Chemical Compositions of Electrum Grains in Ore and Placer Deposits in the Japanese Islands

Kazumi Yokoyama[1], Shogo Takeuchi[2], Izumi Nakai[2], Yukiyasu Tsutsumi[1], Takashi Sano[1], Masako Shigeoka[1], Ritsuro Miyawaki[1] and Satoshi Matsubara[1]

[1] Department of Geology and Paleontology, the National Museum of Nature and Science, 3–23–1, Hyakunin-cho, Shinjuku, Tokyo 169–0073, Japan
[2] Department of Applied Chemistry, Tokyo University of Science, 1–3 Kagurazaka, Shinjuku-ku, Tokyo 162–8601, Japan

Abstract Electrum was analyzed from 33 ore deposits and 51 placer deposits in the Japanese Islands. Chemical composition of electrum from ore deposit is generally consistent with the classification by Shikazono and Shimizu (1988): Ag-rich in epithermal type and Ag-poor in hypo/mesothermal type. Although a Hg-bearing electrum was reported from one ore deposit by them, it is confirmed that such electrum is present from seven more ore deposits among the thirty three deposits studied.

Core composition of electrum from the placer deposit is roughly consistent with that from nearby ore deposit: Ag-rich in the Green Tuff region and Ag-poor in the Early Cretaceous granitoid region. One specific characteristic of the placer gold is the presence of a pure gold rim. It is probable that this was formed by dissolution and precipitation rather than by simple removal of Ag or bacteria-related biomineralization. Hg was detected in electrum grains from many placer deposits. The distribution of Hg in the placer gold sometimes shows an unusual texture such as vermiculate, network and island-like. There is no available information about the origin of such textures. As an accretion of placer electrum is scarcely observed in the placer deposits, it is hard to explain the coarse-grained placer gold or nugget by accretion of fine-grained placer gold grains. As far as core compositions are concerned, it is most likely that the placer gold grains were derived directly from ore deposits.

Introduction

In AD 749, gold was first reported in the South Kitakami region, Tohoku Province, of the Japanese Islands. It was collected from a placer deposit. Until the 12th century, gold was recovered from placer deposits and was used mainly for decorating temple, shrine and buddhism scriptures. Mining of ore deposits for gold was started fundamentally from the Warring State period, i.e. 16th century, and gold was mainly used as currency. During the 20th century, more than 250 gold mines were operated in the Japanese Islands (Plate-1). Now, the Hishikari mine is the only working gold mine in the islands. As whole generation have forgotten that placer gold can be collected from riverbeds in almost every prefecture (even in Tokyo), a special exhibition was held in 2008 in the National Museum of Nature and Science (*cf*. Matsubara and Yokoyama, 2008). At the time we collected placer gold in the islands as a part of the project "Study of rare metal in the Japanese Islands" and analyzed placer gold grains in addition to those from ore deposits stored in our museum.

The name "gold" used above is strictly gold-silver alloy. Native gold-silver mineral is divided generally into three species: native gold, electrum and native silver on the basis of the chemical composition. The native gold-silver mineral has almost continuous composition from pure gold

to pure silver and does not show any compositional gap. Hence, definitions of three species are usually ambiguous and are different from researcher to researcher (Ramdohr, 1969: Barton and Toulmin, 1964: Boyle, 1970). In this paper, following Barton and Toulmin (1964) and Shikazono and Shimizu (1988), the term "electrum" is used for natural Au-Ag alloy from pure gold to pure silver. As discussed in many papers, including this one, Au-Ag alloy from a placer deposit has often a clear rim containing more than 96 wt% Au (*e.g*. Groen *et al*., 1990: Knight *et al*., 1999a: Chapman *et al*., 1999). As it is clearly different in origin from core composition of the alloy, it is tentatively called "pure gold". In addition, the name "gold" is used as "gold mine" and "placer gold" because of their popular usage in the world.

There are two types of electrum deposits: ore and placer deposits. Large electrum masses were rarely reported from ore deposit. Although the biggest electrum from the ore deposit in the Japanese Islands exceeds more than 1.5 kg (Tokunaga, 1991), most of electrum grains in ore deposits are usually very fine-grained, less than 100 μm. Placer electrum has been found in many rivers in the Japanese Islands as discussed later. The size is mostly visible ones by the naked eye, more than 100 μm, larger than those from ore deposit. A large electrum mass is called a nugget. The biggest nugget found in Japan was 768 g from the Hokkaido Province (*cf.* Yanaga, 2008), unfortunately far smaller than the biggest nugget, about 76 kg, in the world. As placer gold is generally considered to be a product transported by a river after weathering and eroding of an ore deposit, the difference in the sizes of electrum grains between ore and placer deposits has been attributed to accretion of the placer gold grains during transportation.

Chemical compositions of electrum grains from ore deposits in the Japanese Islands have been obtained with an electron microprobe analyzer (EPMA) by many workers (Yamaoka, 1981: Urashima *et al*., 1981: Sugaki *et al*., 1981: Soeda and Watanabe, 1981). Shikazono and Shimizu (1988) analyzed electrum from 41 ore deposits from the Japanese Islands and summarized chemical compositions of electrum grains from more than 100 mines. Electrum is composed essentially of Au and Ag with minor amounts of other elements. Cu, Hg, Sb, Te and Ni were reported as rare elements in electrum (Yamaoka, 1981: Urashima *et al*., 1981: Sugaki *et al*., 1981: Soeda and Watanabe, 1981). On the other hand, placer gold has scarcely been analyzed in Japan (Yanaga, 2008).

In addition to EPMA analyses, electrum grains in both ore and placer deposits of the world were analyzed by LA-ICP-MS, PIXE and SR-XRF (Dussubieux and Zelst, 2004: Guerra *et al*., 2008: Constantinescu *et al*., 2008). The most striking feature reported is presence of an almost pure gold rim on electrum grains from placer deposits. There are many debates about the origin of the gold rim. One group insisted that the rim was due to involvement of budding bacteria. Others considered that such a rim was formed chemically after deposition.

In this study, we analyzed electrum newly from 33 ore deposits and 51 placer deposits in the Japanese Islands and reported chemical variations of electrum grains in both the ore and placer deposits, discussing relationships of electrum grains between ore and placer deposits and the origin of gold rim on placer gold. Provenance studies of ancient gold have been done in Europe (Guerra *et al*., 2005: Chapman *et al*., 2006: Constantinescu *et al*., 2009). In Japan, gold was historically used for religious purposes (Buddhism) and currency. Some natural electrum grains were buried at the time of construction of Buddhist temples. These are now national cultural heritages. The compositions of various electrum grains in the Japanese Islands may contribute where electrum grains used for the cultural heritage were collected.

Electrum in Ore Deposit

Ore deposits in the Japanese Islands have been studied by many workers (*e.g*. Shikazono, 1974: Hattori, 1975: Takeuchi and Shikazono, 1984: Shikazono and Shimizu, 1987). They estimated physicochemical environments of ore formation. Shikazono and Shimizu (1988) summarized and classified ore deposits in the Japanese Islands roughly into five types: (1) epithermal type, (2) hypo/mesothermal vein-type, (3) Kuroko type, (4) cupriferous bedded iron sulfide-type and (5) skarn type. The first two types are the most common and are subdivided into Au vein-type, base metal vein-type, Au disseminated-type and polymetallic vein-type. The epithermal type deposits occur in Tertiary-Quaternary volcanic regions, mostly in submarine-altered volcanic regions (so-called the Green Tuff region). The major occurrence of the hypo/mesothermal type is the Kitakami region where Early Cretaceous granitoids intruded into sedimentary and metamorphic rocks. The authors discussed chemical compositions of electrum grains in each type and concluded that the Ag content of electrum is different in different types of deposits. Electrum from the epithermal type is mostly Ag-rich. Only Au disseminated-subtype of the epithermal type contains extremely Ag-poor electrum. On the other hand, most of the electrum grains from the hypo/mesothermal vein-type are Ag-poor. They analyzed electrum grains from 38 ore deposits in the Japanese Islands. In this paper, we analyzed electrum grains from 33 ore deposits. They are registered samples stored in the National Museum of Nature and Science. Many of the localities are the same as those studied by Shikazono and Shimizu (1988). They are listed in Table 1 and their localities are shown in Figs. 2 to 9. Some of electrum grains studied are visible by the naked eye, more than a few mm in length. Relatively large crystals are shown in Plate 2, but the others are very fine-grained and confirmed only under the microscope. Among them, electrum from the Hishikari mine, now the only active mine, is shown in Plate 3. The grain size of electrum is mostly less than 10 μm.

Electrum in Placer Deposit

There is much debate about the origin of the placer gold. The most prevalent idea is that it was derived directly from ore deposit. One major problem is that the size of the placer electrum or nugget is usually larger than that in ore deposit. Other problems are overgrowth of pure gold rim on the placer gold and the presence of bacterioform. The formation of the placer gold has been explained by mechanical accretion of fine-grained electrum grains, a chemical dissolution-precipitation model, bacteria-related formation (*e.g*. Mann, 1984: Groen *et al*., 1990: Watterson, 1991 & 1994: Reith *et al*., 2007).

Placer deposits in the Japanese Islands were the important sources for Au metal and worked until the mid 20th Century after first report at AD 749 from the Tohoku Province. Although no placer gold deposit is currently mined, placer gold grain can be collected more or less from many rivers in the Japanese Islands. As far as we know, scientific reports on placer gold in the Japanese Islands are scarce. Yanaga (2008) briefly reported the chemical compositions of some electrum grains from placer deposits in the Hokkaido Province. In this study, we collected new placer gold grains from 45 localities. Including collections stored in the museum, 51 samples were analyzed. They are listed in Table 2 and their localities are shown in Figs. 2 to 9.

The placer gold grains collected are fine-grained with length of 0.1 mm to nearby 5 mm. They are mostly sub-rounded or platy with a subordinate amount of irregularity in shape (Plate 4). Occasionally they are dendritic in shape with 1 cm in length (Plate 4A).

Table 1. List of samples from ore deposits. Detailed localities of the samples are shown in Figs. 2 to 9. Reg. N.: registered number of the National Museum of Nature and Science. Among 57 localities, samples from 33 localities were studied in this paper and 38 localities by Shikazono and Shimizu (1988). Nag: range of Ag content (wt%).

Locality	Region	Reg. N.	NAg
Hokuryu*	Mombetsu, Hokkaido	*	31.57–38.17
Konomai	Mombetsu, Hokkaido	NSM-M30006	28.21–35.92
Chitose*	Chitose, Hokkaido	NSM-M14845	19.57–33.07
Nurukawa*	Hirakawa, Aomori	*	7.59–10.65
Osarizawa*	Kazuno, Akita	*	9.16–10.46
Okuzu	Kitaakita, Akita	NSM-M10963	1.87–2.55
Innai*	Yuzawa, Akita	*	37.06–38.90
Iwate*	Iwate, Iwate	*	40.20–42.04
Hayachine*	Hanamaki, Iwate	*	14.35–14.61
Matsukura	Hanamaki, Iwate	NSM-M18404	50.15–52.66
Shitodaira	Hanamaki, Iwate	NSM-M30018	48.14–50.96
Kamaishi*	Kamaishi, Iwate	NSM-M30014	3.76–7.19
Nojiri*	Kesen, Iwate	NSM-M12390	9.76–17.08
Oate	Oshu, Iwate	NSM-M30019	7.59–9.09
Yukisawa	Rikuzentakata, Iwate	NSM-M30017	6.25–7.04
Mihara	Kesen, Iwate	NSM-M15162	11.74–13.87
Shishiori*	Kesennuma, Miyagi	*	6.28–7.66
Oya*	Motoyoshi, Miyagi	NSM-M30021	6.32–9.70
Aikawa*	Ishinomaki, Miyagi	*	9.29–10.04
Onagawa	Ishinomaki, Miyagi	NSM-M29301	7.94–8.86
Yatani	Yonezawa, Yamagata	NSM-M15560	41.47–44.77
Takatama	Koriyama, Fukushima	NSM-M30026	50.17–57.84
Takachi*	Sado, Niigata	*	47.72–48.06
Sado	Sado, Niigata	NSM-M30038	37.70–39.80
Hashidate	Itoigawa, Niigata	*	11.69–13.39
Chugu	Hakusan, Ishikawa	NSM-M30043	3.71–4.09
Kinkei*	Chino, Nagano	NSM-M40594	1.86–8.65
Kobushi	Minamisaku, Nagano	NSM-M28024	8.97–10.01
Daigo*	Kuji, Ibaraki	NSM-M30027	7.51–9.51
Shiozawa*	Ibaraki	*	7.00–7.55
Saigane*	Ibaraki	*	9.68–10.97
Suwa*	Ibaraki	*	1.75–2.40
Nishizawa*	Tochigi	NSM-M30031	21.77–38.81
Amanuma	Gunma	NSM-M30033	28.09–35.20
Chichibu*	Saitama	NSM-M12316	9.72–17.84
Kurokawa	Yamanashi	NSM-M28026	6.88–7.71
Ashiyasu*	Yamanashi	*	7.12–9.40
Ho*	Yamanashi	NSM-M24544	5.50–12.34
Gohaku*	Yamanashi	*	9.63–11.38
Koei*	Yamanashi	*	11.71–13.26
Amo*	Gifu	*	7.74–8.96
Mumai-owaki	Gifu	NSM-M30046	29.00–30.03
Akatani*	Gifu	*	22.35–23.50
Tsugu*	Aichi	*	5.98–11.47
Toi*	Shizuoka	NSM-M30051	40.85–46.77
Kawazu*	Shizuoka	*	37.09–44.56
Kekurano	Shizuoka	NSM-M12318	27.64–38.70
Shobusawa	Shizuoka	NSM-M22163	32.40–39.87
Okuyama*	Shizuoka	*	4.92–5.79
Nakase*	Hyogo	NSM-M30058	10.09–18.14
Ikuno*	Hyogo	*	28.55–33.86
Bajo*	Oita	NSM-M30067	27.91–42.80
Mizobe*	Oita	*	35.03–38.20
Hoshino*	Fukuoka	NSM-M30063	34.31–41.52
Okuchi*	Kagoshima	*	19.56–22.11
Hishikari*	Kagoshima	NSM-M25678	27.59–28.67
Yamagano*	Kagoshima	NSM-M30073*	18.44–32.13

* studied by Shikazono and Shimizu (1988)

Table 2. List of samples from placer deposits. Detailed localities of the samples are shown in Figs. 2 to 9. Reg. N.: registered number of the National Museum of Nature and Science. Nag: range of Ag content (wt%).

Locality	Region	Reg. N.	NAg
Tomarinai	Wakkanai, Hokkaido	NSM-M30002	2.19–2.47
Peichan	Esashi, Hokkaido	NSM-M30003	14.35–16.14
Onobunai River	Teshio, Hokkaido	NSM-M30007	8.36–9.18
Yasoshi	Mombetsu, Hokkaido	NSM-M40283	0.15–56.62
Takadomari	Fukagawa, Hokkaido	NSM-M14990	3.85–9.12
Sakinsawa River	Kabato, Hokkaido	*	0.83–17.64
Pankemo-yubari	Yubari, Hokkaido	NSM-M30009	10.81–12.00
Shiribeshitoshibetsu River	Setana, Hokkaido	NSM-M40945	0.27–29.40
Shiriuchi River	Kamiiso, Hokkaido	NSM-M40944	0.26–16.03
Otobe River	Shiwa, Iwate	*	10.66–16.77
Akasawa River	Shiwa, Iwate	*	8.32–8.72
Sahinai River	Shiwa, Iwate	*	10.10–10.69
Tamayama	Rikuzentakata, Iwate	*	12.73–13.63
Yukisawa	Rikuzentakata, Iwate	*	14.56–15.29
Kitakami River	Nishiiwai, Iwate	*	20.95–25.77
Shinota River	Nishiiwai, Iwate	*	0.27–4.93
Tsuya River	Kesennuma, Miyagi	*	4.18–9.79
Oya	Kesennuma, Miyagi	*	9.04–9.83
Koganesawa	Kesennuma, Miyagi	*	4.16–7.69
Mitobe River	Motoyoshi, Miyagi	*	0.24–13.33
Wakuya	Tooda, Miyagi	NSM-M40946	10.61–13.65
Sai River	Kanazawa, Ishikawa	NSM-M29868	18.98–41.31
Asuwa River	Fukui, Fukui	NSM-M29870	8.12–9.93
Osawa River	Kuji, Ibaraki	NSM-M29862	11.62–12.17
Arai River	Kanuma, Tochigi	NSM-M29864	3.94–9.85
Shimonita	Kanra, Gunma	NSM-M29861	0.86–36.01
Ara River	Yorii, Saitama	NSM-M29860	14.80–15.44
Tama River	Tabakeikoku, Yamanashi	*	0.74–23.66
Tama River	Tabayama, Yamanashi	NSM-M29858	2.39–40.18
Tama River	Kosuge, Yamanashi	*	7.49–31.26
Tama River	Hatonosu, Tokyo	*	0.29–24.41
Tama River	Mitake, Tokyo	NSM-M29859	0.44–16.90
Aki River	Akiruno, Tokyo	NSM-M40943	0.31–23.81
Tama River	Akishima, Tokyo	*	0.27–15.10
Tama River	Keiotamagawa, Kanagawa	*	0.25–16.87
Kawachi River	Ashigarakami, Kanagawa	NSM-M29863	7.29–11.20
Haya River	Minamikoma, Yamanashi	NSM-M29866	10.79–11.41
Asari River	Otsuki, Yamanashi		2.65–24.25
Mumai	Takayama, Gifu	NSM-M30049	34.64–47.48
Abe River	Hikagesawa, Shizuoka	NSM-M6685	9.35–13.33
Abe River	Sekinosawa, Shizuoka	*	6.01–13.16
Amasu River	Takashima, Shiga	*	9.12–9.69
Kamo River	Kyoto, Kyoto	*	21.00–22.13
Yagi River	Yabu, Hyogo	*	12.99–17.29
Meidi River	Yabu, Hyogo	*	22.48–35.25
Yamashirodani	Miyoshi, Tokushima	NSM-M12325	6.28–8.22
Yamashirocho	Miyoshi, Tokushima	NSM-M30062	14.25–19.58
Sendai River	Satsuma, Kagoshima	*	29.52–34.43
Kago	Makurazaki, Kagoshima	NSM-M30070	15.83–28.33
Oshima	Amami, Kagoshima	NSM-M10971	2.88–7.57
Hoshino River	Yame, Fukuoka	NSM-M29869	0.69–43.76

* too small in amount to register

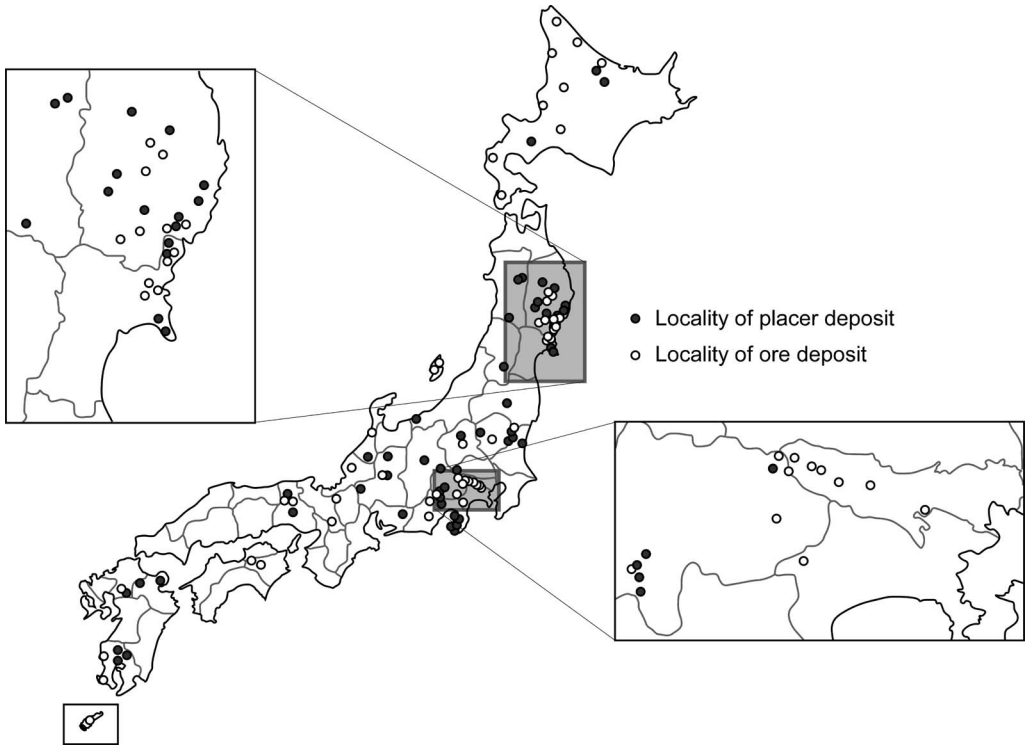

Fig. 1. Locations of 57 ore deposits and 51 placer deposits in the Japanese Islands. Among the ore deposits, electrum grains from 33 ore deposits were newly studied in this paper. Shikazono and Shimizu (1988) analyzed electrum grains from 38 ore deposits. More detailed locations are shown in Figs. 2 to 9.

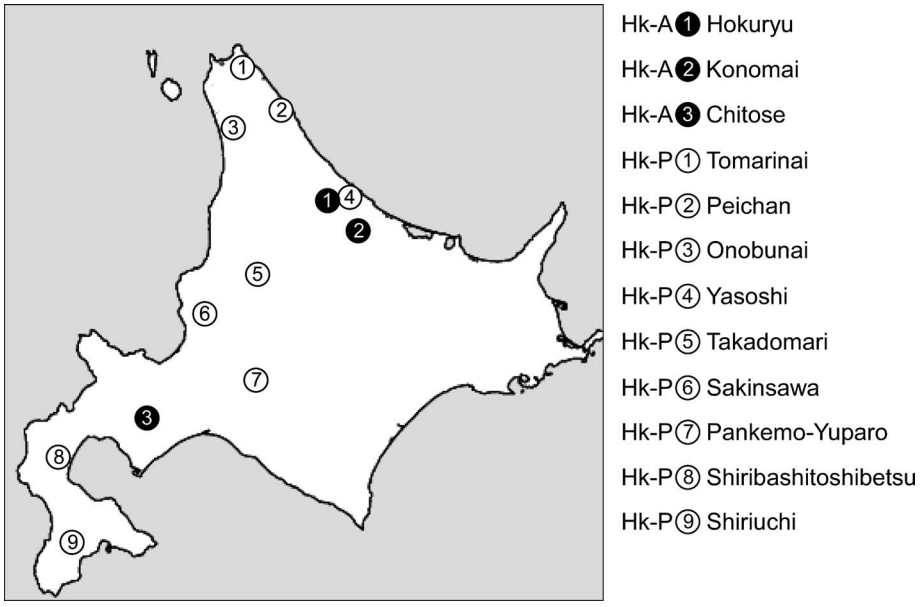

Fig. 2. Locations of ore and placer deposits in the Hokkaido Province.

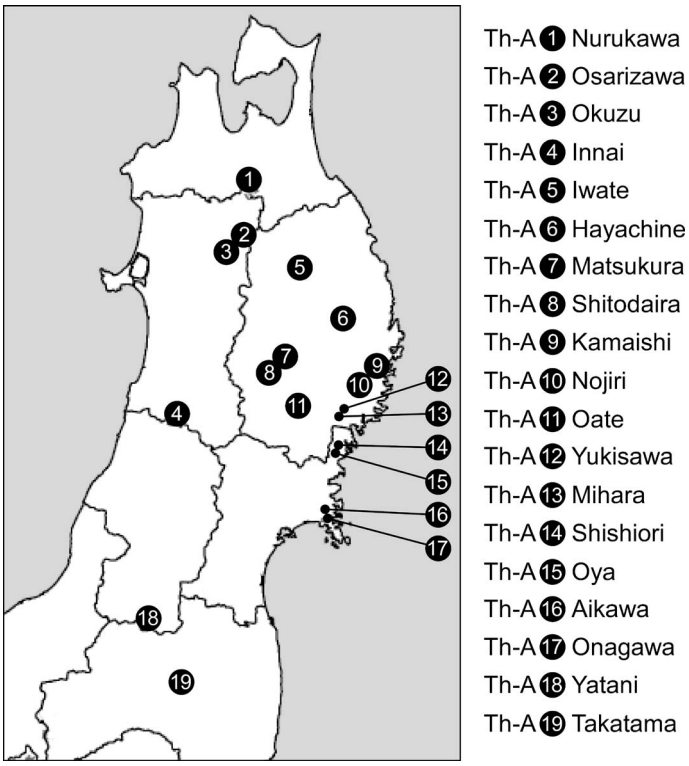

Fig. 3. Locations of ore deposits in the Tohoku Province.

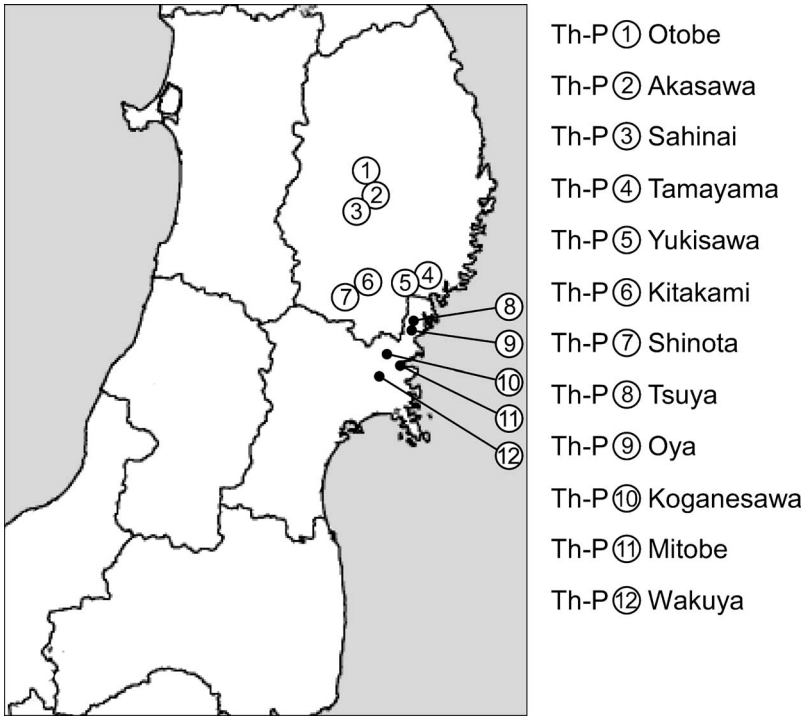

Fig. 4. Locations of placer deposits in the Tohoku Province.

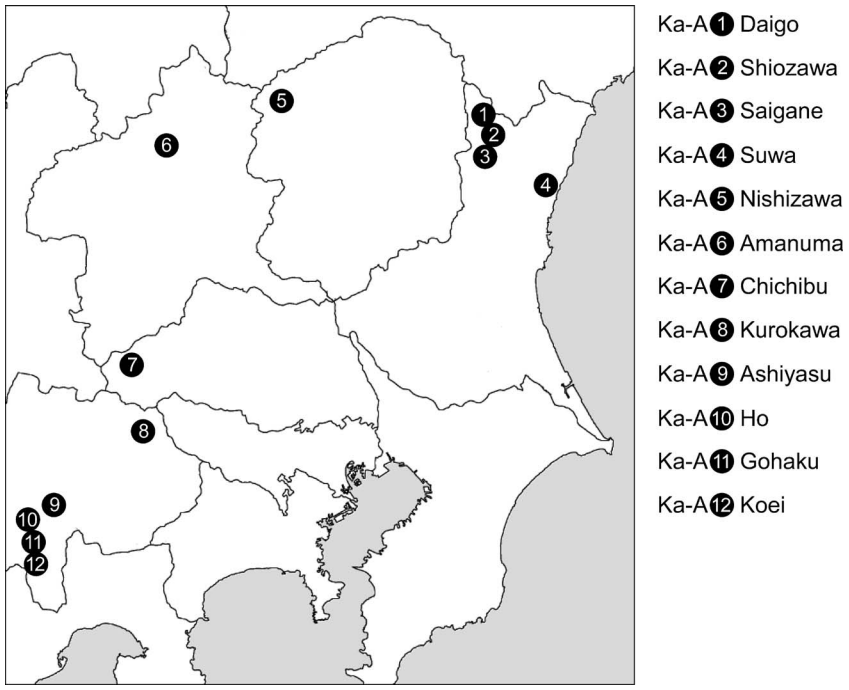

Fig. 5. Locations of ore deposits in the Kanto Province. Yamanashi Prefecture of the Chubu Province is shown in this figure as a matter of convenience.

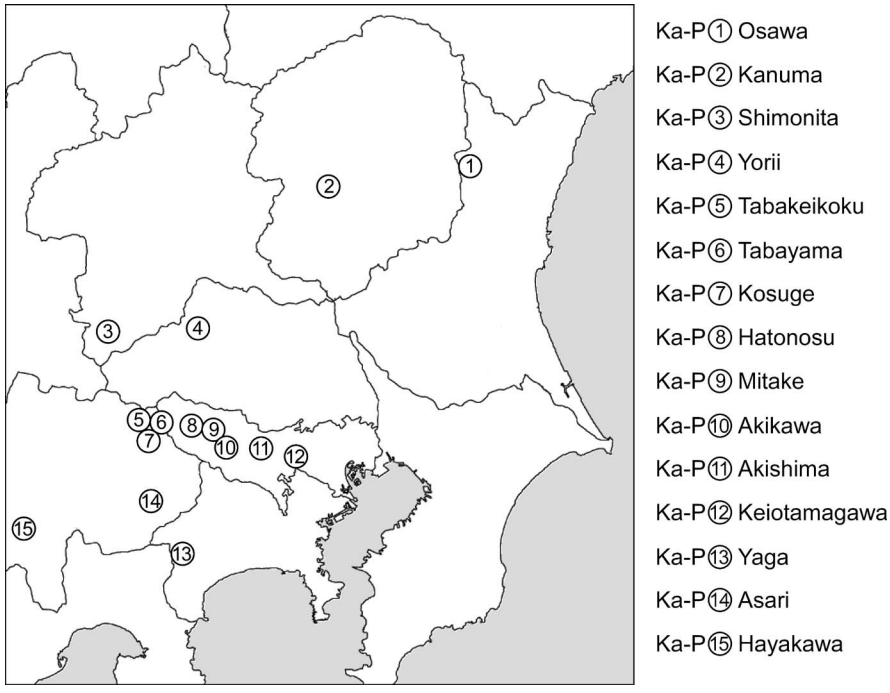

Fig. 6. Locations of placer deposits in the Kanto Province.

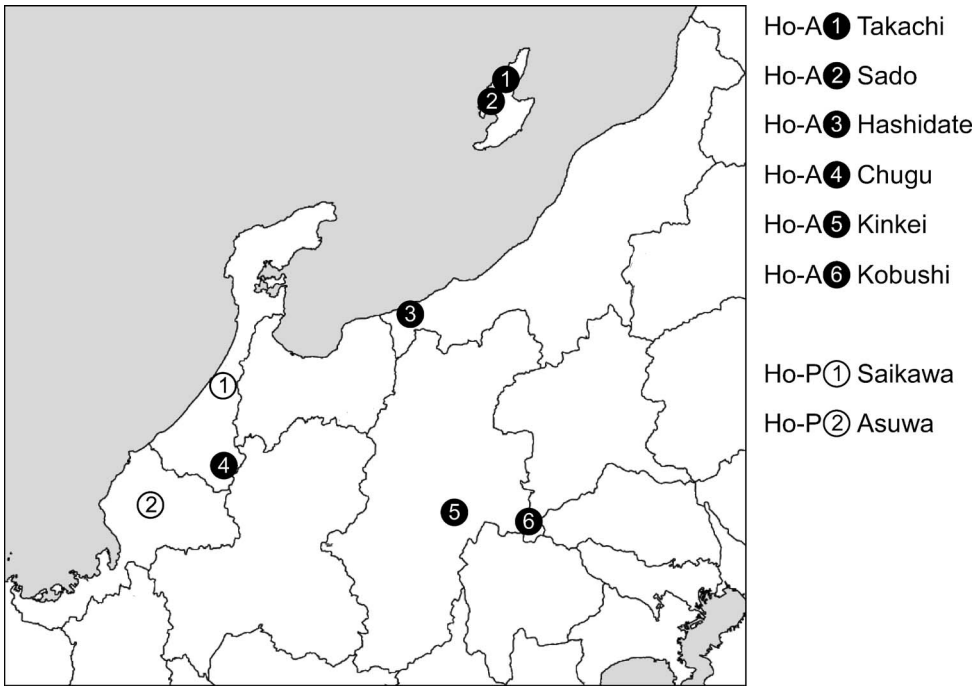

Fig. 7. Locations of ore and placer deposits in the Hokuriku·Shinetsu Province.

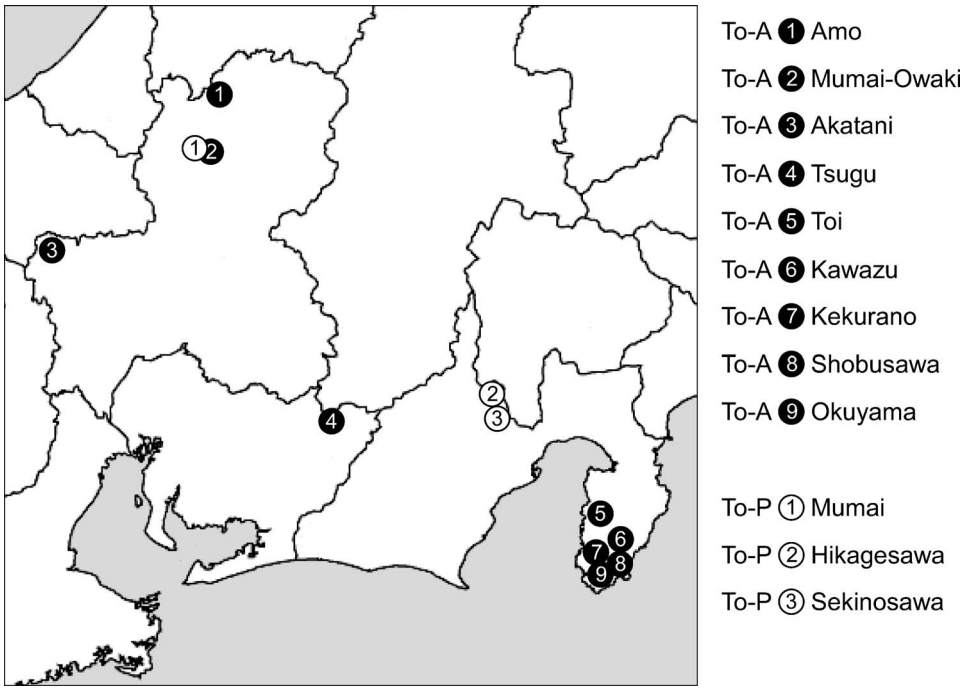

Fig. 8. Locations of ore and placer deposits in the Tokai Province.

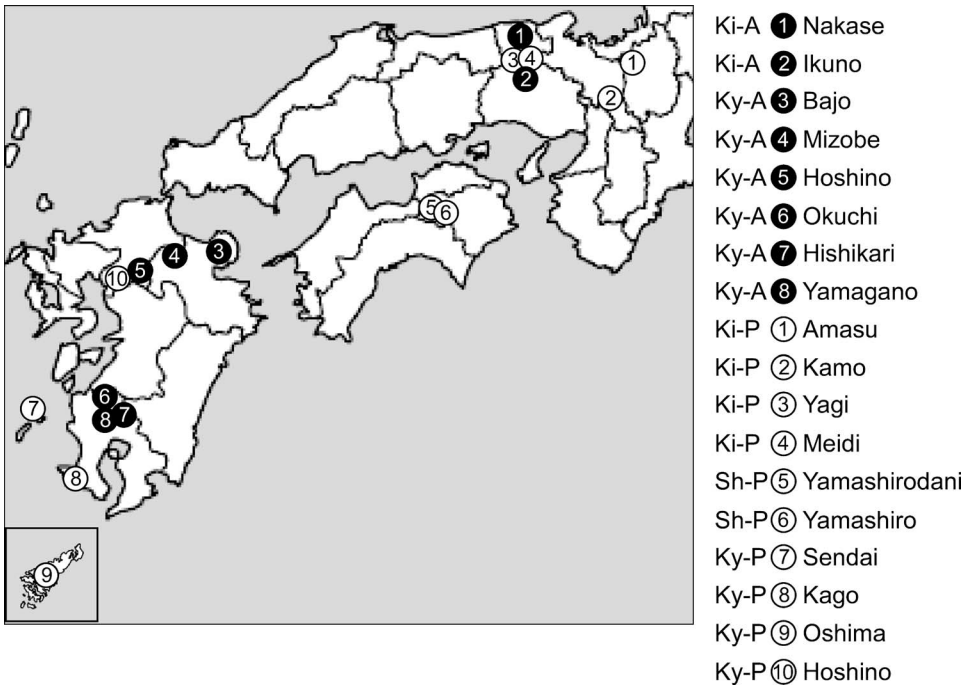

Fig. 9. Locations of ore and placer deposits in the Kinki, Chugoku, Shikoku and Kyushu provinces.

Chemical Composition of Electrum

A chemical analysis of electrum was carried out with an electron microprobe analyzer (EPMA, JEOL 8800) in the National Museum of Nature and Science. The operating conditions of the microprobe were 15 kV accelerating voltage, 4×10^{-8} A probe current and 2 μm beam diameter. Analyzed elements are Au, Ag, Cu, Hg, Se, Te, Pb and As. Mα, Lα and Kα lines were used for the elements except for Hg. Mβ line were used for Hg to avoid the spectral interferences from the other elements. The counting time on each analytical point was 60 seconds at peak and 20 seconds at backgrounds for Hg, 30 seconds at peak and 10 seconds at backgrounds for Cu, Te and Pb, and 15 seconds at peak and 5 seconds at backgrounds for the other elements. Standards used were pure Au and Ag metals, and natural HgTe, $CuFeS_2$, SnSe and As_2S_3. ZAF corrections were applied for the analyses. Detection limits are about 0.05% for Cu, Hg and Te, and 0.02% for Se, Pb and As. Four elements, Se, Te, Pb and As, were checked carefully, but they were usually less than a detection limit of the machine. All the analytical points were selected under back-scattered images to avoid cracks and inclusions.

In total over 2300 points in electrum grains from ore and placer deposits were analyzed. Their chemical compositions are shown in Appendix (Table 3), together with data from electrum grains in ore deposits analyzed by Shikazono and Shimizu (1988). All the data were summarized at first by province. Specific characteristics such as pure gold rim on placer gold and the heterogeneous distribution of Hg in electrum grains from placer deposits are discussed later.

Hokkaido Province

Ore Deposit

Electrum grains from two ore deposits in the Hokkaido Province were analyzed. According to Shikazono and Shimizu (1988), most of the ore deposits in Hokkaido belong to the epithermal vein-type. The electrum grains from the four ore deposits, including data by Shikazono and Shimizu (1988), are high in Ag content with more than 20 wt% (Fig. 10). Shikazono and Shimizu (1988) summarized electrum in epithermal vein-type deposits in the Japanese Islands including fifteen ore deposits in Hokkaido studied by other researchers (*e.g*. Sugaki *et al.*, 1984: Motomura, 1986). A major peak of the Ag content is at around 35 wt% and small peak at 20 wt% (Shikazono and Shimizu, 1988). Ag-poor electrum was found in the Chitose mine. New analyses from the Chitose mine are more than 30 wt%, similar to the major electrum from the epithermal vein-type. The electrum grains analyzed from Hokkaido are Ag-rich, with $>$20 wt% Ag, similar to those from the epithermal vein-type. The Cu content in electrum was usually less than the detection limit. The Hg content is mostly negligible. Only in the electrum grains from the Konomai mine, the Hg content locally exceeds 0.2 wt%.

Placer Deposit

Electrum grains from nine placer deposits were analyzed. They are mostly platy or subrounded grains. Only electrum grains from the Peichan site are dendritic crystal (Plate 4A). The Ag contents from nine deposits vary from 0 to 58 wt% (Fig. 10). There are three major peaks: less than 10, 25 and around 40 wt%. Electrum with an Ag content more than 20 wt% occurs in the Green Tuff region and is probably related to epithermal vein-type deposit. Electrum with an Ag content less than 4 wt% is the overgrowth gold rim, secondarily formed, to be discussed later. Electrum with an Ag content around 10% is not reported from the ore deposits in Hokkaido. It is representative of the hypo/mesothermal Au vein-type deposit in the Japanese Islands (Shikazono and Shimizu, 1988). A major occurrence of a hypo/mesothermal deposit is in the Kitakami region where the Early Cretaceous granitoids intruded into Paleozoic and Mesozoic sequences. A peak around 10 wt% is mainly from the electrum grains from Shiriuchi placer deposit in the southwestern Hokkaido where many epithermal ore deposits occurred. As it is considered that the area is a northern extension of the Kitakami region, the electrum grains in the Shiriuchi placer deposit may belong to the hypo/mesothermal Au vein-type.

As a source of the placer gold, there are three possible deposits: an operating gold mine, a small undeveloped ore deposit and a totally eroded-out deposit. In many cases in the Japanese Islands, ore deposits as possible sources are present around the placer deposit. During the late 19th Century, a “gold rush” was started from placer deposits in the central part of the Hokkaido (Yanaga, 2008). The placer deposits in the central part are Tomarinai, Onobunai, Takadomari and Pankemo-Yuparo. No ore deposit has been reported around the placer deposits (Plate 1). Ag contents in electrum grains from four placer deposits are less than 12 wt%, roughly speaking, corresponding to those from hypo/mesothermal vein-type. So far it is difficult to discuss the relationships between the type of original ore deposit and chemical compositions of the electrum grains in the placer deposits from the central part of Hokkaido.

The Cu content in electrum is mostly less than 0.1 wt % (Fig. 11). The maximum content is around 0.3 wt% from the Shiriuchi site. A high Hg content with more than 1 wt% is found in many deposits. The maximum Hg content is 6% in electrum from the Pankemo-Yuparo site. The variation in composition of Hg within a grain is discussed later.

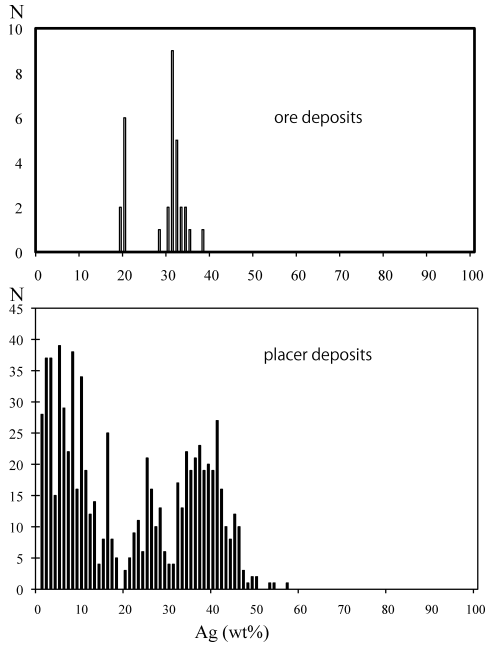

Fig. 10. Frequency histograms of Ag contents (wt%) in electrum grains from ore and placer deposits in the Hokkaido Province. N: number of analyses.

