Unto Salo

Fire-striking implements of iron and Finnish myths relating to the birth of fire

Oval striking-stones

Fire-lighting implements are found in the Iron Age graves of Finland throughout the whole of the period when artefacts were included in the burials, i.e. from the Early Roman Iron Age to the Crusade Period. The oldest of these artefacts are oval strikingstones, which date from the Early Roman Iron age to the middle of the Merovingian Period, and possibly to the end of this period (Kivikoski 1973, Fig. 72, 169—170). There are no doubts regarding the serviceability of these artefacts — they will provide a spark when struck and a better spark the harder the steel used; soft iron will not create a spark that can be used to light a fire (Keyland 1916, 202—207; Leppäaho 1949). In Finland, special striking irons have not been found in connection with oval striking-stones, which suggests that such implements were not used here.

Oval striking-stones were common in the areas surrounding the Baltic after the Birth of Christ, i.e. in Sweden, Denmark, Schleswig, Finland, the Baltic lands and in Eastern and Western Prussia (Hackman 1905, 245—248; Rydh 1917; Moora 1938, 569—574; Kivikoski 1961, 136—137; Tönisson 1982, 291). There are also several finds from Norway, from where they spread into Scotland and Ireland. To some degree they have also been found in greater Poland, Slesia, the Elbe-Saale region and East Mecklenburg as well as in isolated cases from Eastern Russia, the Ukraine and Moravia (ibid.; Kostrzewski 1955, 2238—229; Leube 1975, 33—34). In the Przeworsk and Oksywie cultures oval striking-stones occur already in the Late Pre-Roman Period (Salo 1968, 169). For this reason, it has been assumed that this artefact type came about in the Vistula region, from where it spread to Scandinavia and the lands of the Baltic. The oldest dated specimen from Finland is from the Penttala cemetery in Nakkila, which mainly had contacts with Latvia, but oval striking-stones apparently also spread to Finland from Sweden (Salo 1968, 168—169). In Scandinavia and the Baltic regions their period of use is mainly the same as in Finland.

There are relatively few finds of oval striking-stones in graves, a possible total of ten in the case of Finland. On the other hand, by the late 1940s well over 400 specimens had already been found in Finland (Kivikoski 1961, 136—137). As there are sufficient grounds to assume that they were worn on the belt (Rydh 1917), their placing in graves appears to have been exceptional, perhaps even undesirable, although this was not always adhered to. The oval striking-stones differ from other Iron age artefacts insofar as the majority of these have been found outside the cemeteries, albeit most of them in the so-called zone of cemeteries and the adjacent wilderness regions. They are clear evidence of the utilization of wilderness resources, hunting and especially slash-and-burn cultivation. The most far-off finds, however, were most probably related to the Lapps.



Fig. 1. Oval striking-stones in the collections of the Museum of Turku. Photo: Pekka Kujanpää.

Already in 1905, Alfred Hackman (1905, 241-252) pointed out oval striking-stones were quite often found in marshy meadows and pastures and even on shore in the water and suggested that they were placed in their exceptional locations as sacrifices or for votive purposes. In later finds, where the surroundings and milieu is known in more detail, the proportion of such striking-stones seems to have increased. As it does not seem to be sensible to assume that in these locations the oval striking-stones were in any special danger of being lost, they must therefore reflect some kind of intentional activity involving them. Hackman's suggestion seems to be founded in the light of present evidence, especially if we take into account that in Estonia, Latvia, Sweden and even Denmark these artefacts are rarely found in graves, but common in bog and other sacrificial finds (Danish bog finds, Koku Muiza in Latvia) or in forest regions (Hackman 1905, 246; Moora 1929, 71–78). Thus, the oval striking stones in their area of distribution do not only bear witness to similar fire-making methods, but also to similar burial practices with respect to them and especially a cult relating to marshy locations and shores close to settlement and in far-off forests. The connection with slashand-burn practices seems probable, though it is not the only explanation that can be suggested.

