HELVETIAN GOLD

CELTIC TREASURES FROM SWITZERLAND

Exhibition Catalogue
by Andres Furger and Felix Müller

with contributions from
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SWISS NATIONAL MUSEUM

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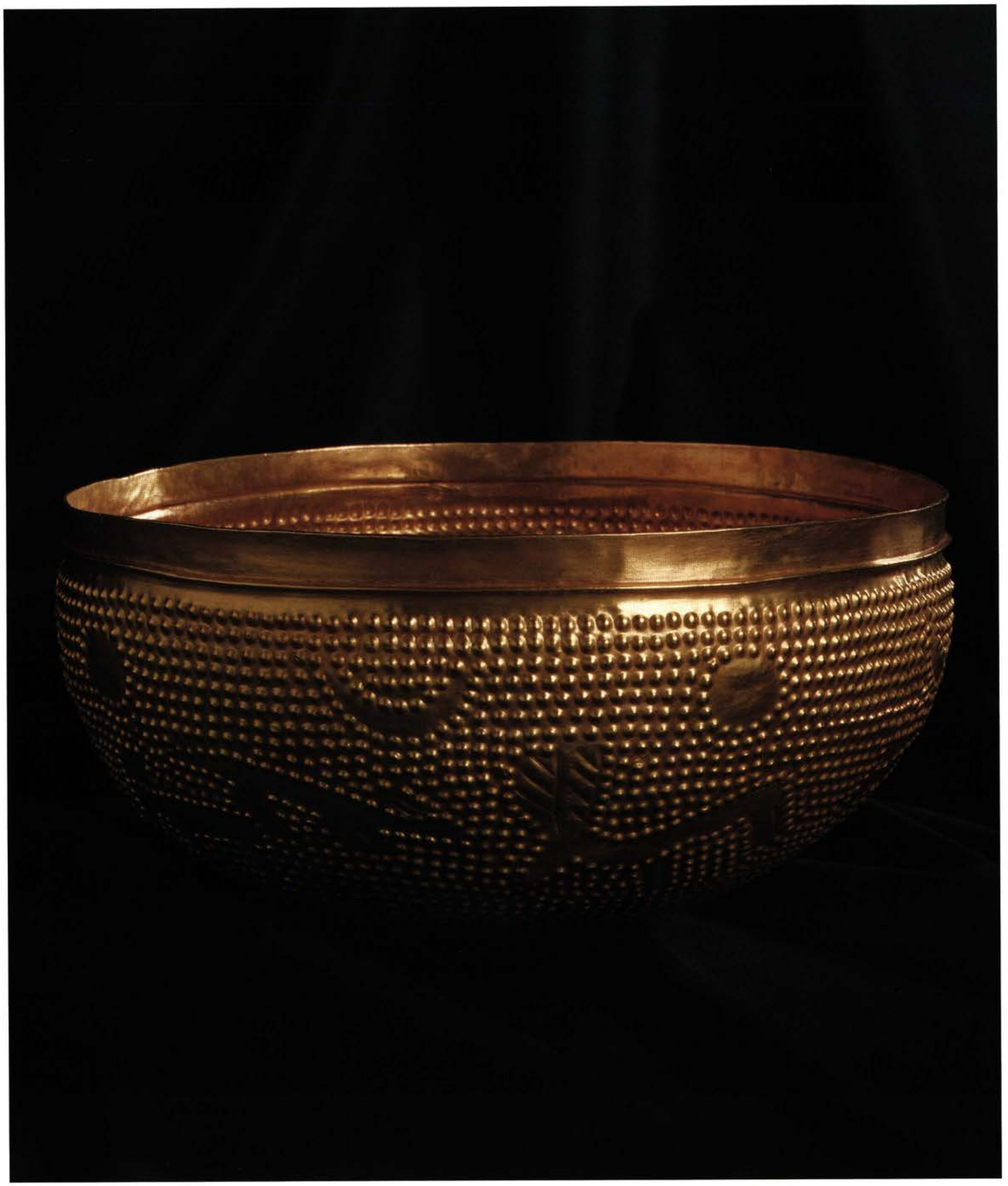

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Colourplate I (page 2) Cat. 7 *(Gold Dish, detail);* Colourplate II (page 4) Cat. 7 *(Gold Dish)*

AN EXHIBITION FROM THE SWISS NATIONAL MUSEUM

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PREFACE

This exhibition and the accompanying catalogue depend on a close cooperation: the Swiss National Museum (Schweizerisches Landesmuseum) with its collections of objects and its infrastructure provides the basis for the project "Helvetian Gold", and the Swiss Bank Corporation, through a substantial subvention, makes possible the execution of the work and the extension of the exhibition to all regions of Switzerland, namely, Zürich, Lugano, Basle, Berne and Geneva. The catalogue appears simultaneously in German, Italian, French and English. In addition, the mounting of the exhibition in foreign countries will be considered.

Thus, in the Jubilee Year of the Swiss Confederation in 1991, a glance back to a high point of the distant past of our land will be made possible in a manner never yet seen: for the first time the early gold finds will be brought together from numerous Swiss and foreign museums. Here they will reveal their history and witness to the former Helvetian and, indeed, earlier inhabitants of Switzerland who, embedded in the great European cultural community of the Celts, were able to achieve truly wonderful things.

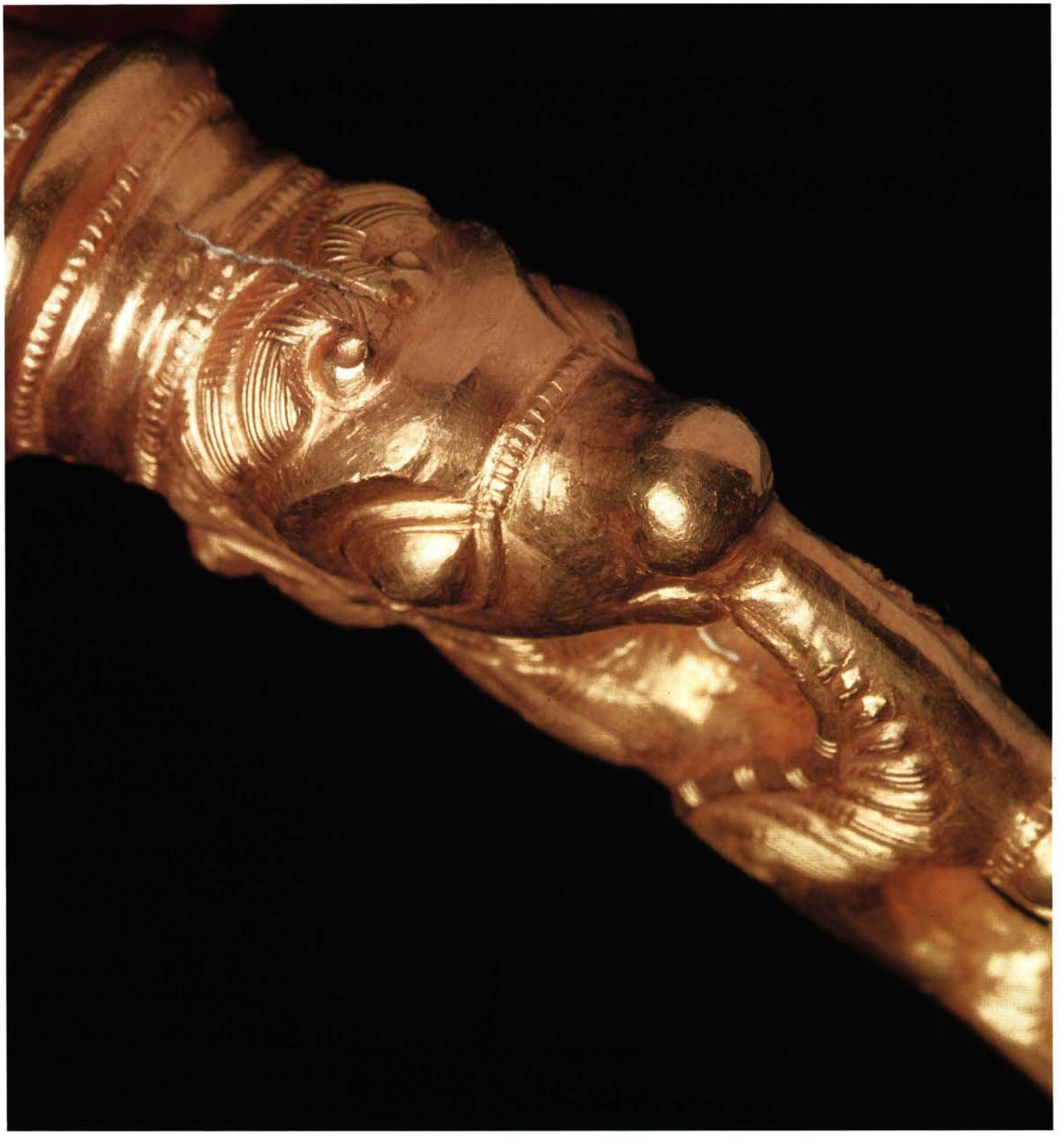
The concept of the exhibition has grown out of the favourable reception of my book, *Die Helvetier – Kulturgeschichte eines Keltenvolkes*, published in 1984 by the Neue Zürcher Zeitung Press. The realisation of the continuously developing basic concept was made possible by the generous support of the Swiss Bank Corporation, represented by W.G. Frehner, Chairman of the Board, and the responsible sections, to all of whom we are greatly indebted. Executive help was provided by the Society of the Swiss National Museum under its president P.M. Gutzwiller. We would also like to express our thanks to the federal and cantonal authorities who have supported the exhibition project. In addition, we thank the lenders of objects mentioned on page 7, especially the Historical Museum of Berne and the directors of the participating museums, namely, M. Kahn-Rossi, Lugano; H.-Chr. Ackermann, Basle; G. Germann, Berne and C. Lapaire and Y. Mothier, Geneva.

Important research in advance of the exhibition was made possible by the Sophie and Karl Binding Foundation in Basle. I wish to express my best thanks to all who participated in the work (see page 7) and especially to the close working exhibition team comprising B. Hu-ber-Greub, F. Müller, R. M. Vogt and B. Enderli and, particularly, to the authors of the catalogue.

Zürich, January, 1991 Andres Furger

Colourplate III Cat. 6 *(Sheet Gold Diadem);* Colourplate IV Cat. 259 *(Gold Necklet)*

Colourplate V Cat. 268–274
(Gold Armlets and Finger Rings)



THE OLD AND THE NEW VIEW OF SWITZERLAND'S PAST

Andres Furger

In the 19th century, after the loosely organised group of states had, with the first constitution of 1848, raised itself to become the Swiss Federation of States, a strong need for a telling of the common history was felt. At that time it was only the traditional legendary episode surrounding William Tell that became an important element in the foundation history. This also provides the cornerstone for the celebrations in 1991 of "700 Years of Confederation". The jubilee is also a reason for historical backward looks, in the knowledge that "history" in an absolute sense does not exist but always includes a representation predicated on modern points of view. It is true that frequently more of modern ideas are incorporated in a telling of the past than of the past itself. History as a conscious or subconscious argument with the present or with the future may be applied also to the archaeological aspects of our past.

William Tell and Divico

Why did the founding fathers of the Swiss Confederation allow their new state to begin with William Tell rather than with Divico, a Celtic ancestor and the first inhabitant of what is now Switzerland to be known by name? Usually nowadays one sees the beginning of history in the first written tradition and, for Switzerland, this refers to the Helvetii. For the period about 100 B.C. Poseidonios mentions, in Strabo's description, "the gold–rich but peace–loving Helvetii". This tradition, forming the historical beginning of our exhibition, will be enlarged later by other texts, for instance from Cicero, but particularly from the somewhat one–sided though very detailed accounts of 58 B.C. by Julius Caesar, the Roman provincial governor and later single ruler. Caesar's reports about the Helvetii are more precise and more authentic than all those about the activities of William Tell and at the same time tell of a great past from which two matters stand out:

107 B.C. The Helvetian Tigurini, under the leadership of Divico, defeat two Roman legions at Agen in southern France.

1st century B.C. The Helvetii are rated amongst the most powerful tribes of all Gaul.

Nevertheless: in 58 B.C. the Helvetii, led by the old Divico, emigrate and, according to Caesar, are defeated and sent back. Although nowdays, as indeed also in the 19th century, the migration and the course of the battle at Bibracte are seen in a different light. The dramatic beginning, which provided material for famous paintings and poems in the 19th century, must have ensured that the history of the new Confederation began with a victory as well as with a defeat. And indeed, it appears significant to me, with a defeat by the Romans. This, in the 19th century, was hardly suitable as a fashionable picture in that the Romans, since the Renaissance, were looked upon as important advocates of European civilisation, as models for a centralised state organisation, for a well–developed transport system, for the general introduction of writing, of liberal education and so on. All these were important concepts for the new national state and its integrated citizens. In this connection, as will be shown below, Divico was influenced in his old age by an immense flaw.

Colourplate VI
Cat. 64 *(Gold Armlet, detail)*

How the Helvetii stand today

The foundation story based on William Tell in the 19th century is today considerably weakened. In addition, more weight is placed now than formerly on historical sources. In consequence, 1998 has been decided on as the next jubilee year, and this is in reference to 1848, the foundation year of the Confederation. Only today can this date be used because the foundation is now an established historical fact; in the 19th century itself it was not yet possible to identify clearly individual deeds or, indeed, the contemporary history, because the most important binding factor in a people is the common feeling for a community's past history. In this way it can be shown that a later (not an older) piece of history will remove William Tell. And in this way also the danger will be reduced of exaggerating the value of the Celtic past. There are clear indications that interest in this period is still growing. As well as the fact that the overstress on the times of "the old federalists" or "the Romans" is decreasing and being transferred to other themes, I see three reasons for the new views:

1. Research during recent decades has thrown considerable light on the history of the Celts and has shown that in fact the inhabitants of Switzerland occupied a prominent place in Celtic Europe. The headlines are clear to be seen: The territory of modern Switzerland formed one of the core regions of Celtic culture, from here Hungary was colonised, here – even before minting by the Romans – coins were in circulation, the Erstfeld Hoard from Switzerland is one of the most important discoveries of Celtic gold objects known and, finally, the unique find-place on Lake Neuchâtel, La Tène, has given its name to a very important aspect of Celtic culture.

2. Changes in modern socio-religious areas meet the reception of Celtic elements in so far as today belief in technocratic advances, with models more in Roman culture than in nature-related consciousness, show an increasing tendency towards glorification. It is, indeed, here that Celtic culture offers itself, especially with its symbol-laden gold finds. One must, of course, refer to the danger of a certain loss of reality if not exactly known areas are expanded throught fantasy-rich details.

3. The national political area in Switzerland has been changed considerably. With regard to a certain pressure for European inte-

gration there is today much less demand for a self-willed, restricted solution in the past rather than for the memory of historical events in which our country was an important part of a greater whole in Europe. This applies with particular strength to Switzerland in Celtic times.
In other words, an exhibition with precise information about this theme is at this moment especially welcome.

Helvetian Gold: main stresses and aims

What quantity of gold objects referred to the "gold-rich Helvetii" remains with us now? This question will be systematically investigated here and all the known finds, both native and foreign, will be brought together, so that a complete review is achieved for Celtic times. The gold finds will be treated in their greater relationships and, thus, numerous associated finds and comparable objects will be studied. Thus consciously there is a restriction to what is essential; an attempt to deal with all aspects of the Celtic period in Switzerland will not be attempted. In order to achieve a wider view a chronological extension was accepted and a selection of older, pre-Celtic gold finds from Switzerland is included as well as native productions of Roman times. The early specimens form part of a later exhibition. Discovery, research and historical exploitation would provide material for a third exhibition.

The Celtic epoch lies on the threshold of historic times (with written sources). Of course, it has long been realised that in this prehistoric period it was not history itself which was lacking but rather its literary expression. Here archaeology begins, a study which examines and interprets the objects discovered, the places of discovery, find associations and any traces left in the soil. A first aim of the exhibition must, therefore, be to allow the gold finds themselves to speak from the available sources. Their significance is today rated differently from formerly. If one remembers that as recently as a century ago relics of the Celtic Helvetians could not be differentiated from those of Stone Age lake-dwellings and that the pre-Roman inhabitants were reckoned as belonging to the primitive, skinclad "Wild-ones", it becomes clear how, up to only a few years ago, the production of works of art of the first order, such as the Erstfeld rings, were not ascribed to the Celts. They were, indeed, declared to be imports without the slightest proof of this assertion.

It is hoped that the present exhibition will present to a wider public the new orientation of views arrived at in professional circles. That chance for this and the prerequisite, indeed, lie in a certain faculty of abstraction, namely, to distance oneself from the modern world and the "school opinion" about the so-called barbaric forerunners of the Romans. Thus today we take for granted firmly established and scarcely changing rules. Such a narrow concept, however, is not sufficient for earlier times for we have to reckon then with constant change in the background and with the counterbalancing effect of a strong tradition. In addition, an astonishing mobility of communities must be reckoned with, a mobility which appears to indicate a looser connection between man and territory. In the area of religion the continuing presence of belief from birth to death and in all aspects of life must be accepted.

Ancient man felt himself more strongly at home in the real and imaginary world of this life rather than of the other world, as part of a whole. For the Celts one must remember their cyclical worlds of imagination, which are so far removed from the present-day perpetual search for the new, for forays into the unknown. The individual should have striven less for self-realisation; individual artistic efforts did not stand in front-stage position but rather consummate production within a firmly established framework. What is so fascinating about this epoch is that it allows us a glimpse of a world entirely different from that of the more trusted Romans and thus to a certain extent makes possible the knowledge of peoples in their own land. In addition, there are now so many finds, excavation results and the earliest written records that a historical review may be within the realms of the possible.

Celts and Helvetii – Europe and Switzerland

Celts are first mentioned by name in the 5th century B.C. and shortly thereafter their culture spreads over large parts of Europe. Celtic finds occur from Upper Italy in the south to Britain and Ireland in the north, from Spain in the west to the Black Sea in the east; and, with right, one can indeed, speak of an early "European" culture. There were close relationships with Greek areas and elements of Greek culture are found everywhere in Celtic regions. More distant neighbours were the Scyths and Thracians in the east, the Germans in the north and the Etruscans to the south, to mention only such people as have left clear traces in Celtic art and culture. The Celtic cultural community developed roughly parallel to the Roman Empire which, with several ups and downs, gradually won the upper hand from the 2nd century onwards.

What is the origin of the Celts? It is not long since one looked upon the solution as simplicity itself; a new people with a new culture wandered in from somewhere, but for this no proof was forthcoming. Today, however, it is recognised that not every innovation can be traced to the advent of new people. A culture can change itself or expand through economic, social or spiritual causes, as can be seen in modern Europe itself. All concepts, such as "the Celts", "the Romans" and so on, require a more specific definition. Under the word "Celts" we understand people bearing the Celtic culture, that is, such groups of people who felt themselves pledged to a Celtic religion and a Celtic culture, dressed in the Celtic manner, dined in a Celtic manner and also probably spoke Celtic. By the word "Romans" is understood adherents of the political organisation known as the "Roman Empire", which does not, of course, exclude being rooted in Celtic culture.

In general a clear timetable was established and that is reflected in the periods used in this catalogue. It begins with the later Neolithic Period and the Early Bronze Age, to which the earliest Swiss gold finds are to be ascribed. The time of the Celts is the Iron Age, divided into an earlier Hallstatt period and a later La Tène culture, for which various written records and linguistic evidence exist and, above all, where a distinct Celtic art becomes clearly manifest.

The Celts were called Keltoi or Galatoi by the Greeks and by the Romans Galli. Today the expression "Gauls" is taken to mean mainly the Celtic inhabitants of Gaul, more particularly of modern France. The Celts did not possess a centralised organised authority but were divided into individual autonomous tribes. On the borders of Gaul about 100 B.C. we meet for the first time by name those called Helvetii whose living area in the 1st century B.C. comprised principally Central Switzerland. Much is unclear about the development of the Celtic Helvetii as it was indeed about the origins of the Celts themselves. Certain it is that dynamic processes between local proto-Helvetian inhabitants and groups newly arrived from the north towards the end of the 2nd century B.C. were so firmly established that, for the whole of the 1st century B.C. it is possible to talk of Helvetii in a narrower sense. Strictly speaking, therefore, it is only those Celtic gold objects of the 1st century B.C. which may be described as Helvetian. In this exhibition, however, all gold objects coming from this clearly circumscribed area and its immediate

Colourplate VII
Cat. 59–65 *(The Gold Treasure from Erstfeld)*

Fig. 1 Ernst Stückelberg, *Helvetisches Siegesopfer* (1873), Museum zu Allerheiligen, Schaffhausen. The picture is supposed to symbolise the spirit of victory of the original Swiss people, as represented by Helvetian priestesses who sacrifice booty in a forest clearing.

surroundings are subsumed under the general heading, "Gold of the Helvetii".

Within the Celtic tribal groupings there were various smaller tribes. Known by name amongst the Helvetii were the Tigurini and the Toutones. In the chapters about the written records neighbouring tribes of the Helvetii are described more closely.

Roman gold objects are also consciously included in the exhibition, because the association of the Helvetii, with its capital at Aventicum (Avenches), and the Celtic Helvetian culture during the time of the Roman occupation continued in existence for a long time and in many areas. Taken into consideration in this context are, amongst others, those products which adhere to native traditions. Not included, on the other hand, is the time of the early Middle Ages, even if, after the end of Roman domination, a certain resurgence of Celtic cultural life is noted. Fundamental research is still needed in this field. This holds good, naturally, for all archaeological areas and thus makes for difficulties at the same time as stimulation in the profession: the limitations of conclusions drawn from the sources which change and improve with every new discovery. An archaeological work, indeed an exhibition also, can provide little more than an intermediate stage, as the second part of this catalogue will demonstrate by examples.

Out of the water – into the water

In the section about the extraction of gold it is stated that in Switzerland gold recovered from rivers comes from secondary sources and the connection with the primary deposits in the mountains must have been known. The tiny gold particles were recovered from the bed of the river through the most arduous work—which would be said today not to be worthwhile. Rivers and other sheets of water were deemed by the Celts to be connecting links to the celestial world, to the kingdom of the gods and to the other world. It is to be accepted that gold panning, then as also later, was subject to the approval of those with religious or lay power in the sense of a royal prerogative. River gold was cast to a new shape by means of fire and from it objects were made. Such were not for everyday use but were reserved for special persons and functions and this applied to the coins as well as to ornaments. Where did such objects end up finally? As well as later recast objects, the fate of which can hardly be determined, the find-places of rediscovered precious objects give considerable information. Statistically the largest number comes from graves. But for what reason were and are graves dug and furnished with valuable materials? The answer must be, to make possible the way of the dead to the other world, to make it easier and to lead to life after death. This means, of course, nothing other than that the gold given with the dead found its way again to the wielders of divine power. This idea probably lies behind the second largest group of gold objects, those from hoards. In the whole of the Celtic area these treasure hoards come from two areas—prominent sites in the landscape and from water. This applies, as will be shown below, to the three most important hoards dealt with here, namely, that from Erstfeld at the foot of the Gotthard Massif, the treasure from Saint-Louis, from the Rhine at Basle and, finally, the huge find complex from Lake Neuchâtel at La Tène.

Finally, the gold offered up was brought back to the place whence it came and with this the circle was completed. During his life span man plays a short but decisive role in this gold cycle, in the certain knowledge that in this dying world nothing can be permanent, not even the possession of the imperishable; the most that gold can do is to ease the way to an everlasting other world.

Rich imaginary worlds – the limitations of science

In the exhibition and particularly in the catalogue an attempt is made, in the light of the latest state of our knowledge, to clarify the background to innumerable objects and to discuss possible associations. Modern archaeology, even when provided with exact scientific aids, faces limitations which are conditioned by restricted sources. Much is known today but, compared with what is unknown, the known sum of knowledge declines as a star giving poor light. It shines into the dark but only poorly outlined contours are lighted. Because concrete single traditions are missing general knowledge of past times must be invoked in order to arrive at the spiritual content of our finds.

Gold in many of the cultures of the Old World is the symbol of the gods and, as amongst the Egyptians, is associated with the belief that through it mortals can be made immortal. Is it then possible that it was for this reason that many princes of the Hallstatt Period had themselves especially "gilt" for burial? In nearly all mythologies the yellow shining gold is linked to the sun and we thus find in the European Bronze Age decorated objects of pure gold bearing sun-symbols and clearly to be taken as part of a sun cult. The most famous discovery of this sort is the sun disc chariot from Trundholm in Denmark, dated to about 1500 B.C. This sun disc already displays in its central zone the wavy meander known as the "running dog"

design as we know it on two armlets from the Erstfeld Hoard of more than a thousand years later. Is it accident that in Erstfeld as in Trundholm the wavy band moves eight times to the loop (Cat. 63 and 64)? But this meaning, probably associated with astronomical concepts, still awaits verification.

The hemisperical bowl from Zürich-Altstetten (Cat. 7) is dated to the Bronze Age. It was found inverted on a stone slab, a position reminiscent of the declining (or rising) sun. The bowl is decorated with a band of deer with four suns and four moons. The sun and the moon revolving about its fixed axis can be seen also in the delicate pendant from Jegenstorf (Cat. 35). The "golden powers" of the sun are noted again in old folk expressions such as in the reference to the legend that Celtic gold coins of the "rainbow-bowl" type, as the name itself implies, originated where the rainbow, produced by the sun's rays, touched the earth. A similar direct or indirect relationship is also not to be excluded with reference to the name "Sonnenbüel" (sun mound) for the rich burial on the Üetliberg near Zürich. Apart from the three preserved gold discs (Cat. 72–74) all further gold objects were plundered from this grave already in Celtic times.

New details of the gold treasure from Erstfeld?

The above-mentioned restricted testimony holds good also for the treasure from Erstfeld which forms the central attraction of the exhibition, "Helvetian Gold". Still open are important questions about the place of discovery. It is known that the four necklets and three armrings were discovered by accident on August 20th, 1962, by G. and V. Ferrazza at the foot of the Gotthard, above Erstfeld. At first the hoard was deemed to comprise items hidden by a dealer. Nowadays, however, a cult interpretation for the deposit is becoming acceptable. It is seen to be connected with the Alpine surroundings and with the idea of mountains as seats for the gods, reaching high to the sacred heavens.

A further questioning of Virgilio Ferrazza, one of the two discoverers of the Erstfeld treasure, on April 26th and September 18th, 1990, in the National Museum produced the following additional information:

After V. Ferrazza and his brother had removed some 7 to 8m of rubble from the incline in the Rüfen valley they came upon a large block of stone measuring about 70 m^3 and at the foot of it, valleywards, a smaller, flat stone apparently quarried. Both had to be removed. G. Ferrazza then, after a heated dispute, lifted with the excavator shovel the flat stone, which measured about 1m by 1m and about 70–80 cm thick. In conversation this was repeatedly called a "table". This "table stone" was apparently on the valley side of the larger stone block where his brother, Virgilio, was standing. In lifting the flat stone or pulling it away the "seven pieces slipped out directly in front of my legs". The seven gold rings lay closely over each other "like a pile of beer mats", the smallest ring at the bottom, the largest on top. Ferrazza thought at first that they were ornaments for a national costume and washed one of the rings in a nearby pool. This movement caused a rivet to fall out of the fastening but, despite much searching, this could not be found. The rings during the day lay in the tool box and at night were brought home and later handed over to the Swiss National Museum.

This description is interesting in that it shows how the gold objects had once been deposited in a horizontal fissure between the large distinct stone block and the smaller quarried piece. Secondly, it is remarkable that the rivet was apparently so loose in one of the armlets that it could be freed through the simple act of washing. All the rings are otherwise completely preserved and show no traces of extended use; they were placed "as new" in the ground.

With this the puzzle of these rings begins. They were manufactured about 300 B.C. but the questions are for whom and by whom were they deposited, what is the significance of the human, animal and phantasy figures represented? Only one thing is certain, namely, that the three questions refer to a common problem. In Celtic times the richly detailed decoration of the rings opened up whole worlds of imagination for the initiates. Only think that today the representation of a human body on a cross brings alive the whole passion of Christ and the foundations of Christianity. What world do the dragons, birds, bulls, rams and pairs of human twins evoke? Up to this science could give no certain answer because unequivocal and direct solutions are missing. This is all the more astonishing in that the full plastic frieze of Celtic animals and human beings is available. At the beginning of our discourse we referred to the fact that history has largely been modern-conditioned; in the period during which research was strongly orientated towards the natural sciences and was highly specialised, some aspects of the history of ideas faded partly into the background. Here we are seeking a middle course, a *via media*, in the belief that it is the duty of the scientist to provide access for a wider public even to areas not yet fully researched. The following lines are therefore composed to afford stimulation to further thought.

A search for traces in neighbouring areas

An insight into the rich and strongly emotional world of ideas is provided in part by texts relating ancient Irish traditions. These are particularly interesting because they were recorded early in the Middle Ages and because Roman influence on them was largely excluded. In one of the epics, in which demons, giants, dwarfs, monsters, witches and fairies have an established position and in which also reminiscences of classical sagas, such as the Odyssey, are unmistakable, the great hero, Cú Chulainn, behaves as follows in the confrontation with the enemy:

"Then a towering rage comes over him. All his limbs and his joints shake, his body turns in his skin so that his feet and his knees face backwards, his heels and his calves look forwards and the muscles of his calves lie like warrior's fists on his shinbones... Through the distortion of his mouth the cheek parts from the jaw so that his throat becomes visible. His lungs and his liver flutter in his mouth and throat... The 'warrior moon' arises from his forehead, as thick as a sharpening stone and as long as his nose..."

This last reference reminds us incidentally of a bow-shaped creation seen on coins (but not present on the mint prototypes). Can the concept of a body twisting in its skin have any connection with the confusion of limbs on the "twin figures" of Erstfeld (Cat. 59 and 60)? Before every single ascription there stands the clarification of the general background. In things Celtic this remains the most important method because the Celtic scholars and priests, strongly influenced by the general knowledge of their times, deliberately rejected the literary formulation of their own knowledge.

As an example of the traditionally conditioned myths of ancient Greece a constellation poem of Aratos may be cited. In this, about 50 years after the production of the Erstfeld rings, he incorporates older sagas of the 6th century B.C.; to it belongs the tradition of Orion which declines when Scorpio is in the ascendant.

"The terrible Scorpio comes for such a man,
Who kneeling ever his rise false began,
The legs and girdle over, the right hand,
The shoulders and the breast. Only when the marksman
Spans the bow does head of kneeling one rise from the veil of night,

Fig. 2 Reconstruction of the discovery of the Erstfeld gold hoard (Catalogue 59–65) on August 20th, 1962 (according to Virgilio Ferrazza). In the Ribi valley above Erstfeld a large reservoir was made to hold the avalanches which rushed continually into the valley. Towards the mountain the deposits made by the avalanches are removed layer by layer, and the ensuing earth masses form a dam lower down.

Top: At 9:30 a.m. Virgilio Ferrazza and his brother, Goffredo (with the excavator) uncover a huge block of layered rock at the bottom of which there is a large fissure. The brothers discuss the matter: Goffredo would like to blow it up at once but Virgilio prefers to try to expose the fissure first.

Centre: Virgilio's view prevails and his brother, somewhat upset, sits in the excavator and tries to free the fissure with its scoop. After several attempts the block tilts over towards Virgilio.

Bottom: Goffredo sees something glittering and jumps from the driver's seat shouting, "Have we found gold?" "Yes, what!" answers Virgilio as beautiful rings fall around his feet from the obliquely positioned stone.

The left one, too; then Hermes' lyre and Kepheus' head and
Neck press forward from the floods in the east.
Over there, however, floats downwards the white glow of the
Dog star and Orion sinks completely back into the womb."

Various religions and myths of ancient times develop out of two archetypal areas of tension: first, the exposure of man under the course of the stars and, secondly, the contrast between life and death, between the world of the mortal and that of the immortal. Forces and phenomena were, in earlier times much more than today, seen as personifications. In this way originated the various divinities with their interchangeable names such as the Greek war god, Ares, known to the Romans as Mars and to the Helvetii as Caturix. To these gods and goddesses, surrounded as they were by a rich world of demi-gods, nymphs, sacred animals and so on, certain attributes were attached, such as a hammer to the Celtic god of smiths. As in Christianity those born as mortals could become immortal. In the whole of antiquity the heavenly bodies were closely bound to the immortals; they not only bore divine names (e.g. Jupiter) but were also symbols of the gods as they were deemed to have been created by the gods like everything that in the cosmos moved of its own volition.

For the meaning of the representation on the Erstfeld rings two fundamental clues suggest themselves in addition to the ascription to a particular divinity as proposed by J.J. Hatt, who saw in the pictorial friezes elements of the Celtic gods Esus and Cernunnos. These clues were either, firstly, that the very conception of the rings was influenced by the life circulation or, secondly, that the representations on them reflect the conflict with the immortals, many of whom were identified with heavenly bodies. My suggestion of 1984, that the cycle of life and death may be seen in the rings, belongs to the first proposal above, namely, the soul in the body in this world, the descent into the underworld, the journey through this same sphere and the new birth in a new body in this world. The leafy snake has a traditional role to play. In Greek mythology the snake is regarded as the incarnation of the soul. Is it possible that the "curled animal" on the left in the centre acquires a mature body in the course of its life, that death intervenes at the high point in the form of a bird, that life in the other world proceeds in the opposite direction and that the soul wanders sleepily in a quiet phase until the beginning of the next life?

Another possible explanation is to see in all this the life cycle of human beings from youth, through middle age, the zenith, to old age. The figures of the twins suggest the twin myth, so widely distributed in antiquity, of the conflict of the good and the bad after birth.

A general divine peculiarity is that the gods are apprehended as being bedded in nature but at the same time are able to direct the course of nature. This brings us to the second clue mentioned above, which leads us to the galaxies, especially to the sun, to which gold is allied. This does not, of course, mean that all gold objects stand in direct relationship to the sun. It is, however, noticeable how rarely in the Celtic world figure representations occur on gold objects or on objects made of polished, gold-coloured bronze. Was it only particular themes that could, in this prized metal, take on a figurative shape? At all events it appears that direct access to this world of signs and symbols was reserved to a narrow circle of people; it is known from various literary sources that the Celtic Druids, the outstanding authorities in spiritual and religious matters, restricted their knowledge to a limited circle of initiates. Of the Druids Caesar writes: "They dispute much about the galaxies and their courses, about the size of the world and the earth..." Various ancient writers have adverted to the relationships of the Celtic religion with the teaching of Pythagoras, which also includes the above-mentioned wandering

Fig. 3 Celtic gold coin with a head with an arched design on the forehead. Is this a case of the "warrior's moon" as mentioned in the Irish hero tales?

of souls. Theology and the exact sciences (arithmetic, geometry, astronomy and the teaching of harmony) formed a unit within the same teaching. To the cosmos in its complete proportions divine likenesses were also attributed.

Significant Greek philosophers, such as Plato or Aristotle (who was still alive when the Erstfeld rings were made), were influenced by the followers of Pythagoras. At this time it was commonly believed that the earth rested under a fixed star and was surrounded by planets. Western astronomy was based on observations made in Egypt and Mesopotamia and on knowlege derived therefrom. Since the 6th century B.C. Greeks collaborated with Babylonians. Since the 5th century B.C. the latter had knowledge of the animal frieze and transmitted it to the former. For the 4th century we are already informed of the "starring" amongst the Greeks: ancestors or relatives of rulers were placed under the stars. We may assume that the developments of those times influenced Celtic scholars also.

"The oblique circle is, according to ancient usage, called the animal circle" says the aforementioned Aratos and also:
"Ram, bull, twins close this dance
As the sun god traverses the Twelve
He brings the year to its end;
As he travels round the globe
The graces bearing fruit, all blossom before him."

In this connection a third idea may be put forward, namely, that the rams and bulls and twins who dance the dances may be represented under other appearances without their at once being recognised as part of the system.

It should be considered, too, whether certain ring representations relate to the cycle of the sun during a single day (or year?) as an Egyptian concept has it, according to which a goddess swallows the sun and gives it new birth every morning. Interestingly enough there is a relationship between incipient darkness and the dragon which occupies the transitional area on three of the collars. Into the 19th century expressions such as "dragon head" and "dragon tail" were used for the point of intersection in the eclipsis of the moon's orbit.

Some ancient beliefs have remained in a fragmentary condition until modern times. To the traditional elements may be added the very odd custom of using as amulets little metal plates with certain signs on them; amongst these, without any doubt, gold is related specifically to the sun.

Unfortunately, not enough remains of the knowledge from antiquity to allow us to arrive at certain conclusions about the representations on the Erstfeld rings; they thus pose for us a problem that is difficult to resolve. This problem can be solved only if from various sides – in the present case from four mutually opposed ideas – an attempt is made. At the beginning of any such discussion stands a thorough study of the original finds themselves. The visitor to the exhibition can form his own views; such views are of interest to those who set up the exhibition. Visitors are requested to set out in a book provided their opinions on the interpretation of the designs on the Erstfeld rings, or to sketch what they think they represent after which the results of these efforts will be evaluated.

We have now arrived at the central concern of the exhibition: the original objects should be experienced in their full immediacy.

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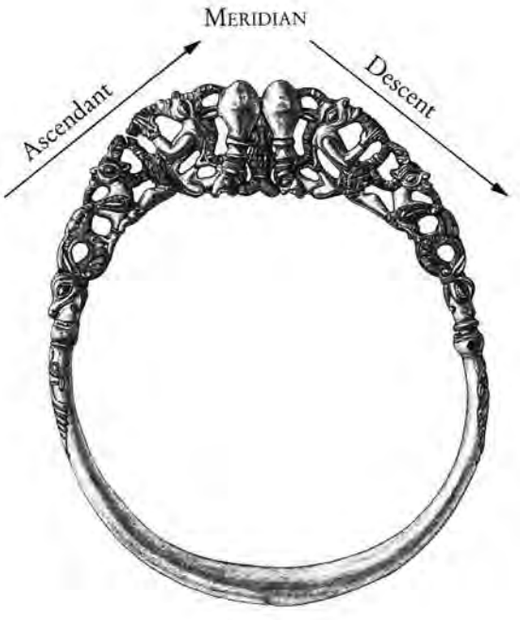
a

b

c



d

Fig. 4 What imaginary worlds are enclosed in the frieze on the necklet from Erstfeld? Four ideas are put forward: (a) Birth, death and rebirth of mankind; (b) life-cycle of man; (c) the course of the sun through a part of the animal world; (d) daily course of the sun.

CELTS AND HELVETII IN SWITZERLAND

Franz Georg Maier

The "Helvetii" appear already in the first chapter of Caesar's report on the Gaulish war and are there brought almost startingly into prominence: "The Helvetii surpass all the other Gauls in their proficiency, as they fight almost daily with the Germans in defending their border against them or even wage war in their territory." (Helvetii quoque reliquos gallos virtute praecedunt, quod fere cotidianis proeliis cum Germanis contendunt, B.G. I,4). The following chapter gives the impression that these Helvetii were then the only inhabitants of modern Swiss territory and, as their borders, Caesar lists the Rhine, Jura and the Lake of Geneva (B.G. I 2,3). There is as little mention of other Celtic groups in Switzerland as of the Rhaeti. An exception is provided by the marginal Sequani.

Rome and Gaul: a conflict opens up

At this time the Helvetii could undoubtedly be seen as one of the leading Celtic tribes though Caesar's very one-sided point of view on this is conditioned by those events of the year 58 B.C., events which, in the following chapters, he gives as an introduction to his history of the conquest of Gaul. The emigration of the Helvetii from their former living area and the battle of Bibracte (near Autun) which developed from this appear to be the causes of the ten-year war against the Gaulish tribes.

The reason for 58 B.C. marking an epoch for the Helvetii can be understood only in the light of the larger connections of Rome's foreign policy. After the unification of Italy and the conquest of the western Mediterranean territories at the turn of the 2nd century B.C. Rome began to reach out to the east. While the Hellenistic state, arising from the collapse of Alexander's empire, was overcome step by step, the northern front of the Roman empire lay in the shadow of this expansion. From the point of view of power, politics and economics, the Alpine lands and central Europe were at this time only of limited interest to the empire. Rome, therefore, restricted itself to a circumscribed expansion, one which would secure its own borders and also serve the land connection with the Spanish provinces. In this connection the "Provincia Gallia Narbonnensis" was created in the year 121 B.C. This "Provincia" reached as far as Geneva. After this, however, Roman policy in this area remained on the defensive for more than half a century.

It was only towards the middle of the 1st century B.C. that the Gaulish Celts finally entered the political sphere of power of the Roman empire. It was the political instability of the Gaulish tribes at this time which provoked a further Roman attack towards the north.

Colourplate VIII
Cat. 235 *(Golden Votive Offering)*
Cat. 236 *(Three Sheet Gold Pods)*

A latent civil war situation prevailed and this was intensified by the advance of the German Suebi in the late seventies of the 1st century B.C. into Alsace which, up to this, had been inhabited by Celts. In 61 or 60 B.C. the King of the Suebi, Ariovist, decisively defeated at Magetobriga a Gaulish contingent which probably also included Helvetii. The great tribe of the Aedui sought dependence on Rome as a result while the Helvetii decided on emigration.

The movements of peoples and comparable historical events are too complex to allow of simple explanation. Thus, the decision of the Helvetii together with the Raurakii to emigrate in 58 B.C. to south-western France can be understood only in the light of the operation of several factors, the importance of which is up to now a matter of debate. Caesar attributes a central role to Orgetorix; as leader of a conspiracy of the nobility (something not of rare occurrence amongst the Celts) he is alleged to have persuaded the Helvetii to attempt "to take control of all Gaul for themselves" (totius Galliae imperio potiri, B.G. I 2,2) but, during the preparations for the campaign, he died in unexplained circumstances.

Such an attempted explanation is conditioned by the strongly personalised nature of ancient historical writing as well as by the concealment of specific interests of Caesar himself. Finally, it is hardly to be doubted that the pressures exerted by Germanic folk movements from southern German territories contributed largely to the decision of the Helvetii. It was no accident that the Aedui prince, Diviciacus, could state in the same year, 58 B.C.: "Should no help come from Caesar or from the Roman people, then all Gauls must do as the Helvetii, namely, emigrate and search for new living areas far from the Germans" (B.G. I 31, 14). A further factor was possibly a sharp population increase amongst the Helvetii and, finally, it remains possible that, as with other Celtic migrations, these may have been irrational and only with difficulty appreciated impulses.

In any case, the movement of the Helvetii may be reckoned as one of the last of the Celtic migrations, just as it is the most exactly to be understood in our sources. Caesar, of course, makes of it the first important link in an artfully developed chain of events from which Rome could not withdraw.

Caesar's description leads necessarily to the question as to how extensively and by whom the territory between the Alps, Jura and the Rhine was inhabited at that time. An attempted reconstruction of the settlement pattern of the Swiss area in pre-Roman times is, however, faced with considerable problems of method. The ethnic significance of prehistoric provinces with archaeological finds is as doubtful today as the exposure of the economic, social and political structures of early historic communities. This is particularly true of those areas where, as in the case of pre-Roman Switzerland, the written records that might supplement the archaeological remains

are very slender. A Celtic writing of its own history is missing and reports of Greek and Roman authors are, up to Caesar's time, most sporadic and fragmentary.

The Celtic Helvetii and their neighbours

The history of the Celtic development is in many ways as little to be understood as the tribal affiliations in Swiss territory before the 1st century B.C. One thing, however, is apparent, namely, that the Helvetii as a tribe are due to the results of a long and many-textured process of formation, the precise steps of which cannot any longer be reconstructed with precision.

The earliest certain mention of the name "Helvetii" is given by Poseidonios about 135–51/50 B.C. He was a philosopher and historian living in Rome who knew from his own observation at the least the Celtic tribes of the Iberian Peninsula: "the Helvetii," he wrote, "rich in gold but peaceful people" (Frag. 272, Edelstein-Kidd). Poseidonios here refers to two Helvetian tribes which, as the Roman historian also reports, invaded the Roman provinces of southern France and northern Italy together with the Germanic Cimbri between 111 and 101 B.C. These were the Tigurini and the Toutones. The latter are sometimes called Teutons and thus, though incorrectly, deemed to be Germans.

Further reports of ancient authors leave hardly any doubt that some of the Helvetian tribes (occasionally today referred to as "Northern Proto-Helvetii") were for a time established in southwest Germany. The Roman historian, Tacitus (c. A.D. 50–120), states in his work *Germania* that the Helvetii once inhabited the territory between the Rhine, the Main and the "Hercynian Forest", that is, probably the Black Forest (inter Hercyniam silvam Rhenumque et Moenum omnes Helvetii tenuere, *Germania* 28). This corresponds to the knowledge of the geographer, Ptolemaeus (c. A.D. 90–168), of a "deserted Helvetian territory" apparently lying north of the Swabian Alps (he ton Helouetion eremos, *Geographia* II 11,6).

About 100 B.C. a more extended migration commenced and it was only in the course of this that the Helvetii appear out of southwestern Germany to occupy those regions which Caesar in about 58 B.C. describes as those in which they lived. There are certain references which indicate that portions of the Swiss central Plateau were occupied already in the 1st century B.C. by the Celtic Sequani. Whether this migration of the Helvetii – as sometimes suspected – was associated with the movements of the Cimbri, the Tigurini and the Toutones cannot be established with any degree of certainty.

The tribal composition and the settlement pattern of Switzerland are now established in outline about the middle of the 1st century B.C., that is, immediately before the Roman attack. The two chief groups – of varying ethnic and cultural character – who played the decisive role were the Rhaeti and the Celts. The border between the Rhaetic and Celtic peoples ran through the middle of Switzerland, from the forest of Arbone, over the low-lying area between the lakes of Zürich and Walen and on to Uri. This demarcation line was by no means sharply drawn and the many intrusive Celtic groups in Rhaetic territory, particularly in the Rhineland, provide an indication of tribal overlap.

In ancient times the Rhaeti, divided into many single tribes, were deemed to be Etruscan, as suggested, for instance, by the natural historian, Pliny the Elder (A.D. 24–79). These Etruscans had fled into the Alpine valleys before the Celts began pressing into northern Italy. Recent researches have indeed shown that they stood in close relationship to the bearers of the contemporary early historic cultures of Tirol and of the eastern Alps and possibly formed a part of the larger tribal group of the Veneti.

The Celts of Switzerland comprised a number of single tribes, each with its own cultural and historical traditions. Their geographical distribution in the 1st century B.C. is relatively easy to comprehend – they can be divided roughly into four regional groups.

Apparently parts of the earlier Ligurian-Northern Italian population allied themselves with the Celts in the Leponti of Ticino and its side valleys (amongst them the Valle Leventina, which received its name from them). The Celts had pressed forward into the southern Alpine valleys after the conquest of northern Italy. The language of the Leponti was Indo-Germanic and was probably an early special form of Celtic. It is possible that the Leponti in time occupied the Rhine and Reuss valleys.

The Allobrogi, incorporated since 121 B.C. in the province of Gallia Narbonnensis, were settled in the area south of the Lake of Geneva and the Rhone. Their border town, Genava (now Geneva), provided, as reported by Caesar (B.G. I 6,3), a bridge into Helvetian territory. The important balance of their tribal lands lay clearly south of Switzerland and their chief centre was Vienne.

Valais was occupied by a league made up of four tribes of the "poeninish" Celts, so-called after the name by which the Great St. Bernard was then known, that of the Celtic god, Poeninus. The Nantuates were settled in Lower Valais, to about St. Maurice, the Veragri in the district of Martigny, the Seduni in the area of Sitten (named after this tribe) and the Uberi (thought by Pliny and many modern research workers to have been a branch of the Leponti) in Upper Valais.

The territory of the Helvetii incorporated the central area of Switzerland, including eastern Switzerland between Lake Constance, the Rhine, the Alps, Jura and the Lake of Geneva. As already stated they are, at the earliest, definitely attested in the year 80 B.C. Together with the influential Aedui and the Sequani they formed a type of power triangle towards the middle of the 1st century B.C. in eastern Gaul.

The Sequani were established on the edge of Helvetian territory on the western side of the Jura mountains. Their main concentration, however, was in the Franche-Comté and in Upper Alsace with headquarters at Vesontio (Besançon). The Rauraki, who participated in the Helvetian campaign of 58 B.C., inhabited the land between the Sequani and the Helvetii, the district of Basle, the Jura mountains at Basle and Upper Alsace. This smaller Celtic tribe, originally from the right bank of the Rhine, was however, probably first settled by Caesar in 58 B.C. in former Sequani territory.

The question of the extent and boundaries of all these tribal areas is of great interest though it can so far be answered only in very rough terms. It appears that the central area, the Jura and some Alpine border valleys have for long been fairly heavily populated while the higher valleys of the central and eastern Alps were only partially settled. For instance, it is uncertain whether the Urseren Valley was occupied; in the Rhine valley the permanent settlement reached only as high as the shelf at Truns-Somvix.

War and Eloquence, the only Celtic qualities?

Thanks to Caesar's reports and to the archaeological discoveries we have a reasonably exact picture of the way of life, the economic, political and social structures of the Celtic tribes, who were the main inhabitants of Swiss territory. The economy of the Celts depended first of all on the rearing of cattle and this, of course, was supplemented by a well-developed agricultural system. Craftsmen operated in the settlements using highly developed technical skills which are mirrored in the quality of bronze and other implements. In addition, there is evidence for a relatively extensive internal trade using rivers as well as roads. Over and above all, imports from

Etruscan and Greek sources as well as the knowledge of the Greek script possessed by the Helvetii show wide commercial contacts which exercised a clear influence on certain aspects of Celtic culture.

The predominant settlement forms of the Celtic tribes were the single farmsteads and the hamlet. Dwelling-houses and farm buildings were relatively simple structures of wood with straw roofs. According to Caesar the Helvetii possessed over 400 "vici" (villages) and almost a dozen "oppida" as settlement centres (B.G. I 5,2). The Celtic "oppida", as instanced at Altenburg/Rheinau, on the Enge peninsula near Berne or on Mont Vully, were less refuges than early city-like organisations in which proto-urban lifestyles developed.

The politico-social structure corresponded to the still largely agrarian economy. Caesar probably delineates the social relations in a somewhat one-sided way when he states: "In all of Gaul there are only two ranks which have meaning and which enjoy respect: the common man is treated virtually as a slave. He dares do nothing on his own account and is not consulted in any way...The two ranks are the Druids and the nobles" (B.G. VI 13,4). However, it seems that the Celts of later times did have an oligarchic power structure. They were ruled by a rich and powerful nobility which controlled many followers and slaves in a dependency situation. There were, of course, also free peasants and craft workers. The hereditary priestly cast of the Druids administers cult, tradition and knowledge and beliefs handed down. Thanks to the deeply rooted religious sense of the Celts, as indicated by Caesar, they achieved their authority, one which secured for them considerable political influence also.

In the beginning of *Bellum Gallicum* Caesar describes the Celts (and, thus, also the Helvetii) as Gauls: "in their own language they are called Celts, in our tongue Gauls" (qui ipsorum lingua Celtae, nostra Galli appellantur, B.G. I 1,1). Both names mean for him the same tribal or folk group. Fundamentally, such an equivalent was also valid for the other historians and ethnographers, beginning with Herodotos in the 5th century B.C., who mention Celtic tribes. The picture of the lifestyle and character of the Celts given to us by the ancient authors and especially comprehensively by Diodorus in the time of Caesar was clearly strongly influenced by Poseidonios who about 90–80 B.C. described the customs and practices of those tribes which he called "Keltoi" (Frag. 67 – 68; Diodorus 5, 25 – 32). They appear as heavily armed, war-loving warriors, arousing fear; they are clever, talented and quick-witted but also fond of drink (the rich import wine from Italy and Marseilles which they drink raw) and quarrelsome; they are full of prattling talk, of tragic poses and of choleric rages. They are tall, dressed in long trousers and check-patterned, hooded cloaks, heavy with gold ornaments. Their hair is long and blonde, made fairer with a lime soap; it is combed in thick strands from the forehead to the neck.

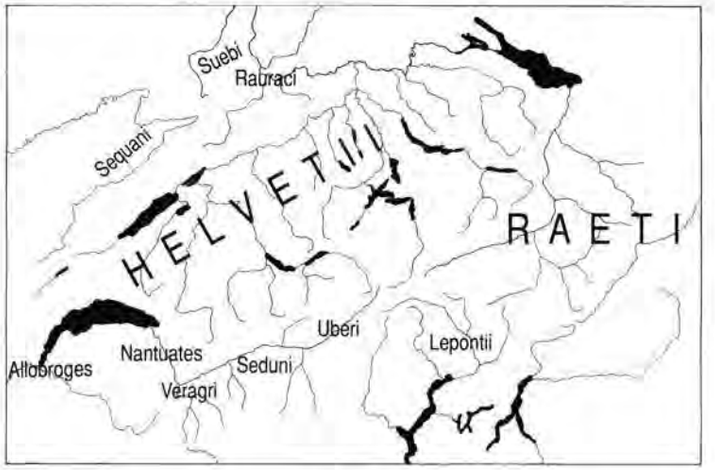


Fig. 5 The Celtic Helvetii and their neighbours with the traditional names written in the Latin manner.

It would be tempting with the help of such descriptions to assert with precision our views of the nature and character of the Helvetii. However, it is difficult to say whether Poseidonios reported actual observations or whether he merely repeated clichés which, as in comparable cases, had a tradition in the ancient ethnographical literature. Characteristically, Cato the Elder (234 – 149 B.C.) indicates that in Gaul one knew of only two main passions, "war and loquacity" (rem militarem et argute loqui, Origines frag. 34). Thus the view should not be excluded that Caesar's judgement of the Helvetii and of their warlike activities was based not only on personal experience but was also influenced by such shadowy ethnographical scenery.

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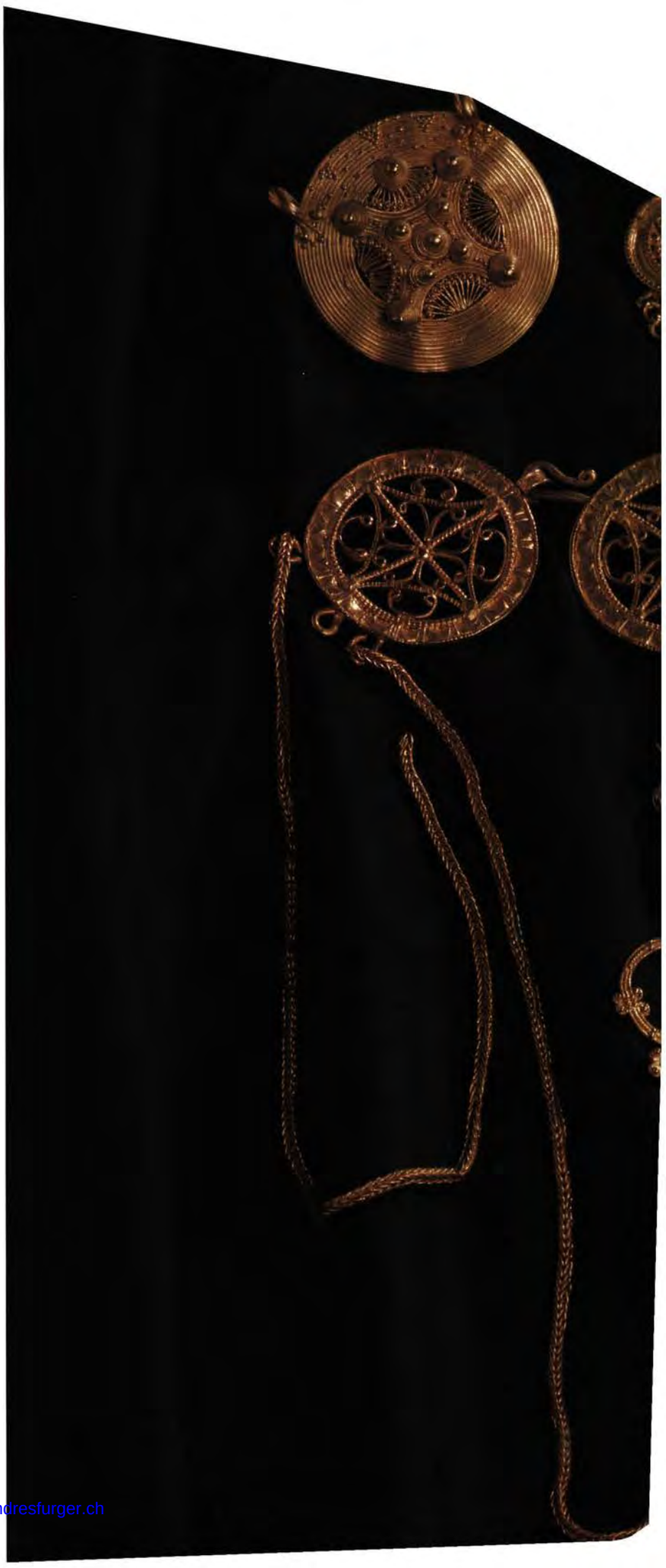


Colourplate IX Cat. 260–266 *(Gold Jewellery)*

58 B.C.: JULIUS CAESAR, THE HELVETII AND ARCHAEOLOGY

Laurent Flutsch and Gilbert Kaenel

f the Helvetii, Julius Caesar at Geneva, the battle of
ginning of the written history of Switzerland, the
ıiniscences of scholars, epic evocations of a whole
ıarch. What does one really know today of these

elates the episode in the first book of his *Gallic Wars*,
ncipal source of information; a work of propaganda,
d, its account makes the search for historic accuracy
ult.
ology allow the raising of certain doubts? Let us
ays: firstly, let us tell the story by adapting Caesar's
t us examine it in the light of the evidence preserved

(adapted) from the Gallic Wars of Julius Caesar

f March, 58 B.C.: The great day is approaching. For
arations for a departure to more pleasant climes have
eral generations ago, the Helvetii, originating across
ettled between the Alps and the Jura; in a few weeks,
ıte to Saintonge in southwest Gaul.
ıe powerful instigator of the project, will not witness
ıment, however; he has died in circumstances, the
h are not quite clear; suicide has been *suggested.*
ılanning the migration, he had allied himself with
ıwerful Sequani neighbour of the outer Juras, and
ı of the Aedui, to whom he had even offered his
riage. He had been accused – mistakenly? – of having
power. Everyone remembered the day of his trial;
was in chains, according to tradition, he presented
the members of his family and with 10,000 men at his
s demonstration had not succeeded; no one had
e, but the disappearance of Orgetorix served to avoid
ict.
t Divico, the legendary old chieftain, will lead the
is already familiar with southwest Gaul; it is there
o, having joined up with the Tigurini in the famous
he Cimbri and the Teutoe, he had dealt a bitter
.omans by making one of their legions pass under a

later, early in the morning: now everything is ready.
loaded with personal effects and supplies; conform-
eryone is provided with flour for three months. The
thy livestock are herded together. Naturally the men
with them, the riders are busy with their mounts, the
ying around the wagons. The old people have found
e middle of a strictly regulated formation.

Outside and inside the oppidum, thousands of people are awaiting the order to set out. The objective: to rally at the end of Léman, where all the emigrants must assemble. From there, the Jura must be crossed, in order to reach the plains of the Saône.

It is time! The leaders set out, irrevocably turning their backs on the oppidum. Behind them, flames touch the sky and a thick smoke spreads out over the air, bearing the aroma of wood and burnt straw. The blazing fortress perishes in sections, the houses are consumed; even the surplus grain has been consigned to the flames.

There is one thing everyone knows: turning back is out of the question. The Germans, those bloodthirsty enemies who will not miss the opportunity to instal themselves in the deserted territory, will find only ruin and desolation.

Slowly, they make their way towards the west, joined at crossroads by other emigrants. In the distance, other columns of smoke rise up; at the same moment, over all their territory, the 12 towns of the Helvetii, their 400 villages and all their farms disappear into the flames.