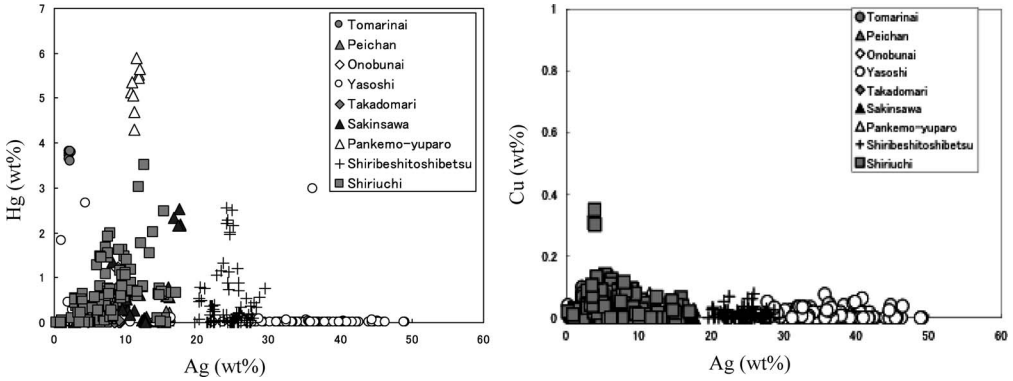

Fig. 11. Hg and Cu contents in electrum grains from placer deposits in the Hokkaido Province.

Tohoku Province

Ore Deposit

Electrum grains from thirteen ore deposits from the Tohoku Province were newly analyzed. Ag contents are variable up to 58 wt% with a major peak at around 10 wt% (Fig. 12). Ag-rich electrum grains with more than 30 wt% are from mines in the Green Tuff region and are of the epithermal type deposits. Au-rich electrum is mostly from the Kitakami region that belongs to hypo/mesothermal vein-type. The Nurukawa and Osarizawa mines occurring in the Green Tuff region belong to the Kuroko-type and base metal vein-types, respectively. They have Au-rich electrum. Cu contents are mostly negligible. The maximum Cu content is 0.14 wt% in electrum

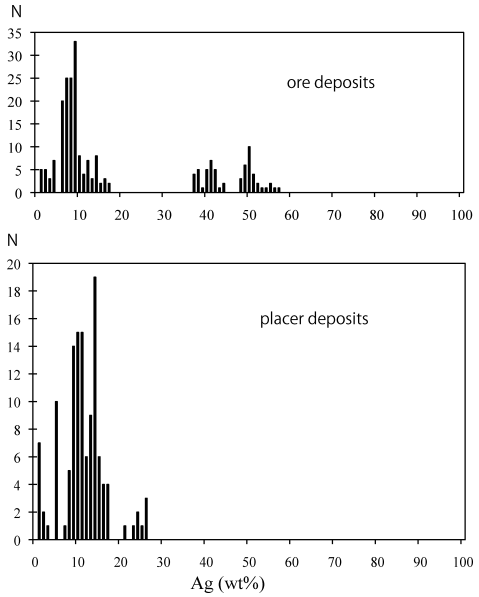

Fig. 12. Frequency histograms of Ag contents (wt%) in electrum grains from ore and placer deposits in the Tohoku Province. N: number of analyses.

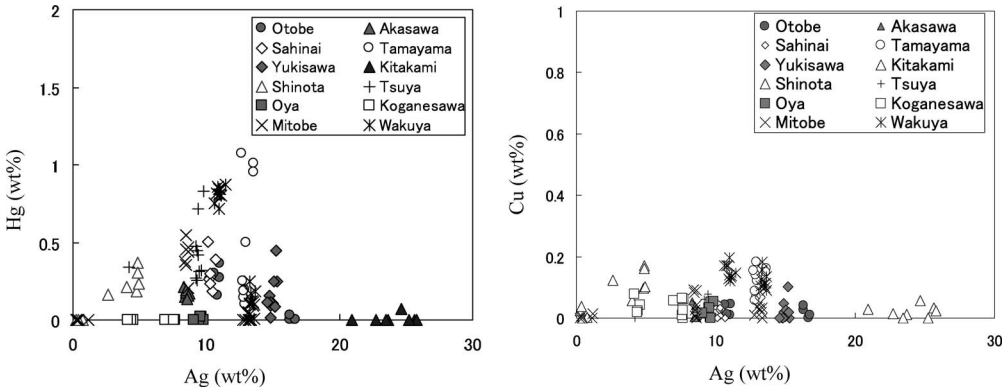

Fig. 13. Hg and Cu contents in electrum grains from placer deposits in the Tohoku Province.

from the Hayachine mine. The Hg content in electrum exceeds 0.1 wt% from three mines from the Kitakami region, Oate, Yukisawa and Mihara. The maximum Hg content is 0.85 wt% from the Mihara mine.

Placer Deposit

Electrum grains from twelve placer deposits were analyzed from the Tohoku Province. Most of them were collected from the Kitakami region and are Ag-poor, less than 20 wt% (Fig. 12), comparable with those in the ore deposits of the region. Electrum grains from the Kitakami site were collected from the riverbed of the Kitakami River. They are only Ag-rich, probably derived parentally from the epithermal deposit in the Green Tuff region. A small peak at pure Au represents an overgrowth gold rim on placer gold grain.

Cu content is less than 0.2 wt% (Fig. 13). Many electrum grains contain more or less Hg. The

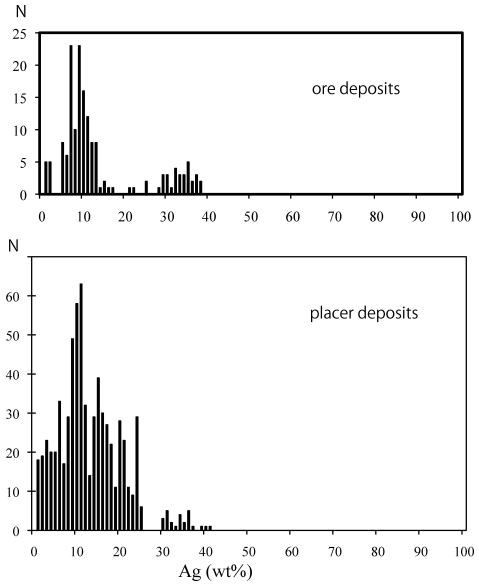

Fig. 14. Frequency histograms of Ag contents (wt%) in electrum grains from ore and placer deposits in the Kanto Province. N: number of analyses.

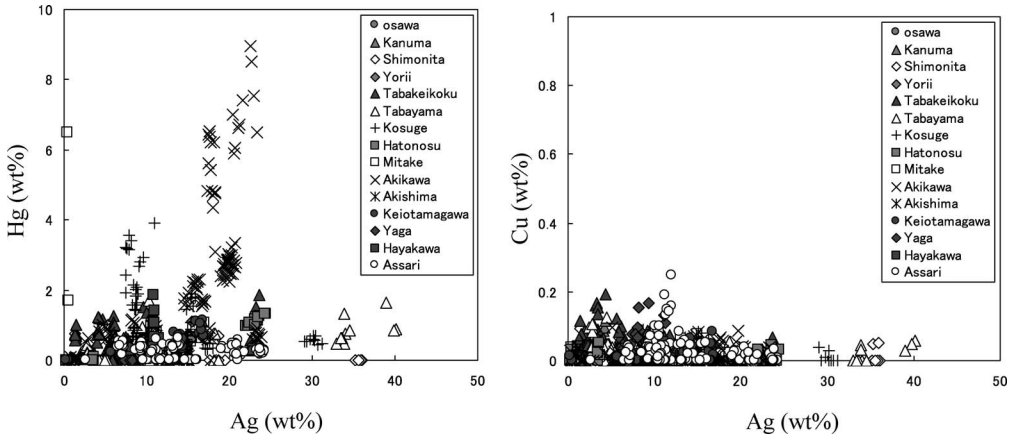

Fig. 15. Hg and Cu contents in electrum grains from placer deposits in the Kanto Province.

maximum Hg content is 1.2 wt% from the Tamayama site.

Kanto Province

Ore Deposit

Electrum grains from six ore deposits in the Kanto Province were newly analyzed. Yamanashi Perfecture of the Chubu Provice is treated here as a matter of convenience. Chemical data from twelve mines, including data by Shikazono and Shimizu (1988), are summarized in Fig. 14. Most of the ore deposits belong to the hypo/mesothermal Au vein-type. This is confirmed by a major peak at around 10 wt%. Ag-rich electrum, more than 30 wt%, is from the Nishizawa and Amanuma mines which belong to polymetallic vein-type and epithermal-type,

respectively. Electrum grains from the Amanuma and Chichibu mines are coarse-grained and visible to the naked eyes (Plate 2).

The Cu content is mostly less than 0.1 wt%, whereas Ag content exceeds 0.5 wt% in the Kurokawa and Ho mines that belong to hypo/mesothermal vein-type.

Placer Deposit

Electrum grains from fifteen placer deposits were analyzed form the Kanto Province. They are mainly collected along the Tama River where hypo/mesothermal deposits occur. The chemical composition of electrum is mostly Ag-poor, less than 20 wt% (Fig. 14). Ag-rich electrum, more than 30 wt%, is observed together with Ag-poor ones in the same sampling sites from Tabayama and Kosuge along the Tama River.

The Cu content is less than 0.2 wt%, whereas Hg content mostly exceeds 0.5 wt% (Fig. 15). The highest Hg content is 9 wt% in the electrum grains from the Akikawa site. As no ore deposit has been reported along the Aki River, a tributary of the Tama River, source of this Hg-rich electrum is unknown.

Hokuriku·Shinetsu and Tokai Provinces

Ore Deposit

Electrum grains from nine ore deposits in the Hokuriku·Shinetsu and Tokai provinces were newly analyzed. Electrum from total fifteen deposits including data by Shikazono and Shimizu (1988) is summarized in Fig. 16. As both the epithermal and hypo/mesothermal deposits occur in the provinces, the Ag content shows bimodal distribution (Fig. 16). Ag-rich electrum grains are from the Sado, Takachi, Akatani, Mumai and Toi mines that belong to epithermal type, whereas Ag-poor ones are from the Hashidate, Kinkei, Amo, Tsugu and Okuyama mines of the hypo/mesothermal vein-type.

The Cu content is mostly negligible (Fig. 17). Only electrum from the Kobushi mine exceeds 0.1 wt%. Shikazono and Shimizu (1988) did not obtain Hg in electrum from the Japanese ore deposits except for the Tsugu mine. Electrum in the Tsugu mine has high Hg content ranging from 2.3 to 8.2 wt%. Present analyses show that Hg content in electrum from the Kobushi mine exceeds 1 wt %.

Placer Deposit

Electrum grains from five placer deposits were analyzed form the Hokuriku·Shinetsu and Tokai provinces. Many analyses were carried out on the electrum grains along the Abe River: Hikagesawa and Sekinosawa sites. They are Hg-rich, up to 2.2 wt% and are Ag-poor, consistent with those from the hypo/mesothermal vein-type deposit around the sites (Fig. 17). Electrum grains from the Mumai and Sai River sites are Ag-rich, probably derived from epithermal type ore deposits. One placer deposit, Asuwa, has Ag-poor and Hg-poor electrum grains. There is no suggestion of an ore deposit for the source around the site. The Cu content is negligible, less than 0.1 wt% as well similar to that in the other provinces.

Kinki, Chugoku, Shikoku and Kyushu Provinces

Ore Deposit

Electrum grains from five ore deposits were newly analyzed: the Nakase mine from the Kinki

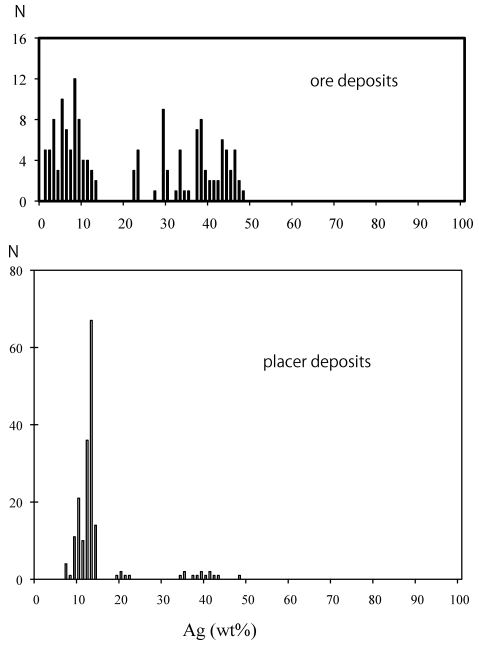

Fig. 16. Frequency histograms of Ag contents (wt%) in electrum grains from ore and placer deposits in the Hokuriku · Shinetsu and Tokai provinces. N: number of analyses.

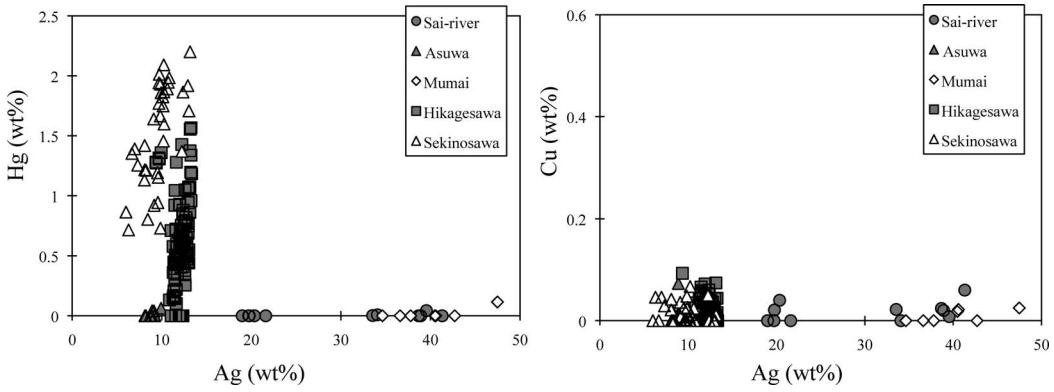

Fig. 17. Hg and Cu contents in electrum grains from placer deposits in the Hokuriku·Shinetsu and Tokai provinces.

Province and the Bajo, Hoshino, Hishikari and Yamagano mines from the Kyushu Province. Eight ore deposits in total are summarized in Fig. 18. The Ag content ranges from 10 to 45 wt%. Ag-poor electrum is from the Nakase mine of hypo/mesothermal type. Other electrum grains have Ag content more than 20 wt% and are mostly from epithermal deposits.

Cu content more than 0.1 wt% is observed in electrum grains from the Bajo, Mizobe and Hishikari mines. The highest Cu content listed in appendix is 0.61 wt% from the Bajo mine (Shikazono and Shimizu, 1988). The Hg content is negligible in electrum except for that from the Nakase mine. The electrum in the Nakase mine of the hypo/mesothermal vein-type contains Hg content up to 11.7 w t%. A high Hg-bearing electrum occurs locally in a grain as shown in Plate 3D.

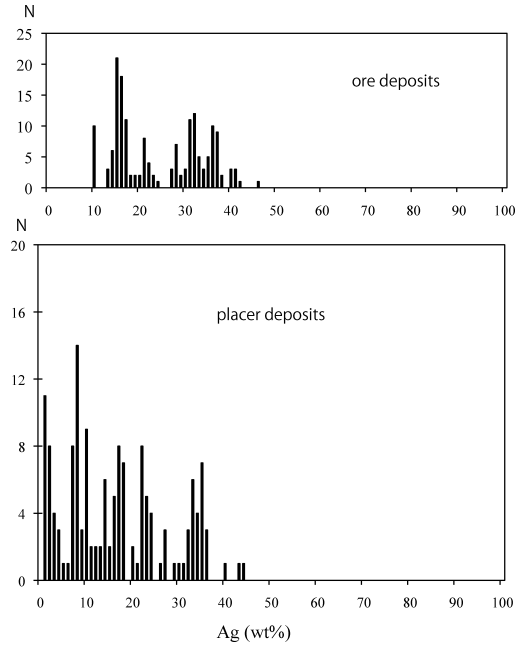

Fig. 18. Frequency histograms of Ag contents (wt%) in electrum grains from ore and placer deposits in the Kinki, Chugoku, Shikoku and Kyushu provinces. N: number of analyses.

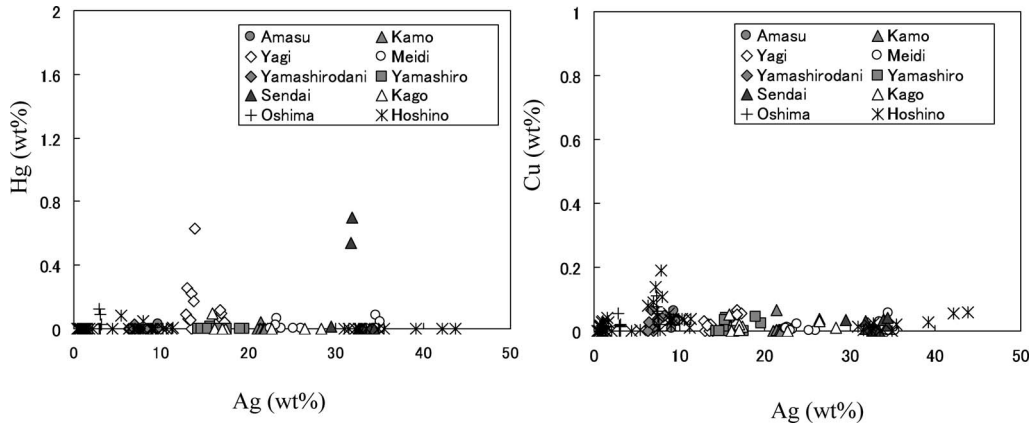

Fig. 19. Hg and Cu contents in electrum grains from placer deposits in the Kinki, Chugoku, Shikoku and Kyushu provinces.

Placer Deposit

Electrum grains from ten placer deposits were analyzed from western Japan. There is no specific peak in the histogram of Ag content (Fig. 18). A small peak at almost pure gold is from analyses of gold rims from the Hoshino site. Electrum with Ag content less than 20 wt% is from the Amasu, Yagi, Yamashiro, Yamashirodani and Oshima sites. There is no probable ore deposit as a source candidate for the electrum.

The Cu content is mostly negligible (Fig. 19). Only electrum grains from the Hoshino site have Cu content up to 0.2 wt%. The Hg content is also negligible in most of the placer deposits. Electrum grains from the Yagi and Sendai sites have Hg contents up to 0.8 wt%.

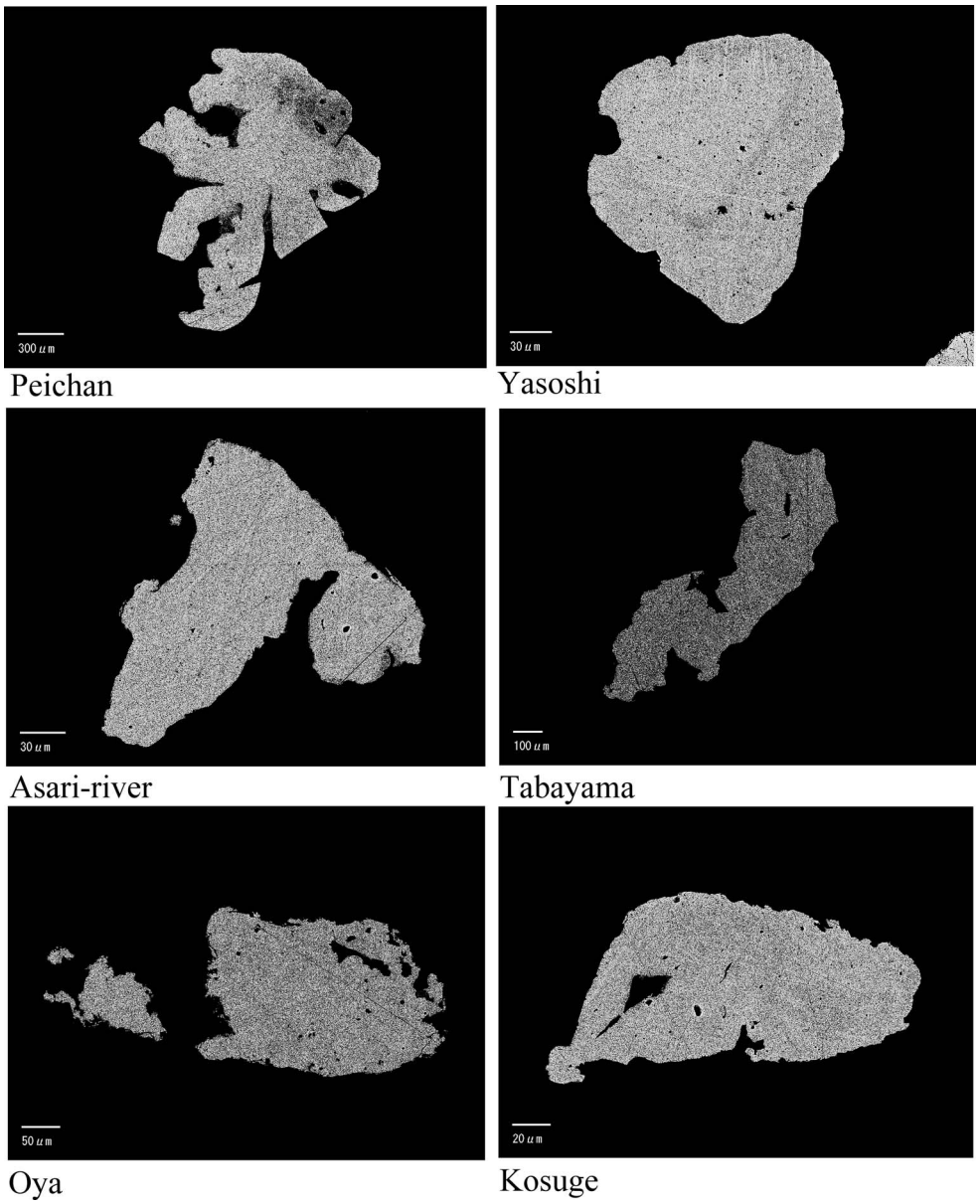

Fig. 20. Relatively homogeneous electrum grains from placer deposits. Electrum from Peichan is dendritic crystal.

Overgrowth of Pure Gold Rim on Placer Gold

Electrum grains from the placer deposits are mostly chemically homogeneous as shown in Fig. 20. Knight *et al*. (1999b) noted that, in general, the compositions of electrum grains from ore and placer deposits are homogeneous. They occasionally show heterogeneous distribution in Ag. Gradational enrichment of Au towards the rim has been rarely observed. However, overgrowth of a pure gold rim on the electrum is common phenomena (Fig. 21). Such overgrowth texture was described in many placer deposits of the world (Mann, 1984: Groen *et al*., 1990: Knight *et al*., 1999a: Chapman *et al*., 1999: Wierchowiec, 2007). The overgrowth rim is chemi-

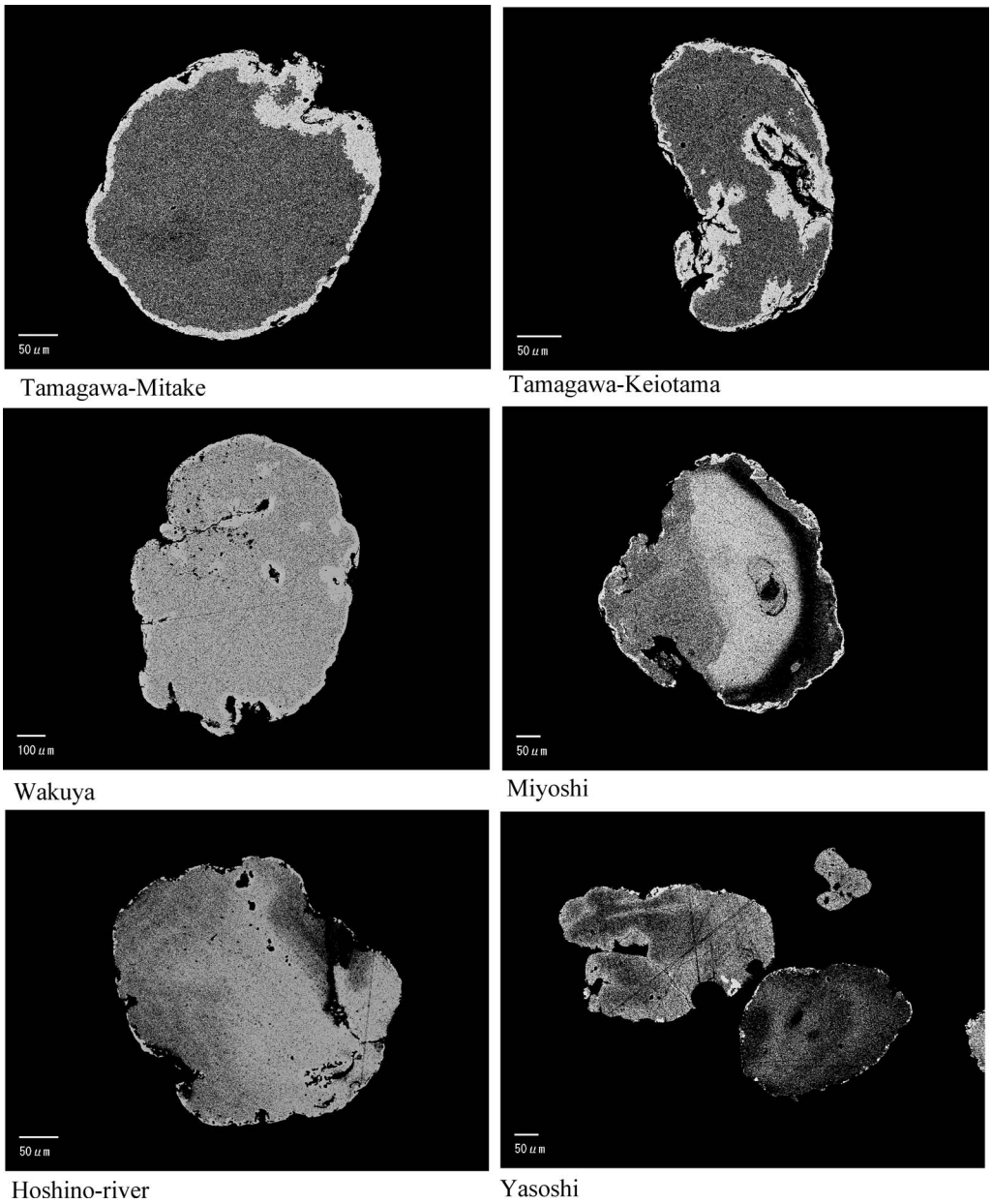

Fig. 21. Placer gold grains with almost pure Au rim.

cally distinct from the core and no gradational change between them is observed. There is no relationship between the composition of core and the potential for rim development. The gold rim overgrowth commonly totally surrounds the core electrum. Grain with an incomplete rim is also common (Fig. 22). Sometimes, gold-enriched part occurs in a small embayment on the grain surface, and small rounded voids are found in the gold-rich rim as noted by Groen *et al*. (1990). The width of the overgrowth is from a few μm to a few tens μm. Analysis of the thin rim shows the presence of a few wt% of Ag. This is probably due to the large exciting volume produced by electron beam or due to penetrating into the core electrum. Such an overgrowth texture is found

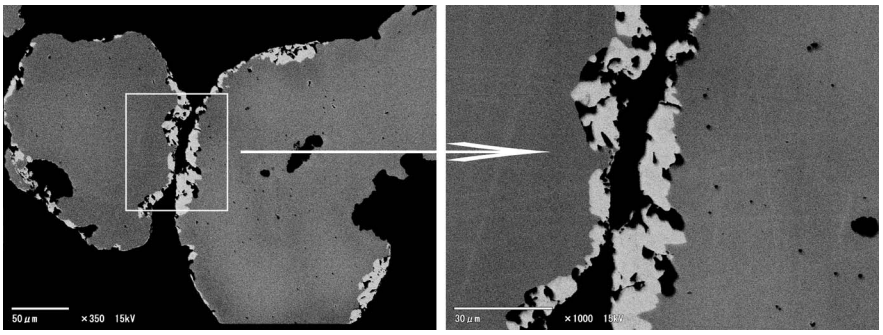

Fig. 22. Incomplete pure gold rim overgrowth on electrum grains (Yasoshi, Hokkaido Province). The gold rims develop in embayment and small voids are common in the rim zone.

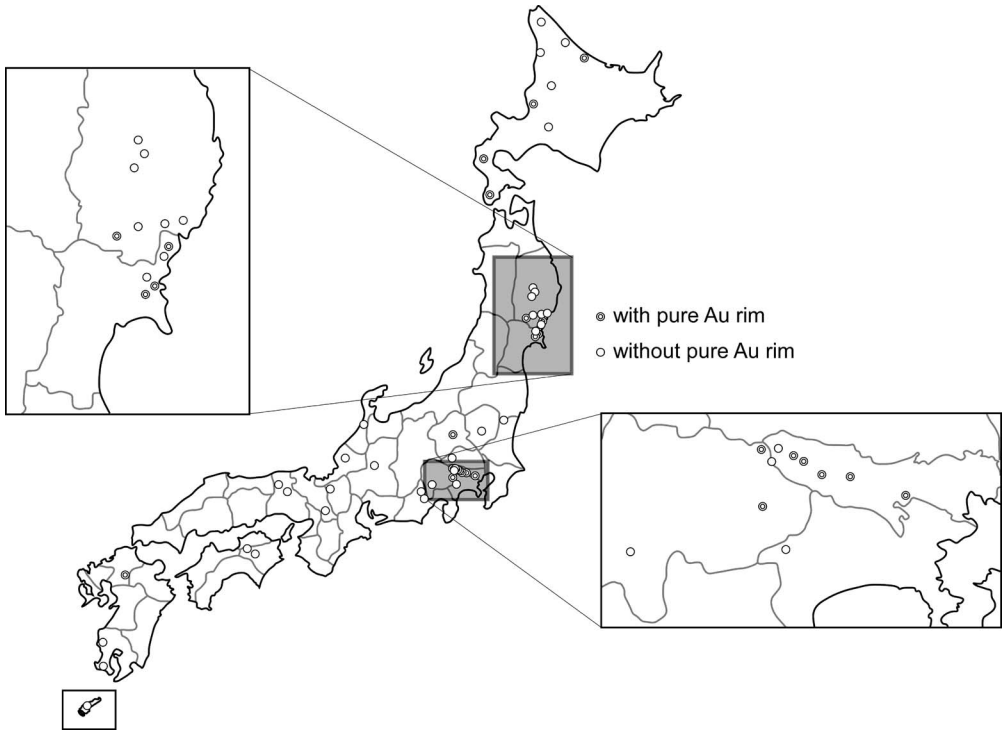

Fig. 23. Locations of placer deposits with pure gold rim-bearing electrum grains in the Japanese Islands.

in many placer deposits in the Japanese Islands (Fig. 23). The mechanism of the overgrowth of pure gold rim has been discussed by many researchers. Major theories are simple removal of Ag, biochemical cycling of gold and chemical precipitation after the deposition of the electrum (*e.g.* Groen *et al*., 1990: Knight *et al*., 1999a: Reith, *et al*., 2007).

Electrum grains from the same placer deposit do not always show such an overgrowth texture. The frequency of the overgrowth has been checked on the electrum grains from the Yasoshi River where electrum was collected from three sites: electrum in the mud stratum and electrum on the riverbed both upper stream and downstream of the river. The electrum grains have mostly Ag-rich core compositions from 30 to 50 wt%. The frequency of the overgrowth texture was not

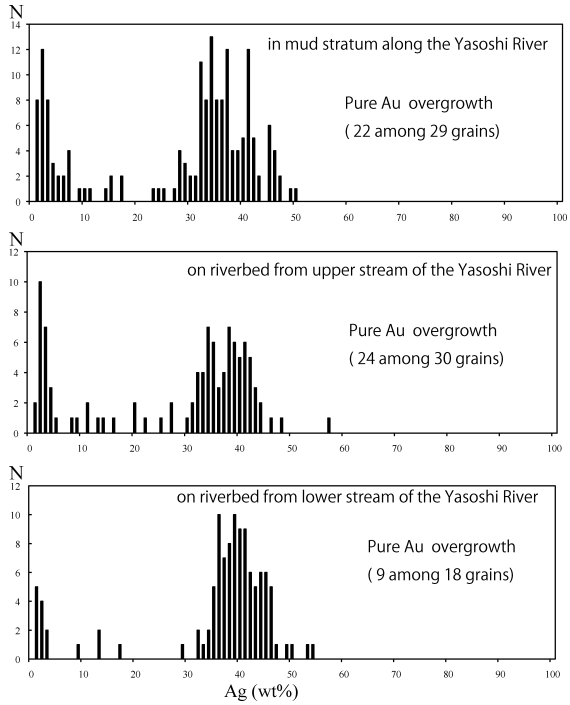

Fig. 24. Frequency histograms of Ag contents (wt%) in electrum grains from placer deposits along the Yasoshi River, Hokkaido Province N: number of analyses.

distinct among the three deposits: 75% of the grain in both upper stream and in mud stratum and 50% from the downstream (Fig. 24). In the Ushiroshiribetsu and Shiriuchi sites, the gold rim is found in 10 grains among 15 grains and 8 grains among 28 grains, respectively. Even though the electrum grains have similar chemical composition in core and settled in a mud stratum or riverbed, it is strange why a part of the electrum grains have been escaped the overgrowth of pure gold.

Hg Distribution in Electrum

Shikazono and Shimizu (1988) obtained Hg in an electrum from only one ore deposit. In this paper, Hg was detected from eight ore deposits and from more than half of placer deposits studied. Electrum grains with Hg content more than 0.5% are found from hypo/mesothermal deposits. The Konomai mine of epithermal type contains Hg-bearing electrum, but the content is negligible, around 0.2 wt%, compared with those from the hypo/mesothermal type. Hg easily makes an alloy, amalgam, with Au and Ag. Hence, it had been used for refining electrum in ore and placer deposits. Amalgam is found around some of the abandoned mines. It is usually silver in color and has a spongy texture. Spongy texture similar to the amalgam was found in two placer grains among the analyzed ones (Fig. 25). The Hg content is variable and more than 20 wt% in the spongy part. It is uncertain whether they are due to a reaction with natural Hg or remnants after refining electrum in ore or placer deposits.

Hg-bearing electrum different from amalgamated ones mentioned above is present in many placer deposits (Fig. 26) and in ore deposits (Fig. 27). The range of Hg content in placer electrum

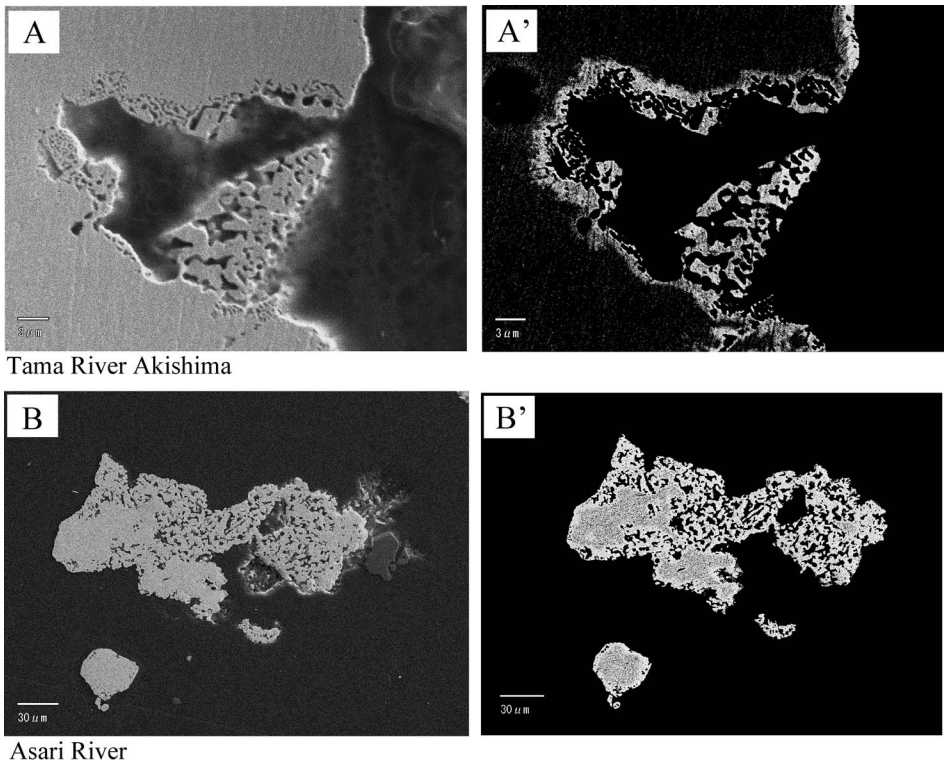

Fig. 25. Partly or strongly amalgamated placer gold with spongy texture. Hg content in the spongy part is usually more than 20 wt%.

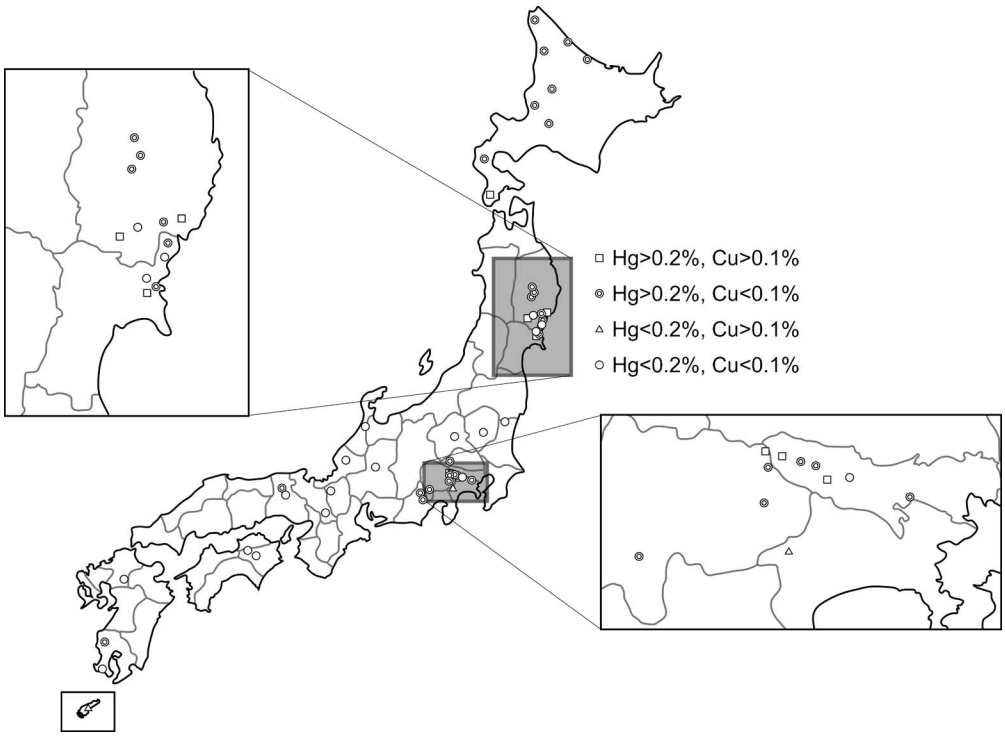

Fig. 26. Locations of placer deposits with Hg-bearing electrum grains in the Japanese Islands.

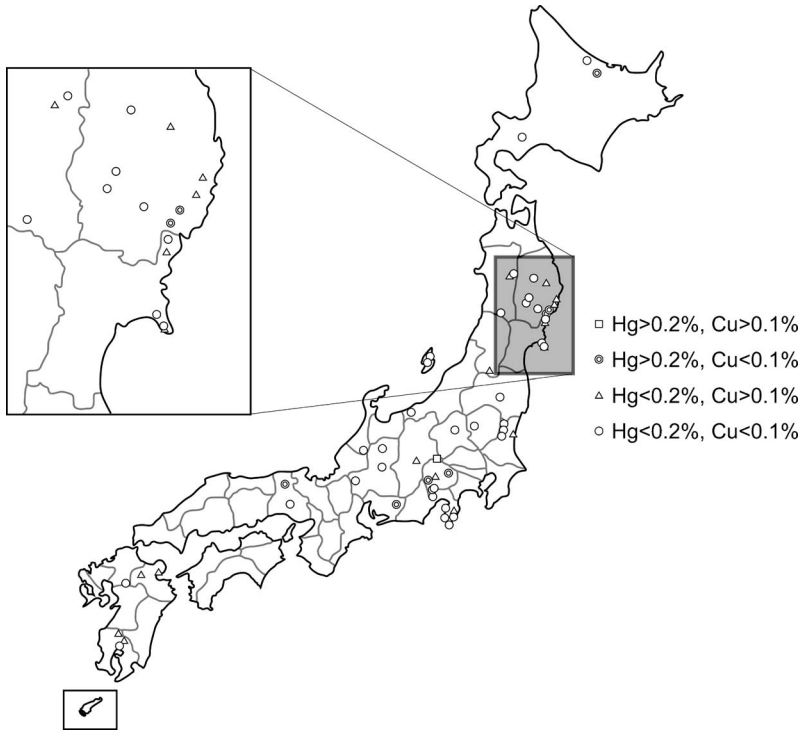

Fig. 27. Locations of ore deposits with Hg-bearing electrum grains in the Japanese Islands.

is similar to that found in electrum from the ore deposits. Hg content is mostly variable in a grain. Some electrum grains show a vermiculate structure as shown in Plate 5 B. The others show a network and island structures (Plate 5 D, E and F). In some grains, there is a positive correlation between the Hg and Ag concentrations. Such vermiculate and network textures have not been described from electrum in the ore deposit. One reason may be that electrum grains analyzed from ore deposits are too fine-grained to get inhomogeneous texture of Hg or Ag content. The textures suggest that the compositional variation of Hg in placer electrum arises from synchronous crystallization of Au, Ag and Hg, not by contamination of Hg during exploitation of the placers. The Hg-bearing electrum grains from the studied deposits can confidently be attributed to natural Au–Ag–Hg alloys.