Thus, the oval striking-stones are related along with technique to "something". This is also suggested by their form. With the exception of the oldest striking-stones, for which oval and relatively flat natural forms were selected, the oval striking-stones are



Fig. 2. Chief distribution of oval striking-stones in Europe, based on various sources (See note 1). Drawn by Kristiina Korkeakoski-Väisänen.

the products of a careful process of manufacture — symmetrical and often plastic in form. They were formed with chiselling technique, the traces of which were however removed with the exception of the binding grooves at the sides. As such their form is a markedly intentional one, which is hardly explained by their technical function. Technical features can only explain the grooves on the sides and partly also the central groove or grooves to which the blow was struck. In other respects their form must be mainly esthetic and symbolic. Nor is their symbolism hard to understand: the oval striking-



Fig. 3. Striking-stone affixed to belt. Hove, Vik, Norway. According to A. Lorange.



Fig. 4. Distribution of oval strikingstones in Finland according to Esko Sarasmo (1945).

52



Fig. 5. Bow-shaped strike-a-lights. Find locations, from left to right: Mäkihaka in Vähäkyrö and Gulldynt in Vöyri, Southern Ostrobothnia; Hagestad and Torup, Vitaby, Scania; Tuna gård, tuna, Småland. The Mäkihaka, Gulldynt and Torup strike-a-lights are of the Merovingian Period. Drawn by Evi Niiranen—Öström according to Leppäaho, Strömberg and Keyland.



Fig. 6. Types based on the bow-shaped strike-a-lights. Find locations, from left to right: Gulldynt, Vöyri, Southern Ostrobothnia Sollentuna, Tureberg, Uppland; Beckum and Meckenheim, Nordrhein-Westfalen, Germany; Cziko, Hungary. The Gulldynt and Beckum specimens are from the Merovingian Period. Drawn by Evi Niiranen—Öström according to Cleve, Kivikoski and Keyland.

stones are to such a degree similar to symbolic representations of the female vulva that there can be no doubts regarding the matter. The interpretation of this feature will be discussed in further detail below.

Strike-a-lights

At the beginning of the Merovingian Period grave finds begin to include the first actual strike-a-lights or fire-striking steels (Cleve 1943, 150—153). These signify a new technique of striking fire which also included flints. The new technique gradually replaced the oval striking-stones, although the latter may have remained in use until later than known at present. Strike-a-lights and flint become common only in the graves of the Late Viking and Crusade Periods (Kivikoski 1973, fig. 1007—1012, 1247—1250; Lehtosa-lo-Hilander 1982 II 72—73). In this case it has hard to decide, whether this meant the spread of strike-a-lights or only their placing in graves. A further improvement in fire-making technique was the use of sulphur, of which there is evidence in Crusade Period graves (Kivikoski 1973, fig. 1251). As the use of strike-a-lights, flint, tinder and sulphur continued until the introduction of matches and is known in detail from ethnographic accounts (Keyland 1917; Sirelius 1921, 5—9), they do not seem to have posed technical problems even in the Iron Age.

However, this technique entails a number of other problems that have not been the subject of study. These features can be reviewed from the perspective of the typology and chronology created by present studies. Finnish archaeologists have divided the strike-a-lights into lyre-shaped, oval, bow-shaped, boat-shaped (lunar, scythe-shaped and curved-ended), bar-shaped and bronze-handled types with the latter further divided into types according to the shape of the handle (Cleve 1943, 150–153; Kivikoski 1973, figs. 641–644, 1007–1011, 1247–1250; Lehtosalo-Hilander 1982 II 72–75). These will be briefly discussed in the following.