28th March, 58 B.C.: An immense crowd is assembled between the lake and the Jura, not far from Genava: to the 263,000 Helvetii are added 36,000 Tulingi, 14,000 Latobici, 23,000 Rauraci and 32,000 Boii.

In a territory which has been Roman for more than 60 years, the Allobrogi oppidum of Genava occupies a strategic position; a port on the lake, where a large wooden statue is erected, and above all a bridge across the Rhône which the emigrants have intended "to borrow"; eventually, having attained the south bank of the river, they will take a route across the Roman Province for some miles before emerging onto the plain. The Allobrogi, who have never manifested any great submission to Rome, will not oppose them there; if they do, they will pass by force.

But here comes bad news: Julius Caesar, the Proconsul of the province, having got wind of the Helvetian project, is in Genava; worse, he has had the bridge over the Rhône cut down. There is only one solution: to negotiate. The emissaries meet the Roman general, ask him for right of passage and promise not to do any damage. Caesar, who appears to be reluctant, allows himself a delay for reflection.

15th April, 58 B.C.: After two interminable weeks of waiting comes Caesar's reply: the Helvetii may not pass. It is learned that the Roman, taking advantage of his "delay for reflection", has mustered his troops and has had the south bank of the river fortified.

In the following days the emigrants attempt, in spite of everything, to ford the river, on boats close together, or by ford, sometimes by day, more often by night; but in vain. At each attempt they encounter the Roman defences and are repulsed. At last the chieftains resign themselves; since the Romans are blocking the passage by the

south bank, they will take the north, in the Sequani country, by the straight and steep road, immediately between the Rhône and the Jura, which everyone would have preferred to avoid.

In a 30 mile long column 2,800 ox carts stretch out in a line across the Sequani territory. Thanks to the intercession of Domnorix of the Aedui, the latter have given right of passage to the Helvetii, after an exchange of hostages as a guarantee of reciprocal good behaviour. It is rumoured that Caesar, leaving the guardianship of the fortifications of the other bank to Labienus, has returned to Italy to raise new troops there.

Passing the last obstacles of the Jura, the huge crowd of men, beasts and vehicles spreads out onto the plain in the direction of the Saône leaving the Sequani country and entering the territory of the Aedui, allies of Rome. The latter, as a result of the depredations caused by the emigrants, have asked Caesar for help.

Already for several days, travelling prudently on rafts or assembled small boats, the chariots have been crossing the Saône, the current of which is so slow that it is hardly perceptible. Three quarters of the emigrants have already gained the west bank; only the Tigurini, one of the four Helvetian cantons, are still on the other side. Suddenly, a clamour! Thousands of legionaries surge from nowhere, descend treacherously on the Tigurini, who, impeded by their baggage, are incapable of defending themselves. The Romans, who are in independent open territory, have made no declaration of war. Powerless on the other bank, the emigrants witness, rooted to the ground, the massacre of their companions.

The following day, the legions ford the Saône in their turn. So it is decided to send a deputation to Caesar, led by Divico; he proposes to the Roman that hostilities should cease; if he accepts, he promises that the Helvetian seekers of asylum will go and establish themselves where Caesar wishes. But the general refuses; for him, the defeat inflicted on Rome that time by the Cimbri and Teutoe cries out for vengeance, as do more recent affronts such as the skirmishes at Genava and violence towards his allies. He claims reparation for the latter and exacts hostages. "Hostages!" replies Divico, breaking off the talks, "Our custom is to take them, not to give them!" This time, war is declared.

The march is resumed, in hilly countryside, in the direction of the Loire. Fifteen days ago, the Helvetian rear guard has put to flight 4,000 Roman horsemen. Since then, the legionaries have prudently contented themselves with following the column of emigrants at a distance of 5 or 6 miles.

For several days deserters have been reporting that Caesar is running out of supplies; thanks to the influence of Domnorix and his allies who are in favour of the Helvetian enterprise the foodstuffs promised by the Aedui have been delayed. The Roman general can scarcely temporise any longer: it appears he tried to attack the Helvetian army two nights ago but owing to the incompetence of one of his officers the whole operation had to be aborted.

It is at this time that the fugitive Roman slaves rejoin the Helvetii; they announce that legions, abandoning the pursuit, are marching in the direction of Bibracte. It is decided to profit from this by attacking and harassing their rear guard; then Caesar deploys his cavalry to contain the attack and disposes his troops on the flank of a hill. The decisive battle has begun. The Romans repulse the first Helvetian assault and these regroup on a neighbouring height; then the legionaries mount an attack; they are put to flight by the Boii and the Tulingii; fighting on two fronts, the Romans manage to drive back the assailants, some on to the height, the others towards the chariots.

The battle raged for several hours and nights had long fallen when the Romans manage to seize the chariots. Innumerable corpses bestrew the field of battle, the daughter and one of the sons of Orgetorix have been taken prisoner, but a group of the emigrants was able to withdraw without incident.

After three days and four nights marching northwards, the survivors arrive at the home of the Lingones, from whom they hope for shelter. Caesar has been detained three days on the field of battle, held back by the care of the wounded and the removal of the dead. But he has sent couriers to the Lingones, threatening them with punishment if they help the fugitives. This intimidation is successful: robbed of their baggage and at peril of their lives, the Helvetii capitulate.

Caesar rejoins them a day or two later. He insists that he is given deserters, hostages and arms. In the night 6,000 men of the canton of the Verbigeni attempt to take flight: recaptured, they will be reduced to slaves or killed. The next day, having received the demanded spoils and concluded a treaty with the Helvetii, Caesar advises the emigrants to return to their abandoned lands and to reconstruct their habitations there; the Allobroges will supply whatever foodstuffs they need before the next harvest. As for the Boii, they may establish themselves in the territory of the Aedui, at the request of the latter.

Today they are on their way home to their devastated, ruined country which the Germans have not yet invaded. They are going to try to rebuild everything, starting with temporary homes for the winter. The young men are cruelly lacking, it is estimated that almost two thirds of the emigrants did not return. Some families are going to return to the ruins of their old burnt homes; others will establish alternatives, they will clear the plains and the hills to establish there their fields and new fortresses. The future is more than uncertain. Caesar's intentions are unknown, in spite of the treaty he has imposed on the chieftains. It is not known what became of Divico.

The archaelogical evidence

This is, if one believes Caesar, what happened in the spring and early summer of 58 B.C.. What part of this is truth? What is approximation, exaggeration, propaganda? Failing other contemporary accounts, it is impossible to evaluate. But are there archaeological traces left by the events of this famous year?

The evidence is meagre. Applied to history, archaeology encounters insoluble difficulties; firstly, the scarcity of old texts, their incompleteness, and their ambiguities obscure the location and interpretation of remains; then, almost always, the dating methods are too imprecise to make it possible to associate one or other archaeological find with one or other historical event.

The well known Carbon 14 dating method gives, after calibration, chronological ranges that are too great. Dendrochronology, which can date the felling of a tree to the nearest year, through the analysis of its growth rings, is more precise. Again, it is necessary to discover well-preserved wood, preferably wood which still has its bark. None has as yet been discovered for "58".

The oppida

At Mont Vully we discovered one day a thick burnt layer on which the internal constructions of the rampart (a tower) were crushed; this layer sealed an archaeological ensemble and constituted a *terminus ante quem;* firstly, all the objects recovered *in* this layer, many partly charred, are contemporary in their usage; secondly, all the occupation remains *under* this are earlier than the fire. But for how long did these occupations last, houses superimposed on one another, rubbish discarded and reused for a different purpose? One year, ten years, fifty years, still longer? Alternatively, the life span of objects

Colourplate X Cat. 25 *(Sheet Gold Armlet)*
Colourplate XI Cat. 75 *(Gold Wire Armlet)*

which have been subjected to the blaze remains unknown; while it is undoubtedly uncertain for the indigenous pottery, it is more difficult to evaluate for the fibulae and jewellery and certainly more difficult than coins.

By comparison with other ensembles, notably the Basel Gasfabrik, one can generally attribute the Mont Vully horizon to La Tène D1 (the first phase of the Late La Tène, from the second half of the 2nd century to the first half of the 1st century before Christ).

Thus the fire of the ramparts belongs, at the latest, to the end of this period. On the other hand, the blaze, the violence of which has been revealed by the excavations, hardly touched the internal accommodation of the fortification. Finally, the exclusively residual nature of the material remaining in the layer of destruction seems to indicate that this was not an unanticipated catastrophe, but, on the contrary, all that could be rescued in advance, had been. Therefore, we are suggesting the presence of a bond between archaeology and history, between the burnt layer and the Gallic Wars; the fire at Mont Vully, one of the 12 oppida mentioned by Caesar, was ignited by the Helvetii before their departure. This hypothesis cannot be verified, of course, but it is plausible, and there is no evidence to contradict it. So, until it is proven otherwise, the year 58 is marked in the terrain of Vully. On this point, archaeology corroborates Caesar's account.

From Geneva to the Battle of Bibracte

Hundreds of thousands of Helvetii marched forth, confronted six Roman legions in mortal combat; what trace of these events are left in the earth?

At Geneva, Caesar is said to have constructed "a 6 ft. high wall behind a ditch for a length of 19 miles from Lake Léman whose waters flow into the Rhône, to the Jura, which forms the frontier between the Sequani and the Helvetii" (B.G. I,8). In 1861, Napoleon III, busy with the publication of his work on Julius Caesar, sent Colonel Stoffel to this area and he discovered traces of military work over a distance of about 5 km. In the 1940s Louis Blondel brought to light new lines of defence not far from Avully. Do these Genevan remains really relate to the Gallic Wars? Only further investigations, over a vast area, would serve to prove it.

For a long time the subject of controversy, the location of the Battle of Bibracte has recently been settled, thanks to archaeology. Caesar's indications fixed the confrontation within an 18-mile radius (27 km) centred on the town of Bibracte. In 1863, again from the account of Napoleon III, Stoffel, prospecting in this area, related Caesar's text to the topography and proposed to place the battlefield at Montmort, on the hill of Bois de Jaux, 22 km south of Bibracte. In 1886, he opened several exploratory sections and discovered a ditch which he identified as a fortification established by the Romans just before the battle: "Thus the entire hill was covered with soldiers; he (Caesar) ordered that at the same time the baggage should be assembled in one place and that the troops who occupied the highest position should employ themselves in fortifying it" (B.G. I, 24). In the fill of this ditch Stoffel found a burnt layer, the remains, according to him, of the incineration of the victims.

One hundred years later a group of Swiss researchers subjected Stoffel's hypothesis to modern archaeological methods. The ditch was found and excavated for a large part of its length; dug into a very strong granite substratum, to a width of 5 to 6 m and a depth of 2 m, it runs perpendicular to the slope for about 120 m, some tens of metres from the summit of the hill. Apart perhaps from a few Roman shoe nails, not one object remains to testify to the battle; hardly surprisingly, since we know from Caesar that the battle never approached the Roman baggage, the Helvetii having been repulsed from the first assault onto a neighbouring height. As for Stoffel's burnt layer, the sections quickly revealed that it did not belong to a level dating to the Gallic Wars, but to a later phase in the fill; long after the abandonment of the ditch the vegetation which covered it burned. Although wrongly interpreted by Stoffel, this layer can furnish a not-inconsiderable argument for his thesis; in fact, C14 dating has established that the fire took place in the 2nd or 3rd century A.D. which implies, forcefully, that the ditch was dug in the Roman era, at the latest.

If all the evidence is examined, it must be asked what could be the function of such a construction if it were not military? A sunken road, drainage, a canal can be discarded; in its form, its position and its plan the work could not be interpreted as having a "civilian" use. Moreover, it is totally disproportionate. Requiring considerable organisation and an abundant workforce, the excavation of such a trench at the Roman period – as at later periods – could scarcely be conceived in anything but a military context. Its position, its profile lend themselves perfectly to this. Having an open, rectilinear plan, it could not be assimilated into a permanent fortification; on the contrary, it is, on the evidence, designed to protect a specific object, a defence determined by immediate circumstances. Thus, from this it can be concluded: the trench of Montmort was dug during a battle of the Roman period, or later. Stoffel's arguments take precedence here; the agreement of situation, of topography, of the route and means of approach, with Caesar's indications allow us to equate this battle with that of Bibracte.

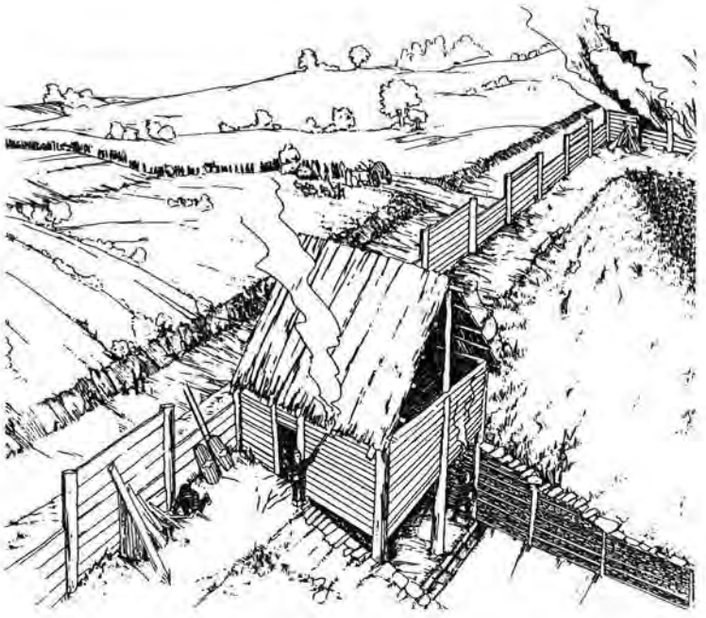
Some tens of metres of ditch almost totally empty; a poor testimony to a combat which, according to Caesar, resulted in the deaths of 268,000 of the emigrants. In spite of its considerable historical significance, in spite of the slaying and struggling, a half day's combat leaves very little trace on the land; and if Caesar had not protected his baggage by a defence system which would be useless for any other purpose, nothing more would remain of the battle which put an end to the epic of 58 B.C.

A layer of carbon at Mont Vully, a ditch at Montmort, perhaps fortifications at Geneva; direct archaeological evidence of the migration is scarce. In spite of this, the remains described above lend support to Caesar's account; too insufficient to verify it point for point, they at least demonstrate to all that the Roman general has not completely invented a Helvetian pretext to justify his entry into Gaul.

Provisional conclusions

It has to be admitted that, with some very rare exceptions, archaeology brings only meagre corroborative evidence to the reading of history. We have outlined above the deficiencies in dating techniques which limit the import of evidence and compromises its interpretation. Certainly, dendrochronology can provide, occasionally, absolute dates; this proof remains, however, a pipe dream for the moment.

Just as it has left little trace in the soil, the first episode, however heroic, of the "History of Switzerland" has scarcely left any imprint on the Helvetian memory. Helvetian military valour is certainly often evoked, "not an enemy could be seen to flee", says Caesar, and rare are the scholarly manuals which do not cite this. But our Divico has never attained the mythical stature of Vercingetorix in France. The Swiss have preferred to fix their national ideal on the solid, familial and patriotic William Tell. It is true that Divico, great leader and chief of the Helvetii though he may have been, committed a patriotically unpardonable mistake in wishing to lead his people to a foreign land, far from the green pastures, the limpid lakes, the snow-capped peaks and the sublime glaciers…



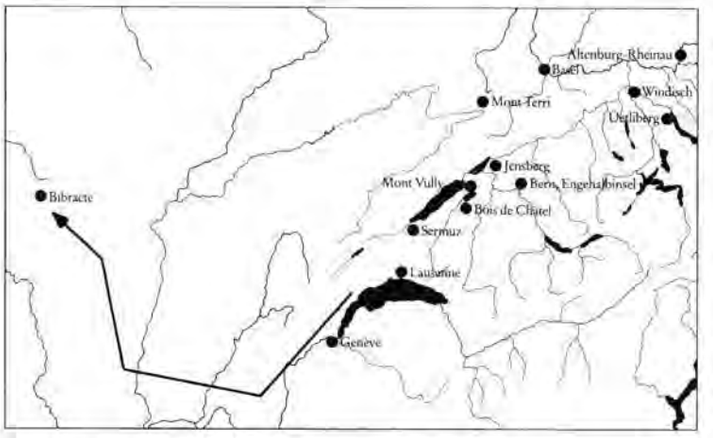


Fig. 6 Spring, 58 B.C.: The Helvetii set fire to the fortress on Mont Vully and depart in the direction of Geneva (left). The route of the Helvetian withdrawal and the large Celtic settlements (oppida) in the first century B.C. (above).

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GOLD, ITS DEPOSITS AND EXTRACTION

Franz Hofmann

Gold is a precious metal which is stable and, with few exceptions, immune to chemical attack either when exposed to the air or through heating. In its pure form its specific gravity is 19.3; in the raw form, when it is commonly mixed with silver, 16. The metal is very soft and malleable and melts at a temperature of 1063° C.

Native gold from the Alps

Gold found in rock formations is called primary gold, especially when it is visible. It is, however, frequently very finely spread and cannot be identified readily in the rock (South Africa) or in any of the sulphur-bearing or arsenical ores in it (Pyrites, arsenopyrite, falore or copper ore). Free gold and gold finely distributed in ores are found mainly in the so-called veins which run through the rock formations. They originated in the penetration from below of heavy metal-bearing solutions into the existing rock body.

The following descriptions of the extraction of primary gold are based primarily on the very active mining carried out in the Middle Ages and in early modern times. The gold-bearing rock won from many large and smaller mines was broken into pieces as small as grains of sand by hand-picking, hammering and pounding (often in a stamp mill). When thus broken down it could be panned or "washed" as in the case of stream nuggets, and the pure gold separated from the material in which it was embedded. Gold-bearing heavy metal ores were so enriched as to form a concentrate which could be worked further in the following manner:

- The ore concentrate was beaten up intensively with quicksilver and, in this way, the gold formed an amalgam with the mercury; when heated (boiling point 357° C) the quicksilver evaporated. The gold then remained as a porous mass (sponge gold) which could be melted at will.
- Gold-bearing sulphur and arsenical ores were generally "roasted", that is, air-tempered. As a result the sulphur escaped as sulphur dioxide and the arsenic in the form of arsenical gases. Iron and in any case copper oxide remained. These gold-bearing oxides were often smelted with lead so that the gold was freed by the lead while the oxides together with other accompanying minerals were reduced to slag. The gold (together with the ever-present silver) was refined from the gold-bearing lead by heating through the admission of air at a temperature of about 1100° C. The lead was oxidised to litharge (as a fused mass) and separated thus from the gold. The remains of the roast were partly melted simply with additions such as lime so that the gold was separated. At any rate well-developed smelting processes were known before mediaeval times.

Colourplate XII
Cat. 229 *(Gold Particles)*

In Switzerland there are various notable sources of gold, but only in small or, indeed, very small amounts. These sites are as follows:
Salanfe VS – Gold-bearing arsenical gravels yielding up to 37 grammes a ton; in the first third of the 20th century about 43 kilos of gold were recovered. Ancient mining operations are unknown.
Gondo VS – Quartz veins with gold – and some silver-bearing pyrites – were mined at Zwischenbergental, about 5 km southwest of Gondo, from the 17th to the beginning of the 19th century, latterly at a loss.
Malcantone TI – Into the 'thirties' of this century a quartz vein with gold-and silver-bearing ores was mined. About 34 grammes of gold and 525 grammes of silver a ton were recovered. Further mining operations occurred at Fescoggia, Miglieglia and Novaggio.
Calanda ob Felsberg GR – Quartz-calcite veins in the Jura levels at Felsberg contain free gold in agregates of up to 225 grammes weight. Mining attempts (at the mine "Goldene Sonne") after the discovery in 1802 were never successful although some good collector's pieces were found.
Other sources of gold – Free gold is known to occur in the region Disentis-Sedrun-Lukmanierschlucht (the latter more diligently examined in recent times) and in several other small deposits which have not been mined.

Much more significant are gold discoveries in other parts of the Alps. Quite near the Swiss border lies the Monte Rosa gold province, the most extensive gold-bearing area of the western Alps. Gold also occurs in the Vals valleys south and east of Monte Rosa. Here the most important mining centre is at Pestarena (Valle d'Anzasca), a site closed down only a few years ago. There were further mines in the same valley, in the Valle d'Antrona near Brusson (Valtournanche) and in the Valle d'Antigorio. The pyrite- and arsenopyrite ores here yield about 25 grammes of gold per ton.

The best known and largest gold-bearing region of the Alps lies in the Tauern mountains, especially between Sonnblick and Ankogel. The floruit of the mining activities there was in the Middle Ages and in the 16th century. At that time the Tauern mountains were amongst the most productive gold areas in the world and produced about 50 tons of gold. After various attempts at revival mining finally ceased during the second Word War.

The Greek author, Strabo (60B.C. to A.D. 20), has already written about the Tauern gold. In his report he mentions the fact that free gold in grains as large as a fodder bean was found there. This refers presumably to superficial gold concentrations caused by the weathering of sulphur- and arsenical ores (up to 5m deep at the so-called Iron Hat – Eiserner Hut). Such deposits were recovered easily and easily produced the metal, gold.

Vosges Mountains – The presence of gold in the mining areas of Château-Lambert and Plancher-les-Mines, already thought to have

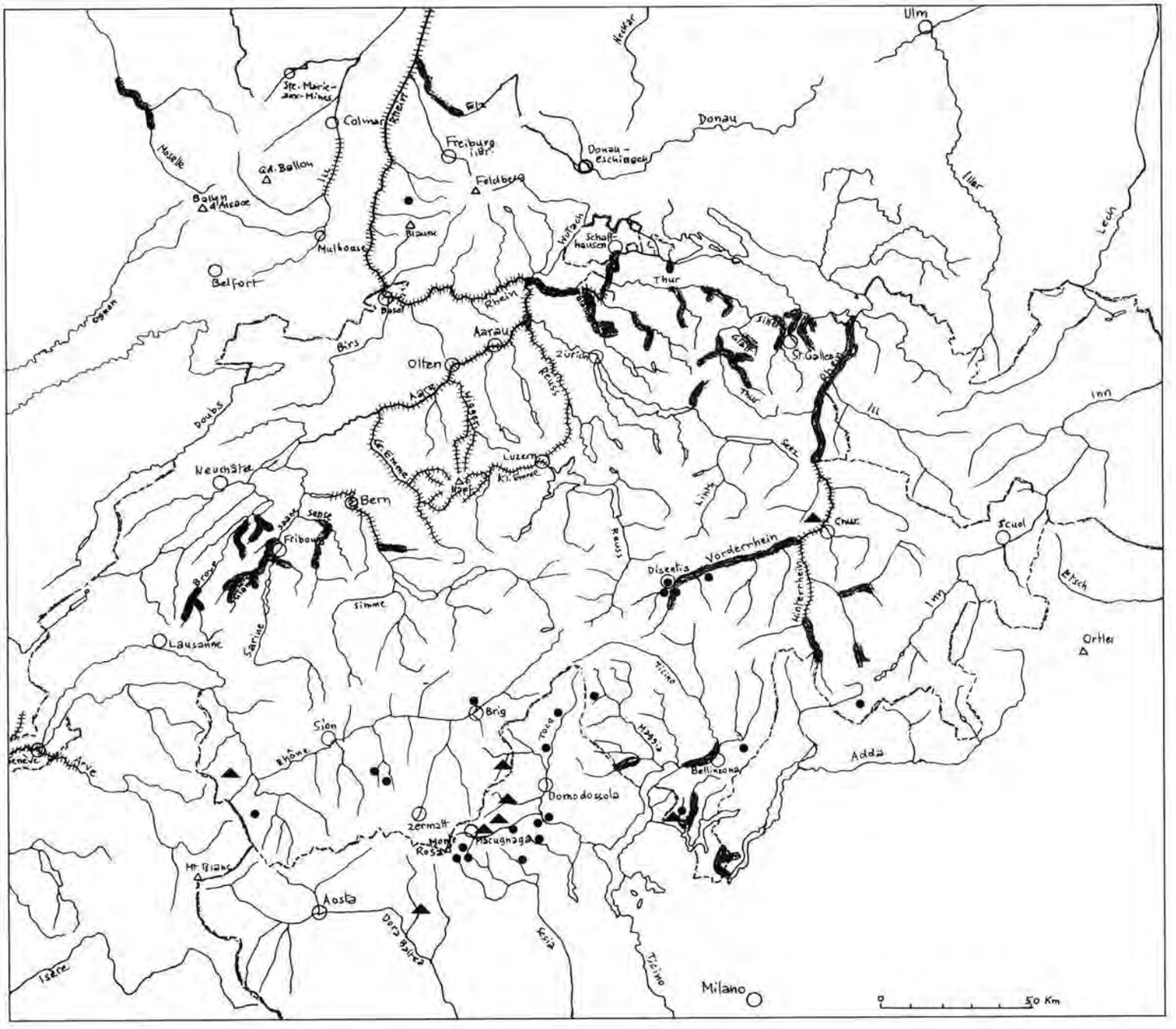

Fig. 7 Sketch map by the authors: gold-bearing streams and gold mining in Switzerland and neighbouring areas (mainly mediaeval and modern): ▲ gold mining; ● occurrences of gold without mining activity; stream with known gold-panning; stream known only in recent times as gold-bearing.

Fig. 8 Panned gold from Napf (Grosse Fontanne) with pieces up to 1.5 mm long (left), panned gold concentrate ("Schlich") with gold particles up to 0.8 mm in diameter, from the Rhine above the Rhine Falls at Neuhausen (right).

been exploited by the Gauls, could not be established. Only in very recent times has gold – though of an as yet unknown significance – been noted in the Black Forest in the region of Sulzburg.

Tinsel from the rivers

Rubble caused by the weathering and excavation of primary gold deposits was carried along rivulets and streams into the rivers and available gold was thus released. On its journey through the river pebbles were hammered into thin little flakes, the so-called tinsel. In the area in which we are interested these flakes are mostly smaller than 2mm. During the various Ice Ages gold in the mountains was also scraped off by the glaciers and carried with moraine material to the foothills of the Alps. When the ice melted the gold was washed out of the glaciers and came again into the rivers and streams.

The heavy gold remains in the rivers where the current is not so strong and becomes concentrated especially on the upper side and along gravel banks, but particularly on the inner sides of bends in the rivers. Such concentrations of gold are known as placers. As the sand, with a specific gravity of 2.6 to 2.7, is lighter than the gold and is usually swept away, the metal together with the pebbles remains stuck in the gravel bank. High waters, however, remove the gravel banks themselves so that, over time, the gold can travel large distances.

Stream gold is regularly supplemented from the delivery areas and is renewed as long as natural conditions are not disturbed, something that today is quite common. Dammed lakes in the mountains as well as river corrections and dam gradations in water have reduced appreciably the delivery of rubble from the catchment area and from the river course. The existence of weirs in the large rivers has frequently led to the flooding of gravel banks which were once good sites for gold panning. It is thus clear that conditions for gold panning in the past and particularly amongst the Helvetii were immeasurably better than today.

The production of river gold

River gold is much easier to extract than is gold from ore veins. The specific gravity of the gold in this case is used with water in the washing process and both together led to the production of river gold concentrations. From this the principle of gold panning developed at an early stage, whereby the lighter sand was flushed away from the heavier gold. Gold panning or washing included the following most important steps (Cat. 231):

- Searching for favourable panning sites with concentrations of gold, which is a matter of experience.
- Removing material being panned, as a rule gravel. Separating the pebbles by hand and by sieving.
- Proper washing.

For gold panning a very old instrument, the sluice-box, was used. This was a contrivance measuring 1m to 1.5 m long, with lateral limits and with transverse ridges or grooves. It is placed directly in running water which flows through it or is set up at an angle as a sluice. At the upper end there is a basket-like sieve arrangement through which the gravel to be washed is sent. The sand is washed by the water through the sieve on to the sluice box. The water passing through washes away the lighter sand while the grooves and ridges hold back the so-called black residue, that is, the gold with other heavy mineral grains such as granite, magnetite and so on. Cloths or hides were also often used in the sluice so that the heavy gold was caught in them. From time to time the concentrate from the sluice is washed into a container and eventually treated further with the gold pan. With this sieved sand can, of course, also be washed direct. The classic pan of 30 cm to 40 cm in diameter has generally a flat bottom and sloping sides or sometimes the shape of a cone or of a flat tray. In the Upper Rhine area ship-shaped rinsing troughs were also used for panning.

The pan is filled with two or three handfuls of sand, held just below water level and set in motion with a rythmically circling motion. The light sand is thus spilled over the edge and the operation is repeated until only heavy mineral particles as well as the gold remain.

The concentrate remaining after many washings in trough or pan was in earlier times often treated with quicksilver, the existing gold turned into an amalgam and, as in the case of primary gold, released through the evaporation of the quicksilver.

Fluvial gold was, in historic times, recovered in various places in Switzerland:

The most important and long-known was in the Napf territory (Cat. 229). The gold comes from the more than 1000 m thick layers of the conglomerates of the Napf mountainy district, that is, from the pebble deposits of a primitive bird of prey from the period of the folding of the Alps, the so-called molasse, which occurred between

12 and 20 million years ago. The gold is freed by the Napf streams from the conglomerate layers and is further enriched by them. In the streams rising in the Napf area, especially in the two Emmes, the gold reaches Reuss and Aare and further to the source of the Rhine and its upper reaches. This was already the case in the Ice Age.

It is known for a long time that, as well as in the Napf region, gold is also to be found in the canton of Geneva, that is, in the Arve, in the little river Allondon and in the Rhone.

Historical gold panning sites in the Rhenish Alpine area are known only from the Rhine, from Felsberg, Chur and Maienfeld, and also from the neighbourhood of Eglisau, now dammed up for electricity works.

It is only in the most modern times that hobby gold-panners and geologists have found the metal in many other flowing waters in Switzerland. Systematic investigations have demonstrated the existence of gold in the Rhine through the Alps from Lake Constance to Sedrun (an area with known occurrences of primary gold), in the Rhine system into the Avers valley and up to Filisur, and also in the upper course of the Julia, but not, for instance in the region of Linth and Seez. Surprisingly clear were traces of gold in the upper Rhine also between Neuhausen and the Aare estuary as well as in numerous other streams and in the Steinach, the Goldach, Lützelmurg and various places in the Mittelthurgau as well as in the stretch from the Zürich Oberland through Kloten-Bülach and on to the lower reaches of the Zürich plain. With few exceptions this gold originates in deposits made by the Rhenish glacier, which came originally from the Rhine valley.

Gold has also been reported from many places in the Broye, Saane and Sensey complex in Canton Fribourg.

In Ticino hobby gold-searchers have found gold, in Magliasina (primary gold in Malcantone!), in Vedeggio, and Breggia but more rarely in the Ticino and in Melezza.

In the immediate neighbourhood of Switzerland the Upper Rhine between Basle and Mainz was, until the 19th century, a gold-panning region of considerable significance. This it had been with success over the centuries and, indeed, gold may be found there still. The richest stretch lay between Strasbourg and Speyer but there is little or no gold in the neighbouring Vosges or in the Black Forest.

An important gold-bearing fluvial system occupied the eastern Alps and their foothills, more specifically the region of the Salzach, the Inn and the Danube. Here, in the 16th and 17th centuries, 220 kg of gold were recovered and gold-panning played a certain role there in earlier times. The catchment area lies in the High Tauern with its rich deposits of gold.

The table herewith gives some information about the composition and quality of alluvial gold in Switzerland and on the upper Rhine. In the Napf area the particles vary between 0.2 mm and 1.2 mm in size though it is not unusual to find pieces up to 4 mm; small grains are, however, rare. A little fragment weighing 0.18 grammes was found at Grosse Fontanne. Of course, the further from the source finds occur the smaller, thinner and therefore lighter are the particles.

	Gold content of good panning sites mg/m³	Number of particles to 1 gramme of gold	Silver content %
Confined Napf region	800	1,500–3,000	1.7
Emmen-Aare-Reuss	40–160	10,000–15,000	5–8
Geneva region	400	8,000	
Fribourg region	c. 100		
Source of Rhine	40–50		
Rhine at Schaffhausen-Zurzach	20–40	c. 25,000	8.5–22
Upper Rhine	50–450	c. 200,000	2–8

After G. Albiez, F. Hofmann, F. Kirchheimer, O.M. Imhof, R. Maag, F. Mäder, J.J. Pittard, K. Schmid and A. Voûte (silver content from the Upper Rhine).

Between 1523 and 1800 31.4 kg of gold were recovered from the Lucerne hinterland of which, between 1700 and 1740, the period of greatest flourishing of the panning activities, 9 kg was found, that is, an average of about 225 grammes a year. If one were to reckon an average daily production per worker of a half cubic metre of gravel (which personal experience shows to be realistic) it would thus be possible to expend 2.5 man days to produce 1 gramme of gold with content of 800 mg/m³ or, in other words, it would take more than 560 man days of work to produce 225 grammes annually. Gold was panned as a subsidiary business but the number of those thus engaged is unknown.

On the upper Rhine in Baden 366 kg of gold were recovered in the 126 years from 1748 to 1874, that is, an average of 3 kg a year. Gangs of three men each were able to deliver about 20 grammes of gold and, in the best decade, 400 panners produced 8.3 kg of gold or, in other words, something over 20 grammes per man.

Silver

Silver is a precious metal with a specific gravity of 10.6 and a melting point of 960° C. It is unchanged by heating but is attacked by sulphur. It is not as often found as native gold and it does not occur in streams like alluvial gold. The metal is contained in silver-bearing lead, copper and even gold ores.

Silver can be recovered by roasting from sulphur ores. Lead and copper are oxidised, the silver remaining behind. Should gold and silver occur together they can be separated by special processes.

The most interesting occurrence of silver-bearing lead ore in the Swiss Alps is in the Scarl valley in Lower Engadine (Val del Poch), a site exploited since the Middle Ages. From 1824 to 1828 it produced a total of 60 tons of lead and 200 kg of silver. There is some silver also in the gold ores of Gondo and especially in those at Astano where, with 525 grammes per ton, the silver content far exceeds the gold. For this reason Astano deserves special notice as a mining centre. The ores in Valais (Val de Nendaz, Val d'Hérens, Val de Zinal, Val d'Anniviers, Goppenstein), at Brisenstock UR and at Andeer also contain some silver.

In the Vosges mountains there are significant deposits at Sainte-Marie-aux-Mines. Mining is known since the 10th century but is probably older. In the 16th century 3000 miners produced 3.5 tons of silver annually. Further important mines were at La Croix-aux-Mines, Masevaux, Giromagny and Plancher-les-Mines.

In the Black Forest silver mining took place from the Middle Ages down to the 19th century at Wittichen, Schauinsland, the Untermünster valley, Badenweiler, Todtnau and St. Blasien.

In the western Alps important deposits are known in the Isère and Aosta valleys. The most important site is at Vallauria in the Argentera massif (southwest of Cuneo). In the Apennines a silver-bearing lead ore is found in Tuscany. All more significant sources of supply are further away – in Sardinia, in the Sierra Morena in Spain and in the Balkans.

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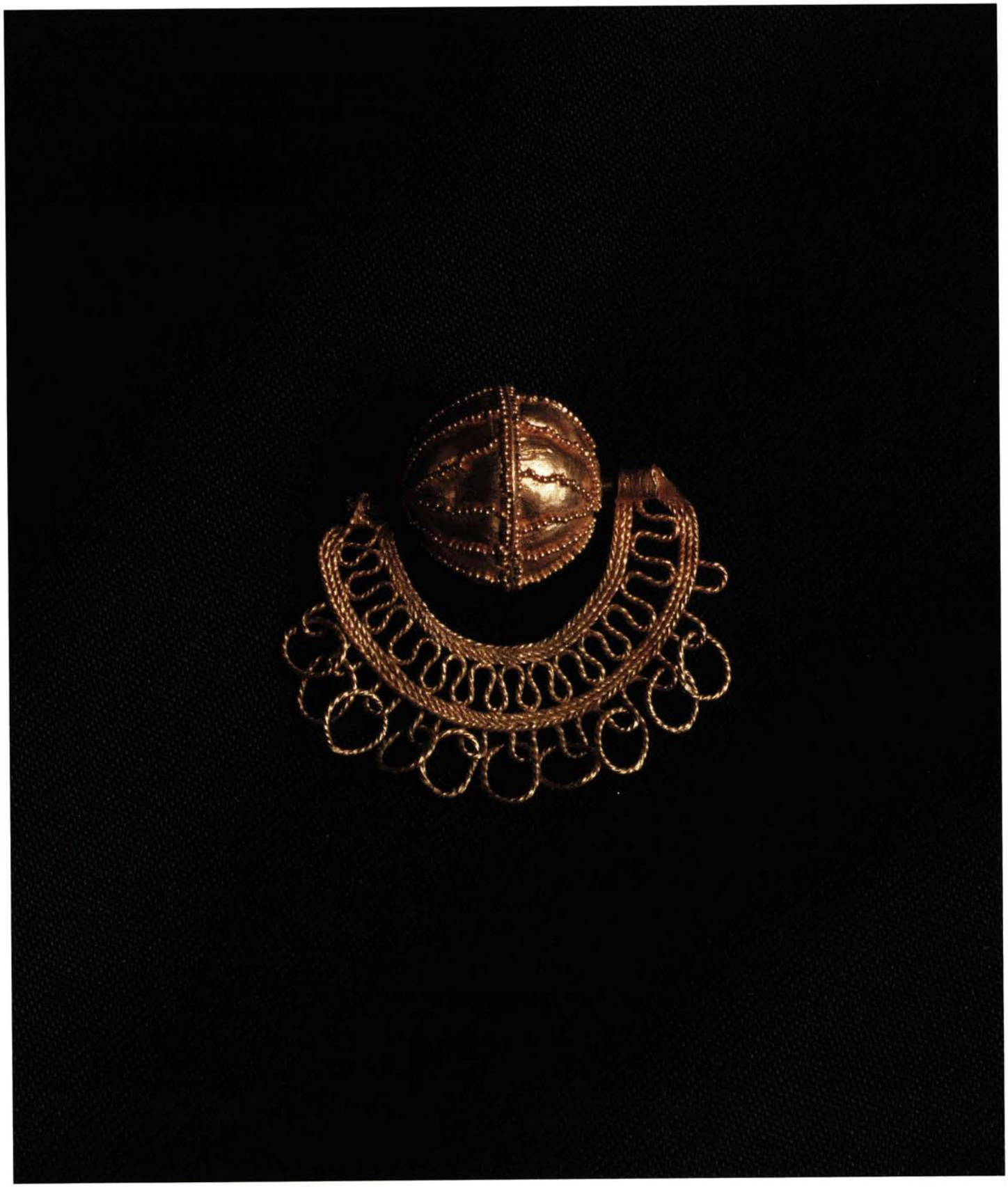

GOLD – CONSUMMATE METAL, IDEAL RAW MATERIAL

Christoph Jäggy

According to the tradition of the ancients the seven metals known in their time stood in a close relationship to the seven heavenly bodies which circled the earth from the living quarters of the gods. Saturn, slowly traversing the skies, corresponds to the heavy lead on earth, radiant Jupiter to the luminous tin, hard iron to the warlike Mars, pleasing copper to the feminine Venus and the lively quicksilver to the unstable Mercury. And as the light of the moon calls to mind the mirror effect of silver so gold is for us the earthly representative of the constellations. As once the sun god received the greatest veneration, so gold was reckoned the consummate material.

So central was its position, so extraordinary its properties. Perhaps the most outstanding of these qualities are its malleability and its reaction to shaping. For instance, up to nine square metres of gold plate can be hammered out of a cubic centimetre of gold weighing about 19 grammes or a wire measuring almost 50 km drawn out. If one wished to cast from pure gold a ball weighing only a kilogramme this could measure only 42 mm in diameter and would be nearly twice as heavy as an equal-sized sphere of lead. The yellow patina of the gold can be improved through being polished and, even after millennia in the earth, remains completely undamaged. This is because of its resistance to the attacks of the most diverse chemical substances, especially of the oxygen with its propensity to eat into everything. In the first century A.D. Pliny writes in his *Natural History* about the properties of gold: "In addition, neither rust nor verdigris nor anything else is formed on gold which might limit its value or reduce its weight. Through its durability it surpasses all other metals in its reaction to salt and vinegar solutions, the conquerors of all materials."

Gold is, however, by no means a homogeneous material. Pliny mentions as follows: "All gold contains silver in differing proportions, sometimes one tenth, sometimes an eighth... Where the proportion of silver is one fifth one talks of electrum... Electrum is also artificially produced by the addition of silver." Gold in pure form, as found in nature, contains tiny quantities of copper as well as the silver already mentioned. The unlimited mixing of these three metals in melting allows the degree of hardness and the melting point of the alloy so produced to suit the intended purpose. An increase in the amount of silver increases also the degree of hardness of the metal, thereby allowing it to be used for pieces subject to mechanically great stress. At the same time the melting point is dropped, a useful factor in casting and soldering.

In order to melt high-carat gold, such as is panned from rivers, high temperatures were required, even reaching over 1000° C. Such heat could be produced only in the glow of a charcoal fire subject to intensive blowing of air. The wood was kindled in simple clay fireplaces, the charcoal thus produced being regarded as the most important source of energy in the metallurgical processes of antiquity. The charcoal, in the main, was obtained from the slow burning of beech and oak timbers. As bellows the then well known tube blow-pipe made of sheep- or goatskin was used. Its open end had a nozzle of clay through which air was pumped to the burning embers.

As masters and controllers of the fire the Celtic goldsmiths were in a position to produce the degree of heat necessary for the metallurgical process. The preparation of a whole series of ancillary materials and implements implied a comprehensive knowledge of material resources and their changeable qualities. Even if we have only sparse historical records of special processes we may conclude from observation of surviving Celtic objects that we are dealing with masters of the goldsmith's art. It is also quite remarkable that in the last two thousand years there has been no further development in the goldsmith's handicraft, apart from certain technical innovations such as the introduction of carbonising gas. All essential techniques used by us today were also known in Celtic times and developed to a high degree of perfection (Cat. 232).

Colourplate XIII
Cat. 35 *(Gold Pendant)*

Melting and casting

Panned gold can be melted directly without further additions in crucibles made of clay mixed with quartz sand. Eventual mineral impurities, such as not entirely washed grains of sand, are thus removed from the fusion of materials and thus do not impede further the process. If impure gold is to be smelted or alloyed with silver or copper the addition of a fusion agent is necessary. This causes the products of burning at high temperatures, the base metals and the metal oxides to dissolve as salts and remain as a residue of slag. Should this cleansing process not take place a brittle alloy is the result. This, when worked further, becomes cracked and unusable. Smelting expedients give alkali-producing salts, such as potash which in historical times was won from plant ashes and sea salt.

In order to produce gold bars or other simply shaped pieces the metal from the molten smelt was cast in a simple open mould (Cat. 232). Casting requires a steady hand and must be carried out at speed; the mould must be completely filled before the fused mass solidifies and impurities in the form of slag must not be allowed into the mould. They are found today as glassy encrustations on many crucibles found in archaeological excavations. Sandstone and burnt or sun-dried clay are the materials used for the moulds which are brought into operation over and over again. When it cools the raw piece becomes a commercial object or may be used for the manufacture of jewellery or coins.

Fig. 9 Inner face of the silver armlet from Siders with the rough surface produced in casting.

In addition to the simple method of casting just described the Celtic goldsmiths were aware of another form of casting, the so-called waste wax process, used to manufacture complicated ornaments. The process works as follows: A wax model of the object to be cast is made and then covered with fireproof clay, a funnel-shaped opening to the wax inside being provided. When the clay mould has dried out it is placed in a fire of low heat until the wax melts and runs off through the opening. Next, the mould is baked intensively and the metal from the crucible then poured into the by now hollow mould. The cast ornament can be released only by breaking the mould after the metal object has cooled and hardened. This is the reason for the name given to the technique. Finally, the casting knob left at the end of the pouring funnel must be broken off and the whole surface smoothed. In this way also a silver armlet from a grave at Siders in Valais was cast. The structure of the wax on the untouched interior wall is still perfectly clear (Cat. 100).

Forging and embossing

Forging is the oldest and most important metallurgical technique for forming shapes. The piece being worked on, derived from the above-mentioned ingot or bar, is given shape between hammer and anvil (Cat. 232). While the blacksmith shapes the iron under heat and when treating it cold speaks of "hammering", the goldsmith, when talking of forging, means shaping his metal in both hot and cold conditions. The malleability of precious metals and their alloys allows as a rule of forging when cold though, of course, increasing coldness causes the metal to become hard and brittle. It must therefore be returned again and again to the fire so that it acquires its original flexibility. By quenching the glowing object in water this quality can be improved; this is the very opposite of the situation regarding iron which is hardened by successive heating and quenching. The shape taken by the object being wrought depends on the sort of hammer used and on the nature of the base. The round, wedge-shaped portion of the hammer, the so-called claw, is used to make bands and sheets of metal while with the flat striking surface, the so-called face, the stroke marks made by the claw are smoothed. All thin pieces of gold foil, measuring only tenths of a millimetre thick, give proof of this method of workmanship, so suitable for gold (Cat. 16–19). The shape of the anvil is, of course, just as important as the face of the hammer. A flat or a rounded anvil surface is usual though negative impressions can be provided in the striking surface also. In this simple way profiled bands and wires can be produced. Presumably many of the golden finger rings from the Berne neighbourhood were made in this way (i.e. Cat. 83, 86 and 87). Many of the ornaments from the Giubiasco cemetery are made by forging from a single piece of silver (Cat. 99).

The use of wires was prolific. The armband from Schalunen, the diameter of which can be changed, is made from a wire with conical ends which was forged (Cat. 75). The visible, spiral-shaped, longitudinal grooves on a golden finger ring provide further evidence of wire-production in Celtic times; a narrow band, cut from a piece of thin plate, is twisted so that the rectangular section becomes a rounded wire. Up to a short time ago the view was held that wire could be made only by forging or by twisting flat strips but today we know of an additional method derived from the discovery of Ošanići in Yugoslavia of a number of tools which must be judged the furnishing of a goldsmith's atelier (Cat. 228). Amongst these was a wire-drawing iron with which wire of varying diameters could be produced very simply: several holes, narrowing conically from the surface, were bored through an iron plate. Through these holes a preforged and gently heated wire was drawn until the required strength of wire is attained. Such a wire has a uniform diameter along its length. It is possible that the fine gold rings from the Horgen burial on the Lake of Zürich were made from such a drawn wire (Cat. 54–56). While "forging" in the narrower sense is taken to mean merely the change in cross-section of an object, the formation of a hollow is called "embossing". Metal forged to make thin plate and lightly heated can be used to make bellied vessels by stretching and hammering. Hollow rings and half spheres can be fabricated in the same way and from similar material. Starting with a circular sheet of metal the base of the vessel is hammered to shape on an iron form; the rim is formed on a softer material, wood, by hammering or reduction in size. This is necessary as the mouth of the vessel is smaller than the original sheet; the wall also becomes thicker through the process. The demands on the metal in this formation technique are very great and cracks can easily eventuate. It is possible, for instance, that the broken places in the gold dish from Zürich-Altstetten may have been caused by such stress on the metal (Cat. 7). The hollow ball with granulation which forms part of the Jegenstorf pendant is made from two half spheres with pressed-in rims and the hammer marks are clearly visible (Cat. 35).

Engraving

The finely jointed surface ornamentation is carried out by engraving and occurs frequently on Celtic works (Cat. 232). The decoration, spread over the whole surface, displays scenes with tendril-like fabulous creatures, carried out with plastic effect; included also are repeating designs and sets of lines in rhythmically repeating arrangement. The punch is driven by the force of the hammer and this shapes the thin metal. This iron punch is normally as thin as a pencil and according to its designated function takes on different shapes at the working terminal; to produce lines it is sharp-angled and wedge-shaped, for plastic modelling it is rounded, for smoothing flat areas it is itself flat and for making special designs it is provided with individual stamps. The punch is held with the thumb, the index and the middle finger while the ring- and little fingers glide along the surface being worked on. The other hand guides the hammer and the punch moves rhythmically, leaving its trace in the metal. The hammering base in this operation should be of a soft material, quite suitable being wood or leather, to yield to the shaping. Let us look at the golden necklet from the man's grave at Allenlüften in the Canton Berne, which is a fine example of the punch technique under review (Cat. 22). The ring is made from a gold-plate cylinder, folded over

a

b

c

d

e

f

Fig. 10 Celtic craftsmiths at work: (a) The raw gold is heated until molten and then cast in a simple mould; (b) it is shaped by hammering on an anvil; (c) fine ornaments executed with a punch; (d) thin wires are drawn; (e) soldering with a bellows requires particular skill; (f) finally, the ornament is polished with various sands and cloths.

Colourplate XIV Cat. 24 *(Sheet Gold Collar)*
Colourplate XV Cat. 24 *(detail)*

and soldered and the lines and stamped designs on it are driven from the inside against the soft hammering base. Both ornamentation and shaping cause a reinforcement of the very thin ornamental piece and contribute to its better and easier wearing. Form and function became a unity, something that produced a quality which we meet again and again in Celtic jewellery and which is sufficient evidence of the highest degree of craftsmanship. If we think in this sense of the fibulae used as dress-fasteners we see that bow, spring and pin are fused to a complete unity to fulfil their function as dress-fasteners and also as personal ornaments (Cat. 76).

More strongly outlined engravings require an even softer foundation. Today an "engraving putty" is used; this is a plastic mass of pitch, resin, tallow and brick dust which, when warmed, becomes sticky and grips tightly the object being manufactured. The outlines of the putative figures and shapes are indicated with a smith's punch in the metal plate adhering to the "engraving putty" and then, with a variety of modelling punches, driven and raised from the back of the metal. The piece is then released from the putty by heating, itself heated, turned upside down and stuck fast again. The final work is done from the front by setting back the raised portions and applying the final elegances. The collars from the Erstfeld gold hoard are typical representatives of this sort of engraving. Two exactly symmetrical engraved gold dishes were soldered together to form half of the half of a collar with figures so that for the pair of collars four identical dishes were used. This naturally gives rise to the surmise that two suitable hollow moulds were available as matrices but this in no way presupposes the production of identical parts because with careful workmanship virtual miracles can be performed (Cat. 59–62).

The armrings from the same hoard also demonstrate the greatest skill with hammer and punch and seduce one with a workmanship true to the material (Cat. 63 and 64). The flowing shapes remind one of water. The gold is molten and it is not astonishing that both rings were made from a single lump of gold. In observing the surface more closely one may miss the final perfection, that the punch-work appears to be too casual. The direction is clear: that set above is decisive, the detail must fit in with it. If one holds the two exactly similar rings beside each other they appear like two outstretched hands, both alike yet definitely different, separated by an invisible mirror surface. This may be seen as an expression of the Celtic world philosophy, in which life in this world resembles but also differs from that of the next world. Perhaps they knew the secret of passing through the looking glass; with this we begin to guess at the domains whence the men of those times drew their inspiration.

Soldering and granulation

Singly fashioned pieces are joined together by soldering in the heat of a fire or jointed by hammering (Cat. 232). This, of course, assumes that the solder will melt in a temperature range in which the parts to be joined remain unchanged and, in order to reduce the melting point of the solder, some silver is alloyed to the gold. However, the room for maneuvre remains limited and it is only with the greatest care that the solder can be melted in an open fire without destroying the work. Today we have the gas burner which allows one to aim the flame at the spot to be soldered and thus to control the temperature. Only when all the pieces to be joined together are equally hot does the solder flow to the ordained place. Even if not all of the stages are attested historically we can perhaps imagine the following course of events: The pieces to be soldered together are cut with a shears or reduced with a suitable metal file and fixed in position with iron clips. The solder, in the shape of tiny clippings, is next placed on the joint which, as in alloying, has already been treated against oxidation; if this is not done the solder will not penetrate the joint and would burn merely. The materials used for this purpose are similar to the melting agents already mentioned only that their melting point must be lower than that of the solder so that, the moment the solder begins to flow the area being worked on is protected. While the goldsmith holds with a tongs the piece thus prepared over the glowing embers he uses the bellows on the fire. Then all depends on achieving the requisite temperature for the fusion of solder and metal. The soldering points on the gold ring from Münsingen are clearly to be identified (Cat. 50).

The spherical ornaments from Ins in Seeland (Cat. 26) and Jegenstorf near Berne (Cat. 35) with their application of the finest granulation display a remarkable technical skill in dealing with fire. Both of these objects were produced probably under Etruscan influence as there are north of the Alps no other examples of granulation of such fine workmanship in pre-Christian times and because the goldsmiths of ancient Etruria are renowned for their mastery of the technique of granulation. The objects can, indeed, possibly be direct Etruscan imports.

Metals in liquid condition tend to acquire a spherical shape, like drops of water on a greasy skin and this peculiarity allows of the easy production of the little gold balls used in granulation. When the finest particles of gold are heated in the fire they attain their spherical shape and retain it on cooling. The globules, arranged in the desired ornamental pattern, are first stuck to their metal background with affixatives of vegetable origin such as rubber, resin or gum or, for example, the sticky residue extracted from quince stones immersed in water. When the fixative, flux and finely cut solder are mixed together all the components essential to making proper joints are present. In soldering, the fixative must operate as long as it is necessary to enable the solder to flow under the little globules and partially to fill out the spaces between them. The Ins sphere with its granulation was produced in this way with powdered solder.

Another technique, known as "reaction soldering", uses a quality of copper salts which allows them to turn into metallic copper in the reducing atmosphere of a charcoal fire. The copper thus formed works then as a solder and produces a superficial alloy between the basic metal and the gold granule. This, barely visible, makes for a lasting fusion of the soldered parts. Copper salts suitable for "reaction soldering" are malachite or the verdigris or copper acetate produced by the action of vinegar on copper. The Greek word for malachite, "Chrysokolla", indeed means "gold glue" and is mentioned by Pliny. "The goldsmiths demand a Chrysokolla for soldering lead and declare that all similar green substances have their name from it. One manufactures it, however, from [a mixture of] Cypriot verdigris and the urine of a boy not yet grown to man's estate with soda added; this is then crushed with a copper pestle in a copper mortar. We call this [mixture] Santerna." This Santerna is a mixture of reaction solder with flux which allows for finer applications than metallic solder; gold granules, soldered in this way, have no recognisable traces of the soldering itself. The Jegenstorf gold sphere provides a good example of this (Cat. 35). But this method of securing the globules, hardly used today, was also used to obscure unsightly joints. Indeed, repeated heating and working of objects soldered using the reaction solder method drives the copper so deeply into the basic metal that even the most up-to-date metal analyses often fail to trace any sign of soldering.

Gilding and polishing

The gilding on the cast silver ring out of a burial at Oberhofen (Cat. 98) shows that ancient goldsmiths were experienced in the use of quicksilver and its special alloys. When fine particles of panned gold are stirred in slightly heated quicksilver the result is a shining greasy

paste, amalgam. This gold amalgam can be applied with a stiff brush as a thin, regular layer to any copper, bronze or silver object. Because of its ability to volatilize easily the quicksilver can be driven away from its alloy. The evaporation is then completed with the production of a heavy white and very poisonous smoke from the weak fire. For this reason this process has acquired its description of fire gilding. An insipid layer of very fine gold, which had joined to the basic metal, remained behind. Occasionally, even today, traces of the quicksilver can be detected in the gold layer by using the most sensitive methods of analysis. The absence of a single trace of quicksilver in the gilt patina of the silver ring from Oberhofen clearly indicates that the evaporation was carried out most carefully and most completely.

Not only after the evaporation of the quicksilver during fire gilding did the surface of the gold take on a matt yellow colour but also after every firing and soldering. The finished gold ornament acquires, finally, its fascinating sheen by rubbing with a polished stone (Cat. 232).

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GOLD ANALYSIS

Alexander Voûte

The analysis of museum specimens becomes necessary for a great variety of reasons, the most important of which is the provision of a basis for conservation and restoration. Of course, analysis of objects is also instructive in relation to technology in earlier times and, in certain cases, the existence and observance of former rules can be checked. In addition, data about the precision of manufacturing methods can be acquired. Equally interesting are researches into the origin of finds (such as comparisons between raw material and end-product) and, in consequence, the discovery of trade routes.

In an analysis of ancient objects various aspects must be taken into account:

(a) Interference with the specimen itself should be minimal because a replacement is impossible.
(b) The analysis should be representative: one requires information about the object *in toto* and not only a small portion of it.
(c) The exactness must fulfil certain conditions.
(d) The expenditure of time and resources for a measurement should be reasonable. In particular, with a series of tests this use of time and resources can be very high.

It is, of course, clear that all the above conditions cannot be met at the same time. The examination of especially valuable objects (and, of course, specimens of gold fall into this category) will always demand compromises of one sort or another.

The various analysis processes

Wet chemical analyses. Although this was the classic analysis method it is now rarely used because of the relatively large quantity of material required for examination (in special processes as much as 50 millegrammes) and because it is not really suited for analysis of series. Thus, condition (a) above would not be fulfilled. However, the method does give results in regard to the chief components of an alloy. It is still important for testing quality and comparison of alloys and solutions which are necessary for other modern measuring processes.

Emission spectrograph. In this apparatus a very small sample is vaporised and stimulated by an electrical arc or by a laser beam. The vapours emit a characteristic light for the composition of the sample and the spectrum of this light is then examined and evaluated.

Standard alloys or solutions, controlled by wet chemical methods, are required for quantative analysis. The method is well adapted to trace elements but main components can be established securely only in low percentages in the contents. The degree of sensitivity is very high and can scarcely be exceeded by the most up-to-date analytical methods. Unfortunately, the method is very time-consuming and, today, it is difficult to procure all the ancillary aids needed for the analyses.

X-ray fluorescence analyses. This method of examination has in recent years become increasingly of significance, not least because of its suitability for directing and evaluating through computers. The object to be analysed is placed on a measuring table (size some mm square up to cm square) and then treated with X-rays. The superficial layer of X-ray fluorescence thus produced (to a depth of about 0.1mm) depends on the composition of the specimen and this is measured. The evaluation is conditioned by comparison with the standard alloys.

X-ray fluorescence analyses can produce very exact results and for this the measured surface must be sufficiently large and must also be polished flat. With normal tools it is not possible to arrange equally exact measurements without using excessively large pieces of the specimen. Practically, one is forced to select small areas for examination so that an approximation to a flat surface can be measured. In this way, however, the danger of achieving an unrepresentative measurement is increased and the sensitivity to trace elements decreases. Another solution lies in so changing the instrument that the influence of an irregular surface on the specimen is considerably reduced. For technical reasons this is not possible with most modern instruments.

Measurement of specific gravity. Every alloy has an exactly defined specific gravity and, as long as there are only two components in the alloy, the composition can be determined by this specific gravity. Should there be more than two components the additional ones must be identified in a separate process.

Applied analysis processes

In the Geochemical Laboratory of the Mineral-Petrographic Institute of Basle University the analyses are carried out with a modern X-ray fluorescence instrument. The area to be examined is held to the smallest possible dimensions and the detector geometry so selected that the influence of the superficial condition does not become preponderant. The analyses may be rated as half quantative but the degree of precision attained is sufficient to identify the alloy type. This method does not destroy the specimen.