Discussion

Ore Deposit

Shikazono and Shimizu (1988) considered the physicochemical environment of Au-Ag mineralization based on chemical composition of coexisting minerals and fluid inclusions data and concluded that the Ag content of electrum correlates inversely with temperature, pH and salinity. The temperatures for typical epithermal and hypo/mesothermal types are 200–270°C and 250–350°C, respectively. Although mineral assemblage and fluid inclusions except for chemical compositions have not been studied here, chemical compositions of electrum grains in the ore deposits are essentially similar to those described by Shikazono and Shimizu (1988). Namely, the Ag content is roughly consistent with the their classification, *i.e*. Ag-rich in the epithermal de-

posits and Ag-poor in the hypo/mesothermal deposits. Differences of data between Shikazono and Shimizu (1988) and this paper mainly concern the frequency of the Hg-bearing electrum, *i.e.* Hg was detected in the new work in 7 among 34 ore deposits (Fig. 25). Hg-bearing electrum is correlated with hypo/mesothermal type. The Cu content is negligible in amount, mostly less than 0.2 wt%. The variations of Hg and Cu in ore deposits are consistent with the report by Knight *et al*. (1999b) that Hg contents in electrum grains from mesothermal vein-type deposits in Klondike are more than detectable, up to 9 wt%, and Cu contents are less than 0.2 wt%. Sb, Ni and Te were described in the electrum grains from ore deposits in the Japanese Islands by Urashima (1981), Sugaki *et al*. (1981) and Soeda and Watanabe (1981), they were not detected by the electron microprobe analyzer.

Placer Deposit

The chemical composition of placer gold has been scarcely analyzed in the Japanese Islands. Present analyses are almost unique for the islands. The placer gold grains collected from riverbeds may be parentally derived from ore deposits. Namely they were concentrated in streams after erosion of ore deposits. The chemical compositions are partly similar to those from nearby ore deposits. As the placer gold grains were derived from a drainage basin of the river where there are many developed, undeveloped or eroded-out deposits, it is hard to compare the chemical compositions of electrum grains between ore and placer deposits one by one. Roughly speaking, the chemical compositions of placer gold grains are consistent to the geological setting: Ag-rich, Ag$>$20 wt%, in the Green Tuff region and Ag-poor, Ag$<$20 wt%, in the Early Cretaceous granitoid region such as the Kitakami district. As far as core composition is concerned, the compositional variation in a placer deposit is restricted. Bimodal distribution, Ag-rich and Ag-poor, is observed from three placer deposits: the Hoshino site from Kyushu, and the Kosuge and Tabayama sites from the Kanto Province. In the Hoshino area, all the ore deposits reported belong to epithermal-type, *i.e.* Ag-rich, whereas ore deposits are hypo/mesothermal type in the Tabayama and Kosuge areas. The epithermal and hypo/mesothermal types rarely include Ag-poor and Ag-rich electrum grains, respectively (Shikazono and Shimizu, 1988). There were some abandoned ore deposits in the drainage basin of the Hoshino and Tama rivers. Electrum grains from the ore deposits can be no longer obtained from them. Hence, it is difficult to pursue whether both types of ore deposits occur in the three areas mentioned above or not.

Specific characters appear in the placer gold grains. One is a pure gold rim on electrum from the placer deposit. Such a placer gold grain is found in many placer deposits (Figs. 21 & 23). The other is vermiculate or network heterogeneity in Hg content. The origin of the pure gold rim has been discussed by many workers. In the late 19th Century, it appeared that the silver had been removed from the surface by solution in some naturally formed solvent (*cf*. Groen *et al.*, 1990). Knight *et al*. (1999a) concluded that the pure gold rim was formed by removal of Ag and not by the precipitation of Au. The sharp boundary between the gold rim and electrum core does not support the simple model of selective removal of Ag. One theory shows that it was formed by precipitation of Au from a surrounding solution and dissolution and precipitation operated in tandem (Groen *et al.*, 1990). The other is a bacteria-forming mechanism (*e.g*. Watterson, 1991: Reith *et al.*, 2007).

Groen *et al*. (1990) observed local growth of gold rim in a small embayment on the grain surface and presence of small rounded void in the pure gold rim as observed in many placer gold grains in the Japanese Islands by us. They concluded that the electrum was at first dissolved from the surface by complexing agents in a river or sediment solution, and Ag ligands moved to the

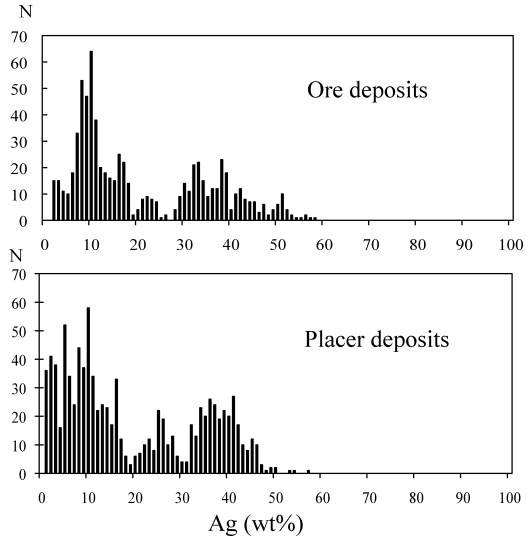

Fig. 28. Frequency histograms of Ag contents (wt%) in electrum grains analyzed in this paper from ore and placer deposits in the Japanese Islands. N: number of analyses.

solution whereas Au ligands precipitated on the corroding surface. This is the most realistic because gold as a free ion in aqueous solution under surface conditions is unstable. However, this mechanism does not explain the coarsening of the placer gold because the overgrowth rim is insignificant to the growth of placer grain as noted by Chapman *et al*. (1999)

Biomineralization has received considerable attention in recent years. Watterson (1991) observed a lacelike network of micrometer-size filiform gold in placer gold after chemical treatment and interpreted as a pseudomorph of a budding bacterium. In his chemical treatments, placer gold was immersed in 50% HF for 5 days at 25°C and then in 16N HNO_3 at 230°C for 5 h. Later, Watterson (1994) found a filiform morphology in gold by treating amalgams made from natural and artificial gold and stated that morphology alone cannot be considered adequate evidence of microbial involvement in gold formation. Reith *et al*. (2007) concluded that biomineralization played an important role in the biogeochemical cycling of gold, referring the experimental observation of gold precipitation in bacteria and the presence of bacteria-like pseudomorphs on placer gold that has not been subjected to any chemical treatments and direct associations between secondary gold and bacteria. They suggested that bacteria probably played a role in the formation of the world's largest gold deposit and in the formation of primary mineralization in hydrothermal and deep subsurface systems. This is not a particularly abstruse idea because bacteria are found in subsurface environments up to a depth of several kilometers.

The origin of coarse-grained placer gold and nugget has been long been the subject of discussion. Major models are detritous in origin, chemical or mechanical accretion and/or a combination of both. Except for the pure gold rim on the placer gold, as the chemical composition of placer gold is roughly similar to that of nearby ore deposits in the Japanese Islands, the biomineralization and chemical dissolution-precipitation models are not applicable to the placer gold grains. A histogram of Ag content in electrum grains from all the ore deposits analyzed here shows major peaks at around 10 wt% and 35 wt% with a subordinate peak between 20 and 30, similar to those from all the placer deposits (Fig. 28). Knight *et al*. (1999b) analyzed electrum grains from both ore and placer deposits in the Klondike, Canada, and concluded that the elec-

trum grains from placer deposits reflect their compositions from those from ore deposits. We rather favor a simple explanation that core of the placer gold was detritous in origin, *i.e.* directly derived from ore deposit in the drainage basin of a river.

In addition of the pure gold rim, a vermiculate or network structure of Hg in the placer gold is enigmatic in origin (Plate 5). As far as we know, such a texture has not been described. One simple explanation might be an accretion of fine-grained Hg-bearing electrum grains into a large grain. As a rare case, one placer gold from the Akikawa site (Plate 5 C & D) apparently suggests that two Hg-bearing grains were coupled together. A huge gold nugget exceeding more than 50 kg was found in the world. The biggest one reported from the Japanese Islands was 760 g in Hokkaido (Yanaga, 2008). As a placer gold or nugget is commonly coarse-grained and larger than that observed in nearby ore deposit, it was said that the origin of large nugget was due to mechanical accretion of fine-grained ones. Although a texture of Hg distribution in placer electrum may be explained by accretion, it is difficult to see how huge nuggets were also made by the accretion of fine-grained ones. The biggest electrum from the ore deposit in the Japanese Islands exceeds more than 1.5 kg (Tokunaga, 1991). Hence, as far as nuggets in the Japanese Islands are concerned, they are not always larger than that of the ore deposit.

There are many unsolved problems especially in the placer gold or nugget. The presented data will provide grounds for the inference about the origin of the ore and placer electrum grains. As the other purpose of this analysis, we aimed to solve the provenance of placer gold and nugget stored as a national heritage in temples and shrines. It is not so difficult to get chemical composition of the gold surface of national heritage. However, the inner composition cannot be obtained without damage to the sample. The chemical composition of the gold surface is highly affected by presence of pure gold rim. Hence, unfortunately, it will be difficult to compare the chemical composition between the national heritage and natural electrum.

Summary

The results of our study indicate that chemical compositions of electrum grains from ore deposits are generally consistent with the classification by Shikazono and Shimizu (1988): Ag-rich in epithermal type and Ag-poor in hypo/mesothermal type. Hg-bearing electrum from ore deposits is not uncommon. It mostly occurs in the hypo/mesothermal deposits, consistent with the report from Klondike, Canada, by Knight *et al*. (1999b). The Cu contents are usually less than 0.2 wt% and the other elements are negligible.

Electrum grains were analyzed from 51 placer deposits in the Japanese Islands. The analyses of placer gold are almost new in the islands. Although, in many places, ore deposits as sources for the placer gold grains could not be uniquely assigned, core compositions of electrum grains from placer deposits are roughly consistent with those from nearby ore deposits. Such a relationship is mainly confirmed in two regions: Ag-rich in Green Tuff region and Ag-poor in the Early Cretaceous granitoid region. It shows that the placer gold grains were essentially derived from ore deposits. One of the most specific characteristics of the placer gold is presence of a pure gold rim. Such an overgrowth was found in many placer deposits. The overgrowth rim is usually thin less than 10 μm and is insignificant to the growth of placer grain. It is probable that the pure gold rim was formed by dissolution and precipitation rather than by simple removal of Ag or bacteria-related biomineralization. An abrupt change in composition from core to rim does not support the simple removal of Ag. So far we did not find any bacteriaform texture in the placer gold. The growth of the pure gold rim occurs in an embayment of the grain and many voids occur in the

rim. Such descriptions support the dissolution and precipitation model of Grown *et al*. (1990). Hg in electrum was detected from many grains in placer deposits. Distribution of Hg in the placer gold sometimes shows unusual texture such as vermiculate, network and island-like. So far, there is no information available or model about the origin of such textures. As an accretion of placer gold is scarcely observed in the placer deposits, it is hard to explain the coarse-grained placer gold or nugget by accretion of fine-grained placer gold grains. As far as core compositions are concerned, it seems the most reasonable that the placer gold grains were derived directly from ore deposits.

Acknowledgements

The authors express sincere gratitude to Mr. N. Omori for showing them the localities of many placer gold deposits in Japan and to a volunteer group of the National Museum of Nature and Science for helping them to collect placer gold in the Kanto Province. The authors also thank Mr. F. Matsuyama for arrangement of gold-bearing ores stored the in National Museum of Nature and Science.

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Appendix

Table 3. Chemical compositions of electrum grains in ore deposits from the Hokkaido Province

Locality	Grain No.	Weight %					Atomic %				
		Au	Ag	Cu	Hg	Total	A	Ag	Cu	Hg	Ag/Au
Hokuryu	1*	67.96	31.57	0.00	–	99.53	54.11	45.89	0.00	–	0.85
(Hk-A ①)		67.89	32.24	0.01	–	100.14	53.54	46.43	0.03	–	0.87
		61.24	38.17	0.00	–	99.41	46.77	53.23	0.00	–	1.14
Konomai	1	65.16	31.94	0.00	0.02	97.31	52.76	47.22	0.00	0.01	0.89
(Hk-A ②)		66.83	30.22	0.00	0.00	97.21	54.78	45.22	0.00	0.00	0.83
		68.75	28.21	0.03	0.00	97.15	57.12	42.79	0.09	0.00	0.75
		63.15	34.08	0.01	0.00	97.37	50.36	49.62	0.01	0.00	0.99
		64.88	31.74	0.04	0.22	97.01	52.67	47.05	0.10	0.18	0.89
		64.40	32.41	0.02	0.03	97.05	52.08	47.85	0.05	0.02	0.92
		64.16	33.14	0.00	0.06	97.61	51.44	48.51	0.00	0.04	0.94
		60.47	35.92	0.02	0.24	96.67	47.86	51.91	0.04	0.18	1.08
		62.83	34.53	0.00	0.04	97.57	49.90	50.07	0.00	0.03	1.00
		65.37	31.88	0.00	0.00	97.41	52.90	47.10	0.00	0.00	0.89
Chitose	1	64.92	32.99	0.01	0.00	98.14	51.86	48.11	0.02	0.00	0.93
(Hk-A ③)		65.13	33.07	0.00	0.00	98.29	51.89	48.11	0.00	0.00	0.93
		64.96	32.17	0.05	0.00	97.37	52.44	47.42	0.13	0.00	0.90
		65.27	31.90	0.02	0.00	97.30	52.82	47.13	0.05	0.00	0.89
		65.35	32.06	0.01	0.00	97.56	52.74	47.23	0.04	0.00	0.90
		65.93	31.45	0.00	0.00	97.48	53.44	46.56	0.00	0.00	0.87
		66.38	30.85	0.00	0.00	97.38	54.10	45.90	0.00	0.00	0.85
		65.94	31.66	0.00	0.00	97.71	53.29	46.71	0.00	0.00	0.88
		66.62	31.02	0.01	0.04	97.81	54.02	45.92	0.03	0.03	0.85
		66.13	31.82	0.02	0.00	98.09	53.21	46.74	0.06	0.00	0.88
Chitose	2*	79.57	19.57	0.02	–	99.16	68.97	30.98	0.05	–	0.45
(Hk-A ③)		79.79	19.84	0.01	–	99.64	68.75	31.22	0.03	–	0.45
		79.19	20.25	0.02	–	99.46	68.14	31.81	0.05	–	0.47
		78.90	20.44	0.02	–	99.36	67.86	32.09	0.05	–	0.47
		79.00	20.52	0.02	–	99.54	67.79	32.16	0.05	–	0.47
		79.02	20.64	0.03	–	99.69	67.65	32.27	0.08	–	0.48
		79.03	20.93	0.00	–	99.96	67.41	32.59	0.00	–	0.48
		78.49	20.80	0.01	–	99.30	67.37	32.60	0.03	–	0.48

*after Shikazono and Shimizu (1988)

Table 3-1. Chemical compositions of electrum grains in placer deposits from the Hokkaido Province

Locality	Grain No.	Weight %					Atomic %				
		Au	Ag	Cu	Hg	Total	Au	Ag	Cu	Hg	Ag/Au
Tomarinai	1	92.08	2.21	0.10	3.76	98.15	91.98	4.02	0.31	3.68	0.04
(Hk-P ①)		93.48	2.47	0.02	3.79	99.78	91.85	4.43	0.05	3.66	0.05
		93.49	2.19	0.08	3.72	99.52	92.22	3.94	0.24	3.60	0.04
		93.70	2.36	0.05	3.82	99.93	91.94	4.22	0.16	3.68	0.05
		93.76	2.20	0.08	3.81	99.88	92.14	3.94	0.24	3.68	0.04
		93.15	2.19	0.02	3.64	99.03	92.45	3.96	0.05	3.54	0.04
		93.38	2.22	0.07	3.82	99.51	92.10	4.00	0.21	3.70	0.04
		92.04	2.26	0.00	3.82	98.15	92.11	4.14	0.00	3.75	0.04
		93.94	2.30	0.00	3.60	99.86	92.41	4.12	0.00	3.47	0.04
Peichan	1	80.19	16.14	0.00	0.21	96.66	72.99	26.82	0.00	0.19	0.37
(Hk-P ②)		80.58	15.69	0.01	0.16	96.53	73.63	26.18	0.04	0.15	0.36
		81.15	15.57	0.05	0.05	96.87	73.93	25.89	0.14	0.04	0.35
		80.11	15.80	0.03	0.12	96.15	73.39	26.43	0.07	0.10	0.36
		82.11	15.93	0.00	0.05	98.16	73.82	26.14	0.00	0.04	0.35
		81.25	15.68	0.00	0.24	97.27	73.79	26.00	0.00	0.21	0.35
		81.88	15.25	0.03	0.00	97.30	74.56	25.36	0.08	0.00	0.34
		81.95	14.35	0.02	0.02	96.46	75.72	24.21	0.05	0.02	0.32
		80.37	15.53	0.00	0.08	96.07	73.87	26.05	0.00	0.07	0.35
		82.10	15.32	0.05	0.00	97.49	74.49	25.38	0.13	0.00	0.34
Onobunai	1	88.77	8.82	0.00	0.48	98.07	84.27	15.29	0.00	0.44	0.18
(Hk-P ③)		87.66	8.84	0.03	1.22	97.84	83.41	15.36	0.09	1.14	0.18
		87.98	8.74	0.04	1.21	98.01	83.58	15.16	0.13	1.13	0.18
		89.78	9.09	0.00	0.03	98.93	84.37	15.60	0.00	0.03	0.18
		88.36	9.18	0.01	0.00	97.61	84.04	15.94	0.02	0.00	0.19
		89.08	9.11	0.00	0.02	98.22	84.25	15.73	0.00	0.01	0.19
		89.23	9.04	0.01	0.01	98.36	84.36	15.60	0.03	0.01	0.18
		88.32	9.17	0.04	0.00	97.64	83.95	15.92	0.13	0.00	0.19
		90.29	8.36	0.00	0.00	98.75	85.53	14.47	0.00	0.00	0.17
		88.30	8.85	0.02	0.30	97.62	84.23	15.41	0.07	0.28	0.18
Yasoshi-clay	1	60.70	36.81	0.00	0.00	97.51	47.46	52.54	0.00	0.00	1.11
(Hk-P ④)	rim	84.05	14.47	0.00	0.00	98.52	76.08	23.92	0.00	0.00	0.31
	rim	91.09	5.69	0.00	0.00	96.78	89.76	10.24	0.00	0.00	0.11
	2	61.92	35.37	0.01	0.05	97.35	48.92	51.02	0.02	0.04	1.04
		62.52	34.86	0.00	0.00	97.38	49.55	50.45	0.00	0.00	1.02
	rim	93.67	6.46	0.01	0.00	100.14	88.79	11.18	0.03	0.00	0.13
	rim	94.98	2.58	0.00	0.00	97.56	95.27	4.73	0.00	0.00	0.05
	3	62.06	34.80	0.00	0.00	96.85	49.41	50.59	0.00	0.00	1.02
		64.44	32.11	0.02	0.00	96.57	52.34	47.61	0.05	0.00	0.91
	rim	95.51	1.98	0.00	0.00	97.49	96.35	3.65	0.00	0.00	0.04
	rim	93.80	5.74	0.00	0.00	99.54	89.95	10.05	0.00	0.00	0.11
	4	62.88	33.74	0.03	0.00	96.65	50.48	49.45	0.07	0.00	0.98
		65.22	32.16	0.01	0.00	97.39	52.60	47.36	0.04	0.00	0.90
		65.62	31.42	0.00	0.00	97.03	53.36	46.64	0.00	0.00	0.87
		70.21	28.27	0.03	0.00	98.51	57.59	42.33	0.08	0.00	0.74
	rim	89.16	8.62	0.00	0.05	97.84	84.95	15.00	0.00	0.05	0.18
	5	59.24	38.70	0.00	0.00	97.93	45.60	54.40	0.00	0.00	1.19
		62.02	35.46	0.00	0.00	97.48	48.93	51.07	0.00	0.00	1.04
		62.77	35.39	0.00	0.00	98.16	49.27	50.73	0.00	0.00	1.03
	rim	96.93	0.26	0.04	0.00	97.23	99.39	0.48	0.13	0.00	0.00
	rim	98.72	0.42	0.00	0.00	99.14	99.23	0.77	0.00	0.00	0.01
	6	58.48	40.64	0.00	0.00	99.13	44.07	55.93	0.00	0.00	1.27
		61.21	36.93	0.00	0.00	98.14	47.58	52.42	0.00	0.00	1.10
	rim	96.65	0.98	0.01	0.00	97.64	98.16	1.82	0.02	0.00	0.02
	rim	99.64	0.74	0.00	0.00	100.37	98.67	1.33	0.00	0.00	0.01

Table 3-1. (Continued)

Locality	Grain No.	Weight %					Atomic %				
		Au	Ag	Cu	Hg	Total	Au	Ag	Cu	Hg	Ag/Au
Yasoshi-clay (Hk-P ④)	7	58.06	40.55	0.02	0.02	98.66	43.92	56.01	0.05	0.02	1.28
		57.67	40.41	0.00	0.00	98.08	43.87	56.13	0.00	0.00	1.28
		56.89	40.41	0.00	0.00	97.30	43.54	56.46	0.00	0.00	1.30
	rim	95.24	1.79	0.00	0.00	97.03	96.68	3.32	0.00	0.00	0.03
	8	57.43	40.08	0.05	0.00	97.55	43.92	55.96	0.11	0.00	1.27
		59.17	39.64	0.03	0.00	98.84	44.95	54.98	0.07	0.00	1.22
		70.32	27.03	0.00	0.00	97.35	58.76	41.23	0.01	0.00	0.70
	rim	95.79	1.19	0.00	0.00	96.98	97.78	2.22	0.00	0.00	0.02
	9	63.92	33.71	0.03	0.00	97.66	50.91	49.02	0.07	0.00	0.96
		66.04	32.48	0.00	0.00	98.52	52.69	47.31	0.00	0.00	0.90
		66.66	31.28	0.00	0.00	97.93	53.86	46.14	0.00	0.00	0.86
		67.30	31.30	0.02	0.00	98.62	54.06	45.90	0.04	0.00	0.85
		74.31	24.85	0.00	0.00	99.15	62.09	37.91	0.00	0.00	0.61
		81.01	16.40	0.01	0.00	97.42	72.98	26.98	0.04	0.00	0.37
	10	48.02	49.08	0.00	0.00	97.10	34.89	65.11	0.00	0.00	1.87
		49.77	48.90	0.00	0.00	98.67	35.80	64.20	0.00	0.00	1.79
		55.89	41.84	0.00	0.00	97.72	42.25	57.75	0.00	0.00	1.37
		65.94	31.88	0.00	0.00	97.82	53.11	46.89	0.00	0.00	0.88
	rim	98.14	0.69	0.01	0.00	98.84	98.72	1.26	0.02	0.00	0.01
	11	62.54	34.84	0.00	0.00	97.38	49.57	50.43	0.00	0.00	1.02
		65.37	33.29	0.02	0.00	98.68	51.80	48.15	0.06	0.00	0.93
		68.02	30.18	0.00	0.00	98.20	55.24	44.76	0.00	0.00	0.81
	rim	97.40	0.62	0.00	0.00	98.01	98.85	1.15	0.00	0.00	0.01
	12	62.30	35.30	0.00	0.00	97.59	49.15	50.85	0.00	0.00	1.03
		68.72	29.50	0.00	0.00	98.22	56.06	43.94	0.01	0.00	0.78
		70.43	28.43	0.01	0.00	98.87	57.56	42.42	0.02	0.00	0.74
		84.81	14.15	0.00	0.00	98.96	76.64	23.36	0.00	0.00	0.30
		86.34	13.02	0.00	0.00	99.36	78.41	21.59	0.00	0.00	0.28
	13	51.32	46.19	0.00	0.00	97.50	37.83	62.17	0.00	0.00	1.64
		53.02	45.31	0.02	0.03	98.37	39.04	60.90	0.04	0.02	1.56
		53.63	44.85	0.04	0.00	98.51	39.54	60.38	0.08	0.00	1.53
		54.79	42.60	0.00	0.00	97.38	41.33	58.67	0.00	0.00	1.42
		57.61	40.37	0.02	0.00	97.99	43.85	56.10	0.04	0.00	1.28
		58.56	39.16	0.00	0.00	97.72	45.03	54.97	0.00	0.00	1.22
	rim	95.15	4.25	0.00	0.00	99.40	92.46	7.54	0.00	0.00	0.08
	rim	95.84	1.13	0.00	1.83	98.80	96.13	2.07	0.00	1.80	0.02
	rim	96.64	3.96	0.01	0.00	100.60	93.03	6.96	0.01	0.00	0.07
	rim	97.47	2.55	0.00	0.26	100.28	95.21	4.55	0.00	0.25	0.05
	14	55.80	41.85	0.02	0.00	97.67	42.19	57.77	0.04	0.00	1.37
		57.08	40.92	0.00	0.00	97.99	43.31	56.69	0.00	0.00	1.31
		54.18	44.50	0.00	0.00	98.68	40.01	59.99	0.00	0.00	1.50
		52.98	45.56	0.02	0.00	98.56	38.89	61.06	0.05	0.00	1.57
	rim	95.73	2.28	0.01	0.00	98.03	95.79	4.17	0.04	0.00	0.04
	15	60.30	36.98	0.02	0.00	97.29	47.16	52.80	0.04	0.00	1.12
		77.23	22.28	0.00	0.01	99.52	65.50	34.49	0.00	0.00	0.53
		61.03	37.16	0.00	0.00	98.19	47.35	52.65	0.00	0.00	1.11
		66.80	31.00	0.03	0.00	97.83	54.10	45.84	0.07	0.00	0.85
		63.88	33.67	0.00	0.00	97.55	50.96	49.04	0.00	0.00	0.96
	16	62.62	34.84	0.00	0.00	97.45	49.61	50.39	0.00	0.00	1.02
		63.49	34.18	0.00	0.00	97.67	50.43	49.57	0.00	0.00	0.98
	rim	98.02	1.50	0.00	0.00	99.52	97.28	2.72	0.00	0.00	0.03
	17	55.17	44.05	0.00	0.00	99.22	40.69	59.31	0.00	0.00	1.46
		54.93	44.73	0.04	0.00	99.70	40.18	59.73	0.09	0.00	1.49
		60.16	38.27	0.00	0.00	98.43	46.27	53.73	0.00	0.00	1.16
		60.69	38.30	0.04	0.00	99.03	46.42	53.48	0.10	0.00	1.15
	rim	91.62	6.08	0.04	0.52	98.26	88.64	10.74	0.13	0.49	0.12

Table 3-1. (Continued)

Locality	Grain No.	Weight %					Atomic %				
		Au	Ag	Cu	Hg	Total	Au	Ag	Cu	Hg	Ag/Au
Yasoshi-clay (Hk-P ④)	18	60.51	38.56	0.00	0.00	99.07	46.22	53.78	0.00	0.00	1.16
		61.31	36.16	0.00	0.00	97.47	48.15	51.85	0.00	0.00	1.08
		59.50	37.61	0.00	0.00	97.11	46.42	53.58	0.00	0.00	1.15
	19	69.73	27.76	0.05	0.00	97.54	57.84	42.03	0.13	0.00	0.73
		53.72	44.53	0.00	0.00	98.25	39.79	60.21	0.00	0.00	1.51
		68.46	30.19	0.02	0.00	98.67	55.37	44.57	0.06	0.00	0.81
		63.86	33.79	0.01	0.00	97.65	50.86	49.13	0.02	0.00	0.97
		52.77	42.38	0.00	0.00	95.16	40.54	59.45	0.00	0.00	1.47
	rim	92.37	6.25	0.03	0.00	98.64	88.94	10.98	0.08	0.00	0.12
	rim	93.21	6.72	0.00	0.00	99.94	88.36	11.64	0.00	0.00	0.13
	rim	97.80	2.17	0.00	0.00	99.96	96.11	3.89	0.00	0.00	0.04
	20	60.66	36.72	0.00	0.00	97.37	47.50	52.50	0.00	0.00	1.11
		72.51	26.27	0.01	0.00	98.79	60.17	39.81	0.02	0.00	0.66
		55.85	41.26	0.00	0.00	97.11	42.57	57.43	0.00	0.00	1.35
	rim	98.86	1.27	0.01	0.00	100.14	97.66	2.30	0.04	0.00	0.02
	21	66.95	32.16	0.04	0.00	99.14	53.23	46.68	0.09	0.00	0.88
		63.41	34.38	0.00	0.00	97.79	50.25	49.75	0.00	0.00	0.99
	22	57.20	40.52	0.02	0.00	97.74	43.58	56.37	0.04	0.00	1.29
		59.59	39.56	0.05	0.00	99.20	45.16	54.73	0.11	0.00	1.21
		57.73	40.08	0.00	0.00	97.81	44.10	55.90	0.00	0.00	1.27
	rim	98.25	1.36	0.02	0.00	99.63	97.48	2.47	0.05	0.00	0.03
	rim	96.98	1.85	0.01	0.00	98.83	96.62	3.36	0.02	0.00	0.03
	rim	95.76	2.90	0.03	0.00	98.69	94.68	5.24	0.09	0.00	0.06
	23	67.11	31.90	0.04	0.00	99.04	53.49	46.43	0.09	0.00	0.87
		71.42	27.85	0.00	0.00	99.26	58.42	41.58	0.00	0.00	0.71
		68.90	29.17	0.02	0.00	98.09	56.38	43.58	0.04	0.00	0.77
	rim	95.28	3.69	0.00	0.00	98.97	93.40	6.60	0.00	0.00	0.07
	24	62.86	36.31	0.05	0.00	99.22	48.62	51.27	0.11	0.00	1.05
		65.79	31.93	0.02	0.00	97.74	52.99	46.97	0.04	0.00	0.89
		65.61	33.19	0.00	0.00	98.80	51.98	48.02	0.00	0.00	0.92
	rim	96.20	1.96	0.00	0.45	98.60	95.99	3.57	0.01	0.44	0.04
	rim	90.30	4.40	0.01	2.66	97.36	89.44	7.95	0.03	2.58	0.09
	25	63.34	33.92	0.00	0.00	97.26	50.55	49.44	0.01	0.00	0.98
		63.15	33.66	0.03	0.00	96.84	50.64	49.28	0.08	0.00	0.97
	26	56.59	41.74	0.00	0.00	98.33	42.61	57.39	0.00	0.00	1.35
		60.99	37.86	0.02	0.00	98.87	46.85	53.11	0.04	0.00	1.13
	rim	95.75	2.96	0.00	0.00	98.71	94.66	5.34	0.00	0.00	0.06
	27	63.19	33.83	0.00	0.00	97.02	50.57	49.43	0.00	0.00	0.98
	rim	94.80	2.94	0.00	0.00	97.74	94.64	5.36	0.00	0.00	0.06
	28	58.29	40.50	0.00	0.00	98.79	44.08	55.92	0.00	0.00	1.27
		56.57	41.70	0.00	0.00	98.26	42.63	57.37	0.00	0.00	1.35
	rim	98.11	1.40	0.00	0.00	99.51	97.46	2.54	0.00	0.00	0.03
	29	58.85	39.10	0.00	0.00	97.95	45.18	54.82	0.00	0.00	1.21
		51.82	45.64	0.00	0.01	97.47	38.34	61.65	0.00	0.01	1.61
		62.32	36.31	0.00	0.00	98.63	48.46	51.54	0.00	0.00	1.06
	30	65.96	31.26	0.00	0.00	97.22	53.61	46.38	0.01	0.00	0.87
	rim	96.85	1.41	0.02	0.00	98.27	97.36	2.58	0.06	0.00	0.03
	31	62.67	34.54	0.00	0.00	97.22	49.84	50.16	0.00	0.00	1.01
		62.38	35.18	0.02	0.00	97.58	49.25	50.71	0.04	0.00	1.03
		60.15	37.90	0.01	0.00	98.05	46.49	53.49	0.02	0.00	1.15
		66.50	31.98	0.01	0.00	98.49	53.24	46.75	0.01	0.00	0.88
		61.35	36.44	0.04	0.00	97.83	47.93	51.98	0.09	0.00	1.08
	32	57.04	40.83	0.06	0.00	97.93	43.29	56.56	0.15	0.00	1.31
		63.87	33.24	0.00	0.00	97.11	51.27	48.73	0.00	0.00	0.95
		61.42	36.74	0.00	0.00	98.16	47.80	52.20	0.00	0.00	1.09
	rim	89.13	9.07	0.00	0.00	98.20	84.33	15.67	0.00	0.00	0.19

Table 3-1. (Continued)

Locality	Grain No.	Weight %					Atomic %				
		Au	Ag	Cu	Hg	Total	Au	Ag	Cu	Hg	Ag/Au
Yasoshi-clay (Hk-P ④)	33	69.10	28.71	0.03	0.08	97.93	56.78	43.08	0.08	0.06	0.76
		62.19	35.65	0.08	0.01	97.92	48.77	51.04	0.18	0.01	1.05
	rim	96.56	0.82	0.00	0.00	97.38	98.48	1.52	0.00	0.00	0.02
	34	67.02	31.66	0.02	0.00	98.70	53.67	46.29	0.04	0.00	0.86
		57.73	40.97	0.00	0.00	98.71	43.56	56.44	0.00	0.00	1.30
	rim	96.71	3.83	0.03	0.00	100.57	93.19	6.73	0.08	0.00	0.07
	35	65.15	33.68	0.02	0.00	98.85	51.42	48.53	0.05	0.00	0.94
		59.62	36.18	0.05	2.96	98.81	46.32	51.32	0.11	2.26	1.11
		87.95	10.72	0.00	0.00	98.67	81.79	18.21	0.00	0.00	0.22
		82.41	16.44	0.00	0.09	98.93	73.25	26.67	0.00	0.08	0.36
	36	66.16	32.95	0.03	0.00	99.14	52.33	47.59	0.08	0.00	0.91
		65.21	32.14	0.04	0.00	97.39	52.59	47.32	0.09	0.00	0.90
		63.83	34.09	0.02	0.00	97.94	50.61	49.35	0.05	0.00	0.98
		62.48	35.70	0.00	0.00	98.18	48.95	51.05	0.00	0.00	1.04
	37	53.04	45.43	0.00	0.00	98.46	39.01	60.99	0.00	0.00	1.56
		64.80	33.46	0.01	0.00	98.27	51.46	48.52	0.01	0.00	0.94
		59.50	39.85	0.05	0.00	99.40	44.93	54.95	0.12	0.00	1.22
	rim	97.14	1.77	0.00	0.00	98.91	96.77	3.22	0.01	0.00	0.03
	rim	98.74	0.98	0.00	0.00	99.72	98.22	1.77	0.01	0.00	0.02
	38	61.49	36.45	0.02	0.00	97.96	48.00	51.94	0.06	0.00	1.08
		61.50	36.51	0.03	0.00	98.04	47.94	51.98	0.08	0.00	1.08
		64.69	33.34	0.00	0.00	98.03	51.52	48.48	0.00	0.00	0.94
	rim	97.23	2.36	0.01	0.00	99.60	95.72	4.24	0.04	0.00	0.04
	39	62.68	35.94	0.03	0.00	98.64	48.83	51.11	0.06	0.00	1.05
		65.98	32.48	0.01	0.00	98.46	52.66	47.33	0.01	0.00	0.90
		52.96	46.42	0.04	0.00	99.41	38.43	61.49	0.09	0.00	1.60
		53.81	44.54	0.03	0.06	98.44	39.78	60.12	0.06	0.04	1.51
		65.68	32.60	0.03	0.04	98.35	52.40	47.48	0.08	0.03	0.91
		77.13	23.64	0.00	0.00	100.77	64.12	35.88	0.00	0.00	0.56
		72.16	27.31	0.00	0.00	99.47	59.13	40.87	0.00	0.00	0.69
		68.74	31.15	0.00	0.00	99.89	54.72	45.28	0.00	0.00	0.83
Yasoshi-upper (Hk-P ④)	1	57.68	40.22	0.02	0.00	98.16	43.97	55.97	0.05	0.00	1.27
		54.82	42.38	0.04	0.00	97.48	41.43	58.47	0.09	0.00	1.41
		42.01	56.62	0.00	0.00	98.91	28.90	71.10	0.00	0.00	2.46
		55.03	43.87	0.00	0.00	99.14	40.72	59.28	0.00	0.00	1.46
		72.40	24.45	0.00	0.81	97.78	61.44	37.89	0.00	0.67	0.62
	2	65.95	31.89	0.01	0.00	98.01	53.10	46.88	0.01	0.00	0.88
		63.50	33.67	0.03	0.00	97.42	50.77	49.16	0.07	0.00	0.97
		70.03	26.98	0.05	0.00	97.27	58.63	41.24	0.12	0.00	0.70
	3	57.03	40.53	0.02	0.00	97.84	43.50	56.45	0.04	0.00	1.30
		63.11	34.53	0.01	0.00	97.77	50.01	49.96	0.03	0.00	1.00
	rim	98.31	1.45	0.03	0.05	99.87	97.25	2.62	0.08	0.05	0.03
	rim	97.47	1.16	0.00	0.00	98.63	97.88	2.12	0.00	0.00	0.02
	4	50.39	47.55	0.02	0.00	98.18	36.71	63.24	0.05	0.00	1.72
		59.95	36.91	0.00	0.00	97.04	47.08	52.92	0.00	0.00	1.12
		88.82	8.77	0.01	0.00	97.65	84.70	15.26	0.04	0.00	0.18
		84.65	13.15	0.00	0.00	97.89	77.90	22.10	0.01	0.00	0.28
	rim	97.87	1.48	0.00	0.00	99.36	97.32	2.68	0.00	0.00	0.03
	5	64.08	33.74	0.00	0.00	98.01	50.99	49.01	0.00	0.00	0.96
		75.04	21.80	0.06	0.00	96.91	65.23	34.60	0.17	0.00	0.53
	6	66.06	32.56	0.01	0.00	98.78	52.62	47.35	0.03	0.00	0.90
		65.77	32.99	0.00	0.00	98.95	52.20	47.80	0.00	0.00	0.92
		64.38	32.96	0.00	0.00	97.49	51.69	48.31	0.00	0.00	0.93

Table 3-1. (Continued)

Locality	Grain No.	Weight %					Atomic %				
		Au	Ag	Cu	Hg	Total	Au	Ag	Cu	Hg	Ag/Au
Yasoshi-upper (Hk-P ④)	7	59.65	38.34	0.00	0.00	98.17	46.01	53.99	0.00	0.00	1.17
		59.45	37.84	0.00	0.00	97.51	46.25	53.75	0.00	0.00	1.16
		60.26	38.45	0.01	0.04	98.96	46.17	53.79	0.01	0.03	1.17
		60.98	37.09	0.02	0.00	98.40	47.36	52.59	0.04	0.00	1.11
		64.18	35.33	0.00	0.00	99.70	49.88	50.12	0.00	0.00	1.00
	rim	93.11	3.97	0.01	0.00	97.12	92.74	7.23	0.03	0.00	0.08
	8	58.26	38.90	0.01	0.00	97.42	45.05	54.92	0.03	0.00	1.22
		58.47	39.42	0.05	0.00	98.19	44.77	55.11	0.13	0.00	1.23
	rim	97.06	0.73	0.03	0.00	97.85	98.53	1.36	0.11	0.00	0.01
	9	54.32	43.06	0.00	0.00	97.65	40.86	59.14	0.00	0.00	1.45
		64.32	33.56	0.06	0.00	98.15	51.14	48.71	0.16	0.00	0.95
		63.13	34.12	0.00	0.06	97.50	50.31	49.64	0.00	0.05	0.99
	rim	97.83	1.21	0.00	0.00	99.05	97.80	2.20	0.00	0.00	0.02
	10	64.98	33.53	0.00	0.00	98.72	51.49	48.51	0.00	0.00	0.94
		63.12	33.74	0.00	0.00	97.09	50.61	49.39	0.00	0.00	0.98
	rim	86.91	10.93	0.01	0.00	97.87	81.32	18.66	0.02	0.00	0.23
	11	57.60	39.62	0.01	0.00	97.50	44.31	55.66	0.03	0.00	1.26
		57.75	39.92	0.00	0.00	97.91	44.21	55.79	0.00	0.00	1.26
	rim	79.57	19.64	0.00	0.10	99.46	68.88	31.04	0.00	0.08	0.45
	12	57.80	39.02	0.00	0.00	97.02	44.79	55.21	0.00	0.00	1.23
		60.43	38.21	0.00	0.00	98.82	46.42	53.58	0.00	0.00	1.15
	13	61.89	34.93	0.05	0.00	97.09	49.19	50.70	0.11	0.00	1.03
		60.87	36.86	0.02	0.00	97.89	47.48	52.48	0.04	0.00	1.11
		68.73	29.55	0.04	0.05	98.58	55.94	43.91	0.11	0.04	0.78
		71.23	26.35	0.05	0.00	97.81	59.62	40.26	0.12	0.00	0.68
	rim	96.13	2.45	0.00	0.00	98.59	95.55	4.45	0.00	0.00	0.05
	14	56.90	41.15	0.00	0.00	98.32	43.09	56.91	0.00	0.00	1.32
	rim	97.02	1.25	0.01	0.00	98.30	97.69	2.29	0.02	0.00	0.02
	rim	95.30	3.49	0.03	0.00	98.84	93.65	6.26	0.09	0.00	0.07
	15	64.48	34.01	0.01	0.00	98.72	50.93	49.05	0.02	0.00	0.96
	rim	92.05	7.80	0.01	0.00	99.88	86.58	13.39	0.03	0.00	0.15
	16	56.38	41.61	0.03	0.00	98.20	42.56	57.36	0.08	0.00	1.35
		55.58	42.23	0.04	0.00	98.06	41.85	58.06	0.09	0.00	1.39
	rim	97.77	1.57	0.00	0.00	99.35	97.15	2.85	0.00	0.00	0.03
	17	56.43	40.89	0.00	0.00	97.50	43.05	56.95	0.00	0.00	1.32
		62.44	34.40	0.03	0.00	97.04	49.82	50.11	0.07	0.00	1.01
		57.40	40.01	0.03	0.00	97.69	43.97	55.95	0.08	0.00	1.27
	18	55.22	42.29	0.00	0.00	97.82	41.70	58.30	0.00	0.00	1.40
		67.88	30.12	0.01	0.01	98.21	55.22	44.74	0.03	0.01	0.81
		61.89	35.77	0.01	0.00	97.89	48.65	51.33	0.02	0.00	1.06
	rim	97.37	1.56	0.00	0.00	98.94	97.15	2.85	0.00	0.00	0.03
	rim	97.40	1.30	0.00	0.00	98.76	97.63	2.37	0.00	0.00	0.02
	19	64.82	34.23	0.00	0.00	99.20	50.91	49.09	0.00	0.00	0.96
		60.43	38.32	0.00	0.00	98.90	46.35	53.65	0.00	0.00	1.16
		82.12	15.16	0.01	0.00	97.40	74.77	25.20	0.03	0.00	0.34
		78.51	19.18	0.00	0.00	97.82	69.16	30.84	0.00	0.00	0.45
	20	66.63	31.61	0.01	0.00	98.42	53.57	46.40	0.03	0.00	0.87
		64.96	32.30	0.00	0.00	97.46	52.42	47.58	0.00	0.00	0.91
		66.70	31.95	0.00	0.00	98.78	53.35	46.65	0.00	0.00	0.87
	21	53.01	45.61	0.01	0.00	98.88	38.89	61.09	0.02	0.00	1.57
		57.03	41.53	0.01	0.00	98.75	42.91	57.06	0.03	0.00	1.33
		64.95	33.97	0.04	0.00	99.16	51.11	48.80	0.09	0.00	0.95
	rim	86.68	10.70	0.01	0.00	97.53	81.60	18.38	0.02	0.00	0.23