The rare bow-shaped strike-a-lights are known in Finland only from Gulldynt in Vöyri and Mahlaistentönkkä in Vähäkyrö, and are both from the Merovingian Period (Leppäaho 1948, 81—83; Kivikoski 1973, fig. 643). In likeness with other strike-a-lights the form in question is most probably of international origin. A summary review indicates that it was in use at least in Scania and Småland (Strömberg 1981, 54—55; Keyland 1916, 208). The form of the bow and especially its ends curving forward show that the prototype was an Asian or composite bow. This is also suggests an eastern origin. The bow-shaped strike-a-lights were light and were possibly did not withstand the strain of striking sparks.

Somewhat more common are boat-shaped or curved-ended strike-a-lights, six of which are known from Finland (Vöyri, Eura and Laitila. Kivikoski 1973, fig. 644; Lehtosalo-Hilander 1982 II 72—73). These are also from the Merovingian Period. This is not a domestic type, as it also occurs at least in the Merovingian Period in Norway and Germany as well as in Hungary and possibly also in England (Petersen 1951, 434—435; Lehtosalo-Hilander 1982 II 73). Its area of distribution was probably much more extensive in the Iron Age, judging from its historically known occurrences as far as China and Sumatra (Keyland 1916, 216, 234). This type is not independent with respect to the former one, as the Finnish finds show that it is a simplified variant of the bowshaped strike-a-lights. It does not have a separate bow or string-shaped part. These features are combined into a plate of bow-shaped outline. The German forms indicate that the dating is correct. This form apparently provided for a type that could better withstand the shock of striking.



Fig. 7. Lyre-shaped strike-a-lights. Find locations, from left to right: Kukkojenkivenmäki, Tampere, Satakunta; Peltokutila, Kalvola, Häme; Juvenius, Kangasala, Satakunta; Övre Fernebo, Gästrikland, Hörsnö, Gotland; Gnezdovo, Russia. The first two specimens are from the Merovingian Period, while the rest are either with certainty or with a degree of probability from the Viking period. Drawn by Evi Niiranen—Öström according to Cleve, Kivikoski, Keyland and Sedov.



Fig. 8. Perforated strike-a-lights. Find locations, from left to right: Ristimäki, Kaarina, Finland-Proper; Imatran voimalaitos, Vanaja, Häme; Tuukkala, Mikkeli, Savo; Hovinsaari, Räisälä, Karelia; Rösta, Ås, Jämtland; Björkö (Birka), Uppland; Mustalaismäki, Hattula, Häme. The Ristimäki specimen is from the transition from the Merovingian to the Viking period. The Imatran voimalaitos, Rösta and Birka specimens are from the Viking Period. Drawn by Evi Niiranen—Öström according to Kivikoski and Keyland.



Fig. 9. Distibution of strike-a-lights with mounted figures according to Pirkko-Liisa Lehtosalo-Hilander.

In the Merovingian Period also the lyre-shaped striking steels began to appear in grave finds, but they became common in the Late Viking Period, remaining in use far into historically documented times (Cleve 1943, 150—153 Kivikoski 1973, fig. 641, 1008; Lehtosalo-Hilander 1982 II 72—73). The connection with the shape of a lyre is only an apparent one, as the type must have developed from the bow-shaped form. The ends of the bow were stretched in front and the bow and string were beaten into a plate. The original bow is still alluded to by a widening of the central part, a typological rudiment without practical significance, The lyre-shaped type was common throughout extensive areas and according to Cleve it spread to Scandinavia from Central Europe and to Finland either from Scandinavia or the latter.

Assuming that the above suggestions are correct, the bow-shaped strike-a-lights as well as the boat and lyre-shaped types involve the idea and concept of a bow. The Finnish finds do not however indicate such a course of development and the types arrived here ready-made. Nor can this be proved with reference to materials from abroad. It appears that strike-a-lights were everywhere regarded as simple functional forms with mainly technical import in archaeological terms.