The Chemical-Physical Laboratory of the Württemberg Landesmuseum at Stuttgart made its analyses with an emission spectrograph, whereby only a small sample, between 1 millegramme and 2 millegrammes, is required. The process is not entirely without danger of destruction. As already mentioned, this method is very sensitive. The specific gravity of the alloy is established for the silver content, which can have appreciable values, and then the gold

Colourplate XVI
Cat. 79–92 *(Gold Finger Rings)*

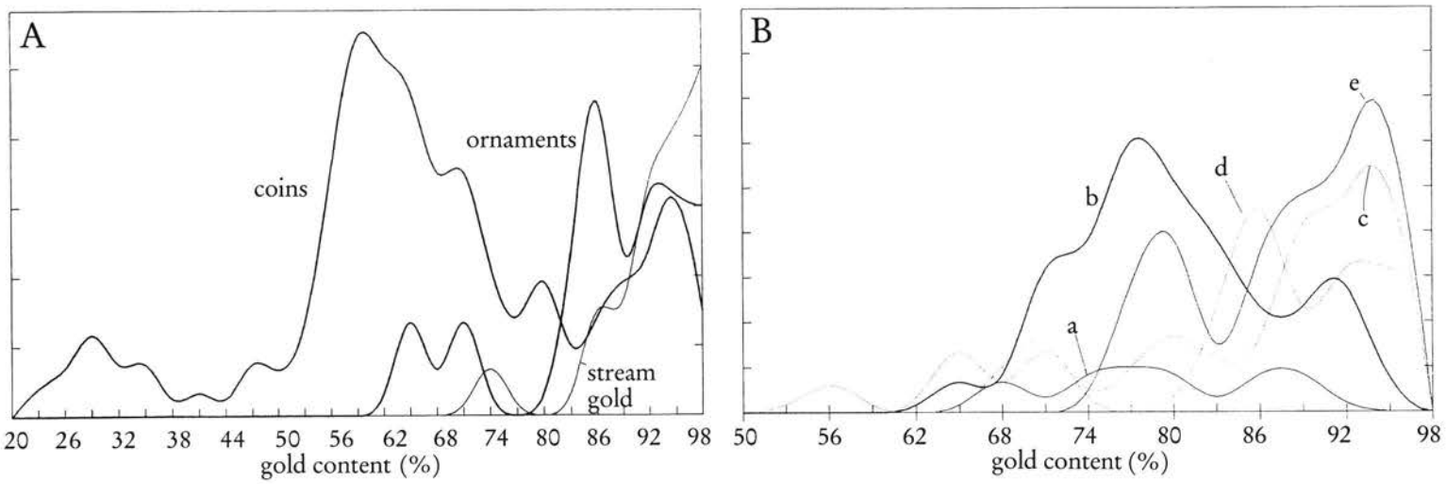

Fig. 11 Illustration A: Coins and ornaments. Frequency distribution based on gold content. Curves for coin finds, ornament discoveries and stream gold recovered today are compared. Illustration B: Frequency distribution of gold content. Represented are the curves for the Bronze Age, the Hallstatt Period, Early and Middle La Tène and the Roman Period (a–e).

analyses can be produced with the help of the spectrograph measurements.

The Chemical-Physical Laboratory of the Swiss National Museum possesses an X-ray fluorescence apparatus which, in the course of time, was altered considerably to meet specific museum requirements. The superficial appearance of the objects plays practically no further role and, in addition, any number of large specimens can be examined without risk of damage. The instrument has been in use for a long time but is not yet completely suited for modern evaluation processes so that in the analysis of gold the evidence of trace elements had to be overlooked to a large extent. To make up for this deficiency a new method had to be developed to compensate for the so-called surface enrichment of objects from the soil. This enrichment of gold alloys occurs through the partial movement of the less precious elements in the alloy from the surface of the object to the surrounding soil. The specific gravity of coins and possibly also of other specimens is established. This specific gravity relates to the whole object and not to the surface alone. Together with the X-ray fluorescence analysis the composition of the alloy can then be securely established. This method completely avoids any destruction.

Comparison of results from the various laboratories

Six Celtic gold coins from the Swiss National Museum were examined in Stuttgart and Zürich. One of them, a Quarter Stater from Horgen (Cat. 57) is listed and the results showed little difference between the two laboratories. Similar correspondences occurred in the case of four gold coins from Manching. In the list of gold objects are noted many which were examined both in Stuttgart and in Zürich. Eventual differences in the measurements are due, firstly, to the not absolute results and, secondly, to the lack of homogeneity in the objects examined. The points of measurement, as can be seen from the table, rarely lie at the same spot.

From these results it may be concluded that the measurements from both laboratories are of equal value. The Basle results could not be included in a similar test though the working methods suggest that they were comparable.

Commentary on the analysis results

The coins investigated belong to Middle La Tène times and for that reason the frequency of the gold content shown in Illustration A was compared with the curve for Middle La Tène ornaments. The results of the river gold analyses have also been included. The clearly differing main points of the curves are remarkable. From the results it may be inferred that the ornaments were fashioned from pure gold without additional alloy. For the coins, however, the alloys were made with a lower gold content and this for practical reasons: coins are in great demand and, in addition, the question of cost plays a role. An increase above about 84% represents in practice merely the Philippus imitations. These were, therefore, not additionally alloyed and were occasionally also made from the metal of imported coins. In Illustration B the gold-content frequency of the ornaments from the Bronze Age, the Hallstatt Period, Early- and Middle La Tène times and from the Roman epoch are compared.

Bronze Age results are too few for positive statements though they do appear to resemble those from the Hallstatt Period. Very clear, however, are the differences between Hallstatt (and Bronze Age) objects on the one hand and those of the Early and Middle La Tène Period and of Roman times on the other.

One is inclined to believe that the gold used came from various sources. It is, of course, also possible that, since Early La Tène times, the gold recovered could have been refined.

The Erstfeld treasure (Cat. 59–65) has a gold content between 90% and 95%. The clasps are made from an alloy with a relatively high amount of silver, an indication of a conscious selection of material on the part of the craftsman. A more strongly alloyed gold is harder and thus better suited to parts with a mechanical function. As well, the evenly high gold content in the treasure suggests further this conscious selection of the alloy. The softer gold of the main portions is more easily worked and more artistically shaped. The result gives a uniform colour and higher value. For such a selection of materials it is, of course, necessary to possess good knowledge of the properties of those used and the ability to assess the fineness of an alloy.

The situation with regard to the Schalunen (Cat. 75) and Stettlen-Deisswil discoveries is similar. The spiral ring, from Stettlen-

Deisswil (Cat. 91) has the highest gold content at 99%. The finds from the cemetery of Münsingen-Rain are entirely different. Apart from their chronological position, they have, with few exceptions, a high silver content and this suggests that they derive from gold sources with high silver content, exploited over a long period.

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THE NEOLITHIC AND THE BRONZE AGE: THE DISCOVERY AND MASTERING OF METALS

Maria Angelica Borrello

The numerous objects of gold from European prehistoric sites display great variety in shape, measurements and in decoration. In studying these minor elements of ornament such as jewels, ornaments for the head, the neck and arms, plates and dishes have been discovered. Certain finds through their morphology and nature can be interpreted as ingots and materials recovered from smelting. To this list a few nuggets can be added.

The discovery of the use of metals is one of the most important instances of the control by man of natural resources and implies the development of complicated techniques and new conceptions of artistic activities. The intensification of metalworking is necessarily bound up with prospecting and the exploitation of mines, with the existence of a group of men employed to convey the primary materials and who sometimes move over very great distances.

The most ancient objects of gold and of copper appear in central and western Europe, in the region of the Carpathians, in Roumania, in Bulgaria, western Yugoslavia, in central France and in Catalonia during the fourth millennium B.C. Minor ornamental objects such as annular and biconical beads are also found.

The development of craftsmanship in the Bronze Age

The beginning of working in bronze in Europe occurs during the third millennium B.C. The inevitable result of this development is demonstrated by the increased use of objects of metal, the appearance of a trade in primary materials and finished products, the formation of a complex of maritime, fluvial and land routes and the rapid expansion of technologies and styles. The eastern Mediterranean sees the increased power of Mycenae profiting from considerable economic resources and its metallurgical techniques influencing craftsmanship even as far away as western Europe.

Many societies of the Early Bronze Age had flourishing economies, amongst them the Wessex Culture of southern Britain and that of Aunjetitz in Czechoslovakia. The first-named is noticeable for its connections with central Europe, the Mediterranean world and even with Egypt. The development of the Aunjetitz Culture is influenced by the nearby mines (the copper of Slovakia, the gold of Transylvania, the tin of Bohemia). Its geographical situation permitted it to control the great commercial arteries and this favoured the spread of new ideas. Objects of Aunjetitz provenance are found as far away as Ireland and the Iberian Peninsula.

These examples suggest complex economic patterns based essentially on peasant foundations which made the existence of craftsmen possible, those who devoted themselves to the production of goods for barter. In this way, perhaps, is indicated the development of structured societies, the emergence of chiefdoms, of elite warriors and of professional merchants.

Amongst the most remarkable gold objects of the early European Bronze Age mention must be made of the twisted gold wires of different sizes, frequently found in Spain and probably used in necklaces, of the decorated personal ornaments of Brittany and Britain and Ireland, of the decorations in the centres of small studs on wooden and bronze objects from burials of the Wessex Culture, in the Iberian and Aegean worlds and in western France. Noted also should be the pins with pointed openings for securing the garments, known in France and Germany; the lunulae, great crescentic neck ornaments made of sheet gold, carefully hammered and found particularly in Ireland, Denmark, Brittany and southeastern England; the cylindrically cut strips of gold foil, frequently found in France and in the west of the Iberian Peninsula. The great diamond-shaped diadems of France and Spain recall some Aegean ornaments and the heavy bracelets of circular cross-section are characteristic of the Aunjetitz civilisation. Plates and dishes of hammered gold plate are found during that period, e.g. at Ploumilliau in France, Fritzdorf, Germany, at Rillaton in Britain and at several other sites in central Europe, the Balkans and the Aegean Sea area.

During the middle of the Bronze Age the expansion of the bronze metallurgy can be observed in the creation of new types of axes and swords and in the multiplication of objects of personal ornament. The splendid civilisations of the Early Bronze Age (Wessex and Aunjetitz) are extinguished. The regions which had known the metals solely through import developed remarkable types and techniques of their own, as in the case of Scandinavia, where primary materials do not exist.

The wearing of new pieces of gold jewellery is very evident in the Middle Bronze Age and includes the twisted earrings of central and western Europe, the twisted necklets known from the Iberian Peninsula to central Europe, in Scandinavia, Britain and Ireland, and bracelets present in large numbers, which sometimes have astonishing shapes, sizes and ornament.

Towards the end of the second millennium the burial rite of cremation, in which the ashes of the dead were placed in a pottery vessel, has led to archaeologists talking of what they call the Urnfield Cultures of the end of the Bronze Age. The distribution of numerous aspects of central European origin over a large part of the Continent may be noted as well as the strengthening of a pre-Celtic world based on economic foundations essentially defined by the control of a large variety of resources, including precious metals amongst others.

The craft of the goldsmiths of the Late Bronze Age covers, in comparison with the preceding period, a larger variety of items which encompass all the technical knowledge of the period. Small

Colourplate XVII Cat. 1 *(Sheet Gold Beaker)*

pieces of personal ornament, diadems and armlets of gold plate, long, twisted fringes and large rings, all form part of the decoration of the neck.

The oldest gold objects from Switzerland

In Europe the end of the Neolithic Period coincides with migrations associated with the Beaker Culture, so-called because of the particular shape of the pottery vessels the people bearing that culture used. These beakers are found in eastern and central Europe, in the Iberian Peninsula, the south of France, in Brittany, Britain, northern Italy and Sardinia. It was the Beaker people who were responsible for the introduction of gold into Switzerland but certainly not for metallurgy in general, for copper appears as early as the middle of the Neolithic Period, at the beginning of the 4th millennium B.C. Copper is known also in the final phases of the Neolithic.

The Beaker Culture is known in the region of Basle through burials at Allschwil, Riehen and Muttenz. In Valais, at the site of Petit-Chasseur in Sion, its arrival may be dated to about 2500 B.C. Its appearance is attested by stone steles decorated with anthropomorphic motifs and by the construction of a group of burials with massive stone coverings (dolmens and cists). The grave-goods consist of personal ornaments, some objects of copper and pottery vessels from varying sources.

Amongst the burials of the Petit-Chasseur Dolmen V produced a remarkable collection of objects (Cat.3). Included were several perforated Mediterranean mussels, used as ornaments, some pottery vessels and a spiral made of gold wire, a typical Central European type.

Bronze Age jewellery in Switzerland

The Bronze Age begins in Switzerland about 2300 B.C. It is possible that the progressive introduction of the new metal is linked more to the importation of finished objects than to local production. The Early Bronze Age (2300–1500 B.C.) is in the main known through the objects discovered in the graves of the Rhone valley and in Grisons. In the flatter parts of Switzerland villages, built at the edges of lakes (traditionally called lake-dwellings), now appear. The bronze metalwork of this period is characterised by flanged axeheads, daggers with triangular blades and a large variety of objects of personal ornament (pins, bracelets and various pendants). A few sites such as Thun "Renzenbühl", Eschenz and Zürich "Mozartstrasse" testify to the appearance of gold at that time. Some small objects, such as spirals of gold wire, have been found at Arbon TG and at Löhringen SH.

At Thun "Renzenbühl" a number of graves were excavated during the first half of the last century (Cat. 4). The axe came from a "princely" burial, so-called because the quality of the metal objects in it recalls the rich grave goods of Central Germany at that time. Their characteristics seem to embody the connections existing between the different regions of the Continent. The elongated form with prominent flanges is typical of western Europe. The decoration of a strip of copper in the centre and the sinuous grooving can perhaps be compared to the Apa Culture, named after a site at Satu Mare (Roumania). The technique of the ornamentation, using gold studs in the centre mounted in a strip of copper, occurs at Mycenae.

Comparative analysis helps to put the Eschenz vessel (Cat. 1) into a chronological and cultural framework. A cup which possesses a similar morphology and decoration comes from a burial of the Wessex Culture at Rillaton (Cornwall). The horizontal strips ornamented in relief permit comparison with the vessel found at Gölenkamp (Hannover) whereas the series of dots bring it closer to the objects found at Ploumilliau (Cotes-du-Nord), at Cruxwald (Lincolnshire) and at Fritzdorf near Bonn.

The amber bead decorated with gold foil from the "Mozartstrasse" in Zürich was found in 1981 during excavations which preceded the construction of the new building for the Opera House (Cat. 2). Unfortunately, it cannot be attributed to a precise archaeological level. Its relevance to the Early Bronze Age is established by comparison with a similar object from a burial of the Wessex Culture at Wilsford (Wiltshire, Britain).

During the Middle Bronze Age (1500–1300 B.C.) the lake-dwellings disappear from the plains of Switzerland. Some sites with stone buildings tell of the occupation of the mountainous region of the Bernese Oberland, of Valais and Grisons.

The graves at Weiningen belong to that period. Here the funeral rites are characterised by the burial of the dead under a mound – sometimes cremated – accompanied by arms, objects of personal ornament and pottery; such items connect Switzerland once again with Central Europe. One of the burials included four spirals of gold wire related to bronze objects such as the spiral leg guards of Roumanian and Hungarian origin and very rare in Switzerland, pins with a round stem and perforated at the top and some amber beads (Cat. 5).

The finds from Grisons provide information about the Middle Bronze Age in the Alps. In the cemetery of Crestaulta the rite of cremation is associated with stone settings and rich bronze jewels. The pottery vessels recovered, like those from Cazis, reveal multiple influences originating in southern Germany, Austria, the southern Alps and the Swiss plains.

The Late Bronze Age (1200–750 B.C.) is illustrated in Switzerland by the development of burials belonging to the Urnfield Culture. The objects recovered from these cemeteries define two successive phases at the beginning of the Late Bronze Age. The more recent phase gets its name from the site at Binningen where a female burial with rich grave-goods of bronze was recovered (Cat. 6). The accompanying bronze objects included two pins, a knife, three bracelets, a fragment of oak, a pectoral and an oval sheet of fine gold, probably a diadem. This last was unfortunately in fragments and displayed superb geometrical ornament.

The beginning of the Late Bronze Age in the Alps is known from several finds and among them the founder's hoard containing moulds and axeheads from Caschlings GR between the hills of Julier and Septimer.

Between 1100 B.C. and 750 B.C. or thereabouts there was intense development of Late Bronze Age occupation, something that is well known because of the numerous systematically conducted excavations of several lake-dwellings during recent years (mainly on the Lakes of Zürich and Neuchâtel), of sites on heights and of some burial places.

The variety in the pottery is quite remarkable and, in addition, considerable numbers of axeheads, blades of sickles, pins, bracelets, pendants and other jewellery, a wheel (Cortaillod, NE) and a cauldron (Corcelettes, VD) testify to the perfection of work in bronze. Smiths' workshops have been identified at several sites.

The work of the goldsmith is known through very small objects and for the most part these only in fragments. Worked in sheet gold and wire they represent an extremely fine and delicate workmanship which demonstrates a perfect mastery of the technique. Worthy of note are a pendant in the shape of a double spiral and a ring, both found during excavations carried out in the last century at the site at Mörigen BE and several objects from Auvergnier NE. The end of the Bronze Age seems also to be marked by a diminution in the number of archaeological objects of gold found in the various sites; this "indigence" is contrary to other aspects of the artisans' production of that period and in particular when compared with the variety of the pottery and of the bronzes.

Fig. 12 The gold handled vessel from Fritzdorf near Bonn resembles in shape and ornament the golden beaker from Eschenz (Cat. 1).

The importance and the consequences of the craft of the prehistoric goldsmith

The character of the precious European prehistoric gold objects was evolving since the end of the Neolithic Period when they seem not to be especially distinguished from other more or less rare materials used for the making of jewellery (silver, copper and lead as well as various stones and shells).

The transition from a curiosity to an object of value happened probably in the Bronze Age as seems to be demonstrated by the use of gold in the decoration of valuable weapons in the Early Bronze Age and of the appearance of hoards in the Middle Bronze Age.

Gold was reserved almost exclusively for the selected few. Its role in the economic life of prehistoric communities had to develop progressively in comparison with that of other metals such as copper and tin.

Specialisation in the working of gold was undoubtedly a gradual process, starting with workmanship which was not different from that of the end of the Neolithic Period. The distribution of certain types of objects attributed to varying communities, such as the Wessex Culture and the Aunjetitz civilisation, demonstrate the export of ideas and craftsmanship rather than of finished products. At the same time the appearance of moulds and of tools necessary for the manufacture of jewellery in the habitation sites indicate the existence of static workshops. The complexities of the chain of operations, the procuring of the primary materials and the use of the finished objects implies the existence of a highly effective system of distribution, all remain little known.

The quality of the gold finds can by themselves inform us of the importance that was attributed to precious metals in prehistoric times.

Thus, the objects of personal ornament of slight weight are found principally in graves while the larger jewels are numerous in hoards.

The distribution in Europe of certain characteristic shapes and ornament permits improvements in existing cultural affinities. Such is the case with the Mycenae-inspired gold which is scattered widely over Continental Europe.

Unfortunately, the role of eastern Europe and of the Aegean Sea in the spreading of gold craftsmanship over the rest of the Continent is not yet clear. Parallel to this there exist regional groups with material of identical quality (for example, during the later Neolithic Period on the Atlantic coasts from the Gulf of Gascogne to the Netherlands and to Britain and Ireland) which suggest the establishment of one or more centres of production and these related to one another.

Towards the end of the Bronze Age, in the 8th century B.C., working in gold became rarer and rarer. This situation coincides with new cultural phenomena which herald the formation of a new world, the Celtic world.

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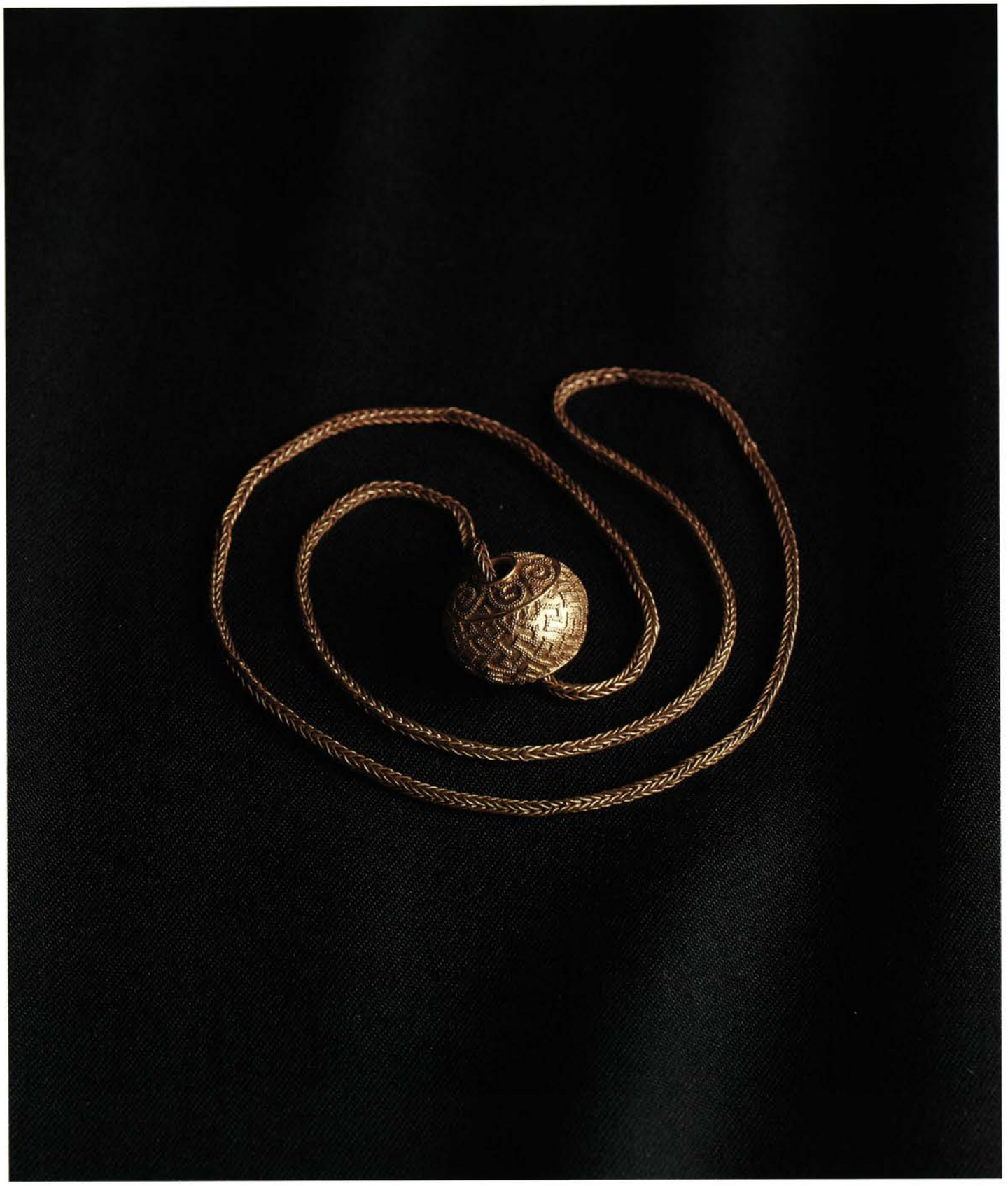
Colourplate XVIII Cat. 26 and 27 *(Small Hollow Gold Sphere and Gold Chain)*

Colourplate XIX Cat. 11, 12, 30 and 32 (*Sheet Gold Earrings*)



HALLSTATT PERIOD: CENTRES OF WEALTH AND POWER

Geneviève Lüscher

Massalia: Trading centre of the western Mediterranean

We are in the 7th century B.C. Greece has established itself against Phoenician and Etruscan competition and assumes supremacy in the Mediterranean region. Trading cities are established along the coast. One of them, Massalia (now Marseilles), is to become of decisive significance for Central Europe. There is uncertainty about the foundation date of the Massalian colony; a date about 600 B.C. is generally given. The founders were the Phocaeans who were emigrants from the Greek city of Phokaia, on the west coast of Asia Minor. The colony was first confined to a small area around the mouth of the Rhone. It depended mainly for its livelihood on sea trading, on fishing and probably also on piracy. The results of the battle of Alalia at Corsica about 540 B. C. probably led to a geographical extension of its interest to the interior.

Then, Carthage won control in the western Mediterranean, thereby ensuring for the Massalian traders the sea passage through the Strait of Gibraltar. They used this route to import tin from England, a metal necessary for the production of bronze. In order not to be compelled to give up this lucrative trade Massalia sought a new route overland, one that led up the Rhone to the mouth of the Saône. From the Saône to the Seine a small landbridge had to be traversed and then, down the Seine, the English Channel and the British Isles were reached. With the extension of the route network one travelled along the Rhone to the Lake of Geneva, the centre of Switzerland and the Rhine or, otherwise, from the Saône reached the plain of the Upper Rhine and middle Rhine through the Burgundian Gap. Along these routes there was a brisk exchange trade and, of course, the rights of passage along them had to be secured by costly presents. In this way the North learned of and treasured the luxury items emanating from the South.

Now, what were the items which found their way from Massalia to Central Europe? In the second half of the 6th century B.C. they comprised mainly amphorae from Massalia and drinking vessels from Attica in Greece. It is to be assumed that with these cultural contacts there was also a spiritual or intellectual component. Certainly, the people of Central Europe learned something of the life style of the Greek colonists. It is possible that individuals travelled to the South, as itinerant craftsmen, as traders, adventurers, soldiers and so on and, on their return to their homelands, reported on their experiences. Though their souvenirs may be preserved in the soil the foreign mental concepts leave no material signs and are thus lost to us.

Fig. 13 Bronze Krater from Vix near Châtillon-sur-Seine. It served as a grave offering for an aristocratic lady, probably a priestess. It came originally from lower Italy (Height 1.64m).

Apart from pottery other goods must have been transported up the Rhone through Massalia, including the raw material for ornaments such as gold from Spain or coral from the Mediterranean. Finished products, such as bronze vessels from Greece, Southern Italy or Etruria, were also traded.

What did the North offer by way of exchange? Because we cannot recognise any goods imported to the South from the North it may be assumed that these comprised organic raw materials such as leather, textiles, and foodstuffs like honey and ham; but human beings, slaves, soldiers and women, were probably also included.

This commerce provided an upper stratum in Central Europe with the opportunity to acquire, increasingly, power and wealth, something that expressed itself in exceedingly elaborate graves with gold objects in them. This will be discussed further in what follows.

The rich lady and priestess of Vix

We leave Massalia and move northwards up the Rhone, into what is now Burgundy. From here, after a short land journey, we reach the Seine. In the distance an isolated mountain top, Mont Lassois near Châtillon-sur-Seine, appears. Here there is a long oval habitation area comprising some 9 hectares. This is surrounded by a wall of earth and wood with a ditch up to 5.7 m deep in front of it. Excavations have revealed traces of intensive occupation though so far no information is available about the nature of the settlement. Over one million pottery sherds were recovered, over 300 fibulae, iron bars, unworked coral, daggers, spearheads, spindle-whorls, glass beads and much more. Immediately noticeable was the great quantity of foreign pottery, including sherds of Greek vessels and fragments of Massalian amphorae.

The dominant situation on the mountain top, the defence arrangements and the numerous imported objects all suggest the probability that the settlement was a powerful and influential trading centre. This hypothesis is supported by the fact that the Seine could be traversed by ship to this point. It is assumed that tin from the coast of Britanny and from Cornwall was loaded on to ships and transported along the waterway to the base of Mont Lassois. Here it had to be unloaded and taken by road to the Saône. It was to this transference from ship to road that Mont Lassois owed its wealth. The settlement flourished in the years between about 500 and 450 B.C. and seems to have been abandonded abruptly shortly before the beginning of the La Tène Period.

Around Mont Lassois there are grouped some fine burial enclosures of the same period. In 1953 the richest grave so far was discovered. It lies in very flat earth immediately at the base of Mont Lassois, the mound having been ploughed completely flat. The excavators found a wooden burial chamber which contained treas-

Fig. 14 Two women or priestesses in a sacrificial act. Representation on the bronze bucket from a grave at Vače in Yugoslavia and on an attachment on the sieve of the Vix Krater (Fig.13).

ures of a striking nature. Most intriguing was the discovery of a huge bronze krater, a Greek vessel of a type normally much smaller. In addition were found an Etruscan beaked flagon and three bronze bowls, two Attic drinking vessels – one with a representation of a battle of Amazons – and a silver dish with gilt base about the origin of which there is still speculation. Along the wall of the chamber there were four stripped-down wagon wheels; the body of the wagon lay in the middle of the chamber. On it there lay the body of a woman about 35 years of age, decked out in jewellery of simple design and, for the times, of considerable value. On the other hand, the neck ornament is completely unusual. This is a ring of gold weighing 450 grammes. It distinguished the wearer and symbolised power and dignity. The wagon is also a status symbol. Its recently constructed copy shows a light and decorative vehicle.

The most outstanding discovery, however, is the bronze krater. It is 1.64 m high and weighs 208 kilos. Round its cylindrical neck there is a frieze depicting warriors and a battle chariot drawn by four horses. The vessel is covered with a perforated lid in the middle of which stands a decorative bronze statue. The female figure wears a dress with a belt at the waist and over the dress she wears a heavy cloak which covers the head also. There are heavy shoes on the feet.

The krater poses certain problems. First of all, its size would make normal use as a mixing vessel impossible because removing liquid from it, for example with a dish, could have been accomplished only when it was full. As well, the very thin walls of bronze sheet metal would not have withstood the pressure of 1200 litres of liquid and this militates against the concept of the krater's having been a mixing vessel in the ordinary sense. Perhaps only symbolic quantities of liquid were used.

The left arm of the female statuette on the lid is bent, the hand is outstretched. We may suspect that it once held an offerings bowl, now unfortunately broken off. The figure is probably that of a priestess offering a libation during sacrifices. She represents *en miniature* the cult operation which then existed by pouring a liquid into the krater. What is more likely than to see in this dead lady the priestess who performed the cult rites with a silver dish? This, of course, is entirely speculative. It is certain, however, that this woman belonged to the highest social class living on Mont Lassois.

The magnifcent tomb of the Prince of Hochdorf

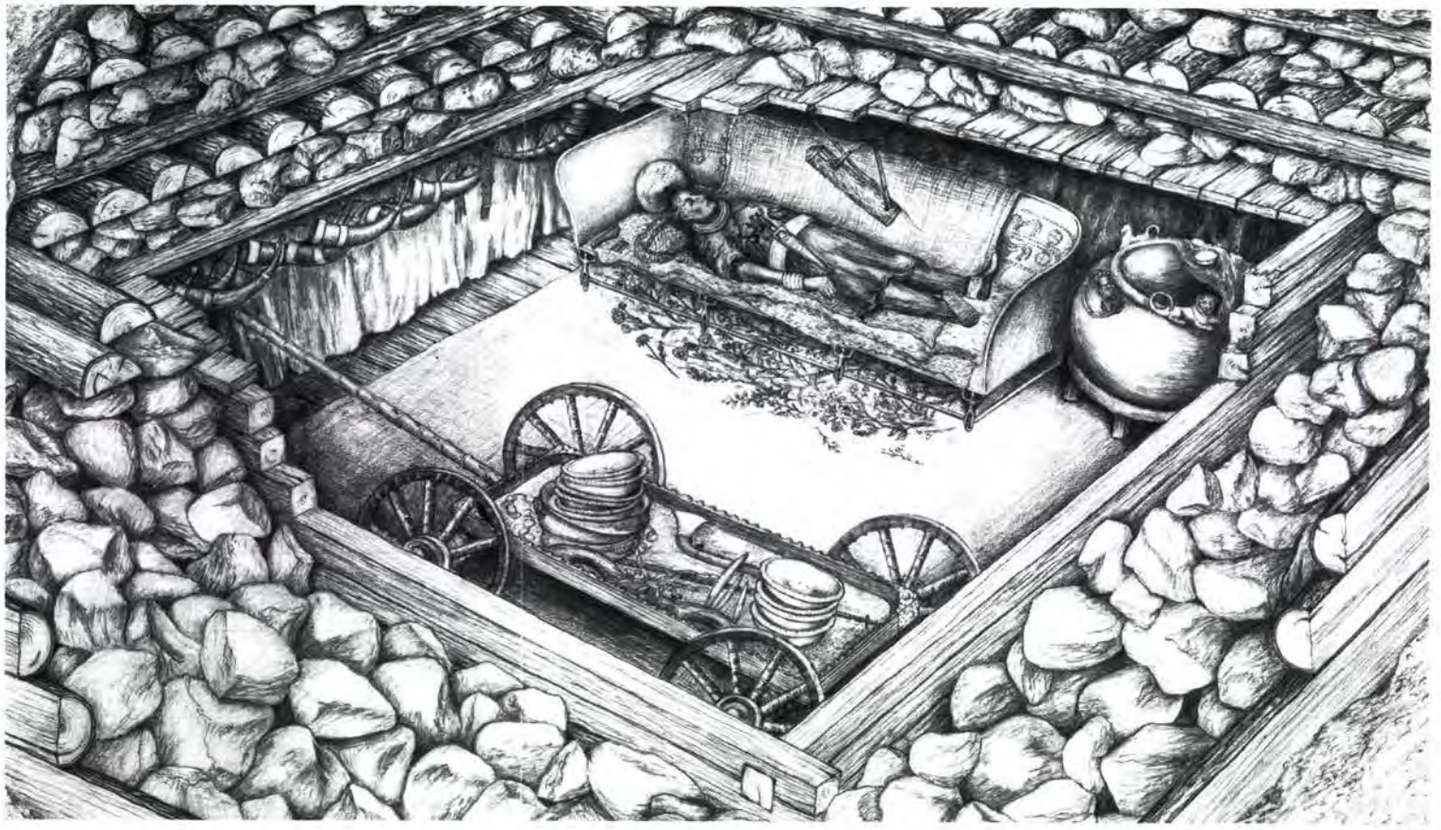
Let us leave Burgundy and travel eastwards to Baden-Württemberg. Here, northwest of Stuttgart, lies the best known early Celtic burial so far reported. It was discovered twenty-five years later than Vix and was excavated in 1978–9 with the most up-to-date methods. Because of its excellent state of preservation a variety of objects made of organic substances were recovered.

When found the mound measured only 1.5 m high but was originally upwards of 10 m high and 60 m in diameter. The burial chamber, constructed of oak beams, was still intact in the centre of the tumulus. There was also a second chamber measuring 4.7 m along the sides. The space between and the covering were made up of about 50 tons of stones. The activities of grave robbers were obviously feared and it was felt that the huge pile of stones would inhibit them. The roof of the burial chamber collapsed after a time under this weight and the splendour of the structure was completely hidden. The careful excavation, however, gives us a most detailed picture of how the tomb must have appeared on the day of interment.

The walls of the chamber had hangings made of strips of woven wool or flax on which varying weaves and embroidery patterns could be discerned. On the south wall hung drinking-horns made from aurochs' horns and one of iron which was the largest and held 5.5 litres. All are decorated with gold foil. In the eastern half of the chamber there was a heavy wagon, the body of which, the wheels and the hubs are covered all over with iron mounts. A bridle, a double yoke for the horses, various implements as well as nine plates of bronze and three basins, also of bronze, all lay on the body of the cart. Opposite the wagon there was a large bronze cauldron, 1.2 m in diameter and with a capacity of up to 500 litres. It held a mead-like liquid and was covered with cloths on which lay a fine gold dish. On its shoulders three lions sit between the three handles. The cauldron is old and much-used; the handles appear to be later additions and one of the lions even has been reproduced in a native atelier. The other two lions as well as the handles originated in mainland Greece.

Beside the cauldron stood probably one of the most original pieces of furniture, a 3 m long reclining chair. This monstrosity, looking like a sofa with side- and end supports of decorated sheet bronze, served as the last resting place for the deceased. Eight little

Fig. 15 Top: Reconstruction drawing of a rich burial mound at Hochdorf near Stuttgart. Bottom: The excavation of the tumuli of Jegenstorf near Berne in 1907. The representatives of the Berne Historical Museum, J. Wiedmer-Stern and E. von Fellenberg, are shown in the pit.



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wheels made it movable. A quiver full of arrows hung over the end-rest; the quiver was made of poplar wood, the arrows of hazel, spindle tree and guelder-rose. The couch itself was lovingly arranged. A bolster of hemp and grass stems, hides and materials made of badger wool and horsehair was used to provide a soft resting place for the dead whose covering consisted of woollen and linen cloth. Beside the head there was a cone-shaped hat of decorated birch bark and the feet were covered with pointed shoes with ornamental strips of gold foil. The dead man was covered in rich ornaments. On the neck there was a collar of gold, on the wrist a golden bracelet, on the breast two bronze and two gold fibulae, all four with bent pins and thus inoperative. An iron dagger in a bronze sheath was fastened to the belt, both dagger and belt ornamented with gold foil on their visible faces. Personal equipment included a wooden comb, a razor and a nail scissors.

The rich decoration of thin gold foil with its dotted ornament is striking. This was clearly made specially for the dead and was not meant for daily use. Why such wealth of ornament was used, what he or those he left behind wished to prove with this show of wealth, must remain an unsolved problem.

Post-excavation anthropological examination has revealed that the man was 1.9 m tall and thus considerably taller than his contemporaries. The cause of his death at about 45 years of age is unknown; incipient arthritis in the joints made movement somewhat difficult.

The dead man from Hochdorf is generally referred to as a "prince" but, as we know literally nothing about the hierarchical or political organisation of early Celtic society, it is safer to use such a title sparingly. What we know is the exceptional size of the burial monument, the costly and elaborate use of gold and the objects which can have reached the North only through trade, marriage, booty or guest-presents. All this, of course, indicates that the dead man was an outstanding personality. However, what his function in contemporary society might have been is unknown. The rich use of gold ornaments at the moment of death suggests the desire to enhance the status of the dead man or even to deify him.

This man lived and died between 550 and 500 B.C. and thus belonged to an earlier generation than the lady of Vix.

Heuneburg on the Danube – an early Celtic royal seat

After the above description of two great tombs one must ask oneself where the early Celts, buried in such monuments, lived. To answer this question we must look to the South; 20 km east of Sigmaringen in Baden-Württemberg lies the Heuneburg on which a so-called princely seat was inhabited between 600 and 450 B.C. Such princely seats are deemed to be extensive settlements sited in raised areas and distinguished by special imports from southern regions. Another characteristic of these places is their location in a region of large burial mounds with richly appointed graves. All the conditions of princely seats are so far met by two excavated settlements only, the Heuneburg and Mont Lassois.

The Heuneburg with its approximately 3 hectares is only about one third as large as Mont Lassois. The settlement area was surrounded by a wall which in the beginning consisted of wood, earth and stones. A sort of box system of wooden beams was filled with earth and covered both inside and out with dry-walling. This arrangement was later replaced by one of entirely different construction, a clay wall made of air-dried tiles, covered on the outer surface by a lime plaster. The external facade was decorated with a series of projecting towers. The building materials and the architecture of this wall are spread widely in Mediterranean areas but until now in northern Europe are confined to this one example.

The wall stood for about 50 years and then collapsed when the whole settlement was destroyed in a great conflagration and later rebuilt in the old way.

The clay tile wall was little suited to building in a damp climate but it does show that, as well as material things such as pottery, ideas, skills and experiences could also be imported. It is not possible that the wall described could have been erected without help from outside and it is also impossible to say whether the builder came from the south himself, bringing his own architectural conception of a large settlement with him. Could a native after a journey to the south have brought an architect back with him? We simply do not know. The examination of the internal area shows that the history of the settlement was most complex and difficult to elucidate. The houses, at least in one corner of the settlement, stood in regular rows; some seem to have been used for bronzeworking while yet others were simply living quarters. Nothing more than the ground plans of these houses are known: all the wooden portions of the structures have disappeared. More information about the daily life of the inhabitants is provided by the finds. Imported objects account for only a tiny proportion of the finds, something that resembles closely the picture at Mont Lassois. The largest body of material comprises domestic rubbish including many pottery sherds, chewed bones, a few broken objects of metal and ornaments. The many thousands of sherds allow of the reconstruction of various vessels with differing functions: coarse cooking-pots and storage jars, dishes for eating and drinking, bottles and finely painted tableware. One may assume that potteries also existed here.

One can only speculate about the function of the settlement. It must certainly, because of its great size, have been some sort of focus with trading establishments, handicraft workshops and other similar arrangements. Whether a prince lived here has not yet been demonstrated through excavation.

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After the chapters above, which have given us an idea of the whole west Hallstatt cultural area, we turn now particularly to the gold finds and especially to those which have come to light in Switzerland. The detour round find-places in neighbouring countries could not be avoided because as yet no such sites excavated in modern times in Switzerland have been found, sites that could have given us information approaching that derived from the Hochdorf burial. Our burial mounds were almost all excavated in the last century, using outmoded methods or were simply plundered. We possess only incomplete find lists, indeed mainly just single finds without any additional information such as is normal for modern research methods.

Nevertheless, we can observe a large number of single objects of high quality either made entirely of gold or else gold-plated. All come from burials and are nearly all ornaments. Before, however, considering these objects, certainly dated to the Hallstatt Period, we must first turn to one of the most outstanding gold finds from Switzerland, the gold dish from Altstetten.

The gold dish from Zürich-Altstetten

This object, found accidentally in 1906 during building operations, has given rise many times in professional circles to many discussions without reaching any final conclusions about the date or the significance of this puzzling discovery (Cat. 7). The views about dating are those which led, and indeed still lead to controversy.

As no archaeological specialist was present at the actual discovery of the dish the find circumstances had to be reconstructed in retrospect. The statements of the building worker seem to be reasonably

clear: the dish lay mouth downwards on a flat stone, covered by an upturned pottery vessel. A white, dust-like mass lay under the dish. A professional search of the surrounding area revealed no further finds. Unfortunately, only the tiniest fragments of the pottery vessel were preserved and thus there are absolutely no associated finds to help with the dating of the gold dish. One is therefore forced to use comparative studies and stylistic considerations. These have led to two views: one argues for a dating to Hallstatt times while the other looks to a Late Bronze Age association. Late Bronze Age gold vessels are relatively common and usually come to light in hoards or as deposited offerings, that is, they do not normally come from graves. The situation was different in the Hallstatt Period from which only four securely dated gold bowls, all from graves, are known. Where the find circumstances are known it can be stated that these bowls occur without exception in a second, larger vessel, either of pottery or bronze. The graves are always richly furnished chariot burials with varying grave-goods, such as, for example, the well known and splendid grave at Hochdorf.

Looking at the discovery in Altstetten one is struck by the fact that there are no solid reasons for assuming it to be a burial. The situation does not give the impression that a grave existed and plunder seems to be excluded through the discovery of the gold dish. If it had indeed been a rich burial traces of such would have come to light in the subsequent examination.

If one compares the four certain Hallstatt bowls with that from Altstetten one is struck by the differences in weight and size: the four Hallstatt vessels together weigh 327 grammes, that from Altstetten alone as much as 910 grammes. Stylistically, there are variations. None of the Hallstatt vessels bear boss ornament. The Apremont vessel is completely undecorated, those from Stuttgart, Hochdorf and Wehringen bear dot-and-circle ornament and straight lines. The rim is occasionally emphasised by special ornament, whereas this part of the Altstetten bowl is entirely plain. The Wehringen bowl alone is decorated all over but large parts of the other bowls are smooth and undecorated.

The Wehringen vessel is the oldest of the four, belonging to the beginning of the Hallstatt Period. Still older vessels, dating to the Late Bronze Age, display sides ornamented all over on the one hand and boss-ornamentation on the other. These two characteristics could indicate an earlier period. As well, Late Bronze Age gold vessels can weigh up to over 500 grammes each, something that approaches more closely the weight of the Altstetten dish.

However, a final dating for the Altstetten gold vessel cannot as yet be suggested though most indications are in favour of the Late Bronze Age.

	Weight (grammes)	Diameter (cm)	Height (cm)
Wehringen (Bavaria)	39	9.1	3.2
Hochdorf (Baden-Württemberg)	72	13.4	5.3
Stuttgart (Baden-Württemberg)	161	16.5	6.5
Apremont (Haute-Saône)	55	13.0	4.0
Altstetten	910	25.0	12.0

Small gold objects from simple graves

Small gold-foil hollow rings are the smallest gold ornaments of the Hallstatt Period. These weigh on average 1 gramme. Thirteen are known from the area of modern Switzerland and they are also well known in the neighbouring areas of Alsace and Baden-Württemberg.

Basically, they are simple in form. They are made of gold which was first formed as a tube and then curved into the shape of a ring. They are open at each end and have a seam along the inner surface. This can sometimes be wide open so that the objects are often called boat or sailing rings. Sometimes one end is narrower than the other so that it can be inserted into the opening at the second end. The external surface is always smooth and undecorated. The ring from Wohlen is, however, an exception (Cat. 11); it is very carefully made and is in various ways quite noteworthy. In cross-section it is not round but rather quadrangular, the roof-shaped exterior surface bearing fine longitudinal grooves; the clasp, made from one of the sharp, narrow ends, is plain.

The specimen was found in the middle of the last century but find circumstances are unknown and no other objects were found with it. Is it possible that this was an isolated object or did the finder give up the smallest piece in order to turn the rest into clinking coin? However, that such little objects could have been deposited alone in graves is demonstrated by a burial at Bonstetten (Cat. 9). The woman buried here wore round her waist a leather belt, fashioned with bronze rivets and with a decorative buckle of sheet bronze; on each wrist she wore a chain of black glass beads. These, and a bronze bucket also found in the grave, indicate for the dead woman moderate wealth, something strongly supported by the gold ring.

There were also burials with many more gold objects, such as those of the women at Ins (Cat. 30) or Châtonnaye (Cat. 21), as we shall see further below. These women belonged to a totally different social class from the woman of Bonstetten.

The function of the rings is still a matter for speculation. Their position – near the head – suggests at first glance that they were earrings but their very large cross-section (4 mm for the rings from Urtenen, Cat. 32) and the difficulty of securing on the ear an open ring, like that from Kirchlindach (Cat. 12), have given rise to doubts about such a solution. On the other hand, of course, the ring from Wohlen (Cat. 11) with its pointed terminal could easily have been worn in the ear. One cannot either reject for the five Gunzwiler pieces (Cat. 34) the idea that they were all worn on one ear in the manner in which young women of today wear several rings on one ear. Perhaps some of the rings were attached to a head scarf or woven into the hair. The rings were worn in varying numbers and frequently as single specimens. This custom is noted but rarely with male burials. Exclusively women adorned themselves mostly with two rings. The dead person buried at Esslingen in Baden-Württemberg was even provided with 18 gold rings.

Gold spirals are much rarer than gold rings. Two examples are known from Baden-Württemberg (Kleinengstingen and Villingen-Magdalenenberg). Both are simple windings, that from the large burial mound at Magdalenenberg being found in a male grave. From Switzerland only one such example is reported, that from a simple woman's grave at Zürich-Burghölzli (Cat. 8). This person wore a necklet, three armlets and a fibula of bronze, all personal ornaments which do not argue in favour of any considerable wealth on the part of the wearer. There were also three pottery vessels in the grave and these are not unusual for the Hallstatt Period when, and especially at the beginning of the epoch, it was often customary to inter several dozen such vessels with the deceased. Another peculiarity of the Burghölzli burial is indicated by the presence with the gold spiral of an iron knife with a bone handle. If we are to accept the reports of the excavators this knife was found sticking in a pig's skull. The deposition of portions of meat, only the bones of which now remain, can be construed as providing sustenance for the journey to the other world.

We know virtually nothing of how men in these times regarded the afterlife. As there is no written documentation we must try to

"read" the material remains, such as, for instance, the grave. It is reasonable to assume that the dead were provided with personal ornaments, garments and weapons so that their social position, thus expressed, would be secured in the other world. These, of course, are merely speculative ideas, positive statements cannot possibly be made. This becomes clear when we consider what an archaeologist would say about our concepts of the afterlife if excavating one of *our* cemeteries in a few millennia from now.

"Gilt" Ornaments

Personal ornaments of bronze or iron, with a loose covering of thin gold foil, form a special category. They are thus not gilt, this technique being not known until much later. Three gold-plated necklets of bronze or iron are recorded from Central Switzerland, from sites at Hermrigen, Düdingen and Châtonnaye (Cat. 15, 17 and 19). As these three places lie close together it looks as if we are dealing with a local speciality. The only other discovery, of a necklet with bronze core, is that from Rottenburg in southern Germany. The gold plating is extremely thin and, unlike the objects in the prince's tomb at Hochdorf, does not appear to have been made or applied specially for the burial. Such rings were probably worn by the living also. The easy assumption that these rings were intended to deceive, to appear as solid gold or stout gold plate, is probably not reliable in that smooth necklets of gold are exceptionally rare and do not occur in Switzerland at all. They could, therefore, not have been imitated: our rings with gold plate must, therefore, represent an independent ornament type.

A related piece from Hermrigen is unique (Cat. 14). This is a narrow bracelet of bronze covered with thick gold plating. It was found probably in the same tumulus from which the gold-plated necklet came but not necessarily from the same grave.

The combination of iron with gold shows that, in this region, these materials were experimented with though apparently without success, since gold-plated iron objects do not occur in the later La Tène times. This experimental phase in the use of iron is to be seen in a wider context. In the Hallstatt Period iron appears as an entirely new material. Unlike bronze it possesses the advantage that it is much easier to procure. As bronze is an alloy of copper and tin, two metals were required and one of them, tin, had to be acquired from a distance. Against that, iron ores occurred in large quantities nearly everywhere in the western Hallstatt region and even today are still found. One has only to think of the granular ores of the Jura Mountains.

Iron, of course, could not be melted and cast like bronze as the necessary temperatures could not be achieved by prehistoric man. Thus iron could only be wrought. This limitation on working the metal led to the fact that finely decorated personal ornaments continued to be made of bronze. Otherwise tools, weapons, implements (for example, the knife from Zürich-Burghölzli), portions of chariots and so forth were all fabricated from iron. Only very rarely did the smith of Hallstatt times make ornaments of iron, such as necklets and bracelets, fibulae, pins and belt buckles and these are found today almost exclusively in mens's graves. Iron was apparently a typically "male" material and one must then ask whether it may be concluded that the graves at Düdingen and Châtonnaye were of males. The find circumstances are so inconclusive that no positive answer can be given.

As we have seen, personal ornaments of gold with a bronze core have also been found. A tiny gold-plated bronze fibula, for instance, occurred at Düdingen (Cat. 18). In Hermrigen a fragment of a narrow ring of sheet gold was found in addition to the gold-plated necklet and bracelet (Cat. 14); the piece is, however, too small to identify as an arm or neck ornament. The exterior surface is grooved along its length and the edges are rolled over. Traces of a bronze lining are to be seen on the inner face.

In the register of the Historical Museum in Berne there is a long list of acquisition numbers under the heading "Düdingen", referring to objects such as "piece of bronze plate with applied gold" or "bronze plate with traces of gold". All these plain and probably very small fragments were removed at some unknown period from the museum collections. We cannot, therefore, say whether the objects were gold-plated in the sense of the simple gold-covered bronze or iron rings or whether other objects in the burial were also gold-plated, as in the case of Hochdorf. All the same, we can conclude from the register lists that there was more gold in Düdingen than appears today and that, therefore, the person laid to rest there must have been reasonably wealthy.

A carriage for the final journey

The burial in Mound 6 at Ins in Canton Berne contained not only a granulated gold bead (Cat. 26), which will be discussed further below, and a razor but also a large number of nails, mounts, tyres, rings and other broken pieces of bronze or iron. The experienced antiquary, Baron Gustave de Bonstetten from Berne, recognised at once that these were parts of a carriage. The excavation was carried out, however, in 1848 at a time when archaeology was in its infancy. The important thing then was to collect as many objects as possible; the find circumstances, of such significance today, were deemed to be of little interest. However, G. de Bonstetten has left behind some notes and has even published a short excavation report, a most praiseworthy occurrence for those times. All the same, when we realise the amount of information garnered from the Hochdorf burial in comparison with that from Ins and all the other gold-bearing graves in Swiss soil we are compelled to complain of the great loss of knowledge. The damage done can hardly be repaired. Tumuli are monuments clearly visible to all and thus easy prey for the tomb robber, even today. Hardly any tumuli are left intact in Switzerland today the excavation of which would add to our knowledge of the past. Even more pressing would be the preservation of the still available remains of burial mounds which, for Switzerland, are the only historical sources left to us of the Hallstatt Period. Habitation finds are particularly rare.

The wagon burial at Ins has produced so many individual parts that a reconstruction should be possible. No one has, however, attempted this task; only a single wheel has been rebuilt and this gives us a good insight into the skills of the Hallstatt carriage builder. The felloes were covered with iron hoops and the eight spikes and the hubs were plated. The wooden body of the cart was apparently provided with a bronze railing and to the sideboards mounts with varying ornament were applied. The fragments of a leather strap, 10 cm wide and decorated with bronze rivets, proved an interesting discovery. Its most likely use was as part of the horse harness.

The most generally known things about chariot burials producing gold objects are the iron wheel tyres or other parts of the carriages. Very frequently such wagon components are heavily rusted and decayed because iron has only poor qualities of preservation. For safekeeping in museums special climatic conditions must be established.

In a huge mound in Payerne, measuring almost 30 m in diameter, there were numerous cremations and unburned remains. Parts of a carriage and a collar of gold suggest a rich Hallstatt grave. The latter is grooved longitudinally and formed from a single piece of gold foil (Cat. 24). Between each three ribs there is a punched series of meanders. Whether it originally really possessed an open shape and

was not more definitely tube-shaped cannot now be decided. The flat side piece may have been turned inwards as in the case of the Hochdorf specimen.

A similar situation is revealed by the mound at Châtonnaye from which we have already learnt of a gold-plated iron collar and a gold earring. This tumulus was plundered in 1880. The finds, including a golden necklet as well as wagon parts, must have come from different graves, so that it is today not possible to say which object belonged to which grave. The necklet (Cat. 20) in form resembles that from Payerne very closely but is narrower and bears an ornamentation of punched S-motives. It is to be supposed that the smooth side pieces were also bent inwards.

The third necklet comes from Allenlüften, a small village between Berne and Murten. The same fate befell the so-called Unghürhubel as the burial places already described. The gold objects, a necklet and a bracelet, were picked up by peasants during the removal of the tumulus in the first half of the 19th century. At a later stage pieces of a carriage were also found. A glance at Hochdorf, with its similar combination of necklet-bracelet-wagon, allows one to guess at what was to be discovered in the Unghürhubel. The annular necklet is the widest of all three (Cat. 22); its exterior surface is finely ribbed and decorated with punched bands of various designs. The bracelet is flat and bears four rows of opposed punched crescents (Cat. 23).

The necklets represent a type which, though varying somewhat individually, all have the same basic form. The regularity with which the dead were provided with such objects suggests that they were status symbols with more than regional validity. Gold collars occur in Central Europe in a specific area which covers eastern France, southwest Germany and Switzerland north of the Alps. Up to now barely twenty examples are known. It is possible that their use was strictly controlled and that departures from standard or imitations were not permitted. None of the collars are made of sheet bronze though this would be possible. The same is true also of the wide bracelets. Earrings and the heads of hair pins were made of different material.

As a rule burials with golden necklets also have wagons, something which, however, in the case of our three examples can be suspected but not proven. Wagons as grave-goods are also not uncommon. The custom is derived from the east where frequently the draught horse was killed and buried with its owner. In Switzerland one did not go as far as this, however. Indeed, the reverse was the case, when only parts of the carriage, such as the wheels, were buried. The wagons were always four-wheeled, drawn by two horses. The function of the carriages is still uncertain: was it in everyday life a means af transport, a travelling coach, or was it used for cult movement or processions? Certainly the male or female dead (wagons are recorded from burials of both sexes) were transported in such wagons from their place of death to their burial place after burial ceremonials had been completed. The wagon was, perhaps, used to make more comfortable that last journey to the next world.

Luxury from the ancient world

Another expression of well-being in Hallstatt Period graves is represented by a further category of valuable objects in addition to gold items and wagons. These were bronze vessels. All the burials here, which include these three groups of objects, are women's graves. They are situated at Ins, at Urtenen near Berne and at Gunzwil near Beromünster. The last-mentioned burial gave a relatively modest appearance because the woman buried there possessed "merely" a chain made of little golden tubes (Cat. 33), five small gold earrings (Cat. 34), ten hair pins with heads of jet, bracelets and anklets of bronze, whereas the other two ladies were decorated with especially rich items.

The mound at Urtenen, excavated in 1857, contained probably more than one burial so that the associations of the objects found are not entirely clear. The lady of Urtenen probably had two lignite bracelets on each arm; in each ear there was an earring of gold (Cat. 32) and either in the hair or attached to a head-covering fifteen pins, with large heads of decorated gold foil, were fastened (Cat. 31). The now missing shafts of the pins were either of bronze or iron.

The heads are now missing but they were probably filled originally with wood or wax, used to prevent the thin foil from being crushed. Other women wore pins with heads of amber, jet or sheet bronze. Pinheads with gold foil are extremely rare: a lady at Nordhausen in Alsace wore one such pin and in Schöckingen in Baden-Württemberg another wore six such pins. The dead women at Urtenen with her fifteen gold pins was thus able to display appreciable wealth.

The woman from Mound 8 at Ins decorated herself much more exclusively. Here in 1848 there came to light, as well as a bronze bucket and a gold earring, two half spheres of gold plate and a number of small pieces of gold foil which, if we are to believe the reports of the excavator, G. de Bonstetten, came from cylindrical or lenticular beads. These were not made from two half spheres fastened together but rolled from a strip of thin gold. The strips are now pressed flat and the exact bead shape can no longer be established (Cat. 28). Their decoration is decidedly transient and unpleasing, especially when compared with the precision of the punched ornament on other gold objects. Perhaps, however, they were not beads at all (of a sort so far unknown as grave-goods) but rather the gold plating of some as yet unknown type of object.

Just as puzzling are the two large decorated gold-foil half spheres which look like enlargements of the pinheads adverted to above (Cat. 29). The most convincing explanation of the ornamental foil is that the half spheres formed the gold plating on two wooden bowls for which, however, there are also no parallels. There is no support for the idea that the two half-spheres were fastened together as a full sphere and, of course, such a sphere would give rise to further questions. The only certain thing about them is that the punched geometric designs show that they are native products.

We are less certain about the origin of the bronze vessels. They come from all three burials: at Urtenen and Gunzwil there was a so-called ziste in each, that is, a bronze bucket with ribbed walls and in Ins a bronze situla, a bronze bucket with smooth sloping sides. Both types of bucket are made from several sheets of bronze riveted together or secured with lap joints and carrying arrangements occur on each in the form of handles or hoops. Their purpose is unknown. They were certainly of some value as shown by occasional patches of riveted bronze plates. Such vessels are found not only in rich graves containing gold objects but also in less wealthy burials.

The same is true of bronze utensils of other forms. We can refer, amongst others, to dishes with wide decorated rims from Corminbœuf in Canton Fribourg and from Wohlen in the Freiamt (Cat. 44), to bowls and cups from Richigen in Canton Berne and from Coffrane in Canton Neuchâtel (Cat. 46–48). These vessels may possibly point to a stratum in the community which could hardly afford gold objects.

There has been much discussion about the origin of these bronze vessels. Their occurrence in Mediterranean regions, especially amongst the Etruscans, suggests that they were imports though there are also indications of the possibility of native workmanship or

Colourplate XX Cat. 72–74 *(Golden Discs)*
Colourplate XXI Cat. 22–23 *(Sheet Gold Collar and Armlet)*

imitation, which would not be beyond the capabilities of a Hallstatt Period coppersmith. It is possible that vessels were imported at first and that when import was not large enough to satisfy the demand the coppersmiths began to fashion the vessels in their own smithys in such excellent manner that now a distinction between the imported and the native cannot be identified.

Certainly imported is the so-called hydria from Grächwil near Berne (Cat. 43). This is nearly 60 cm tall and is thus the third largest bronze vessel in Central Europe after the krater from Vix and the cauldron from Hochdorf. The water container (hydria) is thought to have come from a south Italian workshop and to have been made about 580 B.C. It was found in a burial mound about the middle of the last century.