Table 3-1. (Continued)

Locality	Grain No.	Weight %					Atomic %				
		Au	Ag	Cu	Hg	Total	Au	Ag	Cu	Hg	Ag/Au
Yasoshi-upper (Hk-P ④)	22	58.70	40.27	0.04	0.00	99.17	44.36	55.56	0.08	0.00	1.25
		60.95	37.93	0.00	0.00	99.14	46.81	53.19	0.00	0.00	1.14
	rim	96.13	2.16	0.00	0.00	98.31	96.07	3.93	0.00	0.00	0.04
	rim	95.08	2.72	0.00	0.00	97.80	95.04	4.96	0.00	0.00	0.05
	23	59.59	38.71	0.00	0.03	98.50	45.73	54.24	0.01	0.02	1.19
		66.05	31.94	0.03	0.00	98.20	53.07	46.85	0.08	0.00	0.88
		86.21	12.26	0.00	0.00	98.49	79.38	20.61	0.01	0.00	0.26
	24	61.17	36.87	0.00	0.00	98.23	47.61	52.39	0.00	0.00	1.10
		59.07	39.08	0.00	0.00	98.30	45.30	54.70	0.00	0.00	1.21
	rim	98.33	0.86	0.01	0.00	99.22	98.41	1.56	0.03	0.00	0.02
	25	63.69	35.14	0.02	0.00	99.00	49.80	50.16	0.04	0.00	1.01
		60.12	37.62	0.02	0.00	97.95	46.65	53.29	0.06	0.00	1.14
	rim	96.91	2.12	0.07	0.00	99.11	95.96	3.84	0.20	0.00	0.04
	26	60.86	37.37	0.00	0.00	98.42	47.15	52.85	0.00	0.00	1.12
	rim	94.98	2.73	0.04	0.00	97.75	94.90	4.98	0.11	0.00	0.05
	27	67.63	30.50	0.00	0.00	98.29	54.84	45.16	0.00	0.00	0.82
		61.48	36.96	0.01	0.00	98.64	47.67	52.32	0.01	0.00	1.10
	rim	95.42	2.75	0.00	0.42	98.59	94.61	4.98	0.00	0.40	0.05
	28	54.98	41.88	0.00	0.00	97.10	41.83	58.17	0.00	0.00	1.39
		64.74	33.21	0.00	0.00	98.09	51.64	48.36	0.00	0.00	0.94
	rim	97.05	2.10	0.00	0.00	99.15	96.21	3.79	0.00	0.00	0.04
	29	59.72	37.88	0.00	0.00	97.74	46.34	53.66	0.00	0.00	1.16
		56.32	41.91	0.00	0.00	98.50	42.40	57.60	0.00	0.00	1.36
	rim	93.66	4.94	0.00	0.00	98.64	91.21	8.79	0.00	0.00	0.10
	rim	98.33	1.57	0.04	0.00	99.94	97.05	2.83	0.13	0.00	0.03
	rim	95.00	3.77	0.00	0.00	98.78	93.24	6.76	0.00	0.00	0.07
	30	60.69	37.59	0.02	0.00	98.47	46.91	53.05	0.04	0.00	1.13
		57.11	40.23	0.03	0.00	97.63	43.71	56.21	0.08	0.00	1.29
	rim	97.44	1.87	0.07	0.00	99.38	96.41	3.37	0.22	0.00	0.03
Yasoshi-lower (Hk-P ④)	1	61.73	36.17	0.00	0.00	98.14	48.31	51.68	0.01	0.00	1.07
		62.40	35.22	0.00	0.00	97.79	49.25	50.75	0.00	0.00	1.03
		53.82	44.06	0.02	0.00	98.13	40.07	59.89	0.04	0.00	1.49
		48.87	49.48	0.00	0.00	98.59	35.11	64.89	0.00	0.00	1.85
		49.55	48.60	0.04	0.00	98.49	35.81	64.11	0.08	0.00	1.79
		68.33	28.59	0.00	1.80	98.92	55.88	42.68	0.00	1.44	0.76
		54.84	44.41	0.00	0.05	99.52	40.34	59.63	0.00	0.03	1.48
		62.81	36.62	0.02	0.04	99.73	48.41	51.53	0.04	0.03	1.06
	2	60.48	37.29	0.04	0.11	98.05	46.95	52.86	0.11	0.08	1.13
		60.77	38.69	0.00	0.00	99.63	46.24	53.75	0.00	0.00	1.16
		62.50	37.18	0.05	0.00	100.00	47.88	52.01	0.11	0.00	1.09
		63.55	33.75	0.00	0.00	97.54	50.77	49.23	0.00	0.00	0.97
		59.20	39.13	0.02	0.00	98.50	45.29	54.65	0.06	0.00	1.21
	3	58.27	38.83	0.00	0.00	97.29	45.12	54.88	0.00	0.00	1.22
		59.64	38.69	0.01	0.00	98.56	45.77	54.21	0.01	0.00	1.18
		82.82	16.34	0.00	0.00	99.19	73.52	26.48	0.01	0.00	0.36
		61.88	37.61	0.02	0.07	99.80	47.36	52.55	0.04	0.05	1.11
		58.62	40.31	0.01	0.00	99.10	44.33	55.65	0.02	0.00	1.26
		60.41	38.65	0.07	0.00	99.32	46.04	53.78	0.17	0.00	1.17
		62.49	35.89	0.03	0.00	98.57	48.77	51.14	0.08	0.00	1.05
	4	54.00	45.99	0.00	0.03	100.26	39.13	60.85	0.00	0.02	1.56
		58.89	39.04	0.01	0.00	98.09	45.24	54.75	0.01	0.00	1.21
		59.28	40.20	0.01	0.00	99.70	44.67	55.30	0.03	0.00	1.24
		56.74	41.24	0.03	0.00	98.21	42.94	56.99	0.07	0.00	1.33
	5	56.83	40.59	0.00	0.05	97.63	43.38	56.58	0.00	0.04	1.30
		56.46	43.18	0.03	0.00	99.91	41.71	58.23	0.06	0.00	1.40
		56.74	42.52	0.03	0.00	99.49	42.20	57.73	0.08	0.00	1.37

Table 3-1. (Continued)

Locality	Grain No.	Weight %					Atomic %				
		Au	Ag	Cu	Hg	Total	Au	Ag	Cu	Hg	Ag/Au
Yasoshi-lower (Hk-P ④)	6	59.14	39.97	0.00	0.00	99.25	44.77	55.23	0.00	0.00	1.23
		62.09	35.98	0.04	0.00	98.36	48.54	51.36	0.10	0.00	1.06
		58.99	39.69	0.05	0.00	98.95	44.82	55.06	0.13	0.00	1.23
		62.39	35.50	0.00	0.00	98.06	49.05	50.95	0.00	0.00	1.04
	7	55.61	42.51	0.00	0.00	98.31	41.75	58.25	0.00	0.00	1.40
		57.26	41.23	0.00	0.00	98.70	43.20	56.80	0.00	0.00	1.31
		57.72	40.29	0.00	0.00	98.21	43.96	56.04	0.00	0.00	1.27
	rim	91.29	8.11	0.00	0.00	99.43	86.05	13.95	0.00	0.00	0.16
	rim	95.75	2.90	0.00	0.00	98.65	94.75	5.25	0.00	0.00	0.06
	8	64.07	34.59	0.00	0.00	98.87	50.36	49.64	0.00	0.00	0.99
		61.39	37.60	0.01	0.00	99.18	47.20	52.78	0.02	0.00	1.12
		62.03	36.65	0.00	0.00	98.97	48.11	51.89	0.00	0.00	1.08
		64.66	34.74	0.02	0.00	99.61	50.45	49.50	0.05	0.00	0.98
	rim	96.64	2.36	0.02	0.00	99.04	95.68	4.26	0.06	0.00	0.04
	9	58.45	40.47	0.00	0.00	99.10	44.17	55.83	0.00	0.00	1.26
		60.59	38.44	0.08	0.00	99.29	46.24	53.57	0.18	0.00	1.16
		58.91	39.43	0.00	0.00	98.57	45.01	54.99	0.00	0.00	1.22
		58.47	39.62	0.01	0.00	98.36	44.69	55.28	0.03	0.00	1.24
		59.10	38.91	0.01	0.00	98.17	45.40	54.57	0.03	0.00	1.20
	10	55.92	43.14	0.02	0.00	99.34	41.50	58.45	0.06	0.00	1.41
		55.10	44.54	0.03	0.00	99.96	40.36	59.57	0.07	0.00	1.48
		58.21	40.21	0.00	0.00	98.66	44.22	55.78	0.00	0.00	1.26
	rim	86.53	12.98	0.02	0.00	99.65	78.47	21.49	0.04	0.00	0.27
	11	57.13	42.36	0.02	0.00	99.73	42.46	57.48	0.05	0.00	1.35
		58.96	41.13	0.00	0.00	100.31	43.98	56.02	0.00	0.00	1.27
		57.43	41.20	0.01	0.00	98.92	43.28	56.69	0.03	0.00	1.31
		57.30	41.28	0.02	0.00	98.87	43.17	56.78	0.05	0.00	1.32
		56.18	42.81	0.04	0.00	99.21	41.78	58.12	0.10	0.00	1.39
		58.97	39.23	0.02	0.00	98.40	45.14	54.83	0.04	0.00	1.21
		63.04	38.59	0.06	0.00	101.89	47.15	52.70	0.15	0.00	1.12
		45.76	52.83	0.00	0.11	99.00	32.15	67.77	0.00	0.08	2.11
		45.33	53.77	0.00	0.06	99.46	31.58	68.38	0.00	0.04	2.17
	12	67.99	31.79	0.02	0.00	99.98	53.92	46.03	0.04	0.00	0.85
		66.99	31.24	0.03	0.00	98.36	53.98	45.96	0.06	0.00	0.85
		60.41	38.67	0.00	0.00	99.22	46.12	53.88	0.00	0.00	1.17
	rim	99.66	0.23	0.00	0.00	99.92	99.57	0.43	0.00	0.00	0.00
	rim	99.93	0.15	0.00	0.00	100.09	99.73	0.27	0.00	0.00	0.00
	rim	99.31	0.97	0.00	0.00	100.30	98.24	1.76	0.00	0.00	0.02
	rim	97.83	1.75	0.00	0.00	99.61	96.82	3.17	0.01	0.00	0.03
	13	53.12	45.86	0.01	0.00	99.26	38.81	61.17	0.02	0.00	1.58
		53.73	45.29	0.03	0.00	99.27	39.35	60.57	0.08	0.00	1.54
		51.86	46.25	0.01	0.00	98.36	38.04	61.94	0.02	0.00	1.63
		57.36	41.81	0.01	0.11	99.53	42.87	57.04	0.01	0.08	1.33
		55.34	43.75	0.00	0.00	99.32	40.93	59.07	0.00	0.00	1.44
		53.16	45.22	0.02	0.00	98.65	39.15	60.81	0.04	0.00	1.55
	rim	82.93	12.91	0.00	2.95	98.84	75.81	21.55	0.00	2.65	0.28
	14	62.70	36.27	0.00	0.00	99.21	48.63	51.37	0.00	0.00	1.06
		63.22	35.34	0.00	0.00	98.76	49.49	50.51	0.00	0.00	1.02
	15	58.31	40.71	0.02	0.00	99.30	43.94	56.01	0.06	0.00	1.27
		56.88	42.41	0.06	0.00	99.59	42.29	57.58	0.13	0.00	1.36
		57.91	40.18	0.00	0.03	98.35	44.10	55.87	0.00	0.02	1.27
		53.08	45.90	0.03	0.00	99.21	38.75	61.18	0.07	0.00	1.58
	16	63.98	35.45	0.03	0.00	99.60	49.68	50.26	0.06	0.00	1.01
		62.87	36.69	0.02	0.00	99.81	48.39	51.57	0.04	0.00	1.07
		62.57	35.82	0.02	0.00	98.57	48.86	51.08	0.06	0.00	1.05
		62.19	36.57	0.01	0.00	98.99	48.21	51.77	0.02	0.00	1.07

Table 3-1. (Continued)

Locality	Grain No.	Weight %					Atomic %				
		Au	Ag	Cu	Hg	Total	Au	Ag	Cu	Hg	Ag/Au
Yasoshi-lower	17	60.67	38.05	0.00	0.00	98.87	46.62	53.38	0.00	0.00	1.15
(Hk-P ④)		59.11	39.82	0.00	0.00	99.15	44.84	55.16	0.00	0.00	1.23
		57.54	40.66	0.02	0.05	98.44	43.63	56.28	0.05	0.04	1.29
		55.60	43.52	0.00	0.00	99.33	41.16	58.84	0.00	0.00	1.43
		54.32	44.47	0.02	0.00	99.06	40.07	59.89	0.05	0.00	1.49
		61.45	37.48	0.00	0.07	99.14	47.29	52.66	0.00	0.05	1.11
		60.51	39.55	0.00	0.00	100.33	45.59	54.40	0.01	0.00	1.19
	18	61.80	36.52	0.00	0.05	98.60	48.08	51.88	0.00	0.03	1.08
		62.00	37.08	0.00	0.00	99.30	47.80	52.20	0.00	0.00	1.09
		61.50	37.75	0.06	0.00	99.48	47.09	52.77	0.14	0.00	1.12
		62.68	37.54	0.00	0.00	100.49	47.76	52.24	0.00	0.00	1.09
		60.22	38.44	0.00	0.00	98.85	46.18	53.82	0.00	0.00	1.17
		64.50	34.51	0.00	0.00	99.20	50.59	49.41	0.00	0.00	0.98
		63.17	35.31	0.00	0.00	98.66	49.49	50.51	0.00	0.00	1.02
	19	65.41	34.12	0.01	0.00	99.64	51.20	48.76	0.03	0.00	0.95
		62.72	35.30	0.00	0.00	98.22	49.32	50.68	0.00	0.00	1.03
		65.47	32.84	0.00	0.00	98.48	52.19	47.81	0.00	0.00	0.92
		64.60	33.66	0.02	0.01	98.46	51.23	48.73	0.04	0.01	0.95
	rim	98.22	0.82	0.06	0.00	99.11	98.31	1.51	0.18	0.00	0.02
	20	56.40	43.36	0.00	0.01	99.95	41.60	58.39	0.00	0.01	1.40
		53.94	44.75	0.00	0.02	98.92	39.76	60.23	0.00	0.02	1.51
		63.46	35.42	0.00	0.00	99.08	49.53	50.47	0.00	0.00	1.02
		55.03	44.30	0.00	0.00	99.57	40.49	59.51	0.00	0.00	1.47
		55.61	43.16	0.00	0.00	98.96	41.37	58.63	0.00	0.00	1.42
		65.09	34.18	0.00	0.00	99.35	51.05	48.95	0.00	0.00	0.96
	rim	99.12	1.71	0.01	0.00	100.84	96.92	3.06	0.02	0.00	0.03
	rim	99.63	0.38	0.01	0.08	100.12	99.20	0.69	0.03	0.08	0.01
	rim	98.57	1.80	0.00	0.00	100.39	96.78	3.22	0.00	0.00	0.03
	rim	98.87	1.39	0.00	0.00	100.26	97.50	2.50	0.00	0.00	0.03
Takadomari	1	90.11	9.02	0.04	0.00	99.27	84.44	15.44	0.12	0.00	0.18
(Hk-P ⑤)		88.71	8.48	0.09	0.00	97.42	84.91	14.82	0.26	0.00	0.17
		89.15	9.12	0.02	0.04	98.38	84.17	15.72	0.07	0.03	0.19
	2	93.42	4.73	0.03	0.24	98.46	91.25	8.44	0.08	0.23	0.09
		93.64	3.85	0.00	0.06	97.55	92.96	6.98	0.00	0.06	0.08
		93.32	4.67	0.04	0.08	98.15	91.46	8.35	0.11	0.08	0.09
		93.16	4.75	0.00	0.00	97.91	91.49	8.51	0.00	0.00	0.09
Sakinsawa	1	90.37	10.12	0.01	0.52	101.01	82.63	16.88	0.03	0.46	0.20
(Hk-P ⑥)		89.70	9.97	0.01	0.59	100.27	82.67	16.77	0.03	0.54	0.20
		88.79	9.79	0.04	0.48	99.10	82.77	16.67	0.13	0.44	0.20
		89.90	9.51	0.04	0.39	99.84	83.43	16.11	0.10	0.36	0.19
		89.55	9.67	0.03	0.57	99.82	83.04	16.38	0.07	0.52	0.20
		87.57	9.36	0.00	0.47	97.39	83.31	16.25	0.00	0.43	0.20
		88.68	9.98	0.03	0.65	99.34	82.39	16.94	0.09	0.59	0.21
		89.68	10.01	0.03	0.52	100.24	82.61	16.84	0.08	0.47	0.20
	2	83.84	15.63	0.00	0.59	100.06	74.22	25.27	0.00	0.51	0.34
		82.29	16.18	0.00	0.58	99.05	73.21	26.28	0.01	0.50	0.36
		82.93	15.97	0.05	0.61	99.57	73.49	25.83	0.14	0.53	0.35
		82.64	15.93	0.00	0.79	99.36	73.45	25.86	0.00	0.69	0.35
	3	90.87	8.15	0.04	1.36	100.42	84.76	13.88	0.11	1.25	0.16
		87.46	11.18	0.00	0.26	98.90	80.89	18.87	0.01	0.24	0.23
		90.25	9.20	0.03	0.80	100.27	83.63	15.56	0.08	0.73	0.19
		87.35	11.92	0.01	0.61	99.89	79.59	19.82	0.03	0.55	0.25
		88.98	9.89	0.04	0.63	99.54	82.56	16.75	0.11	0.57	0.20
		90.22	9.46	0.00	0.81	100.49	83.31	15.96	0.00	0.73	0.19
		89.66	9.97	0.05	0.76	100.44	82.43	16.73	0.15	0.69	0.20

Table 3-1. (Continued)

Locality	Grain No.	Weight %					Atomic %				
		Au	Ag	Cu	Hg	Total	Au	Ag	Cu	Hg	Ag/Au
Sakinsawa	4	78.50	17.54	0.00	2.52	98.56	69.47	28.34	0.00	2.19	0.41
(Hk-P ⑥)		78.97	16.71	0.00	2.33	98.01	70.65	27.30	0.00	2.05	0.39
		79.58	17.64	0.00	2.19	99.41	69.84	28.27	0.00	1.89	0.40
		79.94	17.57	0.03	2.16	99.70	69.99	28.09	0.07	1.85	0.40
		78.13	17.41	0.00	2.16	97.71	69.73	28.37	0.00	1.89	0.41
	5	90.57	10.36	0.04	0.28	101.25	82.42	17.21	0.12	0.25	0.21
		88.92	9.54	0.02	0.31	98.79	83.33	16.33	0.06	0.28	0.20
		90.56	10.56	0.00	0.18	101.30	82.32	17.52	0.00	0.16	0.21
		89.05	10.11	0.00	1.01	100.17	82.07	17.01	0.00	0.91	0.21
		89.19	9.51	0.00	0.30	98.99	83.48	16.25	0.00	0.27	0.19
	6	86.49	12.87	0.01	0.03	99.40	78.59	21.35	0.03	0.02	0.27
		87.22	12.29	0.02	0.06	99.59	79.44	20.44	0.06	0.05	0.26
		86.28	12.87	0.00	0.12	99.27	78.51	21.38	0.00	0.11	0.27
		86.06	12.63	0.03	0.10	98.81	78.74	21.10	0.07	0.09	0.27
		87.62	12.63	0.01	0.08	100.33	79.10	20.81	0.01	0.07	0.26
		86.26	12.62	0.04	0.02	98.94	78.81	21.05	0.12	0.02	0.27
		87.27	12.67	0.00	0.00	99.95	79.03	20.96	0.01	0.00	0.27
	rim	99.26	2.98	0.02	0.00	102.25	94.76	5.19	0.05	0.00	0.05
	rim	99.16	0.83	0.02	0.00	100.00	98.45	1.50	0.05	0.00	0.02
Pankemo-yuparo	1	81.05	11.53	0.04	5.91	98.57	75.02	19.48	0.13	5.37	0.26
(Hk-P ⑦)		81.01	11.50	0.08	5.90	98.61	74.99	19.43	0.22	5.36	0.26
		84.17	11.17	0.06	4.69	100.11	76.97	18.65	0.17	4.21	0.24
		82.44	10.81	0.00	5.13	98.39	76.89	18.41	0.00	4.69	0.24
		81.07	11.83	0.03	5.52	98.56	74.95	19.96	0.07	5.02	0.27
		80.96	11.80	0.02	5.45	98.27	75.04	19.96	0.04	4.96	0.27
		83.27	10.99	0.02	5.06	99.37	76.85	18.51	0.05	4.59	0.24
		81.42	12.00	0.02	5.64	99.10	74.74	20.11	0.07	5.08	0.27
		81.15	10.96	0.05	5.36	97.62	76.14	18.77	0.15	4.93	0.25
		83.12	11.15	0.06	4.31	98.69	77.06	18.86	0.16	3.92	0.24
Shiribeshitoshibetsu	1	71.42	24.87	0.00	2.51	98.80	59.87	38.06	0.00	2.06	0.64
(Hk-P ⑧)		72.47	24.28	0.00	2.28	99.04	60.88	37.24	0.00	1.88	0.61
		72.04	24.58	0.02	1.95	98.59	60.59	37.74	0.06	1.61	0.62
		71.83	25.03	0.01	2.17	99.05	60.01	38.18	0.04	1.78	0.64
		72.09	24.08	0.01	2.21	98.39	60.96	37.18	0.03	1.83	0.61
		72.16	24.16	0.00	2.54	98.87	60.76	37.14	0.00	2.10	0.61
		72.09	24.53	0.00	2.02	98.65	60.65	37.68	0.00	1.67	0.62
	rim	98.18	2.06	0.02	0.00	100.26	96.26	3.69	0.05	0.00	0.04
	rim	97.93	2.70	0.00	0.00	100.63	95.20	4.80	0.00	0.00	0.05
	rim	97.95	2.38	0.04	0.00	100.37	95.64	4.25	0.11	0.00	0.04
	2	76.86	22.02	0.00	0.24	99.12	65.52	34.28	0.00	0.20	0.52
		75.87	22.37	0.01	0.18	98.43	64.89	34.94	0.02	0.15	0.54
		76.20	22.25	0.00	0.05	98.49	65.21	34.76	0.00	0.04	0.53
		77.32	21.93	0.01	0.02	99.27	65.87	34.10	0.02	0.02	0.52
		76.39	22.33	0.02	0.00	98.74	65.17	34.78	0.04	0.00	0.53
		76.78	22.08	0.00	0.38	99.24	65.37	34.32	0.00	0.32	0.53
		76.48	22.30	0.02	0.30	99.11	65.05	34.63	0.06	0.25	0.53
	rim	99.02	1.34	0.05	0.00	100.41	97.45	2.40	0.15	0.00	0.02
	rim	100.08	0.71	0.00	0.00	100.79	98.73	1.27	0.00	0.00	0.01
	rim	99.31	0.96	0.01	0.00	100.28	98.25	1.73	0.02	0.00	0.02
	3	73.22	25.06	0.00	0.06	98.34	61.51	38.44	0.00	0.05	0.62
		73.32	25.06	0.06	0.03	98.48	61.46	38.36	0.16	0.03	0.62
		73.55	25.33	0.00	0.10	98.97	61.35	38.57	0.00	0.08	0.63
		72.03	26.19	0.01	0.14	98.38	60.02	39.84	0.03	0.12	0.66
		71.21	27.21	0.00	0.18	98.60	58.82	41.04	0.00	0.14	0.70
		72.59	25.15	0.03	0.06	97.82	61.19	38.70	0.07	0.05	0.63
		71.37	25.89	0.08	0.20	97.53	59.94	39.69	0.20	0.16	0.66
	rim	97.15	1.96	0.03	0.00	99.14	96.37	3.55	0.08	0.00	0.04
	rim	98.44	0.73	0.00	0.00	99.18	98.66	1.34	0.00	0.00	0.01
	rim	98.67	1.07	0.01	0.00	99.74	98.05	1.94	0.02	0.00	0.02

Table 3-1. (Continued)

Locality	Grain No.	Weight %					Atomic %				
		Au	Ag	Cu	Hg	Total	Au	Ag	Cu	Hg	Ag/Au
Shiribeshitoshibetsu (Hk-P ⑧)	4	76.70	21.83	0.02	0.00	98.56	65.76	34.17	0.06	0.00	0.52
		71.29	25.72	0.00	0.21	97.23	60.18	39.65	0.00	0.17	0.66
		72.45	26.88	0.02	0.53	99.88	59.33	40.20	0.04	0.43	0.68
		74.06	24.28	0.00	0.00	98.35	62.55	37.45	0.00	0.00	0.60
		74.25	24.02	0.00	0.16	98.43	62.78	37.08	0.01	0.13	0.59
		75.05	23.14	0.00	0.03	98.23	63.96	36.01	0.00	0.03	0.56
		75.96	23.60	0.02	0.17	99.75	63.68	36.12	0.06	0.14	0.57
		72.38	25.72	0.03	0.71	98.84	60.25	39.10	0.07	0.58	0.65
		73.38	23.84	0.00	0.05	97.27	62.74	37.22	0.00	0.04	0.59
	rim	99.45	1.38	0.00	0.00	100.83	97.54	2.46	0.00	0.00	0.03
	5	72.96	24.58	0.03	0.00	97.57	61.88	38.05	0.07	0.00	0.61
		74.19	25.01	0.03	0.00	99.23	61.86	38.08	0.06	0.00	0.62
		73.53	24.93	0.00	0.00	98.46	61.77	38.23	0.00	0.00	0.62
		71.92	25.81	0.04	0.00	97.76	60.36	39.55	0.09	0.00	0.66
		70.82	26.05	0.01	0.34	97.22	59.64	40.05	0.03	0.28	0.67
		72.10	25.42	0.00	0.19	97.71	60.75	39.10	0.00	0.16	0.64
	rim	100.32	0.58	0.00	0.00	100.90	98.96	1.04	0.00	0.00	0.01
	rim	100.52	1.35	0.00	0.00	101.87	97.61	2.39	0.00	0.00	0.02
	rim	99.21	1.58	0.02	0.00	100.81	97.13	2.83	0.05	0.00	0.03
	rim	98.16	1.73	0.00	0.00	99.90	96.88	3.12	0.00	0.00	0.03
	6	74.29	24.43	0.00	0.74	99.46	62.11	37.28	0.00	0.61	0.60
		73.64	24.97	0.00	0.04	98.64	61.75	38.22	0.00	0.03	0.62
		73.56	24.55	0.00	0.00	98.10	62.14	37.86	0.00	0.00	0.61
		75.07	24.86	0.00	0.00	99.94	62.32	37.68	0.00	0.00	0.60
	rim	99.38	2.04	0.01	0.00	101.43	96.36	3.60	0.04	0.00	0.04
	rim	99.91	0.80	0.00	0.00	100.72	98.55	1.45	0.00	0.00	0.01
	7	73.39	24.56	0.04	0.05	98.04	61.98	37.88	0.10	0.04	0.61
		72.52	24.64	0.00	0.00	97.17	61.71	38.29	0.00	0.00	0.62
		73.24	25.61	0.00	0.00	98.85	61.04	38.96	0.00	0.00	0.64
		71.71	25.82	0.03	0.90	98.46	59.84	39.34	0.09	0.73	0.66
	rim	97.64	0.56	0.03	0.00	98.23	98.86	1.04	0.11	0.00	0.01
	rim	97.06	1.64	0.01	0.00	98.70	97.00	2.98	0.02	0.00	0.03
	8	78.51	20.25	0.03	0.54	99.33	67.62	31.85	0.07	0.46	0.47
		78.80	20.22	0.03	0.08	99.13	67.99	31.85	0.09	0.07	0.47
		77.79	20.18	0.03	0.46	98.45	67.54	32.00	0.07	0.39	0.47
		77.78	20.49	0.00	0.49	98.76	67.24	32.34	0.01	0.41	0.48
		78.56	21.02	0.00	0.76	100.34	66.75	32.62	0.00	0.63	0.49
		78.46	20.42	0.00	0.79	99.66	67.34	31.99	0.00	0.67	0.48
	rim	101.65	0.27	0.03	0.00	101.96	99.42	0.48	0.10	0.00	0.00
	rim	99.73	0.46	0.00	0.00	100.19	99.17	0.83	0.00	0.00	0.01
	rim	100.63	0.49	0.01	0.00	101.13	99.08	0.88	0.04	0.00	0.01
	9	71.57	27.64	0.03	0.19	99.43	58.51	41.26	0.07	0.15	0.71
		70.88	27.43	0.00	0.37	98.68	58.42	41.28	0.00	0.30	0.71
		67.69	29.40	0.00	0.77	97.85	55.43	43.95	0.00	0.62	0.79
		70.36	28.00	0.00	0.44	98.80	57.71	41.93	0.00	0.36	0.73
		69.89	28.16	0.00	0.35	98.40	57.45	42.26	0.00	0.28	0.74
	10	72.28	26.94	0.00	0.00	99.22	59.50	40.49	0.01	0.00	0.68
		74.95	24.85	0.00	0.06	99.86	62.26	37.69	0.00	0.05	0.61
		71.51	27.54	0.00	0.05	99.09	58.69	41.27	0.00	0.04	0.70
		72.48	26.92	0.01	0.06	99.46	59.56	40.38	0.02	0.05	0.68
		71.76	27.50	0.02	0.05	99.33	58.78	41.13	0.05	0.04	0.70
	rim	99.29	0.50	0.00	0.00	99.79	99.09	0.91	0.00	0.00	0.01
	rim	100.09	1.20	0.00	0.00	101.29	97.86	2.14	0.00	0.00	0.02
	rim	100.62	2.12	0.00	0.00	102.74	96.30	3.70	0.00	0.00	0.04

Table 3-1. (Continued)

Locality	Grain No.	Weight %					Atomic %				
		Au	Ag	Cu	Hg	Total	Au	Ag	Cu	Hg	Ag/Au
Shiribeshitoshibetsu (Hk-P ⑧)	11	76.31	21.76	0.05	0.37	98.49	65.47	34.08	0.14	0.32	0.52
		75.23	22.35	0.00	0.25	97.83	64.70	35.09	0.00	0.21	0.54
		77.70	21.84	0.00	0.18	99.72	65.99	33.86	0.00	0.15	0.51
		76.70	22.47	0.07	0.40	99.63	64.82	34.67	0.18	0.33	0.53
		77.04	22.00	0.02	0.37	99.43	65.49	34.14	0.06	0.31	0.52
	12	77.58	19.62	0.00	0.00	97.20	68.41	31.59	0.00	0.00	0.46
		71.10	26.06	0.00	0.00	97.16	59.91	40.09	0.00	0.00	0.67
		77.57	21.47	0.01	0.00	99.04	66.41	33.56	0.03	0.00	0.51
		78.84	21.28	0.02	0.00	100.14	66.95	33.00	0.05	0.00	0.49
		77.56	22.20	0.00	0.00	99.76	65.68	34.32	0.00	0.00	0.52
	13	73.18	24.33	0.00	1.14	98.65	61.64	37.42	0.01	0.94	0.61
		74.51	22.73	0.00	1.07	98.31	63.65	35.45	0.00	0.89	0.56
		71.24	25.60	0.06	1.22	98.11	59.68	39.16	0.16	1.00	0.66
		75.59	23.69	0.01	1.33	100.62	62.89	35.99	0.03	1.09	0.57
		74.18	23.33	0.00	1.15	98.66	62.92	36.13	0.00	0.95	0.57
		70.57	24.30	0.04	0.88	95.78	60.89	38.27	0.10	0.74	0.63
	14	83.26	15.78	0.01	0.00	99.05	74.27	25.70	0.03	0.00	0.35
		83.51	16.27	0.04	0.00	99.82	73.67	26.21	0.12	0.00	0.36
		83.48	15.97	0.03	0.03	99.51	74.03	25.86	0.09	0.02	0.35
		83.80	15.50	0.00	0.00	99.30	74.76	25.24	0.00	0.00	0.34
		83.50	15.37	0.00	0.00	98.87	74.85	25.15	0.00	0.00	0.34
		82.32	15.36	0.00	0.00	97.69	74.58	25.41	0.01	0.00	0.34
	15	71.21	26.89	0.00	0.00	98.11	59.19	40.81	0.00	0.00	0.69
		74.20	25.10	0.03	0.00	99.33	61.77	38.16	0.07	0.00	0.62
		72.69	25.57	0.00	0.05	98.31	60.87	39.09	0.00	0.04	0.64
		72.21	27.44	0.01	0.00	99.67	59.02	40.95	0.04	0.00	0.69
		68.89	27.79	0.02	0.10	96.80	57.51	42.36	0.04	0.08	0.74
		70.59	27.30	0.00	0.01	97.89	58.61	41.38	0.00	0.01	0.71
		69.68	28.71	0.02	0.57	98.98	56.77	42.71	0.06	0.45	0.75
Shiriuchi (Hk-P ⑨)	1	89.13	9.16	0.09	1.15	99.53	83.09	15.58	0.27	1.06	0.19
		88.75	9.46	0.01	1.62	99.84	82.46	16.05	0.02	1.48	0.19
		87.85	10.76	0.00	1.19	99.80	80.84	18.08	0.00	1.07	0.22
		90.66	8.76	0.03	0.48	99.92	84.57	14.92	0.08	0.44	0.18
		88.64	9.87	0.02	1.48	100.02	81.93	16.66	0.06	1.34	0.20
		89.84	9.24	0.01	0.63	99.72	83.69	15.71	0.03	0.58	0.19
		88.85	10.20	0.06	1.39	100.50	81.51	17.08	0.17	1.25	0.21
		91.50	8.30	0.04	0.40	100.24	85.38	14.14	0.12	0.36	0.17
	rim	97.65	2.44	0.00	0.10	100.19	95.54	4.36	0.00	0.09	0.05
	rim	99.57	1.05	0.00	0.04	100.67	98.07	1.89	0.00	0.04	0.02
	2	92.24	7.66	0.00	0.15	100.05	86.72	13.14	0.00	0.14	0.15
		92.18	7.83	0.04	0.07	100.12	86.43	13.40	0.10	0.06	0.16
		92.63	8.07	0.00	0.08	100.78	86.22	13.71	0.00	0.08	0.16
		91.73	7.97	0.05	0.08	99.83	86.13	13.65	0.14	0.08	0.16
		90.21	7.86	0.06	1.99	100.12	84.56	13.45	0.16	1.83	0.16
		92.30	7.95	0.05	0.11	100.41	86.20	13.55	0.14	0.10	0.16
		91.68	7.61	0.06	0.15	99.50	86.57	13.11	0.18	0.14	0.15
		89.83	7.54	0.00	0.08	97.45	86.64	13.28	0.00	0.08	0.15
		92.82	7.42	0.00	0.00	100.23	87.27	12.73	0.00	0.00	0.15
	3	94.17	5.63	0.00	0.00	99.80	90.16	9.84	0.00	0.00	0.11
		93.46	5.19	0.00	0.00	98.64	90.80	9.20	0.00	0.00	0.10
		94.06	5.70	0.05	0.39	100.19	89.59	9.91	0.14	0.36	0.11
		96.11	5.28	0.00	0.00	101.38	90.89	9.11	0.00	0.00	0.10
		94.16	5.53	0.00	0.00	99.69	90.32	9.68	0.00	0.00	0.11
		95.33	5.61	0.08	0.00	101.02	90.07	9.68	0.25	0.00	0.11
		93.90	5.37	0.02	0.03	99.32	90.47	9.45	0.05	0.02	0.10
		94.39	4.88	0.01	0.00	99.27	91.37	8.62	0.02	0.00	0.09
		94.45	5.43	0.01	0.03	99.92	90.44	9.49	0.04	0.03	0.10

Table 3-1. (Continued)

Locality	Grain No.	Weight %					Atomic %				
		Au	Ag	Cu	Hg	Total	Au	Ag	Cu	Hg	Ag/Au
Shiriuchi (Hk-P ⑨)	4	96.67	4.77	0.02	0.00	101.47	91.68	8.27	0.05	0.00	0.09
		95.90	4.95	0.08	0.15	101.07	91.05	8.58	0.23	0.14	0.09
		95.05	4.83	0.06	0.07	100.01	91.28	8.47	0.19	0.06	0.09
		96.14	4.97	0.10	0.00	101.22	91.10	8.60	0.31	0.00	0.09
		93.81	5.67	0.11	0.07	99.66	89.70	9.90	0.33	0.06	0.11
		92.54	5.57	0.13	0.21	98.45	89.56	9.85	0.40	0.20	0.11
		94.69	4.96	0.08	0.03	99.77	91.02	8.70	0.25	0.03	0.10
		95.53	4.83	0.06	0.00	100.43	91.38	8.43	0.19	0.00	0.09
		96.29	4.80	0.10	0.10	101.28	91.32	8.30	0.29	0.09	0.09
		96.04	4.85	0.11	0.11	101.11	91.17	8.41	0.32	0.10	0.09
	5	94.92	5.26	0.09	0.26	100.53	90.33	9.15	0.28	0.24	0.10
		95.22	5.24	0.11	0.38	100.94	90.25	9.06	0.33	0.35	0.10
		95.56	5.14	0.12	0.26	101.08	90.52	8.89	0.36	0.24	0.10
		93.69	5.12	0.10	0.32	99.24	90.36	9.02	0.31	0.30	0.10
		94.61	4.95	0.13	0.31	100.00	90.66	8.66	0.39	0.29	0.10
		95.17	4.95	0.08	0.33	100.52	90.83	8.62	0.25	0.30	0.09
		93.99	5.14	0.05	0.35	99.52	90.49	9.03	0.15	0.33	0.10
		94.99	5.22	0.12	0.24	100.57	90.35	9.07	0.35	0.22	0.10
		93.72	5.01	0.06	0.21	99.00	90.76	8.86	0.17	0.20	0.10
	rim	100.93	1.10	0.03	0.00	102.06	97.97	1.95	0.08	0.00	0.02
	6	95.24	5.33	0.08	0.34	100.99	90.23	9.22	0.23	0.32	0.10
		95.34	5.38	0.14	0.15	101.00	90.16	9.29	0.41	0.14	0.10
		94.89	5.16	0.07	0.35	100.46	90.50	8.98	0.20	0.33	0.10
		94.50	4.96	0.11	0.21	99.78	90.78	8.69	0.33	0.20	0.10
		95.49	5.03	0.08	0.27	100.86	90.80	8.73	0.22	0.25	0.10
		94.60	4.97	0.10	0.28	99.96	90.74	8.70	0.30	0.27	0.10
		95.43	5.12	0.07	0.10	100.73	90.80	8.90	0.20	0.10	0.10
		95.77	5.26	0.12	0.20	101.34	90.41	9.06	0.34	0.18	0.10
		94.26	3.85	0.02	0.17	98.29	92.86	6.92	0.06	0.16	0.07
	7	83.21	15.86	0.07	0.62	99.76	73.65	25.63	0.18	0.54	0.35
		84.15	15.50	0.03	0.11	99.79	74.70	25.12	0.09	0.10	0.34
		82.89	16.03	0.04	0.57	99.52	73.46	25.94	0.10	0.50	0.35
		82.66	15.42	0.00	0.62	98.70	74.18	25.26	0.01	0.55	0.34
		83.39	15.89	0.00	0.65	99.93	73.77	25.66	0.00	0.57	0.35
	8	94.67	6.21	0.09	0.00	100.96	89.08	10.67	0.25	0.00	0.12
		93.52	6.33	0.09	0.08	100.01	88.70	10.95	0.27	0.07	0.12
		94.67	4.33	0.06	0.00	99.05	92.13	7.69	0.17	0.00	0.08
		93.65	6.26	0.13	0.00	100.04	88.79	10.84	0.37	0.00	0.12
		94.67	5.95	0.10	0.00	100.72	89.44	10.26	0.29	0.00	0.11
		94.33	6.11	0.08	0.00	100.52	89.21	10.55	0.24	0.00	0.12
		93.08	6.13	0.11	0.00	99.32	88.98	10.70	0.32	0.00	0.12
		93.25	6.38	0.07	0.00	99.70	88.72	11.08	0.21	0.00	0.12
		94.11	6.23	0.06	0.08	100.48	89.00	10.76	0.17	0.07	0.12
	9	95.00	4.55	0.05	0.25	99.85	91.61	8.01	0.14	0.24	0.09
		95.08	4.69	0.06	0.22	100.04	91.39	8.23	0.17	0.21	0.09
		95.91	4.64	0.07	0.20	100.82	91.53	8.08	0.21	0.19	0.09
		95.90	4.71	0.04	0.17	100.82	91.50	8.21	0.13	0.16	0.09
		96.88	4.78	0.08	0.34	102.07	91.24	8.22	0.23	0.31	0.09
		95.79	4.63	0.09	0.20	100.70	91.49	8.07	0.25	0.19	0.09
		95.72	4.61	0.07	0.18	100.57	91.57	8.05	0.22	0.17	0.09
		96.40	4.71	0.07	0.11	101.30	91.52	8.16	0.21	0.11	0.09
		95.75	4.65	0.08	0.15	100.61	91.53	8.11	0.22	0.14	0.09
		95.93	4.66	0.07	0.05	100.71	91.62	8.13	0.20	0.05	0.09

Table 3-1. (Continued)