This view would seem to apply especially well to frame-like strike-a-lights, i.e. fire steels which in most cases have only a frame and sometimes a thread-like ornament in the centre as well (Kivikoski 1973, 642, 1007—1009, 1247, 1249—1250). The frame often has curved sides and the ends are either round, cut off or conical. Although the forms in question are simple, they cannot be explained solely with reference to technique of striking fire. The frame-like were introduced already in the late Merovingian Period and remained in use into historically documented times.

An exceptional group consists of the Viking Period bronze-handled strike-a-lights. Of these I shall mention only the so-called rider type which has recently been studied in Finland by Pirkko-Liisa Lehtosalo-Hilander (1982 II 73—75). This type has a exten-

sive distribution, viz. from Norway to the Kama River and from Finnmark to Hedeby, Lithuania and Gezdovo. In Finland they are more common than elsewhere and they were most probably made here, in the early stages of the type in the early 10th century. However, the ornamental motif of two mounted figures facing away from each other is generally regarded as of eastern origin and there are no preliminary stages to it in the Finnish material. It was most probably introduced into Finland, although it has not been possible to demonstrate any prototypes for it.¹

The mythical origin of fire

The very existence of the above differing types of strike-a-lights shows that their forms hardly derive from technical function. They must thus have certain symbolic and esthetic content in the same way as the oval striking-stones. This is understandable as such , for fire was both a useful and a dangerous element. It was needed, but precautions also had to be taken against it. It required a correct manner of behaviour and wrong behaviour brought on punishment. As the basis of my explanation I shall refer to Finnish spell poems and especially the myths relating to the birth of fire, as they appear to have surprising connections with the fire-making implements of the Iron Age.

According to the Finnish spells fire was of heavenly origin:

"Vuorest' on veen sikiä,

tulen synty taivahasta," (Krohn 1917, 97)

(From the rock water is born / Fire is born of heaven) or

"Miss' on tulta tuuitettu,

vaaputettu valkeata?

Tuolla taivahan navalla,

kuulun vuoren kukkulalla," (Karelia. Krohn 1917, 106)

(Where was fire rocked / light swaddled? / There up in the sky/ on the crest of the mount.)

The heavenly origin of fire is also known from Swedish folklore (Krohn 1917, 98).

Ukko as the striker of fire

In the poems the heavenly maker of fire is above all Ukko, the god of thunder, who is also referred to as the striker of fire. But Ukko also appears to have been the keeper of fire in a more general sense as well. It was from him that friction fire was asked for burn-clearing — "Anna, Ukko, uutta tulta" ("Ukko give new fire". Krohn 1914, 126). Friction fire was regarded as "more angry" than struck fire and of better use in burning over a clearing (Sirelius 1921, 7). This may reflect the much Stone Age origin

¹ The map in fig. 2 is based on the following sources: Hackman 1905, 241—252; Rydh 1917; Moora 1938, 569—574; Kivikoski 1961, 136—137; Salo 1968, 169—170; Huurre 1983, 332—334; Kostrzewski 1919, 178—179; Kostrzewski 1955, 228—229; Sjövold 1962, 187—188; Okulicz 1973, 359—360; Leube 1975, 33—34; Tönisson 1982, 291—292. The boundary of the area of distribution of the striking-stones is marked summarily. Outside the area are Russia, White Russia, Greater Poland, Slesia, the Elbe-Saale region and East Mecklenburg, although there are some finds of striking-stones from the latter regions. The author did not have sufficient information at his disposal to assess, whether some of these regions should also have been included in the area of distribution. Scotland and Ireland are outside the area shown in the map.

of slash-and-burn cultivation (Pihlman & Seppä-Heikka 1985) and its greater age in comparison with Iron Age fire-striking methods.

