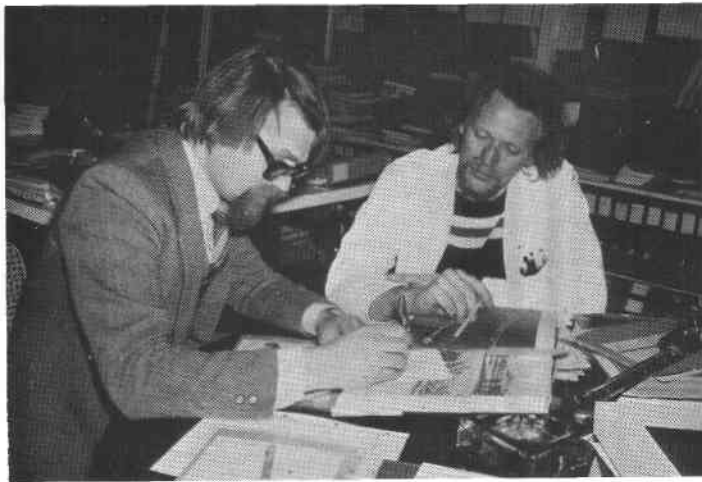
Views at Castle Grandson



The castle of Grandson on the Lake of Neuchatel, Grandson, Switzerland.



Wall-Walk (15th Century). Grandson Castle is one of the best preserved medieval fortresses of Switzerland. This view from my office window.



The collaboration of the two departments (technical and research) is most important in the field of restoration. Right, Ian Ashdown, chief restorer, and left, Eugene Heer, Director.



A view of the research development, big enough for four assistants. To the right, part of the library.

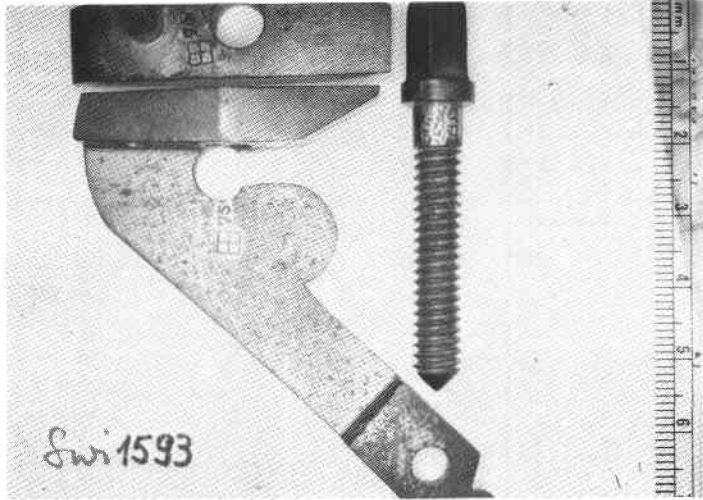


The laboratory contains up-to-date equipment.



The main work shop of the Institute, located on the top floor of the Castle.