Locality	Grain No.	Weight %					Atomic %				
		Au	Ag	Cu	Hg	Total	Au	Ag	Cu	Hg	Ag/Au
Shiriuchi (Hk-P ⑨)	10	86.54	11.72	0.03	0.59	98.89	79.68	19.70	0.09	0.53	0.25
		81.57	15.32	0.04	2.48	99.40	72.77	24.95	0.11	2.17	0.34
		84.85	11.82	0.00	3.03	99.70	77.55	19.72	0.01	2.72	0.25
		86.16	12.06	0.02	1.78	100.02	78.34	20.01	0.06	1.59	0.26
		84.32	13.40	0.00	1.56	99.28	76.44	22.17	0.00	1.39	0.29
		90.42	9.00	0.09	1.61	101.13	83.16	15.12	0.27	1.46	0.18
		84.30	12.65	0.02	3.51	100.47	76.02	20.83	0.04	3.11	0.27
		86.33	10.74	0.05	0.90	98.02	80.70	18.34	0.14	0.82	0.23
		82.71	13.80	0.00	2.01	98.53	75.27	22.93	0.00	1.80	0.30
	11	92.73	6.63	0.03	0.68	100.08	87.82	11.47	0.08	0.64	0.13
		92.02	7.11	0.01	0.63	99.77	87.10	12.29	0.03	0.58	0.14
		95.30	4.56	0.00	0.00	99.86	91.96	8.04	0.00	0.00	0.09
		92.05	6.51	0.03	0.23	98.82	88.28	11.40	0.10	0.22	0.13
		94.32	6.20	0.00	0.05	100.57	89.24	10.71	0.00	0.04	0.12
	12	91.37	7.83	0.05	0.54	99.79	85.93	13.44	0.13	0.50	0.16
		92.69	7.42	0.04	0.47	100.62	86.78	12.68	0.11	0.43	0.15
		91.09	7.38	0.03	0.61	99.11	86.54	12.80	0.10	0.57	0.15
		91.08	7.49	0.03	0.57	99.17	86.40	12.97	0.10	0.53	0.15
		90.49	7.25	0.02	0.57	98.34	86.71	12.69	0.06	0.54	0.15
	13	94.25	3.02	0.08	0.38	97.73	93.90	5.49	0.24	0.37	0.06
		97.44	2.90	0.08	0.51	100.93	94.16	5.12	0.24	0.48	0.05
		97.24	2.98	0.09	0.44	100.74	94.06	5.26	0.26	0.42	0.06
		95.82	2.85	0.04	0.53	99.24	94.24	5.12	0.13	0.51	0.05
		97.60	2.97	0.03	0.53	101.14	94.17	5.24	0.10	0.50	0.06
	14	88.62	10.31	0.02	0.66	99.60	81.95	17.40	0.05	0.60	0.21
		88.68	9.85	0.00	0.57	99.10	82.70	16.78	0.00	0.52	0.20
		90.18	10.44	0.03	0.69	101.33	81.98	17.32	0.08	0.61	0.21
		88.77	9.03	0.00	0.65	98.45	83.83	15.56	0.00	0.61	0.19
		89.56	10.89	0.01	0.71	101.18	81.29	18.04	0.03	0.64	0.22
	15	91.72	7.48	0.04	1.91	101.15	85.41	12.72	0.12	1.75	0.15
		92.22	7.51	0.00	1.46	101.19	85.90	12.76	0.00	1.34	0.15
		92.09	7.23	0.03	1.09	100.44	86.50	12.40	0.10	1.01	0.14
		91.33	7.22	0.03	1.67	100.24	85.97	12.41	0.08	1.54	0.14
		90.22	7.54	0.05	1.55	99.36	85.39	13.04	0.13	1.44	0.15
	16	89.55	9.22	0.00	0.72	99.48	83.63	15.72	0.00	0.66	0.19
		89.86	9.38	0.00	0.77	100.01	83.41	15.89	0.00	0.70	0.19
		91.31	9.35	0.00	0.55	101.21	83.84	15.67	0.00	0.49	0.19
		89.65	8.68	0.02	0.71	99.06	84.37	14.91	0.07	0.66	0.18
		90.62	9.06	0.03	0.75	100.45	83.92	15.31	0.08	0.68	0.18
		90.11	9.28	0.03	0.62	100.05	83.61	15.73	0.10	0.57	0.19
	17	83.00	15.60	0.00	0.01	98.61	74.45	25.54	0.00	0.01	0.34
		82.74	17.01	0.02	0.67	100.43	72.26	27.12	0.05	0.57	0.38
		84.16	14.39	0.04	0.09	98.68	76.05	23.75	0.12	0.08	0.31
		83.69	14.91	0.02	0.01	98.63	75.40	24.53	0.06	0.01	0.33
	18	88.13	10.04	0.00	1.10	99.27	81.96	17.04	0.00	1.00	0.21
		86.23	12.50	0.07	0.78	99.57	78.38	20.74	0.19	0.69	0.26
		89.98	9.56	0.01	1.06	100.60	82.93	16.08	0.04	0.95	0.19
		91.21	9.51	0.08	0.80	101.60	83.22	15.84	0.22	0.72	0.19
		86.83	12.48	0.00	0.80	100.11	78.65	20.64	0.00	0.71	0.26
	19	90.81	7.61	0.00	0.33	98.75	86.46	13.23	0.00	0.31	0.15
		92.05	6.97	0.01	0.17	99.20	87.70	12.12	0.02	0.16	0.14
		92.60	6.92	0.05	0.13	99.69	87.76	11.98	0.14	0.12	0.14
		90.31	7.04	0.02	0.13	97.51	87.38	12.44	0.06	0.13	0.14
		92.52	7.37	0.09	0.23	100.21	86.89	12.63	0.26	0.21	0.15
		91.61	7.31	0.03	0.07	99.00	87.17	12.70	0.07	0.06	0.15

Table 3-1. (Continued)

Locality	Grain No.	Weight %					Atomic %				
		Au	Ag	Cu	Hg	Total	Au	Ag	Cu	Hg	Ag/Au
Shiriuchi (Hk-P ⑨)	20	92.44	7.14	0.00	0.50	100.07	87.23	12.31	0.00	0.46	0.14
		92.77	6.50	0.02	0.80	100.09	87.95	11.25	0.05	0.75	0.13
		92.43	5.96	0.08	1.28	99.75	88.18	10.38	0.25	1.20	0.12
		93.67	6.47	0.05	1.48	101.67	87.47	11.03	0.14	1.36	0.13
		93.65	6.66	0.04	1.44	101.79	87.24	11.33	0.12	1.32	0.13
	21	89.39	7.27	0.07	0.21	96.94	86.71	12.88	0.21	0.20	0.15
		93.19	7.17	0.09	0.29	100.75	87.22	12.26	0.26	0.27	0.14
		92.40	7.50	0.03	0.30	100.24	86.76	12.86	0.10	0.28	0.15
		92.36	7.10	0.02	0.04	99.52	87.60	12.30	0.07	0.04	0.14
		91.87	7.09	0.07	0.25	99.28	87.28	12.29	0.19	0.24	0.14
	22	95.70	4.61	0.01	0.00	100.32	91.88	8.08	0.04	0.00	0.09
		95.83	4.99	0.07	0.00	100.90	91.12	8.67	0.21	0.00	0.10
		95.26	4.86	0.09	0.00	100.20	91.24	8.49	0.27	0.00	0.09
		96.22	4.80	0.00	0.00	101.01	91.66	8.34	0.00	0.00	0.09
		95.00	4.76	0.03	0.00	99.79	91.54	8.37	0.10	0.00	0.09
		95.92	4.36	0.02	0.00	100.30	92.29	7.66	0.05	0.00	0.08
	23	94.51	3.93	0.35	0.64	99.42	91.41	6.93	1.05	0.60	0.08
		93.91	3.87	0.31	0.52	98.61	91.68	6.89	0.93	0.50	0.08
		94.31	4.00	0.30	0.47	99.08	91.55	7.09	0.91	0.45	0.08
		92.49	4.21	0.13	0.31	97.14	91.68	7.62	0.41	0.30	0.08
		89.60	10.02	0.01	1.06	100.68	82.23	16.78	0.03	0.95	0.20
	24	90.60	7.31	0.05	0.34	98.30	86.75	12.77	0.16	0.32	0.15
		90.90	8.05	0.08	0.21	99.24	85.72	13.86	0.23	0.20	0.16
		87.94	7.23	0.07	0.37	95.61	86.45	12.98	0.21	0.36	0.15
		91.89	7.77	0.09	0.11	99.85	86.32	13.32	0.25	0.10	0.15
		90.93	8.27	0.09	0.15	99.43	85.43	14.18	0.25	0.14	0.17
		91.68	7.97	0.12	0.26	100.03	85.81	13.62	0.33	0.24	0.16
	25	94.97	3.36	0.04	0.21	98.59	93.61	6.05	0.13	0.21	0.06
		95.87	3.73	0.04	0.22	99.86	93.06	6.61	0.12	0.21	0.07
		95.67	3.65	0.07	0.22	99.60	93.10	6.48	0.21	0.21	0.07
		96.29	3.58	0.11	0.00	99.98	93.35	6.33	0.32	0.00	0.07
	rim	100.81	0.26	0.02	0.00	101.09	99.48	0.46	0.06	0.00	0.00
	26	91.84	7.55	0.05	0.77	100.22	86.19	12.94	0.15	0.71	0.15
		83.36	11.69	0.00	0.70	95.74	79.10	20.25	0.00	0.65	0.26
		89.15	7.52	0.01	0.68	97.36	86.08	13.26	0.02	0.64	0.15
		92.00	7.79	0.00	0.75	100.53	86.02	13.30	0.00	0.68	0.15
		91.17	7.74	0.00	0.65	99.56	86.06	13.34	0.00	0.60	0.16
	rim	101.24	0.98	0.01	0.00	102.23	98.23	1.74	0.03	0.00	0.02
	27	93.36	6.30	0.00	0.54	100.20	88.58	10.92	0.00	0.50	0.12
		92.58	6.23	0.01	0.40	99.21	88.71	10.89	0.02	0.37	0.12
		93.32	5.73	0.00	0.57	99.63	89.44	10.02	0.00	0.54	0.11
		93.96	5.32	0.04	0.33	99.64	90.26	9.32	0.11	0.31	0.10
		94.39	6.17	0.00	0.28	100.84	89.11	10.63	0.00	0.26	0.12
	28	83.92	14.77	0.00	0.77	99.46	75.17	24.15	0.00	0.68	0.32
		84.31	15.05	0.00	0.65	100.01	74.99	24.44	0.00	0.57	0.33
		83.89	14.58	0.06	0.64	99.16	75.37	23.91	0.15	0.57	0.32
		83.65	15.06	0.02	0.68	99.40	74.79	24.58	0.04	0.59	0.33
		82.53	14.71	0.02	0.61	97.87	74.98	24.41	0.07	0.54	0.33

Table 4. Chemical compositions of electrum grains in ore deposits from the Tohoku Province

Locality	Grain No.	Weight%					Atomic%				
		Au	Ag	Cu	Hg	Total	Au	Ag	Cu	Hg	Ag/Au
Nurukawa	1*	92.36	7.59	0.04	—	99.99	86.86	13.03	0.11	—	0.15
(Th-A ①)		91.75	7.88	0.04	—	99.67	86.35	13.54	0.11	—	0.16
		91.35	8.01	0.05	—	99.41	86.08	13.77	0.15	—	0.16
		91.23	8.23	0.10	—	99.56	85.60	14.10	0.30	—	0.16
		91.21	8.59	0.06	—	99.86	85.19	14.65	0.17	—	0.17
		91.01	8.87	0.04	—	99.92	84.80	15.09	0.11	—	0.18
		90.57	9.12	0.10	—	99.79	84.22	15.48	0.29	—	0.18
		89.51	9.69	0.03	—	99.23	83.42	16.49	0.09	—	0.20
		89.44	9.77	0.03	—	99.24	83.30	16.61	0.09	—	0.20
		88.68	10.65	0.07	—	99.40	81.85	17.95	0.20	—	0.22
Osarizawa	1*	90.00	9.16	0.02	—	99.18	84.28	15.66	0.06	—	0.19
(Th-A ②)		90.23	9.40	0.01	—	99.64	83.99	15.97	0.04	—	0.19
		90.18	9.49	0.02	—	99.69	83.83	16.11	0.05	—	0.19
		89.76	9.46	0.03	—	99.25	83.78	16.13	0.09	—	0.19
		90.23	9.58	0.02	—	99.83	83.71	16.23	0.05	—	0.19
		89.49	9.63	0.02	—	99.14	83.59	16.41	0.06	—	0.20
		90.35	9.76	0.02	—	100.13	83.47	16.47	0.05	—	0.20
		89.46	9.71	0.00	—	99.17	83.46	16.54	0.00	—	0.20
		89.64	9.94	0.01	—	99.59	83.14	16.83	0.04	—	0.20
		88.86	10.46	0.02	—	99.34	82.27	17.67	0.05	—	0.21
Okuzu	1	96.48	2.55	0.05	0.00	99.13	95.24	4.60	0.16	0.00	0.05
(Th-A ③)		97.57	1.87	0.00	0.00	99.48	96.61	3.38	0.01	0.00	0.04
		96.69	2.08	0.13	0.00	98.91	95.84	3.77	0.39	0.00	0.04
		99.17	1.90	0.11	0.00	101.19	96.29	3.37	0.34	0.00	0.04
		97.61	1.97	0.01	0.00	99.61	96.43	3.55	0.02	0.00	0.04
		97.65	2.11	0.04	0.00	99.80	96.10	3.79	0.11	0.00	0.04
		98.30	1.95	0.06	0.00	100.32	96.33	3.49	0.19	0.00	0.04
		98.10	1.89	0.05	0.00	100.03	96.47	3.39	0.14	0.00	0.04
		96.41	2.11	0.07	0.06	98.71	95.91	3.83	0.20	0.06	0.04
		97.47	2.04	0.06	0.01	99.58	96.14	3.68	0.18	0.01	0.04
Innai	1*	62.98	37.06	0.00	—	100.04	48.21	51.79	0.00	—	1.07
(Th-A ④)		62.09	37.10	0.02	—	99.21	47.82	52.15	0.05	—	1.09
		61.80	37.43	0.01	—	99.24	47.47	52.50	0.03	—	1.11
		61.62	37.97	0.01	—	99.60	47.04	52.93	0.03	—	1.13
		61.53	38.43	0.03	—	99.99	46.68	53.24	0.07	—	1.14
		60.95	38.17	0.04	—	99.16	46.61	53.30	0.09	—	1.14
		60.64	38.69	0.03	—	99.36	46.15	53.77	0.07	—	1.17
		60.66	38.85	0.01	—	99.52	46.08	53.89	0.03	—	1.17
		60.42	38.90	0.00	—	99.32	45.97	54.03	0.00	—	1.18
		60.42	39.04	0.03	—	99.49	45.84	54.08	0.07	—	1.18
Iwate	1*	59.31	40.35	0.01	—	99.67	44.59	55.38	0.03	—	1.24
(Th-A ⑤)		58.90	40.20	0.00	—	99.10	44.52	55.48	0.00	—	1.25
		58.71	40.61	0.02	—	99.34	44.17	55.79	0.04	—	1.26
		58.64	40.84	0.02	—	99.50	44.01	55.95	0.04	—	1.27
		58.27	40.85	0.02	—	99.14	43.84	56.11	0.04	—	1.28
		58.22	41.12	0.01	—	99.35	43.66	56.31	0.03	—	1.29
		58.07	41.25	0.04	—	99.36	43.50	56.41	0.09	—	1.30
		58.02	41.48	0.02	—	99.52	43.36	56.60	0.04	—	1.31
		57.87	41.48	0.01	—	99.36	43.31	56.66	0.03	—	1.31
		57.48	42.04	0.03	—	99.55	42.79	57.13	0.07	—	1.34
Hayachine	1*	85.03	14.35	0.14	—	99.52	76.15	23.47	0.39	—	0.31
(Th-A ⑥)		85.23	14.52	0.13	—	99.88	76.00	23.65	0.35	—	0.31
		84.44	14.43	0.14	—	99.01	75.93	23.68	0.39	—	0.31
		85.07	14.53	0.08	—	99.68	76.05	23.72	0.23	—	0.31
		85.47	14.61	0.08	—	100.16	76.04	23.73	0.23	—	0.31

*after Shikazono and Shimizu (1988)

Table 4. (Continued)

Locality	Grain No.	Weight %					Atomic %				
		Au	Ag	Cu	Hg	Total	Au	Ag	Cu	Hg	Ag/Au
Matsukura	1	48.64	50.15	0.00	0.04	99.03	34.68	65.29	0.00	0.03	1.88
(Th-A ⑦)		48.76	50.77	0.00	0.00	99.78	34.47	65.53	0.00	0.00	1.90
		48.54	51.33	0.02	0.01	100.12	34.11	65.85	0.03	0.00	1.93
		48.95	50.52	0.02	0.10	99.86	34.63	65.25	0.04	0.07	1.88
		48.75	50.74	0.00	0.00	99.74	34.48	65.52	0.01	0.00	1.90
		48.33	51.00	0.00	0.03	99.55	34.16	65.82	0.00	0.02	1.93
		47.30	51.48	0.00	0.00	99.03	33.48	66.52	0.00	0.00	1.99
		46.73	52.66	0.03	0.00	99.62	32.69	67.26	0.06	0.00	2.06
		49.40	50.76	0.00	0.09	100.57	34.75	65.19	0.00	0.06	1.88
		49.54	49.94	0.00	0.00	99.70	35.20	64.80	0.00	0.00	1.84
Shitodaira	1	48.68	49.44	0.00	0.00	98.35	35.03	64.97	0.00	0.00	1.85
(Th-A ⑧)		47.70	50.04	0.02	0.00	97.99	34.29	65.67	0.03	0.00	1.92
		49.24	48.14	0.03	0.00	97.64	35.88	64.05	0.07	0.00	1.79
		49.38	48.65	0.00	0.00	98.29	35.73	64.27	0.00	0.00	1.80
		48.40	50.96	0.00	0.00	99.62	34.22	65.78	0.00	0.00	1.92
		47.57	50.17	0.01	0.02	97.97	34.17	65.79	0.02	0.02	1.93
		47.77	49.82	0.05	0.03	97.90	34.39	65.48	0.10	0.02	1.90
		47.99	49.45	0.02	0.00	97.71	34.69	65.26	0.04	0.00	1.88
		48.42	49.08	0.00	0.00	97.70	35.08	64.92	0.00	0.00	1.85
		48.80	49.16	0.02	0.00	98.23	35.21	64.75	0.05	0.00	1.84
		48.64	48.87	0.01	0.00	97.72	35.28	64.71	0.02	0.00	1.83
Kamaishi	1	92.55	6.96	0.02	0.00	99.55	87.88	12.06	0.06	0.00	0.14
(Th-A ⑨)		93.02	7.07	0.08	0.00	100.28	87.61	12.15	0.24	0.00	0.14
		93.01	7.05	0.06	0.00	100.20	87.69	12.14	0.17	0.00	0.14
		92.88	7.01	0.05	0.00	100.02	87.77	12.10	0.13	0.00	0.14
		93.67	6.67	0.10	0.00	100.49	88.24	11.47	0.29	0.00	0.13
		92.85	6.99	0.03	0.00	99.93	87.83	12.08	0.09	0.00	0.14
		92.55	7.19	0.03	0.00	99.88	87.50	12.40	0.09	0.00	0.14
		92.84	7.11	0.02	0.00	99.96	87.70	12.26	0.05	0.00	0.14
		92.97	6.73	0.11	0.00	99.84	88.04	11.64	0.32	0.00	0.13
		92.61	7.17	0.05	0.00	99.90	87.49	12.36	0.15	0.00	0.14
	2*	96.04	3.76	0.02	—	99.82	93.28	6.66	0.06	—	0.07
		95.55	3.93	0.01	—	99.49	92.98	6.98	0.04	—	0.08
		95.84	4.00	0.03	—	99.87	92.83	7.08	0.10	—	0.08
		95.49	4.04	0.03	—	99.56	92.27	7.16	0.10	—	0.08
		95.78	4.13	0.02	—	99.93	92.64	7.30	0.06	—	0.08
		95.64	4.21	0.03	—	99.88	92.48	7.43	0.10	—	0.08
		95.35	4.27	0.01	—	99.63	92.40	7.56	0.04	—	0.08
		95.24	4.38	0.02	—	99.64	92.20	7.74	0.06	—	0.08
		95.39	4.49	0.02	—	99.90	92.04	7.91	0.06	—	0.09
		95.55	4.60	0.01	—	100.16	91.89	8.07	0.04	—	0.09
Nojiri	1	89.42	10.31	0.03	0.00	99.78	82.54	17.38	0.08	0.00	0.21
(Th-A ⑩)		87.36	12.17	0.01	0.00	99.61	79.70	20.28	0.03	0.00	0.25
		88.05	11.29	0.01	0.00	99.44	81.02	18.96	0.02	0.00	0.23
		87.91	12.53	0.00	0.02	100.54	79.33	20.64	0.01	0.02	0.26
		89.66	9.97	0.10	0.00	99.83	82.89	16.83	0.28	0.00	0.20
		89.53	9.78	0.06	0.00	99.49	83.23	16.61	0.16	0.00	0.20
		90.12	9.96	0.02	0.00	100.17	83.16	16.78	0.05	0.00	0.20
		89.71	9.76	0.04	0.00	99.58	83.34	16.55	0.11	0.00	0.20
		89.56	10.72	0.02	0.00	100.32	82.03	17.93	0.05	0.00	0.22
		88.70	10.91	0.04	0.00	99.71	81.57	18.31	0.11	0.00	0.22

*after Shikazono and Shimizu (1988)

Table 4. (Continued)

Locality	Grain No.	Weight %					Atomic %				
		Au	Ag	Cu	Hg	Total	Au	Ag	Cu	Hg	Ag/Au
Nojiri	2	83.25	15.78	0.00	0.00	99.07	74.29	25.71	0.00	0.00	0.35
(Th-A ⑩)		84.45	15.19	0.03	0.00	99.68	75.23	24.70	0.07	0.00	0.33
		82.89	17.08	0.01	0.00	100.12	72.65	27.33	0.02	0.00	0.38
		83.21	16.34	0.04	0.00	99.72	73.54	26.36	0.10	0.00	0.36
		84.86	14.10	0.00	0.00	99.04	76.72	23.27	0.01	0.00	0.30
		84.15	14.89	0.02	0.06	99.15	75.50	24.39	0.06	0.05	0.32
		84.91	14.87	0.02	0.00	99.97	75.74	24.21	0.05	0.00	0.32
		82.65	17.04	0.01	0.00	99.77	72.65	27.34	0.02	0.00	0.38
		82.50	16.49	0.03	0.00	99.11	73.21	26.72	0.07	0.00	0.36
		83.96	16.61	0.05	0.00	100.75	73.37	26.50	0.13	0.00	0.36
	3*	90.13	10.08	0.03	–	100.24	82.97	15.13	0.09	–	0.18
		90.28	8.89	0.02	–	99.19	84.71	15.23	0.06	–	0.18
		90.05	9.10	0.02	–	99.17	84.38	15.56	0.06	–	0.18
		90.59	9.40	0.01	–	100.00	84.04	15.92	0.04	–	0.19
		89.69	9.42	0.01	–	99.12	83.88	16.08	0.04	–	0.19
		89.98	9.61	0.03	–	99.62	83.60	16.31	0.09	–	0.20
		90.01	9.87	0.03	–	99.91	83.24	16.67	0.09	–	0.20
		89.68	9.90	0.03	–	99.61	83.14	16.77	0.09	–	0.20
		89.87	10.09	0.00	–	99.96	82.99	17.01	0.00	–	0.20
		87.08	12.79	0.00	–	99.87	78.86	21.14	0.00	–	0.27
Oate	1	91.10	8.61	0.00	0.15	99.94	85.17	14.70	0.00	0.13	0.17
(Th-A ⑪)		91.20	8.75	0.00	0.11	100.11	85.01	14.89	0.00	0.10	0.18
		91.13	8.10	0.00	0.04	99.30	86.00	13.96	0.00	0.03	0.16
		91.67	7.59	0.01	0.05	99.41	86.79	13.12	0.04	0.05	0.15
		91.22	8.91	0.02	0.05	100.25	84.78	15.12	0.05	0.04	0.18
		92.51	7.71	0.01	0.00	100.28	86.76	13.20	0.04	0.00	0.15
		91.51	8.96	0.06	0.02	100.65	84.68	15.14	0.16	0.02	0.18
		91.32	9.09	0.01	0.03	100.49	84.57	15.38	0.02	0.03	0.18
		91.16	8.40	0.00	0.00	99.68	85.60	14.40	0.00	0.00	0.17
		91.64	8.56	0.00	0.00	100.21	85.44	14.56	0.00	0.00	0.17
Yukisawa	1	92.76	6.71	0.06	0.30	99.82	87.96	11.61	0.16	0.27	0.13
(Th-A ⑫)		92.47	6.65	0.00	0.34	99.48	88.12	11.56	0.01	0.32	0.13
		93.27	6.85	0.04	0.32	100.55	87.82	11.77	0.11	0.30	0.13
		92.95	6.41	0.00	0.19	99.59	88.65	11.17	0.00	0.18	0.13
		92.40	6.70	0.01	0.43	99.57	87.93	11.64	0.02	0.40	0.13
		92.69	6.85	0.04	0.42	100.08	87.65	11.83	0.13	0.39	0.14
		92.66	7.04	0.04	0.44	100.19	87.35	12.12	0.13	0.40	0.14
		92.76	6.89	0.00	0.34	100.06	87.78	11.90	0.00	0.32	0.14
		93.04	6.63	0.03	0.53	100.29	87.98	11.44	0.08	0.50	0.13
		92.76	6.25	0.02	0.44	99.50	88.64	10.89	0.06	0.41	0.12
Mihara	1	87.57	12.37	0.00	0.51	100.54	79.14	20.41	0.00	0.45	0.26
(Th-A ⑬)		87.33	12.01	0.01	0.63	100.02	79.48	19.95	0.01	0.56	0.25
		87.40	11.74	0.01	0.45	99.63	79.97	19.60	0.03	0.40	0.25
		86.55	12.22	0.01	0.67	99.48	79.02	20.36	0.02	0.60	0.26
		87.57	11.85	0.01	0.47	99.97	79.83	19.73	0.03	0.42	0.25
		88.03	11.83	0.00	0.47	100.37	79.96	19.62	0.00	0.42	0.25
		85.15	13.87	0.00	0.85	100.03	76.49	22.76	0.00	0.75	0.30
		86.32	12.81	0.02	0.82	100.11	78.07	21.16	0.04	0.73	0.27
		86.10	13.15	0.00	0.77	100.16	77.66	21.66	0.00	0.68	0.28
		85.50	13.62	0.00	0.77	99.98	76.95	22.38	0.00	0.68	0.29
Shishiori	1*	92.88	6.28	0.00	–	99.16	89.01	10.99	0.00	–	0.12
(Th-A ⑭)		93.20	6.35	0.00	–	99.55	88.93	11.07	0.00	–	0.12
		92.92	6.65	0.02	–	99.59	88.40	11.54	0.06	–	0.13
		93.56	6.82	0.03	–	100.41	88.17	11.73	0.09	–	0.13
		92.57	6.90	0.03	–	99.50	87.95	11.96	0.09	–	0.14
		92.93	6.97	0.02	–	99.92	87.91	12.04	0.06	–	0.14
		92.87	7.04	0.02	–	99.93	87.80	12.14	0.06	–	0.14
		92.25	7.13	0.03	–	99.41	87.55	12.36	0.09	–	0.14
		92.00	7.66	0.03	–	99.69	86.72	13.18	0.09	–	0.15
		91.58	7.65	0.02	–	99.25	86.72	13.23	0.06	–	0.15

*after Shikazono and Shimizu (1988)

Table 4. (Continued)

Locality	Grain No.	Weight %					Atomic %				
		Au	Ag	Cu	Hg	Total	Au	Ag	Cu	Hg	Ag/Au
Oya	1	92.79	7.27	0.05	0.00	100.15	87.37	12.49	0.14	0.00	0.14
(Th-A ⑮)		92.49	7.61	0.08	0.00	100.29	86.74	13.04	0.23	0.00	0.15
		93.12	7.21	0.08	0.00	100.43	87.41	12.36	0.23	0.00	0.14
		93.87	6.32	0.06	0.00	100.28	88.89	10.92	0.19	0.00	0.12
		92.88	7.08	0.03	0.00	100.02	87.70	12.20	0.10	0.00	0.14
		92.03	7.59	0.05	0.00	99.73	86.80	13.07	0.14	0.00	0.15
		92.95	7.49	0.03	0.00	100.53	87.11	12.81	0.08	0.00	0.15
		92.21	7.35	0.03	0.00	99.62	87.22	12.70	0.08	0.00	0.15
		92.10	7.43	0.04	0.00	99.58	87.06	12.82	0.12	0.00	0.15
		92.32	7.22	0.04	0.00	99.57	87.40	12.48	0.12	0.00	0.14
	2*	91.01	8.50	0.07	–	99.58	85.26	14.54	0.20	–	0.17
		90.56	8.56	0.06	–	99.18	85.15	14.69	0.17	–	0.17
		91.42	8.67	0.07	–	100.16	85.06	14.74	0.20	–	0.17
		91.04	8.98	0.10	–	100.12	84.49	15.21	0.29	–	0.18
		90.02	9.18	0.03	–	99.23	84.22	15.68	0.09	–	0.19
		89.98	9.37	0.05	–	99.40	83.91	15.94	0.15	–	0.19
		90.65	9.48	0.03	–	100.16	83.89	16.02	0.09	–	0.19
		89.84	9.46	0.05	–	99.35	83.75	16.11	0.15	–	0.19
		89.83	9.55	0.06	–	99.44	83.61	16.23	0.17	–	0.19
		90.09	9.70	0.02	–	99.81	83.53	16.42	0.05	–	0.20
Aikawa	1*	90.02	9.29	0.03	–	99.34	84.07	15.84	0.09	–	0.19
(Th-A ⑯)		89.80	9.79	0.02	–	99.61	83.35	16.59	0.05	–	0.20
		90.64	9.92	0.04	–	100.60	83.26	16.63	0.11	–	0.20
		89.19	9.88	0.04	–	99.11	83.08	16.81	0.11	–	0.20
		89.98	10.04	0.00	–	100.02	83.08	16.92	0.00	–	0.20
Onagwa	1	91.89	8.39	0.01	0.01	100.37	85.69	14.29	0.01	0.01	0.17
(Th-A ⑰)		91.07	8.48	0.03	0.00	99.65	85.39	14.52	0.10	0.00	0.17
		91.08	8.30	0.01	0.00	99.40	85.71	14.25	0.03	0.00	0.17
		90.43	8.86	0.00	0.00	99.30	84.82	15.18	0.00	0.00	0.18
		92.63	8.46	0.00	0.06	101.19	85.66	14.29	0.00	0.06	0.17
		91.76	8.14	0.00	0.00	99.97	86.06	13.94	0.00	0.00	0.16
		92.34	8.29	0.03	0.00	100.77	85.84	14.07	0.09	0.00	0.16
		92.79	8.21	0.05	0.00	101.13	85.96	13.88	0.15	0.00	0.16
		92.29	7.94	0.02	0.00	100.31	86.36	13.57	0.07	0.00	0.16
		91.49	8.04	0.00	0.00	99.60	86.18	13.82	0.00	0.00	0.16
Yatani	1	54.00	43.58	0.48	0.00	98.28	39.98	58.92	1.10	0.00	1.47
(Th-A ⑱)		55.57	41.47	0.04	0.00	97.28	42.29	57.62	0.09	0.00	1.36
		55.67	41.64	0.08	0.00	97.57	42.19	57.61	0.19	0.00	1.37
		55.39	42.93	0.03	0.00	98.54	41.38	58.56	0.07	0.00	1.42
		52.86	44.77	0.27	0.00	98.13	39.02	60.35	0.62	0.00	1.55
		54.48	42.54	0.05	0.02	97.37	41.17	58.69	0.12	0.02	1.43
		55.18	42.28	0.00	0.00	97.59	41.68	58.32	0.00	0.00	1.40
		54.41	42.51	0.27	0.00	97.42	40.95	58.41	0.63	0.00	1.43
		53.21	44.20	0.36	0.00	98.02	39.41	59.77	0.82	0.00	1.52
		54.92	41.91	0.17	0.00	97.25	41.62	57.98	0.41	0.00	1.39
Takatama	1	47.50	50.17	0.00	0.00	97.93	27.56	72.41	0.01	0.02	2.63
(Th-A ⑲)		40.19	57.84	0.00	0.04	98.26	33.03	66.97	0.00	0.00	2.03
		46.25	51.35	0.00	0.00	97.79	28.65	71.35	0.00	0.00	2.49
		41.03	55.96	0.00	0.00	97.27	30.09	69.91	0.00	0.00	2.32
		42.81	54.49	0.00	0.01	97.60	32.47	67.53	0.00	0.00	2.08
		45.61	51.95	0.00	0.00	97.86	31.08	68.73	0.19	0.00	2.21
		44.17	53.50	0.09	0.00	97.98	31.53	68.43	0.04	0.00	2.17
		44.41	52.79	0.02	0.00	97.52	29.22	70.78	0.00	0.00	2.42
		42.36	56.21	0.00	0.00	98.89	29.35	70.63	0.02	0.00	2.41
		42.19	55.61	0.01	0.00	98.12	32.64	67.35	0.00	0.01	2.06

*after Shikazono and Shimizu (1988)

Table 4-1. Chemical compositions of electrum grains in placer deposits from the Tohoku Province

Locality	Grain No.	Weight %					Atomic %				
		Au	Ag	Cu	Hg	Total	Au	Ag	Cu	Hg	Ag/Au
Otobe	1	79.91	16.66	0.00	0.00	96.57	72.43	27.57	0.00	0.00	0.38
(Th-Pá ①)		80.23	16.29	0.03	0.00	96.55	72.90	27.02	0.08	0.00	0.37
		79.43	16.77	0.01	0.00	96.20	72.16	27.81	0.03	0.00	0.39
		79.84	16.31	0.04	0.03	96.21	72.74	27.13	0.12	0.02	0.37
	2	84.41	11.04	0.01	0.36	95.82	80.43	19.21	0.03	0.34	0.24
		84.68	11.06	0.04	0.27	96.06	80.44	19.18	0.13	0.25	0.24
		85.72	10.84	0.01	0.15	96.73	81.09	18.73	0.04	0.14	0.23
		86.54	10.66	0.04	0.30	97.54	81.32	18.28	0.13	0.28	0.22
Akasawa	1	88.67	8.32	0.06	0.21	97.26	85.07	14.57	0.16	0.20	0.17
(Th-P ②)		89.40	8.42	0.00	0.15	97.97	85.21	14.65	0.00	0.14	0.17
		89.10	8.53	0.04	0.18	97.85	84.88	14.84	0.12	0.17	0.17
		89.28	8.51	0.03	0.19	98.01	84.95	14.79	0.08	0.18	0.17
		88.42	8.72	0.01	0.17	97.32	84.59	15.23	0.02	0.16	0.18
		88.99	8.68	0.00	0.15	97.83	84.76	15.09	0.00	0.14	0.18
		89.29	8.53	0.00	0.14	97.96	85.04	14.83	0.00	0.13	0.17
Sahinai	1	87.70	10.43	0.03	0.19	98.35	81.95	17.80	0.08	0.17	0.22
(Th-P ③)		88.40	10.33	0.01	0.28	99.02	82.19	17.54	0.02	0.25	0.21
		88.38	10.21	0.05	0.26	98.89	82.28	17.35	0.13	0.24	0.21
		87.08	10.27	0.03	0.30	97.67	81.99	17.66	0.08	0.28	0.22
		88.19	10.69	0.00	0.39	99.26	81.59	18.05	0.00	0.36	0.22
		87.99	10.10	0.00	0.50	98.59	82.29	17.24	0.00	0.46	0.21
		87.09	10.30	0.03	0.24	97.67	81.98	17.70	0.10	0.22	0.22
Tamayama	1	85.27	12.92	0.18	0.10	98.58	77.86	21.54	0.52	0.09	0.28
(Th-P ④)		85.60	13.06	0.12	0.49	99.30	77.60	21.61	0.35	0.44	0.28
		85.47	12.97	0.12	0.19	98.80	77.91	21.58	0.34	0.17	0.28
		85.38	12.94	0.07	0.20	98.66	78.03	21.60	0.19	0.18	0.28
		85.77	12.80	0.09	0.25	99.00	78.22	21.31	0.25	0.22	0.27
		85.83	12.88	0.14	0.14	99.04	78.09	21.39	0.39	0.13	0.27
		85.47	12.83	0.06	0.19	98.56	78.23	21.44	0.16	0.17	0.27
		83.97	13.63	0.16	0.95	98.77	76.13	22.57	0.45	0.85	0.30
		84.36	12.73	0.16	1.07	98.42	77.30	21.29	0.44	0.96	0.28
		84.11	13.58	0.15	1.01	98.95	76.22	22.46	0.42	0.90	0.29
Yukisawa	1	83.04	15.29	0.00	0.25	98.58	74.68	25.11	0.00	0.22	0.34
(Th-P ⑤)		83.85	14.87	0.05	0.09	98.85	75.38	24.41	0.13	0.08	0.32
		83.10	14.78	0.00	0.15	98.04	75.38	24.48	0.00	0.14	0.32
		83.54	14.97	0.00	0.10	98.62	75.27	24.63	0.01	0.09	0.33
		83.64	14.86	0.02	0.01	98.54	75.46	24.48	0.05	0.01	0.32
		83.44	14.81	0.00	0.11	98.37	75.45	24.46	0.00	0.10	0.32
		83.81	14.56	0.00	0.11	98.48	75.85	24.05	0.00	0.10	0.32
		82.59	15.16	0.10	0.09	97.94	74.63	25.00	0.29	0.08	0.34
		82.98	15.04	0.03	0.25	98.29	74.91	24.79	0.07	0.22	0.33
		82.58	15.24	0.02	0.44	98.29	74.46	25.09	0.06	0.39	0.34
Kitakami	1	72.11	25.64	0.03	0.00	97.88	60.59	39.33	0.08	0.00	0.65
(Th-P ⑥)		73.60	24.65	0.06	0.07	98.49	61.93	37.86	0.15	0.06	0.61
		75.51	22.72	0.01	0.00	98.40	64.52	35.44	0.04	0.00	0.55
		72.37	25.77	0.02	0.00	98.39	60.56	39.38	0.06	0.00	0.65
		73.05	25.23	0.00	0.00	98.39	61.33	38.67	0.00	0.00	0.63
		76.78	20.95	0.03	0.00	97.92	66.70	33.22	0.08	0.00	0.50
		74.44	23.67	0.01	0.00	98.25	63.25	36.72	0.03	0.00	0.58
		74.35	23.46	0.00	0.00	97.87	63.45	36.55	0.00	0.00	0.58
Shinota	1	97.63	2.64	0.12	0.16	100.55	94.80	4.67	0.37	0.15	0.05
(Th-P ⑦)	rim	98.39	0.27	0.02	0.00	98.69	99.42	0.50	0.08	0.00	0.01

Table 4-1. (Continued)

Locality	Grain No.	Weight %					Atomic %				
		Au	Ag	Cu	Hg	Total	Au	Ag	Cu	Hg	Ag/Au
Shinota	2	93.74	4.01	0.06	0.21	98.02	92.41	7.21	0.17	0.21	0.08
(Th-P ⑦)		93.00	4.81	0.10	0.18	98.09	90.95	8.58	0.29	0.18	0.09
		92.79	4.93	0.10	0.24	98.06	90.67	8.80	0.31	0.23	0.10
		92.91	4.89	0.17	0.37	98.34	90.45	8.69	0.52	0.35	0.10
	rim	99.24	0.74	0.00	0.00	99.99	98.64	1.35	0.01	0.00	0.01
	rim	98.22	0.41	0.00	0.00	98.63	99.24	0.76	0.00	0.00	0.01
		92.78	4.90	0.16	0.31	98.15	90.50	8.72	0.49	0.29	0.10
	rim	98.88	0.38	0.04	0.00	99.30	99.19	0.69	0.12	0.00	0.01
Tsuya	1	89.67	9.61	0.01	0.32	99.66	83.36	16.31	0.04	0.29	0.20
(Th-P ⑧)		89.94	9.44	0.08	0.31	99.82	83.49	16.00	0.23	0.29	0.19
		90.27	9.40	0.02	0.72	100.46	83.43	15.86	0.06	0.65	0.19
		90.50	9.20	0.06	0.27	100.09	83.99	15.58	0.18	0.25	0.19
		90.32	9.30	0.00	0.26	99.89	83.98	15.79	0.00	0.23	0.19
		90.35	9.40	0.02	0.42	100.27	83.67	15.90	0.05	0.38	0.19
		90.23	9.29	0.00	0.45	100.03	83.83	15.76	0.01	0.41	0.19
		90.32	9.22	0.00	0.48	100.10	83.92	15.65	0.00	0.44	0.19
		89.06	9.79	0.03	0.83	99.77	82.59	16.57	0.08	0.76	0.20
	rim	95.28	4.18	0.00	0.34	99.86	92.28	7.39	0.00	0.32	0.08
Oya	1	89.86	9.65	0.00	0.02	99.53	83.60	16.39	0.00	0.02	0.20
(Th-P ⑨)		89.30	9.63	0.05	0.00	98.98	83.42	16.43	0.15	0.00	0.20
		89.11	9.83	0.05	0.00	99.00	83.10	16.74	0.16	0.00	0.20
		89.60	9.51	0.03	0.00	99.15	83.69	16.21	0.10	0.00	0.19
		89.41	9.56	0.03	0.02	99.02	83.57	16.31	0.10	0.02	0.20
		89.78	9.04	0.02	0.00	98.84	84.43	15.52	0.05	0.00	0.18
Koganesawa	1	91.63	7.65	0.00	0.00	99.27	86.78	13.22	0.00	0.00	0.15
(Th-P ⑩)		91.39	6.96	0.06	0.00	98.41	87.64	12.18	0.17	0.00	0.14
		91.92	7.61	0.01	0.00	99.54	86.85	13.13	0.03	0.00	0.15
		90.81	7.69	0.06	0.00	98.57	86.45	13.37	0.18	0.00	0.15
		90.53	7.67	0.03	0.00	98.22	86.54	13.38	0.08	0.00	0.15
		91.07	7.60	0.06	0.00	98.73	86.62	13.19	0.19	0.00	0.15
	2	94.70	4.55	0.04	0.00	99.29	91.82	8.05	0.13	0.00	0.09
		95.04	4.40	0.02	0.00	99.47	92.14	7.79	0.07	0.00	0.08
		95.06	4.34	0.02	0.00	99.42	92.26	7.69	0.06	0.00	0.08
		95.46	4.16	0.08	0.00	99.70	92.41	7.35	0.24	0.00	0.08
Mitobe	1	90.60	8.46	0.08	0.54	99.69	84.80	14.46	0.24	0.50	0.17
(Th-P ⑪)		90.07	8.43	0.09	0.38	98.96	84.88	14.50	0.27	0.35	0.17
		90.90	8.61	0.09	0.44	100.04	84.69	14.65	0.26	0.40	0.17
		89.95	8.62	0.00	0.47	99.05	84.73	14.83	0.00	0.44	0.18
		90.54	8.63	0.04	0.21	99.42	84.90	14.78	0.12	0.19	0.17
		90.06	8.49	0.03	0.35	98.93	84.97	14.63	0.07	0.33	0.17
		90.11	8.53	0.01	0.45	99.10	84.89	14.67	0.02	0.42	0.17
	rim	98.32	0.43	0.00	0.00	98.75	99.20	0.80	0.00	0.00	0.01
	rim	99.42	0.37	0.01	0.00	99.80	99.30	0.67	0.02	0.00	0.01
	rim	98.50	0.24	0.00	0.00	98.74	99.55	0.45	0.00	0.00	0.00
	2	85.17	13.31	0.00	0.10	98.72	77.73	22.18	0.00	0.09	0.29
		85.53	13.27	0.02	0.00	98.83	77.88	22.06	0.06	0.00	0.28
		85.63	12.75	0.01	0.00	98.49	78.61	21.36	0.03	0.00	0.27
		85.29	13.18	0.05	0.05	98.68	77.84	21.97	0.14	0.05	0.28
		85.43	13.33	0.03	0.00	98.79	77.76	22.15	0.09	0.00	0.28
		85.43	13.20	0.09	0.00	98.83	77.81	21.94	0.24	0.00	0.28
		85.54	13.11	0.03	0.05	98.74	78.04	21.83	0.08	0.04	0.28
		85.44	12.97	0.04	0.00	98.46	78.22	21.67	0.10	0.00	0.28
	rim	98.85	1.12	0.00	0.00	99.98	97.97	2.03	0.00	0.00	0.02
	rim	99.09	1.17	0.01	0.00	100.30	97.85	2.10	0.04	0.00	0.02

Table 4-1. (Continued)

Locality	Grain No.	Weight %					Atomic %				
		Au	Ag	Cu	Hg	Total	Au	Ag	Cu	Hg	Ag/Au
Wakuya (Th-P ⑫)	1	84.53	13.65	0.14	0.18	98.51	76.81	22.64	0.38	0.16	0.29
		84.29	13.45	0.11	0.12	98.11	77.13	22.46	0.30	0.11	0.29
		84.76	13.30	0.13	0.25	98.48	77.28	22.14	0.36	0.22	0.29
		85.60	13.63	0.09	0.10	99.53	77.22	22.45	0.25	0.09	0.29
		85.20	13.26	0.10	0.10	98.72	77.58	22.04	0.29	0.09	0.28
		84.67	13.57	0.11	0.01	98.42	77.11	22.56	0.32	0.01	0.29
		84.95	13.54	0.10	0.11	98.74	77.17	22.46	0.28	0.10	0.29
		85.83	13.36	0.18	0.17	99.62	77.36	21.98	0.51	0.15	0.28
		85.02	13.31	0.16	0.03	98.53	77.41	22.12	0.44	0.03	0.29
		84.65	13.49	0.11	0.10	98.38	77.15	22.45	0.32	0.09	0.29
	2	87.18	10.95	0.14	0.81	99.16	80.42	18.44	0.40	0.74	0.23
		86.62	11.00	0.12	0.81	98.64	80.30	18.62	0.34	0.73	0.23
		86.93	10.86	0.17	0.86	98.94	80.39	18.34	0.49	0.78	0.23
		86.50	11.42	0.15	0.87	99.01	79.60	19.19	0.42	0.79	0.24
		86.77	11.11	0.14	0.80	98.88	80.14	18.74	0.40	0.72	0.23
		86.61	11.00	0.20	0.72	98.59	80.19	18.59	0.57	0.65	0.23
		86.70	10.94	0.13	0.85	98.61	80.35	18.51	0.37	0.77	0.23
		87.01	10.61	0.17	0.75	98.61	80.83	17.99	0.49	0.69	0.22
		86.84	10.76	0.17	0.82	98.63	80.54	18.22	0.49	0.75	0.23
		86.65	11.07	0.13	0.85	98.80	80.15	18.70	0.38	0.77	0.23

Table 5. Chemical compositions of electrum grains in ore deposits from the Kanto Province. Data from the Yamanashi Prefecture of the Chubu Provice is listed in this table as a matter of convenience.