A further group of imported luxury articles comprises pottery vessels from Greece or Italy. We have already seen such wares from the stately tombs of Vix and Hochdorf and also from the settlement on the Heuneburg. Imported pottery is unknown from Swiss graves but occurs in at least three settlements. Greek wares were found at Châtillon-sur-Glâne near Fribourg, at the Üetliberg near Zürich and at Yverdon on the Lake of Neuchâtel. From Yverdon (Cat. 42) there came but a single and probably late sherd and, amongst a large body of native material, only the smallest sherds were found at Üetliberg (Cat. 36 and 37). Against that the Hallstatt Period settlement of Châtillon has produced at least 42 portions of vessels, of Greek manufacture (Cat. 38). Further pottery comes from Marseilles (amphorae) and from southern and eastern France, thereby stressing the far-reaching relationships cherished here (Cat. 39–41).

Granulation and filigree from Etruria

Two beads, found in the Canton Berne, are quite exceptional within the framework of Hallstatt Period ornamental pieces north of the Alps not only in their shape but also in their decoration technique. While one, that from Jegenstorf near Berne, came from what can only be called a poor grave, the second, from Ins in Seeland, was found in a rich chariot grave but without any other gold objects.

Let us look first at the Jegenstorf pendant (Cat. 35). It is made of two loose parts, one a hollow bead and one consisting of a crescentic, openwork form made of wire from which little rings are suspended. Both were probably connected by a stiff shaft, now lost. The shaft itself was suspended or fixed in some other way so that the pendant could move freely. The bead is slightly oval in shape and is composed of two half hollow balls, soldered together. The seam is hidden by a twisted wire. Each half ball is decorated with a design comprising overlapping angular patterns made from granulation spheres placed irregularly side by side. These little balls, measuring between 0.3 mm and 0.5 mm in diameter, are incredibly small. Finer still, 0.1 mm to 0.2 mm in diameter, are the twisted filigree wires which form a continuous S-pattern between each of three filigree wires which are themselves soldered together. Ten tiny rings are suspended on a further S-formed wire while another one is lost. The whole work of art weighs only 2.0 grammes.

The Ins bead is more definitely oval (Cat. 26). It is presumably also made from two half balls but the seam is so well made that it cannot be discerned any more. The exterior surface of the bead is divided by two soldered wires into three zones – a wider central strip with angular designs and two narrower bordering strips with a lotus pattern, also carried out through granulation. Although the little grains are themselves irregular in size, measuring 0.2 mm to 0.4 mm across, the general effect of the ornament is surer and more capably executed than on the Jegenstorf bead. The associated chain, made up of closely woven links, is almost 40 cm in length (Cat. 27). As the clasp is now missing it cannot be stated how long the chain was originally. It is unique north of the Alps though a silver example was found in a rich grave in a large tumulus at Kleinaspergle near Asperg in BadenWürttemberg. They are, of course, quite common at this time in Mediterranean areas.

All three techniques – filigree, granulation and woven chains – are unfamiliar to the smiths of the Hallstatt Period. Indeed, only six objects with granulation can be listed north of the Alps and, of these, the greatest number of tiny granules on a specimen is only five. At Ins and Jegenstorf several thousand such granules occur.

Filigree and granulation were very popular south of the Alps, amongst the Etruscans, who were masters of the art of granulation. Our two treasures – from Ins and Jegenstorf, could easily have been imported from Etruria. The decorative patterns support this possibility. The combination of sphere and crescent on the Jegenstorf bead is interpreted as sun and moon, a motif of Mesopotamian origin which in the Far East is known from the second millennium B.C. This design was taken up by Phoenician goldsmiths and, later, in the 7th century, was worn by Etruscan ladies in the form of a flat pendant. It is not represented in the body of motives of Hallstatt times. The overlapping triangles made of granulation in double rows are found more frequently in Etruria and more effectively fashioned there, for example on a superb gold fibula from a burial at Vulci in Tuscany where S-shaped filigree is also applied. Parallels to the angular design on the middle part of the bead from Ins occur also on Etruscan ornaments and also to the double rows of applied granules. It is more difficult to suggest an origin for the lotus pattern, which is not at home in Etruria.

The poorer quality of the granulation on both beads compared with that on Etruscan pieces would seem to invalidate an Etruscan origin for them. Etruscan granules are mainly from 0.1 mm to, at most, 0.2 mm in diameter and are always attached with the utmost precision. There are, however, also larger granules. Though the final word has not yet been said about the origin of our beads Etruria would appear to be the most likely source.

The sex of the wearer seems to be certain in both cases: in Jegenstorf a dagger was found near the bead, in Ins a razor. The conclusion must be then that these costly and mysterious ornaments were worn by males.

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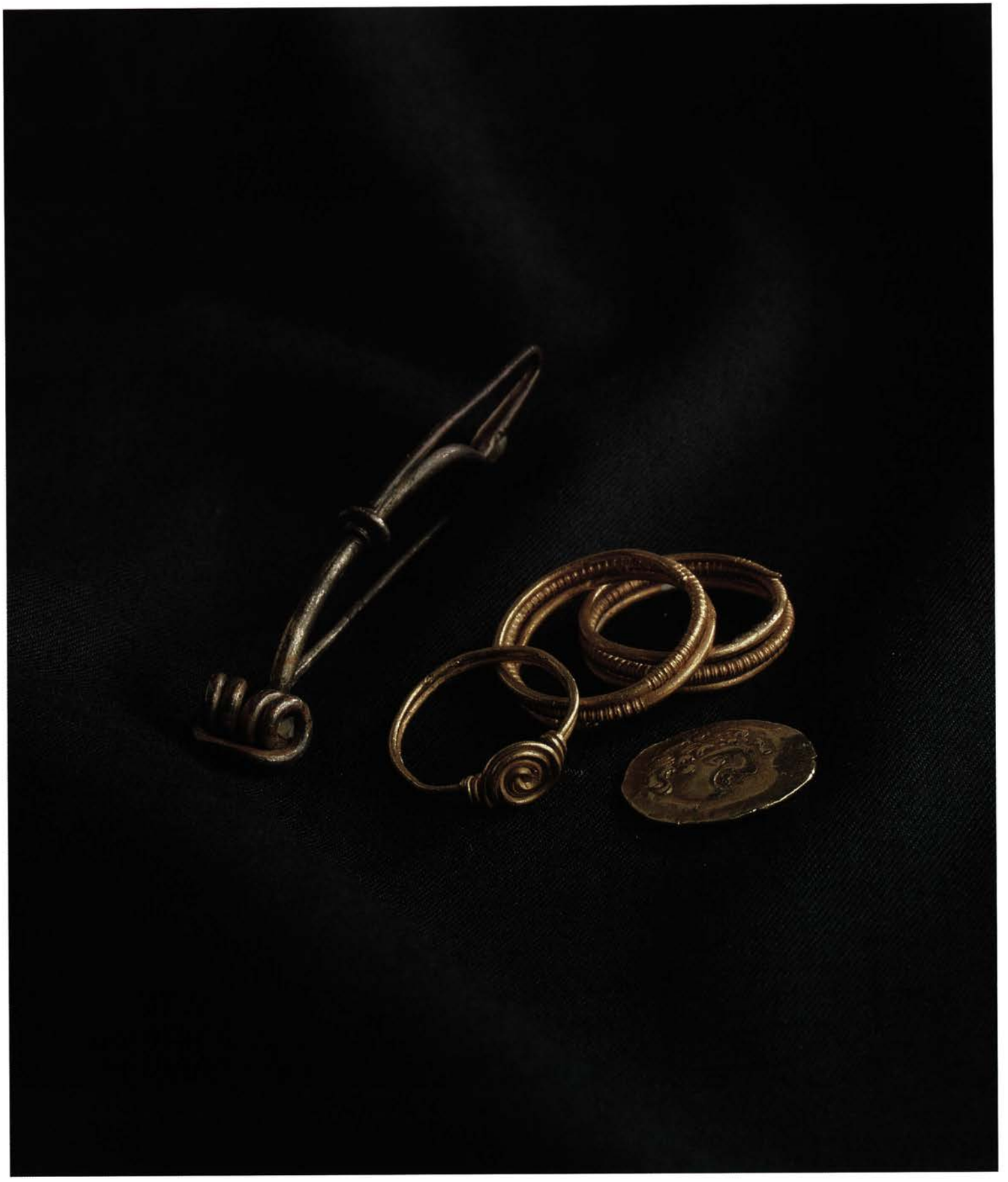

THE LA TÈNE PERIOD: THE WORLD BEGINS TO MOVE

Felix Müller

On the 18th July, 387 B.C., a united Celtic force confronted the Roman army at the Allia stream, routed them and began three days later to plunder the conquered city of Rome. Most of the inhabitants of the city fled to open land and to neighbouring cities, but a smaller group entrenched themselves on the fortress rock of the Capitol. Here they found themselves able at length to resist the Celtic attack and then to prevent the complete destruction of the Roman state.

With this display of power at the beginning of the 4th century B.C. the Celts finally paced the stage of world history by driving Rome, later to be so powerful, to the edge of the abyss. Thus, from this time onwards the 18th of July entered the annals of Roman history as "dies ater" or the "black day". Rome was indeed saved from destruction only by the legendary gaggling of the sacred geese of Juno, which prevented the Celtic besiegers from scaling the Capitol Hill in the middle of the night. What is the greater connection of this legendary episode? The historical works of Roman historians provide us with further information.

The highly civilised Etruscans had reached an unusually elevated standard of living in the 5th century. Politically powerful cities were allied to each other and established centres for a quickly growing economy based presumably on the discovery and exploitation of rich iron ores in Etruria. The political power demands of this people grew noticeably in Upper Italy and about 400 B.C. the Etruscan sphere of influence extended across the Po to reach the foot of the Alps. Economic and cultural influences spread even beyond the Alps themselves into the very heart of the Celtic tribal lands in Central Europe.

At all events the interest of the northern peoples was aroused and, in their eyes, blooming Etruria must have seemed like an earthly paradise exerting an almost magnetic influence. This caused the event so well documented in the time of Pliny the Elder (A.D. 23–79). This refers to a member of the Helvetii called Helico who is said to have brought back with him from a sojourn in the south dried figs and grapes as well as oil and wine as proofs of the boundless fertility of Italian soil. This caused his Celtic fellow-countrymen to cross over the Alps and flood through the whole of Italy. To the events related by Pliny can be added that, as well as the fruits of the earth, the wealth and the gold of the well-to-do Italian cities provided the strongest attraction. The Celts undoubtedly lived from agriculture and animal husbandry, but still now and then the temptation to exchange the plough for the sword must have been more than compelling.

At some time, still in dispute amongst research workers, various Celtic tribes crossed the Alps and drove forward into northern Italy.

Colourplate XXII
Cat. 54–57 *(Gold Coin and Finger Rings; Silver Fibula)*

Some of these are named; they included the Bituriges, the Averni, the Senones, the Aedui, the Ambarri and the Carnutes. The Boii and the Lingones together traversed the Poeninish mountain range, the Valais Alps, and marched further over the Po. The Senones established themselves first on the Adriatic coast between Rimini and Ancona. From there, with new demands for land, they soon broke into the heartland of the Etruscans, their clear intent on plunder being demonstrated by their leaving their women and children behind.

During the siege of Clusium (Chiusi) certain diplomatic complications developed with a delegation sent from Rome. Through the emissaries the hard pressed Etruscan was assured of help, something not expected by the Senones. Eventually, the Senones, under their leader, Brennus, turned away from Clusium and drove towards Rome itself. This resulted in the Battle of the Allia on July 18th in the year 387 B.C. and the plundering of Rome, events which were to have serious consequences. Brennus is said to have besieged the fortress for seven months and was eventually persuaded to withdraw only after payment of a heavy ransom. Gold, not arable land as at first demanded before Clusium, was the reward for this act of war: the humbled Romans were required to pay some 1000 lbs., about 300 kg.

These armed incursions of the first decades of the 4th century into Upper Italy, so strikingly described by the Roman historian, Livy (59 B.C. – A.D. 17), were not the only evidence of the Celtic drive towards expansion, one which found expression particularly in the written traditions of the highly civilised world of the Mediterranean.

The magic of the unknown

In the succeeding decades Celts emerge in various places in southern and southeastern Europe. In 368 B.C. Dionysios of Syracuse in Sicily sends the Celtic soldiers he recruited to help his allied Spartans: Celts appear for the first time on Greek soil. In 335 B.C. Celtic delegates meet Alexander the Great on the lower Danube and declare in swaggering tones that they fear nothing but the possible collapse of the heavens on their heads. In 279 B.C. booty-hungry Celtic bands besiege the Greek shrine of Delphi, a place which, because of its wealth, must have exercised great attraction. A year later the Galatae, as the Celts were called in Greek, cross the Bosphorus and press on into the Near East. In 212 B.C. Celts took part in the second Punic War in support of Hannibal in the conquest of Taranto in southern Italy. They remain loyal to him up to the final battle at Zama in North Africa in 202 B.C.

That the world in those days had apparently shrunk for the Celts is demonstrated by contemporary archaeologial discoveries. Here we have no information to acquire about precise dates or the course of battles. Instead characteristic objects form the basis of our interest

Fig. 16 Two small glass heads from Carthage. Found in the grave of a Celtic woman in Saint-Sulpice, Canton Vaud.

and it is these which tell us of the widespread relationships and even of the individual journeys of their owners.

An example is provided by two small coloured glass beads, discovered during excavations between 1912 and 1914 in the Celtic cemetery of Saint-Sulpice VD. Their former owner, a very young woman, possibly, because of her height of 145 cm, still only a girl, died about 350 B.C. The two beads measure fully 4 cm in height. On them are portrayed well-ordered curly beard-and head hair and a suspension loop is attached to the parting. The penetrating glance of their two round eyes is accentuated by pronounced eyebrows. In the manner of their presentation and of their production these little heads are seen to be completely strange in a Celtic cultural milieu. Exact parallels have been found in Carthage in modern Tunisia where these pendants were probably manufactured. In the western Mediterranean only isolated examples occur, as in Sicily, Sardinia, the Balearics and in the Barcelona region. The two heads from Saint-Sulpice may, with reservations, be reckoned the most northerly so far found and are indeed the only perfectly preserved specimens from north of the Alps. How they found their way to Saint-Sulpice must remain their secret. Various scholars have attempted to explain the heads as those of Semites or Punic or even of the god Baal-Hammon. Their probing look, which in the beliefs of the people of those times was able to turn away evil and harm, must have made a strong impression along the shores of Lake Geneva. The two heads were worn by the young person on the left and on the right at shoulder height; they were probably suspended from the ears or fastened to a garment.

From Rubigen near Münsingen in the upper Aar valley comes a find which originates not in the south but rather in the north. This is a perforated amber bead which was found in a female burial dated to shortly after 400 B.C. Amber is a material developed in geological time from a consolidated resin, brown or honey-gold in colour. It was thought to have special healing qualities. Even today it has again become fashionable to hang amber necklaces on the necks of little children in order to lighten the pains of teething.

The Rubigen bead with a diameter of 6.4 cm is the largest of its kind to be found in Switzerland. Its flattened shape and the extremely carefully made decoration of concentric grooves indicate its origin in an exceptionally large block of raw amber. Scientific examination has revealed that amber comes from the North Sea and the Baltic and also from Central Europe. Our specimen has not yet been subjected to analysis but it is nevertheless clear that it is not Swiss.

More precise statements about the mobility over a large area of certain objects in prehistoric times can be made in the case of two special disc-shaped necklets. This type of neck ring, made of bronze, has an ornamental part with disc expansions and round insets of red glass. The bronze parts were decorated with typical Celtic motives, very individual in the details. A variant with three ornamental discs was exclusive to the upper Rhine and the main stream; it was fabricated in this region. A piece from Muttenz near Basle is remarkably similar to one from Fiad in the lowlands south of Lake Palaton. In both cases the ornamental portion is asymmetrical, which is otherwise unknown. It is, therefore, to be assumed that the Hungarian object was produced in the Basle area. From there it came, probably not through long-distance trade but as the personal ornament of a lady from the Upper Rhine. It thus looks like concrete archaeological proof of the Celtic wanderings as told to us by the ancient historians about this region.

In the period after 300 B.C., to which the two rings belong, there are many archaeological traces of the Celts in the Carpathians and in the Balkans and these may be associated with the failed attack on Delphi in 279 B.C.

Probably in the same way, that is, through possession by a Celtic lady involved in the expansion, other personal ornaments reached Greece and even Asia Minor, as, for example, a sort of bronze leg ring with several hollow bosses open to the inner surface ("hollow bossed rings"). The type is particularly widespread in eastern Europe and occurs also in Central Switzerland where it may be dated to the 3rd century B.C. A pair of such rings was found in 1953 while an ancient well was being emptied on the isthmus of Corinth. Because of the number of these bosses and of their closing mechanism these rings have their best parallels in southern Bavaria, where, indeed, they could easily have been made. This is, of course, still a speculative notion, still awaiting proof of validity. Wherever in Central Europe such rings may have had their origin, however, it seems plausible to associate their distribution along the Danube and through the Balkans into Greece with the Celtic migrations. Finally, it may be stated that one of these rings of Celtic type is said to have been found at Finike on the Bay of Antalya, on the southwestern coast of modern Turkey.

Already in the last century a distinct type of iron sword was found together with many other weapons in the old river bed of the Zihl near Port in the Nidau neighbourhood. Only in 1954 was an old, deeply hammered impression discovered on the rusted blade and beside it, in well-formed Greek letters, the word "Korisios". This is one of the oldest examples of writing north of the Alps. It is difficult to date the sword itself; a date about 100 B.C. is possible, with a margin of error of some decades on either side. The name "Korisios" refers either to the smith or to the owner of the sword.

According to Julius Caesar, the Helvetii during their exodus, in the year 58 B.C., made lists in *Greek lettering* on writing tablets. On these were mentioned the men capable of bearing arms and in separate lists the boys, old men and women (in this order!). Caesar also tells us that the Druids also regularly used the Greek alphabet in their writings. That writing was in general use already by the 1st century B.C. is demonstrated in the archaeological material by little writing tablets and particularly by writing-pens of bone and metal.

The archaeology of the Celts – a historical picture with gaps

During the last century Swiss archaeologists had considerable difficulty in equating archaeological finds with the Celts as known in the ancient literature, especially as the discoveries were in those times not dated precisely enough. It was only the discovery of extensive cemeteries at the turn of the century that the conditions for a

systematic argument with the archaeology of the La Tène Period were created in Switzerland. It is interesting to note in this connection that graves only are known in the period from the 5th to the 2nd century B.C. (that is, in Early and Middle La Tène times), while where the people lived is virtually unknown.

In the 1st century B.C. (Late La Tène) the situation is precisely the reverse: the number of graves decreases rapidly and at the same time our information about habitation is very much improved. These varying sources of information, which we try to reconstruct with the help of archaeology, leave a lasting impression on the historical picture.

Four cemeteries of Early and Middle La Tène times were carefully excavated at the turn of the century. All included remains of men, women and children, buried with their personal belongings, the men with their weapons, the women with their jewellery.

Albert Naef first discovered in 1898 a group of 31 graves in the Reb hills above Lake Geneva near Vevey VD. A second cemetery, with more than 200 graves, came to light between 1904 and 1906 in Münsingen to the south of Berne. The other two cemeteries were Andelfingen ZH found with 29 graves in 1911 and Saint-Sulpice VD with 86 graves examined from 1912 to 1914. Later numerous small groupings of burials and single graves turned up. These concentrate in Central Switzerland with special emphasis on the city of Berne and its immediate surroundings. Contemporary with all these important discoveries a not inconsiderable number of burials must have been destroyed without being reported to an archaeologist.

For further research the cemetery at Münsingen "Rain" proved to be the most valuable. The excavator, J. Wiedmer-Stern, was able to establish that the cemetery was always expanded in the same direction, along the slope. In the course of many generations between about 420 and 200 B.C. it grew slowly from north to south. A comparison of the objects buried over the years with the skeletons showed a definite style development, especially amongst the fibulae. Because they were essential as dress-fasteners and worn in prominent places they were most strongly influenced by contemporary modes. The almost 400 examples from Münsingen "Rain" became thus indicators of date. Even in the composition of the ornament ensembles changes and developments were easy to identify.

In the Ticino also there are large and important cemeteries of the same period. The most significant is that at Solduno near Locarno which by its size and valuable testimony may be compared to Münsingen. In addition the cemeteries at Giubiasco and Gudo hold several hundred burials and indicate a large population in the area round the upper end of Lake Maggiore. In the canton of Valais there are considerable numbers of smaller grave groups and single finds and in Graubünden the cemeteries of Castaneda in Misox and of Trun in the Rhine valley deserve mention.

Though hundreds of Early and Middle La Tène graves have been found in Central Switzerland and the Jura region so far only the foundations of a single building have been discovered. This was a pit dwelling dug deep into the earth, found in 1937 near Gelterkinden in the upper Basle area. It measured 3.60 m by 2.20 m; in the middle of each of the narrower walls there were two upright posts which once carried the roof tree.

A considerable change in the nature of archaeological finds can be seen shortly before 100 B.C. The dead were now cremated and the ashes placed in pottery containers in the earth. As a result the chances of their discovery are appreciably lessened as are the possibilities of recovering anthropological details, of reconstructing clothing and ornaments and of dating the burials. Graves from this period in Switzerland are still isolated discoveries.

At about this same time in Europe north of the Alps the custom of surrounding settlements with extensive defence works began to

Fig. 17 Iron sword from the Zihl, Canton Berne (bottom). The name "Korisios" is stamped below the hilt in Greek letters.

spread and soon the settlements exceeded the proportions of a mediaeval city. The Romans called such sites "oppida", a name taken over into the archaeological literature. These oppida represented in themselves the crystallization of political, religious and cultural life and go back probably to the city concepts learned by the Celts in Italy.

The characteristic defences consisted as a rule of a vertical, stone-built facade with piled earth behind, frequently strengthened by wooden framing. Because such defensive walls are clearly visible today in the landscape they have frequently become targets for archaeological investigation. One is, however, less well informed about buildings and settlement inside these monuments. Large, well-organised investigations as at Manching in Bavaria strengthen the view that the total inner space was not covered with buildings but that sufficient space was left free to take in the people of neighbouring farms with their animals in times of pressing danger.

A large number of oppida are known from places easily defended in Central Switzerland and the Jura. Examples may be pointed to on the hilltops like Mont Vully between Lakes Morat and Neuchâtel, at Mont Terri in Ajoie and the Üetliberg near Zürich. The oppida at Geneva, on the Enge peninsula near Berne, on the Münster hill at Basle and at Rheinau near Altenburg were all protected by running waters around them.

All the sites mentioned have been the subject of lengthy excavations and finds from some settlement levels are available in large quantities. In relation to the overall sizes of the oppida the excavated areas were too limited in extent and their results too small to give a reliable picture of the way-of-life and the daily occupations of the inhabitants. The houses, all of wood, have left hardly a trace behind.

An important find-place, significant not only because of its name but also of its meaning, is that called La Tène in the municipality of Marin-Epagnier at the outlet of Lake Neuchâtel. Here, about the beginning of this century, when the water level had dropped appreciably after drainage operations, thousands of iron objects came to light in the shallow waters. Particularly noteworthy were the many iron weapons, including over 600 swords and spearheads, dating mainly to the 3rd and 2nd centuries B.C. Because of these discoveries La Tène was the name given to an archaeological epoch since called in the professional literature the La Tène Period, which lasted from 450 B.C. to the birth of Christ. For long there was uncertainty about the significance of this amazing collection of weapons and other finds. Recently, however, similar groupings of material have been located in sanctuaries in France, so that a religious interpretation is the most likely. The weapons presumably represent offerings of booty to a god, being deposited in water for this purpose.

In general it must be accepted that in prehistoric times metal objects which for their owners had a solid value (such as weapons or ornaments of precious metals) were rarely lost accidentally. As a rule they were deliberately buried, whether they accompanied the dead or were dedicated to a god.

Gold from the rivers

Various ancient texts stress the wealth in gold of communities living not in classical Italy but rather in the Iberian peninsula, in southern France and along the Alps. Gaul itself was reckoned to be poor in silver but against that rich in gold which occurred as placer deposits in rivers and streams. Thus Diodorus tells us how certain rivers in their windings along hill-slopes gurgle and bring with them gold-bearing rocks. Then trusted persons would wash the gold-bearing sands and bring the metal thus released to the smelting ovens (Cat. 231).

More than once are the Helvetii described in the ancient sources as rich in gold. A text of the Greek author, Athenaios, unfortunately preserved only as a fragment, is of especial importance. Here he refers to his correspondent, Poseidonios, who lived about 100 B.C. and even visited Gaul himself. He writes: "In the most remote parts of the world there are certain small rivers which contain gold nuggets. These are sieved out of the sand by women and physically weak men and then brought in for smelting as, according to my informant, Poseidonios, was common amongst the Helvetii and some other tribes." This may be taken to mean that in ancient times rich quantities of gold were actually washed for in the rivers of Central Switzerland.

What technical methods were used in recovering river gold? It can be assumed that flat washing basins and plates were used so that, by the movement of the water, the gold could be separated from the sand. In addition, there are indications that the washing-stand was already known in Celtic times. A reason for this suggestion lies in the finds from an excavation at Modlešovice in southern Bohemia where, in 1940, portions of a wooden outflow drain were found on the small river Otava, which even today contains much gold. In the damp bottom of the stream pieces of sheep hide were found; these were used as lining in the chute to pick up the tiny particles of gold. Beside them potsherds and two armbands of the period about 300 B.C. were found. There is, however, some controversy about the dating of the wooden washing-stand in that, at the same place, objects of the Bronze Age and of the Middle Ages came to light.

In view of the ever-increasing demand for gold in Celtic times it is reasonable to assume that the technical methods of recovering the metal must have improved, thus leading to the invention of the washing-stand. That such an arrangement was known in early times is clear from the interpretation of a passage by Strabo in which he writes that, in the Iberian Peninsula, rich gold-bearing soils were buddled in woven sieves over a chest and this is fairly exactly the description of the functioning of the washing-stand. Where necessary the coarse grains must be separated in a sieve from the gold-bearing sand before they can be washed in the wooden chute. That is the common practice today also.

Gold for people

The Celtic graves of Early and Middle La Tène times (about 450 B.C. to 120 B.C.), because of their great number, provide a remarkable and informative source of evidence. Up to now some 3000 burials are known from Swiss territory, half of them south of and half north of the Alps. In an 18 km stretch between Münsingen and Berne there are 400 graves alone. Most contain grave-goods and ornaments which vary considerably in size and quality and womens' interments, with their fibulae, frequently of several parts, and their collections of rings, add greatly to our knowledge. Men, on the other hand, have far fewer grave-goods.

As individual pieces frequently show strong traces of wear and sometimes even repairs it is reasonable to assume that these were objects not made specially as grave-goods but had been used in daily life. Obvious quality differences amongst the objects deposited with the dead indicate clearly the social differences in the communities of the time. Presumably ornaments serving as badges of rank served to preserve in the afterlife the social privileges of this one. From this it can be concluded that the conception of life after death was not deemed to vary in any important respect from that of normal life.

Julius Caesar shows that amongst the Celtic people of the 1st century B.C. there was a marked social differentiation. The leaders formed a thin upper stratum on which the great mass of the people, without any rights, was dependent. Social distinctions, of course,

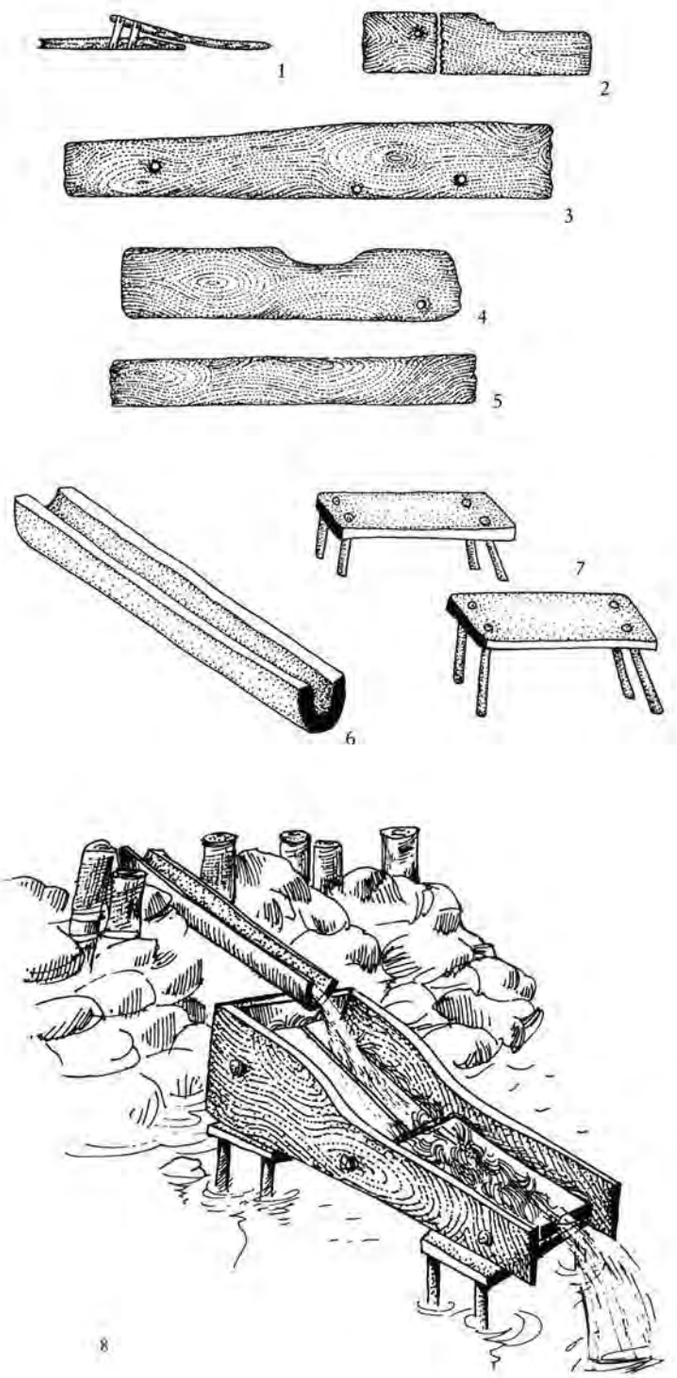

Fig. 18 The supposed panning trough from the River Otava near Modlešovice in Southern Bohemia. The wall and bottom boards are original (1–5), the accessories restored (6,7) and the panning trough (8) reconstructed by the National Technical Museum in Prague (1987).

existed in earlier times as demonstrated by archaeological discoveries. An example is provided by the difference between a woman who owned several fibulae, a complete ensemble comprising necklet, bracelet, anklet and finger rings as well as pendants made up of several pieces and one who, living at the same time, had only one fibula or even none at all.

For social and probably also decorative reasons some items of ornament possessed a religio-magical meaning. Thus, children, especially girls, and women wore many pendants which had the character of amulets to protect them from evil forces of many sorts. Some of the amulets had symbolic significance, such as those in the shape of human figures and shoes found with a woman at Unterlunkhofen AG (Cat. 49). As amulets could be worn in different ways and parts of the body their interpretation in individual cases is not always easy. Thus in the folk belief (or superstition) shoes play an important role in the area of marriage, lust and love; at the same time they represent protective spells against every form of harm. Special effects were also expected from the nature of the material used for the amulets, such as amber, glass and deer horn, such as worn by the girl from Münsingen in the form of spherical beads and perforated discs (Cat. 50).

Gold also, without any doubt, had magical powers when used for ornaments though we have no precise knowledge of its effect in individual cases. In antiquity and in the Middle Ages, even, indeed, into the recent past, gold was used as medicine and remedy because of its purity which made it antiseptic; it was felt that it could not fail in curing. Its polish, never to be affected by verdigris, rust or other oxidation, must have been charming and its rarity caused it to be much in demand and increased its value.

Finger rings are by far the commonest ornaments fashioned from gold and various types have been identified. Particularly interesting are the so-called bent finger rings (for example, Cat. 79–81) which occur in a relatively short period of fifty years, from 300 B.C. to 250 B.C. and, in addition, were made of various precious metals. This enables us to recognise the property gradings of their female owners (rarely of male). In the large cemetery of Münsingen 16 of the bent rings were of bronze, 14 of silver and only three of gold. The percentage of precious metals is fairly high which argues for a relatively high living standard for the people. In the whole of Europe gold finger rings of this type are always found in graves with rich contents, for example, at Nebringen near Stuttgart with a disc neck collar inlaid with glass, in Mannersdorf in Lower Austria with an imported Etruscan cauldron and in Hurbanovo in Slovakia with rare silver ornaments.

Other finger rings consist of two or more twists of gold wire or of a gold band hammered flat (cf. Cat. 82–95). Amongst the rings of wire some are of unusual fineness (Cat. 96 with tiny granules) and of crafty knots (Cat. 58).

Two silver rings with decorated disc-shaped bezels belong to a rare type in Celtic times north of the Alps. That from Münsingen (Cat. 53) has a piece of gold foil set in it, which unfortunately is so damaged that the engraved pattern cannot be reconstructed. Particularly notable from the technical point of view is the ring from Oberhofen BE (Cat. 98). Its ornamental bezel with its galloping horse is clearly gilt. This ring comes from a burial and is shown by associated finds to belong to the 3rd or 2nd century B.C. It belongs to the oldest group of gilt objects found as yet north of the Alps.

With respect to the wearing of finger rings made of precious metals it may be stated that, within Central Switzerland itself, there are geographical differences. Gold and silver both occur at Münsingen and at Vevey; only bronze specimens come from Andelfingen while in Saint-Sulpice they are very rare. Where rings are found they were always the possessions of females who through their rich and varied ornaments are differentiated from the normal.

In one instance a man also wore a bent finger ring of gold (Cat. 79).

In spite of his age of over 60 years he was an imposing figure, about 1.80 m tall. The nature of his grave was also unusual: his body was placed in a wooden coffin and protected additionally by a mantling of stones. The old man was not provided with weapons but for the last journey was given a fine ham, the bones of which were still preserved. Such gifts of flesh were usually withheld from warriors but in this case the gold finger ring demonstrated the special importance and the social position of the deceased.

Equally surprising and also disappointing was the excavation in 1979 of the tumulus on the Üetliberg near Zürich. The disappointment lay in the discovery that the burial had been plundered already; as against that, however, the quality of the few remaining pieces of decorative gold was unexpectedly high.

The mound is situated on a terrace with wide views and has a diameter of about 20 metres. During the excavation a rectangular burial chamber of wood originally and measuring 3.30 m by 3.40 m was recognised by colouring in the soil. The deceased was buried here with his or her associated items for the journey to the next world. The excavator concluded from the few grave-goods that remained that the tomb-robbing occurred before the mound was finally heaped up. This would then be an example of ancient tomb robbery of the sort well known to archaeologists but so far very puzzling. The solutions proposed reach from cult concepts to simple enrichment but the second idea, in view of the huge quantity of soil to be moved at Üetliberg, could hardly be achieved with any degree of secrecy. It can, of course, not be ruled out entirely that treasure hunters of mediaeval times or of more recent years were successfully at work.

One of the three discs of gold plate already noted (Cat. 72) is still in position on its background piece of iron, reconstructed as a fibula. It belongs to the same type of disc fibula as that with inlaid coral and amber settings from a rich girls'grave at Saint-Sulpice (Cat. 102). The second disc of plate (Cat. 73) with floral decoration was probably also part of a fibula.

The little disc (Cat. 74) weighing less than 1 gramme could also give rise to speculation. Drinking horns were also found frequently in such "princely" furnished burial mounds; for suspension and carrying a leather strap was used, decorated with many little rosettes of sheet metal, of a type already well known. Should such a meaning apply to the Üetliberg deposit then it would be possible by analogy to assess for other burials of the same rich quality how much the grave robbers were able to steal: a carriage on which the corpse lay, presumably further gold ornaments (for instance, a necklet or a bracelet), then possibly bronze vessels, pieces of furniture and perhaps weapons, apart altogether from perishables such as excellent carving, fine cloths, furs or delicate containers of bast or basketry. We can today do no more than try to imagine what these riches might have looked like.

Giving us a brief look at the life of the Celtic warrior and his magic weaponry are the three stamped marks on the sword from Böttstein in the canton of Aargau (Cat. 71). Such marks always occur on the blade near the hilt as we have seen already in the case of the Korisios sword and, in Celtic territories, they are distributed widely. Rarely are these marks inlaid with fine sheet gold as here at Böttstein, but examples are recorded also on swords from Mainz, Munich and in Upper Italy. The commonest devices used for the stamps are little boars which are so well executed with their defiant perversity. These figures were used also on battle standards thereby suggesting a special relationship between these aggressive animals and fighting methods. One can even think that the boar was the emblem of a Celtic war god, impressed on the sword blade to enhance the courage of the warrior and to increase his Celtic fury. As statuettes and on coins the wild pig is also encountered.

Gold for the gods

If gold were the most proper thing to stress the worth of the noblest of men it must for the gods have been cheap. If they were to wish for a happy life and a future of hope they had to captivate the higher powers and impress them favourably. What could, therefore, be urged upon them more forcefully than so to influence the greater powers with gifts and presents which they held costly and meaningful for themselves? In this way, gold became the most luxurious and effective dedication or sacrificial gift which men could offer to their gods or goddesses.

Such general concepts find positive proof in various parts of the history and archaeology of the Celts. Diodorus, for instance, in his universal Roman history, writes about the Celts of the 1st century B.C. north of the Alps: "Much gold, dedicated to the gods, is preserved in their temples and holy places, which one frequently chances upon. The fear of these gods is so great that no one dares to touch the gold though the Celts are otherwise very money conscious". The costly dedicatory offerings were preserved in the sanctuaries and holy territories (the "places of sojourn" of the gods), in this way given a sort of taboo and thereby removed from human grasping.

Poseidonios reports also on the almost unbelievable quantities of gold and silver preserved by the Tectosages (a Celtic tribe living in the Toulouse region of southern France) not only in temples but also sunken in pools. Such hoards of gold objects deposited in sanctified waters are also common in Gaul.

Few gold finds have come to light specifically in lakes, rivers or bogs in Switzerland. So far it is mostly coins which have come to light in such circumstances, a relatively high proportion of which still remain illegally in private hands. At least seven pieces have been found during turf cutting in small midland lakes some of which dried out in the last century. Examples are afforded by the bog at Wauwil LU, at Zellmoos near Sursee LU and at Feldimoos near Melchnau BE. In the same way the waters have delivered up a gold stater from the Birs near Basle (Cat. 123) and a quarter stater from the shore of Lake Neuchâtel near Cortaillod.

Gold has also been discovered at the famous site of La Tène already mentioned. Although the find circumstances are somewhat obscure it does seem certain that at least nine staters and quarter staters came from the main source, together with the numerous swords, spears and shields. As well as other small gold objects a piece of a gold-plate necklet weighing some 73 grammes may also be adverted to. This was found shortly before or about 1885 but stolen from the museum in 1907, since when it has been missing.

It is today as good as certain that the gold objects and weapons at La Tène were sunk as dedicatory offerings in a swampy side part of the Zihl. A similar ritual accompanied weapons not deposited in water, as shown by the discovery in 1849 of at least 120 swords and spears in the oppidum on the Enge peninsula near Berne. Julius Caesar proves this for us during his warlike expeditions in Gaul between 58 and 52 B.C. when he states that the Celts, before a decisive battle, dedicated to their war god the booty they hoped to acquire. Such booty, piled into heaps, could be observed amongst many of the tribes in holy places.

The gold treasure of Saint-Louis is also a similar discovery, having been found on the bank of the Rhine below Basle (Cat. 66–70). Regarding this discovery there are also many gaps in our knowledge. It can, however, be stated confidently that it came to light in the winter of 1882/83. The single pieces found their way soon into dealers' hands or were even melted down. A closer scrutiny of the

Colourplate XXIII Cat. 61 *(Necklet from Erstfeld, detail)*

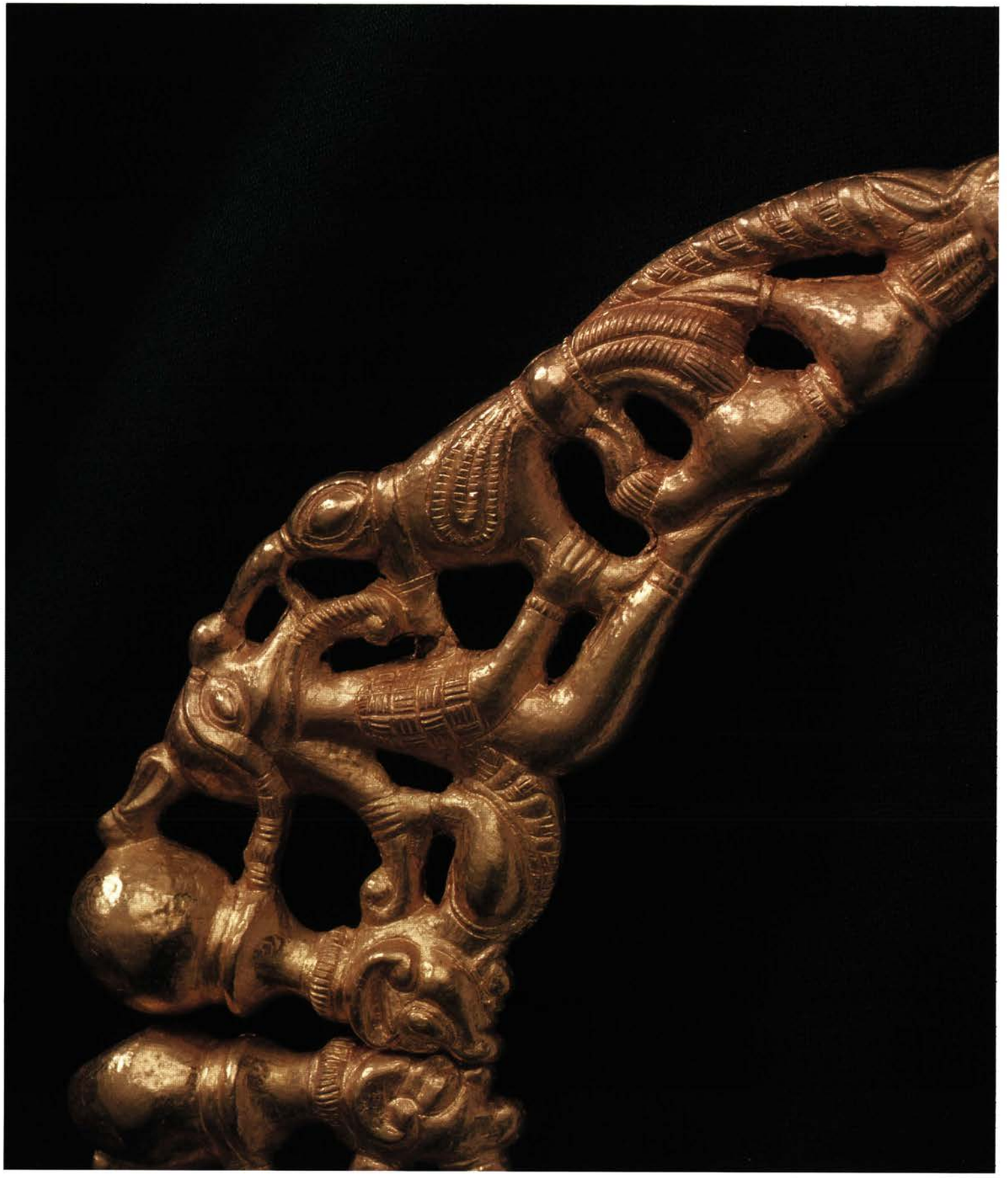

Fig. 19 Gold necklet from La Tène on Lake Neuchâtel. Found in 1887 and missing since 1907.

history of the discovery allows one to see that the find was divided into two groups the different fates of which could to some extent be reconstructed after their discovery. In a most recent account two finders were mentioned who attempted to dispose of their "booty" through different channels. The personal ornaments and at least ten coins, to judge by illustrations published in 1884 and 1924, are most likely to belong to the first portion of the find and this may with some certainty be ascribed to Saint-Louis. The second portion comprises coins only, which passed gradually to dealers, some of them giving as find-place "Freiburg im Breisgau". It is, of course, entirely possible that years after the discovery at Saint-Louis such coins were also found at Freiburg (Germany) and later attributed to the by now famous treasure of Saint-Louis in order to get higher prices. This would also conform to some organisation in the antique dealing trade.

The most interesting item in this treasure is the clasp of a very large necklet, the reconstructed internal diameter of which measures about 27cm (Cat. 66). A ring of a similar dimension has since been found at Frasnes-les-Buissenal in Belgium. These two pieces, being much too large, were clearly not designed for the person but they may have been conceived for more than life-size figures, most likely for gods. On the rare occasions on which such deities occur, in stone or in metal, they are distinguished by wearing a necklet with buffer terminals. Gods on special occasions or as a sign of thanks receive ornamental objects as Justin has related in an anecdote from Massalia's early history. In this instance a golden collar was dedicated to the goddess who saved the city from destruction.

In Switzerland there are two wooden sculptures which may be called cult statues. The larger, 3 m high, comes from the old harbour basin in Geneva, whereas the smaller – 1.25 m high – was found at the other end of the Lake of Geneva in the alluvial silt of the Rhone at Villeneuve. If one were to reconstruct the two necklets from the Saint-Louis treasure one would see that they would fit very well on the two wooden figures from the Lake of Geneva (Cat. 230).

During a careful restoration of the small Villeneuve statue surprisingly three Celtic coins were found stuck into a crack under the arm on the right side of the body. They probably represented a donation. In this manner also the coins in the Saint-Louis treasure would acquire a deeper sense. Could the ring and the coins at Saint-Louis have belonged to one or more cult figures? Were they deposited in the earth at a moment of extreme danger of for some cult reason? All these questions can as yet be discerned as part of a general model but no definite answers can be given to them (Cat. 234). The execution of all such sacrificial tasks formed part of the duties of the priestly caste of druids. These formed a special group of their own which, with the nobility, exercised the greatest influence and enjoyed the greatest respect. The druids were not responsible for the religious life only but also had considerable functions as teachers and judges.

The fine heavy ring from Schalunen near Fraubrunnen BE (Cat. 75) may well be compared with the wire ring from Saint-Louis (Cat. 68). This also was hardly buried by accident. Further objects

and other archaeological traces were noted at its discovery in 1865. These were either damaged earlier or destroyed in ploughing without anyone's paying much attention to them. The only thing we have about the discovery of the armlet at Schalunen is a charming story from the pen of a Münchenbuchsee doctor named J. Uhlmann:

Mr. G. Ebert, a native of Württemberg, was employed as a secondary school teacher in Fraubrunnen. His inclination to the natural sciences and to ethnography and thus to archaeology caused him to devote his researches and studies to those disciplines.

One day in school in the early summer of 1865 he looked at his watch. The face was not enamelled but incised and gilt. A boy sitting near him said under his breath, "Oh, how that shines!" "Not everything that shines is gold", answered the teacher. Another boy, son of a local man, Sterchi von Schalunen, said somewhat hesitantly, "I have something at home that shines though I do not know whether it is gold or not". The teacher perked up at this statement and asked curiously, "What can you have, then, which shines but you do not know what it is?" "A ring found in the field", was the reply. "Bring it along for me to look at, if you cannot identify the metal of which it is made; I'll help you to find out". Next day the boy pulled his find out of his pocket and remarked that it was neither rusty nor green when found and that he had done no cleaning on it other than to wash it with soap and water. It was this which produced the lovely light yellow polish. The colour and weight of the ring as well as its size and unusual shape impressed Mr. Ebert at once. He made a scratch on it with a touchstone, like any other, which he had also done to a gold Napoleon, but could not remove the scrape with saltpetre, a medium which removed immediately scratches on non-precious metals such as brass. This strengthened further his suspicion that the ring must be a treasure of precious metal, indeed, of gold.

Equally insufficient are the details of the finding of the most impressive of our Celtic works of art, the treasure from Erstfeld in the Canton Uri (Cat. 59–65).

In order to secure Erstfeld from the perpetual fear of flood waters and avalanches it was decided in 1962 to build a barrier about 70 m above the bottom of the valley to the eastern side of the village. For this purpose it was found necessary to move massive quantities of earth and rubble, during the course of which a huge block of stone, some 70 cubic metres in size, had to be shifted. Immediately beneath it lay a smaller block, the removal of which by an excavating machine on August 20th, 1962, led immediately to the discovery of the treasure by the preparatory workers. Four collars and three armlets were found in a virtually undamaged condition. For over 2000 years they had remained protected by the huge stone blocks from storm water and avalanche and stayed clear of the bottom of the valley.

Erstfeld lies in the valley of the Reuss, about half way between the Vierwaldstätter Lake and the St. Gotthard pass. The find-place itself is in a steep overhang above the village, about 540 m above sea level. Only a few finds of prehistoric and Roman times have so far been located in the wider region around.

All the rings are made of gold plate measuring 0.2 mm to 0.3 mm thick and are hollow. The ornamental portions of the neck rings consist of two dish-shaped portions, soldered together and bearing raised and punched decoration. As the back and front faces are identical an almost plastic effect is produced. For fastening and opening the wide decorative zones can be removed. When worn these lie so on the breast of the lady that the individual representations face her. Only in this way do the human and animal representations come to full fruition and for this reason, when exhibited or illustrated, the objects are usually arranged upside down. The necklets are related to each other and to one of the armlets (Cat. 65) in their composition and in their technical details. The pair of rings with plastic tendril design (Cat. 63–64) differ from these.

The necklets are, of their class, something special and stylistic parallels with specimens found elsewhere are difficult to discern; their dating also presents problems. Their origin and the manner in which they came to be deposited specifically in this mountain valley poses further problems. The subjects of the illustrations are not less puzzling; the wonderful fantasy of the Celtic craftsmen, expressed through dislocated human and animal shapes, makes the understanding of them not easy for people of the 20th century.

Soon after their discovery it was assumed that the rings had been hidden by an itinerant trader in a time of pressing danger. Other researches raised the possibility of their having meaning as "personal equipment", that is, to be secure in the possession after death and in the other world of objects already in use in this life. It is rather more probable, however, that we are here dealing with a sacrificial deposit, not only as an analogy to other gold finds of a similar nature (such as, for example, Saint-Louis). Even the site of the dedication of the Alps brings with it enough dangers which we can picture for ourselves, dangers such as natural powers unfriendly to man, uncertain tracks, perhaps even ill-disposed mountainy men, intent on endangering life. There was sufficient reason at hand for the Celts to cross the mountains in one direction or another, as we have seen. The very richness of the dedicatory offerings allows one to think of a larger band of men with wealthy companions wishing to derive a happy fate from the deposition of the sacrifice. May one conclude that it was a goddess who wore the neck ornament, remembering that such collars were worn by women at this time, or was it indeed women who offered their personal ornaments in sacrificial rites?

However, let us return to the collars themselves. Just as unconfined as every observing eye defines anew the individual figures and dares to bring each into combination with neighbouring shapes, so glittering are the possibilities of the whole. An attempt has already been made to see in the circular shape of the rings and in the compositions presented the principle of a complete philosophy and ideology of life on earth, in the next life and including the migration of souls. Another scholar indentified single hybrid forms as Celtic gods; for instance, Teutates was seen on the one hand as the youthful warrior with a goat's horn and on the other hand as an old man, growing out of the same young body, in conversation with a raven (Cat. 61).

We know about the Celtic world of the gods in the main through Roman interpreters, though these had little interest in the theme. We do, however, discover that Taranis is to be equated with the Roman father god, Jupiter, and that the Celtic Canturix is equivalent to the war god, Mars. The male gods are frequently given a warrior-like appearance; goddesses also occur, such as Epona, the horse goddess, who is represented seated on a horse. It looks as if the great variety of the Celtic gods and of their duties was most unusual for the Romans and only with difficulty intelligible to them. Our situation regarding Celtic goddesses which in Switzerland were honoured into Roman times is hardly any better. Their functions are as varied as their names are strange: they bear names such as Artio, Naria, Epona, Sirona, Anechtlomara, Cantismerta. All were called upon for help, for healing and for protection.

Bronze – a sheen like gold

In the course of archaeological investigations of graves it is of the first importance to establish in word and picture the exact positions of individual items. With the help of exact plans one can interpret precisely the armlets and anklets on a body, the fibulae on a garment and pendants on a belt. All perishable materials, such as clothing,

Colourplate XXIV Cat. 99 *(Massive Silver Ornaments)*

must be reconstructed in the mind. As against that, of course, anthropological examination of skeletal remains gives one information about height, age and sex and also about diseases the deceased may have suffered.

Bronze objects are found in their thousands in Swiss graves. Personal ornaments when shown in their original condition make a particularly strong impression. It is to be presumed that the green patina on the surface of archaeological finds of bronze objects has been caused by chemical action in the soil. Underneath this covering of verdigris, however, the bronze appears with a glittering golden colour. In ancient times the outer surfaces were rubbed smooth by cleaning or by constant wear so that at a casual glance it would not be easy to differentiate between a bronze ornament and a gold one. The question then poses itself as to whether the shining bronze was not meant to imitate gold (cf. Cat. 102–107).

As an argument for this the use of coral may be suggested. This material was found in the Mediterranean and traded into the regions north of the Alps. According to the Romans coral was used as a prophylactory so that Celctic warriors had their swords, shields and helmets inlaid with it and Celtic women ornamented their children with it, something that is confirmed by the archaeological finds. It may also be noted that coral could be replaced by glass of similar appearance, with a shining red colour. This glass is found in the same places on the ornaments as the pieces of coral thereby suggesting that it was more the appearance than the material itself that mattered. Obviously, the evil spirits were easily deceived!

In like manner, it may be supposed that the powers inherent in gold could also be transferred to the golden-coloured bronze.

Silver, the gold of the south

In sharp contrast to the northern Alpine region of Switzerland in La Tène times virtually no ornaments of gold came to light in the Ticino. So frequently was silver worn there that it can be seen as characteristic for the great Ticino cemeteries. In Giubiasco, on the edge of the plain of Magadino, over 500 graves have been investigated since 1900. Amongst the first 100 burial groupings nearly 30 objects of silver were found (Cat. 99). In particular, silver wire was made into finger rings and armclasps, using remarkable bending and knotting techniques. Fibulae were also made of the same material.

It is not surprising that this wire style could establish itself in Valais also (Cat. 100) as this area had close connections at different times with neighbouring regions. Thus, the knotted armrings are found here also. Similarly, there is in the Rhone valley a strong tradition of silver armbands with strong hollow bosses. These were sometimes of such size and strength that they had to be provided with a removable fastening.

Such silver personal ornaments from the Ticino and Valais demonstrate a great love amongst the inner Alpine peoples for large and heavy decorative items. This peculiarity of style exercised a strong influence across the Alps and into the Bernese Oberland, as shown by the series of five unusually coarse spiral finger rings from Oberhofen on Lake Thun (Cat. 101).

Fig. 20 Amulet in the shape of two human figures and two shoes. From a woman's grave at Unterlunkhofen, Canton Aargau.

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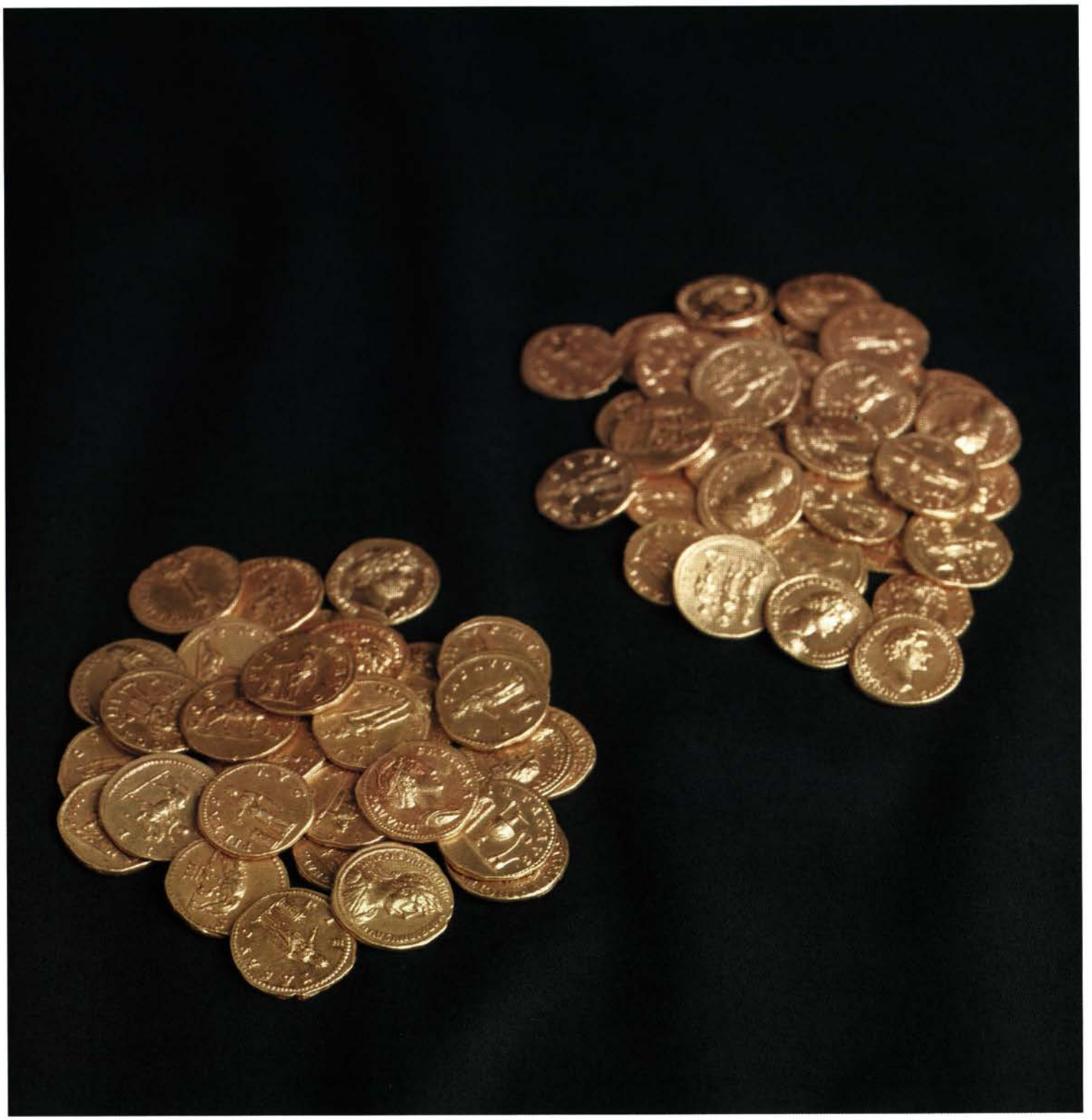

CELTIC GOLD COINS IN SWITZERLAND

Hortensia von Roten

Up to now some thousands of Celtic coins have been recovered from Swiss soil and these include an appreciable number in gold. A proportion of these came from local mints and it may be assumed that only a negligible quantity of the coinage minted and in circulation in Celtic times is represented by the known discoveries.

It is characteristic of the Celtic coinage that they are in the main copies of Greek exemplars and later of Roman models and of their later developments. The oldest coins known from Switzerland are Celtic gold specimens dating to the 3rd century B.C. On the obverse they carry the head of the Greek god, Apollo, and on the reverse a chariot with two horses. These coins are imitations of the gold stater of Philip II of Macedonia (359–336 B.C.).

The first gold coins to be certainly minted in what is modern Switzerland belong to the first half of the 2nd century B.C. and were also based mainly on the stater of Philip. In the course of time, however, their weight and gold content were diminished and the design of the coin changed appreciably.

Stimuli from the Mediterranean world

Long before the beginning of Celtic minting of coins the Celts were in close relationship with the Greco-Roman Mediterranean world. Such contacts arose through commercial activities, through wars and plundering expeditions as well as through military service. It was thus in the nature of things that the Celts learned of the use of coinage.