The weapons and implements of Ukko, the god of thunder — literally "old man", were the axe, 'club', hammer and arrow (Harva 1948, 74—82). The oldest stratum of these attributes are without doubt the hammer and the axe, as the hammer-butted axe is generally regarded as the original weapon of the Indo-European god of thunder (Harva 1948, 81—88; Salo 1988). The use of these weapons produced heavenly fire — light-ning. As an anthropomorphic god of thunder, which is not included in Finno-Ugrian tradition, Ukko with his attributes and tasks corresponds to the Indo-European god of thunder — mainly Thor of Scandinavian lore. It is possible that Ukko was introduced to Finland from the west, possibly as the god of cereal cultivation and especially slash-and-burn farming. As the striker of fire and the giver of rain Ukko could have had his positive role by the Bronze Age at the latest (1300—500 B.C.), but possibly already in the period of the Kiukainen culture.

According to folklore Ukko held rein over the clouds (Fi. hattarat), made "God's weather" (Fi. jumalanilma) or thunder, struck with his lightning, produced the heavy thunder showers, but also the more gentle rain and increased the fertility of the land (Harva 1948, 74—102). The latter was accomplished by the striking of lightning, born from the weapons of Ukko and leaving in the ground weapons (axes) of stone (Fi. ukonvaaja, ukonnaula, ukonkynsi).

Hieros gamos

However, at the same time lightning was seen as a sacred wedding (hieros gamos), as indicated by folk sayings (Harva 1948, 77) and the verses of the Ukonvirsi (Ukko's hymn) of Ingermanland:

"Pyhä Ukko armollisin,

tule meille vierahisin,

anna maillesi makua (makaamista),

pelloillesi pehmitystä." (Krohn 1914, 120)

(Holy Ukko, most gracious/ Come and visit us / Lay your land / Soften your fields.) These verses are clearly influenced by Christianity, but on the other hand there is no doubt regarding their pre-Christian character. The earliest known mention of the coital nature of lightning is in the preface to Mikael Agricola's Psalter (1551), as argued by Martti Haavio (1959, 81–102):

"Quin Rauni Ukon Naini härsky/

ialosti Wkoi Pohiasti pärsky."

(When Rauni Ukko's woman him enticed / nobly did Ukko spatter.)

Ukko's partner in the sacred wedding was his woman, Rauni, without doubt the godess of the fertility of the soil. She "enticed" Ukko to make lightning. The Finnish myths do not tell exactly how this happened, but it is alluded to in a Ostrobothnian-Swedish spell for putting out forest fire: "Gnisto sto ur steinin, lågan sto ur särven. Vet du, vem har illa gjort? Jag vet, jag vet. Jungfrau steg upp ur tseldon med sina gyllene pattar" (Krohn 1917, 104). Freely translated, the verses read: "The spark came from stone / the flame lit up from a chip./ Do you know the evil-doer?/ I know the evil-doer./ Arose the virgin from the spring/ with her breasts of gold.

The words possibly refer on the one hand to oval striking-stones, as the term "steinin" and not "flinta" (flint) is used and on the other hand to the woman of the god of thunder, who lived in a spring and who could make the god strike lightning and set fire to the forest by baring her breasts. The danger of baring one's breasts is also pointed out in Finnish spells relating to the birth of fire, with their references to the heavenly spark of fire:

"Vaimo lastansa imetti. alla reppänän retuisen. Rikkoi rinnat neitoselta, paloi parmahat emolta." (Krohn 1917, 102)

(The wife suckled her baby / beneath a smoky window / Broke the breasts of the maiden / Burnt the mother's bust)

The idea of the verses is that while suckling her baby by a sooted window the barebreasted mother enticed lightning to strike. According to still existing folk beliefs it is not good to sit by an open window during a thunderstorm.

The above provides a background for the oval striking-stones. When a spark was struck from the vulva-like stone, the making of fire was comprehended as a rite repeating the birth myth of heavenly fire. Judging from the distribution of the oval striking-stones, the myth is possibly from the Vistula area, from where it spread into the Baltic region after the Birth of Christ. Accordingly, it was a central myth of the birth of fire until the middle of the Merovingian Period. But it must have been preserved until later times for Mikael Agricola to record it in the 16th century.