Locality	Grain No.	Weight %					Atomic %				
		Au	Ag	Cu	Hg	Total	Au	Ag	Cu	Hg	Ag/Au
Daigo	1	88.72	9.01	0.04	0.02	97.82	84.26	15.62	0.10	0.02	0.19
(Ka-A ①)		89.48	9.13	0.01	0.00	98.65	84.26	15.70	0.04	0.00	0.19
		89.58	8.85	0.04	0.00	98.58	84.63	15.26	0.11	0.00	0.18
		89.63	9.43	0.02	0.00	99.25	83.83	16.11	0.06	0.00	0.19
		89.81	9.25	0.01	0.00	99.13	84.14	15.83	0.04	0.00	0.19
		89.05	9.51	0.02	0.00	98.64	83.62	16.31	0.07	0.00	0.19
		88.98	9.49	0.01	0.00	98.50	83.69	16.29	0.02	0.00	0.19
		89.15	8.82	0.00	0.03	98.06	84.68	15.29	0.00	0.03	0.18
		88.71	9.33	0.06	0.00	98.13	83.75	16.07	0.17		0.19
	2*	92.32	7.54	0.02	–	99.88	86.97	12.97	0.06	–	0.15
		91.68	7.51	0.01	–	99.20	86.96	13.00	0.04	–	0.15
		91.65	7.69	0.02	–	99.36	86.66	13.28	0.06	–	0.15
		91.77	7.78	0.02	–	99.57	86.55	13.40	0.06	–	0.15
		91.54	7.83	0.02	–	99.39	86.44	13.50	0.06	–	0.16
		91.64	7.93	0.03	–	99.60	86.28	13.63	0.09	–	0.16
		91.27	8.04	0.02	–	99.33	86.10	13.85	0.06	–	0.16
		91.41	8.11	0.04	–	99.56	85.96	13.93	0.11	–	0.16
		91.33	8.18	0.00	–	99.51	85.95	14.05	0.00	–	0.16
		91.16	8.37	0.04	–	99.57	85.54	14.35	0.11	–	0.17
Shiozawa	1*	92.83	7.00	0.05	–	99.88	87.76	12.09	0.15	–	0.14
(Ho-A ②)		92.10	7.06	0.05	–	99.21	87.60	12.25	0.15	–	0.14
		92.24	7.11	0.02	–	99.37	87.61	12.33	0.06	–	0.14
		92.15	7.16	0.04	–	99.35	87.47	12.42	0.11	–	0.14
		92.22	7.24	0.06	–	99.52	87.32	12.52	0.17	–	0.14
		92.62	7.37	0.03	–	100.02	87.24	12.67	0.09	–	0.15
		92.20	7.37	0.06	–	99.63	87.12	12.71	0.17	–	0.15
		91.96	7.45	0.06	–	99.47	85.98	12.86	0.17	–	0.15
		91.55	7.48	0.04	–	99.07	86.92	12.96	0.11	–	0.15
		91.64	7.55	0.00	–	99.19	86.92	13.08	0.00	–	0.15
Saigane	1*	89.73	9.68	0.07	–	99.48	83.38	16.42	0.20	–	0.20
(Ho-A ③)		89.40	9.71	0.06	–	99.17	83.31	16.52	0.17	–	0.20
		89.56	10.19	0.06	–	99.81	82.67	17.17	0.16	–	0.21
		88.69	10.28	0.06	–	99.03	82.39	17.44	0.16	–	0.21
		89.19	10.46	0.08	–	99.73	83.17	17.59	0.24	–	0.21
		89.12	10.54	0.08	–	99.74	82.05	17.72	0.24	–	0.22
		88.42	10.66	0.07	–	99.15	81.79	18.01	0.20	–	0.22
		88.99	10.78	0.08	–	99.85	81.46	18.30	0.24	–	0.22
		88.34	10.97	0.09	–	99.40	81.31	18.44	0.25	–	0.23
Suwa	1*	98.27	1.75	0.10	–	100.12	96.55	3.14	0.31	–	0.03
(Ho-A ④)		97.53	1.78	0.06	–	99.37	96.60	3.22	0.18	–	0.03
		97.57	1.84	0.10	–	99.51	96.36	3.33	0.31	–	0.03
		98.13	1.92	0.09	–	100.14	96.29	3.44	0.27	–	0.04
		97.69	1.99	0.09	–	99.77	96.16	3.57	0.27	–	0.04
		97.35	2.03	0.07	–	99.45	96.13	3.66	0.21	–	0.04
		97.64	2.08	0.08	–	99.80	96.01	3.74	0.25	–	0.04
		97.48	2.16	0.10	–	99.74	95.82	3.87	0.31	–	0.04
		97.57	2.33	0.07	–	99.97	95.62	4.17	0.21	–	0.04
		97.16	2.40	0.07	–	99.63	95.49	4.30	0.21	–	0.05
Nishizawa	1	62.73	37.14	0.00	0.00	100.05	48.06	51.94	0.00	0.00	1.08
(Ho-A ⑤)		61.78	38.21	0.02	0.00	100.16	46.95	53.02	0.04	0.00	1.13
		68.56	30.90	0.02	0.00	99.61	54.84	45.12	0.04	0.00	0.82
		62.35	37.83	0.02	0.00	100.34	47.42	52.52	0.06	0.00	1.11
		60.71	38.81	0.00	0.00	99.70	46.14	53.86	0.00	0.00	1.17
		67.36	32.30	0.04	0.00	99.88	53.26	46.63	0.10	0.00	0.88
		68.88	30.92	0.00	0.00	99.94	54.96	45.04	0.00	0.00	0.82
		67.15	32.47	0.05	0.00	99.83	53.04	46.83	0.13	0.00	0.88
		67.88	32.25	0.04	0.00	100.33	53.50	46.41	0.09	0.00	0.87
		64.76	35.02	0.01	0.00	99.97	50.30	49.66	0.03	0.00	0.99

*after Shikazono and Shimizu (1988)

Table 5. (Continued)

Locality	Grain No.	Weight %					Atomic %				
		Au	Ag	Cu	Hg	Total	Au	Ag	Cu	Hg	Ag/Au
Nishizawa	2*	78.44	21.77	0.00	–	100.21	66.37	33.63	0.00	–	0.51
(Ho-A ⑤)		76.55	22.91	0.01	–	99.47	64.65	35.32	0.03	–	0.55
		73.97	25.61	0.01	–	99.59	61.26	38.71	0.03	–	0.63
		73.49	25.79	0.01	–	99.29	60.93	39.04	0.03	–	0.64
		69.72	29.45	0.01	–	99.18	56.44	43.52	0.03	–	0.77
Amanuma	1	64.63	34.86	0.02	0.00	99.66	50.35	49.59	0.06	0.00	0.98
(Ho-A ⑥)		65.85	33.55	0.00	0.00	99.65	51.80	48.20	0.00	0.00	0.93
		69.74	29.90	0.00	0.00	99.81	56.09	43.91	0.00	0.00	0.78
		66.60	33.78	0.00	0.01	100.47	51.91	48.07	0.00	0.01	0.93
		64.38	35.20	0.00	0.03	99.76	50.03	49.95	0.00	0.02	1.00
		65.90	34.09	0.00	0.00	100.12	51.43	48.57	0.00	0.00	0.94
		67.02	32.74	0.00	0.04	100.00	52.84	47.13	0.00	0.03	0.89
		65.10	35.14	0.00	0.00	100.41	50.37	49.63	0.00	0.00	0.99
		64.51	35.36	0.00	0.00	100.07	49.98	50.02	0.00	0.00	1.00
		65.80	33.73	0.02	0.00	99.71	51.63	48.33	0.04	0.00	0.94
	2*	71.01	28.09	0.00	–	99.10	58.07	41.93	0.00	–	0.72
		69.45	29.83	0.00	–	99.28	56.04	43.96	0.00	–	0.78
		69.15	30.29	0.00	–	99.44	55.56	44.44	0.00	–	0.80
		67.87	31.29	0.00	–	99.16	54.29	45.71	0.00	–	0.84
		65.33	34.26	0.02	–	99.61	53.18	46.78	0.05	–	0.88
		63.91	35.21	0.01	–	99.13	49.84	50.13	0.03	–	1.01
		63.45	36.08	0.00	–	99.53	49.06	50.94	0.00	–	1.04
		62.97	36.39	0.01	–	99.37	48.64	51.33	0.03	–	1.06
		62.16	37.98	0.01	–	100.15	47.25	52.72	0.03	–	1.12
Chichibu	1	90.58	9.72	0.04	0.01	100.42	83.51	16.37	0.12	0.01	0.20
(Ho-A ⑦)		91.00	10.20	0.02	0.01	101.25	82.96	16.97	0.06	0.01	0.20
		90.70	9.86	0.00	0.00	100.57	83.43	16.57	0.00	0.00	0.20
		89.77	10.10	0.00	0.00	99.94	82.96	17.04	0.00	0.00	0.21
		90.14	9.90	0.06	0.00	100.13	83.14	16.68	0.18	0.00	0.20
		89.80	10.07	0.00	0.17	100.03	82.89	16.97	0.00	0.15	0.20
		90.48	9.84	0.00	0.00	100.33	83.44	16.56	0.00	0.00	0.20
		89.78	9.77	0.00	0.00	99.63	83.43	16.57	0.00	0.00	0.20
		89.77	10.09	0.00	0.00	99.88	82.98	17.02	0.00	0.00	0.21
		90.71	10.00	0.01	0.00	100.74	83.23	16.74	0.03	0.00	0.20
	2*	86.35	13.11	0.01	–	99.47	78.27	21.70	0.04	–	0.28
		86.38	13.22	0.01	–	99.61	78.14	21.83	0.04	–	0.28
		86.42	13.46	0.01	–	99.89	77.84	22.13	0.04	–	0.28
		86.00	13.79	0.00	–	99.79	77.35	22.65	0.00	–	0.29
		85.50	13.99	0.01	–	99.50	76.96	23.00	0.04	–	0.30
		85.16	14.28	0.05	–	99.49	76.46	23.40	0.14	–	0.31
		84.48	15.08	0.00	–	99.56	75.41	24.59	0.00	–	0.33
		83.96	15.20	0.00	–	99.16	75.15	24.85	0.00	–	0.33
		82.67	16.84	0.04	–	99.55	72.81	27.09	0.10	–	0.37
		81.45	17.84	0.01	–	99.30	71.42	28.55	0.03	–	0.40
Kurokawa	1	91.66	6.88	0.00	1.02	99.61	87.12	11.93	0.00	0.95	0.14
(Ho-A ⑧)		91.53	6.91	0.05	1.03	99.56	86.92	11.99	0.14	0.96	0.14
		91.62	7.48	0.00	0.99	100.17	86.24	12.85	0.00	0.91	0.15
		92.26	7.29	0.02	1.10	100.70	86.47	12.48	0.04	1.01	0.14
		92.02	7.66	0.07	1.06	100.81	85.80	13.04	0.20	0.97	0.15
		90.80	7.47	0.00	0.93	99.27	86.19	12.94	0.00	0.87	0.15
		91.42	7.67	0.00	0.96	100.05	85.95	13.16	0.00	0.89	0.15
		92.86	6.98	0.02	1.11	100.99	86.99	11.94	0.05	1.02	0.14
		89.41	7.34	0.02	1.02	97.85	86.09	12.90	0.05	0.96	0.15
		92.57	7.71	0.05	0.99	101.35	85.89	13.06	0.15	0.90	0.15

*after Shikazono and Shimizu (1988)

Table 5. (Continued)

Locality	Grain No.	Weight %					Atomic %				
		Au	Ag	Cu	Hg	Total	Au	Ag	Cu	Hg	Ag/Au
Ashiyasu	1*	92.21	7.12	0.03	–	99.36	87.56	12.35	0.09	–	0.14
(Ho-A ⑨)		90.98	8.52	0.02	–	99.52	85.34	14.60	0.06	–	0.17
		90.75	8.62	0.05	–	99.42	85.09	14.76	0.15	–	0.17
		90.59	8.76	0.05	–	99.40	84.87	14.99	0.15	–	0.18
		90.70	8.86	0.04	–	99.60	84.77	15.12	0.11	–	0.18
		90.83	9.02	0.04	–	99.89	84.56	15.33	0.11	–	0.18
		89.94	9.24	0.03	–	99.21	84.13	15.76	0.09	–	0.19
		90.70	9.16	0.06	–	99.92	84.29	15.54	0.16	–	0.18
		90.33	9.40	0.17	–	99.90	83.62	15.89	0.49	–	0.19
		89.80	9.39	0.12	–	99.31	83.68	15.97	0.35	–	0.19
Ho	1	88.02	11.98	0.02	0.67	100.69	79.58	19.77	0.06	0.59	0.25
(Ho-A ⑩)		86.29	12.34	0.00	0.82	99.53	78.71	20.55	0.00	0.73	0.26
		86.16	12.33	0.00	0.98	99.57	78.60	20.53	0.00	0.87	0.26
		88.17	11.59	0.04	0.34	100.15	80.29	19.28	0.12	0.31	0.24
		86.82	11.72	0.04	0.56	99.20	79.73	19.65	0.11	0.51	0.25
		87.83	11.41	0.02	0.27	99.63	80.59	19.11	0.06	0.25	0.24
		87.67	12.09	0.01	0.80	100.59	79.29	19.97	0.03	0.71	0.25
		87.12	11.62	0.10	0.57	99.47	79.77	19.43	0.28	0.51	0.24
		87.72	11.60	0.00	0.20	99.62	80.40	19.42	0.00	0.18	0.24
		88.30	11.77	0.00	0.35	100.45	80.18	19.51	0.00	0.31	0.24
		87.55	11.92	0.05	0.85	100.46	79.36	19.73	0.15	0.76	0.25
	2*	93.49	5.50	0.03	–	99.02	90.21	9.69	0.10	–	0.11
		93.34	5.62	0.05	–	99.01	89.96	9.86	0.15	–	0.11
		93.91	5.69	0.03	–	99.63	89.96	9.95	0.09	–	0.11
		93.82	5.82	0.04	–	99.68	89.73	10.16	0.11	–	0.11
		93.53	5.83	0.05	–	99.41	89.65	10.20	0.15	–	0.11
		94.03	5.91	0.06	–	100.00	89.55	10.29	0.17	–	0.11
		93.73	5.91	0.06	–	99.70	89.52	10.31	0.17	–	0.12
		93.54	5.97	0.05	–	99.56	89.43	10.42	0.15	–	0.12
		93.48	6.03	0.05	–	99.56	89.33	10.52	0.15	–	0.12
		93.70	6.13	0.03	–	99.86	89.25	10.66	0.09	–	0.12
Gohaku	1*	90.22	9.63	0.00	–	99.85	83.70	16.30	0.00	–	0.19
(Ho-A ⑪)		90.00	9.77	0.00	–	99.77	83.47	16.53	0.00	–	0.20
		89.52	9.89	0.00	–	99.41	83.21	16.79	0.00	–	0.20
		89.93	10.02	0.00	–	99.95	83.09	16.91	0.00	–	0.20
		88.97	10.04	0.01	–	99.02	82.89	17.07	0.04	–	0.21
		88.99	10.31	0.01	–	99.31	82.50	17.46	0.04	–	0.21
		88.60	10.56	0.00	–	99.16	82.12	17.88	0.00	–	0.22
		88.26	10.96	0.00	–	99.22	81.51	18.49	0.00	–	0.23
		88.58	11.25	0.00	–	99.83	81.17	18.83	0.00	–	0.23
		87.74	11.38	0.00	–	99.12	80.85	19.15	0.00	–	0.24
Koei	1*	87.32	11.71	0.02	–	99.05	80.29	19.66	0.05	–	0.24
(Ho-A ⑫)		88.06	11.89	0.01	–	99.96	80.19	19.77	0.04	–	0.25
		87.12	12.04	0.04	–	99.20	79.76	20.13	0.11	–	0.25
		88.39	12.50	0.00	–	100.89	79.49	20.51	0.00	–	0.26
		86.73	12.53	0.00	–	99.26	79.13	20.87	0.00	–	0.26
		86.53	12.69	0.02	–	99.24	78.84	21.11	0.05	–	0.27
		86.56	12.94	0.02	–	99.52	78.52	21.43	0.05	–	0.27
		86.08	13.14	0.02	–	99.24	78.16	21.79	0.05	–	0.28
		86.36	13.26	0.02	–	99.64	78.06	21.88	0.05	–	0.28
		85.99	13.25	0.03	–	99.27	77.97	21.94	0.09	–	0.28

*after Shikazono and Shimizu (1988)

Table 5-1. Chemical compositions of electrum grains in palcer deposits from the Kanto Province. Data from the Yamanashi Prefecture of the Chubu Provice is listed in this table as a matter of convenience.

Locality	Grain No.	Weight %					Atomic %				
		Au	Ag	Cu	Hg	Total	Au	Ag	Cu	Hg	Ag/Au
Osawa	1	85.67	12.17	0.00	0.12	97.99	79.32	20.57	0.00	0.11	0.26
(Ka-P ①)		85.68	11.87	0.00	0.18	97.77	79.68	20.16	0.00	0.16	0.25
		86.19	11.62	0.01	0.13	98.00	80.13	19.72	0.04	0.12	0.25
		85.80	11.93	0.02	0.13	97.90	79.62	20.21	0.06	0.12	0.25
		85.66	11.85	0.02	0.07	97.65	79.74	20.14	0.05	0.07	0.25
Kanuma	1	88.82	9.40	0.08	0.00	98.39	83.61	16.15	0.24	0.00	0.19
(Ka-P ②)		88.95	9.85	0.03	0.00	98.95	83.12	16.80	0.09	0.00	0.20
		88.68	9.46	0.02	0.00	98.24	83.65	16.29	0.06	0.00	0.19
		88.84	9.36	0.01	0.00	98.28	83.84	16.12	0.04	0.00	0.19
		89.34	9.76	0.02	0.00	99.16	83.32	16.61	0.07	0.00	0.20
	2	94.80	3.94	0.06	0.00	98.81	92.78	7.03	0.19	0.00	0.08
		93.42	4.13	0.09	0.00	97.64	92.29	7.44	0.27	0.00	0.08
		95.02	4.20	0.10	0.00	99.34	92.26	7.44	0.29	0.00	0.08
		94.17	4.36	0.12	0.00	98.64	91.89	7.76	0.35	0.00	0.08
Shimonita	1	65.34	35.27	0.05	0.00	100.65	50.30	49.59	0.11	0.00	0.99
(Ka-P ③)		65.05	36.01	0.00	0.00	101.06	49.68	50.22	0.00	0.00	1.01
	2	93.34	7.81	0.00	0.00	101.16	86.65	13.25	0.00	0.00	0.15
		91.49	8.12	0.00	0.00	99.61	86.05	13.95	0.00	0.00	0.16
		93.00	6.23	0.00	0.00	99.23	89.05	10.89	0.00	0.00	0.12
	2 (rim)	98.01	1.33	0.00	0.00	99.33	97.55	2.41	0.00	0.00	0.02
	2 (rim)	98.65	1.35	0.09	0.75	100.84	96.58	2.42	0.28	0.72	0.03
	2 (rim)	99.16	0.86	0.00	0.00	100.01	98.45	1.55	0.00	0.00	0.02
	3	79.81	19.49	0.00	0.00	99.30	69.13	30.84	0.00	0.00	0.45
		80.56	18.71	0.00	0.00	99.27	70.21	29.79	0.00	0.00	0.42
		81.70	17.64	0.00	0.00	99.34	71.72	28.28	0.00	0.00	0.39
		80.40	18.67	0.00	0.69	99.76	69.76	29.58	0.00	0.59	0.42
	4	64.66	35.20	0.00	0.00	99.86	50.11	49.82	0.00	0.00	0.99
		62.84	35.94	0.05	0.00	98.83	48.85	51.03	0.12	0.00	1.04
		64.26	35.86	0.00	0.00	100.11	49.51	50.46	0.00	0.00	1.02
		64.22	35.60	0.00	0.00	99.82	49.69	50.31	0.00	0.00	1.01
Yorii	1	80.82	15.26	0.05	0.74	96.92	73.77	25.44	0.13	0.66	0.34
(Ka-P ④)		81.49	15.16	0.00	0.55	97.26	74.27	25.23	0.01	0.50	0.34
		79.68	15.00	0.00	0.60	95.41	74.01	25.44	0.01	0.55	0.34
		81.21	14.80	0.04	0.63	96.76	74.53	24.80	0.10	0.57	0.33
		80.68	15.00	0.00	0.73	96.47	74.16	25.17	0.01	0.66	0.34
		81.78	15.34	0.00	0.60	97.79	74.09	25.38	0.00	0.53	0.34
		80.88	15.44	0.06	1.10	97.60	73.31	25.55	0.17	0.98	0.35
Tabakeikoku	1	93.95	5.32	0.01	0.32	99.65	90.33	9.34	0.03	0.31	0.10
(Ka-P ⑤)		94.28	5.88	0.05	0.12	100.34	89.54	10.20	0.14	0.11	0.11
		94.79	5.20	0.02	0.31	100.32	90.59	9.07	0.06	0.29	0.10
		93.72	5.98	0.01	0.30	100.03	89.30	10.41	0.01	0.28	0.12
		93.56	5.84	0.00	0.48	99.89	89.37	10.18	0.01	0.45	0.11
		94.12	5.53	0.00	0.27	99.95	90.08	9.66	0.00	0.26	0.11
		94.04	5.71	0.00	0.47	100.25	89.63	9.93	0.00	0.44	0.11
		94.55	5.70	0.02	0.06	100.35	89.99	9.90	0.05	0.06	0.11
		94.45	5.39	0.03	0.12	100.01	90.39	9.41	0.09	0.11	0.10
		94.18	5.64	0.04	0.29	100.17	89.80	9.81	0.12	0.27	0.11
	2	92.17	6.04	0.00	1.27	99.60	88.24	10.56	0.00	1.19	0.12
		92.51	6.01	0.05	1.08	99.72	88.35	10.48	0.15	1.01	0.12
		91.90	5.96	0.01	0.99	98.99	88.55	10.49	0.03	0.93	0.12
		92.90	5.95	0.00	0.77	99.63	88.88	10.39	0.00	0.73	0.12
		93.41	6.08	0.05	1.02	100.59	88.41	10.50	0.14	0.95	0.12
		91.51	6.12	0.01	0.66	98.31	88.54	10.81	0.02	0.63	0.12
		93.17	5.45	0.02	0.42	99.10	89.93	9.61	0.06	0.40	0.11
		94.69	5.83	0.02	0.49	101.10	89.44	10.06	0.05	0.46	0.11
		93.72	6.13	0.00	0.38	100.25	89.01	10.63	0.00	0.36	0.12
		93.33	6.24	0.01	0.62	100.25	88.57	10.81	0.04	0.58	0.12

Table 5-1. (Continued)

Locality	Grain No.	Weight %					Atomic %				
		Au	Ag	Cu	Hg	Total	Au	Ag	Cu	Hg	Ag/Au
Tabakeikoku (Ka-P ⑤)	3	99.69	2.08	0.01	0.04	101.82	96.28	3.66	0.02	0.04	0.04
		97.08	1.90	0.05	0.09	99.15	96.33	3.44	0.14	0.08	0.04
		99.50	2.06	0.00	0.19	101.75	96.18	3.64	0.00	0.18	0.04
		98.01	2.02	0.05	0.08	100.17	96.16	3.63	0.14	0.08	0.04
		98.48	1.94	0.09	0.04	100.58	96.24	3.46	0.26	0.04	0.04
		97.94	2.16	0.03	0.03	100.21	96.01	3.87	0.09	0.03	0.04
		96.99	1.97	0.00	0.03	98.99	96.40	3.57	0.00	0.03	0.04
		100.48	2.03	0.08	0.05	102.64	96.18	3.55	0.22	0.05	0.04
		99.49	2.09	0.01	0.02	101.64	96.26	3.69	0.03	0.02	0.04
		98.45	2.01	0.08	0.06	100.66	96.12	3.59	0.23	0.06	0.04
	4	93.20	6.11	0.07	0.00	99.41	89.12	10.67	0.21	0.00	0.12
		95.12	4.74	0.05	0.02	99.94	91.52	8.33	0.13	0.02	0.09
		93.36	6.34	0.07	0.00	99.90	88.78	11.00	0.21	0.00	0.12
		93.71	6.22	0.07	0.03	100.07	89.00	10.78	0.19	0.02	0.12
		94.38	6.17	0.10	0.00	100.70	89.07	10.64	0.29	0.00	0.12
		92.98	6.05	0.07	0.00	99.12	89.21	10.59	0.20	0.00	0.12
		95.06	5.68	0.12	0.00	100.88	89.84	9.80	0.36	0.00	0.11
		93.73	5.84	0.08	0.00	99.70	89.56	10.19	0.25	0.00	0.11
		95.40	4.30	0.19	0.00	99.96	91.86	7.57	0.57	0.00	0.08
	rim	99.76	0.74	0.03	0.09	100.62	98.51	1.33	0.08	0.09	0.01
	5	89.66	9.14	0.02	0.00	98.92	84.27	15.68	0.05	0.00	0.19
		89.96	9.22	0.02	0.00	99.22	84.20	15.76	0.04	0.00	0.19
		91.30	9.30	0.04	0.00	100.74	84.23	15.66	0.11	0.00	0.19
		90.55	9.18	0.09	0.01	99.88	84.16	15.57	0.25	0.01	0.19
		89.70	9.99	0.03	0.01	99.75	83.01	16.88	0.10	0.01	0.20
		90.13	9.56	0.05	0.00	99.85	83.65	16.20	0.14	0.00	0.19
		88.54	11.12	0.07	0.00	99.77	81.18	18.62	0.20	0.00	0.23
		89.80	11.04	0.03	0.00	100.92	81.60	18.32	0.08	0.00	0.22
		89.97	10.53	0.05	0.00	100.56	82.27	17.59	0.14	0.00	0.21
		88.29	10.98	0.06	0.00	99.42	81.36	18.47	0.17	0.00	0.23
	6	87.00	11.04	0.03	0.23	98.41	80.94	18.75	0.10	0.21	0.23
		86.74	10.99	0.01	0.29	98.13	80.97	18.74	0.03	0.26	0.23
		85.89	13.82	0.04	0.44	100.23	76.91	22.59	0.12	0.39	0.29
		85.39	14.95	0.02	0.49	100.92	75.43	24.10	0.04	0.42	0.32
		84.22	14.84	0.00	0.45	99.66	75.36	24.25	0.00	0.39	0.32
		85.05	14.07	0.06	0.50	99.77	76.35	23.05	0.16	0.44	0.30
		87.52	11.82	0.07	0.45	99.93	79.73	19.66	0.21	0.41	0.25
		87.68	10.99	0.03	0.21	98.97	81.15	18.58	0.09	0.19	0.23
		88.58	10.77	0.01	0.41	99.81	81.52	18.09	0.01	0.37	0.22
		88.13	10.59	0.04	0.16	98.92	81.79	17.94	0.12	0.14	0.22
	7	96.93	3.52	0.04	0.19	100.73	93.50	6.20	0.12	0.18	0.07
		97.62	3.30	0.05	0.20	101.18	93.88	5.79	0.15	0.19	0.06
		97.68	3.22	0.16	0.18	101.24	93.71	5.64	0.48	0.17	0.06
		95.97	3.41	0.09	0.27	99.73	93.42	6.05	0.27	0.26	0.06
		97.14	3.31	0.17	0.14	100.78	93.56	5.81	0.50	0.13	0.06
		95.80	3.40	0.15	0.24	99.63	93.27	6.04	0.46	0.23	0.06
		97.50	3.18	0.05	0.22	100.95	94.06	5.59	0.14	0.20	0.06
		97.23	3.09	0.10	0.26	100.68	94.00	5.46	0.30	0.24	0.06
		96.62	3.38	0.07	0.24	100.34	93.59	5.97	0.21	0.23	0.06
		96.44	3.39	0.14	0.26	100.24	93.36	6.00	0.41	0.24	0.06
	8	93.56	4.72	0.05	1.18	99.54	90.42	8.32	0.15	1.12	0.09
		94.64	4.10	0.07	0.87	99.69	91.73	7.25	0.20	0.82	0.08
		95.41	3.95	0.02	0.50	99.95	92.47	6.99	0.06	0.48	0.08
		95.09	4.02	0.04	0.72	99.92	92.09	7.10	0.13	0.69	0.08
		95.50	4.30	0.05	0.77	100.64	91.60	7.54	0.15	0.72	0.08
		93.49	4.29	0.04	1.20	99.05	91.10	7.64	0.11	1.15	0.08
		92.76	4.19	0.03	1.23	98.26	91.20	7.53	0.08	1.19	0.08

Table 5-1. (Continued)

Locality	Grain No.	Weight %					Atomic %				
		Au	Ag	Cu	Hg	Total	Au	Ag	Cu	Hg	Ag/Au
Tabakeikoku (Ka-P ⑤)	9	92.42	7.77	0.00	0.61	100.80	86.21	13.23	0.00	0.56	0.15
		92.14	6.17	0.00	0.63	99.00	88.56	10.83	0.01	0.60	0.12
		93.02	7.61	0.00	0.52	101.24	86.59	12.93	0.00	0.48	0.15
		92.84	7.41	0.02	0.67	101.04	86.69	12.63	0.07	0.62	0.15
		92.79	7.68	0.00	0.55	101.05	86.43	13.06	0.01	0.50	0.15
		92.11	7.41	0.00	0.58	100.14	86.73	12.73	0.00	0.53	0.15
		91.39	7.22	0.00	0.64	99.26	86.87	12.53	0.00	0.60	0.14
	10	75.49	23.38	0.00	0.51	99.43	63.62	35.97	0.00	0.42	0.57
		75.97	23.10	0.00	0.29	99.51	64.15	35.60	0.00	0.24	0.56
		76.79	22.29	0.02	0.29	99.51	65.18	34.54	0.04	0.24	0.53
		76.59	22.49	0.00	0.32	99.51	64.93	34.80	0.00	0.27	0.54
		74.80	23.46	0.00	0.50	98.92	63.32	36.26	0.00	0.42	0.57
		72.40	23.66	0.07	1.87	98.16	61.54	36.72	0.18	1.56	0.60
		75.31	23.39	0.00	1.18	100.05	63.20	35.83	0.00	0.97	0.57
		75.13	23.19	0.01	1.53	99.92	63.13	35.57	0.03	1.26	0.56
		75.24	22.48	0.02	0.57	98.44	64.35	35.11	0.06	0.48	0.55
	11	98.60	1.49	0.04	0.71	100.88	96.53	2.66	0.13	0.68	0.03
		99.37	1.48	0.08	0.61	101.55	96.55	2.63	0.23	0.58	0.03
		99.60	1.51	0.06	0.75	101.92	96.45	2.67	0.17	0.71	0.03
		100.12	1.31	0.02	0.56	102.03	97.07	2.32	0.07	0.54	0.02
		97.12	1.32	0.06	0.74	99.25	96.68	2.40	0.19	0.73	0.02
		97.97	1.37	0.12	0.73	100.18	96.48	2.45	0.36	0.70	0.03
		99.10	1.45	0.02	1.00	101.61	96.41	2.58	0.06	0.95	0.03
	12	97.58	2.39	0.01	0.25	100.23	95.45	4.27	0.04	0.24	0.04
		97.41	2.32	0.02	0.16	99.92	95.62	4.16	0.06	0.15	0.04
		97.16	2.59	0.04	0.25	100.12	95.01	4.62	0.13	0.24	0.05
		97.61	2.30	0.06	0.13	100.13	95.60	4.11	0.17	0.12	0.04
		97.58	2.32	0.04	0.14	100.11	95.57	4.16	0.13	0.14	0.04
	13	88.71	9.60	0.01	1.51	99.87	82.32	16.27	0.03	1.38	0.20
		89.05	10.12	0.00	0.63	99.83	82.35	17.08	0.00	0.57	0.21
		88.39	10.57	0.00	0.89	99.96	81.41	17.78	0.00	0.81	0.22
		88.63	10.82	0.01	0.69	100.18	81.23	18.10	0.04	0.62	0.22
		88.35	9.96	0.00	1.36	99.78	81.91	16.85	0.00	1.24	0.21
	14	87.31	12.28	0.03	0.11	99.77	79.43	20.39	0.08	0.10	0.26
		84.89	14.91	0.00	0.07	99.96	75.68	24.26	0.00	0.06	0.32
		90.96	9.62	0.00	0.00	100.63	83.82	16.18	0.00	0.00	0.19
		91.41	8.85	0.05	0.00	100.40	84.85	15.00	0.15	0.00	0.18
		88.26	12.44	0.03	0.03	100.85	79.46	20.44	0.07	0.03	0.26
		87.68	11.84	0.00	0.07	99.70	80.17	19.76	0.00	0.06	0.25
		89.85	8.61	0.06	0.02	98.65	84.94	14.86	0.17	0.02	0.17
		90.84	9.15	0.01	0.07	100.19	84.40	15.51	0.02	0.07	0.18
		87.58	12.10	0.00	0.02	99.82	79.85	20.13	0.00	0.02	0.25
		88.18	11.27	0.05	0.00	99.56	80.97	18.90	0.13	0.00	0.23
Tabayama (Ka-P ⑥)	1	90.15	9.52	0.00	0.95	100.62	83.11	16.02	0.00	0.86	0.19
		91.54	9.44	0.00	0.00	100.98	84.13	15.84	0.00	0.00	0.19
		91.16	9.57	0.00	0.00	100.73	83.82	16.08	0.00	0.00	0.19
		90.57	9.16	0.00	0.62	100.34	83.94	15.50	0.00	0.57	0.18
		91.44	9.42	0.06	0.00	100.92	84.02	15.81	0.17	0.00	0.19
	2	88.24	12.67	0.00	0.00	100.91	79.22	20.78	0.00	0.00	0.26
		87.55	11.76	0.00	0.00	99.30	80.30	19.70	0.00	0.00	0.25
	3	82.10	18.28	0.00	0.75	101.13	70.60	28.71	0.00	0.64	0.41
		81.77	18.18	0.00	0.00	99.95	71.09	28.87	0.00	0.00	0.41
		81.07	18.68	0.05	0.00	99.80	70.28	29.58	0.15	0.00	0.42
	4	88.52	10.82	0.00	0.96	100.29	81.05	18.09	0.00	0.86	0.22
		87.21	10.52	0.06	1.30	99.09	80.84	17.80	0.18	1.18	0.22
		89.08	10.39	0.00	0.00	99.47	82.44	17.56	0.00	0.00	0.21
		89.56	10.20	0.00	1.69	101.45	81.53	16.96	0.00	1.51	0.21
		89.37	9.72	0.00	0.52	99.60	83.02	16.49	0.00	0.47	0.20

Table 5-1. (Continued)

Locality	Grain No.	Weight %					Atomic %				
		Au	Ag	Cu	Hg	Total	Au	Ag	Cu	Hg	Ag/Au
Tabayama (Ka-P ⑥)	5	92.67	5.17	0.04	0.00	97.94	90.65	9.24	0.11	0.00	0.10
		94.40	4.86	0.03	0.00	99.33	91.32	8.59	0.09	0.00	0.09
		94.08	4.61	0.05	0.00	98.73	91.66	8.20	0.14	0.00	0.09
		93.61	4.48	0.13	0.00	98.30	91.62	8.00	0.38	0.00	0.09
		95.71	3.66	0.04	0.00	99.44	93.37	6.52	0.11	0.00	0.07
		93.35	4.18	0.00	0.00	97.55	92.45	7.55	0.00	0.00	0.08
		93.75	4.22	0.03	0.00	98.00	92.32	7.58	0.10	0.00	0.08
		92.79	4.98	0.03	0.00	97.86	90.99	8.92	0.09	0.00	0.10
	6	97.73	2.82	0.03	0.29	100.87	94.66	4.98	0.08	0.27	0.05
		95.30	2.85	0.09	0.25	98.53	94.32	5.15	0.29	0.24	0.05
		98.02	2.80	0.10	0.24	101.20	94.55	4.93	0.29	0.23	0.05
		99.30	2.39	0.10	0.22	102.04	95.32	4.19	0.29	0.20	0.04
		98.71	2.63	0.04	0.37	101.74	94.92	4.61	0.12	0.35	0.05
		98.53	2.83	0.08	0.44	101.89	94.40	4.94	0.24	0.41	0.05
		98.37	2.79	0.04	0.22	101.43	94.76	4.91	0.13	0.21	0.05
		98.14	2.83	0.11	0.20	101.28	94.52	4.98	0.31	0.19	0.05
	7	65.51	34.02	0.00	0.75	100.44	51.04	48.39	0.00	0.57	0.95
		65.95	33.59	0.00	0.62	100.40	51.57	47.96	0.00	0.48	0.93
		64.46	34.59	0.00	0.86	100.02	50.18	49.16	0.00	0.66	0.98
		65.77	33.93	0.04	0.48	100.39	51.25	48.27	0.11	0.37	0.94
		65.96	32.97	0.00	0.46	99.59	52.10	47.54	0.00	0.36	0.91
		66.38	33.41	0.00	0.64	100.62	51.86	47.65	0.00	0.49	0.92
		64.19	33.90	0.03	1.32	99.58	50.35	48.55	0.08	1.02	0.96
		58.96	40.18	0.06	0.88	100.34	44.21	55.01	0.13	0.65	1.24
		59.63	39.83	0.05	0.85	100.56	44.73	54.54	0.11	0.63	1.22
		59.16	38.98	0.03	1.64	100.02	44.81	53.90	0.07	1.22	1.20
Kosuge (Ka-P ⑦)	1	68.31	30.69	0.00	0.44	99.71	54.74	44.91	0.00	0.35	0.82
		68.85	30.14	0.00	0.62	99.68	55.31	44.21	0.00	0.49	0.80
		69.85	29.33	0.00	0.52	99.79	56.37	43.22	0.00	0.42	0.77
		67.44	31.26	0.00	0.48	99.39	53.96	45.67	0.00	0.38	0.85
		69.58	29.74	0.01	0.59	99.95	55.89	43.62	0.02	0.47	0.78
		67.98	31.21	0.00	0.49	99.85	54.20	45.42	0.00	0.38	0.84
		68.90	30.23	0.00	0.56	99.92	55.28	44.28	0.00	0.44	0.80
		70.24	29.07	0.04	0.55	100.00	56.66	42.81	0.09	0.43	0.76
		68.65	30.15	0.03	0.70	99.72	55.15	44.23	0.07	0.55	0.80
		68.54	30.41	0.00	0.70	99.83	54.94	44.50	0.00	0.55	0.81
	2	90.04	8.65	0.01	2.03	100.74	83.47	14.64	0.04	1.85	0.18
		90.69	8.30	0.02	1.56	100.61	84.41	14.10	0.05	1.43	0.17
		90.03	8.42	0.00	2.13	100.67	83.75	14.31	0.00	1.95	0.17
		90.45	8.73	0.09	1.41	100.76	83.71	14.75	0.26	1.28	0.18
		90.37	8.68	0.03	1.56	100.67	83.80	14.69	0.09	1.42	0.18
		91.00	7.41	0.00	1.91	100.38	85.52	12.72	0.00	1.77	0.15
		90.06	8.76	0.00	2.08	100.98	83.31	14.80	0.00	1.89	0.18
		90.52	8.72	0.00	1.83	101.15	83.63	14.71	0.00	1.66	0.18
		90.22	8.89	0.00	1.90	101.07	83.29	14.99	0.00	1.72	0.18
		90.53	8.79	0.04	1.64	101.09	83.59	14.82	0.10	1.49	0.18
	3	86.33	13.58	0.00	0.52	100.51	77.34	22.20	0.00	0.46	0.29
		86.36	13.78	0.04	0.34	100.61	77.12	22.47	0.12	0.30	0.29
		86.21	13.78	0.00	0.64	100.72	76.97	22.47	0.00	0.56	0.29
		85.74	14.01	0.02	0.04	99.93	76.96	22.96	0.05	0.04	0.30
		86.48	13.59	0.07	0.23	100.44	77.41	22.20	0.19	0.20	0.29
		86.32	13.86	0.00	0.42	100.67	77.05	22.59	0.00	0.36	0.29
		86.32	13.87	0.02	0.10	100.39	77.20	22.65	0.07	0.08	0.29
		86.67	13.64	0.01	0.18	100.51	77.53	22.28	0.03	0.15	0.29
		85.75	13.76	0.02	0.13	99.68	77.21	22.62	0.05	0.11	0.29
		85.24	13.64	0.03	0.48	99.42	77.00	22.50	0.08	0.43	0.29