Coins were first minted in the 7th century B.C. in the Near East and, in the 6th century B.C., this knowledge spread to the whole Mediterranean region, remaining, however, restricted to the Greek cities. The silver drachma, the weight of which varied in the different towns, was the unit of currency.

There is some controversy as to the purpose of the earliest coins. As exchange of goods was still normal it appears that coinage was not at first exploited for local buying needs nor indeed for foreign trade but was used for disbursing large sums of money for such purposes as payments for the military, for taxes and for tributes as well as for expenditure on public buildings. This explains the high face value of coins at the beginning of minting.

It is likely that, as soldiers, the Celts first encountered coinage. This happened because the Greek potentates, fighting amongst themselves and against Carthage for the suzerainty of the Mediterranean at the end of the 4th and beginning of the 3rd century B.C., had a great need of Celtic troops.

Thus, the establishment of the suzerainty under Philip II in Greece and the conquests of his son, Alexander the Great, were possible only with mercenary armies amongst which Celts were frequent. The mercenary was paid in coins and, as a result, Macedonian staters were widely disseminated and became a sort of world currency.

Researching Celtic coins

The definition and interpretation of Celtic coins are accompanied by specific difficulties which will be sketched briefly in what follows.

Celtic coins rarely have inscriptions and other individual indications of minting are lacking. As a result of all this we are today left with a series of queries about the prevalence of mints. Times and places of minting, reasons for minting and the tribes responsible for minting all pose questions, still largely without answer.

In this connection the matter of the minting authority amongst the Celts must be adverted to. It must, of course, be taken into account that the Celts did not have a sophisticated or comprehensive state system, such as is otherwise known in ancient times. The minting of Celtic coins must be seen less as a symbol of centralised political power than as an indication of the self-importance of the Celtic ruling class.

It is not known what the Celts called their coins but in numismatic circles they are given names out of the Greek and Roman currency system. Thus, after the Greek model, the Celtic gold coin of about 7.5 to 8.5 grammes is called the "Stater" (Greek, "weight") and the quarter piece of 1.7 to 1.9 grammes is termed a "Quarter Stater". The same principle applies to Celtic silver coins: they are called "Drachma" after the Greek prototype and the later silver coins, copying the Roman silver quinar ("fiver") are called "quinars" or "fivers". Other coins are named after a particular feature or a definite place of discovery.

Coins present in a find complex will usually date the archaeological material but with Celtic coins the reverse is the case. Because of the paucity of inscriptions the archaeological items afford great importance in the dating of the coins.

Even the chronological range within a coinage series presents difficulty of definition though certain dating indications can be read from typological and stylistic criteria. The weight and quality of gold coins, as defined by metallurgical analysis, also give indications. The ordering within a coin type follows the experience of numismatic law, whereby the weight and fineness of a coin are subordinate to inflationary tendencies and with time continue to lose value.

Exact dating of Celtic coins is possible only when found with other material which is itself dated by ordinary archaeological methods as is the case with Celtic graves. In great demand in Celtic graves were bronze fibulae. These have been well studied and usually provide a sound basis for the dating of a whole find complex. Thanks to such a method, whereby certain coins are very closely dated, a

Colourplate XXV Cat. 258 *(72 Roman Gold Coins)*

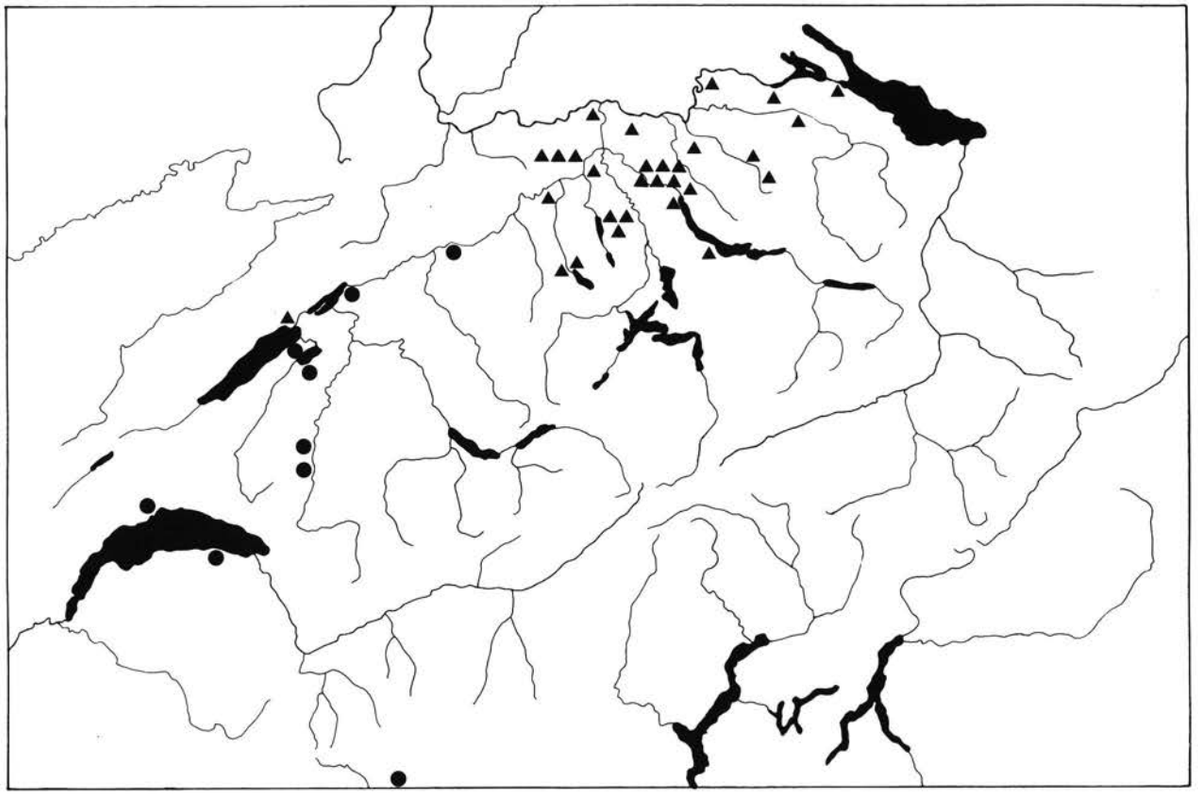

Fig. 21a Gold coinage: distribution of quarter staters of Horgen-Unterentfelden Type (▲) and the uninscribed staters of Fribourg Type (●) after K. Castelin, 1985.

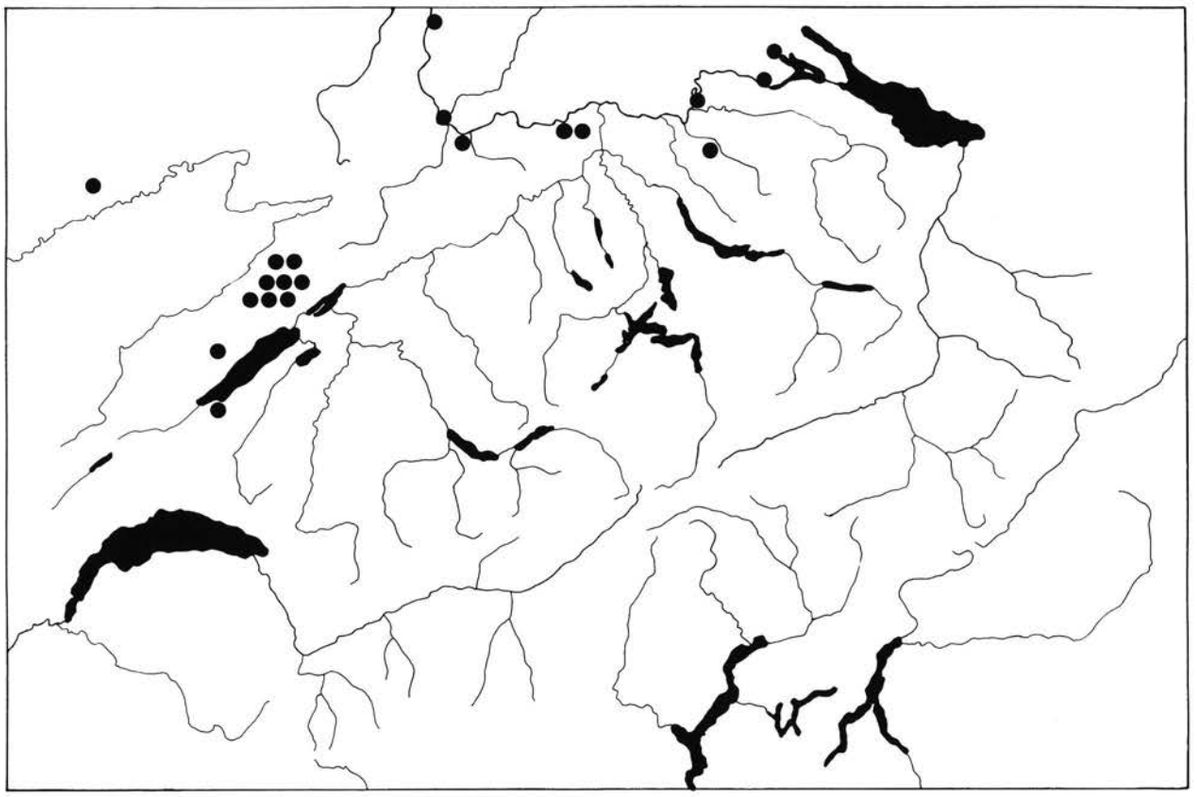

Fig. 21b Gold coinage: distribution of staters and quarter staters from northwest and western Switzerland (●) after D. Allen, 1974.

whole series of coins can be placed in their correct chronological position.

The peculiar representations on Celtic coin types were, according to the taste of the 19th and 20th centuries, despised as incompetent copies of classical models or praised as being stylistically unique works of art. Some reserve, however, is recommended in interpreting the Celtic artistic world and, thus, of that of the coins also, for our knowledge about the mysticism and religion of the Celts is full of gaps and barely allows suspicions about the original intended message of such art.

The minting of Celtic coins

The gold coins, so common in Switzerland, cannot be viewed in isolation but rather as part of the whole body of Celtic coins.

The Celts began to mint their own coins probably as early as 300 B.C. The earliest known to us were of silver, from the middle Danube region, from the plain of the Po and from southern France. They are sometimes copies of Greek drachmae from Macedonia or from the Greek cities of Marseille and Rhoda in eastern Spain. It was presumably only a little later that gold coins, based on the Macedonian staters, were minted in Central France and Switzerland as well as in Moravia and Bohemia.

The use of coins became widespread over the whole Celtic territory in the course of the 2nd century B.C. and the metal used in the operation led to a division of the area into two parts. In the east and in the whole of the Mediterranean basin silver was the metal of the currency whereas in the west gold was preponderant. The area of gold production was also divided: west of the Rhine, in what are now France and Belgium, the gold staters of Philip II of Macedonia (359–336 B.C.) formed the chief types while in Bohemia, Bavaria and Suabia the gold stater of Alexander the Great (336–323 B.C.) was the commonest type. Switzerland belonged to the earlier group, that of Philip.

Notwithstanding the uniform basis of the currency there was no overall currency system: each tribe minted its coins to its own taste, that is, it settled the weight and metal content of the coinage itself. This meant that the coins did not have a wide circulation and were confined mainly to their own tribal territories.

In contrast to the rough bronze and silver coins which stand at the head of the Roman series the Celtic coins are seen to be first-class finished copies which can sometimes hardly be distinguished from the originals. With the passage of time, however, a style peculiar to itself developed on the Celtic coins, one in which the original whence it was derived can only with difficulty be discerned.

The manufacture of coins

The technique of coin production remained in principle unchanged since the first use of coinage towards the end of the 7th century B.C. The minting process is simple (Cat. 253). A blank, an already prepared piece of metal, is laid between two dies in which the obverse and reverse designs are engraved by the die maker. The work is completed by a hammer blow. Sometimes the lower die was, for practical reasons, fastened to a support by a spike.

The habitats of some of the Celtic mints are known, such as, for instance, Altenburg-Rheinau and on the Üetliberg near Zürich (Cat. 223 and 224). Positive evidence for the existence of a minting site is provided by coin dies and moulds as well as weighing scales. The clay moulds (the so-called pitted plates) occur also amongst the waste from metalworking shops so that a connection between workshops for casting and for minting of coins seems to be established. It is, however, by no means certain that sites for the production of coins were tied to any particular place: it is possible that there were mobile workshops in the same way as there were travelling craftsmen and die cutters.

The equipment of a Celtic mint included fine scales for weighing the metal for the blanks, clay plates with depressions for melting gold powder, a pair of coin dies and an iron hammer. In addition, a mint had to have crucibles, bellows, charcoal and a selection of pincers, files, chisels and engraving tools.

For the production of the coin blanks clay tablets with depressions 0.5 to 3.0 cm in diameter were used. Gold grains were weighed into the little hollows and then melted. It is not yet quite clear how exactly the process operated. The possibility that the complete clay plate was placed over a fire until the metal melted at a temperature of over 1000° C does not appear to have been the case. The clay tablets display on their upper surfaces traces of extremely high temperature while the undersides are in part unburnt. It is, therefore, to be assumed that a charcoal fire was lighted on the ground round the clay tablets, the temperature increased by means of a blowpipe or a bellows and the heat directed towards the moulds (Cat. 253).

The Celtic craftsmen were able without difficulty to maintain the weight of the individual coin blanks. Small, equal-armed balances, similar to today's apothecary's scales, were used widely. Such were used presumably not only in mints but also as aids to payments.

Celtic coinage stamps consist frequently of two parts – an iron ring and a bronze core with its engraved design. The iron ring was used to prevent the splitting of the bronze core during minting. An extremely fine example of such a stamp came to light in Avenches (Cat. 226).

The stamps were from time to time quickly worn out and had, therefore, to be reworked with a steel point; cases of frequent reworking are not rare. For this reason impressions with the same die can give different designs. At the same time the use of completely worn out and partly deeply hollowed dies was widespread. The result was a smooth bulging shape on the design; this was a determining factor for certain Celtic coin types such as the so-called rainbow vessels (Regenbogenschüsselchen, Cat. 188 and 189).

Switzerland's first money – early copies of the Philip stater

The earliest coins found on Swiss soil, as already mentioned, are gold pieces of about 8 grammes in weight (Cat. 108–126). They are based on the widely distributed stater of Philip of Macedon and such are found scattered throughout Gaul. It is, thus, not possible to ascribe them to any particular tribe or territory.

However, the earliest pieces, closest in appearance, weight and metal to the Greek originals, were commonest in what is now Switzerland and the upper Rhine as well as Central and Eastern France. It is thus conceivable that the Celts of this general area were the first in western and central Europe to establish the custom of minting coins and that the stater of Philip as master design spread from here over the whole of Gaul. According to most up-to-date researches the first copies may be dated to the 3rd century B.C.

According to the numismatic law, already adverted to above, a copy of a coin is the older the closer to the original it is in respect of weight, fineness of alloy and reproduction of the obverse and reverse faces. Thus the early Gallic Philip imitations, exact copies of the originals, carry the name of the conqueror, Philip, as well as the Greek symbol. They weigh about 8.4 grammes as opposed to the nominal weight of 8.6 grammes of the Macedonian original and have a gold content of about 95%.

In time the design of the coin loses its contours and the Greek inscription dissolves into unidentifiable shapes. In weight the staters

fall from about 8.4 grammes to 7.5 grammes and on occasion even to 6 grammes. With this reduction in weight the gold content also falls because of the increase in the quantities of silver and copper used until finally it is hardly possible at all to speak of "gold" coins.

Still to be answered is the question about the reasons that the Celts used coins. Money is mentioned but rarely in literary sources. One frequently quoted exception concerns Poseidonios' exhortations to Luernius, father of the Avernian king, Bituitus, who lived in the first half of the 2nd century B.C. It is reported that Luernius attempted with gifts of gold and silver to win the goodwill of his followers and, to give an example, he is said to have thrown a bag full of gold to a singer who praised his deeds of valour. The donor here displays his wealth and at the same time ensures the loyalty of his followers. This episode indicates the social function of coinage. It is, of course, possible that, in the beginning at least, coinage amongst the Celts was a matter of prestige and also a way of saving for future payments.

It is possible that coinage was used for the regulation of social contracts and in this way gifts, ransom demands and penalties were paid. To judge by the Greek experience it is likely that tributes and mercenaries' wages were also paid with coins and, as many finds from cult centres testify, gold coins were also used as dedicatory and sacrificial offerings.

It was only in the oppida, the city-like settlements which began to develop in the 2nd century B.C., that coins were exploited finally for everyday purposes. The change in the use of coinage is related to specialisation in industry and to the development of the larger markets. At this time also the gold stater begins to yield to a variety of silver and bronze coins which in respect of design and quality are close to Roman prototypes.

Regional gold mints

In the first half of the 2nd century B.C. gold coins occur here in Switzerland which, because of their clearly restricted distribution, may be defined as deriving from regional mints. They resemble the aforementioned Philip stater imitations because, of course, they are based on the staters of Philip II of Macedon; there does not appear, however, to have been a direct connection between the early Philip copies and the local derivatives from them.

The various regional types are differentiated by their symbols which – as in the case of the Greek prototype – are to be found under the horses on the reverse side of the coins. These symbols, in contrast to the earlier Philip imitations, mostly comprise designs from Celtic pictorial scenes, the symbolic meaning of which remains for the moment hidden. The commonest coin minted was the quarter stater, less frequently the stater itself or the half stater.

Regional coins are lighter in weight (the stater weight fell below 8 grammes), wider in shape and thinner and more curved than the prototypes. The strong curls on the forehead and the S-shaped ear on the head on the obverse are characteristic while, on the reverse, the pair of horses is occasionally reduced to one animal and the limb joints become remarkably spherical. All the coins are without names and the Greek inscription is barely to be seen or has, indeed, disappeared entirely.

Amongst the regional coins the quarter staters with a "wheeled animal" (a snake-like creature with a bird's head) as symbol form a most homogeneous group. In the specialist literature these are ascribed to the Horgen-Unterentfelden Type (Cat. 127–135), so-called after two important find-places, and occur almost exclusively in the cantons of Zürich and Aargau. Thus, it may be assumed that the mint lay somewhere in the area of these two cantons.

The weight of the quarter staters of the Horgen-Unterentfelden Type varies narrowly between 1.8 grammes and 1.92 grammes and the average gold content is about 60%. Unlike the earliest Philip copies the gold was not left in its raw state any more but was alloyed with silver and copper and was thus hardened and also "cheapened".

Two burials are important for the dating of this group of coins. These are at Horgen ZH and Langdorf near Frauenfeld TG and in each a quarter stater of the Horgen-Unterentfelden Type was found (Cat. 57 and 104). An archaeological study of the accompanying grave-goods allows one to accept for each coin a dating to the first half of the 2nd century B.C. As the weight and metal content of these coins are relatively stable it may be accepted that quarter staters with "wheeled animals" (Rolltier) can, in general, be placed in this period.

Several coin types are to be noted in western and nothwestern Switzerland (Cat. 136–161) and, with one exception, to be discussed further below, these are closely related, both stylistically and typologically, to the Horgen-Unterentfelden Type. Full staters as well as quarter pieces were minted. On the obverse there is again a head with a laurel wreath and on the reverse a chariot drawn by two horses. The distribution of this western coin group is more diffuse than that of the eastern Horgen-Unterentfelden group, so that a localising of mints is not possible.

The symbols used in the western group include the figure eight lying on its side, rosette, triskeles, rosette with centre point and the S-volute. The coins with the "reclining" eight and the rosette derive mainly from the famous site of La Tène on Lake Neuchâtel. Those with triskeles or rosettes with point, on the other hand, come more frequently from northwestern Switzerland and southwestern Germany.

The criterion for the absolute dating is provided by a burial find from a grave at Euren near Trier where a quarter stater of the type with rosette and point was found in a closed archaeological context indicating its chronological position in the middle of the 2nd century B.C (Cat. 154).

In what is now western Switzerland gold staters were recovered in addition to the coins just mentioned. For these the Philip staters were not the models but, more likely, staters from Bohemia which, in turn, are themselves based on the stater of Alexander the Great (Cat. 162–170). It is still an open matter as to how and when western Swiss and Valais tribes came into contact with groups from the region of Bohemia.

The stater of Alexander has on the obverse the head of the goddess, Athena with Corinthian helmet and, on the reverse, the winged Nike. The representation on the Swiss stater is, however, hardly to be recognised as a copy. On the obverse there is a strongly barbarianised head and frequently on the reverse only an unclear ridge is to be seen or occasionally two vertical lines which may be associated with the pacing Nike.

One can differentiate between the older staters without inscriptions, which were found frequently in the Broye region of Fribourg (and therefore known as the Fribourg Type) and the later specimens with inscriptions which are found in Valais and in the Aosta Valley. Latest research ascribes the latter to a tribe settled in Valais. In the past, on the other hand, both types were attributed to the Salassi, a tribe settled in the Aosta Valley and in consequence the coins were called "Salassi staters".

The older Fribourg type, without inscriptions, weighed on average about 7.4 grammes and had a gold content of 80% to 90%. The 2nd century B.C. is the earliest date for these: a more exact date has not as yet been established.

Colourplate XXVI Cat. 108, 112, 133, 155, 163, and 187 *(Celtic Gold Coins, photos b–f; Greek Gold Coin, photo a)*

a b

c d

e f

Not closely localised gold coins

One group of coins is spread over the whole of central Switzerland and the Upper Rhine, but especially in eastern French areas (Cat. 171–182). In the literature these are known as "questionable eastern specimens" (incertaines de l'Est). Whether the individual types were minted in Switzerland or in eastern France is not clear. Were more find-places known it might be possible to establish a regional distribution for the later mintings.

This group of coins can be dated largely to the 1st century B.C. Their weight and gold content are appreciably decreased: very often the stater weighs less than 7.5 grammes and a quarter stater less than 1.8 grammes. At first the coins were minted from electron, an alloy of 30% gold with silver. The later coins are merely gilt silver specimens.

The number of different coin types appears to increase in this period and their symbols include the quatrefoil, the four-spoked wheel, flowering rod, crescent, triskeles, dagger and lyre.

Staters as well as quarter staters continued to be minted and the coinage developed further from the prototype which suggests a more extended period of minting than was the case with the earlier localised issues.

After Caesar's conquests minting in precious metals became predominant. It is likely that the deeply concave staters with small gold content and badly impressed designs are to be reckoned to the end of the Swiss period of minting of gold. They occur particularly along the Rhine, in Swiss and in German areas. These later Helvetian silver staters belong probably to the same period to which the above-mentioned group, the so-called Incertaines de l'Est, may be ascribed. That coinages in neighbouring territories influenced each other in late Celtic times is, thanks to the continuing development of commercial affairs and of the numerous travel routes, extremely likely.

From the later part of the 2nd century B.C. gold and silver coins reached central Switzerland from southwestern Germany and especially those widely distributed in the upper Danubian regions. These are popularly known as "little rainbow vessels" (Regenbogenschüsselchen), said to have originated with the occurrence of a rainbow, a belief derived from their being found frequently after fructifying falls of rain on freshly ploughed fields. They are decidedly dish-formed gold staters and their imprints are rated as peculiarly Celtic creations.

These "rainbow" coins appear to occur as independent creations though, as regards subdivisions and weight they can be compared to the Philip imitations of Gaul. Hoards of coins containing these staters are of the first importance especially for the chronological setting of the various coin types. An example is provided by the gold hoard of Saint-Louis near Basle which was probably a collection of religious offerings. The "rainbow" coins found in Switzerland are mostly relatively light, thus belonging to the later minting series and dating to about 100 B.C.

Silver and pinchbeck coins in Switzerland

From the 2nd century B.C. onwards a large number of locally minted silver coins were in circulation in what is nowadays Switzerland, in addition to the gold coins. Oboli and drachmae penetrated central Switzerland from southern France, along the Rhone, and from northern Italy over the Alps.

A well-documented example of a local imitation minting is provided by the silver coins of the Veragri established on a northern spur of the Great St. Bernard (Cat. 207 and 208). They are copies of coins from the valley of the Po and these in turn imitate drachmae from Massalia.

The growing connections with the Roman Empire towards the end of the 2nd century B.C. led to the Celts in Central Europe beginning to copy Roman coins. The original Greek system, based on gold, was now overtaken by a silver currency based on Roman principles. A telling example of this development may be seen in the Kaletedou quinars which imitate a Roman silver dinar but with a Greek inscription (Cat. 209 and 210). Probably contemporaneously with the Kaletedou quinars there circulated the so-called cross coins (Kreuzmünzen), the prototypes of which are to be sought in southern France (Cat. 211 and 212). The weights of both types of coins are similar and vary between 1.80 grammes and 1.95 grammes.

Presumably somewhat later, about the middle of the 1st century B.C., quinars with the inscription NINNO and the so-called bunched quinars (Büschelquinare) were added (Cat. 213–216). These occur mainly in northwestern Switzerland and in the Jura region. The Ninno quinars are attributed to the Rauraki, settled in the Basle area. The bunched coins, derived from southern German prototypes, can also be seen as products of a mint situated within the area of modern Switzerland. Both coin types have approximately the same average weight, ranging from 1.57 grammes to 1.56 grammes, and were in circulation together as their discovery side by side at Balsthal in 1839/40 shows.

The small quinars with the inscription VATICO found at Avenches are probably from a local mint (Cat. 217 and 218). The name is probably that of a Helvetian tribal leader who, in accordance with the spirit of the times, had his name etched on the coins. The last coin type to be mentioned comprises specimens made of pinchbeck, that is, of copper with a very high tin content (Cat. 219–222). They date to the 1st century B.C. and were produced to meet local needs.

Coins as witnesses to the times

Coins form an important source of historical information though their message is not so immediate as that of the written records. Their metal, the coin designs, their number and their distribution, however, all add to their effect.

In interpreting Celtic coins it is well to note that Celtic mintmasters minted only occasionally, that is, their production was sporadic rather than continuing. It was, therefore, not necessary in Celtic times to replace older coins with new ones. As well, it is likely that there was at first neither a regional nor a more general and widespread currency unit.

It is known from ancient sources that "Helvetian" tribes settled in the 2nd century B.C. in southern Germany also. On the other hand, Caesar meets "Helvetians" only in the left bank area of the Rhine. To what extent these two groups of people are identical is still an open question. In what follows we adhere to Caesar's formulations and see as Helvetians those tribes who settled in Switzerland in the 1st century B.C. and look upon the folk groups settled in Switzerland and southern Germany in the 2nd century B.C. as proto-Helvetians. Any question as to their ethnic composition can only be hypothetical.

What information is to be derived from the Swiss coins about the settlement of the country between the 3rd and the 1st century B.C.? From a purely numismatic point of view there are no direct connections between the heavy Philip copies, dating likely to the 3rd century, and the subsequent gold coins of the first half of the 2nd century B.C. It is possible that a shift in political power is indicated.

The distribution map of regional coinage types suggests a division of central Switzerland into two parts: in the east the closely limited quarter staters of the Horgen-Unterentfelden Type and, in the west, various coin types related stylistically to each other. The independence of these two settlement areas, as shown by their coins, is

further enhanced by differences in dress equipment, for example the use of chain girdles. Central Switzerland was clearly divided into two parts and in that in the west more individual groups could be isolated.

No distribution concentrations of the later, more numerous coin types, distinguished by low weight and gold content, can be observed. This coin develoment may indicate an economic decline in Central Switzerland and a breakup of the tribal structures or of other organisational forms.

The distribution of the 2nd century coins shows that connections with southern Germany are largely lacking apart from upper Rhenish territories. This situation changed in the course of the 1st century. In association with finds of offerings south German "Regenbogenschüsselchen" occur frequently at first and then later two common south German silver coins, the cross coins and the cluster quinars, achieve wide distribution in Central Switzerland. It is possible that this development is associated with the emigration of proto-Helvetian tribes from southern Germany, though such is not proven through archaeological discoveries.

The gold coins minted in the area of modern Switzerland cover a period of about 150 years. These coins, based on the gold stater of Philip II of Macedon, can be divided into homogeneous geographical groups according to their occurrence and minting characteristics. This indicates the existence of several independent tribal groups or else of numerous mint-masters. At the same time the distribution in Central Switzerland, on the Upper Rhine and in neighbouring eastern France of gold coins typologically and stylistically related indicates the presence of a very extensive cultural region.

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THE ROMAN PERIOD: NATIVE TRADITIONS – FOREIGN INFLUENCES

Annemarie Kaufmann-Heinimann

"Oh, would that gold could be removed from life", sighs Pliny the Elder in the 1st century A.D., referring to the greed of his contemporaries. In the 33rd volume of his *Natural History*, dealing with precious metals, he says further: "The worst crime against humantiy was perpetrated by him who first placed gold on his finger and the next outrage by him who first coined a dinar from gold". At the same time he praised the Homeric age when barter was usual and things of nature were rated higher than precious metals and also the older Republican years, as for example the year 387 B.C. when in all of Rome only 1000 pounds of gold could be found for the peace negotiations with the Celts after they had plundered the city.

Three hundred years later, according to Pliny's report, the situation was entirely changed; the huge compensation arising out of the Mithridatic wars made it possible for the dictator, Sulla, to carry 29,000 pounds of gold in his triumphal parade. During later Republican and early imperial times the amount of available gold increased because of the additions from the conquered territories of Spain, North Africa, Gaul, Britain and the Balkans. Correspondingly, the once rare precious metal came within the reach of private persons and – especially in the form of ornaments – became common.

If in Republican years a gold ring was the status symbol of the knights, from early imperial times the custom of wearing several rings, both by men and women, became quite common and, in addition, the women covered arms, ears, neck, the hair and the hips with gold, as Pliny somewhat scornfully remarks. Further, it became customary not only in the Golden House of the Emperor Nero but also in upper-class private houses to gild the wooden or ivory lids of little chests and even the walls themselves. Officials and private persons of merit were honoured by the erection of gilt statues, whereas fully gold statues and golden utensils were reserved exclusively for the gods and for the imperial family. These few references may suffice to show how widespread and how widely used in so many ways gold was in the time of the Roman Empire. On the one hand specialist craftworkers came into being in connection with the various types of objects made from precious metals and, on the other hand, products in precious metals were less regionally varied than in preceding centuries because of the Rome-centred art industry and of the supra-regional taste of the upper-class merchant group.

It is also true of Roman Switzerland that a greater quantity of gold has come down to us from the first three post-Christian centuries compared with what we have from the corresponding three centuries before the birth of Christ. It is not here a question of spreading as completely as possible the quantity and variety of the gold objects, but rather of displaying the gold of the Helvetii and of their Romanised children and great-grandchildren from two points of view: one is that votive plates of precious metal and gold statues of gods with their encircling necklets (torcs) show how native traditions continued to flourish, the other is that selected gold finds from Roman Switzerland show clearly the influences of the other provinces of the Empire.

Colourplate XXVII Cat. 275 *(Golden Bust of Emperor Marcus Aurelius)*

Celtic and Gallo-Roman divinities

It is important to make clear that there is considerable uncertainty about Celtic religion from before the Roman conquest, that is, from before the 1st century B.C. We do know of stone figures and individual heads dating probably to the 3rd/2nd century B.C. but we have no indication at all of their significance. They are more likely to be portraits of herioc warriors or of ancestors rather than of gods. There were certainly wooden figures also, like those from Genava and Villeneuve (Cat. 230) but such are rarely preserved and we cannot say which divinities they represent.

Written pronouncements about Celtic religion are known to us only from Greek and Roman historians, ethnographers or army generals (such as Poseidonios, Lucan, Caesar) and not from the natives themselves. From this the angle of approach of these authorities is explained: they see the foreign gods as local expressions of their own gods without understanding their peculiarities. Even the Celts themselves, after intensive contact with Roman art and culture in the 1st century B.C., appear to have adopted this attempt at conformity: they use Roman god types to represent their own gods, which originally probably had animal shapes. It frequently happens that the name or nickname of a god hides a Celtic religious concept behind a fully Romanised appearance.

Caesar mentions Mercury as the most important god of the Celts, a god responsible for all arts, for commerce and for travel. Next to him the healing god, Apollo, the war god, Mars, the god of the Heavens, Jupiter and, finally, Minerva, the patroness and protectress of handicrafts. Lucan, in his historical epic of the middle of the 1st century A.D., gives Teutates, Esus and Taranis as the chief gods of the Gauls. Their areas of responsibility correspond apparently with those of Mars, Mercury and Jupiter. Further names or nicknames of native gods are found in dedicatory inscriptions; these include Naria, Sirona, Cantismerta, Sucellus, Mars Caturix, Mars Caisivus, Mercury Cissonius and others. The custom of placing the words *deus* or *dea* (god or goddess) before the name of the god itself is entirely un-Roman.

Offerings of precious metals: votive metal plates

At the time of the conquest of Gaul by the Romans the sacred places were fenced holy areas or else open cult sites on water or on heights.

In the time of the Roman Empire the simple wooden structures were enlarged, then later built in stone and turned into extensive cult areas. Thus, in Thun-Allmendingen there was a sanctuary comprising several chapels and altars with ashes; this was dedicated to the gods of the Alps (Alpibus), that is, to Jupiter and to some not easily defined mother goddesses, and the whole was administered by a local cult association. As sacrificial gifts in this sanctuary objects such as clay figurines, clay and tin vessels, coins, a golden votive plaque and three gold-foil pods (Cat. 235 and 236) were offered up in addition to natural specimens such as flowers, fruits and corn, which, of course, do not lend themselves to preservation.

The lanceolate sheet-metal object with sickle-shaped clasp and crossarms is ornamented over the whole surface with foldings like the veins of a leaf. A similar design occurs on the other known votive sheet-metal objects, though they differ in shape and execution. There are as yet no parallels for the golden pods.

The votive specimen from Thun-Allmendingen is the only gold one known from Roman Switzerland; four silver specimens in sheet metal have been found in Martigny or on the Great St. Bernard. Two of the three objects from the main centre of Roman Valais (Cat. 238) were found in a soapstone vessel in 1874 on the farm called La Délèze. The stone vessel was accompanied by a bronze cauldron filled with other bronze vessels and implements of iron. The group of objects was deposited in the 3rd century A.D. It cannot now be decided whether the bronze vessels and iron objects had belonged to a sanctuary, such as happened with the hoards from Weissenburg in Bavaria or from Mauer on the Url in Austria. The La Délèze objects could, of course, also have belonged to a private person forced to hide them in times of danger. The shape of the pieces of silver from the same find, consisting of a sort of arch resting on two stylised pillars, is unusual and so far not otherwise documented. It looks as if originally there was a central panel framed by the pillars.

Votive objects of precious metal, mostly elongated and with side appendages, are known particularly from the northern boundary provinces of the Empire, that is, from Britain, Germany, Rhaetia and Pannonia. Those specimens with a figural representation or with an inscription show that the gods to whom they were dedicated were native or oriental, sometimes in a Romanised form. Thus the 28 silver votive offerings in the find at Mauer on the Url were dedicated to the Near Eastern Jupiter Dolichenus while, of the 130 silver objects recovered from the Rhine at Hagenbach in Germany, about one quarter carry inscriptions to Mars or to his native rendition; the remaining three-quarters have no inscriptions.

In the cases of Thun-Allmendingen and Martigny it is not known to what divinities the votive offerings were dedicated but the fifth example known from Roman Switzerland (Cat. 239) has an inscription. This votive offering, of silver, is almost tree-shaped; it was found in 1900 on the Great St. Bernard. Its inscription tells us that a certain G(aius) I(?-ulius?) P. (thus he abbreviates his name) had gladly and in decency fulfilled his vow to Jupiter Poeninus. The pass – 2473 m high – was already in use in pre-Roman times. Poeninus – otherwise Phoeninus, Pyninus, etc. – was clearly the native name of a local protective divinity who was equated with Jupiter by the Romans. A second silver votive offering was found as well as Cat. 239. This is now unfortunately lost. In addition, there are about 50 other bronze tablets expressing thanks by travellers to the divinity for help on the dangerous route.

Dedicatory offerings of precious metal: torcs on statues of gods

As we have seen it seems that the custom of placing votive offerings of sheet metal in sanctuaries is associated with the honouring of divinities in our area. It is not possible at the moment to indicate where this custom may have originated but another cult observance, which lasted into imperial times, is certainly Celtic. This is the custom of ornamenting statues of gods with a necklet (torc) of precious metal, probably as a symbol of gratitude to the god for favours received or in fulfilment of a vow. In itself the decoration of a representation of a god is nothing specifically Celtic: for instance, we already know, from Roman Syria, renowned for its rich ornamentation of carvings, statues to which, later, rings were added to necks and arms. In Gaul, however, the necklet had a form peculiar to itself, that is, twisted and with open terminals. These were worn not only on statues of gods but also by humans such as on the limestone statuette of the elderly lady from Avenches (Cat. 241) and as we know from illustrations and reports of Roman informants.

The installation of a *lararium* (house sanctuary) in the atrium or the dwelling-house kitchen is a cult innovation brought by the Romans to the provinces. It frequently consisted merely of a painted representation of the *larses,* the protective divinities of the house. In more richly furnished houses wooden, clay or bronze figures of various gods were exhibited in a shrine or small temple. The same figures were also placed as donations in the temples.

Amongst the hundreds of bronze figurines presently known, preponderantly from civilian settlements of Roman imperial times, there are about 25 which wear a golden or a silver torc (rarely of bronze) and it is interesting to note that, with the exception of the Syrian examples referred to above, all come from districts which from the 4th to the 1st century B.C. were affected by the expansion of the Celts, irrespective of the differing cultures of the tribes. It, therefore, seemed reasonable in our treatment of the four figures with torcs known from Roman Switzerland to compare them with the other known examples. These are, in the main, discoveries from Gaul and Britain; it is likely that similar statues from Roman Germany, from Rhaetia, Noricum and Pannonia were mostly imported from Gaul. No example has yet been found in Italy. The stated number of from about 25 to 50 torc-decorated statues remaining to us (including so far unpublished specimens) may at first glance look peculiarly small but it should not be overlooked that many of the torcs, hanging loosely on the necks of figurines, are only 2 cm in diameter (Cat. 242) and could thus, with the passage of time or even at the time of actual discovery, be lost very easily.

At the moment no positive statements can be made about the cult significance of torc offerings. We do not know in what connection or to what extent they were exploited, what prompted their origin or who produced them. Various possibilities may be considered: a figurine might be made more valuable or "holier" by the addition, after fabrication, of a ring of precious metal; the donor of the statue might have had the torc added at a later stage; or, it may be, that statue and torc are independent of each other and donated by different persons.

It would, indeed, be conceivable that those gods which were provided with torcs were most influenced by Gaulish types or styles but, at first glance, this seems not to have been the case. The torc is missing in the case of the *larses* or of the spirit of the master of the house; underlying these there are definite Roman religious concepts. However, about half the figurines with torcs are divinities which can scarcely have Celtic connections, such as Venus, Jupiter and Apollo. It should, however, not be forgotten that a native divinity may have its own religious conceptions in spite of having the appearance of a foreign cult figure.

For the moment the bronze statue of a bearded man with a deer antler from Margerides (Dép. Corrèze) stands alone. This statue of a god is to be identified with the antler god, Cernunnos, known also from stone carvings. Cernunnos does not wear the torc on his neck but carries it in his right hand. He is dressed in trousers, like the Celtic

Fig. 22 Bronze statues with necklets: Cernunnos, the Celtic deer-god with a torc in the right hand (left, Margerides); Mercury with torcs of silver and gold (centre, Weissenburg; right, Pierrre-en-Luiset).

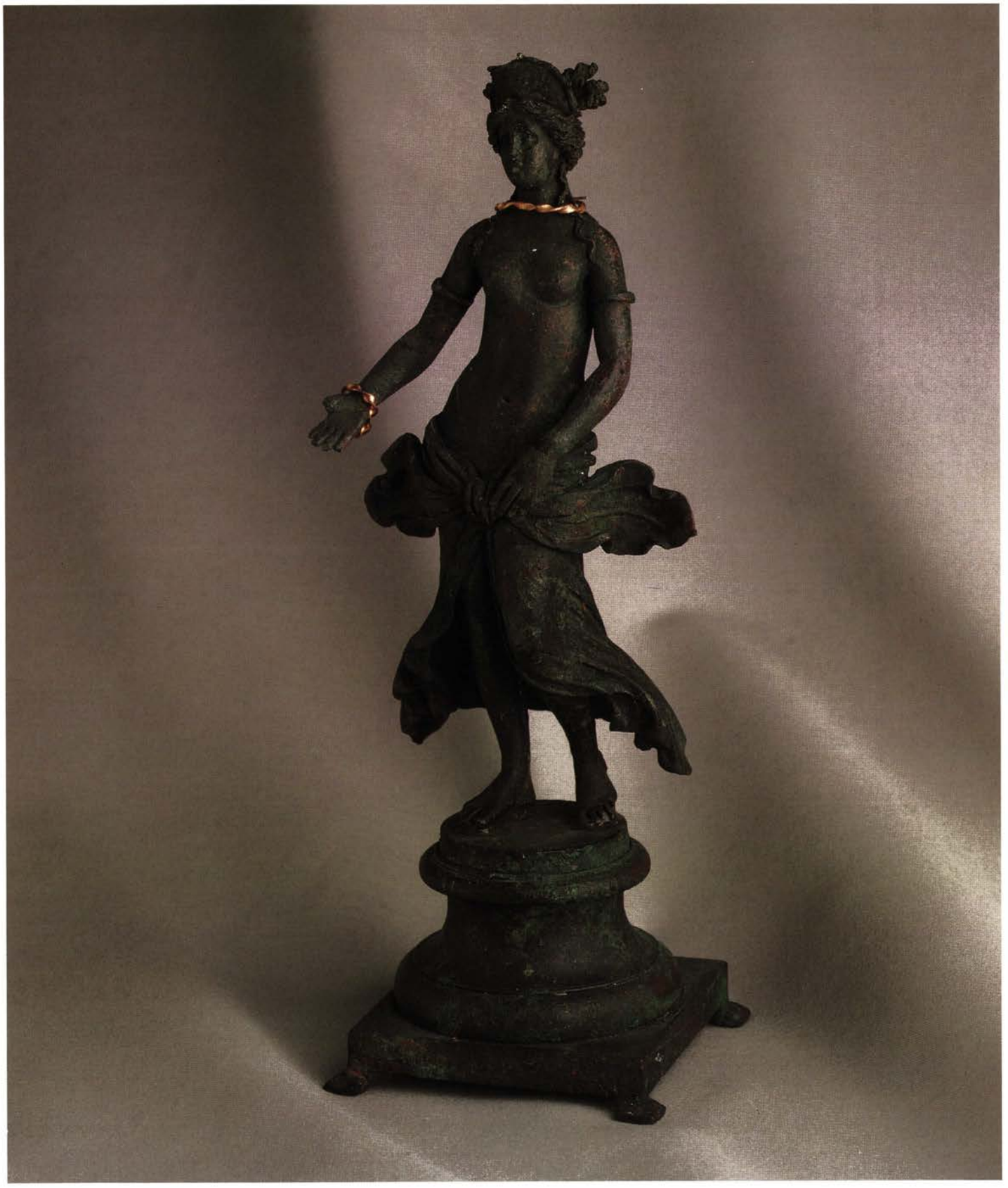
god, Sucellus, and wears a cloak fastened on his shoulder in imitation of the Roman Mercury. He thus displays in exemplary fashion the mixture of Celtic and Roman elements.

The Gaulish transformation of a Roman type is made particularly clear by the example of the god of sleep, Somnus. From the 2nd century B.C. sleep was personified as a youth floating in air with winged head and poppy hair cut; it is not clear that this god was a cult figure. About ten bronze figures of Somnus from eastern Gaul and dating to imperial times are known; none is recorded from Italy but from Riez in southern France there is an inscription which relates that two doctors gave the god of healing, Aesculapius, a bronze figure of Somnus, a golden torc and two medical instruments as a thanksgiving for his work. It is clear that the classical Roman Somnus was honoured in Gaul as a god of healing. A bronze figurine of Somnus, found in Besançon in 1849 (Cat. 245) with a silver torc round his neck – a thanksgiving offering for a successful cure, perhaps? – suits the above inscription well. Together with the figure of Somnus one of a god with an animal's ear and dressed in a cloak and trousers and of a man with a hooded cloak sitting in a cane chair were found.

Caesar characterises Apollo as the true god of healing of the Gauls. Here one may recall amongst Helvetian cult sites the Grienmatt temple at Augst (near Basle) with the curative bath bordering it. In 1979, in Martigny in Roman Valais a beautifully worked statue of Apollo was found. This is decorated not with the torc with open terminals but rather with a narrow, close-fitting necklet of gold. The god rests his left arm on a lyre standing on the ground and in his right hand he holds the plectrum for striking the strings. The soft bodily shapes, the flowing movement and the very expressive countenance indicate that this is the work of a first-class, probably Italian, artist who worked in the early 1st century A.D. It is difficult to imagine what such a sculpture meant to the owner or to the one dedicating it to the god, a sculpture of very high quality obviously imported from Italy. It cannot be established either how the additional ornament of a golden fillet was given to it; did it, perhaps, belong to a lover of art who treasured it for its artistic quality or was the effectiveness of the god the reason for the costly ornamentation of the little figure?

The Mercury statues from Heddernheim (Cat. 248) and St. Albans (Cat. 249) are both items of a group as demonstrated by their accompanying sacred animals – ram or billy goat, cock or tortoise. The stylistically peculiar Mercury from Heddernheim wears a collar of bronze, possibly seen as a reasonable substitute for a golden torc, as unpatinated bronze shines like gold. In the case of the remaining statues silver collars far outnumber those of gold, though it is by no means clear whether the reason for this was financial or aesthetic.

It is not surprising that most of the Mercury statues belong to the group of those decorated with torcs; indeed, on the contrary, a statue



of the most elevated of the Roman gods, Jupiter, was distinguished in this manner. The enthroned Jupiter with his bundle of lightning flashes and his (now lost) sceptre was found in 1978 in Xanten, the ancient Colonia Ulpia Traiana, on the lower Rhine. It is a reproduction in smaller size of the cult figure of the Temple of Jupiter on the Capitol in Rome. It is exactly this figure, so eminently of Roman type in origin, that wears an unusual torc ornament. It has four complete collars and at least ten fragmentary pieces strung together, though how they were arranged originally cannot now be reconstructed. Can the figurine have belonged once to a legionary from Gaul who brought it back with him from the south and tried in this way to show his thanks to the god?

If the torcs on the statues of gods so far reviewed can best be seen as votive offerings, far different and more difficult to make a pronouncement is the case with statues of the goddess, Venus. It is part of the nature of the goddess of beauty and love that she adorns herself and is adorned. Thus, a marble statue of Venus in Naples wears gold rings on neck and arms and, in the case of bronze statues, the armrings are frequently cast with the figure or are indicated through chiselling. The Venus figures from Augst (Cat. 255) and Novae also wear rings cast on to the upper arms; when such added ornament is carried out in precious metal it is obvious that it was intended as a votive offering.

To summarise, it may be stated that the custom of making votive offerings of torcs lasted until the 2nd/3rd century A.D. in the original territories of the Celts and in Gaul and Britain. Here the individual statues were provided with a silver or a golden collar, probably in thanks to the divinity.

The coin hoard from Vidy – the first numismatic collection?

Roman suzerainity brought cultural and civilizing innovations to the native population of Roman Switzerland apart from the changed political structure. Such matters as travel routes and settlements, house-building, interior decoration, handicrafts, etc., were all influenced. The extended road net and better means of transport in the Roman provinces allowed for greater mobility of people and improved trade. In contrast to Late La Tène times, when coins and barter existed side by side, money became the normal method of payment for all in Roman imperial times.

In all Roman settlements numerous coins have been discovered, preserved to us as accidental losses or deliberately hidden. We know unfortunately very little about prices and wages, that is, about the actual cost of living in our area. We get a certain idea from indications from Pompeii where, in the 1st century A.D., one had to pay a sesterce for a half litre of good wine, that is, small pocket money, and for a measure of corn (about 9 litres) four sesterces. At any rate, it is clear that the so-far unidentified man, an inhabitant of the harbour and trading port of Lousonna (nowadays Vidy near Lausanne), who about the middle of the 2nd century A.D. buried 72 gold coins (=7200 sesterces) in a room of his house, must have been rich. The coins were hardly used (Cat. 258); clearly he had collected them over a long period and then suddenly decided to bury them and to improve security by hiding 36 coins in opposite corners of the room. We can only speculate as to the reason for such careful hiding of his wealth – perhaps it was the political upsets which are documented for this period in other parts of Switzerland. The quality and selection of the gold coins in this hoard are quite remarkable. One has the feeling of a collector at work who knew exactly what he was doing. It is possible that this is the earliest coin collection known to us.

Colourplate XXVIII
Cat. 255 *(Bronze Figure of Venus)*

Gold ornaments of the ladies of the Helvetii

What remain to us of gold ornaments from Roman Switzerland include sometimes single finds, objects lost in settlements, grave-goods and, finally objects or groups of objects deliberately buried. Of course, the place of discovery gives no indication of the place of manufacture. Personal ornaments fabricated in a general imperial Roman style can just as easily have been made in Gaul as in Egypt. Local styles can be identified only when enough samples similar to each other are found.

We also know from a tomb inscription in the church at Amsoldingen, removed from elsewhere, that two goldsmiths from Lydia, that is, from western Turkey, Camillius Polynices and his son, Camillius Paulus, were active in Aventicum, but we do not know what they produced. Like so many of his professional comrades in imperial Roman times, he was a migrant craftsmen. He settled in Avenches and, as a free man, was adopted by the otherwise well known Helvetian family of the Camillii. It is interesting to note that, though a goldsmith, he belonged to the guild of carpenters (*fabri tignuarii*). Unfortunately, we can only guess at the appearance of the ornaments made by the two goldsmiths. Did they retain the styles of their homeland or did they work in an imperial Roman manner or did they, perhaps, adopt the traditions of their new domicile?

One of the most beautiful pieces of personal ornament in Roman Switzerland is possibly of local manufacture. This is a golden chain made up of 38 tendril- and leaf-shaped members, found in Kaiseraugst (Cat. 259). Its find circumstances are in sharp contrast to its festival character. The chain was found deep in a Roman hot spring together with the skeletal remains of fourteen people, eight horses, two donkeys and twenty-two dogs. The examination of the skeletons showed that both men and animals died violently; their burial in the spring made it unusable afterwards. A ritual execution has been proposed as the explanation of this horrible event though we remain in the dark as to its cause and character. It may, however, be nearer the truth to postulate warlike happenings which are attested by other finds at the time of the deposit in the second half of the 3rd century at Kaiseraugst and Augst. It is, of course, still a puzzle why the girl's valuable collar was sunk with the other remains or why its wearer was deprived of it.

Two hoards of golden ornaments prove less puzzling than the filling of the spring at Kaiseraugst; one of them came to light in the 19th century, both in the canton of Berne. The owners clearly buried them for fear of war dangers and were unable to recover them later. In 1741, in researches by the philosopher and aesthete, Johann Georg Sulzer, in the territory of the Roman villa of Obfelden-Lunnern, about 80 silver coins and a quantity of personal ornaments of gold (Cat. 260–266) stuck into cracks in the corner made by two converging walls were found . Unfortunately, it cannot any longer be established what belonged to the hoard originally: the silver coins are lost as well as two chains, two earrings and a bracelet. An oil painting, probably done shortly after 1741, shows the excavations at Lunnern, but does not help with the original composition of the hoard. Today there exist four collars, two ornamental discs which formerly served as chain pendants, a bracelet with stylised snakes' heads, an earring and three further chain pendants. It demonstrates in exemplary fashion the quantity and richness of shape of Roman personal ornaments in the later 2nd and 3rd centuries A.D. Pierced filigree discs, used as clasps on chains, flat bracelets with snakehead terminals, the love of chains made of several parts and the combination of gold and precious jewels are all characteristic. Pieces comparable to the Lunnern chains are preserved in the hoards from Lyon and Naix in northern France. The ornamental discs with tiny soldered spheres appear to represent a Rhaetian (Upper German) form because of

Fig. 23 Painting by an unknown artist showing excavation and finds from Obfelden-Lunnern, 1741. In the centre top are portions of the ornamental treasures (Swiss National Museum, Zürich).

their preponderant presence in finds and on gravestones in those areas. Either the lady of Lunnern had her ornaments from Gaul and Germany on the right bank of the Rhine or she found what was required amongst local goldsmiths who themselves adopted the forms from those regions.

On July 27th, 1868, while dislodging a jackdaw in the inner cloister of the former Dominican monastery at Oetenbach in Zürich, a workman found a hoard of personal ornaments comprising two twisted gold bracelets and seven finger rings (Cat. 268–274). The finger rings belong in shape and execution to a type common to the whole Roman empire in the 2nd century A.D.

The two twisted armlets are singular both in form and workmanship. Each is made of two strips of gold plate bent longitudinally and with decorative strips soldered along the edges. The terminals are carefully made of snakes' heads, cast in moulds. Hollow twisted rings ending in animal heads are best known to us in Hellenistic goldsmiths' work; the massive Celtic torcs usually have thickened terminals or ends shaped like balls. It is possible that the so-far unknown goldsmith combined a twisted hollow armlet, with forerunners amongst Greek types, with a contemporary style with snakes' heads, as they occur also on the finger rings (cf. Cat. 274). The gold ornaments may have been buried because of the internal political upsets of the 2nd century A.D., as already mentioned.

The golden Emperor portrait

The chief occupation of Roman goldsmiths in provincial cities lay in the production of personal ornaments and the gilding of decorative elements of bronze, such as ornamental friezes, applied mounts and so on. It was only rarely that plastic – and therefore for financial reasons, small – figures of precious metal were commisioned from a

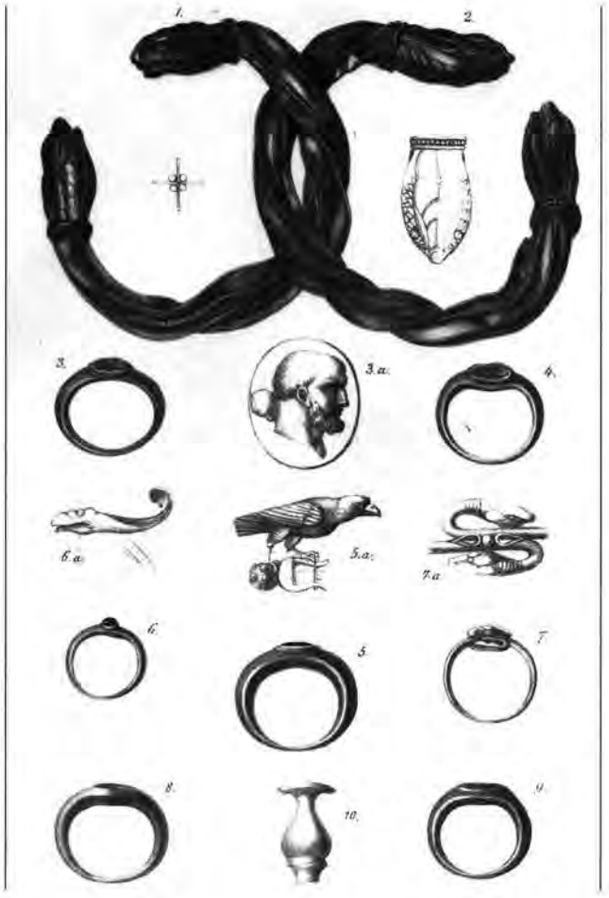


Fig. 24 The initial opening of the Zürich "Oetenbach" treasure of 1868.

Fig. 25 Fragment of a bronze dish: relief of Mercury with a silver torc (Caistor St. Edmund).

goldsmith. Even more rarely were portraits of the emperor ordered. Of course, every community and every military barracks had to have, for reasons of state, a portrait of the ruling conqueror. In the provinces one was satisfied in the main with a good – or even a middling – painting or stone carving of him. It is due to happy circumstances that one of the very few imperial portraits of precious metal in the Roman empire came to light in Roman Switzerland. This was a larger than life-size gold bust of the Emperor Marcus Aurelius (A.D. 161–180) which was found on April 19th, 1939, in a sewage channel in front of the Cigognier temple in Avenches (Cat. 275). One was surprised then, as indeed one is today, by the severe frontality, the only slightly agitated surface, the unusual proportions and the staring glance of the portrait. These features, which seem to anticipate Late Antique understanding of form, are obviously to be explained by supposing that a native goldsmith carried out an unusual contract after a supplied pattern and that he carried out the work freehand and translated it into his own concept of the finished product. The method normally used in copying in stone – with measuring points and so on – would hardly have suited embossing in metal. We do not know who commissioned the imperial bust nor have we any idea where it was displayed in Aventicum. In any case, it rounds off in an appropriate way our picture of a Helvetia and its inhabitants, rich in gold.

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CATALOGUE

I EXPLANATION OF CATALOGUE

Felix Müller

The objects on exhibition, which are referred to in the essays, are described in detail in the Catalogue and are given Catalogue numbers (Catalogue 1-275). In addition, the particular find complexes for the objects (most from the Bronze or Iron Age) are designated preceding the Catalogue number and therefore are not numbered individually.

Glossary

Amber	Fossil tree resin, yellow to reddish brown. Worked to bead shape.
Amphora	Ancient storage and transportation vessel for wine, oil, grain and other provisions.
Anthropology	Science of man: examination of human skeletons to establish the age and sex of the deceased.
Biga	A war chariot (with two horses) in antiquity.
Cantharos	Ancient drinking vessel with raised handles and added footing.
Dolmen	A single-chambered burial chamber built of large stone slabs.
Drachma	A silver coin.
Fibula	Metal component of ornament and costume. Forerunner of our safety pin. There are numerous different forms, which can be fixed chronologically.
Filigree	Decoration of gold or silver wire.
Granulation	Decoration formed by soldering small gold spheres (granules) to a background.
Hallstatt Period	The earlier portion of the Iron Age (750–450 B. C.). Named after the find-place, Hallstatt, in Austria.
Jet	Fossil wood, black bituminous coal. Amongst other things worked into beads.
Krater	Ancient mixing vessel, in which wine mixed with water.
La Tène Period	Later portion of the Iron Age (450 B. C. to Birth of Christ). Named after the find-place La Tène on Lake Neuchâtel.
Lignite	Fossil wood, bituminous coal, light to dark brown. Made into armlets.
Noricum	Roman province south of the Danube in the eastern Alps.
Obol	Silver coin.
Oppidum	City-like, defended settlement of the Celts. Tribal centre and focus of commerce, craftsmanship, politics and religion.
Pannonia	Roman province between the eastern border of the Alps and the Danube.
Pinchbeck	Alloy of tin and copper, a Celtic coin type.
Quinar	A silver coin.
Sapropelit	Decayed mud coal, slate coal, black. Used in the making of armlets.
Situla	Conical container of sheet bronze.
Spindle whorl	Small fly wheel of clay or stone (or bone). It is placed over the lower end of the spindle and thereby gives it the necessary swing.
Stater	Gold coin.
Torc	Penannular collar.
Triskele	Three-legged ornamental device.
Ziste	Bucket-shaped container of sheet bronze.