This chain of argument has in my opinion artefactual parallels as well. According to them the rite remained even after the oval striking-stones were replaced by other means of making fire. Their symbolism was transferred now to the frame-like strike-a-lights, as most clearly indicated by the types and variants with conical ends. I wish to repeat the idea presented above, that despite its simplicity the form of the frame-like strikea-lights is not a functional necessity and accordingly it must be of a symbolic nature. The frame-like strike-a-lights first appear in the Finnish material already in the late Merovingian Period and remain in use throughout the prehistoric period and well into historically documented times. Could it thus be impossible to think that they provide a link between the oval striking-stones and Agricola's verses?





Ukko's arrow

In the preceding section I attempted to argue for the view that the boat and lyre-shaped strike-a-lights derived from those of bow-like form. In any case, a myth-related back-ground can be demonstrated for the bow-shaped type. This consists of the bow and arrow of the god of thunder. The arrow of the god of thunder is known from at least Finnish, Lapp, Estonian, Votic and Swedish folklore (Harva 1948, 88—89), which indicates a wide distribution in the Baltic area. Judging from strike-a-lights of the bow type the myth however derive from Asia with an even wider distribution. The occurrence of the bow, boat and lyre types shows that this myth became known in the Merovingian Period at the latest. By the use of such striking irons the myth was then repeated as a rite far into historically documented times. On the other hand, there are insufficient grounds to assess when these forms lost their original symbolic content.

The bronze riders

We have yet to discuss the rider figures of bronze. Their ornamental character may in itself be sufficient grounds to assume domestic manufacture, but knowledge of their iconography is not to be excluded as a further alternative. In my opinion, also these artefacts have mythological import. The two mounted figures can possibly be linked to Kastor and Polydeuces of Greek mytholofy — the Castor and Pollux of the Romans. These were twin gods, sons of Zeus, the god of heaven and thunder (Grant & Hazel 1976, 236-238). As the sons of Zeus they appear to have had some connection with heavenly fire; they appeared at least to seafarers as St. Elmo's fire. Of the twins, Castor was a master horseman, but in mythology both are often shown as riders, which would serve to explain the mounted figures of the strike-a-lights. However, certain chronological and topographical links with the world of Classical Antiquity are needed for this interpretation to achieve more probability. Finnish mythology does not provide any support in this connection, but with some reservation I would nevertheless refer to the socalled "Kaleva's fires" (Fi. kalevantulet), the far-off sheet lightning of late summer. The term links the phenomenon to Kaleva, of which only the name is known, and the Kaleva's fires could in fact be "the fires of the sons of Kaleva". The body of lore relat-



Fig. 11. Bow-shaped strike-a-lights of the Bataks of Sumatra. Drawn by Kristiina Korkeakoski-Väisänen according to Keyland.

ing to the sons of Kaleva presents them as active heroes. According to Mikael Agricola they were the mythical cutters of the pastures and possibly also cleared the slash-and-burn plots ("Caleuanpojat / Nijttut ja mwdh löit.).

There are various versions of the number of the sons of Kaleva, but the most probable version is of two sons, one of whom was the legendary Väinämöinen. Of interest in this connection is that the fire myths often mention Ilmarinen and Väinämöinen as the strikers of fire (Krohn 1917, 101—102). The strike-a-lights with mounted figures could in some way be suited to the latter myth, but the argument relies on so many assumptions that a deduction cannot be based upon it.

Bibliography

Cleve, Nils, 1943. Skelettgravfälten på Kjuloholm i Kjulo. SMYA-FFT XLIV. Helsinki.

Grant, Michael und Hazel, John, 1973. Lexikon der antiken Mythen und Gestalten. München.

Haavio, Martti, 1959. Karjalan jumalat. Uskontotieteellinen tutkimus. Porvoo-Helsinki.

Hackman, Alfred, 1905. Die ältere Eisenzeit in Finnland. I. Die Funde aus den fünf ersten Jahrhunderten n. Chr. Helsingfors.