Table 5-1. (Continued)

Locality	Grain No.	Weight %					Atomic %				
		Au	Ag	Cu	Hg	Total	Au	Ag	Cu	Hg	Ag/Au
Kosuge (Ka-P ⑦)	4	83.33	15.59	0.00	1.56	100.50	73.53	25.12	0.00	1.35	0.34
		83.02	15.33	0.01	1.75	100.24	73.62	24.82	0.02	1.53	0.34
		82.62	15.83	0.00	1.80	100.39	72.92	25.52	0.00	1.56	0.35
		83.54	15.39	0.05	1.07	100.15	74.03	24.89	0.14	0.93	0.34
		84.06	15.34	0.04	0.88	100.42	74.35	24.78	0.10	0.76	0.33
		83.00	14.80	0.00	1.46	99.41	74.46	24.25	0.00	1.29	0.33
		83.17	15.33	0.00	1.78	100.43	73.66	24.79	0.00	1.55	0.34
		83.09	15.47	0.00	1.90	100.51	73.40	24.95	0.00	1.65	0.34
		82.52	15.67	0.03	1.10	99.50	73.48	25.47	0.09	0.96	0.35
		84.60	14.96	0.04	0.71	100.41	75.05	24.23	0.10	0.62	0.32
	5	91.05	8.86	0.04	0.84	100.90	84.19	14.95	0.10	0.77	0.18
		90.11	8.82	0.04	0.76	99.82	84.16	15.04	0.10	0.70	0.18
		91.16	8.68	0.04	0.62	100.52	84.61	14.71	0.13	0.56	0.17
		89.01	8.79	0.00	0.79	98.66	84.11	15.16	0.00	0.73	0.18
		90.96	8.48	0.00	1.47	101.04	84.32	14.34	0.00	1.33	0.17
		90.44	8.51	0.00	0.91	99.87	84.63	14.53	0.00	0.84	0.17
		91.19	8.74	0.06	0.80	100.81	84.35	14.76	0.17	0.73	0.17
		91.64	8.36	0.00	0.85	100.91	85.05	14.17	0.00	0.78	0.17
		90.70	8.53	0.04	0.96	100.24	84.51	14.51	0.10	0.88	0.17
		92.09	8.29	0.02	0.65	101.11	85.33	14.03	0.05	0.59	0.16
		91.71	8.42	0.00	0.70	100.87	85.09	14.27	0.00	0.64	0.17
	6	89.25	7.88	0.00	3.16	100.40	83.62	13.47	0.00	2.91	0.16
		89.07	8.16	0.00	3.39	100.65	83.01	13.89	0.00	3.11	0.17
		87.41	7.93	0.02	3.56	99.07	82.89	13.72	0.07	3.32	0.17
		90.44	7.53	0.01	2.44	100.57	84.83	12.90	0.03	2.24	0.15
		89.52	7.55	0.00	3.20	100.38	84.11	12.95	0.00	2.95	0.15
		85.45	10.95	0.01	3.90	100.35	78.18	18.30	0.02	3.50	0.23
		88.69	9.01	0.03	2.68	100.42	82.22	15.25	0.09	2.44	0.19
		87.15	9.63	0.00	2.92	99.77	81.00	16.34	0.00	2.66	0.20
		88.62	7.49	0.05	3.21	99.44	83.91	12.95	0.16	2.99	0.15
		88.61	9.23	0.03	2.82	100.77	81.81	15.56	0.09	2.55	0.19
	7	82.53	16.68	0.00	0.83	100.12	72.52	26.76	0.00	0.71	0.37
		81.94	17.65	0.01	0.49	100.20	71.45	28.10	0.03	0.42	0.39
		82.70	16.62	0.00	0.69	100.11	72.72	26.68	0.00	0.59	0.37
		82.34	17.34	0.01	0.31	100.18	72.03	27.69	0.02	0.27	0.38
		82.51	16.76	0.01	0.52	99.91	72.59	26.93	0.04	0.45	0.37
		81.43	17.97	0.01	0.34	99.86	71.05	28.62	0.03	0.29	0.40
		82.58	16.48	0.00	0.65	99.78	72.89	26.55	0.00	0.56	0.36
		80.46	19.24	0.00	0.38	100.19	69.38	30.30	0.00	0.32	0.44
		82.51	17.07	0.04	0.34	100.06	72.31	27.31	0.10	0.29	0.38
		82.49	16.88	0.02	0.62	100.03	72.38	27.04	0.04	0.53	0.37
Hatonosu (Ka-P ⑧)	1	73.18	24.41	0.03	1.31	99.08	61.43	37.41	0.08	1.08	0.61
		76.17	21.99	0.03	0.97	99.32	64.89	34.21	0.09	0.81	0.53
		74.86	23.15	0.00	1.22	99.39	63.27	35.72	0.00	1.01	0.56
		76.75	22.25	0.00	0.97	100.05	64.86	34.33	0.01	0.80	0.53
		75.52	23.09	0.00	1.16	99.95	63.56	35.48	0.00	0.96	0.56
		75.50	22.45	0.00	1.08	99.18	64.22	34.87	0.00	0.90	0.54
		75.06	23.03	0.00	1.02	99.21	63.55	35.60	0.00	0.85	0.56
		74.62	23.54	0.04	1.27	99.69	62.71	36.12	0.11	1.05	0.58
		75.09	23.50	0.00	1.22	99.83	62.99	35.99	0.01	1.00	0.57
		73.48	24.21	0.00	1.34	99.23	61.75	37.15	0.00	1.10	0.60
	2	96.43	3.48	0.04	0.00	99.98	93.70	6.18	0.13	0.00	0.07
		96.66	3.61	0.05	0.00	100.33	93.48	6.37	0.15	0.00	0.07
		96.68	3.40	0.00	0.04	100.19	93.93	6.03	0.00	0.04	0.06
		96.82	3.47	0.00	0.00	100.34	93.86	6.14	0.00	0.00	0.07
		96.21	3.48	0.03	0.03	99.75	93.71	6.18	0.08	0.03	0.07
		96.53	3.66	0.02	0.10	100.33	93.40	6.46	0.05	0.09	0.07
		96.93	3.47	0.02	0.01	100.47	93.79	6.13	0.07	0.01	0.07
	rim	100.20	0.37	0.03	0.00	100.61	99.23	0.68	0.10	0.00	0.01
	rim	99.23	0.50	0.00	0.00	99.74	99.09	0.91	0.00	0.00	0.01
	rim	100.08	0.29	0.00	0.00	100.40	99.48	0.52	0.00	0.00	0.01

Table 5-1. (Continued)

Locality	Grain No.	Weight %					Atomic %				
		Au	Ag	Cu	Hg	Total	Au	Ag	Cu	Hg	Ag/Au
Mitake	1	86.75	10.75	0.03	0.77	98.39	80.91	18.30	0.08	0.71	0.23
(Ka-P ⑨)		86.17	10.92	0.00	0.94	98.09	80.52	18.62	0.00	0.86	0.23
		87.62	10.47	0.08	0.78	99.00	81.31	17.74	0.24	0.71	0.22
		87.09	11.24	0.00	0.81	99.18	80.33	18.93	0.00	0.74	0.24
		87.58	11.19	0.00	0.78	99.64	80.51	18.78	0.01	0.70	0.23
		86.37	10.57	0.00	0.95	98.02	81.01	18.11	0.00	0.88	0.22
		87.23	10.81	0.03	0.65	98.84	81.01	18.33	0.07	0.59	0.23
		86.69	10.88	0.00	0.77	98.41	80.78	18.52	0.00	0.70	0.23
		86.75	10.83	0.04	0.93	98.61	80.66	18.38	0.12	0.84	0.23
	2	86.62	13.36	0.00	0.00	100.05	78.03	21.97	0.00	0.00	0.28
		87.64	12.51	0.00	0.00	100.20	79.33	20.67	0.00	0.00	0.26
		86.41	13.24	0.02	0.00	99.76	78.10	21.85	0.05	0.00	0.28
		87.13	13.08	0.01	0.00	100.30	78.46	21.50	0.04	0.00	0.27
		86.93	12.96	0.00	0.00	100.02	78.60	21.40	0.00	0.00	0.27
		86.77	13.04	0.06	0.00	99.91	78.33	21.50	0.18	0.00	0.27
		86.89	13.36	0.00	0.00	100.25	78.09	21.91	0.00	0.00	0.28
		87.23	12.44	0.00	0.00	99.79	79.35	20.65	0.00	0.00	0.26
		87.78	12.40	0.01	0.00	100.29	79.49	20.50	0.02	0.00	0.26
		86.54	13.12	0.00	0.00	99.67	78.32	21.68	0.00	0.00	0.28
	rim	99.56	0.96	0.02	0.00	100.56	98.22	1.73	0.05	0.00	0.02
	rim	98.95	0.50	0.00	1.70	101.18	97.46	0.90	0.00	1.65	0.01
	rim	98.89	0.83	0.00	0.00	99.73	98.49	1.51	0.00	0.00	0.02
	rim	94.10	0.44	0.04	6.50	101.09	92.80	0.79	0.12	6.29	0.01
	3	83.34	15.50	0.02	0.62	99.53	74.21	25.20	0.05	0.54	0.34
		83.88	15.38	0.00	0.54	99.87	74.56	24.97	0.00	0.47	0.33
		84.80	14.35	0.01	0.44	99.67	76.09	23.50	0.02	0.39	0.31
		84.80	14.38	0.00	0.36	99.69	76.11	23.57	0.00	0.32	0.31
		84.44	14.94	0.06	0.39	99.98	75.21	24.29	0.15	0.34	0.32
		84.95	14.61	0.06	0.21	99.94	75.85	23.82	0.15	0.18	0.31
		84.71	14.95	0.08	0.44	100.28	75.18	24.22	0.21	0.39	0.32
		83.90	15.38	0.01	0.67	100.08	74.47	24.92	0.03	0.59	0.33
		82.19	16.90	0.00	1.06	100.20	72.04	27.04	0.00	0.92	0.38
		83.51	15.67	0.06	0.92	100.28	73.76	25.26	0.18	0.80	0.34
	4	89.39	10.21	0.01	0.45	100.08	82.40	17.18	0.02	0.40	0.21
		89.40	10.09	0.04	0.42	100.04	82.52	17.00	0.10	0.38	0.21
		89.68	10.10	0.00	0.52	100.32	82.55	16.98	0.00	0.47	0.21
		89.43	10.14	0.03	0.43	100.15	82.46	17.07	0.08	0.39	0.21
		89.54	9.97	0.00	0.58	100.17	82.66	16.81	0.00	0.53	0.20
		89.99	9.75	0.02	0.52	100.29	83.05	16.42	0.06	0.47	0.20
		89.69	9.81	0.00	0.59	100.09	82.92	16.55	0.00	0.53	0.20
		89.31	10.08	0.00	0.56	100.00	82.50	17.00	0.00	0.51	0.21
		88.95	10.05	0.02	0.62	99.65	82.39	16.99	0.05	0.56	0.21
		89.39	10.02	0.02	0.62	100.08	82.51	16.88	0.05	0.56	0.20
	rim	100.36	1.09	0.04	0.00	101.50	97.93	1.94	0.13	0.00	0.02
Akikawa	1	81.51	16.66	0.01	1.66	99.93	71.77	26.78	0.02	1.43	0.37
(Ka-P ⑩)		81.40	16.69	0.02	1.56	99.72	71.74	26.85	0.06	1.35	0.37
		81.54	16.60	0.04	1.73	99.94	71.74	26.67	0.10	1.49	0.37
		81.00	17.06	0.00	1.68	99.84	71.18	27.37	0.00	1.45	0.38
		81.07	16.81	0.02	1.60	99.71	71.49	27.07	0.06	1.39	0.38
		81.11	16.96	0.00	1.71	99.87	71.29	27.22	0.01	1.48	0.38
		75.44	18.14	0.00	6.22	99.92	65.78	28.88	0.01	5.33	0.44
		77.73	17.95	0.03	4.35	100.17	67.67	28.53	0.08	3.72	0.42
		78.71	18.24	0.00	3.10	100.11	68.42	28.94	0.00	2.64	0.42
		82.26	17.78	0.00	0.00	100.17	71.70	28.30	0.00	0.00	0.39
	rim	98.78	1.69	0.01	0.06	100.57	96.91	3.02	0.02	0.06	0.03
	rim	100.45	0.53	0.00	0.00	100.97	99.05	0.95	0.00	0.00	0.01
	rim	99.97	0.31	0.03	0.00	100.31	99.35	0.56	0.09	0.00	0.01

Table 5-1. (Continued)

Locality	Grain No.	Weight %					Atomic %				
		Au	Ag	Cu	Hg	Total	Au	Ag	Cu	Hg	Ag/Au
Akikawa (Ka-P ⑩)	2	91.03	8.43	0.00	1.07	100.63	84.70	14.32	0.01	0.97	0.17
		90.95	8.07	0.02	1.14	100.27	85.10	13.79	0.06	1.05	0.16
		90.39	8.69	0.05	1.03	100.16	84.14	14.77	0.14	0.95	0.18
		90.60	8.26	0.00	1.16	100.05	84.82	14.11	0.00	1.07	0.17
		87.48	11.17	0.03	0.68	99.47	80.53	18.78	0.08	0.62	0.23
		88.12	11.17	0.01	0.87	100.26	80.54	18.65	0.04	0.78	0.23
		87.83	10.60	0.07	0.80	99.33	81.20	17.89	0.19	0.73	0.22
		87.64	11.05	0.07	0.97	99.83	80.43	18.51	0.18	0.87	0.23
		88.68	10.83	0.06	0.74	100.39	81.10	18.08	0.16	0.66	0.22
		89.18	10.75	0.06	0.72	100.74	81.31	17.89	0.16	0.65	0.22
	3	81.63	17.38	0.00	0.87	99.96	71.47	27.78	0.00	0.74	0.39
		81.30	17.56	0.00	0.73	99.64	71.27	28.10	0.00	0.63	0.39
		81.42	17.92	0.01	0.61	100.07	70.95	28.51	0.02	0.52	0.40
		82.03	17.31	0.05	0.60	100.05	71.71	27.63	0.15	0.51	0.39
		81.89	17.49	0.04	0.75	100.27	71.41	27.84	0.12	0.64	0.39
		81.24	17.55	0.06	0.92	99.85	71.03	28.02	0.16	0.79	0.39
		81.73	16.88	0.00	0.75	99.48	72.15	27.21	0.00	0.65	0.38
	rim	99.48	1.65	0.00	0.05	101.21	97.03	2.93	0.00	0.04	0.03
	rim	99.83	1.39	0.00	0.08	101.32	97.44	2.48	0.00	0.07	0.03
	rim	101.33	0.74	0.00	0.08	102.16	98.61	1.31	0.00	0.08	0.01
	rim	97.48	2.61	0.00	0.49	100.63	94.88	4.65	0.00	0.47	0.05
	4	75.99	20.25	0.04	3.23	99.63	65.36	31.80	0.11	2.73	0.49
		77.14	20.44	0.02	2.68	100.42	65.86	31.85	0.05	2.24	0.48
		75.18	20.79	0.00	2.77	98.94	64.89	32.76	0.00	2.35	0.50
		76.75	20.43	0.00	2.47	99.67	65.90	32.02	0.00	2.08	0.49
		76.56	20.38	0.02	2.72	99.83	65.71	31.94	0.06	2.29	0.49
		76.26	19.70	0.00	2.83	98.95	66.31	31.27	0.00	2.42	0.47
		76.22	20.55	0.02	2.83	99.74	65.37	32.19	0.05	2.39	0.49
		77.15	20.60	0.00	2.65	100.63	65.73	32.05	0.00	2.22	0.49
		76.32	20.63	0.02	3.34	100.36	65.05	32.10	0.04	2.80	0.49
	5	75.83	23.53	0.04	0.65	100.10	63.44	35.94	0.09	0.53	0.57
		74.91	23.28	0.02	0.93	99.23	63.28	35.91	0.04	0.77	0.57
		75.92	23.23	0.00	0.85	100.20	63.70	35.59	0.00	0.70	0.56
		76.18	23.44	0.00	0.75	100.48	63.64	35.74	0.00	0.61	0.56
		75.75	23.33	0.03	0.63	99.89	63.63	35.78	0.07	0.52	0.56
		74.66	23.81	0.00	0.67	99.27	62.85	36.59	0.00	0.56	0.58
		74.81	23.23	0.00	0.78	99.01	63.40	35.95	0.00	0.65	0.57
		74.48	23.65	0.01	0.71	99.05	62.90	36.47	0.04	0.59	0.58
		75.38	22.84	0.03	0.61	99.01	64.00	35.41	0.08	0.51	0.55
		75.46	23.14	0.03	0.62	99.40	63.73	35.68	0.08	0.52	0.56
	6	78.12	19.72	0.00	2.64	100.59	66.93	30.85	0.00	2.22	0.46
		77.11	19.94	0.03	2.96	100.16	66.19	31.26	0.07	2.49	0.47
		76.60	20.21	0.00	2.79	99.67	65.90	31.75	0.00	2.35	0.48
		77.29	20.15	0.01	2.86	100.39	66.11	31.46	0.02	2.40	0.48
		77.14	20.19	0.03	2.46	99.91	66.21	31.63	0.08	2.08	0.48
		77.35	19.98	0.01	3.00	100.47	66.22	31.24	0.02	2.52	0.47
		76.95	20.24	0.03	2.99	100.32	65.81	31.60	0.07	2.51	0.48
		77.53	19.94	0.03	2.84	100.41	66.37	31.16	0.07	2.39	0.47
		77.08	19.40	0.00	2.75	99.32	66.91	30.74	0.00	2.35	0.46
		77.56	19.89	0.00	2.85	100.39	66.48	31.12	0.00	2.40	0.47
	7	96.87	4.24	0.02	0.83	101.98	91.83	7.34	0.06	0.77	0.08
		97.44	2.96	0.00	0.62	101.01	94.19	5.22	0.00	0.59	0.06
		94.73	5.12	0.00	0.61	100.51	90.50	8.93	0.00	0.58	0.10
		93.82	5.85	0.00	0.36	100.08	89.48	10.18	0.00	0.34	0.11
		94.61	5.42	0.03	0.36	100.42	90.15	9.43	0.08	0.33	0.10
		95.18	5.62	0.00	0.46	101.30	89.89	9.68	0.00	0.43	0.11
		93.31	5.93	0.01	0.49	99.80	89.16	10.34	0.04	0.46	0.12
		94.20	5.90	0.05	0.40	100.57	89.27	10.21	0.15	0.37	0.11
		96.08	5.64	0.00	0.40	102.17	89.99	9.64	0.00	0.37	0.11
		95.39	5.74	0.01	0.43	101.61	89.73	9.86	0.01	0.39	0.11

Table 5-1. (Continued)

Locality	Grain No.	Weight %					Atomic %				
		Au	Ag	Cu	Hg	Total	Au	Ag	Cu	Hg	Ag/Au
Akikawa (Ka-P ⑩)	8	84.19	14.49	0.02	0.72	99.61	75.56	23.75	0.06	0.63	0.31
		85.16	14.23	0.03	0.56	100.13	76.19	23.24	0.07	0.49	0.31
		85.20	14.25	0.00	0.53	100.00	76.24	23.29	0.01	0.47	0.31
		84.77	14.24	0.02	0.70	99.81	76.02	23.32	0.05	0.62	0.31
		83.68	14.34	0.05	0.62	98.75	75.64	23.66	0.15	0.55	0.31
		86.12	14.11	0.06	0.47	100.78	76.55	22.89	0.15	0.41	0.30
		84.17	14.09	0.00	0.63	99.01	76.16	23.27	0.01	0.56	0.31
		90.31	8.56	0.04	0.02	98.98	85.13	14.74	0.12	0.02	0.17
		92.24	8.32	0.04	0.07	100.77	85.70	14.12	0.12	0.06	0.16
		93.25	8.05	0.00	0.00	101.34	86.38	13.62	0.00	0.00	0.16
	rim	98.78	1.06	0.03	0.00	99.88	97.98	1.92	0.10	0.00	0.02
	rim	98.58	1.20	0.04	0.00	99.83	97.71	2.18	0.11	0.00	0.02
	rim	98.92	1.57	0.00	0.05	100.54	97.14	2.82	0.00	0.05	0.03
	9	76.45	17.67	0.07	6.21	100.48	66.47	28.05	0.18	5.30	0.42
		76.38	17.52	0.05	6.45	100.51	66.51	27.85	0.13	5.52	0.42
		76.42	17.59	0.00	6.52	100.57	66.49	27.94	0.00	5.57	0.42
		76.71	17.49	0.00	5.62	99.92	67.19	27.97	0.00	4.84	0.42
		75.77	17.61	0.00	6.37	99.76	66.36	28.15	0.00	5.48	0.42
		83.49	15.07	0.01	1.78	100.38	74.05	24.39	0.01	1.55	0.33
		83.23	14.58	0.02	1.78	99.65	74.53	23.84	0.07	1.56	0.32
		84.04	14.52	0.07	1.59	100.30	74.82	23.59	0.20	1.39	0.32
		83.25	15.06	0.00	1.94	100.32	73.90	24.41	0.00	1.69	0.33
		83.23	15.01	0.00	1.54	99.78	74.22	24.43	0.00	1.35	0.33
	10	94.84	4.69	0.01	1.01	100.60	90.81	8.20	0.04	0.95	0.09
		94.41	5.13	0.10	0.93	100.62	89.92	8.92	0.29	0.87	0.10
		93.53	5.43	0.00	0.73	99.75	89.78	9.52	0.00	0.69	0.11
		94.48	5.24	0.00	0.88	100.60	90.06	9.12	0.00	0.82	0.10
		93.76	5.46	0.00	0.78	100.05	89.72	9.54	0.00	0.73	0.11
		93.53	5.71	0.00	0.66	99.98	89.42	9.96	0.00	0.62	0.11
	rim	83.01	0.56	0.02	16.98	100.61	82.39	1.01	0.06	16.55	0.01
	rim	78.50	0.36	0.04	17.95	96.87	80.99	0.69	0.13	18.19	0.01
	rim	99.95	1.33	0.00	0.00	101.29	97.64	2.36	0.00	0.00	0.02
	rim	100.82	0.41	0.01	0.27	101.53	98.97	0.73	0.04	0.26	0.01
	11	77.13	17.78	0.00	5.42	100.49	67.12	28.25	0.00	4.63	0.42
		77.29	18.28	0.00	4.78	100.50	66.99	28.94	0.00	4.07	0.43
		77.20	18.02	0.00	4.70	100.06	67.30	28.68	0.00	4.02	0.43
		77.34	18.33	0.00	4.76	100.57	66.97	28.98	0.00	4.05	0.43
		76.55	17.85	0.06	4.84	99.43	67.11	28.57	0.15	4.16	0.43
		77.43	17.31	0.02	4.81	99.65	68.02	27.76	0.06	4.15	0.41
	12	81.26	16.40	0.00	2.31	100.11	71.62	26.38	0.00	2.00	0.37
		81.57	16.06	0.03	2.07	99.86	72.17	25.95	0.08	1.80	0.36
		81.74	16.19	0.03	2.30	100.31	71.93	26.01	0.07	1.99	0.36
		81.93	15.86	0.00	2.20	100.06	72.47	25.62	0.00	1.91	0.35
		81.70	16.18	0.03	2.03	100.03	72.10	26.07	0.07	1.76	0.36
		82.13	15.56	0.00	2.25	100.07	72.84	25.20	0.00	1.96	0.35
		82.58	15.63	0.06	2.12	100.51	72.83	25.17	0.17	1.84	0.35
		81.68	16.08	0.00	2.24	100.11	72.12	25.93	0.00	1.95	0.36
	13	68.80	22.66	0.00	8.53	100.13	58.04	34.90	0.00	7.07	0.60
		72.85	20.73	0.02	6.05	99.77	62.42	32.42	0.06	5.09	0.52
		72.51	20.42	0.04	7.00	100.17	62.09	31.93	0.11	5.88	0.51
		72.15	21.14	0.01	6.73	100.20	61.47	32.88	0.01	5.63	0.53
		73.79	20.50	0.02	5.89	100.28	63.04	31.97	0.04	4.94	0.51
		72.46	21.05	0.00	6.64	100.24	61.71	32.73	0.00	5.55	0.53
		70.01	23.28	0.04	6.50	100.00	58.82	35.71	0.10	5.36	0.61
		70.55	21.60	0.00	7.43	99.69	60.15	33.62	0.01	6.22	0.56
		69.11	22.90	0.00	7.54	99.71	58.40	35.34	0.00	6.26	0.61
		68.22	22.48	0.00	8.97	99.77	57.78	34.76	0.00	7.46	0.60

Table 5-1. (Continued)

Locality	Grain No.	Weight %					Atomic %				
		Au	Ag	Cu	Hg	Total	Au	Ag	Cu	Hg	Ag/Au
Akikawa	14	75.27	19.20	0.00	2.26	96.73	66.88	31.15	0.00	1.97	0.47
(Ka-P ⑩)		76.29	18.95	0.00	2.40	97.63	67.37	30.55	0.00	2.08	0.45
		74.59	19.47	0.00	2.71	96.76	66.13	31.51	0.00	2.36	0.48
		74.55	19.70	0.02	2.31	96.58	66.07	31.87	0.05	2.01	0.48
		74.58	19.55	0.01	2.62	96.76	66.07	31.61	0.03	2.28	0.48
		74.64	19.56	0.00	2.43	96.63	66.20	31.68	0.00	2.12	0.48
		74.54	19.83	0.01	3.02	97.41	65.53	31.83	0.03	2.61	0.49
		73.89	19.90	0.00	2.78	96.57	65.42	32.17	0.00	2.42	0.49
		74.49	19.84	0.00	2.86	97.20	65.62	31.91	0.00	2.48	0.49
	15	76.10	19.49	0.06	2.65	98.30	66.48	31.09	0.15	2.27	0.47
		77.47	19.25	0.00	2.69	99.40	67.21	30.50	0.00	2.29	0.45
		75.88	19.74	0.00	2.87	98.49	66.13	31.42	0.00	2.45	0.48
		77.50	19.85	0.00	2.62	99.98	66.60	31.15	0.00	2.21	0.47
		76.16	20.03	0.00	2.24	98.44	66.26	31.83	0.00	1.91	0.48
		78.09	19.87	0.00	2.48	100.44	66.85	31.06	0.00	2.09	0.46
		77.18	19.39	0.00	2.44	99.02	67.10	30.79	0.00	2.08	0.46
		76.16	19.71	0.09	2.78	98.74	66.14	31.26	0.23	2.37	0.47
Akishima	1	90.87	9.03	0.02	0.00	99.97	84.58	15.35	0.07	0.00	0.18
(Ka-P ⑪)		91.59	8.85	0.00	0.00	100.50	85.00	15.00	0.00	0.00	0.18
		91.80	8.84	0.00	0.00	100.74	85.04	14.96	0.00	0.00	0.18
		90.85	8.73	0.05	0.08	99.75	84.90	14.89	0.13	0.08	0.18
		91.13	8.81	0.00	0.00	99.96	85.00	15.00	0.00	0.00	0.18
		91.35	8.72	0.00	0.00	100.09	85.16	14.84	0.00	0.00	0.17
		90.77	8.73	0.03	0.00	99.55	84.98	14.93	0.09	0.00	0.18
		90.21	8.89	0.03	0.02	99.15	84.67	15.23	0.08	0.02	0.18
		90.90	8.85	0.00	0.05	99.85	84.87	15.09	0.00	0.04	0.18
		91.08	8.63	0.02	0.11	99.85	85.13	14.72	0.06	0.10	0.17
	rim	100.22	0.32	0.00	0.00	100.55	99.41	0.59	0.00	0.00	0.01
	rim	98.47	0.27	0.00	0.00	98.74	99.49	0.50	0.01	0.00	0.00
	rim	99.86	0.71	0.01	0.00	100.59	98.69	1.27	0.04	0.00	0.01
	rim	99.70	0.53	0.00	0.00	100.25	99.04	0.96	0.00	0.00	0.01
	2	85.61	13.92	0.03	0.03	99.72	77.02	22.86	0.09	0.02	0.30
		85.18	14.53	0.03	0.00	99.82	76.19	23.73	0.08	0.00	0.31
		84.69	14.71	0.03	0.05	99.58	75.82	24.04	0.09	0.05	0.32
		84.53	15.10	0.02	0.00	99.71	75.37	24.58	0.05	0.00	0.33
		85.18	14.50	0.00	0.02	99.81	76.28	23.70	0.00	0.02	0.31
		85.41	14.85	0.03	0.01	100.37	75.84	24.08	0.07	0.01	0.32
		85.22	14.80	0.04	0.02	100.13	75.84	24.05	0.10	0.01	0.32
		85.16	15.00	0.01	0.01	100.24	75.65	24.32	0.03	0.01	0.32
		84.78	14.82	0.08	0.00	99.71	75.65	24.15	0.21	0.00	0.32
		84.51	15.03	0.08	0.11	99.78	75.25	24.43	0.23	0.10	0.32
	rim	70.27	5.28	0.00	23.01	98.59	68.56	9.40	0.00	22.04	0.14
	rim	69.47	5.33	0.00	22.90	97.72	68.31	9.58	0.00	22.11	0.14
	rim	64.66	4.64	0.00	29.61	98.97	63.25	8.29	0.01	28.45	0.13
Keiotamagawa	1	83.01	15.98	0.00	1.10	100.09	73.29	25.75	0.00	0.95	0.35
(Ka-P ⑫)		82.21	16.76	0.09	1.14	100.19	72.00	26.79	0.23	0.98	0.37
		82.11	16.79	0.04	0.99	99.92	72.12	26.93	0.10	0.85	0.37
		82.38	16.69	0.00	0.88	99.96	72.44	26.80	0.00	0.76	0.37
		82.50	16.42	0.03	0.75	99.70	72.81	26.46	0.07	0.65	0.36
		82.70	16.74	0.05	0.65	100.15	72.51	26.80	0.13	0.56	0.37
		82.50	16.69	0.05	0.86	100.09	72.40	26.74	0.13	0.74	0.37
		82.28	16.87	0.02	0.68	99.85	72.30	27.07	0.04	0.59	0.37
		82.14	16.69	0.00	0.86	99.69	72.40	26.85	0.00	0.75	0.37
		82.29	16.52	0.00	1.05	99.85	72.52	26.58	0.00	0.91	0.37

Table 5-1. (Continued)

Locality	Grain No.	Weight %					Atomic %				
		Au	Ag	Cu	Hg	Total	Au	Ag	Cu	Hg	Ag/Au
Keiotamagawa	2	92.40	7.36	0.04	0.11	99.91	87.11	12.66	0.13	0.10	0.15
(Ka-P ⑫)		91.91	7.61	0.00	0.28	99.81	86.64	13.10	0.00	0.26	0.15
		91.49	8.22	0.06	0.20	99.96	85.60	14.04	0.18	0.18	0.16
		92.15	7.89	0.02	0.23	100.28	86.25	13.49	0.06	0.21	0.16
		90.63	8.36	0.09	0.24	99.32	85.17	14.35	0.27	0.22	0.17
		91.03	7.99	0.00	0.30	99.31	85.95	13.77	0.00	0.28	0.16
		92.41	7.56	0.01	0.08	100.06	86.91	12.98	0.03	0.07	0.15
		92.09	8.07	0.00	0.17	100.33	86.07	13.77	0.00	0.16	0.16
		92.46	7.95	0.07	0.34	100.81	86.00	13.50	0.19	0.31	0.16
		94.09	5.69	0.01	0.21	100.00	89.85	9.92	0.03	0.19	0.11
	3	86.07	13.37	0.02	0.80	100.26	77.31	21.92	0.06	0.70	0.28
		84.83	14.18	0.06	0.72	99.79	75.99	23.19	0.18	0.64	0.31
		85.30	14.41	0.04	0.45	100.20	76.04	23.45	0.12	0.39	0.31
		85.35	14.35	0.01	0.33	100.04	76.27	23.41	0.04	0.29	0.31
		85.26	13.93	0.03	0.63	99.85	76.53	22.83	0.08	0.56	0.30
		85.08	14.42	0.00	0.61	100.12	75.95	23.51	0.00	0.54	0.31
		85.00	14.41	0.00	0.37	99.79	76.11	23.56	0.00	0.33	0.31
		85.57	13.89	0.00	0.69	100.15	76.67	22.73	0.00	0.61	0.30
	rim	99.40	0.56	0.00	0.00	99.96	98.98	1.02	0.00	0.00	0.01
	rim	99.84	0.25	0.01	0.00	100.10	99.50	0.45	0.04	0.00	0.00
Yaga	1	89.74	8.31	0.09	0.00	98.16	85.33	14.42	0.25	0.00	0.17
(Ka-P ⑬)		91.87	7.37	0.08	0.00	99.33	87.03	12.75	0.22	0.00	0.15
		86.62	11.20	0.11	0.00	97.99	80.64	19.04	0.32	0.00	0.24
		88.21	11.12	0.13	0.00	99.47	80.98	18.64	0.38	0.00	0.23
		88.98	9.28	0.17	0.00	98.49	83.60	15.91	0.49	0.00	0.19
		90.49	8.09	0.10	0.00	98.81	85.73	13.99	0.28	0.00	0.16
		91.08	7.75	0.08	0.00	98.91	86.36	13.41	0.23	0.00	0.16
		91.71	7.29	0.03	0.00	99.09	87.26	12.67	0.07	0.00	0.15
		91.17	8.00	0.07	0.00	99.26	86.02	13.79	0.20	0.00	0.16
		91.21	8.25	0.16	0.00	99.65	85.44	14.11	0.45	0.00	0.17
Hayakawa	1	85.63	10.95	0.06	0.56	97.27	81.55	16.76	0.00	1.69	0.21
(Ka-P ⑭)		85.33	10.83	0.00	1.87	98.09	81.72	17.68	0.00	0.60	0.22
		86.44	10.84	0.03	0.50	97.83	81.32	18.12	0.21	0.35	0.22
		85.58	10.90	0.03	0.48	97.15	81.50	17.78	0.32	0.41	0.22
		85.96	11.41	0.02	0.63	98.15	80.76	18.55	0.00	0.61	0.23
		86.39	11.08	0.02	0.49	98.04	81.17	18.30	0.00	0.53	0.23
	2	86.59	10.97	0.00	1.42	99.07	80.29	18.66	0.00	0.95	0.23
		85.00	10.80	0.03	1.11	97.04	70.90	28.77	0.00	0.33	0.41
		85.78	10.79	0.00	0.53	97.16	70.02	27.42	0.35	2.21	0.39
		85.47	10.93	0.00	0.66	97.12	69.93	29.89	0.00	0.15	0.43
		85.72	11.00	0.03	1.07	97.87	71.13	28.30	0.00	0.51	0.40
Asari	1	87.56	11.91	0.05	0.37	99.93	79.73	19.80	0.14	0.33	0.25
(Ka-P ⑮)		87.35	12.05	0.00	0.45	99.97	79.56	20.03	0.00	0.40	0.25
		88.21	11.26	0.02	0.60	100.12	80.61	18.79	0.06	0.54	0.23
		89.76	10.12	0.00	0.00	99.93	82.93	17.07	0.00	0.00	0.21
		88.25	11.55	0.02	0.08	99.95	80.63	19.26	0.05	0.07	0.24
		89.89	9.91	0.06	0.03	99.99	83.09	16.73	0.16	0.03	0.20
		88.54	11.38	0.00	0.06	100.08	80.95	19.00	0.00	0.05	0.23
		90.20	9.83	0.00	0.00	100.11	83.40	16.59	0.01	0.00	0.20
		88.49	11.37	0.03	0.08	100.04	80.87	18.97	0.09	0.07	0.23
		89.90	10.07	0.02	0.00	100.02	82.97	16.97	0.05	0.00	0.20

Table 5-1. (Continued)

Locality	Grain No.	Weight %					Atomic %				
		Au	Ag	Cu	Hg	Total	Au	Ag	Cu	Hg	Ag/Au
Asari (Ka-P ⑮)	2	90.20	9.76	0.01	0.01	100.04	83.47	16.50	0.02	0.01	0.20
		90.51	9.39	0.05	0.03	100.08	83.93	15.90	0.14	0.03	0.19
		90.16	9.42	0.00	0.00	99.60	83.98	16.02	0.00	0.00	0.19
		89.58	10.09	0.01	0.08	99.79	82.86	17.04	0.03	0.07	0.21
		89.63	10.03	0.00	0.06	99.76	82.99	16.95	0.00	0.06	0.20
		90.37	9.54	0.00	0.00	100.03	83.84	16.16	0.00	0.00	0.19
		90.16	9.81	0.02	0.16	100.17	83.25	16.55	0.06	0.15	0.20
		89.75	9.76	0.03	0.04	99.71	83.34	16.55	0.08	0.04	0.20
		90.21	9.76	0.00	0.14	100.11	83.40	16.47	0.00	0.13	0.20
		90.36	9.70	0.00	0.17	100.26	83.49	16.36	0.00	0.15	0.20
	3	90.88	8.97	0.00	0.23	100.11	84.56	15.23	0.00	0.21	0.18
		90.47	9.13	0.00	0.23	99.89	84.25	15.52	0.01	0.21	0.18
		90.59	9.07	0.00	0.22	99.96	84.38	15.42	0.00	0.20	0.18
		90.54	9.15	0.04	0.20	99.99	84.17	15.54	0.11	0.18	0.18
		90.44	9.16	0.03	0.34	100.02	84.06	15.54	0.09	0.31	0.18
		90.36	9.32	0.00	0.15	99.94	84.04	15.82	0.00	0.14	0.19
		90.36	9.23	0.00	0.31	99.97	84.04	15.67	0.00	0.29	0.19
		90.30	9.52	0.00	0.29	100.17	83.63	16.10	0.01	0.26	0.19
		90.45	9.39	0.00	0.33	100.18	83.82	15.88	0.00	0.30	0.19
		90.10	9.65	0.02	0.29	100.16	83.38	16.31	0.05	0.26	0.20
	4	90.45	9.44	0.03	0.22	100.21	83.75	15.96	0.09	0.20	0.19
		90.13	9.55	0.00	0.27	99.98	83.58	16.17	0.00	0.24	0.19
		90.15	9.51	0.04	0.18	99.89	83.62	16.10	0.11	0.16	0.19
		89.88	9.58	0.02	0.29	99.86	83.44	16.23	0.06	0.26	0.19
		90.16	9.53	0.04	0.50	100.29	83.36	16.09	0.10	0.45	0.19
		90.49	9.29	0.00	0.26	100.11	84.02	15.74	0.00	0.24	0.19
		90.83	8.61	0.02	0.30	99.79	84.96	14.71	0.06	0.27	0.17
		89.99	9.27	0.00	0.33	99.65	83.91	15.79	0.01	0.30	0.19
		90.26	9.57	0.01	0.38	100.30	83.46	16.16	0.04	0.35	0.19
		89.99	9.39	0.00	0.38	99.82	83.70	15.95	0.01	0.35	0.19
	5	74.98	23.91	0.00	0.21	99.25	63.09	36.73	0.00	0.18	0.58
		75.40	23.79	0.00	0.17	99.51	63.36	36.50	0.00	0.14	0.58
		75.17	23.38	0.02	0.27	98.92	63.60	36.12	0.05	0.22	0.57
		75.11	24.24	0.00	0.27	99.83	62.79	36.99	0.01	0.22	0.59
		75.50	24.25	0.01	0.27	100.16	62.88	36.88	0.01	0.22	0.59
		75.88	23.61	0.01	0.20	99.82	63.66	36.16	0.01	0.17	0.57
		75.50	23.81	0.00	0.28	99.65	63.31	36.46	0.00	0.23	0.58
		74.81	24.11	0.00	0.18	99.18	62.86	36.99	0.00	0.15	0.59
		76.05	23.91	0.03	0.26	100.39	63.34	36.37	0.09	0.21	0.57
		76.09	24.25	0.00	0.26	100.77	63.08	36.71	0.00	0.21	0.58
	6	89.04	10.87	0.03	0.13	100.09	81.62	18.19	0.07	0.12	0.22
		89.35	10.26	0.03	0.03	99.75	82.57	17.31	0.09	0.03	0.21
		88.38	11.31	0.04	0.25	100.01	80.78	18.88	0.12	0.22	0.23
		89.09	10.64	0.00	0.14	100.16	81.99	17.88	0.01	0.13	0.22
		89.53	10.64	0.00	0.23	100.41	82.00	17.79	0.01	0.21	0.22
		88.30	11.40	0.03	0.22	100.08	80.69	19.03	0.08	0.20	0.24
		89.43	10.46	0.00	0.13	100.08	82.31	17.57	0.00	0.12	0.21
		89.48	10.69	0.01	0.13	100.36	81.98	17.88	0.03	0.12	0.22
		88.53	10.87	0.04	0.07	99.62	81.54	18.28	0.12	0.06	0.22
		89.37	10.65	0.00	0.05	100.15	82.09	17.87	0.00	0.05	0.22

Table 5-1. (Continued)