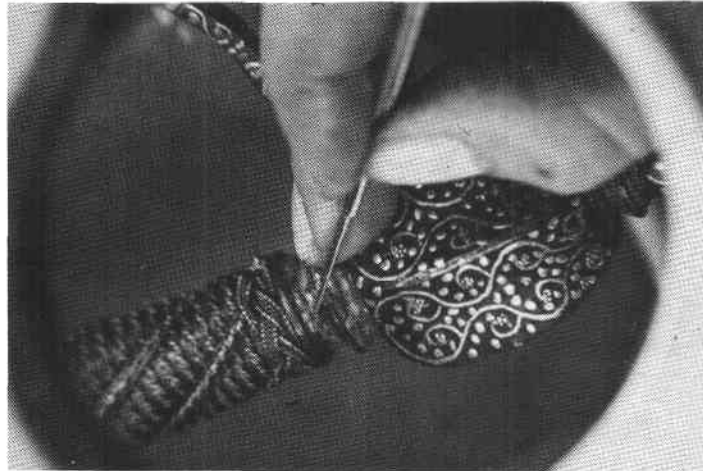
Work at Castle Grandson



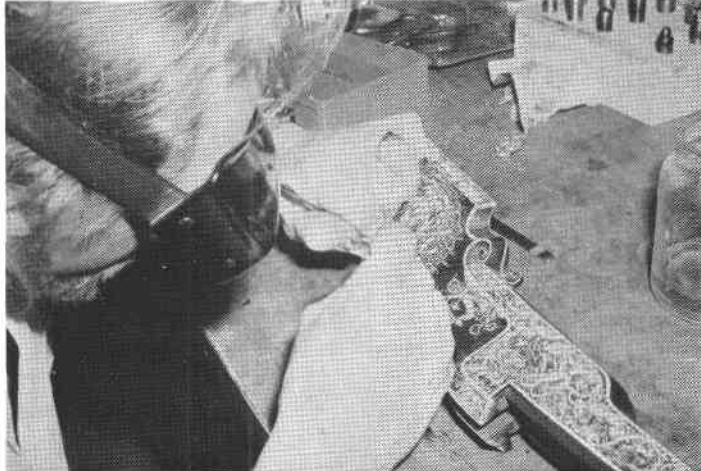
The replacement cock, finished, shows clearly the markings of the Swiss Institute of Arms and Armour, plus the year of manufacture or restoration. We feel that all restorers including museums should clearly indicate any replacement parts.



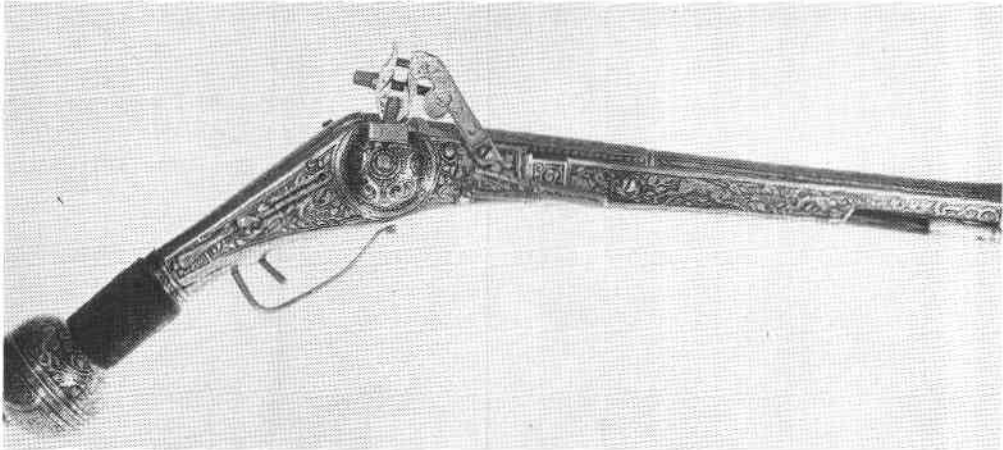
The replaced cock on the pistol. *It should be noted that we do not undertake the reconversion of former flint locks. This is a matter of principal.*



Some of the very fine work has to be done with a magnifying glass.



Ian Ashdown in the process of replacing some missing inlay which had been "restored" by a previous "specialist" using chewing gum. Correct inlay work is a technique mastered only by a few restorers today.



The restored wheel lock pistol, originally made at Brunswick, Germany, about 1580. Note the correctly replaced ramrod.

as a "belt-hook," situated at the rear, was used to fasten the gun in the saddle-holster.

Concerning its appearance at the time of manufacture—this was our second point—the surface of the barrel and the stock is, as already mentioned, etched and is, in certain places, somewhat worn. The design was originally enhanced by blackening. Traces of fire-gilding indicate that the surface was partly or entirely gilt. The components of the lock (the springs, screws, chain-links, etc.) are polished, but were probably originally lightly blued. There is a date on the powder-pan, the last digits of which are not original. There must have been a cloth covering, probably velvet, immediately above the pommel. This cannot have been a wire binding, as no hole is present into which the end of the wire can be fixed. Under the third heading, the questions of damage, there is no doubt that this pistol has already been in the hands of a so-called restorer: the original cock has been replaced by one from a 17th century Italian wheel-lock pistol; further, an improvised ramrod has been fitted to replace the missing original. The date, which is still partly visible, has also been altered, the specialist (?) obviously tried to make a good pistol into a better one by back-dating it to 1540, but the impossibility of this date could not escape the observant connoisseur.