Harva, Uno, 1948. Suomalaisten muinaisusko. Porvoo-Helsinki.

Huurre, Matti, 1983. Pohjois-Pohjanmaan ja Lapin esihistoria. Pohjois-Pohjanmaan ja Lapin historia I. Kuusamo.

Keyland, Nils, 1916. Primitiva eldgörningsmetoder i Sverige. Gnideld, vrideld, slageld. Med en jämförande studie. Fataburen 1916. Stockholm.

Kivikoski, Ella, 1961. Suomen esihistoria. Professori Jalmari Jaakkolan johdolla laaditun Suomen historian I osa. Porvoo-Helsinki.

Kivikoski, Ella, 1973. Die Eisenzeit Finnlands. Bildwerk und Text. Neuausgabe. Helsinki.

Kostrzewski, Josef, 1919. Die ostgermanische Kultur der Spätlatenezeit. I. Teil. Mannus-Bibliothek No. 18. Leipzig und Würzburg.

Kostrzewski, Josef, 1955. Wiekopolska w pradziejach. Biblioteka archaeologiczna 7. Warszawa—Wroclaw. Krohn, Kaarle, 1914. Suomalaisten runojen uskonto. Suomensuvun uskonnot. Porvoo.

Krohn, Kaarle, 1917. Suomalaiset syntyloitsut. Vertaileva tutkimus. SKST 157. Helsinki.

Lehtosalo-Hilander, Pirkko-Liisa, 1982 II. Luistari II. The Artefacts. SMYA-FFT 82:2. Helsinki.

Leppäaho, Jorma, 1949. Iski tulta... Kalevalaseuran vuosikirja 29 1949. Helsinki.

Leube, Achim 1975. Die römische Kaiserzeit im Oder-Spree-Gebiet. Veröffentlichungen des Museums fur Ur- und Frühgeschichte Potsdam. Band 9. Berlin.

Moora, H., 1929, 1938. Die Eisenzeit in Lettland bis etwa 500 n. Chr. I. Teil: Die Funde. II. Teil: Analyse. Verhandlungen der gelehrten estnischen Gesellschaft XXV, XXIX. Tartu-Dorpat.

Okulicz, Jerzy, 1973. Pradzieje ziem Pruskich od poznego paleolitu do VII w.n.e. Wrocław.

Petersen, Jan, 1951. Vikingetidens redskaper. Skrifter utgitt av Det Norske Videnskaps-Akademi i Oslo II. Hist. — Filos. Klasse. 1951. No 4. Oslo.

Pihlman, Sirkku & Seppä-Heikka, Merja 1985. Indication of Late-Neolithic cereal cultivation of the Kotirinne dwelling site at Niuskala, Turku, SW Finland. Memoranda Soc. Fauna Flora Fennica 61, 1985. Helsinki.
Rydh, Hanna, 1917. S. K. eldslagninsstenar från järnåldern. Fornvännen 1917. Stockholm.

Salo, Unto, 1968. Die frührömische Zeit in Finnland. SMYA-FFT 67. Helsinki.

Salo, Unto, 1988. Kontakter tvärs över Bottenviken under förhistorisk tid — en kort översikt. Iskos 7. Helsinki — Helsingfors.

Sirelius, U.T., 1921. Suomen kansanomaista kulttuuria. Esineellisen kansatieteen tuloksia II. Helsinki.

Sjövold, Thorleif, 1962. The Iron Age settlement of arctic Norway. Tromsö Museums skrifter vol. X, 1. Tromsö / Oslo.

Strömberg, Märtha, 1981. Järn i Österlänska Forntidsfynd. Simrishamn.

Tönisson, Evald, 1982. Keskmine rauaaeg. Teoksessa L. Jaanits, S. Laul, V. Löugas, E. Tönisson, Eesti Esiajalugu. Tallinn.