Abbreviations

Ag	Silver
Au	Gold
Cu	Copper
Dm.	Diameter
H.	Height
Inv. no.	Inventory number
L.	Length
Obv.	Obverse (of coin)
Rev.	Reverse (of coin)
Wt.	Weight

Abbreviations and References

AS	*Archäologie der Schweiz*
ASA	*Anzeiger für Schweizerische Altertumskunde, Neue Folge*
BAR	*British Archaeological Reports*
HA	*Helvetia Archaeologica*
JbBHM	*Jahrbuch des Bernischen Historischen Museum Bern*
JbSGUF	*Jahrbuch der schweizerischen Gesellschaft für Ur- und Frühgeschichte*
MAGZ	*Mitteilungen der Antiquarischen Gesellschaft in Zürich*
SNR	*Schweizerische Numismatische Rundschau*
ZAK	*Zeitschrift für Schweizerische Archäologie und Kunstgeschichte*

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CHRONOLOGICAL TABLE

	Periods and their subdivisions	Archaeological specialities in Switzerland	Important finds in the Exhibition	Comparisons with world history
	End of the Neolithic (New Stone Age)	Lake dwellings		
3000 B. C.				
		Farmers and stock raisers		
	Bell beakers		Sion Cat. 3	Building of the Cheops pyramid in Egypt
		Bronze-working	Eschenz Cat. 1	
	Early Bronze Age			Decline of the Sumerian Empire of Ur
		Specialist craftsmanship	Thun Cat. 4	
2000 B. C.				
	Middle Bronze Age			Palaces of Knossos in Crete
			Weiningen Cat. 5	
		Defended settlements on mountain tops	Binningen Cat. 6	
	Late Bronze Age			
1000 B. C.				David, King of Israel
			Altstetten Cat. 7	
				Foundation of Rome
	Hallstatt Period (Earlier Iron Age)	Iron-working	Ins Cat. 26 – 27	
			Allenlüften Cat. 22 – 23	
			Unterlunkhofen Cat. 49	
	Late Tène Period (Later Iron Age)	Coinage	Erstfeld Cat. 59 – 65	Alexander the Great
		"Oppida"	Oberhofen Cat. 98	
		"Helvetier"	Saint-Louis Cat. 66 – 70	Julius Caesar
Birth of Christ				
	Roman Period			
		Integration into the Roman Empire	Avenches Cat. 275	
	Beginning of the Early Middle Ages			Folk migrations
A. D. 1000				

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4	Muttenz BL	Cat. 76, 121
5	Augst BL	Cat. 159, 255, 256, 259, 267
6	Leuggern AG	Cat. 128
7	Böttstein AG	Cat. 71
8	Niederweningen ZH	Cat. 122
9	Seeb ZH	Cat. 132
10	Rheinau ZH	Cat. 131, 157, 191, 224
11	Marthalen ZH	Cat. 188
12	Schaffhausen	Cat. 178
13	Stein am Rhein SH	Cat. 110
14	Eschenz TG	Cat. 1
15	Steinegg TG	Cat. 134
16	Tägerwilen TG	Cat. 120
17	Frauenfeld TG	Cat. 104
18	Wil TG	Cat. 199
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20	Erstfeld UR	Cat. 59–65
21	Stäfa ZH	Cat. 114, 116–118
22	Horgen ZH	Cat. 54–57
23	Obfelden ZH	Cat. 260–266
24	Unterlunkhofen AG	Cat. 49
25	Bonstetten ZH	Cat. 9
26	Üetliberg ZH	Cat. 36, 37, 72–74, 223
27	Zürich	Cat. 2, 7, 8, 133, 135, 174, 219, 268–274
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34	Gunzwil LU	Cat. 33, 34
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36	Aarburg AG	Cat. 125
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58	Allenlüften BE	Cat. 22, 23
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61	Hermrigen BE	Cat. 14–16
62	Hagneck BE	Cat. 171
63	Düdingen FR	Cat. 17, 18
64	Corminboeuf FR	Cat. 45
65	Châtillon-sur-Glâne FR	Cat. 38–41
66	Corpataux FR	Cat. 164
67	Sorens FR	Cat. 163
68	Châtonnaye FR	Cat.19–21
69	Lentigny FR	Cat. 25
70	Payerne VD	Cat. 24
71	Domdidier FR	Cat. 203
72	Avenches VD	Cat. 217, 218, 226, 241, 275
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74	Vully FR	Cat. 165
75	Cudrefin VD	Cat. 167
76	Ins BE	Cat. 13, 26–30
77	La Tène NE	Cat. 136, 137, 140, 143–145, 149, 152, 156, 209, 220–222
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82	Yverdon VD	Cat. 42, 201
83	Geneva	Cat. 230
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86	Morges VD	Cat. 119
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92	Martigny VS	Cat. 207, 208, 237, 238, 246
93	Vollèges VS	Cat. 100
94	Grand Saint-Bernard VS	Cat. 239
95	Isérables VS	Cat. 100
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97	Lens VS	Cat. 100
98	Sierre VS	Cat. 100
99	Leukerbad VS	Cat. 100
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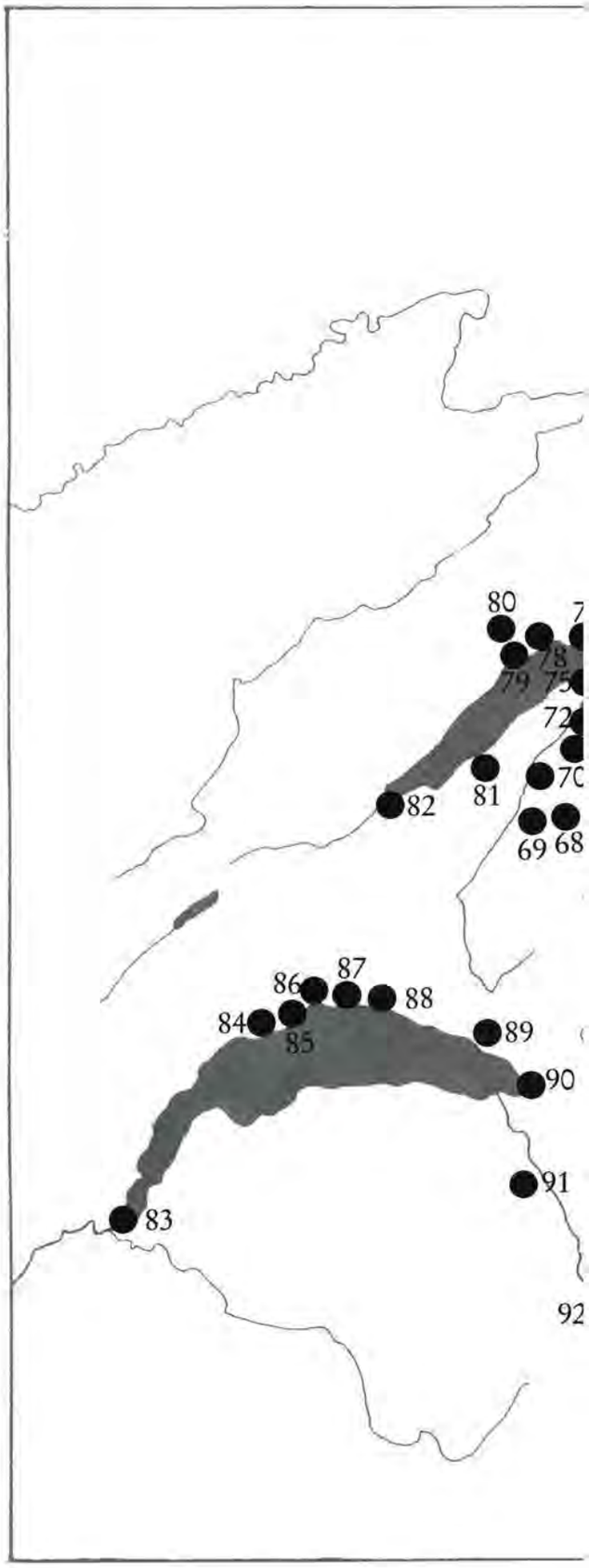
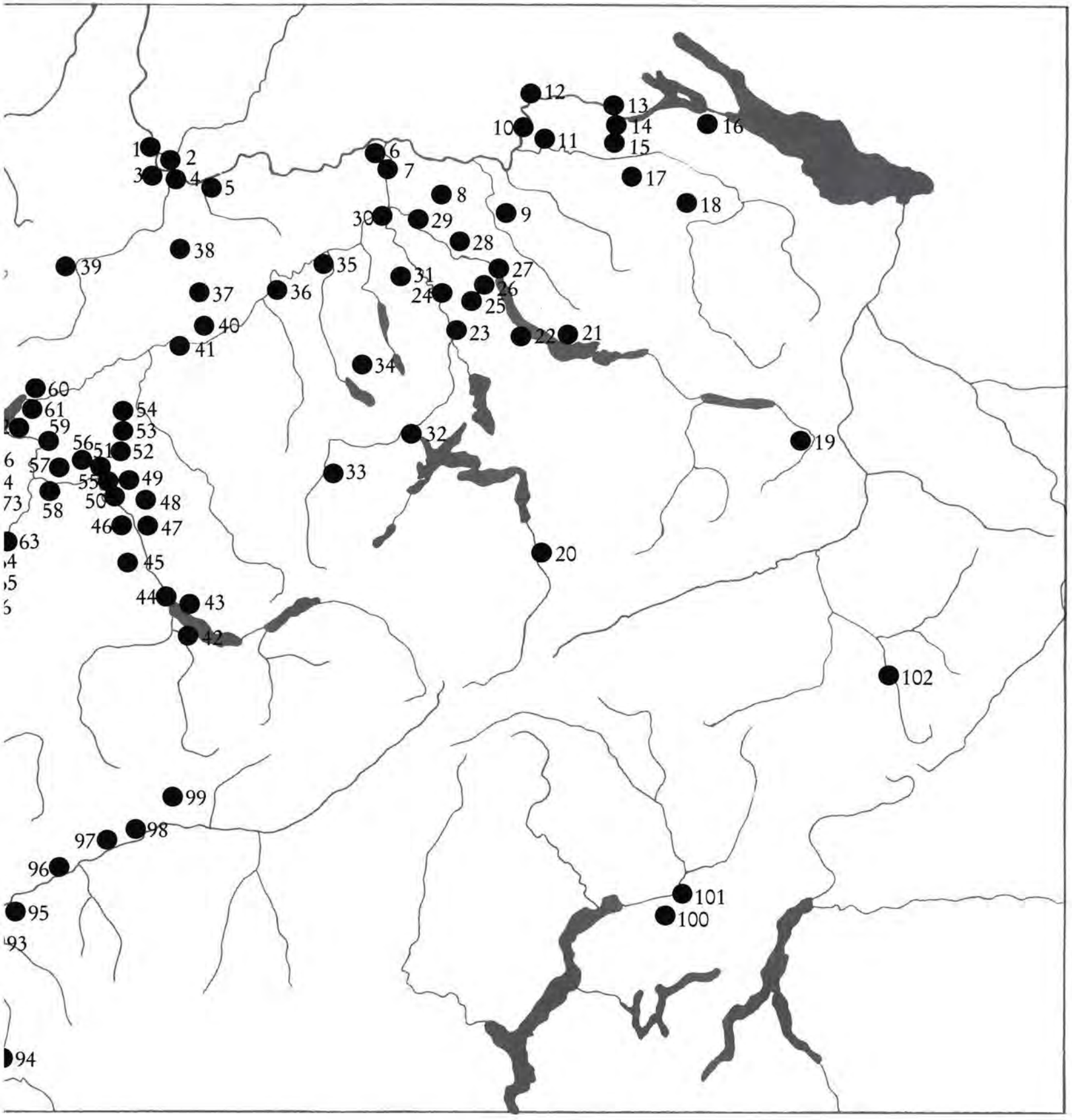




II NEOLITHIC AND BRONZE AGE: 2500–750 B.C.

Felix Müller

1

Eschenz, Canton Thurgau
c. 2300 B.C.

In 1916 a gold vessel was found in the course of building railway installations and factories. It was bought privately and remained completely unnoticed until in 1974 it was "rediscovered"and handed over to the Museum.

1 *A beaker of sheet gold.* The body of the vessel is covered with repoussé work in the form of ridges and rows of bosses of varying sizes. The rim is bent outwards and it alone is undecorated. H. 11.1 cm; Weight 136 grammes.

Frauenfeld, Historisches Museum des Kantons Thurgau. – Literature: B. Hardmeyer and J. Bürgi, Der Goldbecher von Eschenz. *ZAK* 32, 1975, 109–120.

Colourplate XVII page 52

2

Zürich "Mozartstrasse", Canton Zürich
c. 1600 B.C.

While sinking an exploratory shaft in connection with an extension to the Opera House an amber bead and a bronze dagger blade were found, both lying in the dark habitation layer of a settlement excavated later at the same place.

2 *Amber bead in gold plate mount.* The slightly smoother sphere with central perforation is mounted in gold strips with longitudinal grooves. Diameter 2.9 cm.

Zürich, Büro für Archäologie der Stadt Zürich. – Literature: E. Groß et al., *Zürich «Mozartstraße». Neolithische und bronzezeitliche Ufersiedlungen 1.* Berichte der Zürcher Denkmalpflege, Monographien 4 (1987).

3a

3b

Sion "Petit-Chasseur", Canton Valais
c. 2500 B.C.

Between 1961 and 1973 an extensive burial place with less than a dozen grave monuments was investigated in the alluvial neck of the Sionne. These monuments covered several corpses and were used over a long period and were frequently renewed. Cist No. 5, measuring 1.70 m by 80 cm, was built of large slates. In it and partially in front of it were the remains of 6 to 8 people as well as ornaments and vessels, all dating to the end of the Neolithic.

3 *Spiral of gold wire.* Diameter 0.7 cm; Weight 0.6 gramme.
- Pendant of Columbella snails, of dentalium tubes and of crescentic mussels.
- Two clay beakers.
- Two clay cups with handles.

Sitten, Archäologisches Museum des Wallis. – Literature: A. Gallay, Le site du Petit-Chasseur (Sion, Valais) 7: secteur oriental. *Cahiers d'Archéologie Romande* 47, 1989.

4

Thun "Renzenbühl", Canton Berne
c. 2000 B.C.

In removing a low moraine on 10th December, 1829, the workmen chanced upon a grave made of flat stones and measuring about 3 m by 1.5 m. In this was a skeleton together with a noticeably large number of grave-goods. Later, at the same place, further graves dating to the Early Bronze Age were found.

4 *Bronze axehead of long, narrow shape.* On the flange on each side is an inlaid copper strip containing a large number of small gold pegs. L. 24.1 cm; Weight 250.3 grammes.
- Six bronze necklets with rolled ends.
- Bronze dagger with hilt tang.
- Two bronze pins with lozenge-shaped heads.
- An armlet of sheet bronze.
- Bronze belt hook.

Berne, Bernisches Historisches Museum. – Literature: Ch. Strahm, Renzenbühl und Ringoldswil. *JbBHM* 45–46, 1965–1966; id., Das Beil von Thun-Renzenbühl. *HA* 3, 1972, no. 12, 99–112.

5a

5b

Weiningen "Hardwald", Canton Zürich
c. 1400 B.C.

Four tumuli of the Middle Bronze Age were scientifically excavated in 1946. In the third mound a burial pit, 2.90 m long, was uncovered and in it were the remains of four persons, three of them inhumed, the fourth cremated. Some milk teeth indicate that one was a child.

5 *Four spiral rolls of fine gold wire.* 7 mm – 1.4 cm in diameter; Weights 0.2, 0.3, 0.8 and 1.7 grammes.
– Seven small spiral rings of bronze wire.
– Originally 30 amber beads.
– A finger ring with spiral terminals.
– Two bronze pins.
– Three sheet bronze armlets and anklets.
– A bronze bracelet.

Zürich, Schweizerisches Landesmuseum. – Literature: E. Vogt, Die bronzezeitlichen Grabhügel von Weiningen (Kt. Zürich). *ZAK* 10, 1948/49, 28–42.

6

Binningen, Canton Basleland
c. 1200 B.C.

Somewhere in the sixties of the 19th century a group of bronzes came to light. Originally in private possession, it was acquired by the Museum in 1872. The objects found were of Late Bronze Age date and, as several pieces were melted, it probably came from a cremation burial.

6 *Long oval diadem of sheet gold.* Ornamented with dot-and-circle patterns and scores. Badly damaged. Length of the fragment about 11 cm; Weight 2.3 grammes.
– Two bronze pins of Binningen Type.
– A knife with ring-haft.
– Three heavy armlets and a bronze band.
– A chain belt of ring units and sheet metal clasps.
– Remains of a wire pendant of bronze.

Berne, Bernisches Historisches Museum. – Literature: Ch. Unz, Das spätbronzezeitliche Frauengrab aus Binningen BL. *AS* 5, 1982, 194–201.

Colourplate III page 8

III HALLSTATT PERIOD: 750 – 450 B.C.

Geneviève Lüscher

7

Zürich-Altstetten, Canton Zürich
c. 900 B.C. (?)

In 1906, while building railway lines, a workman found a pottery vessel. According to statements he made later the pot covered a gold dish lying mouth downwards on a flat stone. Beneath this vessel there was a powder-like mass, not preserved because the workman regarded it simply as earth. A professional, Jakob Heierli, was called to the scene and was able to identify an 80 cm deep and 50 cm wide pit at the bottom of which lay the flat stone, the gold dish and the pottery vessel. Nothing further of a prehistoric nature was found. The likeliest explanation is that we are here dealing with a valuable dedicatory offering placed in the earth.

7 *Gold dish.* There is a short, smooth upright neck and below it a hemispherical body ornamented all over with bosses raised from the inside. Three rows are filled in with figures – suns, crescent moons, deer and does. The outlines of the animals are finely scored. Thickness of wall 1.25 mm; H. 12 cm; Weight 910 grammes.

Zürich, Schweizerisches Landesmuseum. – Literature: J. Heierli, Die goldene Schüssel von Zürich. *ASA* 9, 1907, 1ff.; W. Kimmig, Die Goldschale von Zürich-Altstetten. In: *Festschrift Martin Almagro Basch* (1983) 101ff.

Colourplate I and II
Pages 2 and 4

8a

8b

Zürich "Burghölzli", Canton Zürich
c. 600 B.C.

In 1832 F. Keller arranged for the investigation of four burial mounds which were situated on a site with a magnificent view on the right bank of Lake Zürich. Mound 3 had a diameter of only 12 metres but, in its exterior, had been reduced in size by the erection of a gun emplacement in 1799 by French artillerymen.

Six graves were noted, three of which were early mediaeval and three belonged to Hallstatt times. Grave 2 was the lowest and was dug into the centre of the mound. According to specialists who were present both the bones and the teeth of the skeleton were those of a young woman. She wore a hollow bronze ring round her neck and three bracelets on her wrists. A little spiral of gold lay behind the head and beside it there were three pottery vessels. The woman's right hand was closed on an iron knife, "the point of which was stuck in the skull bone of a young pig". A "plate" of 42 cm diameter painted red, and a "bronze brooch... near the breast" were, unfortunately, lost.

8 *Hair spiral of gold wire.* Comprises seven doubled coils. L. 1.9 cm; Weight 2.4 grammes.
- Necklet of sheeet bronze with plug-shaped fastening of bone.
- Three bronze bracelets of varying solidity.
- Iron knife with bone handle.
- Two ceramic vessels.

Zürich, Schweizerisches Landesmuseum. – Literature: F. Keller, Die keltischen Grabhügel im Burghölzli. *MAGZ* 1,1 (1837) 2–6.

9

10

Bonstetten "Gibel", Canton Zürich
c. 500 B.C.

Three burial mounds, already strongly affected by agricultural work, were examined in 1981. Mound 1 measured at least 20 m in diameter and contained various groups of finds, amounting in total to eleven cremations and inhumations. The skeletal remains, however, had disintegrated completely and all the other finds were also strongly attacked by chemicals in the soil.

The woman in Grave 8A lay crouched in a North-South orientation; her ornaments were found on her body in positions approximating to their use in life. At the feet of the dead and enclosed in stones was a handled bronze cauldron.

9 *Earring of gold plate, with plug fastening.* External diameter 1.7 cm; Weight 1.5 grammes.
- Pieces of a belt: leather remains with bronze clasp. Fragments of belt of sheet metal with punched ornament, small open bronze rings (not exhibited).
- Armlet of 126 black glass beads.
- Armlet of 166 black glass beads.
- Bronze cauldron (ribbed cauldron); in very crushed condition (not exhibited).

Zürich, Schweizerisches Landesmuseum. – Literature: W. Drack, Drei hallstattzeitliche Grabhügel bei Bonstetten, Kanton Zürich. *JbSGUF* 68, 1985, 122 – 172.

Murten "Löwenberg", Canton Fribourg
Between 500 and 450 B.C.

One of the most informative tumulus excavations of modern times was undertaken in 1980. The mound had been completely flattened and covered eight graves, the older ones in the centre. A little to one side, in Grave 3, a woman was buried in open ground and, although the skeletal remains had disappeared, the ornamental pieces lay where they had been deposited originally. Thus, it was possible to conclude that the body had been deposited originally with the head in the south.

10 *Two small pieces of sheet bronze with thin gold foil.* They belonged, with a small bronze ring, to a belt. 8.5 by 2.6 cm; 3.9 by 1.8 cm.
- Two double-drum fibulae with wide springs.
- Two fairly small armlets of solid bronze.
- Two anklets, also of solid bronze.

Fribourg, Kantonaler Archäologischer Dienst/ Museum für Kunst und Geschichte. – Literature: J.-L. Boisaubert and M. Bouyer, RN1-Archéologie. *Rapports de Fouilles 1979–1982* (1983) 50–59.

11

12

14–16

13

Wohlen-Murzelen, Canton Berne
c. 500 B.C.

At least five burial mounds were destroyed in the middle of the last century during land clearance operations.

11 *Earring of sheet gold with smooth plug fastening.* External diameter 1.6 cm; Weight 0.9 gramme.

Berne, Bernisches Historisches Museum. – Literature: Drack 1959, 24.

Colourplate XIX page 57

Kirchlindach-Jetzikofen "Vorholz",
Canton Berne
c. 500 B.C.

In the re-examination by O. Tschumi in 1935 of a burial mound which had been robbed in earlier times only a single object was found.

12 *Earring of raised sheet gold with smooth plug fastening.*
External diameter 1.6 cm; Weight 0.8 gramme.

Berne, Bernisches Historisches Museum. – Literature: Drack 1959, 21.

Colourplate XIX page 57

Ins "Holzmatt", Canton Berne
c. 500 B.C.

From one of several tumuli which were excavated about the middle of the last century and which can no longer be identified on the ground.

13 *Earring of sheet gold.* External diameter 1.7 cm; Weight 0.5 gramme.

Biel, Museum Schwab. – Literature: Drack 1958, 15f. (with additional Bibliography).

Hermrigen "Hermrigenmoos", Canton Berne
c. 550 B.C.

Already in the middle of the last century E.F. Müller from Nidau excavated one of several tumuli and this is said to have contained at least seven inhumations from which most of the finds were lost or were later mixed up with other objects so that their source cannot be identified now. The object from the beginning known as the "gilt ring ornament" must almost certainly have come from here. Whether it comes from the central chariot burial or not must remain uncertain.

14 *Three pieces of sheet gold from a narrow collar (?).* Five ribs. Remains of the bronze lining not any longer available. Width 2.4 cm; Weight 1.4 grammes.

15 *Gold-plated bronze collar.* Diameter 17.0 cm; Weight 55.3 grammes.

16 *Bracelet. Ribbon-shaped bronze core covered with stout gold foil.* Diameter 5.8 cm; Weight 12.8 grammes.

Biel, Museum Schwab. – Literature: Drack 1958, 5f. (with additional Bibiliography); C. Dunning, *Quelques tumulus hallstattiens du Seeland* (forthcoming).

Düdingen "Birch", Canton Fribourg
c. 500 B.C.

Last century, hoping to find a spring, a landowner trenched through and in consequence destroyed an apparently rich burial mound. Further excavations were carried out in 1865 by Baron G. de Bonstetten and in 1969 by the cantonal archaeologist, Hanna Schwab. The centre of the mound was formed by a huge core of stones. As sheet metal parts of two belts were found the burial of two or more persons must be assumed. In addition to multifacetted ring ornaments portions of the wheels of a chariot and a large cauldron of sheet bronze must be mentioned.

17 *Necklet made of a thin iron tube covered with gold foil.* Reconstructed from many pieces. Diameter as reconstructed c. 20 cm.

18 *Very small drum fibula of bronze, surface covered with gold foil.* L. 1.4 cm; Weight 0.4 gramme.

Berne, Bernisches Historisches Museum. – Literature: H. Schwab, Erforschung hallstattzeitlicher Grabhügel im Kanton Freiburg. *Mitteilungsblatt SGUF (=HA)* 7, 1976, no. 25/26, 24–33.

17

20

18

21

19

Châtonnaye "Prâlet", Canton Fribourg
c. 550 B.C.

Without the presence of any professional a tumulus was demolished and completely levelled in 1880. Amongst the notable finds which remained for later inspection are included, in addition to gold objects, iron parts of chariots, a fibula of bronze, parts of a bronze dagger sheath and a portion of a ring of sapropelite.

19 *Fragment of collar made from a gold-plated iron tube.*

20 *Collar of sheet gold.* On the exterior surface an ornamental band with punched S shapes. Diameter 21.8 cm; Weight 27 grammes.

21 *Earring of gold foil.* Diameter 1.6 cm; Weight 0.9 gramme.

Fribourg, Museum für Kunst und Geschichte/ Kantonaler Archäologischer Dienst. – Literature: *ASA* 16, 1880, 71f.; Drack 1964, 4f.

22

23

25

Allenlüften near Mühleberg,
"Unghürhubel", Canton Berne
Between 550 B.C. and 500 B.C.

A large tumulus, originally 6 m high, was situated in close proximity to a smaller one on a terrace with excellent view. In the last century both were gradually dug away by peasants wishing to acquire more cultivable land. As a result of these levelling works the two gold ornaments were discovered and these led, especially in 1869, to organised excavations under the direction of E. von Fellenberg. The objects now available out of the "Unghürhubel" belong clearly to two or more graves.

As well as the gold ornaments the richest burial contained also what appear to be the metal parts of a funeral carriage. Some of the objects, for instance, a drum fibula – important for dating purposes – have long since disappeared. The following objects, however, can hypothetically be assigned to this chief grave:

22 *Collar of sheet gold.* On the outer surface dotted ornament composed of St. Andrew's crosses and bands of meander designs placed side by side. Restored as a closed necklet. Diameter c. 18.5 cm; Weight 74.2 grammes.

23 *Open armlet of sheet gold.* On the exterior surface four rows of opposed crescent moons. One end rounded, the other damaged. Diameter now c. 7 cm; Weight 12.5 grammes.

Berne, Bernisches Historisches Museum. – Literature: E. Fellenberg and A. Jahn, Die Grabhügel bei Allenlüften (Kt. Bern). *MAGZ* 17,1 (1870).

Colourplate XXI page 67

24

Payerne "Roverex", Canton Vaud
c. 550 B.C.

The large tumulus was dug into several times about the turn of the century but most inadequately investigated and documented. It was 2.5 m high and measured about 30 m in diameter. It covered a number of cremation and inhumation graves. Some iron fragments suggest the presence of a wagon or chariot, indicating rich contents, something supported by the gold ornaments.

24 *Collar of sheet gold.* On the exterior surface there are three raised bands all round with, between them, two bands of meander patterns, executed by dotting. Internal diameter 20 cm; Weight 86 grammes.

Lausanne, Musée cantonal d'archéologie et d'histoire. – Literature: *ASA* 1, 1899, 164f.; Drack 1964, 51f.

Colourplate XIV and XV
Pages 44 and 45

Lentigny "En Bumey", Canton Fribourg
c. 500 B.C.

In 1883 a farmer found a golden armlet in a burial mound.

25 *Armlet made of stout sheet gold with a plug fastening.* Angular cross-section. Repoussé designs of dot-in-circle and zigzag bands. Diameter 4.5 cm; Weight 12.3 grammes.

Zürich, Schweizerisches Landesmuseum. – Literature: Drack 1964, 20 (with additional Bibliography).

Colourplate X page 30

26 –27

26 – 27 (Razor blade)

26 – 27 (Wheel parts)

Ins "Grossholz", Canton Berne
c. 650 B.C.

A large group of ten burial mounds provided, from 1848 and later, the material for more or less scientific examination. The first to excavate was the Baron G. de Bonstetten and he compiled a comprehensive report. Tumulus 6 was the most imposing of them all and contained a considerable number of grave deposits. A large collection of finds lay over 3 m deep and was covered by a massive arrangement of stones.

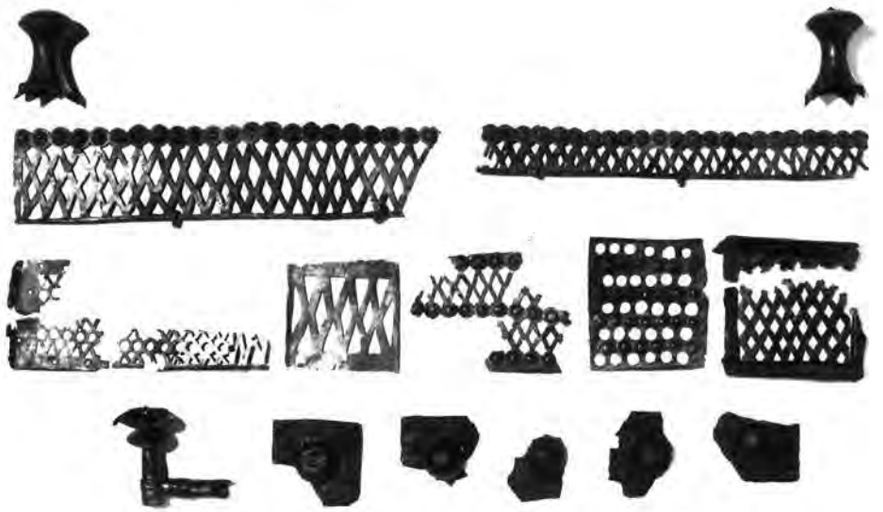
26 *Small hollow sphere of gold* with three bands formed by soldered wires, the zones thus made carrying flat designs in a granulation technique of high quality. The fine spheres are arranged in double rows and display lotus patterns and irregular meanders. Diameter 1.4 cm; Weight 2.2 grammes.

27 *Small chain of gold.* The intertwined units consist of fine, soldered, single wires, 0.3 mm thick. No clasp present. L. 38.8 cm; Weight 5.3 grammes.

- Bronze razor blade.
- Metal parts of the wheels and body of a cart.
- Draught appliance (yoke mount) of leather with rivets.

Berne, Bernisches Historisches Museum. – Literature: G. de Bonstetten, Notice sur les tombelles d'Anet (Canton de Berne) 1849; Ch. Osterwalder and G. Breitenbach, Neukonservierte Objekte aus Ins und Münsingen BE. *JbBHM* 59/60, 1979–1980, 86–88.

Colourplate XVIII page 56



26 – 27 (Carriage parts)

26 – 27 (Yoke mount)

26 – 27 (Horse bridle)

28

29

30

28 – 30 (Bucket)

Ins "Grossholz", Canton Berne
c. 550 B.C.

In 1848 all ten tumuli of a cemetery above Ins were dug into. The most important information about the work comes from the excavator, G. de Bonstetten. A short way below the top of Tumulus 8 some archaeological objects were recovered and these clearly formed a group in themselves.

28 *Seventeen fragments of gold foil ornamented with dot-and-circle and cruciform designs.* Function unknown. (For use on clothing?)

29 *Two hemispheres of gold foil.* Decorated with narrow radial decorative strips of simple motifs – circles, triangles, quadrangles and one design consisting of opposed crescents. Originally covered cores of organic material. Function unknown. Diameter of reconstruction c. 13 cm.

30 *Earring of sheet gold with simple plug fastening.* External diameter 1.2 cm; Weight 0.9 gramme.
– Large bronze bucket (situla).

Berne, Bernisches Historisches Museum. – Literature: G. de Bonstetten, Notice sur les tombelles d'Anet (Canton de Berne) 1849; Ch. Osterwalder and G. Breitenbach, Neukonservierte Objekte aus Ins und Münsingen BE. *JbBHM* 59/60, 1979–1980, 83–86.

Colourplate XIX page 57

Urtenen "Grauholz", Canton Berne
c. 550 B.C.

During road construction works in 1857 a tumulus was dug into and later thoroughly examined by J. Uhlmann. It was about 2.4 m high and had a circumference measurement of about 60 paces. A two-handled bronze cauldron lay in the centre of the mound and this apparently was covered with a dry-built arch of rough gravel and field stones. On one outer side of this stone core were the metallic parts of wagon wheels and on the other the well known gold ornaments. There was also mention of strongly decayed bones, which allowed one to assume the presence of one or even several burials.

31 *Thirty hemispheres of sheet gold in two different sizes.* Three or else two figured zones with ornamental geometric designs. Heads of ornamental hair pins. Diameter 2.7 or 2.4 cm; Total weight 20 grammes.

32 *Two open earrings of sheet gold.* Diameter 1.4 or 1.5 cm; Weight of each 1.8 grammes.
- Four lignite bracelets as well as four small pieces.
- Bronze cauldron (ribbed vessel) with two handles.
- Axle-head and pieces of iron tyres from a wagon (not exhibited).

Berne, Bernisches Historisches Museum; Biel, Museum Schwab. – Literature: J. Uhlmann, Collectana 2, Unpublizierte handschriftliche Notizen im Bernischen Historischen Museum; Drack 1959, 26f.

Colourplate XIX page 57

31

32

31 – 32 (Cauldron)

Gunzwil-Adiswil "Bettlisacker",
Canton Lucerne
c. 500 B.C.

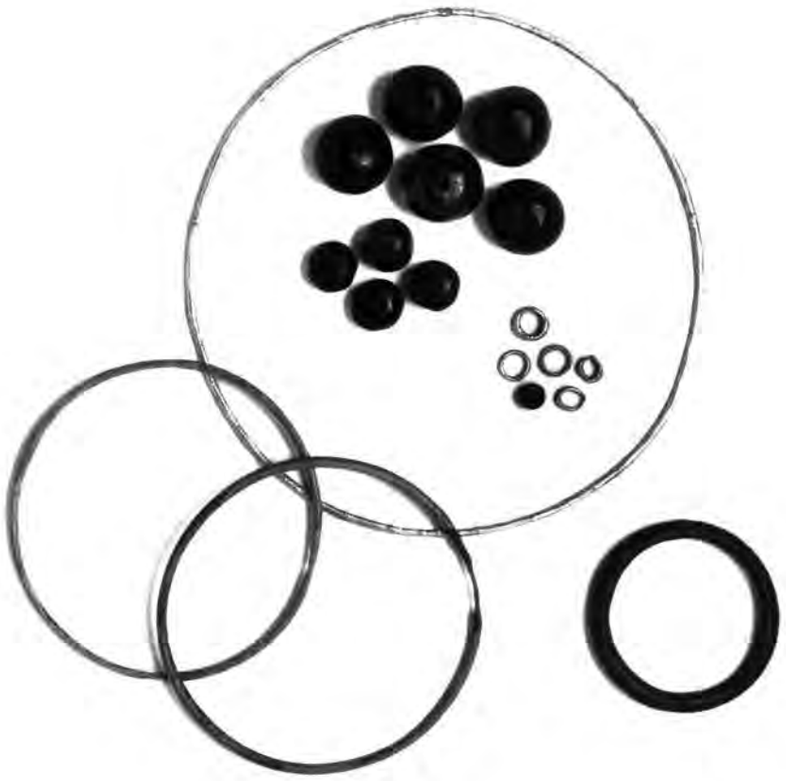
In 1933, while a street was being refurbished, a burial mound was cut into and more completely investigated by a group from Tübingen which happened to be engaged at that time on works in the neighbouring Wauwil bog. The excavation records as well as the objects found were removed to Tübingen where they were partly lost until after the war.

When the mound was noted it had been completely ploughed in but a reconstruction based on the available excavation documents showed that a woman had been buried there, lying on a four-wheeled carriage.

33 *Neck ornament of thin sheet gold, made up of fifteen small tubular units.* L. 4 – 6 cm.

34 *Five small hollow rings of gold plate.* Probably worn woven into the hair.
- Ten balls of jet and amber. Presumably heads of ornamental hair pins.
- Armlet of lignite.
- Two anklets of solid bronze.
- Bronze bucket (situla; not exhibited)
- Fragments of iron wheel tyres (not exhibited).
- Hub pieces, lost.

Original missing (Copy: Schweizerisches Landesmuseum, Zürich). – Literature: B. Schmid-Sikimic, Das Wagengrab von Gunzwil-Adiswil: ein Frauengrab. *HA* 15, 1984, no. 57–60, 103–118.



33–34

Jegenstorf "Hurst", Canton Berne
c. 650 B.C.

A burial mound investigated in 1907 was already virtually flattened. The excavator, J. Wiedmer-Stern, found there an arrowhead and immediately beside it a dagger as well as some pottery vessels. The conclusion that it was a man's grave seemed reasonable. A two-piece gold ornament was found about 20 cm away together with a jet bead in a head-sized discolouration.

35 *Two-piece gold pendant.* The hollow ball is made of two parts, soldered together and decorated with simple, rough and irregularly disposed lines of granulation. The crescentic filigree consists of the finest twisted wires and ten of an original eleven little rings move freely where they are suspended. Presumably both parts were mounted on the same axis. Diameter of the ball 1.3 cm; Weights 1.1 and 0.9 grammes.

Berne, Bernisches Historisches Museum. – Literature: Drack 1959, 19; 21; 25.

Colourplate XIII page 40

35

36

37

Stallikon "Üetliberg", Canton Zürich
6th – 5th century B.C.

In the course of archaeological excavations in 1980 at the Uto-Kulm above Zürich a few fragments of Greek ware were found in ransacked layers. These were sherds of black-glazed Attic vessels of the 6th century B.C.

Presumably later (c. 500 B.C.) is a handle sherd of a black-figure krater (the so-called Kolonette krater), a Greek pottery type which had already come to light in 1840 while working in a garden.

36 *Handle sherd of an Attic, black-figure (?) Kolonette krater.*

37 *Sherds of black-glazed Attic (?) pottery.*

Zürich, Schweizerisches Landesmuseum/Kantonale Denkmalpflege, Kantonsarchäologie. – Literature: W. Drack, Die archäologischen Forschungen auf dem Üetliberg in den Jahren 1979–1984 (1988).

38

39

Châtillon-sur-Glâne, Canton Fribourg
550–450 B.C.

During excavations from 1974 to 1981 on a spur of rock where the Sarine and the Glâne join, south of Fribourg, a large body of native pottery was discovered as well as numerous sherds of imported vessels. There seems to have been very brisk trading activity in the settlement, possibly connected with shipping on the Saane.

38 *Sherds of dishes and kraters of Attic pottery* (Greece).

39 *Amphora sherds from Marseilles* (Southern France).

40 *Fragments of situlae from Este (?)* (Northern Italy).

41 *Sherd of a small glass bottle from Rhodes (?)*

Fribourg, Kantonaler Archäologischer Dienst/ Museum für Kunst und Geschichte. – Literature: H. Schwab, Châtillon-sur-Glâne. Ein Fürstensitz der Hallstattzeit bei Freiburg im Uechtland. *Germania* 53, 1975, 79ff.

40

41

42

Yverdon-Les Bains, Canton Vaud
c. 450 B.C.

During excavations in 1975 at the late Roman fortress of Eburodunum a small sherd of a Greek red-figure vessel of the first half of the 5th century B.C. was found in an already ransacked layer. Can it be that we are here, at the upper end of Lake Neuchâtel, dealing with a settlement of the latest Hallstatt Period or early La Tène times which included imported wares?

42 *Red-figured Attic potsherd.* Possibly from a chalice krater.

Lausanne, Musée cantonal d'archéologie et d'histoire. – Literature: G. Kaenel, A propos d'un point sur une carte de répartition. *AS* 7, 1984, 93ff.

43

Meikirch-Grächwil, Canton Berne
c. 580 B.C.

A burial mound, already dug into during sand quarrying, was investigated in 1851. It contained many remains, totally reduced to ashes, some of which could have belonged to early mediaeval times. Portions of wheels and wagons suggest one or more chariot burials while pieces of a bronze vessel revealed themselves to be parts of a hydria, a Greek water container.

43 *Hydria.* Bronze. A winged "mistress of the animals" forms an ornamental handle on the shoulder. In her hands she holds two hares and on either side sits a lion. An eagle, flanked by two lions, sits on her head. Only the upper portion of the vessel remains; the lower portion has been reconstructed.

Berne, Bernisches Historisches Museum. – Literature: H. Jucker, Altes und Neues zur Grächwiler Hydria. *Antike Kunst,* suppl. 9, 1973, 41ff.

Wohlen "Hohbühl", Canton Aargau
6th century B.C.

After various unscientific trial soundings a proper excavation of four burial mounds was carried out under the direction of E. Suter in 1926–1930. In Tumulus 1 there were several richly equipped inhumations, most of them of females. One of them contained bracelets of bronze and lignite, a belt, a fibula and a pin of bronze. In addition,the grave produced a sheet-bronze situla and two bowls with decorated rims.

44 *Two bronze bowls with beaded rims.* The wide rim is decorated with repoussé lines and little bosses as well as zigzags in rocked tracer technique. A local imitation of an Etruscan model or possibly even pure Etruscan.

Brugg, Vindonissa-Museum. – Literature: *Kelten im Aargau. Ausstellung im Vindonissa-Museum Brugg* (1982) 47.

Corminbœuf "Bois de Murat", Canton Fribourg
6th century B.C.

While digging the foundations for a building in 1903 a burial mound was cut into and then excavated by H. Breuil. There was a huge stone core, almost 2 m high and 18 m in diameter and under this on various locations about 20 pieces of tableware were found, some placed in each other. Rivets and bronze particles indicate further vessels but actual grave settings could not be established. A bronze leg portion came to light almost on the surface and this was probably a stand for a bronze vessel.

45 *Bronze leg.* Etruscan?

Fribourg, Museum für Kunst und Geschichte/ Kantonaler Archäologischer Dienst. – Literature: Drack 1964, 14ff.

44

45

48

46–47

Coffrane "Les Favargettes", Canton Neuchâtel
7th/6th century B.C.

In 1868 in sand quarrying a tumulus was removed and during the work various prehistoric objects were found, dating to both the Bronze Age and the Hallstatt Period, but no grave groups could be identified. Amongst the finds were included a deep sheet bronze bowl and a handled cup. They are either Etruscan or based on an Etruscan prototype.

46 *Hemispherical bowl.* Bronze. Rim bent inwards with two handles on the sides.

47 *Hemispherical cup.* Bronze. Rim decorated with strokes. Has a strip handle.

Neuchâtel, Musée cantonal d'archéologie. – Literature: Drack 1964, 29ff.

Worb-Richigen, Canton Berne
6th century B.C.

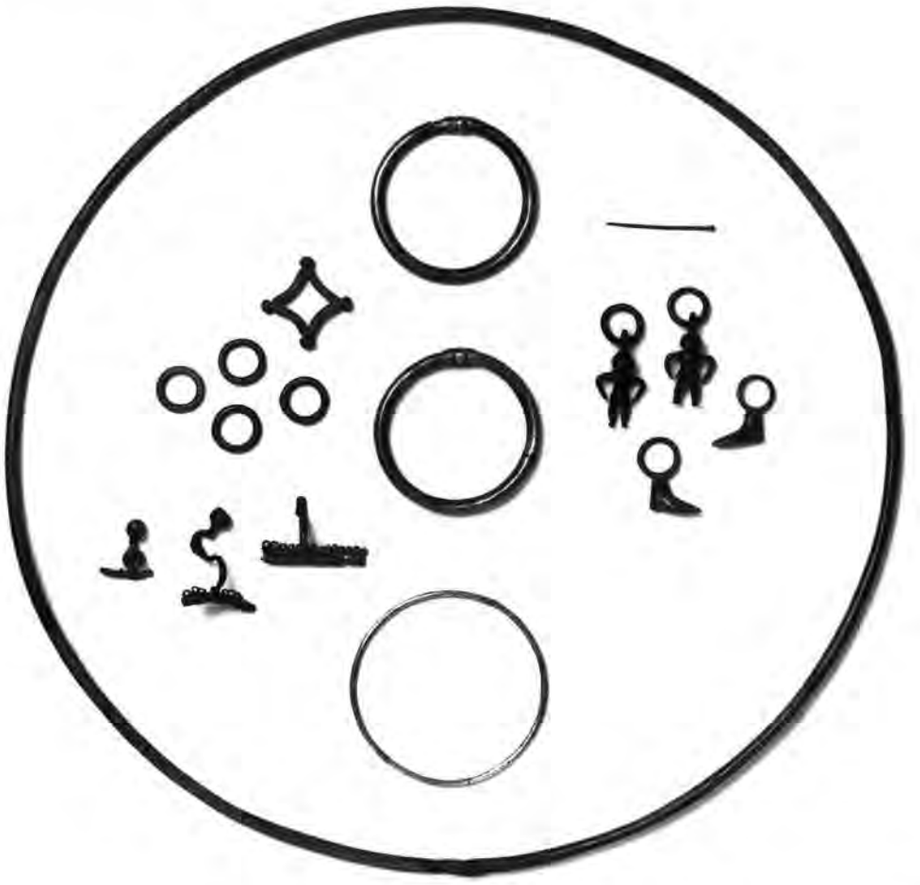
Two burial mounds were excavated about the middle of the 19th century, one of which contained a large stone core. Portions of a bronze cauldron and of bronze wire armlets are mentioned as being amongst the finds but it seems that they did not belong togehter. The armlets are lost but the cauldron pieces turned up again as the upper portion of a basin with handles. Vessels of this type are native to eastern Alpine areas.

48 *Bowl with cruciform attachments.* Bronze. Only the original upper portion remains, the lower part is a reconstruction. Rim decorated with strokes. Four cruciform attachments hold two twisted rings with swan-like, bent ends.

Berne, Bernisches Historisches Museum. – Literature: Drack 1960, 28f.

IV THE LA TÈNE PERIOD: 450 B.C. TO BIRTH OF CHRIST

Felix Müller



49

Unterlunkhofen "Bärhau", Canton Aargau
c. 450 B.C.

This, the most extensive mound cemetery in Switzerland, encompasses 63 burial mounds, of which No. 62 is the best preserved. It was excavated in the high summer of 1878 and, after only a few hours work, produced an unusual female grave. No documentation relating to the excavation itself was preserved so that many questions still remain without answers. Its main interest lies in the unusually varied collection of the women's jewellery.

49 *Two hollow armlets of silver plate.* The wide cuffs of the coupling clasp are gilt and are decorated with dotted designs of Andrew's Crosses and of "angled" lotus devices. Diameter of each 5.5 cm; Weights 15.7 and 200 grammes.

- Necklet (?) of stong smooth, bronze wire.
- Armlet, undecorated, of thin silver plate.
- Two bronze foot fibulae with wide spiral spring.
- Double-drum fibula with spherical head.
- Four small bronze rings.
- Pendant shaped like a rectangular frame with human figures (man and woman) as well as two shoes.

Zürich, Schweizerisches Landesmuseum. – Literature: C. Eluère et al., L'or et l'argent de la tombe de Vix. *Bulletin de la Société préhistorique française* 86, 1989, 27.

50a

Münsingen "Rain", Canton Berne
c. 400 B.C.

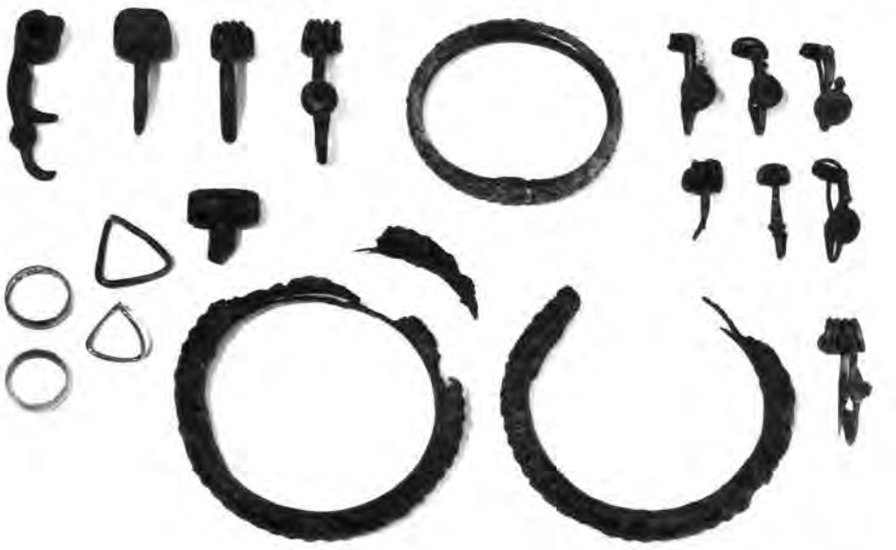
In 1906 a large cemetery containing over 200 flat graves was fully excavated. Much information was derived from the careful investigation and the conscientious records about the man, women and children buried there.

A girl between 7 and 14 years of age found in Grave 12 was accompanied by extremely wealthy ornaments.

50 *A golden finger ring ending in two hooks with a wavy band between them.* Worn on the right ring finger. Diameter 1.5 cm; Weight 1.2 g.
- Two necklets of bronze and iron.
- Necklace of 142 amber beads.
- Four fibulae of bronze and iron.
- Two bracelets of solid bronze.
- Two hollow anklets of sheet bronze.
- Numerous ornaments worn on the belt; one was a rectangular frame of bronze, one a glass bead with a white zigzag line and one a perforated disc of deer horn.

Berne, Bernisches Historisches Museum. – Literature: Hodson 1968.

50b



51–52

Münsingen "Rain", Canton Berne
c. 300 B.C.

Grave 102, also at Münsingen, contained a woman's body also. Her skeleton was in good condition when found but was not preserved.

51 *A bent-plane finger ring of gold wire on the ring finger of the right hand.* Diameter 1.6 cm; Weight 1.8 grammes.

52 *Gold finger ring made from a plain band of metal.* Also on the right ring finger. Diameter 1.7 cm; Weight 2.6 grammes.
- Two silver finger rings. On the right thumb and ring finger.
- Twelve fibulae of bronze and iron. Some covered with red glass and white coral.
- Hollow armlet of sheet bronze on right arm.
- Four hollow leg rings of sheet bronze, a pair on each ankle.

Berne, Bernisches Historisches Museum. – Literature: Hodson 1968.

53

54–57

58

Münsingen "Rain", Canton Berne
c. 250 B.C.

The settled community of Münsingen had buried their dead over a long period on the "Rain" when the woman of Grave 181 died. She was between 20 and 40 years old. Somewhat later a man of over 60 years of age was buried at the same spot but whether the two were related or not or whether they were married to each other can only be guessed at.

53 *Spiral finger ring of gold.* Notched pattern. On the right hand. Diameter 1.7 cm; Weight 9.7 grammes.
- Silver finger ring with disc-shaped setting which holds a piece of thin gold foil. On the right hand.
- Two spiral finger rings of silver, one on the left hand, one on the right.
- Four large bronze fibulae.
- Bracelet of blue glass on right forearm.
- Small bronze ring, on the breast.

Berne, Bernisches Historisches Museum. – Literature: Hodson 1968.

Horgen "Thalacker", Canton Zürich
c. 200 B.C.

In 1840 or 1841 during road-widening operations the grave of a woman came to light in circumstances no longer clear. It is possible that not all the grave-goods then present were recovered and, indeed, a mixing with another grave found in 1842 at the same place cannot be entirely excluded.

54 *Finger ring of gold wire with ornamental plate wound in spiral form.* Diameter 1.5 cm; Weight 3.4 grammes.

55 *Spiral finger ring of gold.* Light ribbing. Diameter 1.7 cm; Weight 2.9 grammes.

56 *Spiral finger ring of gold.* Light ribbing. Diameter 1.6 cm; Weight 1.4 grammes.

57 *Gold coin.* Quarter stater of Horgen-Unterentfelden Type. Obverse: head with laurel wreath; reverse, horse and driver with whip; symbol, wheeled animal. Diameter 1.7 cm; Weight 1.88 grammes; position of stamp 270°
- Silver fibula.
- Pottery vessel. Lost.

Zürich, Schweizerisches Landesmuseum. – Literature: Castelin 1976, no. 886; J. Bill, Die latènezeitlichen Gräber von Horgen. *ZAK* 38, 1981, 173–177; Polenz 1982, 69–72.

Colourplate XXII page 70

Muri-Mettlen "Widmannstrasse", Canton Berne
c. 150 B.C.

The grave of a fashionable lady was excavated carefully in 1929 after a preceding one had been destroyed.

58 *Finger ring of beaded gold wire.* Ornamen-

tal plate wound spirally. On the right hand. Diameter 1.8 cm; Weight 8 grammes.
- Two spiral finger rings of silver. On the left hand.
- Three large bronze fibulae of Mötschwil Type. From region of neck and shoulder.
- Two small bronze fibulae with wide spiral springs. From the middle of the breast.
- Bracelet of brown glass. Beside the left elbow.
- Amber bead. Lost.

Berne, Bernisches Historisches Museum. – Literature: *JbSGUF* 21, 1929, 72f.; O. Tschumi, Latènegräber von Muri–Mettlen. *JbBHM* 9, 1929, 57–60.

59–65

Erstfeld "Ribitäler", Canton Uri
c. 300 B.C.

The seven-piece collection of gold rings was found in 1962 during works pertaining to repairs after an avalanche. The site lies on an impassable precipice on the right side of the Reuss valley. The rings were hidden under a large block of stone, the whole covered by an 8 meter high deposit which in the course of centuries had been deposited as a result of avalanches.

This is probably a case of an especially valuable dedicatory offering to an unknown mountain divinity. All the seven rings are made of sheet gold and lavishly decorated. Together they weigh 639.8 grammes.

59 *Necklet.* The detachable fastening portion takes up almost half the circumference of the collar and is secured to the rear portion with two plug-fasteners. For security a stop rod is attached to the side. There is a wide ornamental area with an openwork pattern consisting of a maze of fabulous creatures in human and animal form. A bird in a central position is flanked by two heads mounted between smooth clubs. On both sides there are widely dislocated limbs and on the outside two heads with horns, a twisted moustache and pointed ears. Each terminal is shaped as an animal's head with wide-open mouth and a twisted horn. Apart from two palmette designs and abstract facial features the back is smooth. Diameter 16.4 cm; Weight 127.8 grammes.

60 *Necklet.* Apart from its more rounded general shape and some deviations in the ornamental details of the central bird, it closely resembles necklet 59. Diameter 15. 3 cm; Weight 128 grammes.

61 *Necklet.* Similar in general appearance to the two just listed. Only half of the ornamental area can be moved for opening. One terminal is joined to the back with a plug, the other is fixed with a little peg. The two "club heads" press forehead to forehead against each other. On either side there follows a manlike fabulous creature and a bird with a long tail. Finally, there is a simpler animal head, this time with straight horns. The back, normally smooth, carries palmette designs and chessboard patterns. Diameter 17.3 cm; Weight 124.4 grammes.

62 *Necklet.* Differs from the other specimens through its more unpretentious shape. About half the ring consists of a movable ornamental section which is held in position by a plug and a peg. The narrow decorative portion has a "pseudo-buffer" in the middle, after which there are animal heads with spring bodies hardly indicated; from this grows a closing palmette and a similar palmette shape occurs also on the smooth back portion. Diameter 16.3 cm; Weight 125 grammes.

63 *Armlet.* Hollow ring of plate with plug fastening. The spherical fastening is decorated with a wavy line and dotted ornament. The outer surface of the ring is treated in a plastic manner and bears a "running dog", a plant-like wavy pattern of typical Celtic execution. Diameter 7.8 cm; Weight 37.9 grammes.

64 *Armlet.* Only barely distinguishable from Armlet 63. There is a hole for a peg in the spherical fastening. The "running dog" moves as a mirror image. Diameter 7.8 cm; Weight 37 grammes.

65 *Armlet.* Fastened by an asymmetrical plug with a perforation for a peg. Two small "pseudo-buffers" divide the ring into two equal parts. These are flanked on each side by a horned face mask, looking outwards and, like a beard, turning into a palmette. Diameter 7.8 cm; Weight 59.7 grammes.

Zürich, Schweizerisches Landesmuseum. – Literature: R. Wyss, Der Schatzfund von Erstfeld. Archaeologische Forschungen (1975); F. Müller, Zur Datierung des Goldschatzes von Erstfeld. *JbSGUF* 73, 1990, 83–94.

Colourplate VI, VII and XXIII
Pages 12, 15 and 77

66 – 70

Saint-Louis near Basle, France
c. 100 B.C.

There are only sparse details available of the discovery and composition of the hoard of gold objects as it came only gradually into antique dealers' hands and as the original finders prefered to remain anonymous. However, a reconstruction based on the evidence available allows the following to be suggested: Probably about the end of 1882 or beginning of 1883 a flood water cleared the banks of the Rhine between Basle and Saint-Louis. Those workers charged with putting the matter to rights noticed the objects and sold them later in various places. All the ring ornaments belong certainly to this complex but many coins are of more doubtful origin.

One of the collars must have been particularly large: with the other precious objects it could easily have served as a votive offering to a divinity.

66 *Swollen double buffer clasp of a large collar of sheet gold.* Internal diameter as reconstructed c. 27 cm; Weight 75.8 grammes.

67 *Half the ring and swollen buffer clasp of a smaller necklet of sheet gold.* The clasp to be reconstructed at the back is missing. Internal diameter as reconstructed c. 13.4 cm; Weight unknown.

68 *Armlet of forged, twisted, smooth gold wires.* The ends which grip each other are fastened to each other by eleven spirals. Greatest diameter 8.6 cm; Weight 50.2 grammes.

69 *Two small rings of gold wire.* Probably finger rings. Diameters 1.8 and 1.9 cm; Weights 1.2 and 4.5 grammes.

70 *Gold coins.* Various "rainbow dishes" (Regenbogenschüsselchen) and "ball staters".

Saint-Germain-en-Laye, Musée des Antiquités Nationales. – Literature: A. Furger-Gunti, Der «Goldfund von Saint-Louis» bei Basel und ähnliche keltische Schatzfunde. *ZAK* 39, 1982, 1–47.

Böttstein "Hardwald", Canton Aargau
c. 200 B.C.

According to reports from the year 1954 the iron sword was found about eight years previously under a tree root during land clearance operations. An "iron arrowhead with barbs", found by one of the forestry workers, was later lost without being more closely investigated.

Hammer or punch marks are frequently to be noted on Celtic swords and indicate magical battle concepts. They are only rarely plated with gold.

71 *Iron sword with tang and bell-shaped guard.* The sheath is missing. On the end of the blade there are on one face two and on the other one mark in the shape of a wild boar with powerful back bristles and snout directed towards the blade point. They are covered with heavy gold plating. Total length of sword 84.4 cm.

Zurzach, Messe- und Bezirksmuseum. – Literature: W. Drack, Ein Mittellatèneschwert mit drei Goldmarken von Böttstein (Aargau). *ZAK* 15, 1954/55, 193–236.

71

Uitikon-Üetliberg "Sonnenbühl",
Canton Zürich
c. 400 B.C.

The burial mound crowning an exposed steep declivity in front of and visible from the approximately contemporary settlement on the Uto-Kulm. A complete excavation in 1979 produced few concrete facts and even those difficult of interpretation as the burial place had already been robbed when found.

The three golden discs indicate the presence not merely of a "princely" person but also suggest what precious objects must have fallen into the hands of the grave robers. Little is still known about the background to grave plundering.

72 *Gold disc fibula.* The thin ornamental piece of sheet metal bears a punched rosette design enclosed within two concentric beaded strips. It is fastened to the iron base with a fixative containing resin in conical shape and on it are the constructional parts of the fibula itself – bow, footrest and wide spring. Diameter 2.6 cm; Weight 4.3 grammes.

73 *Disc of plate gold.* There is a wide ornamental zone with four three-leaved lotus blossoms with four heart-shaped patterns between them. In each case fastened with a beaded strip both outside and within. A hole in the centre. Possibly a decorative mount for a disc fibula. Diameter 2.6 cm; Weight 0.3 gramme.