This is an example of worthless restoration which luckily has done no real damage to the pistol. The spurious addition can be removed and work can begin in earnest.

The next step, after the pistol has been examined, is to plan the restoration. Each arm which goes through our workshops is recorded with its individual code-number—in this case, SWI 1593—on a file card on which comments and details of the nature and technique of each stage in the restoration and conservation work are given. Photographs of the completed parts with their corresponding markings are also adjoined.

After collaboration between the technical and research departments, the following points were concluded:

First, the missing cock should be replaced. Secondly, the peculiar ramrod should be removed and replaced by a replica of the original component; thirdly, *the missing gilding should under no circumstances be renewed*; the etching should be brought into evidence by intensifying the blackening, and lastly, the velvet covering should be replaced.

No particular problems arise from point 2. The reproduction of a correct ramrod can be considered as more or less routine work, plenty of examples being available to copy. In the 16th century a ramrod from Braunschweig was very much the same as those produced in Nuremberg or Strasburg. They were nearly always made of ash, the copper-brazed iron tip was fitted with a thread at the front end, onto which the bullet-extractor could be screwed. The only exceptions were either obvious display or "art" pistols, beautifully decorated arms which were popular in the 16th century, or the plain pistols of the Saxon guard in Dresden with their engraved bone or ivory ends.

The focus of attention, at this stage, should therefore be on the replacement of the cock . . .

The first thing is to find a suitable model. In view of the fact that Braunschweig exported a good deal to Skandinavia, we were inclined to turn our eyes in that direction. As 16th century

gunmakers worked mostly on an individual basis, it was highly unlikely that we should find an identical pistol from which to copy the cock. However, as long as the model corresponds in style and origin with the gun to be restored, the specialist should be able to make a replacement without any trouble, and we found a pair of Braunschweig pistols in the Livrustkammaren collection, Stockholm, to serve our purpose.

A series of photographs were then ordered from Stockholm, showing the cock from every angle. The final measurements of the cock were taken from the model, bringing into evidence the fact that the distance between the powder-pan and the cock axle determined the final overall length.

Next the rough replacement was made. At this point two ways were open to us, either forging or milling. If there is no imperative reason to use the forge, we usually prefer to mill. In either case, however, the work is finished by hand. A machine finish would give the cock an unnaturally "mechanical" appearance.

In every restoration we give very special attention to the screw. The easy solution is to fit a modern screw (which costs a few cents) and to re-cut the old thread, but this cannot be called restoration—massacre would be nearer the mark! The correct procedure, which obviously costs a great deal more—is to make a new screw to fit the original thread. Therefore, in this particular case, the thread of our model from Stockholm was carefully measured to be copied, then a whole day's work was needed to make the necessary thread-cutting equipment. As our friend Tibor Dite has said, "The importance and eloquence of a thread cannot be over-estimated for dating and situating a weapon."

The Engraving

It is interesting to note that during the 16th century, all engraving on musket or pistol cocks was carried out by working with a stylus or chisel, even when other parts of the lock were etched. To date, no satisfactory explanation has been brought forward to explain the simultaneous use of differing techniques.

There was no exception to this rule in Braunschweig and our engraver, Reymond Graber, guided by the Stockholm pistols, engraved the surface of the cock with a stylus, spending a whole day on this work.

It is essential to mark a replica component for subsequent identification, and our "master's mark" and the year were stamped in a position where they would not mar the finished appearance. There is no valid reason not to mark restored items; here in the Swiss Institute of Arms and Armour, we have not lost a single client on these grounds, and we feel that other workshops (and museums) should not refrain from practicing this security measure.

The velvet cover was hand-sewn and fitted over the grip after dismounting the pommel.

It is obviously necessary to take one's time when restoring, and any form of stinting, whether of time or of money, is in the interest of neither the customer nor of the gun itself. Experience has shown, time and time again, that restoring cannot be judged in terms of expense: it is either good or bad, and bad work is always too expensive.