74 *Small disc of thin gold foil.* From the inside to the outer edge are a beaded circle and a beaded bordering strip, concentrically arranged. Bored in the centre. The outer edge is flanged. The disc fitted originally on a tinned iron base, which could not be preserved. This served as a strap mount on a drinking horn. Diameter 1 cm; Weight 0.03 gramme.

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Zürich, Schweizerisches Landesmuseum. – Literature: W. Drack, Der frühlatènezeitliche Fürstengrabhügel auf dem Üetliberg. *ZAK* 38, 1981, 1–28.

Colourplate XX page 66

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76

Schalunen, "to the west in the village above", Canton Berne
c. 100 B.C.

The armlet was found during ploughing in 1864 and kept by a boy as a curiosity. Fifty years before the discovery the site is said to have been a meadow with oak trees. Two small, mound-like elevations about 50 paces apart were dug and ploughed up later. No further discoveries were reported.

The gold ring was probably an offering to an unknown divinity which was honoured at this spot.

75 *Armlet of smooth gold wire* the terminals of which grip each other and are wound in spiral fashion round the body of the ring itself. Its width could thus be changed at will. Diameter 7.3 cm; Weight 88.9 grammes.

Berne, Bernisches Historisches Museum. – Literature: J. Uhlmann, Goldener Armring von Schalunen, untenher Fraubrunnen, Kant. Bern. *Archiv des Historischen Vereins des Kantons Bern* 6, 1865, 297–303 with pl.; S. Rieckhoff-Pauli, Der Lauteracher Schatzfund aus Archäologischer Sicht. *Numismatische Zeitschrift* 95, 1981, 15.

Colourplate XI page 31

Muttenz "Margelacker", Canton Basleland
c. 350 B.C.

Over decades grave finds came to light time and again in the same sand pit and with these must be included a bronze fibula discovered in 1878. Unfortunately, there are no associated finds and no further information has been preserved. Such would have been of especial interest as the fibula was cast in a very carefully made mould and because gold appliqué designs as here are not otherwise generally known.

76 *Bronze fibula with maggot-shaped and dotted bow.* The applied disc of glass, formerly translucent red, is secured by a rivet, the rosette-shaped head of which is gold plated. Length 8.1 cm; Weight 24 grammes.

Basle, Historisches Museum. – Literature: F. Müller, Die frühlatènezeitlichen Flachgräber der Kantone Baselstadt und Baselland. *JbSGUF* 64, 1981, 89.

Worb-Richigen "Stockeren", Canton Berne
c. 200 B.C.

In 1907 a gold ring, either for the hair or the ear, was found beside the left temple of a skeleton in its grave. The person buried here was a 40- to 60-year old man and buried with him was his complete warrior's outfit, including a sword in its sheath, a spear measuring 1.60 m long and a wooden shield of which only a few pieces still remained. Fragments of fibulae were also mentioned. Apart from the small gold ring all other objects were lost.

The ring was worn either in the ear or bound into the hair, both equally applicable to the male of the time.

77 *Hair ring made of three finely ribbed gold wires, twisted together.* The ends of the wires are rough and separated from each other and form neither a clasp nor an ear fixture. External diameter 1.7 cm; Weight 4 grammes.

Berne, Bernisches Historisches Museum. – Literature: *JbBHM* 1907, 20ff.

Basle "Gasfabrik", Canton Basle City
c. 100 B.C.

Excavations have been taking place regularly since 1911 in the Celtic settlement near the gasworks. The archaeological finds come to light usually in pits, one of which, Pit 230, was extensive and was most likely used as a storage cellar. At a later stage, when the pit was filled in, a young woman was buried here. To her probably belonged originally the piece of sheet gold.

78 *Piece of sheet gold, badly crumpled.* Probably one half of a small hollow ring used as a pendant. Length 1.2 cm; Weight 2 grammes.

Basle, Historisches Museum. – Literature: G. Böckner, *Basler Zeitschrift für Geschichte und Altertumskunde* 76, 1976, 221–235.; A. Furger-Gunti and L. Berger, Katalog und Tafeln der Funde aus der spätkeltischen Siedlung Basel-Gasfabrik. *Basler Beiträge zu Ur- und Frühgeschichte* 7, 1980, no. 287.

In comparison with other places the ladies of Central Switzerland had a particular preference for finger rings, as shown by their more frequent occurrence in burials. A considerable number have been recovered in the Gürbe and Aar valleys between Berne and Lake Thun. They occur frequently as complete sets of up to four specimens, worn for preference on the ring- and middle fingers of the right hand. The women who possessed gold finger rings had also sets of leg and arm ornaments of bronze or glass through which they were able to distinguish themselves from their less richly and less comprehensively ornamented contemporaries.

This indicates significant differences in the material possessions and thus presumably in the social distinctions of the wearers of the ornaments. It was only rarely that men wore rings on their fingers.

Celtic finger rings are usully made of profiled or smooth gold wire, frequently worked into artistic knots or interlacings. Thin, flat strips of gold are also noted while finger rings with individual ornamental plates are rarer.

Literature: P. Jacobsthal, *Early Celtic Art* (1944); P.J. Suter, Neuere Mittellatène-Grabkomplexe aus dem Kanton Bern. *JbSGUF* 67, 1984, 73–93; O. Tschumi, *Urgeschichte des Kantons Bern* (1953).

79 *Bent-plane finger ring with clearly marked hammer strokes on the inner face.* From a man's grave.
Münsingen "Rain", Grave 64, Canton Berne.
Diameter 2 cm; Weight 4.4 grammes.
– Berne, Bernisches Historisches Museum.

80 *Bent-plane finger ring of band-shaped wire.*
Worb-Richigen "Stockeren", Grave 4, Canton Berne.
Diameter 1.7 cm; Weight 2.6 grammes.
– Berne, Bernisches Historisches Museum.

81 *Bent-plane finger ring of flat section.* Find-place unknown.
Diameter 1.9 cm; Weight 5.5 grammes.
– Berne, Bernisches Historisches Museum.

82 *Broad finger ring of thin gold plate.*
Münsingen "Rain", Grave 140, Canton Berne.
Diameter 1.7 cm; Weight 2.1 grammes.
– Berne, Bernisches Historisches Museum.

83 *Spiral finger ring with profiled central rib.*
Belp "Dorf 1904", Canton Berne.
Diameter 1.8 cm; Weight 3.6 grammes.
– Berne, Bernisches Historisches Museum.

84 *Spiral finger ring with twisted central portion.*
Bern-Bümpliz "Morgenstrasse", Grave 1, Canton Berne.
Diameter 1.6 cm; Weight 3.6 grammes.
– Berne, Bernisches Historisches Museum.

85 *Spiral finger ring made of two twisted wires.*
Bern "Spitalacker", Grave 2, Canton Berne.
Diameter 1.7 cm; Weight 3.7 grammes.
– Berne, Bernisches Historisches Museum.

86 *Spiral finger ring with profiled central portion.*
Kirchenthurnen, Canton Berne.
Diameter 1.7 cm; Weight 4.7 grammes.
– Berne, Bernisches Historisches Museum.

87 *Spiral finger ring of smooth wire.*
Kirchenthurnen, Canton Berne.
Diameter 1.8 cm; Weight 7.6 grammes.
– Berne, Bernisches Historisches Museum.

88 *Spiral finger ring with coils soldered together.*
Münsingen "Rain", Grave 164, Canton Berne.
Diameter 1.8 cm; Weight 3.5 grammes.
– Berne, Bernisches Historisches Museum.

89 *Spiral finger ring with fine dotted ornament.*
Muri-Mettlen "Widmannstrasse", Grave 1, Canton Berne.
Diameter 2 cm; Weight 8 grammes.
– Berne, Bernisches Historisches Museum.

90 *Spiral finger ring with notched central portion.*
Stettlen-Deisswil, Grave 1, Canton Berne.
Diameter 1.5 cm; Weight 7 grammes.
– Berne, Bernisches Historisches Museum.

91 *Spiral finger ring with profiled midrib.*
Stettlen-Deisswil, Grave 5–7, Canton Berne.
Diameter 1.7 cm; Weight 8 grammes.
– Berne, Bernisches Historisches Museum.

92 *Spiral finger ring of smooth wire.*
Worb-Richigen "Stockeren", Grave 4, Canton Berne.
Diameter 1.8 cm; Weight 4.5 grammes.
– Berne, Bernisches Historisches Museum.

93 *Spiral finger ring with clear hammer marks.*
Vevey, "En Crédeyle", Grave 8, Canton Vaud.
Diameter 1.4 cm; Weight 1.8 grammes.
– Vevey, Musée du Vieux-Vevey.

94 *Spiral finger ring with punched triangles.*
Vevey "En Crédeyle", Grave 9, Canton Vaud.
Diameter 1.5 cm; Weight 3.1 grammes.
– Vevey, Musée du Vieux-Vevey.

95 *Spiral finger ring of smooth wire.*
Vevey "En Crédeyle", Grave 9, Canton Vaud.
Diameter 1.6 cm; Weight 7.5 grammes.
– Vevey, Musée du Vieux-Vevey.

96 *Wire finger ring with ornamental plate and three small balls.*
Spiez "Spiezmoos", Grave 2, Canton Berne.
Diameter 1.6 cm; Weight 0.6 gramme.
– Berne, Bernisches Historisches Museum.

97 *Plate finger ring with repoussé spiral designs.*
Etoy, Canton Vaud.
Diameter 2.1 cm; Weight 5.4 grammes.
– Geneva, Musée d'art et d'histoire.

98 *Silver finger ring with gilt ornamental plate on which a little horse with long ears is portrayed.* On the back and the belly there is a triskele and, on the breast, a wavy line.
Oberhofen "Schönörtli", Canton Berne.
Diameter 1.9 cm; Weight 2.2 grammes.
– Berne, Bernisches Historisches Museum.

Colourplate XVI page 48

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While gold as basic material was frequently used for the production of personal ornaments silver, apart from certain finger ring types, is largely missing. In Ticino the situation was exactly the opposite. Here gold objects are completely missing while silver craftsmanship enjoyed a real blossoming. Silver wires, bent and knotted, were worked into armlets and finger rings of varying kinds and fibulae were also made of silver. Decorative objects from the extensive cemetery at Giubiasco, excavated at the turn of the century, provide a good example of what Ticino produced.

This "Wire Style" extended also to Valais where the same types of ring also occur. As well as this, a separate tradition in bracelets with strong hollow bosses is found in the Rhone valley.

The above mentioned ornaments from Ticino and Valais display the love of the inner Alpine communities for heavy and large pieces of ornament. This peculiarity of style exerted its influence over the Alps and into the Bernese Oberland, as a series of heavy spiral finger rings from Oberhofen on Lake Thun demonstrates.

99 *Massive silver ornaments from Ticino.* The majority between 250 and 50 B.C.

Giubiasco, Graves 1–100

- Five spiral finger rings. Diameters 1.7, 1.8, 1.8, 2.0 and 2.0 cm; Weights 13.8, 8.7, 14.3, 3.3 and 28.3 grammes.
- Band-shaped finger ring with D-shaped section. Diameter 1.7 cm; Weight 5.7 grammes.
- Finger ring with round ornamental plate. Diameter 1.6 cm; Weight 2.7 grammes.
- Two armlets of silver with adjustable widths. Diameters 5.2 and 6.8 cm; Weights 9.8 and 43.1 grammes.
- Three silver armlets. Each made of a single wire twisted and knotted. Diameters 5.9, 6.2 and 6.4 cm; Weights 49.3, 114.8 and 95.2 grammes.
- Four undulating armlets of silver. Of smooth wire. Diameters 5.8, 6.3, 6.4 and 6.5 cm; Weights 63.2, 41.6, 35.3 and 63.0 grammes.
- Five silver bent-plane armlets of smooth wire. Diameters 4.3, 6.3, 6.3, 6.4 and 7.8 cm; Weights 8.4, 86, 75.3, 7.8 and 89.1 grammes.
- Spiral armlet of silver. Engraved with dots and strokes. Diameter 7.2 cm; Weight 40.5 grammes.
- Silver armlet. Smooth outer surface. Diameter 7 cm; Weight 23.4 grammes.
- Two annular anklets. Diameters 8.5 and 8.7 cm; Weights 38.4 and 34.4 grammes.
- Four silver fibulae. With arched bows and wide springs. Lengths 8.5, 9.3, 9.5 and 9.7 cm; Weights 52.1, 46.4, 52.5 and 50.7 grammes.
- Silver ear pendant (?). Of looped wire with four spherical beads. L. 3.3 cm; Weight 2.9 grammes.

Zürich, Schweizerisches Landesmuseum. – Literature: R. Ulrich, *Die Gräberfelder in der Umgebung von Bellinzona, Kt. Tessin* (1914); A. Crivelli, La Necropoli di Giubiasco. *Rivista archeologica dell'antica provinca e diocesi di Como* 159, 1977, 5–98.

Colourplate XXIV pages 80 and 81

100 (Jsérables)

100 (Lens)

100 (Vollèges)

100 (Siders)

100 (Leukerbad)

101

100 *Massive silver ornaments from Valais*
Mostly c. 200 to 100 B.C.

Isérables
- Silver bracelet. Consists of a single twisted and knotted wire, of which neither beginning nor end is visible. Diameter 8.4 cm; Weight 158. 5 grammes.
- Berne, Bernisches Historisches Museum.

Vollèges "Le Levron"
- Silver bracelet made from a single wire. Diameter 5.1 cm; Weight 6.0 grammes.
- Sitten, Archäologisches Museum des Wallis.

Siders "Cûchon"
- Silver bracelet. Body and pronounced bosses hollow on inner face. Diameter 5.9 cm; Weight 140.9 grammes.
- Zürich, Schweizerisches Landesmuseum.

Lens "La Bouilletaz"
- Bent-plane bracelet made from a single wire. Diameter 5.5 cm; Weight 16.0 grammes.
- Sitten, Archäologisches Museum des Wallis.

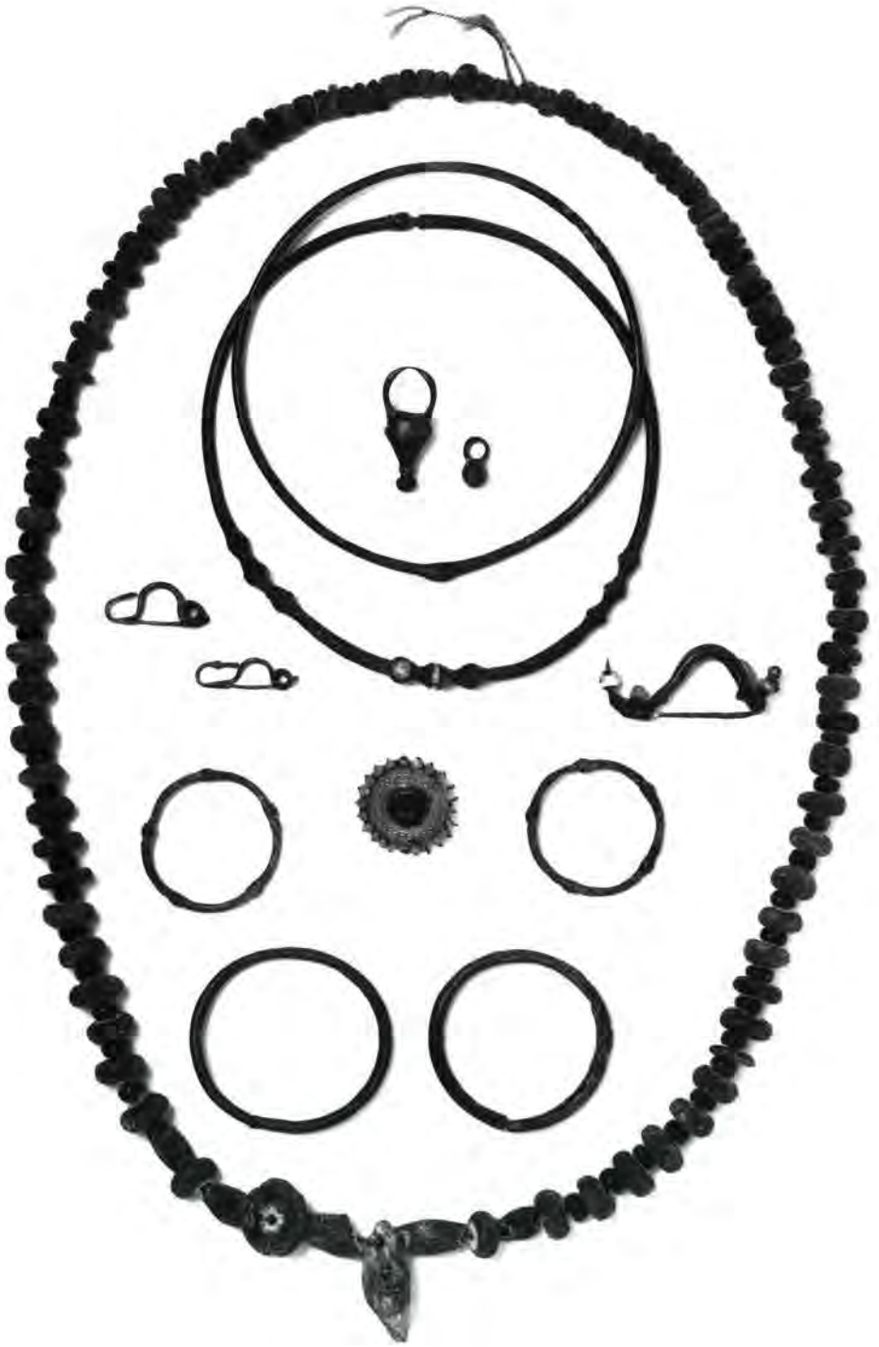
Leukerbad
- Silver armlet. The body and the removable clasp with powerful bosses are hollow. Diameter 5.9 cm; Weight 150.4 grammes.
- Zürich, Schweizerisches Landesmuseum.

Literature: S. Peyer, Zur Eisenzeit im Wallis, *Bayerische Vorgeschichtsblätter* 45, 1980, 59–76; G. Kaenel and S. Peyer, in: Le *Valais avant l'histoire* (1986) 112–123.

101 *Massive silver ornaments from the Bernese Oberland*
c. 200 B.C.

Oberhofen "Schönörtli", Canton Berne.
- Spiral finger ring of silver. Midrib on the outer surface with fine, D-shaped punch marks. Diameter 1.7 cm; Weight 7.8 grammes.
- Spiral finger ring of silver. Smooth outer surface. Diameter 1.8 cm; Weight 10.5 grammes.
- Spiral finger ring, silver. Smooth outer surface. Diameter 1.7 cm; Weight 13.7 grammes.
- Spiral finger ring, silver. Outer surface smooth. Diameter 2.0 cm; Weight 12.7 grammes.
- Spiral finger ring, silver. Outer face smooth. Diameter 1.8 cm; Weight 7.2 grammes.

Berne, Bernisches Historisches Museum. – Literature: G. de Bonstetten, *Recueil d'Antiquités Suisses* (1855) 48. Pl. 28.



102a

102b

Saint-Sulpice "En Pétoleyres", Canton Vaud
c. 400 B.C.

The largest Celtic cemetery of western Switzerland was uncovered at Saint-Sulpice from 1912 to 1914. It contained about 100 graves. Though the skeleton in Grave 48 was almost completely decayed its length could be established at 1.40 m This suggests a young person, still growing, and, because of the nature of the ornaments, probably a girl.

102 *Disc fibula with gold-foil covering, an amber bead in the middle and radial coral spheres.* The basal plate and fastening devices are of bronze. Found on the neck. Diameter 4.1 cm; Weight 18.4 grammes.

- Necklet of bronze with white inlays (bone?) and fastening arrangement at the back of the neck.
- Diadem? Annular bronze ring.
- Necklace of 157 glass and amber beads.
- Bronze fibula with red coral insets. Found on the breast.
- Two bronze fibulae (Marzabotto Type). Found near the pelvis.
- Two bronze pendants of "little basket" shape. Resting on the navel.
- Two armlets of heavy bronze.
- Two anklets of sheet bronze.

Lausanne, Musée cantonal d'archéologie et d'histoire. – Literature: J. Gruaz, Le cimetière gaulois de Saint-Sulpice (Vaud). *ASA* 16, 1914, esp. 268f.; F. Müller, Die frühlatènezeitlichen Scheibenhalsringe. *Römisch-Germanische Forschungen* 46, 1989, 104.

103

Giubiasco, Canton Ticino
c. 300 B.C.

During the excavation of the large necropolis of Giubiasco in 1901 some of the graves were examined competently and thoroughly documented. Grave 110 had been carefully enclosed and covered by stone slabs. All the bones had decayed. The manner of wearing the ornaments can be deduced from their positions in the grave. Their style and number suggest that the person buried was female. Two pottery vessels stood at the feet of the corpse.

103 *Ornaments:*
- Bronze necklet with inverted terminals.
- Necklace of 32 amber beads.
- Two ear pendants with amber beads.
- Four fibulae of Sanguisuga Type. Rested on the shoulder and neck.
- Three bronze rings on the left arm.
- Belt ring (?) of iron. Beside the right hand.
- Pendant made from eight glass beads and nine bulging rings as well as one swallow-tail and one cogged-wheel pendant. Beside the right knee.

Zürich, Schweizerisches Landesmuseum. – Literature: R. Ulrich, *Die Gräberfelder in der Umgebung von Bellinzona, Kt. Tessin* (1914).

104

Frauenfeld-Langdorf, Canton Thurgau
c. 150 B.C.

In removing gravel from a pit graves were constantly being destroyed until in 1908 one was properly investigated. Of the skeleton only the leg bones and skull remained and these allowed for the conclusion that the grave was that of a female who died at the age of 30 to 40 years.

The woman had a gold coin (for her journey to the other world) and this amongst the Celts was something of rare occurrence.

104 *Gold coin.* Quarter stater of Horgen-Unterentfelden Type. Obverse: Head with laurel-leaf wreath; reverse, horse with driver and whip; symbol, animal on wheels. Lay apparently "between the teeth". Diameter 1.58 cm; Weight 1.89 grammes; angle of stamp 45°
- Large bronze fibula, resembling Mötschwil Type. Beside the skull.
- Two small bronze fibulae. On the breast.
- Two amber beads of different sizes. In the region of the waist.
- Armlet of blue glass. On the left elbow.
- Armring of sheet bronze. On the left wrist.

Zürich, Schweizerisches Landesmuseum. – Literature: D. Viollier, Die gallischen Gräber in Langdorf bei Frauenfeld (Thurgau). *ASA* 12, 1910, 1–6; Castelin 1976, no. 894; Polenz 1982, 74f.

If bronze ornaments are worn continually or even cleaned and polished regularly they acquire a surface which closely resembles gold. The green patina which archaeological finds get is occasioned by being deposited in the soil.

The exact copies of ornaments made in 1991 are worn by three figures based as closely as possible on their former owners at Saint-Sulpice VD, Giubiasco TI and Frauenfeld TG. The different groups of ornaments correspond to the style of the times in which they were worn.

The garments were reconstructed according to the manner of wearing the fibuale as these occurred originally in the graves. The same female apparel is represented on tombstones in the Middle Rhine region and in Pannonia (Hungary) in Roman times. Actual garments have occasionally been found in Danish bogs.

A cylindrical dress was worn over a tailored undergarment and this dress was fastened by fibulae on shoulder and breast. Should the "cylinder" be excessively long its upper end can be turned over and worn in two layers on the breast. Such a garment was called a "peplos" by the Greeks.

105 *Replica of a girl from Saint-Sulpice, c. 400 B.C.*

106 *Replica of a mature woman from Giubiasco, c. 300 B.C.*

107 *Replica of a woman of between 30 and 40 years of age from Frauenfeld, c. 150 B.C.*

Zürich, Schweizerisches Landesmuseum.

105–107

106

V CELTIC COINS

Hortensia von Roten

Commentary to coin catalogue

The selection of coins presented here gives a representative view of the Celtic coins found in this country which were minted either by Celts in the territory of modern Switzerland or circulated at that time here. They cover a period of some 200 years, from the end of the 3rd century to the end of the 1st century B.C.

The coins are grouped according to typological and geographical criteria. As most of them are preserved in the collections of the Swiss National Museum the ordering of them, as proposed by Karel Castelin in his publication, *Keltische Münzen-Katalog der Sammlung des Schweizerischen Landesmuseums Zürich (1976),* has been adopted, even if certain aspects still remain open for discussion.

For each coin are given type, metal, weight diameter and stamp. These details are followed in each case by a description of obverse and reverse faces.

The Greek model:
The gold stater of Philip II of Macedon (359–336 B.C.)

108 Stater, Au, 8.62 g, 18.7 mm, 330°
Philip II of Macedon, 359–336 B.C.
Obv. Head of Apollo with laurel wreath, looking right. Rev. carriage with two horses, facing right, charioteer with whip, trident under the horses, the name of the conqueror, Philip, in Greek script.

Zürich, Schweizerisches Landesmuseum, Amiet Coll. – Literature: Jenkins 1972, fig. 232/235.

Colourplate XXVI page 89

Early copies of the stater of Philip from 3rd century B.C.

109 Stater, Au, 8.45 g, 18 mm, 330°
Obv. Head with laurel wreath, looking right.
Rev. carriage with two horses facing right, driver with whip, cantharos under the horses, inscription below base line.
Find-place: "On the upper Rhine".

New York, The American Numismatic Society, Inv. no. 944.100.71839. – Literature: Allen 1974, no. 7.

110 111

110 Stater, Au, 8.40 g, 19.1 mm, 135°
Obv. and Rev. similar to Cat. 109.
Find-place: Stein am Rhein, Canton Schaffhausen.

Zürich, Schweizerisches Landesmuseum, Inv. no. LM A1149. – Literature: Castelin 1976, no. 374.

111 Stater, Au, 8.32 g, 18.6 mm, 300°
Obv. Head with laurel leaves, facing right, in beaded circle.
Rev. Similar to Cat. 109, decoration behind driver, unclear monogram under the horses.
Find-place: near Basle.

Zürich, Schweizerisches Landesmuseum, Inv. no. LM A 1418. – Literature: Castelin 1976, no. 377.

112 Stater, Au, 8.34 g, 16.9 mm, 45°
Obv. as Cat. 109.
Rev. as Cat. 109. Trident under the horses.
Find-place: Canton Zürich.

Zürich, Schweizerisches Landesmuseum, Inv. no. ZB 1031. – Literature: Castelin 1976, no. 379.

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113 Stater, Au, 8.35 g, 18.6 mm, 315°
Obv. curly head, facing left, deep gash (clipped).
Rev. Two-horse carriage, facing left, driver with whip, unclear symbol below the horses, degenerate inscription below the base line.
Find-place: Bregenz, Austria.

Zürich, Schweizerisches Landesmuseum, Inv. no. LM A 1152. – Literature: Castelin 1976, no. 380.

114 Half stater, Au, 4.12 g, 15.1 mm, 315°
Obv. Head with laurel wreath, facing right.
Rev. two-horse carriage with driver, facing right, lightning and monogram under the horses, inscription and ear of corn below.
Find-place: Stäfa, Canton Zürich.

Zürich, Schweizerisches Landesmuseum, Inv. no. LM A 1194. – Literature: Castelin 1976, no. 382.

115 Quarter stater, Au, 2.13 g, 12.3 mm, 45°
Obv. Head with laurel wreath, looking right.
Rev. horse, looking right, charioteer with whip, monogram under the horse, lightning and leaf.
Find-place: near Neuchâtel.

Zürich, Schweizerisches Landesmuseum, Inv. no. M 12982. – Literature: Castelin 1976, no. 385.

116 Quarter stater Au, 2.03 g, 11.2 mm, 225°
Obv. Curly head, looking right, cut.
Rev. as Cat. 115, below the horse disc with rays and lightning, traces of an inscription below.
Find-place: Stäfa, Canton Zürich.

Zürich, Schweizerisches Landesmuseum, Inv. no. LM A 1183. – Literature: Castelin 1976, no. 389.

117 Quarter stater, Au, 2.05 g, 13.8 mm, 270°
Obv. as Cat. 115.
Rev. Two-horse carriage with driver, looking right, a six-spoked wheel below the horses.
Find-place: Stäfa, Canton Zürich.

Zürich, Schweizerisches Landesmuseum, Inv. no. LM A 1182. – Literature: Castelin 1976, no. 399.

118 Quarter stater, Au, 2.07 g, 11.9 mm, 360°
Obv. and Rev. similar to Cat. 115.
Find-place: Stäfa, Canton Zürich.

Zürich, Schweizerisches Landesmuseum, Inv. no. LM A 1189. – Literature: Castelin 1976, no. 402.

119 Quarter stater, Au, 1.91 g, 12.6 mm, 70°
Obv. as Cat. 115.
Rev. Horse with driver, looking to right, monogram AP below the horse.
Find-place: Morges, Canton Vaud.

Lausanne, Cabinet des médailles, Inv. no. 283. – Literature: Allen 1974, no. 23.

120 Quarter stater, Au, 2.01 g, 12.2 mm, 315°
Obv. similar to Cat. 115.
Rev. as Cat. 119
Find-place: Tägerwilen (fortress), Canton Thurgau.

Zürich, Schweizerisches Landesmuseum, Inv. no. AG K 42. – Literature: Castelin 1976, no. 404.

121 Quarter stater, Au, 2.05 g, 11.6 mm, 45°
Obv. as Cat. 115.
Rev. Two-horse carriage facing right, driver with whip, cantharos below the horses, below this traces of an inscription.
Find-place: Muttenz, Canton Basleland.

Zürich, Schweizerisches Landesmuseum, Inv. no. AG K 43. – Literature: Castelin 1976, no. 405.

122 Quarter stater, Au, 2.04 g, 12.4 mm, 270°
Obv. similar to Cat. 115.
Rev. similar to Cat. 121.
Find-place: Niederweningen "Guggach", Canton Zürich.

Zürich, Schweizerisches Landesmuseum, Inv. no. M 8722. – Literature: Castelin 1976, no. 406.

112 113

114 115

116 117

118 119

123 Stater, Au, 7.86 g, 16.5 mm, 270°
Obv. Head with laurel wreath, facing right, beaded circle as earring.
Rev. Horse with rider, facing left, below a triskele.
Find-place: in the Birs near Basle.

Zürich, Schweizerisches Landesmuseum, Inv. no. LM A 1154. – Literature: Castelin 1976, no. 409.

124 Quarter stater, Au, 1.99 g, 11.2 mm, 45°
Obv. Head facing right, barely visible.
Rev. Two-horse wagon with driver, facing left, two rings above the horses' heads, below, ear of corn.
Find-place: Val de Ruz near Neuchâtel.

Zürich, Schweizerisches Landesmuseum, Inv. no. AG K 20. – Literature: Castelin 1976, no. 413.

125 Quarter stater, Au, 1.90 g, 12.8 mm, 45°
Obv. Curly head facing right.
Rev. Horse with rider facing right, dots under the horse.
Find-place: near Aarburg, Canton Aargau.

Zürich, Schweizerisches Landesmuseum, Inv. no. +A K 4. – Literature: Castelin 1976, no. 420.

126 Stater, electrum, 7.39 g, 19.8 mm, 90°
Obv. Head with clumsy curls, facing right.
Rev. Two-horse carriage, facing right, above it the driver (?) and a reclining cross.
Find-place: Canton Valais.

Zürich, Schweizerisches Landesmuseum, Inv. no. LM A 1153. – Literature: Castelin 1976, no. 430.

Regional minting of gold from the 1st half of the 2nd century B.C.

Northeastern and Central Switzerland

Quarter staters with coiled animal, Horgen-Unterentfelden Type

127 Quarter stater, Au, 1.93 g, 16 mm, 150°
Obv. Head with laurel wreath, facing right, S-shaped curls on forehead.
Rev. Galloping horse, facing left, rider with whip, crescent moon in front of the horse, coiled animal below the horse, under the base line an unintelligible inscription. Find-place: unknown.
Oxford, Ashmolean Museum, Christ Church 222. – Literature: Allen 1974, no. 134.

128 Quarter stater, Au, 1.90 g, 17.5 mm, 225°
Obv. and Rev. similar to Cat. 127.
Find-place: Leuggern, Canton Aargau.

Zürich, Schweizerisches Landesmuseum, Inv. no. AG K 30. – Literature: Castelin 1976, no. 878.

129 Quarter stater, Au, 1.89 g, 14.9 mm, 225°
Obv. and Rev. similar to Cat. 127.
Find-place: Windisch, Canton Aargau.

Zürich, Schweizerisches Landesmuseum, Inv. no. AG K 27. – Literature: Castelin 1976, no. 880.

130 Quarter stater, Au, 1.85 g, 16.0 mm, 225°
Obv. and Rev. similar to Cat. 127.
Find-place: Freiamt, Canton Aargau.

Zürich, Schweizerisches Landesmuseum, Inv. no. AG K 31. – Literature: Castelin 1986, no. 882.

131 Quarter stater, electrum, 1.82 g, 15.7 mm, 270°
Obv. and Rev. similar to Cat. 127.
Find-place: near Rheinau, Canton Zürich.

Zürich, Schweizerisches Landesmuseum, Inv. no. AG K 39. – Literature: Castelin 1976, no. 888.

132 Quarter stater, Au, 1.82 g, 16.0 mm, 225°
Obv. and Rev. similar to Cat. 127.
Find-place: Seeb, Canton Zürich.

Zürich, Schweizerisches Landesmuseum, Inv. no. AG K 38. – Literature: Castelin 1976, no. 889.

133 Quarter stater, Au, 1.93 g, 14.5 mm, 225°
Obv. and Rev. similar to Cat. 127.
Find-place: City of Zürich.

Zürich, Schweizerisches Landesmuseum, Inv. no. AG K 34. – Literature: Castelin 1976, no. 891.

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134 Quarter stater, Au, 1.89 g, 16 mm, 225°
Obv. and Rev. similar to Cat. 127.
Find-place: Steinegg (Lake Steinegg), Canton Thurgau.

Zürich, Schweizerisches Landesmuseum, Inv. no. AG K 37. – Literature: Castelin 1976, no. 895.

135 Quarter stater, Au, 1.92 g, 14.7 mm, 225°
Obv. and Rev. similar to Cat. 127.
Find-place: Zürich.

Zürich, Schweizerisches Landesmuseum, Inv. no. ZB 1032. – Literature: Castelin 1976, no. 899.

Northwestern and western Switzerland

136 Quarter stater, Au, 1.93 g, 16.3 mm, 270°
Obv. Head with laurel wreath and cut on cheek, facing right.
Rev. Two-horse carriage with driver facing right, under the horses a figure-of-eight on its side, below that an obscured inscription.
Find-place: La Tène (Marin-Epagnier), Canton Neuchâtel.

Biel, Museum Schwab, Inv. no. 3098. – Literature: Allen 1974, no. 99.

137 Quarter stater, Au, 1.91 g, 15 mm, 225°
Obv. and Rev. similar to Cat. 136.
Find-place: La Tène, Canton Neuchâtel.

Neuchâtel, Museé d'art et d'histoire, Inv. no. 2354. – Literature: Allen 1974, no. 108.

138 Quarter stater, Au, 1.85 g, 16 mm, 150°
Obv. and Rev. similar to Cat. 136.
Find-place: unknown.

Lausanne, Cabinet des médailles, Inv. no. 310. – Literature: Allen 1974, no. 102.

139 Quarter stater, Au, 1.91 g, 15.15 mm, 240°
Obv. similar to Cat. 136.
Rev. similar to Cat. 136, but below a small four-spoked wheel.
Find-place: unknown.

Berne, Bernisches Historisches Museum, Inv. no. 149. – Literature: Allen 1974, no. 105.

140 Quarter stater, Au, 1.91 g, 15.8 mm, 45°
Obv. similar to Cat. 136.
Rev. similar to Cat. 139.
Find-place: La Tène, Canton Neuchâtel.

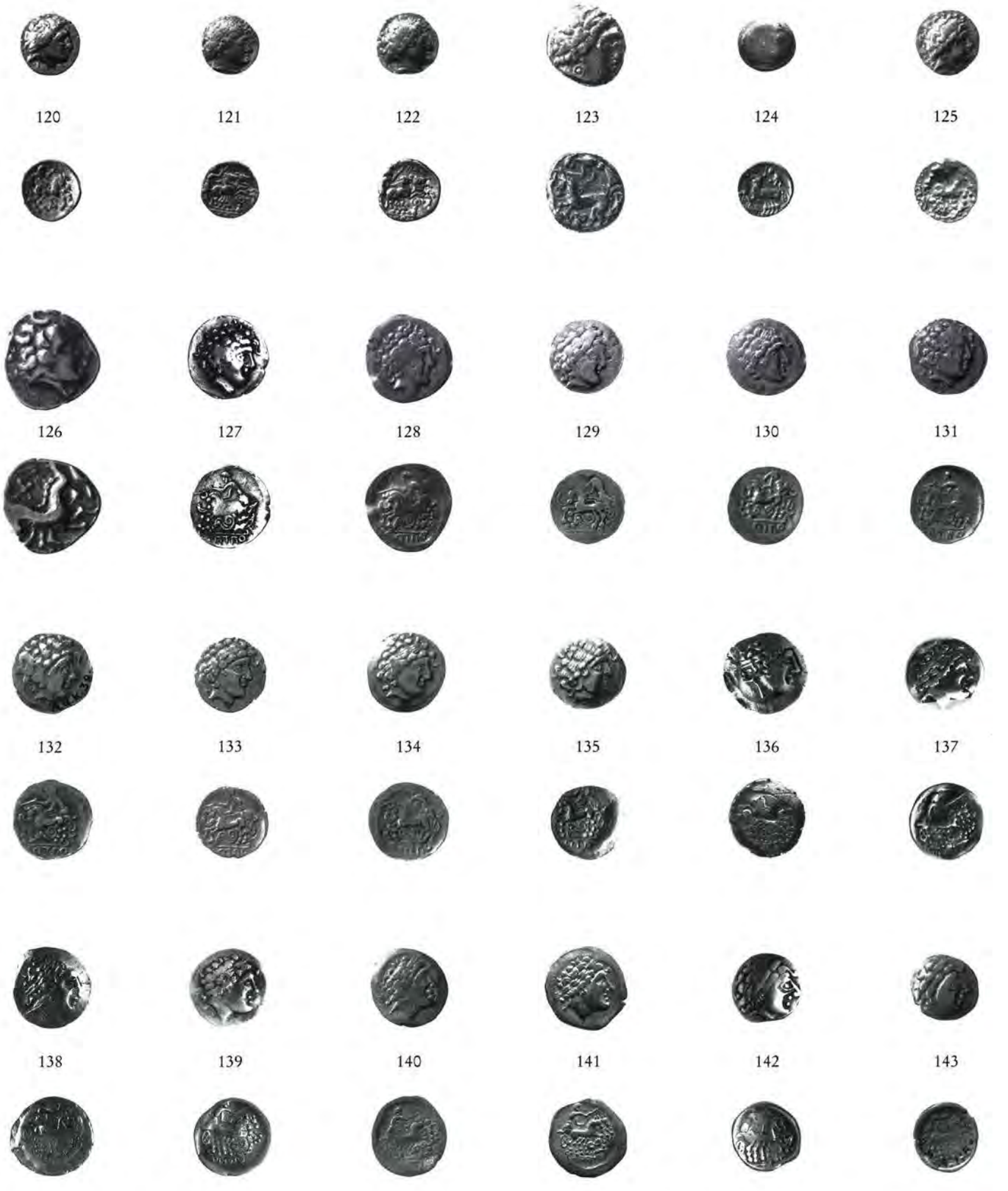
Zürich, Schweizerisches Landesmuseum, Inv. no. LM A 1170. – Literature: Castelin 1976, no. 921.

141 Quarter stater, Au, 1.97 g, 16 mm, 270°
Obv. similar to Cat. 136.
Rev. similar to Cat. 139.
Find-place: unknown.

New York, The American Numismatic Society, Inv. no. 944.100.71840. – Literature: Allen 1974, no. 109.

142 Quarter stater, electrum, 1.77 g, 14 mm, 30°
Obv. and Rev. similar to Cat. 136.
Find-place: unknown.

Basle, Historisches Museum, Inv. no. 1918.5329. Literature: Allen 1974, no. 104.



120 121 122 123 124 125

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132 133 134 135 136 137

138 139 140 141 142 143

143 Quarter stater, electrum, 1.84 g, 13.6 mm, 90°
Obv. similar to Cat. 136 but with an S-shaped ear.
Rev. similar to Cat. 136.
Find-place: La Tène, Canton Neuchâtel.

Zürich, Schweizerisches Landesmuseum, Inv. no. LM A 1185. – Literature: Castelin 1976, no. 934.

144 Stater, Au, 7.92 g, 26 mm, 45°
Obv. Head with laurel wreath, facing right, and with cut on cheek and volute-shaped forehead curls.
Rev. Two-horse carriage with driver, facing right, uncertain symbol below the horses, traces of inscription below.
Find-place: La Tène, Canton Neuchâtel.

Neuchâtel, Musée d'art et d'histoire, Inv. no. 2355. – Literature: Allen 1974, no. 40.

145 Stater, Au, 7.78 g, 24 mm, 360°
Obv. similar to Cat. 144, but with an S-shaped ear.
Rev. Two-horse carriage and driver, facing right, a seven-leaved rosette under the horses, below traces of an inscription.
Find-place: La Tène, Canton Neuchâtel.

Zürich, Schweizerisches Landesmuseum, Inv. no. Amiet 84. – Literature: Castelin 1976, no. 933.

146 Stater, Au, 7.69 g, 26.44 mm, 210°
Obv. similar to Cat. 144.
Rev. similar to Cat. 145.
Find-place: "Probably Switzerland".

Berne, Bernisches Historisches Museum, Inv. no. 144. – Literature: Allen 1974, no. 42.

147 Stater, Au, 7.70 g, 26 mm, 180°
Obv. and Rev. similar to Cat. 144.
Find-place: "Probably Switzerland".

New York, The American Numismatic Society, Inv. no. 1944.100.71837. – Literature: Allen 1974, no. 43.

148 Quarter stater, Au, 1.99 g, 15.9 mm, 225°
Obv. Head with laurel wreath, facing right, small forehead curls.
Rev. Galloping horse with rider, facing right, in front of it a small ringlet, under the horse a rosette of six dots and a central one, below traces of an inscription.
Find-place: unknown.

Zürich, Schweizerisches Landesmuseum, Inv. no. M 12985. – Literature: Castelin 1976, no. 932.

149 Quarter stater, Au, 1.88 g, 14.5 mm, 270°
Obv. similar to Cat. 148.
Rev. similar to Cat. 148 but rosette of four dots.
Find-place: La Tène, Canton Neuchâtel.

Neuchâtel, Musée d'art et d'histoire, Inv. no. 2357. – Literature: Allen 1974, no.116.

150 Stater, Au, 7.98 g, 27.2 mm, 210°
Obv. Head with laurel wreath and forehead curl, facing right.
Rev. Two-pair carriage with driver, facing left, under the horses triskele and lightning, an X under the wagon.
Find-place: "From the Winterthur area".

Winterthur, Münzkabinett der Stadt Winterthur, Inv. no. 94. – Literature: H. Bloesch, *Griechische Münzen in Winterthur*, vol. 1, Winterthur 1987, no. 94; Allen 1974, no. 46.

151 Quarter stater, Au, 1.91 g, 18.4 mm, 240°
Obv. Head with laurel wreath and forehead curl, facing right.
Rev. Galloping horse with rider, facing right, triskele under the horse, below traces of an inscription.
Find-place: "Probably in the Basle neighbourhood".

Basle, Historisches Museum, Inv. no. 1918.5333. – Literature: Allen 1974, no.121.

152 Quarter stater, Au, 1.94 g, 14 mm, 225°
Obv. Head without laurel wreath, facing right, swelling on side of the neck.
Rev. Galloping horse with rider, facing left, below it a triskele.
Find-place: La Tène, Canton Neuchâtel.

Neuchâtel, Musée d'art et d'histoire, Inv. no. 2356. – Literature: Allen 1974, no. 125.

153 Quarter stater, Au, 1.94 g, 16.2 mm, 45°
Obv. Head with laurel wreath and forehead curl, facing right.
Rev. Horse with rider, facing right, below the horse a "dotted rosette", traces of inscription under the base line.
Find-place: Canton Aargau.

Zürich, Schweizerisches Landesmuseum, Inv. no. AG K 41. – Literature: Castelin 1976, no. 925.

154 Quarter stater, Au, 1.89 g, 15 mm, 90°
Obv. and Rev. similar to Cat. 153.
Find-place: Euren, Trier District, Germany.

Trier, Rheinisches Landesmuseum, Inv. no. 1934. 5. – Literature: Polenz 1982, p. 86 ; Allen 1974, no. 142.

155 Quarter stater, Au, 1.77 g, 17 mm, 90°
Obv. and Rev. similar to Cat. 153.
Find-place: unknown.

Oxford, Ashmolean Museum, Christ Church 224. – Literature: Allen 1974, no.147.

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156 Quarter stater, Au, 1.41 g (broken), 15 mm, 240°
Obv. and Rev. similar to Cat. 153.
Find-place: "Possibly La Tène, Canton Neuchâtel".

Neuchâtel, Musée d'art et d'histoire, Inv. no. 926. – Literature: Allen 1974, no. 154.

157 Quarter stater, Au, 1.55 g, 14.3 mm, 225°
Obv. and Rev. similar to Cat. 153.
Find-place: Near Rheinau, Canton Zürich.

Zürich, Schweizerisches Landesmuseum, Inv. no. AG K 40. – Literature: Castelin 1976, no. 930.

158 Stater, Au, 7.69 g, 25 mm, 270°, sharply dished.
Obv. Head with laurel wreath and forehead curl, facing right.
Rev. Two-horse carriage with driver, facing right, below the horses "rosette with dot", below the base line traces of an inscription made of dots and strokes.
Find-place: Kreenheinstetten, Messkirch District, Germany.

Karlsruhe, Badisches Landesmuseum, Inv. no. 11 409. – Literature: Allen 1974, no. 50; F. Wielandt, Keltische Fundmünzen aus Baden, in: *Jahrbuch für Numismatik und Geldgeschichte* 14, 1964, no. 26.

159 Stater, Au, 7.34 g, 23.3 mm, 250°, strongly dished.
Obv. Head with laurel wreath, facing right; in front of the mouth a snake-shaped symbol with three dots.
Rev. similar to Cat. 158.
Find-place: Augst, Canton Basleland.

Augst, Römermuseum, Inv. no. 1952.361. – Literature: Furger 1987, fig. 4; Allen 1974, no. 53.

160 Quarter stater, electrum, 1.78 g, 14.5 mm, 270°
Obv. Head with laurel wreath, facing right.
Rev. Horse and rider, facing right, under it an S-volute, below it lightning.
Find-place: Estavayer, Canton Fribourg.

Zürich, Schweizerisches Landesmuseum, Inv. no. LM A 1218. – Literature: Castelin 1976, no. 935.

161 Quarter stater, electrum, 1.61 g, 14.8 mm, 315°
Obv. and Rev. similar to Cat. 160.
Find-place: Auvernier, Canton Neuchâtel.

Zürich, Schweizerisches Landesmuseum, Inv. no. LM A 1172. – Literature: Castelin 1976, no. 936.

Southwestern and western Switzerland

The Greek model: gold stater of Alexander III, the Great, of Macedon (336–323 B.C.)

162 Stater, Au, 8.35 g, 17.7 mm, 120°
Alexander III, the Great, of Macedon.
Obv. Winged Nike, facing left, a crosier in the left hand (stylis), a laurel wreath in the right, under it a trident, the name of the conqueror, Alexander, vertically in Greek script.

Zürich, Schweizerisches Landesmuseum, Amiet Coll. 2507. – Literature: Jenkins 1972, fig. 506/507 (Stater).

Staters of Fribourg Type

163 Stater, Au, 7.31 g, 18 mm
Obv. Strongly barbarian picture of a head, facing left, the eye portrayed as a sphere, the hair as strokes crossing each other.
Rev. Deep border with simple strokes.
Find-place: Sorens, Canton Fribourg.

Fribourg, Museum für Kunst und Geschichte, Inv. no. 360. – Literature: N. Peissard, *Carte archéologique du canton de Fribourg,* Fribourg 1941, p. 89; cf. Castelin 1976, no. 939.

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164 Stater, Au, 7.17 g, 18.2 mm
Obv. and Rev. similar to Cat. 163.
Find-place: Corpataux, Canton Fribourg.

Fribourg, Museum für Kunst und Geschichte, Inv. no. 500. – Literature: Pautasso 1972, p. 41, no. 1.

165 Stater, Au, 7.33 g, 18.3 mm
Obv. and Rev. similar to Cat. 163.
Find-place: Vully (lower Broye valley), Canton Fribourg.

Fribourg, Museum für Kunst und Geschichte, Inv. no. 362. – Literature: H. Schwab, *Archéologie de la 2e correction des eaux du Jura, Vol. I: Les Celtes sur la Broye et la Thielle, Archéologie fribourgeoise,* Fribourg 1990, p. 260; cf. Castelin 1976, no. 939.

166 Stater, Au, 7.53 g, 19.3 mm, 45°
Obv. similar to Cat. 163.
Rev. similar to Cat. 163 but unclear.
Find-place: Fraidaigues/St. Prex, Canton Vaud.

Lausanne, Cabinet des médailles, Inv. no. 358. – Literature: A. Pautasso, *Le monete preromane dell'Italia settentrionale,* Varese 1966, fig. 537.

167 Stater, Au, 7.09 g, 17.3 mm
Obv. and Rev. similar to Cat. 163.
Find-place: Cudrefin, Canton Vaud.

Zürich, Schweizerisches Landesmuseum, Inv. no. LM A 498. – Literature: Castelin 1976, no. 939.

168 Stater, Au, 8.08 g, 18.5 mm
Obv. and Rev. similar to Cat. 166.
Find-place: Niederbipp, Canton Berne.

Stadt Solothurn, Inv. no. 1946.38. – Literature: von Kaenel 1972, p. 105; cf. Castelin 1976, no. 937.

169 Stater, Au, 7.15 g, 19.1 mm
Obv. similar to Cat. 163.
Rev. Simple geometric drawing with a small circle with a dot in the centre.
Find-place: unknown.

Zürich, Schweizerisches Landesmuseum, Inv. no. Dep. 3084.66. – Literature: Castelin 1976, no. 938.

Stater of the Uberi (Valais)

170 Stater, Au, 6.67 g, 22.2 mm, 100°
Obv. similar to Cat. 165.
Rev. similar to Cat. 169, the inscription NDIKOV between the two straight lines.
Find-place: Collombey, Canton Valais.

Lausanne, Cabinet des médailles, Inv. no. 357. – Literature: Pautasso 1972, p. 41; cf. A. Geiser, Keltische Münzprägung der Spätlatènezeit im Wallis (2.–1. Jh.v.Chr.), in: *Das Wallis vor der Geschichte 14 000 v.Chr. – 47 n.Chr.,* exhibition catalogue, Sitten Kantonsmuseen 23 May– 28 September 1986, p. 334.

Gold coins not more closely localised 2nd/1st century B.C.

Central Switzerland – Jura – Franche Comté

171 Stater, Au, 7.62 g, 25.78 mm, 150°
Obv. Head with laurel wreath, facing right.
Rev. Two-horse carriage and driver, facing left, under the horse a quatrefoil, below this a dot with side leaves, an unclear inscription below the base line.
Find-place: Hagneck, Canton Berne.

Berne, Bernisches Historisches Museum, Inv. no. 145. – Literature: Allen 1974, no. 55.

172 Stater, Au, 7.63 g, 24.7 mm, 165°
Obv. and Rev. similar to Cat. 171.
Find-place: Wangen on the Aar, Canton Berne.

Stadt Solothurn, Inv. no. 1926.17. – Literature: cf. Allen 1974, no. 55.

173 Quarter stater, electrum, 1.93 g, 16 mm, 45°
Obv. Head with laurel wreath and forehead curls, facing right.
Rev. Horse and rider, facing left, a four-leaved blossom beneath the horse and a dot with two side leaves.
Find-place: Goldscheuer, Offenburg District, Germany.

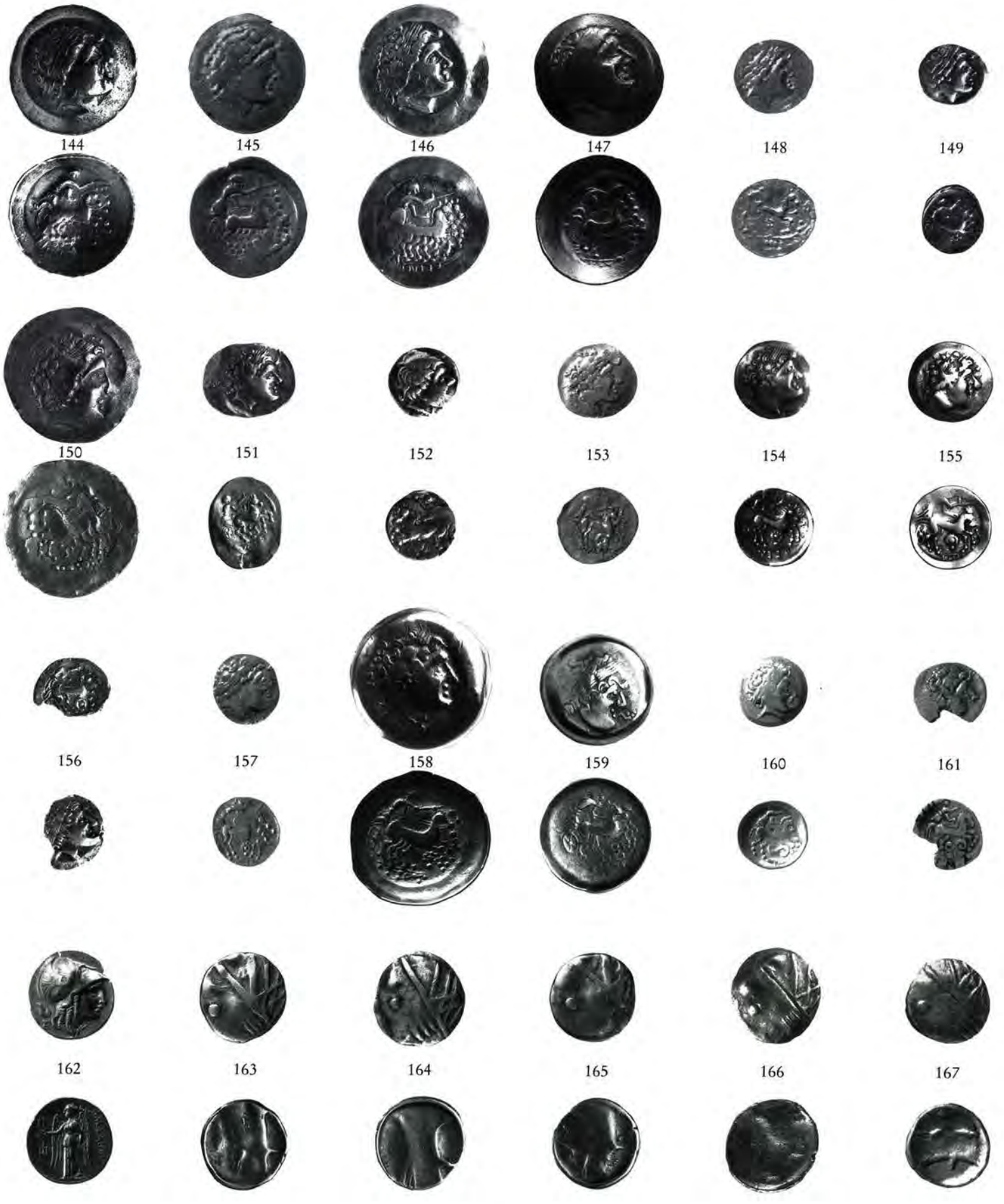
Zürich, Schweizerisches Landesmuseum, Inv. no. LM A 1169. – Literature: Castelin 1976, no. 852.

174 Quarter stater, electrum, 1.58 g, 12 mm, 315°
Obv. Head with laurel wreath, facing right.
Rev. Horse and rider, facing left, uncertain symbol.
Find-place: Limmat (Gemüse Bridge) Zürich, Canton Zürich.

Zürich, Schweizerisches Landesmuseum, Inv. no. LM A 1219. – Literature: Castelin 1976, no. 853.

175 Stater, electrum, 7.47 g, 24.7 mm, 45°, dish-shaped.
Obv. Head with laurel wreath and forehead curl, facing right.
Rev. Two-horse carriage and driver, facing left; below this a four-spoked wheel.
Find-place: Canton Berne.

Zürich, Schweizerisches Landesmuseum, Inv. no. AGK 25. – Literature: Castelin 1976, no. 845.

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176 Stater, electrum, 6.88 g, 24 mm, 45°, dish-shaped.
Obv. Head with laurel wreath, facing right, within a circle formed of small crescents.
Rev. Galloping horse and rider, facing left, under it a crescent with strokes and a row of dots.
Find-place: Belfort, France.

Zürich, Schweizerisches Landesmuseum, Inv. no. LM A 1203. – Literature: Castelin 1976, no. 847.

177 Stater, electrum, 7.33 g, 23.2 mm, 135°, dish-shaped.
Obv. Head with laurel wreath, facing left, neck shown with double lines.
Rev. Horse and rider, facing left, below it a star.
Find-place: Canton Aargau.

Zürich, Schweizerisches Landesmuseum, Inv. no.AG K 23.–Literature: Castelin 1976, no. 848.

178 Stater, electrum, 7.43 g, 22.7 mm, 45°, dish-shaped.
Obv. similar to Cat. 177, S-volute below the ear.
Rev. similar to Cat. 177, a crescent in front of the horse.
Find-place: near Schaffhausen.

Zürich, Schweizerisches Landesmuseum, Inv. no.AG K 24.–Literature: Castelin 1976, no. 849.

179 Quarter stater, electrum, 1.48 g, 14.9 mm, 360°, dish-shaped.
Obv. Head with laurel wreath, facing right.
Rev. Two-horse carriage with driver, facing right, triskele with dots in the angles below the horses.
Find-place: unknown.

Basle, Historisches Museum, Inv. no. 1918.5335. – Literature: Allen 1974, no. 180.

180 Quarter stater, Au, 1.87 g, 16.5 mm, 270°
Obv. Head w. laurel wreath, facing right.
Rev. Horse with rider, facing right, three dots under the horse.
Find-place: unknown.

Oxford, Ashmolean Museum, Christ Church 223. – Literature: Allen 1974, no. 196.

181 Quarter stater, Ag, gilt, 1.45 g, 14.7 mm, 315°
Obv. Head w. laurel wreath, facing right.
Rev. Horse with rider, facing right, three dots under the horse.
Find-place: unknown.

Zürich, Schweizerisches Landesmuseum, Inv. no. LM A 1216. – Literature: Castelin 1976, no. 861.

182 Stater, electrum, 6.63 g, 22.5 mm, 360°
Obv. Curly head with laurel wreath, facing right.
Rev. Two-horse carriage, facing right, four-spoked wheel below the horses.
Find-place: unknown.

Zürich, Schweizerisches Landesmuseum, Inv. no. M11256. – Literature: Castelin 1976, no. 869.

South German "Rainbow dishes" (Regenbogenschüsselchen)

183 Stater, Au, 7.49 g, 18.2 mm
Obv. Two half-circles made of crescents, a rounded bird's head between them.
Rev. Open torc with five spheres inside it.
Find-place: Basle (Saint-Louis?).

Zürich, Schweizerisches Landesmuseum, Inv. no. LM AB 2254. – Literature: Furger 1982, p. 18, no. 91; Castelin 1976, no.1070.

184 Stater, Au, 7.55 g, 19.4 mm
Obv. similar to Cat. 183.
Rev. Star with two spheres and two opposed volutes.
Find-place: Saint-Louis near Basle (?)

Zürich, Schweizerisches Landesmuseum, Inv. no. LM A 1161. – Literature: Furger 1982, p. 18, no. 92; Castelin 1976, no. 1073.

185 Stater, Au, 7.61 g, 18.1 mm
Obv. Curled animal, facing left.
Rev. Volute decoration.
Find-place: "near Basle" (Saint-Louis?).

Zürich, Schweizerisches Landesmuseum, Inv. no. LM A 496. – Literature: Furger 1982, p. 15, no. 41; Castelin 1976, no. 1078.

186 Stater, Au, 7.5 g, 18 mm
Obv. similar to Cat. 183 but without bird's head.
Rev. Torc with six spheres.
Find-place: near Aarberg, Canton Berne

Zürich, Schweizerisches Landesmuseum, Inv. no. +A K1. – Literature: Castelin 1976, no. 1080.

187 Stater, Au, 7.34 g, 16.6 mm
Obv. Palmette.
Rev. Torc-like arc, closed above with two semicircles with spherical terminals, inside it three spheres.
Find-place: the Aargau region of the Rhine, Canton Aargau.

Zürich, Schweizerisches Landesmuseum, Inv. no. LM A 497. – Literature: Castelin 1976, no. 1087.

Colourplate XXVI page 89

188 Quarter stater, Au, 1.86 g, 12.5 mm
Obv. Off-centre, smooth boss.
Rev. Flat surface.
Find-place: Marthalen, Canton Zürich.

Zürich, Schweizerisches Landesmuseum, Inv. no. LM A 524. – Literature: Castelin 1976, no. 1088.

189 Quarter stater, Au, 2.02 g, 12.9 mm
Obv. and Rev. similar to Cat. 188.
Find-place: Lucerne.

Zürich, Schweizerisches Landesmuseum, Inv. no. M 8173. – Literature: Castelin 1976, no. 1089.

190 Stater, electrum, 5.82 g, 18.6 mm
Obv. Two opposed quadrants made up of crescents with little rings at their ends, a three-part swirl in the centre.
Rev. Eight circles arranged in zigzag manner in a triangle.
Find-place: Lausanne, Canton Vaud.

Zürich, Schweizerisches Landesmuseum, Inv. no. LM A 499. – Literature: Castelin 1976, no. 1099.

Late "gold" mintings: Silver staters 1st half of the 1st century B.C.

191 Stater, Ag, coated, 6.15 g, 24.5 mm, 45°
Obv. curly head, facing right.
Rev. Two-horse carriage with driver, facing left, uncertain symbol.
Find-place: Rheinau, Canton Zürich.

Zürich, Schweizerisches Landesmuseum, Inv. no. AG K 45. – Literature: Castelin 1976, no. 940.

192 Stater, Ag, coated, 5.44 g, 26.6 mm, 315°
Obv. similar to Cat. 191.
Rev. similar to Cat. 191 but with double row of dots and a zigzag line below.
Find-place: near Brugg, Canton Aargau.

Zürich, Schweizerisches Landesmuseum, Inv. no. AG K 44. – Literature: Castelin 1976, no. 941.

193 Stater, Ag, 5.62 g, 24.4 mm, 360°
Obv. and Rev. similar to Cat. 191.
Find-place: Mels, Canton St. Gallen.

St. Gallen, Historisches Museum, Inv. no. M 10004. – Literature: J. Egli and L. Naegeli, *Die im Kanton St. Gallen gefundenen römischen Münzen*, St. Gallen 1933, p. 7, no. 2.

194 Stater, Ag, 5.46 g, 25.98 mm, 120°
Obv. and Rev. similar to Cat. 191.
Find-place: Berne-Enge peninsula, Canton Berne.

Berne, Bernisches Historisches Museum, without Inv. no. – Literature: Allen 1974, no. 69; Furger/von Kaenel 1976, p. 51.

195 Fragment of stater, Ag, 3.23 g, 24.2 mm, 120°
Obv. and Rev. similar to Cat. 191.
Find-place: Berne-Enge peninsula, Canton Berne.

Berne, Bernisches Historisches Museum, without Inv. no. – Literature: H.-M. von Kaenel, Die Fundmünzen der Grabung auf der Engehalbinsel von 1967 bis 1969. *JdBHM* 51 – 52, 1971 – 72, no. 10.

196 Stater, Ag, 5.77 g, 26.69 mm, 60°
Obv. and Rev. similar to Cat. 191.
Find-place: Berne-Enge peninsula, Canton Berne.

Berne, Bernisches Historisches Museum, without Inv. no. – Literature: Allen 1974, no. 70; Furger/von Kaenel, 1976, p. 51.

197 Stater, Ag, 5.40 g, 26 mm, 45°
Obv. similar to Cat. 191.
Rev. Two-horse carriage, facing right; above it a circle with central dot, a triskele under the horses.
Find-place: unknown.

Lausanne, Cabinet des médailles, Inv. no. 378. – Literature: Allen 1974, no. 72.

Gold coins from more distant regions

198 Quarter stater of the Mediomatrici (east Gaul), Au, 2 g, 15 mm, 135°
Obv. Head facing right.
Rev. Pegasus facing right, three dots and a beaded circle along the belly, double row of dots below.
Find-place: Biel, Canton Berne.

Zürich, Schweizerisches Landesmuseum, Inv. no. LM A 1188. – Literature: Castelin 1976, no. 494.

199 Stater of the Treveri (east Gaul), Au (gilt on a strongly alloyed core), 6.86 g, 20.7 mm, 225°
Obv. Head with laurel wreath, geometrically arranged curls.
Rev. Horse with a man's head, facing left, rider above, a winged figure lying below the horse.
Find-place: Wil, Canton St. Gallen.

Zürich, Schweizerisches Landesmuseum, Inv. no. LM A 1148. – Literature: Castelin 1976, no. 501.

200 Ball stater of the Senones (?) (Central Gaul), Au, 7.31 g, 12.1 mm
Obv. Star on the half-spherical smooth surface.
Rev. Half-spherical and smooth surface.
Find-place: "bed of the Rhine", Canton Aargau.

Zürich, Schweizerisches Landesmuseum, Inv. no. LM A 493. – Literature: Castelin 1976, no. 706.

201 Quarter stater of the Belgae, Au, 2.08 g, 12.8 mm, 45°
Obv. Curly head, facing right.
Rev. Horse with rider, facing left, below it a beaded circle with central dot, under the base line degenerate lettering.
Find-place: Yverdon, Canton Vaud.

Zürich, Schweizerisches Landesmuseum, Inv. no. LM A 1184. – Literature: Castelin 1976, no. 356.

202 Stater of the Bituriges Vivisci (western Gaul), Au, 7.78 g, 22.4 mm, 45°
Obv. Head with laurel wreath, looking right.
Rev. Biga with driver, facing right, trident under the horses, below the curved base line a confused inscription.
Find-place: Aarau, Canton Aargau.

Zürich, Schweizerisches Landesmuseum, Inv. no. LM A 1151. – Literature: Castelin 1976, no. 141.

203 Stater from Bohemia, Au, 7.39 g, 17.4 mm
Obv. Irregular boss.
Rev. Boss with fine strokes.
Find-place: Domdidier, Canton Fribourg.

Fribourg, Museum für Kunst und Geschichte, Inv. no. 342. – Literature: N. Peissard, *Carte archéologique du canton de Fribourg*, Fribourg 1941, p. 45; cf. Castelin 1976, no. 1122.

204 Stater from Bohemia, Au, 7.01 g, 15.4 mm
Obv. Irregular boss.
Rev. "Mussel shell" with fine rays.
Find-place: Saint-Louis near Basle.

Zürich, Schweizerisches Landesmuseum, Inv. no. M 12994. – Literature: Castelin 1976, no. 1130.

Silver and pinchbeck coins from the 2nd century

Northern Italian imitations of drachmae from Massalia (Marseilles)

205 Drachma, Ag, 2.75 g, 14 mm, 90°
Obv. Curly head of Diana within a beaded circle, facing right.
Rev. Scorpion-like lion, facing right, walking.
Find-place: Bellinzona, Canton Ticino.

Zürich, Schweizerisches Landesmuseum. Inv. no. LM A 1048. – Literature: Castelin 1976, no. 1002.

206 Drachma, Ag, 2.56 g, 14.7 mm, 45°
Obv. and Rev. similar to Cat. 205.
Find-place: Bellinzona, Canton Ticino

Zürich, Schweizerisches Landesmuseum, Inv. no. LM A 1050. – Literature: Castelin 1976, no. 1004.

Silver coins of the Veragri (Valais)

207 Coin, Ag, 1.60 g, 15.5 mm, 225°
Obv. Head in beaded circle, facing right.
Rev. "Lion", facing right; above, traces of the inscription, below a cross over M.
Find-place: Martigny, Canton Valais.

Sitten, Archäologisches Museum des Wallis, Inv. no. 77/213. – Literature: Geiser 1984, no. 98.

208 Silver coin, 1.65 g, 14 mm, 135°
Obv. and Rev. similar to Cat. 207.
Find-place: Martigny, Canton Valais.

Sitten, Archäologisches Museum des Wallis, Inv. no. 76.245. – Literature: Geiser 1984, no. 100.

KALETEDOU-quinars

209 Quinar, Ag, 1.80 g, 12 mm, 225°
Obv. Head of Rom in a double beaded circle, facing left.
Rev. Horse facing left, inscription KALETEDOU round it.
Find-place: La Tène, Canton Neuchâtel.

Zürich, Schweizerisches Landesmuseum, Inv. no. LM A 547. – Literature: Castelin 1976, no. 654.

210 Quinar, Ag, 1.9 g, 11.9 mm, 90°
Obv. and Rev. similar to Cat. 209.
Find-place: Nunningen, Canton Solothurn.

Zürich, Schweizerische Landesmuseum, Inv. no. A6 K77. – Literature: Castelin 1976, no. 677.

Cross coins (cruciati)

211 Cross coin, Ag, 1.82 g, 13.3 mm
Obv. Barbarised head, facing right, roughly curled hair, eye, nose, mouth each portrayed as a sphere.
Rev. Thin cross, in the angles V, I, O and two spheres.
Find-place: "Near Geneva or Nyon."

Zürich, Schweizerisches Landesmuseum, Inv. no. AG K 229. – Literature: Castelin 1976, no. 1103.

212 Cross coin, Ag, 1.74 g, 12.4 mm
Obv. Smooth boss.
Rev. Thin cross, in the angles V, half-moon, three dots and a circle.
Find-place: "Near Geneva or Nyon".

Zürich, Schweizerisches Landesmuseum, Inv. no. AG K 228. – Literature: Castelin 1976, no. 1104.

North Helvetian cluster quinars

213 Cluster quinar, Ag, 1.54 g, 12.9 mm, 315°
Obv. Eight-leaf swirl, three dots in the centre, small half moon above, dot below.
Rev. Horse facing left, above and below a half beaded circle.
Find-place: Balsthal, Canton Solothurn.

Zürich, Schweizerisches Landesmuseum, Inv. no. AG K 101. – Literature: Castelin 1976, no. 943.

214 Cluster quinar, Ag, 1.56 g, 10.3 mm, 90°
Obv. and Rev. similar to Cat. 213.
Find-place: Courroux, Canton Jura.

Zürich, Schweizerisches Landesmuseum, Inv. no. AG K 103. – Literature: Castelin 1976, no. 947.

NINNO-quinars

215 Quinar, Ag, 1.68 g, 12.4 mm, 315°
Obv. Head facing left in a fine, beaded circle, wing in the hair, inscription NINNO vertical in front of the face.


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Rev. Boar facing left, in a fine, beaded circle.
Find-place: Balsthal, Solothurn.

Zürich, Schweizerisches Landesmuseum, Inv. no. AG K 111. – Literature: Castelin 1976, no. 963.

216 Quinar, Ag, 1.57 g, 13.6 mm, 180°
Obv. and Rev. similar to Cat. 215.
Find-place: Burvagn, Canton Graubünden.

Zürich, Schweizerisches Landesmuseum, Inv. no. AG K 11. – Literature: Castelin 1976, no. 965.

VATICO-quinars

217 Quinar, Ag, coated, 1.40 g, 11.8 mm, 90°
Obv. Stylised head with large eye and half-moon-shaped curls, facing right, below vertical strokes, remains of a beaded circle.
Rev. Horse facing left, beneath it the inscription VATICO, above and below a half-circle.
Find-place: Avenches, Canton Vaud.

Avenches, Musée Romain, Inv. no. M 701. – Literature: von Kaenel 1972, p. 59, no. 11 and p. 101.

218 Quinar, Ag, coated, 0.53 g (cut off), 12.3 mm, 135°
Obv. and Rev. similar to Cat. 217.
Find-place: Avenches "Bois de Châtel".

Lausanne, Cabinet des médailles, Inv. no. 25 253. – Literature: G. Kaenel and H.-M. von Kaenel, Le Bois de Châtel près d'Avenches à la lumière de trouvailles récentes – Oppidum celtique? et castrum du Bas-Empire, in: *Archeologie der Schweiz* 6, 1983, 3, p. 112, no. 1.

Pinchbeck coins of Zürich Type

219 Pinchbeck coin, cast, 3.70 g, 17.7 mm, 90°
Obv. Symmetrical double-anchor design.
Rev. An ibex facing left, head looking backwards and with long tail.
Find-place: City of Zürich (Börse), Canton Zürich.

Zürich, Schweizerisches Landesmuseum, Inv. no. AG K 63. – Literature: Castelin 1976, no. 910.

220 Pinchbeck coin, cast, 3.45 g, 17.2 mm, 90°
Obv. and Rev. similar to Cat. 219.
Find-place: La Tène, Canton Neuchâtel.

Zürich, Schweizerisches Landesmuseum, Inv. no. LM A 1385. – Literature: Castelin 1976, no. 914.

Pinchbeck coins from western Switzerland

221 Pinchbeck coin, cast, 5.7 g, 20 mm, 315°
Obv. Head looking left, within a smooth circle: head has a double headband.
Rev. Four-legged animal within a plain circle, with raised tail.
Find-place: La Tène, Canton Neuchâtel.

Zürich, Schweizerisches Landesmuseum, Inv. no. LM A 1329. – Literature: Castelin 1976, no. 779.

222 Pinchbeck coin, cast, 3.22 g, 17.3 mm, 315°
Obv. Head facing left, in plain circle.
Rev. Horse with raised tail, facing right.
Find-place: La Tène, Canton Neuchâtel.

Zürich, Schweizerisches Landesmuseum, Inv. no. LM A 1348. – Literature: Castelin 1976, no. 974.

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Minting implements

223 Fragment of a pottery slab, for dotting or pitting (?).
L. 3 cm The fragment has on it five partly preserved circular depressions.
Find-place: Üetliberg, Canton Zürich.

Zürich, Kantonale Denkmalpflege. – Literature: *Archäologische Monografien der Zürcher Denkmalpflege*, vol. 9 (forthcoming).

224 Fragment of pottery slab, for pitting.
Copy.
Find-place: Altenburg-Rheinau, Germany.

Säckingen, Oberrheinisches Museum (Original). – Literature: F. Fischer, Das Oppidum von Altenburg-Rheinau – Ein Vorbericht, in: *Germania*, vol. 44, 1966, fig. p. 299.

225 Stater blank, 7.48 g, 17.5 mm
Find-place: unknown.

Zürich, Schweizerisches Landesmuseum, Inv. no. M 14092.

226 Coin stamp. The stamp consists of two parts, a bronze core encircled by an iron ring. In the slightly concave surface of the core a curly head with a wreath and facing left is engraved. Diameter 5.03 cm.
Find-place: probably Avenches, Canton Vaud.

Avenches, Musée Romain, Inv. no. 972. – Literature: von Kaenel 1972, p. 60, no. 17 and p. 103.

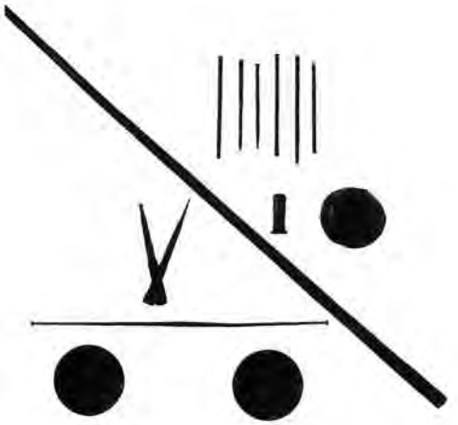
227 Coin stamp. Consists of two parts. The bronze core is inserted into an eight-angled iron shaft which had a spike at the end. The upper face of the core is strongly dished and has no trace of stamp-cutting. The iron shaft is split. Diameter 5 cm.
Find-place: "most probably in Upper Alsace".

Basle, Historisches Museum, Inv. no. 1984.442. Literature: Furger 1987, p. 371/372.

227

VI EXTRACTION, PROCESSING AND USE OF GOLD

Felix Müller



228 (Steelyard, Bellows, Punch)

228 (Tools for drawing wire, Compass)

228 (Tongs, Hammer, Anvils)

228 (Negative mould)

Ošanići near Stolac, Yugoslavia
c. 280 B. C.

In 1977, while excavating in the ancient city of Daor, a hoard weighing 34 kg came to light. It comprised numerous tools and raw materials, including a unique and complete assemblage of the implements of a goldsmith, which must have been at the disposal of Helvetian craftworkers. Up to now in Switzerland only single comparable items have been found.

228 *Tools and implements of bronze and iron*

- Complete steelyard for weighing raw materials and finished products.
- Compass for scoring on metal.
- Hammers, tongs, tweezers and many engraving punches.
- Anvils and fixing plates as smithy supports.
- Dies and negative moulds for modelling and hallmarking.
- Drawing iron and vice for drawing wire.
- Scissors and files.
- Bellows and silver wire for soldering.
- Four fibulae and a jewel case to hold precious objects.

228 (Jewel case cover)

Sarajevo, Zemaljski Muzej bosne i hercegovine. – Literature: Z. Marić, Depo pronadem u ilirskom gradu Daors. *Glasnik Sarajevo, Arheologija N.S.* 33, 1978, 23–113.

Entlebuch "Gadenstatt", Canton Lucerne

Many Swiss streams and rivers today carry gold particles of varying shapes and sometimes of quite appreciable size. The best known are pieces panned in a bowl.

229 *Gold particles* from the stream Grosse Fontanne near Entlebuch.

Berne, Naturhistorisches Museum.

Colourplate XII page 34

In their earliest records the Helvetii are depicted as courageous but feared warriors. There were, however, times when they were described by the Romans as rich in gold but peace-loving. The proverbial wealth of the Celts in those times expressed itself through heavy gold rings, worn by aristocratic persons even in battle. As well, similar or even bigger necklets could be willed to persons of high rank or to gods.

230 *Staging.* Two wooden statues from Geneva and Villeneuve (probably figures of divinities) with exact reconstructions of necklets; from the treasure hoard of Saint-Louis. Height of statue from Geneva (the larger) 3 m.

Zürich, Schweizerisches Landesmuseum. – Literature: R. Wyss, La statue celte de Villeneuve. *HA* 10, 1979, no. 38, 58–67.

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Four models show how one must view the extraction, processing and use of gold in the times of the Helvetii. The foundations and hypotheses depend on ancient traditions and the most up-to-date archaeological research (models by Marius Rappo).

231 *The extraction of stream gold.* Gold-bearing sand was panned on the banks of rivers by men and women.

232 *Goldsmith at work.* Virtually all modern working techniques were already known – casting and forging, drawing of wire as well as chasing, soldering and polishing. Works of art so produced served as ornaments for people and as votive offerings to the gods.

233 *Minting of coins.* In the production process the raw gold was first melted in the glowing coals to form blanks. These were then struck between two stamps to produce coins.

234 *Gifts of gold for the gods.* The most costly and beautiful ornaments and badges or rank were probably reserved for the undying gods…

VII ROMAN PERIOD: FROM BIRTH OF CHRIST TO A.D. 400

Annemarie Kaufmann-Heinimann

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Thun-Allmendingen, Canton Berne
2nd/3rd century A.D.

Here in 1926 in the Gallo-Roman temple area an altar dedicated to one of the Alpine gods, a marble statue of Fortuna, several pottery figures and four objects of sheet gold were found.

235 *Golden votive offering of sheet metal* in the shape of a stylised felled tree, ending at the top in a crescent. L. 12.8 cm; Wt. 4.5 g.

236 *Three pods of sheet gold,* outlined and decorated with a running inclined band and punched dots. L. 2.6, 2.2 and 2.1 cm; Wt. 0.44, 0.26 and 0.20 g.

Berne, Bernisches Historisches Museum. – Literature: H. Bögli, *Ur- und Frühgeschichte der Gemeinde Thun* (1964) 73, no. 166f. pl. 27,1.3.

Colourplate VIII page 22

Martigny, Canton Valais
2nd/3rd century A.D.

To the rich votive offerings which were deposited in the Gallo-Roman temple area from the 1st to the 4th century A.D. belong coins, fibulae, little bells, pottery figures, a small votive axe and a sheet-metal offering.

237 *Sheet silver votive offering* in the shape of a torn-off lanceolate leaf which ends in a pointed stem. L. 9.5 cm; Wt. 3.15 g.

Sitten, Archäologisches Museum des Wallis. – Literature: F. Wiblé, Le téménos de Martigny. *AS* 6, 1983, 65 fig. 11,1.

Martigny "La Délèze", Canton Valais
2nd/3rd century A.D.

During blasting operations in March, 1874, a pit laid with tiles was discovered. In it were bronze vessels, iron implements and two dishes of soapstone. The dishes fitted into one another and in them were two pieces of silver plate.

238 *Two votive offerings of sheet silver* in the form of an arch-shaped frame with stylised columns. The original end appears to be preserved at the lower left portion of the larger of the two objects. On the narrower arch there is a border made of leaves in serried ranks. H. 22.5 and 25.5 cm; Wt. 15 and 20 grammes.

Geneva, Musée d'art et d'histoire. – Literature: W. Deonna, Documents du culte dolichénien en Suisse? *Genaa N.S.* 3, 1955, 39–45 fig. 10.

Great St. Bernard, Canton Valais
2nd/3rd century A.D.

Approximately 50 inscribed votive tablets were brought by Roman travellers to the god of the Pass and amongst them were two of silver (one of them now lost).

239 *Silver plate votive offering* in the shape of a stylised tree with short branches bent downwards. Chiselled curved lines instead of folding. Inscription on the lower end: IOVI PY/NINO E/X VOTO/CIP/VSLL – "To Jupiter Pyninus following a vow. Gaius Julius P... has willingly and joyfully redeemed his vow". H. 21 cm; Wt. 11.2 g.

239

Le Grand-Saint Bernard, Musée de l'Hospice. – Literature: G. Walser, Summus Poeninus. *Historia,* special issue 46 (1984) 126 no. 51.

240

241

Windisch, Canton Aargau
1st/2nd century A.D.

240 *Pottery female bust* with cloak drawn over the head. A torc with spherical ends round the neck. Found in the general area of the legionary barracks of Vindonissa. H. 11.6 cm.

Brugg, Vindonissa-Museum. – Literature: V. v. Gonzenbach, *Die römischen Terracotten in der Schweiz,* vol. B (1986) 47 no. 21 pl. 97,3.

Avenches, Canton Vaud
A.D. 20–40

Imported as well as locally made sculptures were found at Aventicum, the capital city of the Helvetii. Amongst these is a fragment found in 1970 in a dwelling house of Insula 10; it is so far the oldest known piece of native sculpture.

242

241 *Limestone statue:* the upper portion of an elderly woman with plaited hair at the back of the neck; dressed in a shift and coat; round the neck she wears a wide torc with spherical terminals. H. 32 cm.

Avenches, Musée romain. – Literature: M. Bossert, Die Rundskulpturen von Aventicum. *Acta Bernensia* 9, 1983, 28f. no. 12 pl. 23.

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The custom of placing torcs of precious metal as votive offerings on individual figures of gods has been established particularly in Gaul but also in other areas once settled by Celts.

Windisch, Canton Aargau
1st century A.D.

242 *Silver torc* with a small pendant crescent (lunula). Found in 1935 in the area of the baths of the legionary barracks of Vindonissa. Belonged originally to a now lost statue. Dm. 2.7 cm; Wt. 2.3 g.

Brugg, Vindonissa-Museum. – Literature: Th. Eckinger, Grabungen der Gesellschaft Pro Vindonissa in den Jahren 1934 und 1935 auf der Breite. *ASA* 38, 1936, 175.

Baden, Canton Aargau
2nd century A.D.

243 *Bronze figure* of a striding, triple-horned bull with a flat penannular silver band round the neck. The triple-horned bull is a Gallic divinity which retained its animal form into imperial times. H. 5.6 cm; Wt. 88 g.

243

244

Baden, Historisches Museum der Stadt. – Literature: *Bronzes romains de Suisse,* Catalogue Lausanne (1978) no. 35.

Mathay, Département of Doubs, France
1st/2nd century A.D.

The statue was found in 1889 on the left bank of the Doubs, opposite the Roman harbour.

244 *Bronze figure* of a standing triple-horned bull with powerful dewlap. A silver torc is fastened in the muzzle. H. 4.7 cm.

Montbéliard, Musée du Château. – Literature: Lebel 1962, no. 28 pl. 31.

245

Besançon, Department of Doubs, France
1st/2nd century A.D.

In 1849 three Gallo-Roman figures were found in the Rue des Chambrettes in the area of the Roman city, Vesontio.

245 *Bronze figure of Somnus* who, swaying out of a horn, drips poppy juice into human eyes. He holds poppy heads in the left hand and wears a silver torc round the neck. H. 16 cm.

Besançon, Musée des Beaux-Arts et d'Archéologie. – Literature: Lebel 1959/61, no. 44; pl. 26, 2.3; 27.

246

Martigny, Canton Valais
c. A.D. 50

In 1979 in the chief Roman centre of Valais (Forum Claudii Vallensium) two figures of Apollo and one of a billy goat as well as a pedestal for a statue were found. These came to light in a destruction level of the early 3rd century A.D., in a dwelling house in the living- and handworkers' quarters of Insula 1 of the site.

246 *Bronze figure of Apollo,* the left arm of which presumably rested on a standing lyre; in the right hand he holds the implement for striking the strings. Remains of a tinned hair band can be seen on the head and there is a smooth band of gold round the neck. H. 12.5 cm.

Sitten, Archäologisches Museum des Wallis. – Literature: I.A. Manfrini, Bronzes figurés. *Annales valaisannes* 1980, 133–136 pl. 1.

247

Solin, Croatia, Yugoslavia
1st/2nd century A.D.

The figure was found in 1875 in Salona, capital city of the Roman province of Dalmatia.

247 *Bronze figure of Apollo* with silver (?) torc. The cooker is suspended on his person and in his right hand he holds what seems to be a dart. H. 6.3 cm.

Split, Archäologisches Museum. – Literature: J. Zani´c-Proti´c, Roman Bronze Sculpture from the Archaeological Museum in Split I. *Vjesnik za Arheologiju Historiju Dalmatinsku* 81, 1988, 24 no. 3 pl. 1, 3.

248

Heddernheim, Hessen, Germany
3rd century A.D.

The figure was acquired in 1893 in Frankfurt a. Main. It was found in the settlement of Nida near Heddernheim.

248 *Bronze figure of Mercury* with bronze torc. He carries his cloak thrown over his left arm and holds a purse. He is accompanied by a cock, a billy goat and a tortoise. Overall height 22.5 cm.

Saint-Germain-en-Laye, Musée des Antiquités Nationales. – Literature: S. Reinach, *Description raisonnée du Musée de Saint-Germain-en-Laye 2: Bronzes figurés de la Gaule romaine* (1894) no. 50; M. Kohlert-Németh, *Römische Bronzen I aus Nida-Heddernheim: Götter und Dämonen* (1988) no. 7.

249

St. Albans, Hertfordshire, England
2nd century A.D.

This figure, probably imported from Gaul, was found close to cremation graves southwest of the Roman city of Verulamium.

249 *Bronze figure of Mercury* with a silver torc. He carries a cloak folded over the left arm and is accompanied by a ram, a cock and a tortoise. He holds a purse in his right hand and, in the left, a herald's staff, now lost. Overall height 12.8 cm.

St. Albans, Verulamium Museum. – Literature: L.F. Pitts, Roman Bronze Figurines of the Catuvellauni and Trinovantes. *BAR* British Series 60, 1979, no. 39 pl. 12.

250

Mathay, Département of Doubs, France
1st/2nd century A.D.

From 1901 to 1903 several bronze figures were found in Mathay; four of these represented Mercury and one was a figure of Mars. It cannot now be stated whether all the nine objects belonged together.

250 *Bronze figure of Mercury* with a silver torc. He wears a winged hat and a cloak. In the drooping right hand he holds the purse and, in the left, he held the now-missing herald's staff. Overall height 17.1 cm.

Montbéliard, Musée du Château. – Literature: Lebel 1962, no. 12 pl. 14.

251

Sens, Département of Yonne, France
1st/2nd century A.D.

The figure was found in 1841 in Agedincum, the main centre of the Senones.

251 *Bronze figure of Mercury* with a golden torc. He wears a winged hat and a cloak; the money bag is in the right hand and the herald's staff (now lost) is in the left. H. 16 cm.

Sens, Musée Municipal. – Literature: *Bronzes antiques de l'Yonne,* Catalogue Avallon (1982) no. 76.

252

Richborough, Kent, England
1st/2nd century A.D.

The figure was found in the military barracks of Rutupia.

252 *Bronze figure of Mercury* with golden torc. It wears a winged hat and cloak. In the left hand he carries a silver herald's staff and, in the right hand, a purse (now lost). H. 9.1 cm.

Kent, English Heritage, Richborough Castle. – Literature: M.J. Green, A Corpus of Small Cult-Objects from the Military Areas of Roman Britain. *BAR* British Series 52, 1978, 69 no. 25.

253

Mönchhof, Burgenland, Austria
2nd century A.D.

253 *Bronze figure of Mercury* with a silver torc and a twisted silver armlet. This god, with a cloak folded over the arm, possibly wore a winged hat. In the right hand it bears a purse and a herald's staff, now lost, in the left. H. 9.8 cm.

Bruckneudorf, Private collection. – Literature: K. Gschwantler, Die Merkurstatuette vom Ruprechtsplatz in Wien. *Lebendige Altertumswissenschaft, Festschr. H. Vetters* (1985) 240 pl. 29 fig. 3.

Xanten, North Rhine/Westphalia, Germany
1st century A.D.

This figure, probably an import from Gaul, was found in 1978 in a burnt level in the settlement on the lower Rhine where, at the end of the 1st century A.D., the Roman colony of Ulpia Traiana was established.

254 *Bronze figure of the enthroned Jupiter,* decorated with about fifteen connecting silver torcs. The figure is dressed in a cloak suspended on the shoulder; in his right hand he holds the bundle of lightning strokes and in his left a sceptre, most of which is now missing. Overall height 15.2 cm.

254

Xanten, Regionalmuseum. – Literature: D. von Detten, Funde aus einem Brandschutthorizont der vorcolonialzeitlichen Siedlung in Xanten. Das Rheinische Landesmuseum Bonn, special issue January 1979, *Ausgrabungen im Rheinland '78,* 150f. fig. 136.

255

Augst, Canton Basleland
2nd century A.D.

Found in the dwelling- and workers' quarters of Insula 23 in the Roman city of Colonia Augusta Raurica.

255 *Bronze figure of Venus* dressed in a cloak slung around the hips. In addition to the ornament cast with the figure, a diadem and rings on the upper arms, the figure wears a collar of gold wire round the neck and bracelets on the wrists. Overall height 16.7 cm.

Augst, Römermuseum. – Literature: Kaufmann-Heinimann 1977, no. 69 pl. 71–73.

Colourplate XXVIII page 96

256

Augst, Canton Basleland
3rd century A.D.

In 1963 a small group of objects comprising a jug, a beaker and a group of figures, was found hidden in an industrial hall in Insula 18, a dwelling- and workshop quarter in Augusta Raurica.

256 *Bronze figures of Venus and of two small cupids* on a semicircular base. The small boy looks back at the goddess who is staring in front of herself; the other, decorated with a bronze necklet, holds before her a now broken-off mirror and carries a little bottle with ointment in it. The group probably decorated the toilet table of a Roman lady. H. of Venus 13 cm.

Augst, Römermuseum. – Literature: Kaufmann-Heinimann 1977, no. 68 pl. 69f.

257

Mitrovica, Yugoslavia
2nd century A.D.

257 *Bronze figure of Venus* dressed in a cloak slung round the hips. She wears a bronze torc round her neck. H. 12.5 cm.

Budapest, Ungarisches Nationalmuseum. – Literature: V. Cserméryi, Statuettes de Vénus en Pannonie. Actes du VIIe Colloque international sur les bronzes antiques. *Alba Regia* 21, 1984, 136 pl. 67,1.

Lausanne-Vidy, Canton Vaud
A.D. 72–145

In 1936 in the harbour of Lousonna an extraordinary hoard of coins was found in the interior of a dwelling-house. In each of two corners opposite each other in the room 36 freshly stamped gold coins were found. Their owner had probably hidden them in a politically uncertain situation shortly after A.D. 145 and was unable to recover them later.

258 *Seventy-two gold coins* (aurei) from the period of government of the emperors Vespasian, Domitian, Trajan and Antoninus Pius (A.D. 72–145).

Lausanne, Cabinet des Médailles; Musée cantonal d'archéologie et d'histoire. – Literature: C. Martin, Le trésor monétaire de Vidy. *Revue historique vaudoise* 49, 1941, 193–214.

Colourplate XXV page 84

Kaiseraugst, Canton Aargau
3rd century A.D.

258 A Roman well over 12 metres deep contained the bones of 14 humans, 8 horses, 2 donkeys and 22 dogs as well as a little pottery, glass, fragments of metal objects and a golden neck chain. The well must have been filled in between A.D. 245 and 275.

259 *Gold necklet* consisting of 38 links shaped like double-sided ivy creepers. The fastening on each terminal is made of a dolphin coiled on a trident. L. 34 cm; Wt. 29 g.

Augst, Römermuseum. – Literature: M. Schwarz, Der Brunnenschacht beim SBB-Umschlagplatz in Kaiseraugst 1980: Befund und Funde. *Jahresberichte aus Augst und Kaiseraugst* 6, 1986, 68ff. fig. 2.

Colourplate IV page 8

259

Obfelden-Lunnern, Canton Zürich
3rd century A.D.

In 1741 about 80 silver coins and a number of gold ornaments were found in the lands round the Roman villa of Obfelden-Lunnern. The hoard, only partly preserved, must have been hidden about A.D. 250.

260 *Two three-member gold necklets* with openwork fastening members. L. 62 and 53 cm; Wt. 60.5 and 38.5 g.

261 *Two gold necklets* made of openwork links and red glass. L. 27.3 and 24 cm; Wt. 6.8 and 8.5 g.

262 *Two gold ornamental discs* with filigree; each has two loops. Dm. 3.3 and 4.5 cm; Wt. 10.6 and 19.8 g.

263 *Two husk-shaped golden pendants.* H. 3.0 cm; Wt. 2.6 g.

264 *Golden bracelet* ending in stylised snakes' heads. L. 16 cm; Wt. 50.7 g.

265 *Fragment of a three-piece gold earring.* L. 3.5 cm; Wt. 1.6 g.

266 *Clasp of a golden chain.* L. 4.2 cm; Wt. 2.9 g.

Zürich, Schweizerisches Landesmuseum. – Literature: E. Vogt, *Geschichte der Gemeinde Obfelden* (1947) fig. 47–56 m.

Colourplate IX pages 26 and 27

260–261

262–263

264–266

267

Augst, Canton Basleland
3rd century A.D.

The pendant was found in a trench in a street of the dwelling- and handworkers' quarter on the southern edge (Insula 49) of the Roman city of Augusta Raurica.

267 *Ornamental gold disc.* Openwork decoration and filigree. Part of a neck chain. Dm. 2.73 cm; Wt. 8.2 g.

Augst Römermuseum.–Literature: T. Tomasevic, Goldfunde aus Augst 1967–1969. *Römerhaus und Museum Augst, Jahresbericht* 1968, 6f. fig. 1 pl. 1 Ab.

268

Zürich "Oetenbachhof", Canton Zürich
2nd century A.D.

In 1868 in the courtyard of the former convent of the Dominican sisters on the Oetenbach in Zürich a small hoard of ornaments was found. It had probably been buried about A.D. 150.

268 *Two twisted gold armlets,* the terminals formed of separately worked snakes' heads. Dm. 7.8 and 8.4 cm; Wt. 81.6 and 82.7 g.

269 *Two gold rings* with head of Hercules in relief. Dm. 2.5 and 2.6 cm; Wt. 11.4 and 11.2 g.

270 *Gold ring* with agate bezel on which is carved a raven on a lyre. Dm. 2.9 cm; Wt. 25.4 g.

271 *Gold ring* with carnelian bezel showing a dolphin. Dm. 1.8 cm; Wt. 2.1 g.

272 *Gold ring* with setting of blue glass paste showing a satyr with grapes and a Thyrsos Rod. Dm. 2.8 cm; Wt. 21.4 g.

273 *Two gold rings* from which the bezels are missing. Dm. of each 2.5 cm; Wt. 4.0 and 11.0 g.

274 *Gold ring,* the terminals formed of two bent-back snakes' heads. Dm. 2.3 cm; Wt. 3.0 g.

Zürich, Schweizerisches Landesmuseum. – Literature: F. Keller, Römischer Goldschmuck, gefunden zu Zürich. *ASA* 1, 1868, 70. 87ff. pl. 5; J. E. Schneider, Zürich in römischer Zeit. *Turicum – Vitudurum – Iuliomagus, Festschr. O. Coninx* (1985) 71–75 fig. 2.20.

Colourplate V pages 10 and 11

269

270–272

273–274

275

Avenches, Canton Vaud
A.D. 170–180

The bust was found on April 19th, 1939, in clearing a drainage channel in front of the Cigognier temple in Avenches.

275 *Golden bust of the emperor Marcus Aurelius* (A.D. 161–180). He wears a coat of mail with Medusa head and on the left shoulder part of the cloak is visible. In comparison with other portraits of this emperor this representation is distinguished by a number of unusual details such as the strictly frontal pose, the blind stare, the low forehead and the decorative treatment of the hair. A native goldsmith seems to have been at work here without having a plastic model to work from. H. 33.5 cm; Wt. 1589.7 grammes.

Avenches, Musée Romain. – Literature: H. Jukker, Marc Aurel bleibt Marc Aurel. *Bulletin de l'Association Pro Aventico* 26, 1981, 5–36, fig. 1–26.

Colourplate XXVII page 92

APPENDIX: GOLD ANALYSIS

Alexander Voûte

Small finds

Cat. no.	Find-place	Object/Inv.no.	Au %	Ag %	Cu %	Sn %	Ni %	Other %	Analysis
1	Eschenz	Beaker	74.5	25	0.35	0.020	–	–	Ha4902
1	Eschenz	Beaker	76.3	23.3	0.4	–	–	0.2Zn;SpFe	VT0534 9.74
4	Thun–Renzenbühl	Gold pegs	69	30ca	1–2	–	–	–	F&H 1941
5	Weiningen	Spiral roll of wire/40188	89.5	10	0.40	0.13	–	–	Ha4776
6	Binningen	Diadem/10205	79	18ca	2.8	0.27	–	SpBi	Ha0445
7	Zürich-Altstetten	Dish/17430	85.4	14	0.35	0.24	–	–	Ha3652
8	Zürich-Burghölzli	Spiral roll of wire/3138d	80.8	18.5	0.7	–	–	–	VT1286 4.90
9	Bonstetten	Earring/59397	79.5	19.3	1.2	–	–	–	VT1288 4.90
11	Wohlen-Murzelen	Earring/10920	84.8	14	0.06	0.086	–	–	Ha0437
12	Kirchlindach	Earring/31827	73.1	25.5	1.4	0.045	–	–	Ha0456
20	Châtonnaye	Collar/4567	78.2	21	0.8	0.043	–	–	Ha0458
21	Châtonnaye	Earring/4569	93.5	6ca	0.06	0.52	–	0.018Pt	Ha0439
22	Allenlüften/Mühleberg	Collar/11535/11540	87.5	12	0.32	0.11	–	–	Ha0454
22	Allenlüften/Mühleberg	Collar/11536–39	87.4	12	0.34	0.22	–	–	Ha0450
23	Allenlüften/Mühleberg	Armlet/11540	90.3	9.45	0.25	–	–	–	VT0449 8.72
25	Lentigny	Armlet/10854	82.5	13.9	3.6	–	–	–	VT0449 8.72
26	Ins-Großholz	Hollow sphere/11278	88.7	9.2	2.1	–	–	–	VT0449 8.72
27	Ins-Großholz	Chain/11278	80.9	17.4	1.7	–	–	–	VT0449 8.72
28	Ins-Großholz	Foil/11243	70.5	29ca	0.50	0.012	–	–	Ha0511
28	Ins–Großholz	Foil/11243	66.4	33ca	0.51	0.044	–	–	Ha0512
28	Ins-Großholz	Foil/11243	74.4	25ca	0.60	0.018	–	–	Ha0513
28	Ins-Großholz	Foil/11243	76.6	23ca	0.42	0.015	–	–	Ha0514
29	Ins-Großholz	Hemisphere/11240	70.2	29ca	0.7	0.055	–	–	Ha0451
29	Ins-Großholz	Hemisphere/11240	72.3	27.0	0.7	–	–	–	VT0449 8.72
29	Ins-Großholz	Hemisphere/11241/2	77.8	22ca	0.23	–	–	–	Ha0452
29	Ins-Großholz	Hemisphere/11242	77.0	22.7	0.3	–	–	–	VT0449 8.72
30	Ins-Großholz	Earring/11266	84.7	15	0.25	Sp	–	0.05Zn	Ha0438 1)
31	Urtenen-Grauholz	Hemisphere/11076	77.3	20.3	2.4	–	–	–	VT0449 8.72
31	Urtenen-Grauholz	Hemisphere/11076	76.5	23.0	0.5	–	–	–	VT0449 8.72
31	Urtenen-Grauholz	Hemisphere/11076	75.2	24ca	0.8	0.037	–	–	Ha0440
31	Urtenen-Grauholz	Hemisphere/11076	80.2	19ca	0.74	0.047	–	–	Ha0459
31	Urtenen-Grauholz	Hemisphere/11076	78.1	21ca	0.9	0.049	–	–	Ha0461
31	Urtenen-Grauholz	Hemisphere/11076	81.3	18ca	0.64	0.024	–	–	Ha0467
31	Urtenen-Grauholz	Hemisphere/11076	82.1	17ca	0.9	0.044	–	–	Ha0469
32	Urtenen-Grauholz	Earring/11077	93.7	6	0.26	0.062	–	0.05Zn	Ha0442
32	Urtenen-Grauholz	Earring/11078	93.8	6	0.14	0.030	–	–	Ha0443
35	Jegenstorf-Hurst	Pendant/25175	71.0	28.3	0.7	–	–	–	VT0449 8.72
49	Unterlunkhofen	Coupling clasp/3231a1	(77.1)	22.3	0.6	cf. Silver			VT1287 4.90
49	Unterlunkhofen	Coupling clasp/3231a2	(79.6)	19.8	0.6	cf. Silver			VT1287 4.90
50	Münsingen-Rain	Finger ring/24721	72.0	26.0	2.0	–	–	–	VT0449 8.72
51	Münsingen-Rain	Finger ring/24511	68.4	30ca	1.6	0.003	0.057	–	Ha0495
52	Münsingen-Rain	Finger ring/24509	57.6	37	5.3	0.13	–	0.059Bi	Ha0476

53	Münsingen-Rain	Finger ring/24210	92.4	7	0.5	0.021	0.060	0.014Pt	Ha0474
54	Horgen	Finger ring/3261	87.5	12.2	0.3	–	–	–	VT0435 2.72
55	Horgen	Finger ring/3261	87.5	12.2	0.3	–	–	–	VT0435 2.72
56	Horgen	Finger ring/3261	86.7	13.0	0.3	–	–	–	VT0435 2.72
58	Muri	Finger ring/30387	87.5	11.5	0.46	0.015	0.48	0.012Pt	Ha0472
58	Muri	Finger ring/30387	93.3	6.2	0.5	–	–	–	VT0449 8.72
59	Erstfeld	Necklet Opening/3192	92.9	6ca	1.05	0.065	–	–	Ha4650
59	Erstfeld	Necklet/3192	93.0	6.60	0.40	–	–	–	VT0450 8.72
59	Erstfeld	Necklet Opening/3192	86.5	12.8	0.7	–	–	–	VT0450 8.72
60	Erstfeld	Necklet Opening/3193	94.2	5ca	0.73	0.022	–	–	Ha4641
60	Erstfeld	Necklet/3193	94.7	5.20	0.50	–	–	–	VT0450 8.72
60	Erstfeld	Necklet Opening/3193	89.0	10.2	0.8	–	–	–	VT0450 8.72
61	Erstfeld	Necklet Opening/3194	90.0	9ca	0.9	0.09	–	–	Ha4645
61	Erstfeld	Necklet/3194	93.8	5.95	0.25	–	–	–	VT0450 8.72
62	Erstfeld	Necklet/3195	93.2	6ca	0.76	0.092	–	–	Ha4646
62	Erstfeld	Necklet/3195	94.3	5.40	0.30	–	–	–	VT0450 8.72
62	Erstfeld	Necklet Opening/3195	84.0	15.5	0.5	–	–	–	VT0450 8.72
63	Erstfeld	Armlet Opening/3196	89.6	10ca	0.38	0.021	–	–	Ha4648
63	Erstfeld	Armlet/3196	94.0	5.70	0.30	–	–	–	VT0450 8.72
64	Erstfeld	Armlet Opening/3197	94.7	5ca	0.29	0.006	–	–	Ha4649
64	Erstfeld	Armlet/3197	94.5	5.25	0.25	–	–	–	VT0450 8.72
65	Erstfeld	Armlet Opening/3198	89.6	10ca	0.31	0.053	–	–	Ha4647
65	Erstfeld	Armlet/3198	94.5	5.20	0.30	–	–	–	VT0450 8.72
66	St Louis/Basle	Collar/27573	96	3	1	–	–	SpPt;SpZn	Joff 69.58
67	St Louis/Basle	Collar/27571/27574	96	3	1	–	–	SpPt;SpZn	Joff 69.58
72	Uitikon–Üetliberg	Fibula/56976	81.7	18.2	<0.1	–	–	–	VT1289 4.90
73	Uitikon-Üetliberg	Disc/56977	79.0	19.4	1.6	–	–	–	VT1289 4.90
74	Uitikon-Üetliberg	Disc/56975	77.0	22.8	0.2	–	–	–	VT1289 4.90
75	Schalunen	Armlet/11702	96.5	3	0.43	0.013	–	0.010Pt	Ha0457
75	Schalunen	Armlet/11702	97.1	2.5	0.5	–	–	–	VT0449 8.72
77	Worb-Richigen	Hair ring/25149	83.2	12.5	4.0	0.14	0.14	SpPb;0.027Pt	Ha0455
77	Worb-Richigen	Hair ring/25149	85.7	12.3	2.0	–	–	–	VT0449 8.72
79	Münsingen-Rain	Finger ring/24624	71.4	26ca	2.6	0.009	–	–	Ha0494
80	Worb-Richigen	Finger ring/24983	5!	75ca	20ca	–	–	ca5 Au!	VT1292 5.90
81	Schweiz	Finger ring/39420	90.3	8	1.7	0.003	–	–	Ha0493
82	Münsingen-Rain	Finger ring/24312	47	45ca	7.8	–	0.039	0.01Bi	Ha0496
83	Belp	Finger ring/22804	66.9	29	4.1	0.065	–	0.027Pt;0.013Bi	Ha0475
84	Berne-Bümpliz	Finger ring/34459	65.2	31	3.8	–	–	–	VT1292 5.90
85	Berne-Spitalacker	Finger ring/20909	71.2	27.1	1.7	–	–	–	VT1292 5.90
86	Kirchenthurnen	Finger ring/10079	82.4	15	2.5	0.085	0.047	0.017Pt	Ha0491
87	Kirchenthurnen	Finger ring/39422	87.3	10	2.6	0.049	0.065	0.021Pt	Ha0492
88	Münsingen-Rain	Finger ring/24027	70.6	27	2.3	0.061	0.039	0.025Pt;0.01Bi	Ha0479
89	Muri	Finger ring/30378	89.6	8.5	1.8	0.070	0.12	<0.01Pt	Ha0473
89	Muri	Finger ring/30378	91.7	7.5	0.8	–	–	–	VT0449 8.72
90	Stettlen-Deißwil	Finger ring/32425	97.2	2.5	0.31	0.011	0.064	0.012Pt	Ha0471
91	Stettlen-Deißwil	Finger ring/L88–4	99.0	0.6	0.4	–	–	–	VT1292 5.90
95	Worb	Finger ring/24984	5!	87ca	8ca	–	–	ca 5Au!	VT1292 5.90
96	Spiez-Spiezmoos	Finger ring/31245	91.2	7.5	1.3	–	–	–	VT0449 8.72
235	Thun-Allmendingen	Votive sheet/33880	94.2	3.7	2.1	–	–	–	VT1293 5.90
236	Thun-Allmendingen	Pod of sheet/33879	91.3	7.3	1.4	–	–	–	VT1293 5.90
236	Thun-Allmendingen	Pod of sheet/33879	88.4	10.1	1.5	–	–	–	VT1293 5.90
236	Thun-Allmendingen	Pod of sheet/33879	89.6	9.2	1.2	–	–	–	VT1293 5.90
260	Obfelden-Lunnern	Necklet Fastening/4551/1	87.4	8.9	3.7	–	–	–	VT1291 4.90
260	Obfelden-Lunnern	Necklet/4551/1	94.8	4.8	0.4	–	–	–	VT1291 4.90
260	Obfelden-Lunnern	Necklet Fastening/4551/2	91.3	7.2	1.5	–	–	–	VT1291 4.90
261	Obfelden-Lunnern	Necklet/4551/4	86.9	10.9	2.2	–	–	–	VT1291 4.90
261	Obfelden-Lunnern	Necklet/4551/5	79.4	16.5	4.1	–	–	–	VT1291 4.90
262	Obfelden-Lunnern	Ornamental disk/4551/3/1	80.4	16.3	3.3	–	–	–	VT1291 4.90
262	Obfelden-Lunnern	Ornamental disk/4551/3/2	80.6	16.5	2.9	–	–	–	VT1291 4.90
263	Obfelden-Lunnern	Pendant/4551/8/1	78.2	19.5	2.3	–	–	–	VT1291 4.90
263	Obfelden-Lunnern	Pendant/4551/8/2	77.2	11.5	1.3	–	–	–	VT1291 4.90
264	Obfelden-Lunnern	Bracelet/4551/6	81.4	17.0	1.6	–	–	–	VT1291 4.90
265	Obfelden-Lunnern	Earring/4551/7	86.1	11.4	2.5	–	–	–	VT1291 4.90
266	Obfelden-Lunnern	Clasp of chain/4551/9	80.7	17.5	1.8	–	–	–	VT1291 4.90
268	Zürich-Oetenbach	Armlet/4552a1	96.2	3.3	0.5	–	–	–	VT1290 4.90
268	Zürich-Oetenbach	Armlet/4552a1	95.7	3.2	1.1	–	–	–	VT1290 4.90
268	Zürich-Oetenbach	Armlet/4552a2	95.7	3.7	0.6	–	–	–	VT1290 4.90

268	Zürich-Oetenbach	Armlet/4552a2	92.9	4.9	2.2	–	–	–	VT1290 4.90
269	Zürich-Oetenbach	Finger ring/4552a4a	90.1	8.0	1.9	–	–	–	VT1290 4.90
269	Zürich-Oetenbach	Finger ring/4552a4b	85.0	12.2	2.8	–	–	–	VT1290 4.90
270	Zürich-Oetenbach	Finger ring/4552a5	95.8	2.8	1.4	–	–	–	VT1290 4.90
271	Zürich-Oetenbach	Finger ring/4552a6	94.5	3.5	2.0	–	–	–	VT1290 4.90
272	Zürich-Oetenbach	Finger ring/4552a3	93.9	5.3	0.8	–	–	–	VT1290 4.90
273	Zürich-Oetenbach	Finger ring/4552a8	94.1	4.5	1.4	–	–	–	VT1290 4.90
273	Zürich-Oetenbach	Finger ring/4552a9	96.9	2.3	0.8	–	–	–	VT1290 4.90
274	Zürich-Oetenbach	Finger ring/4552a7	88.7	9.4	1.9	–	–	–	VT1290 4.90

River and Primary gold

Find-place	Object/Probe no.	Au %	Ag %	Cu %	Sn %	Ni %	Other %	Analysis
Rhein Zurzach	River gold/3787	75.2	22	2.8	–	–	–	VT1282 90 2)
Rhein Rheinau/Ellikon	River gold/3788	85.8	13	1.2	–	–	–	VT1282 90 2)
Rhein Neuhausen Flurlingen	River gold/3918	87	13	–	–	–	–	VT1282 90 2)
Rhein Neuhausen	River gold/3923	89.5	8.5	2	–	–	–	VT1282 90 2)
Oberrhein Kembs	River gold 1/4021	91.5	8	0.5	–	–	–	VT1282 90 2)
Oberrhein Kembs	River gold 2/4021	97	2	1	–	–	–	VT1282 90 2)
Wigger hint. Hergiswil	River gold	98.7	1.1	0.14	–	<0.01	–	VT0827 80 3)
Große Fontannen	River gold	91.7	8	0.2–4	–	–	–	VT0827 79 3)
Große Fontannen	River gold	96	3–4	0.2–6	–	–	–	VT0827 79 3)
Große Fontannen	River gold	96.3	3.5	<0.2	–	–	–	VT0827 79 3)
Grüne Sumiswald	River gold 1	98.4	1	0.01	–	–	0.016Pb; 0.03Hg	Hartm. 63 4)
Grüne Sumiswald	River gold 2(1883)	91.8	8	0.01	–	–	0.015Pb; 0.14Hg	Hartm. 63 4)
Krümpelgraben Trubschachen	River gold 1	96.9	3	0.02	Sp	–	0.036Pb	Hartm. 63 4)
Krümpelgraben Trubschachen	River gold 2(1933)	95.8	4	0.03	–	–	0.014Pb; 0.12Hg	Hartm. 63 4)
Krümpelgraben Trubschachen	River gold 3(1933)	97.9	2	0.02	–	–	0.018Pb; 0.05Hg	Hartm. 63 4)
Aare/Aarau	River gold	97.4	2	0.02	–	–	0.008Pb; 0.6Hg	Hartm. 63 4)
Calanda–Massiv	Primary gold	93.8	6	0.08	–	–	0.009Pb; 0.06Hg	Hartm. 63 4)

Notes:

1) Averages.
2) Hofmann F. Waschgold in der Molasse, in pleistozänen Ablagerungen und in rezenten Bächen und Flüssen der Ostschweiz. *Eclogae geol. Helv.* Vol. 78/3, 1985, 433–450; Hofmann F, Über den Goldgehalt der Bäche und Flüsse im Ostschweizerischen Rhein- und Linthsystem und seine Herkunft. *Minaria Helvetica* 4, 1984.
3) Maag R., Gold aus dem Luzerner Hinterland. *Heimatkunde des Wiggertals* 37, 1979; Maag R., Neue Erkenntnisse und Beobachtungen an rezenten Goldablagerungen (Seifen) des Napfgebietes. *Schweizer Strahler* 6, no. 7, 1983.
4) For lead contents see Hartmann A., Prähistorische Goldfunde aus Europa. *Studien zu den Anfängen der Metallurgie* 3, 1970, 19. The contents listed correspond to the apparent lead contents as determined by A. Hartmann. They should not be considered as absolute.

Coins

Cat. no.	Find-place	Object /Castelin no.	Au %	Ag %	Cu %	Analysis
110	Stein am Rhein	Stater/374	96	3.2	0.8	VT0409 71/72
111	Basle	Stater/377	93	6.1	0.9	VT0409 71/72
112	Zürich	Stater/379	92	7.5	0.5	VT0409 71/72
114	Stäfa	Half stater/382	94.5	4.9	0.6	VT0409 71/72
115	Neuchâtel	Quarter stater/385	94.5	4.9	0.6	VT0409 71/72
116	Stäfa	Quarter stater/389	95	4	1	VT0409 71/72
117	Stäfa	Quarter stater/399	85	13.4	1.6	VT0409 71/72
118	Stäfa	Quarter stater/402	81.5	17.7	0.8	VT0409 71/72
120	Tägerwilen	Quarter stater/404	78.5	20.5	1.0	VT0409 71/72

121	Muttenz	Quarter stater/405	74.5	24	1.5	VT0409 71/72
122	Niederweningen	Quarter stater/406	74.0	24.5	1.5	VT0409 71/72
123	Birs/Basle	Stater/409	71.5	23.5	5.0	VT0409 71/72
124	Val de Ruz/Neuchâtel	Quarter stater/413	79	19.2	1.8	VT0409 71/72
125	Aarburg	Quarter stater/420	63	35.3	1.7	VT0409 71/72
126	Valais	Stater/430	49.5	37.3	13	VT0409 71/72
128	Leuggern	Quarter stater/878	67	28	5	VT0409 71/72
129	Windisch	Quarter stater/880	61.5	32.5	6	VT0409 71/72
130	Freiamt	Quarter stater/882	59	34	7	VT0409 71/72
131	Rheinau	Quarter stater/888	46	42	12	VT0409 71/72
132	Seeb	Quarter stater/889	55	35	10	VT0409 71/72
133	Zürich	Quarter stater/891	62	30.5	7.5	VT0409 71/72
134	Steinegg	Quarter stater/895	58	32	10	VT0409 71/72
135	Zürich	Quarter stater/899	65	20.5	14.5	VT0409 71/72
140	La Tène	Quarter stater/921	66	30.5	3.5	VT0409 71/72
143	La Tène	Quarter stater/934	41	43	16	VT0409 71/72
145	La Tène	Quarter stater/933	64	31.5	4.5	VT0409 71/72
153	Aargau	Quarter stater/925	68.5	28	3.5	VT0409 71/72
157	Rheinau	Quarter stater/930	62	31.5	6.5	VT0409 71/72
160	Estavayer	Quarter stater/935	28	26.5	15.5	VT0409 71/72
161	Auvernier	Quarter stater/936	28.5	48.5	23	VT0409 71/72
167	Cudrefin	Stater/939	79	20.9	0.1	VT0409 71/72
174	Zürich	Quarter stater/853	27.5	49.5	23	VT0409 71/72
175	Berne	Stater/845	34.5	46.5	19	VT0409 71/72
177	Aargau	Stater/848	30	43.5	26.5	VT0409 71/72
178	Schaffhausen	Stater/849	24.5	52	23.5	VT0409 71/72
183	Basle/St-Louis?	Stater/1070	67.5	25	7.5	VT0409 71/72
185	Basle/St-Louis?	Stater/1078	63	27.5	9.5	VT0409 71/72
186	Aarberg	Stater/1080	70	23	7	VT0409 71/72
187	Aargauische Rheingegend	Stater/1087	55.5	31.5	13	VT0409 71/72
188	Marthalen	Quarter stater/1088	90.2	8.8	1	VT0409 71/72
189	Luzern	Quarter stater/1089	61.5	27	11.5	VT0409 71/72
190	Lausanne	Stater/1099	13	82	5	VT0409 71/72
198	Biel	Quarter stater/494	67	31	2	VT0409 71/72
199	Wil	Stater/501	"Gilt"			VT0409 71/72
200	Aargau	Ball stater/706	68	26	6	VT0409 71/72
201	Yverdon	Quarter stater/356	94.3	4.5	0.8	VT0409 71/72
202	Aarau	Stater/141	65	26	9.0	VT0409 71/72

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