Locality	Grain No.	Weight %					Atomic %				
		Au	Ag	Cu	Hg	Total	Au	Ag	Cu	Hg	Ag/Au
Asari (Ka-P ⑮)	7	78.18	21.05	0.00	0.57	100.02	66.72	32.80	0.00	0.48	0.49
		80.03	19.70	0.03	0.33	100.18	68.75	30.90	0.07	0.28	0.45
		79.77	19.26	0.03	0.38	99.56	69.13	30.48	0.07	0.33	0.44
		78.15	20.78	0.00	0.48	99.52	67.05	32.55	0.00	0.41	0.49
		78.93	20.31	0.01	0.34	99.72	67.84	31.86	0.01	0.28	0.47
		78.83	20.40	0.00	0.48	99.80	67.64	31.96	0.00	0.41	0.47
		79.43	19.93	0.00	0.31	99.81	68.40	31.34	0.00	0.26	0.46
		79.14	20.41	0.04	0.42	100.14	67.69	31.87	0.10	0.35	0.47
		80.84	19.03	0.01	0.33	100.32	69.72	29.97	0.03	0.28	0.43
		78.36	20.94	0.00	0.43	99.84	66.96	32.67	0.00	0.36	0.49
	8	89.84	10.38	0.04	0.00	100.33	82.50	17.40	0.10	0.00	0.21
		88.36	11.21	0.00	0.29	99.93	80.98	18.76	0.00	0.26	0.23
		88.46	10.86	0.02	0.29	99.64	81.43	18.25	0.06	0.26	0.22
		89.87	10.27	0.00	0.12	100.35	82.65	17.24	0.00	0.11	0.21
		88.88	10.72	0.00	0.10	99.83	81.88	18.03	0.00	0.09	0.22
		89.65	10.35	0.00	0.13	100.20	82.49	17.39	0.00	0.12	0.21
		88.91	10.48	0.00	0.14	99.66	82.19	17.69	0.00	0.12	0.22
		89.20	10.74	0.02	0.16	100.16	81.83	17.99	0.04	0.14	0.22
		89.01	10.54	0.01	0.17	99.79	82.08	17.74	0.03	0.15	0.22
	rim	99.46	2.65	0.00	0.00	102.13	95.37	4.63	0.00	0.00	0.05
	9	78.26	21.51	0.01	0.26	100.09	66.43	33.34	0.02	0.22	0.50
		78.22	21.41	0.01	0.11	99.95	66.60	33.27	0.04	0.09	0.50
		76.09	23.90	0.00	0.22	100.35	63.44	36.38	0.00	0.18	0.57
		75.94	23.73	0.00	0.31	100.16	63.51	36.24	0.00	0.26	0.57
		78.69	20.62	0.02	0.21	99.67	67.50	32.29	0.04	0.17	0.48
		78.71	21.02	0.00	0.05	99.93	67.19	32.77	0.00	0.04	0.49
		78.55	21.12	0.00	0.00	99.76	67.07	32.93	0.00	0.00	0.49
		78.35	21.60	0.00	0.23	100.26	66.40	33.41	0.00	0.19	0.50
		77.55	21.93	0.02	0.21	99.93	65.81	33.98	0.04	0.17	0.52
		79.06	20.98	0.02	0.15	100.24	67.24	32.58	0.06	0.12	0.48
	10	93.28	7.16	0.01	0.28	100.76	87.47	12.25	0.02	0.26	0.14
		92.65	6.64	0.00	0.54	99.94	87.98	11.51	0.00	0.50	0.13
		93.37	6.97	0.03	0.25	100.66	87.73	11.96	0.08	0.23	0.14
		91.99	7.09	0.04	0.29	99.51	87.33	12.28	0.12	0.27	0.14
		92.54	6.55	0.00	0.36	99.55	88.25	11.41	0.00	0.34	0.13
		93.30	7.33	0.00	0.42	101.04	87.12	12.49	0.00	0.38	0.14
		93.08	7.12	0.03	0.16	100.50	87.53	12.22	0.10	0.15	0.14
		92.53	7.31	0.00	0.39	100.27	87.08	12.55	0.01	0.36	0.14
		91.49	7.22	0.00	0.42	99.13	87.07	12.54	0.00	0.39	0.14
		91.02	7.25	0.01	0.54	98.84	86.83	12.62	0.04	0.51	0.15
		93.12	6.76	0.02	0.42	100.40	87.90	11.65	0.06	0.39	0.13
	11	91.51	9.22	0.03	0.56	101.43	83.96	15.45	0.09	0.50	0.18
		66.17	9.20	0.02	28.41	103.89	59.65	15.14	0.05	25.15	0.25
		90.07	9.13	0.00	1.22	100.47	83.44	15.45	0.00	1.11	0.19
		64.06	9.57	0.04	28.81	102.55	58.26	15.89	0.12	25.73	0.27
		90.69	9.12	0.04	0.47	100.38	84.04	15.42	0.11	0.43	0.18
		90.69	9.30	0.01	0.45	100.52	83.87	15.70	0.01	0.41	0.19
		91.11	8.82	0.00	0.48	100.40	84.61	14.95	0.00	0.44	0.18
		63.41	8.09	0.03	31.33	102.89	58.16	13.54	0.09	28.22	0.23
		65.99	7.99	0.00	29.27	103.31	60.37	13.34	0.00	26.29	0.22
		61.46	9.80	0.00	31.54	102.83	55.71	16.21	0.00	28.08	0.29

Table 5-1. (Continued)

Locality	Grain No.	Weight %					Atomic %				
		Au	Ag	Cu	Hg	Total	Au	Ag	Cu	Hg	Ag/Au
Asari (Ka-P ⑮)	12	86.92	12.06	0.25	0.00	99.37	79.22	20.07	0.70	0.00	0.25
		87.50	11.41	0.13	0.00	99.16	80.47	19.15	0.37	0.00	0.24
		87.10	12.01	0.16	0.03	99.47	79.51	20.02	0.45	0.03	0.25
		88.52	11.20	0.19	0.00	100.06	80.80	18.67	0.53	0.00	0.23
		88.27	11.57	0.15	0.03	100.12	80.33	19.22	0.41	0.03	0.24
		89.47	10.08	0.10	0.00	99.71	82.71	17.01	0.28	0.00	0.21
		88.10	11.76	0.14	0.00	100.18	80.08	19.52	0.40	0.00	0.24
		88.09	10.59	0.07	0.18	99.05	81.70	17.94	0.21	0.16	0.22
		88.88	10.65	0.10	0.21	100.04	81.65	17.87	0.28	0.19	0.22
		91.09	9.61	0.07	0.00	100.82	83.68	16.11	0.21	0.00	0.19
	13	83.86	15.96	0.00	0.00	99.91	74.21	25.79	0.00	0.00	0.35
		84.33	15.49	0.05	0.00	99.95	74.78	25.09	0.13	0.00	0.34
		84.03	15.59	0.01	0.01	99.73	74.68	25.29	0.02	0.01	0.34
		84.99	14.96	0.00	0.00	100.05	75.68	24.32	0.00	0.00	0.32
		84.13	16.09	0.00	0.00	100.40	74.11	25.88	0.01	0.00	0.35
		86.37	13.50	0.06	0.02	99.99	77.67	22.16	0.16	0.01	0.29
		84.38	15.34	0.00	0.00	99.83	75.08	24.92	0.00	0.00	0.33
		84.89	14.61	0.02	0.00	99.68	76.05	23.90	0.06	0.00	0.31
		87.64	12.77	0.05	0.00	100.55	78.89	20.98	0.13	0.00	0.27
		83.40	15.97	0.05	0.00	99.50	73.98	25.87	0.15	0.00	0.35
	14	85.20	13.83	0.00	0.60	99.72	76.73	22.74	0.00	0.53	0.30
		86.50	13.71	0.00	0.45	100.74	77.25	22.36	0.00	0.39	0.29
		86.07	12.88	0.08	0.43	99.58	78.06	21.33	0.24	0.38	0.27
		85.70	14.18	0.05	0.44	100.48	76.41	23.08	0.13	0.39	0.30
		86.34	13.95	0.00	0.41	100.80	76.95	22.69	0.00	0.36	0.29
		86.84	13.72	0.00	0.47	101.09	77.29	22.29	0.01	0.41	0.29
		85.74	13.24	0.05	0.40	99.56	77.63	21.88	0.13	0.35	0.28
		86.33	13.36	0.00	0.31	100.03	77.76	21.97	0.00	0.27	0.28
		85.97	13.89	0.02	0.62	100.63	76.77	22.64	0.05	0.54	0.29
		86.12	13.17	0.00	0.37	99.70	77.91	21.76	0.00	0.33	0.28

Table 6. Chemical compositions of electrum grains in ore deposits from the Hokuriku·Shinetsu and Tokai provinces

Locality	Grain No.	Weight %					Atomic %				
		Au	Ag	Cu	Hg	Total	Au	Ag	Cu	Hg	Ag/Au
Takachi	1*	51.48	47.72	0.05	–	99.25	37.07	62.78	0.11	–	1.69
(Ho-A ①)		51.39	47.77	0.07	–	99.23	37.02	62.84	0.16	–	1.70
		51.17	48.06	0.06	–	99.29	36.83	63.03	0.13	–	1.71
Sado	1	58.21	38.96	0.03	0.00	97.39	44.98	54.95	0.07	0.00	1.22
(Ho-A ②)		59.60	38.09	0.00	0.00	97.87	46.15	53.85	0.00	0.00	1.17
		58.19	38.90	0.00	0.02	97.30	45.03	54.96	0.00	0.01	1.22
		57.31	39.80	0.05	0.00	97.37	44.05	55.85	0.11	0.00	1.27
		58.32	38.02	0.00	0.00	96.54	45.65	54.35	0.00	0.00	1.19
		57.66	39.69	0.05	0.00	97.65	44.25	55.62	0.13	0.00	1.26
		59.34	37.70	0.05	0.00	97.29	46.23	53.64	0.13	0.00	1.16
		57.66	38.84	0.00	0.00	96.59	44.85	55.15	0.00	0.00	1.23
Hashidate	1*	87.62	11.69	0.04	–	99.35	80.33	19.56	0.11	–	0.24
(Ho-A ③)		87.25	12.25	0.00	–	99.50	79.60	20.40	0.00	–	0.26
		87.57	12.52	0.03	–	100.12	79.23	20.68	0.09	–	0.26
		86.77	12.72	0.00	–	99.49	78.89	21.11	0.00	–	0.27
		86.40	13.01	0.02	–	99.43	78.39	21.55	0.05	–	0.27
		86.65	13.39	0.06	–	100.10	77.87	21.97	0.16	–	0.28
Chugu	1	95.28	3.74	0.07	0.00	99.17	93.10	6.68	0.22	0.00	0.07
(Ho-A ④)		95.48	4.02	0.05	0.00	99.58	92.72	7.13	0.15	0.00	0.08
		96.07	3.95	0.09	0.00	100.14	92.78	6.97	0.25	0.00	0.08
		94.36	4.09	0.06	0.00	98.55	92.52	7.31	0.17	0.00	0.08
		96.87	3.86	0.03	0.14	100.92	93.01	6.77	0.09	0.13	0.07
		96.97	3.96	0.01	0.00	100.97	93.04	6.94	0.02	0.00	0.07
		97.94	3.71	0.04	0.00	101.71	93.42	6.46	0.13	0.00	0.07
		96.33	3.80	0.04	0.00	100.21	93.16	6.71	0.13	0.00	0.07
		96.58	3.86	0.06	0.10	100.62	92.96	6.79	0.17	0.09	0.07
		97.50	3.87	0.05	0.00	101.42	93.11	6.75	0.14	0.00	0.07
Kinkei	1	98.27	2.07	0.00	0.00	100.34	96.30	3.70	0.00	0.00	0.04
(Ho-A ⑤)		97.64	2.03	0.08	0.00	99.75	96.11	3.65	0.23	0.00	0.04
		97.82	1.97	0.03	0.04	99.87	96.31	3.54	0.10	0.04	0.04
		98.44	1.94	0.11	0.00	100.48	96.21	3.46	0.33	0.00	0.04
		98.52	1.86	0.06	0.00	100.44	96.49	3.32	0.19	0.00	0.03
		98.12	1.93	0.08	0.00	100.13	96.29	3.46	0.25	0.00	0.04
		98.12	2.01	0.11	0.00	100.23	96.08	3.60	0.32	0.00	0.04
		97.69	2.14	0.07	0.00	99.90	95.95	3.84	0.21	0.00	0.04
		98.05	2.12	0.08	0.00	100.26	95.97	3.79	0.24	0.00	0.04
		97.65	1.95	0.07	0.00	99.67	96.29	3.50	0.21	0.00	0.04
	2*	93.81	6.32	0.05	–	100.18	88.91	10.94	0.15	–	0.12
		93.56	6.50	0.02	–	100.08	88.70	11.24	0.06	–	0.13
		93.07	6.53	0.01	–	99.61	88.61	11.35	0.04	–	0.13
		93.02	7.00	0.03	–	100.05	87.83	12.07	0.09	–	0.14
		92.83	7.03	0.03	–	99.89	87.76	12.14	0.09	–	0.14
		92.23	7.44	0.04	–	99.71	87.06	12.83	0.11	–	0.15
		92.20	7.69	0.03	–	99.92	86.70	13.21	0.09	–	0.15
		91.47	7.97	0.02	–	99.46	86.22	13.72	0.06	–	0.16
		91.26	8.35	0.02	–	99.63	85.64	14.31	0.06	–	0.17
		90.98	8.65	0.02	–	99.65	85.16	14.79	0.06	–	0.17
Kobushi	1	89.17	9.45	0.11	1.08	99.83	82.71	16.00	0.30	0.98	0.19
(Ho-A ⑥)		89.55	9.25	0.14	0.92	99.90	83.09	15.67	0.40	0.84	0.19
		89.77	8.97	0.08	1.00	99.87	83.59	15.25	0.24	0.91	0.18
		89.54	9.08	0.01	1.35	100.06	83.30	15.43	0.03	1.23	0.19
		89.24	9.69	0.10	0.98	100.02	82.48	16.35	0.28	0.89	0.20
		89.45	9.51	0.09	0.83	99.90	82.90	16.09	0.26	0.75	0.19
		88.90	9.81	0.11	0.97	99.80	82.24	16.57	0.31	0.88	0.20
		88.65	9.94	0.10	1.09	99.85	81.95	16.77	0.29	0.99	0.20
		89.43	9.58	0.16	1.01	100.28	82.51	16.14	0.44	0.91	0.20
		88.89	10.01	0.12	0.96	100.04	81.94	16.84	0.35	0.87	0.21

*after Shikazono and Shimizu (1988)

Table 6. (Continued)

Locality	Grain No.	Weight %					Atomic %				
		Au	Ag	Cu	Hg	Total	Au	Ag	Cu	Hg	Ag/Au
Amo	1*	91.62	7.74	0.03	–	99.39	86.56	13.34	0.09	–	0.15
(To-A ①)		91.66	8.05	0.01	–	99.72	86.15	13.81	0.04	–	0.16
		91.05	8.07	0.02	–	99.14	86.02	13.92	0.06	–	0.16
		91.17	8.29	0.04	–	99.50	85.67	14.22	0.11	–	0.17
		91.20	8.42	0.05	–	99.67	85.45	14.40	0.15	–	0.17
		91.06	8.59	0.03	–	99.68	85.23	14.68	0.09	–	0.17
		91.36	8.67	0.01	–	100.04	85.19	14.77	0.04	–	0.17
		90.65	8.66	0.02	–	99.33	85.10	14.85	0.06	–	0.17
		91.13	8.80	0.02	–	99.95	84.96	14.99	0.06	–	0.18
		90.74	8.96	0.03	–	99.73	84.65	15.25	0.09	–	0.18
Mumai-owaki	1	66.48	30.03	0.00	0.00	96.71	54.80	45.20	0.00	0.00	0.82
(To-A ②)		67.23	29.29	0.00	0.00	96.71	55.70	44.30	0.00	0.00	0.80
		68.54	29.42	0.05	0.02	98.13	55.99	43.88	0.12	0.02	0.78
		67.26	30.20	0.00	0.00	97.56	54.95	45.05	0.00	0.00	0.82
		67.81	29.62	0.02	0.00	97.61	55.61	44.35	0.04	0.00	0.80
		67.13	29.71	0.07	0.00	97.07	55.21	44.61	0.18	0.00	0.81
		67.33	29.66	0.00	0.03	97.13	55.41	44.57	0.00	0.02	0.80
		67.74	29.00	0.00	0.00	96.84	56.13	43.87	0.00	0.00	0.78
		67.18	29.93	0.06	0.00	97.34	55.07	44.79	0.15	0.00	0.81
		67.05	29.24	0.03	0.05	96.51	55.61	44.27	0.08	0.04	0.80
Akatani	1*	76.65	22.35	0.01	–	99.01	65.24	34.73	0.03	–	0.53
(To-A ③)		76.59	22.54	0.01	–	99.14	65.03	34.94	0.03	–	0.54
		76.42	22.96	0.01	–	99.39	64.55	35.41	0.03	–	0.55
		76.08	23.07	0.03	–	99.18	64.31	35.60	0.08	–	0.55
		76.19	23.35	0.00	–	99.54	64.12	35.88	0.00	–	0.56
		76.19	23.45	0.04	–	99.68	63.97	35.94	0.10	–	0.56
		76.38	23.50	0.00	–	99.88	64.03	35.97	0.00	–	0.56
		75.76	23.46	0.03	–	99.25	63.83	36.08	0.08	–	0.57
Tsugu	1*	86.61	5.98	0.01	7.39	99.98	82.63	10.41	0.04	6.92	0.13
(To-A ④)		89.19	6.14	0.00	4.66	99.99	84.97	10.68	0.00	4.35	0.13
		91.15	6.34	0.01	2.30	99.79	86.78	11.03	0.04	2.16	0.13
		90.21	6.37	0.03	2.85	99.43	86.14	11.10	0.09	2.67	0.13
		83.08	10.04	0.07	6.54	99.66	76.90	16.96	0.20	5.94	0.22
		82.48	10.22	0.06	7.01	99.71	76.24	17.24	0.16	6.35	0.23
		81.62	10.31	0.06	7.77	99.70	75.40	17.40	0.16	7.04	0.23
		80.95	11.09	0.09	7.62	99.66	74.53	18.42	0.25	6.81	0.25
		79.94	11.28	0.07	7.91	99.13	73.67	18.97	0.20	7.15	0.26
		79.37	11.47	0.09	8.20	99.04	73.06	19.27	0.25	7.42	0.26
Toi	1	51.77	46.25	0.05	0.00	98.26	37.96	61.91	0.12	0.00	1.63
(To-A ⑤)		52.07	45.22	0.03	0.00	97.56	38.65	61.28	0.06	0.00	1.59
		52.34	45.53	0.00	0.00	98.12	38.64	61.36	0.00	0.00	1.59
		51.40	46.77	0.00	0.00	98.38	37.57	62.43	0.00	0.00	1.66
		52.82	44.89	0.00	0.00	97.95	39.19	60.81	0.00	0.00	1.55
		53.75	43.41	0.02	0.00	97.39	40.40	59.57	0.03	0.00	1.47
		51.54	46.43	0.00	0.00	98.21	37.81	62.19	0.00	0.00	1.64
		52.80	44.71	0.00	0.00	97.77	39.27	60.73	0.00	0.00	1.55
		52.61	44.39	0.00	0.00	97.17	39.36	60.64	0.00	0.00	1.54
		52.16	46.85	0.00	0.00	99.22	37.88	62.12	0.00	0.00	1.64
	2*	59.08	40.85	0.03	–	99.96	44.18	55.77	0.04	–	1.26
		58.34	41.05	0.02	–	99.41	43.75	56.21	0.04	–	1.28
		57.80	41.50	0.02	–	99.32	43.24	56.68	0.07	–	1.31
		57.94	42.63	0.03	–	100.60	42.64	57.29	0.07	–	1.34
		57.22	43.08	0.03	–	100.33	42.10	57.86	0.04	–	1.37
		56.43	43.31	0.02	–	99.76	41.62	58.33	0.04	–	1.40
		56.37	43.61	0.02	–	100.00	41.42	58.51	0.07	–	1.41
		55.17	44.22	0.03	–	99.42	40.57	59.36	0.07	–	1.46
		54.18	45.84	0.03	–	100.05	39.27	60.66	0.07	–	1.54
		53.25	46.26	0.02	–	99.53	38.65	61.30	0.04	–	1.59

*after Shikazono and Shimizu (1988)

Table 6. (Continued)

Locality	Grain No.	Weight %					Atomic %				
		Au	Ag	Cu	Hg	Total	Au	Ag	Cu	Hg	Ag/Au
Kawazu	1*	62.50	37.09	0.10	–	99.69	47.89	51.87	0.24	–	1.08
(To-A ⑥)		61.85	37.24	0.14	–	99.23	47.48	52.19	0.33	–	1.10
		60.78	38.25	0.15	–	99.18	46.36	53.28	0.36	–	1.15
		58.35	40.79	0.17	–	99.31	43.76	55.84	0.40	–	1.28
		57.11	42.09	0.15	–	99.35	42.48	57.17	0.35	–	1.35
		55.90	43.07	0.17	–	99.14	41.39	58.22	0.39	–	1.41
		55.41	43.70	0.14	–	99.25	40.86	58.82	0.32	–	1.44
		54.71	44.56	0.17	–	99.44	40.05	59.56	0.39	–	1.49
Kekurano	1	59.48	37.02	0.00	0.00	96.67	46.80	53.20	0.00	0.00	1.14
(To-A ⑦)		63.94	33.76	0.00	0.00	97.85	50.92	49.08	0.00	0.00	0.96
		66.47	29.71	0.00	0.00	96.34	55.07	44.93	0.00	0.00	0.82
		63.98	33.19	0.00	0.00	97.32	51.35	48.65	0.00	0.00	0.95
		66.76	30.28	0.04	0.00	97.20	54.65	45.25	0.09	0.00	0.83
		69.54	27.64	0.01	0.00	97.33	57.93	42.04	0.03	0.00	0.73
		59.27	37.74	0.01	0.00	97.25	46.24	53.74	0.02	0.00	1.16
		57.84	38.70	0.01	0.00	96.77	45.00	54.97	0.03	0.00	1.22
Shobusawa	1	64.67	33.89	0.01	0.00	98.70	51.09	48.89	0.02	0.00	0.96
(To-A ⑧)		64.16	34.24	0.00	0.00	98.58	50.65	49.35	0.00	0.00	0.97
		62.56	35.55	0.00	0.00	98.25	49.08	50.92	0.00	0.00	1.04
		60.92	37.17	0.00	0.00	98.22	47.30	52.70	0.00	0.00	1.11
		60.81	37.45	0.02	0.00	98.51	47.06	52.91	0.04	0.00	1.12
		59.98	38.43	0.06	0.00	98.61	46.03	53.84	0.14	0.00	1.17
		65.02	33.86	0.03	0.00	99.11	51.23	48.71	0.07	0.00	0.95
		59.83	39.87	0.00	0.01	99.91	45.11	54.88	0.00	0.01	1.22
		67.05	32.40	0.00	0.00	99.66	53.13	46.87	0.00	0.00	0.88
		64.59	33.25	0.01	0.00	98.06	51.54	48.43	0.03	0.00	0.94
Okuyama	1*	94.86	4.92	0.04	–	99.82	91.25	8.64	0.11	–	0.09
(To-A ⑨)		94.56	5.10	0.03	–	99.69	90.94	8.96	0.09	–	0.10
		94.94	5.17	0.03	–	100.14	90.87	9.03	0.09	–	0.10
		94.55	5.25	0.04	–	99.84	90.68	9.20	0.11	–	0.10
		94.43	5.29	0.08	–	99.80	90.50	9.25	0.25	–	0.10
		94.45	5.38	0.07	–	99.90	90.38	9.41	0.21	–	0.10
		94.25	5.38	0.05	–	99.68	90.42	9.43	0.15	–	0.10
		94.54	5.44	0.03	–	100.01	90.41	9.50	0.09	–	0.11
		94.28	5.53	0.05	–	99.86	90.18	9.67	0.15	–	0.11
		94.56	5.79	0.06	–	100.41	89.79	10.04	0.17	–	0.11

*after Shikazono and Shimizu (1988)

Table 6-1. Chemical compositions of electrum grains in palcer deposits from the Hokuriku·Shinetsu and Tokai provinces

Locality	Grain No.	Weight %					Atomic %				
		Au	Ag	Cu	Hg	Total	Au	Ag	Cu	Hg	Ag/Au
Sai-river	1	55.99	41.31	0.06	0.00	97.51	42.55	57.31	0.14	0.00	1.35
(Ho-P ①)		58.18	38.92	0.02	0.00	97.33	45.00	54.96	0.05	0.00	1.22
		58.05	38.67	0.02	0.00	96.95	45.09	54.85	0.06	0.00	1.22
		56.78	39.55	0.01	0.04	96.57	44.00	55.95	0.02	0.03	1.27
	2	77.19	19.71	0.00	0.00	96.98	68.20	31.80	0.00	0.00	0.47
		79.09	18.98	0.00	0.00	98.15	69.53	30.47	0.00	0.00	0.44
		76.93	19.77	0.02	0.00	96.80	68.03	31.91	0.06	0.00	0.47
		75.65	21.61	0.00	0.00	97.33	65.73	34.27	0.00	0.00	0.52
		77.67	20.35	0.04	0.00	98.16	67.57	32.32	0.11	0.00	0.48
	3	63.72	33.55	0.02	0.00	97.45	50.96	48.98	0.05	0.00	0.96
		63.67	34.08	0.00	0.01	97.92	50.57	49.42	0.00	0.01	0.98
Asuwa	1	89.50	9.93	0.00	0.06	99.54	83.11	16.83	0.00	0.06	0.20
(Ho-P ②)		90.05	8.69	0.00	0.00	98.75	85.02	14.98	0.00	0.00	0.18
		89.18	8.92	0.02	0.04	98.18	84.49	15.42	0.05	0.04	0.18
		88.26	9.12	0.02	0.04	97.46	84.05	15.86	0.05	0.04	0.19
		89.20	9.23	0.02	0.00	98.56	84.07	15.88	0.04	0.00	0.19
		89.28	9.21	0.00	0.00	98.50	84.15	15.85	0.00	0.00	0.19
		89.18	8.89	0.07	0.00	98.24	84.42	15.36	0.21	0.00	0.18
		89.93	8.89	0.00	0.00	98.90	84.70	15.30	0.00	0.00	0.18
		90.40	8.12	0.02	0.00	98.59	85.86	14.07	0.07	0.00	0.16
		89.62	8.24	0.00	0.00	97.97	85.63	14.37	0.00	0.00	0.17
Mumai	1	49.23	47.48	0.03	0.12	97.13	36.17	63.69	0.06	0.08	1.76
(To-P ①)		59.66	37.79	0.00	0.00	97.60	46.37	53.63	0.00	0.00	1.16
		60.68	36.61	0.00	0.00	97.47	47.59	52.41	0.00	0.00	1.10
		62.81	34.64	0.00	0.00	97.58	49.83	50.17	0.00	0.00	1.01
		54.63	42.71	0.00	0.00	97.54	41.20	58.80	0.00	0.00	1.43
		56.13	40.48	0.02	0.00	96.82	43.14	56.81	0.04	0.00	1.32
		56.28	40.59	0.02	0.00	97.14	43.14	56.81	0.05	0.00	1.32
Hikagesawa	1	85.94	11.44	0.00	0.43	97.86	80.13	19.48	0.00	0.40	0.24
(To-P ②)		86.63	11.50	0.06	0.51	98.72	79.99	19.39	0.17	0.46	0.24
		86.25	11.74	0.00	0.35	98.35	79.84	19.85	0.00	0.32	0.25
		85.78	11.28	0.00	0.36	97.57	80.37	19.30	0.00	0.33	0.24
		85.25	11.60	0.00	0.47	97.41	79.75	19.81	0.00	0.43	0.25
		85.60	11.26	0.00	0.58	97.50	80.21	19.26	0.00	0.53	0.24
		85.93	11.50	0.05	0.47	98.04	79.89	19.53	0.15	0.43	0.24
		86.32	11.70	0.00	0.57	98.70	79.74	19.74	0.01	0.52	0.25
		87.22	11.72	0.05	0.47	99.47	79.86	19.59	0.13	0.42	0.25
	2	87.52	12.23	0.01	0.00	99.76	79.64	20.33	0.03	0.00	0.26
		87.84	12.20	0.00	0.00	100.04	79.77	20.23	0.00	0.00	0.25
		87.72	12.17	0.00	0.00	99.89	79.80	20.20	0.00	0.00	0.25
		87.74	12.19	0.00	0.00	99.94	79.76	20.24	0.00	0.00	0.25
		88.19	11.95	0.00	0.00	100.14	80.17	19.83	0.00	0.00	0.25
		87.56	12.23	0.04	0.00	99.83	79.59	20.30	0.12	0.00	0.26
		87.71	12.37	0.00	0.00	100.07	79.53	20.47	0.00	0.00	0.26
		88.85	11.06	0.00	0.00	99.91	81.49	18.51	0.00	0.00	0.23
		88.17	11.56	0.00	0.00	99.73	80.68	19.31	0.01	0.00	0.24
		88.32	12.10	0.00	0.00	100.42	79.99	20.01	0.00	0.00	0.25

Table 6-1. (Continued)

Locality	Grain No.	Weight %					Atomic %				
		Au	Ag	Cu	Hg	Total	Au	Ag	Cu	Hg	Ag/Au
Hikagesawa (To-P ②)	3	87.14	12.94	0.00	0.94	101.02	78.01	21.16	0.00	0.83	0.27
		87.25	12.39	0.04	0.88	100.56	78.71	20.41	0.11	0.78	0.26
		86.60	12.75	0.04	0.80	100.18	78.18	21.01	0.10	0.70	0.27
		86.37	12.34	0.00	0.85	99.56	78.71	20.53	0.00	0.76	0.26
		86.25	12.35	0.00	0.85	99.44	78.68	20.56	0.00	0.76	0.26
		87.67	12.02	0.00	0.92	100.61	79.32	19.86	0.00	0.82	0.25
	4	87.21	11.50	0.00	1.04	99.75	79.84	19.22	0.00	0.94	0.24
		86.84	11.46	0.00	0.92	99.22	79.91	19.25	0.01	0.83	0.24
		88.05	11.99	0.05	0.93	101.01	79.33	19.72	0.13	0.82	0.25
		86.86	11.63	0.01	1.28	99.78	79.41	19.41	0.04	1.15	0.24
	5	90.56	9.93	0.01	1.36	101.85	82.29	16.48	0.01	1.21	0.20
		90.39	9.35	0.09	1.28	101.10	82.93	15.65	0.26	1.15	0.19
		89.69	9.70	0.00	1.32	100.70	82.52	16.29	0.00	1.19	0.20
		87.47	9.40	0.00	1.27	98.14	82.61	16.21	0.00	1.18	0.20
		88.63	9.73	0.00	1.31	99.67	82.31	16.50	0.00	1.19	0.20
	6	87.70	12.17	0.02	0.76	100.65	79.21	20.07	0.05	0.67	0.25
		85.86	12.19	0.00	0.66	98.70	78.95	20.46	0.00	0.59	0.26
		85.36	12.07	0.03	0.71	98.17	78.91	20.37	0.07	0.65	0.26
		87.27	12.29	0.03	0.65	100.23	79.02	20.31	0.09	0.58	0.26
		86.70	12.52	0.00	0.78	100.00	78.59	20.72	0.00	0.69	0.26
	7	87.97	11.99	0.04	0.44	100.43	79.68	19.82	0.12	0.39	0.25
		86.66	11.92	0.07	0.48	99.13	79.41	19.95	0.20	0.43	0.25
		88.02	12.09	0.00	0.53	100.63	79.58	19.95	0.00	0.47	0.25
		87.08	11.63	0.02	0.43	99.15	80.04	19.52	0.05	0.38	0.24
		87.30	11.80	0.00	0.49	99.60	79.85	19.70	0.01	0.44	0.25
	8	85.91	13.12	0.00	1.07	100.10	77.46	21.60	0.00	0.94	0.28
		84.92	12.99	0.02	1.07	99.00	77.38	21.61	0.05	0.96	0.28
		84.72	13.14	0.07	1.07	99.00	77.03	21.81	0.21	0.96	0.28
		86.31	12.60	0.00	1.05	99.96	78.22	20.84	0.00	0.93	0.27
Hikagesawa (To-P ②)	9	85.33	13.18	0.00	1.55	100.06	76.93	21.69	0.00	1.38	0.28
		86.32	12.24	0.03	1.43	100.02	78.35	20.28	0.10	1.27	0.26
		85.67	13.14	0.01	0.86	99.68	77.50	21.71	0.03	0.77	0.28
		85.07	13.27	0.02	1.57	99.92	76.72	21.85	0.04	1.39	0.28
		85.71	13.26	0.04	0.96	99.97	77.22	21.81	0.12	0.85	0.28
		85.02	13.33	0.00	1.18	99.53	76.93	22.02	0.00	1.05	0.29
		85.71	13.27	0.00	1.34	100.31	77.05	21.77	0.00	1.18	0.28
		85.91	12.99	0.00	1.06	99.96	77.63	21.43	0.00	0.94	0.28
		86.41	13.15	0.00	1.37	100.93	77.31	21.49	0.00	1.21	0.28
		84.76	13.24	0.01	1.20	99.21	76.95	21.95	0.03	1.07	0.29
	10	86.70	12.07	0.04	0.66	99.46	79.17	20.12	0.12	0.59	0.25
		88.43	11.36	0.05	0.45	100.29	80.57	18.89	0.14	0.40	0.23
		86.94	12.29	0.04	0.57	99.84	78.99	20.39	0.11	0.50	0.26
		87.14	12.60	0.00	0.76	100.49	78.58	20.75	0.00	0.67	0.26
		86.48	12.95	0.03	0.69	100.15	78.00	21.32	0.07	0.61	0.27
		87.17	12.58	0.04	0.34	100.12	78.82	20.76	0.11	0.30	0.26
		86.37	12.69	0.03	0.82	99.91	78.21	20.99	0.07	0.73	0.27
		86.85	12.80	0.00	0.49	100.15	78.45	21.11	0.00	0.44	0.27
		86.87	12.96	0.02	0.75	100.60	78.03	21.25	0.06	0.66	0.27
		86.51	12.96	0.00	0.77	100.23	77.99	21.32	0.00	0.68	0.27

Table 6-1. (Continued)

Locality	Grain No.	Weight %					Atomic %				
		Au	Ag	Cu	Hg	Total	Au	Ag	Cu	Hg	Ag/Au
Hikagesawa (To-P ②)	11	87.39	12.33	0.06	0.59	100.36	78.97	20.34	0.17	0.53	0.26
		87.44	12.61	0.00	0.26	100.31	78.97	20.80	0.00	0.23	0.26
		86.86	12.67	0.00	0.52	100.05	78.60	20.94	0.00	0.46	0.27
		86.47	13.01	0.00	0.44	99.93	78.14	21.47	0.00	0.39	0.27
		86.73	12.57	0.02	0.38	99.69	78.78	20.84	0.04	0.34	0.26
		87.13	12.46	0.01	0.50	100.10	78.92	20.61	0.03	0.44	0.26
		87.54	12.33	0.00	0.44	100.31	79.23	20.38	0.00	0.39	0.26
		87.54	12.14	0.02	0.41	100.10	79.47	20.12	0.06	0.36	0.25
		87.06	12.48	0.00	0.47	100.01	78.93	20.65	0.00	0.42	0.26
		86.18	12.98	0.01	0.52	99.69	78.06	21.46	0.02	0.46	0.27
	12	87.06	12.56	0.01	0.60	100.23	78.70	20.73	0.04	0.53	0.26
		86.14	12.70	0.00	0.50	99.35	78.43	21.12	0.00	0.45	0.27
		86.89	12.73	0.02	0.65	100.29	78.39	20.98	0.06	0.57	0.27
		86.70	13.02	0.04	0.55	100.32	78.00	21.39	0.12	0.49	0.27
		87.16	12.90	0.01	0.45	100.53	78.39	21.18	0.03	0.40	0.27
		88.00	12.12	0.01	0.47	100.60	79.55	20.01	0.03	0.41	0.25
		87.17	12.38	0.00	0.41	99.96	79.13	20.51	0.00	0.37	0.26
		87.41	12.45	0.02	0.60	100.48	78.89	20.51	0.06	0.53	0.26
		87.10	12.10	0.00	0.58	99.78	79.36	20.12	0.00	0.52	0.25
		88.00	12.11	0.00	0.49	100.60	79.57	19.99	0.00	0.44	0.25
	13	86.69	12.81	0.01	0.51	100.02	78.37	21.14	0.04	0.45	0.27
		87.73	12.75	0.00	0.47	100.96	78.70	20.89	0.00	0.42	0.27
		86.65	12.23	0.00	0.60	99.48	79.08	20.38	0.00	0.54	0.26
		86.83	12.81	0.01	0.61	100.25	78.34	21.09	0.02	0.54	0.27
		87.27	12.79	0.00	0.53	100.58	78.53	21.01	0.00	0.47	0.27
		87.68	11.65	0.00	0.60	99.94	80.04	19.42	0.00	0.54	0.24
		88.17	12.13	0.03	0.71	101.03	79.36	19.93	0.07	0.63	0.25
		87.77	12.18	0.03	0.61	100.59	79.28	20.08	0.09	0.54	0.25
		86.96	12.00	0.03	0.59	99.58	79.38	20.00	0.09	0.53	0.25
		87.89	11.59	0.00	0.72	100.20	80.08	19.27	0.00	0.65	0.24
Hikagesawa (To-P ②)	14	88.02	12.20	0.01	0.63	100.86	79.35	20.08	0.01	0.56	0.25
		87.20	12.42	0.00	0.58	100.19	78.96	20.53	0.00	0.51	0.26
		88.13	12.00	0.03	0.64	100.79	79.57	19.78	0.09	0.57	0.25
		88.23	11.60	0.00	0.72	100.54	80.13	19.23	0.00	0.64	0.24
		88.30	12.31	0.03	0.67	101.30	79.19	20.15	0.07	0.59	0.25
		86.20	12.28	0.01	0.63	99.12	78.89	20.52	0.02	0.57	0.26
		87.41	12.39	0.05	0.71	100.56	78.82	20.40	0.15	0.63	0.26
		88.98	12.19	0.00	0.51	101.68	79.63	19.92	0.00	0.45	0.25
		87.30	11.04	0.02	0.71	99.07	80.68	18.63	0.05	0.65	0.23
		88.40	12.35	0.01	0.71	101.46	79.16	20.19	0.02	0.62	0.26
	15	87.89	11.63	0.02	0.22	99.86	80.34	19.40	0.06	0.20	0.24
		88.43	11.46	0.06	0.30	100.32	80.51	19.06	0.17	0.27	0.24
		88.05	11.45	0.06	0.16	99.78	80.57	19.13	0.16	0.14	0.24
		88.87	11.26	0.05	0.15	100.40	80.99	18.74	0.14	0.13	0.23
		89.11	10.87	0.04	0.13	100.25	81.61	18.17	0.10	0.12	0.22
		88.75	11.31	0.05	0.17	100.38	80.90	18.82	0.13	0.15	0.23
		88.73	11.45	0.07	0.14	100.40	80.67	19.01	0.19	0.13	0.24
		88.00	11.62	0.00	0.10	99.74	80.49	19.41	0.01	0.09	0.24
		88.18	11.46	0.03	0.35	100.02	80.51	19.10	0.08	0.31	0.24
		88.10	11.37	0.02	0.21	99.78	80.74	19.03	0.05	0.19	0.24

Table 6-1. (Continued)

Locality	Grain No.	Weight %					Atomic %				
		Au	Ag	Cu	Hg	Total	Au	Ag	Cu	Hg	Ag/Au
Sekinosawa (To-P ③)	1	86.80	10.63	0.02	1.89	99.34	80.27	17.94	0.07	1.72	0.22
		86.52	10.73	0.00	1.95	99.19	80.10	18.14	0.00	1.77	0.23
		89.44	9.10	0.04	1.64	100.21	82.99	15.41	0.10	1.49	0.19
		88.20	9.73	0.00	2.01	99.95	81.71	16.46	0.00	1.83	0.20
		88.59	10.23	0.00	1.87	100.69	81.20	17.12	0.00	1.68	0.21
		87.80	10.15	0.00	1.75	99.70	81.26	17.15	0.00	1.59	0.21
		88.23	10.22	0.07	2.09	100.61	80.83	17.10	0.19	1.88	0.21
		88.76	10.12	0.01	1.82	100.71	81.40	16.94	0.02	1.64	0.21
		87.67	9.93	0.03	1.86	99.48	81.40	16.83	0.07	1.70	0.21
		86.98	10.83	0.00	1.98	99.80	80.01	18.20	0.00	1.79	0.23
	2	89.29	9.85	0.05	1.93	101.12	81.68	16.45	0.14	1.73	0.20
		88.69	9.52	0.03	1.19	99.43	82.64	16.19	0.07	1.09	0.20
		88.45	10.26	0.01	1.60	100.32	81.30	17.22	0.03	1.44	0.21
		88.24	10.19	0.00	1.46	99.88	81.50	17.18	0.00	1.32	0.21
	3	84.31	12.92	0.00	1.92	99.15	76.80	21.48	0.00	1.72	0.28
		85.66	13.16	0.01	2.20	101.04	76.56	21.48	0.03	1.93	0.28
		85.88	12.37	0.00	1.86	100.12	77.86	20.48	0.00	1.66	0.26
		86.19	12.25	0.05	1.37	99.86	78.32	20.32	0.14	1.22	0.26
		84.58	13.04	0.00	1.71	99.32	76.85	21.63	0.00	1.52	0.28
	4	89.79	9.61	0.00	1.15	100.55	82.78	16.17	0.01	1.04	0.20
		89.46	9.57	0.00	0.94	99.97	82.94	16.20	0.00	0.86	0.20
		88.98	9.86	0.02	0.73	99.60	82.56	16.71	0.07	0.67	0.20
		88.67	9.15	0.01	0.92	98.75	83.41	15.72	0.02	0.85	0.19
	5	89.42	8.44	0.00	0.80	98.66	84.67	14.59	0.00	0.75	0.17
		90.69	8.11	0.00	1.22	100.02	85.01	13.87	0.00	1.12	0.16
		91.80	8.07	0.02	1.13	101.02	85.23	13.68	0.06	1.03	0.16
		89.75	8.09	0.04	1.42	99.30	84.64	13.93	0.12	1.31	0.16
		88.11	8.24	0.00	1.21	97.56	84.44	14.42	0.00	1.14	0.17
	6	89.83	9.69	0.00	1.77	101.29	82.22	16.19	0.00	1.59	0.20
		87.65	9.69	0.00	1.94	99.28	81.73	16.50	0.00	1.78	0.20
		88.43	9.84	0.00	1.66	99.94	81.86	16.63	0.00	1.51	0.20
	7	92.04	6.98	0.05	1.39	100.45	86.60	11.99	0.13	1.28	0.14
		92.85	7.32	0.03	1.25	101.45	86.34	12.43	0.08	1.15	0.14
		92.55	6.01	0.00	0.87	99.42	88.68	10.51	0.00	0.81	0.12
		93.36	6.30	0.05	0.72	100.42	88.32	10.88	0.13	0.67	0.12
		91.42	6.67	0.00	1.35	99.44	87.13	11.60	0.00	1.27	0.13

Table 7. Chemical compositions of electrum grains in ore deposits from the Kinki, Chugoku and Kyushu provinces

Locality	Grain No.	Weight %					Atomic %				
		Au	Ag	Cu	Hg	Total	Au	Ag	Cu	Hg	Ag/Au
Nakase (Ki-A ①)	1	76.03	15.17	0.01	8.83	100.11	67.63	24.64	0.02	7.72	0.36
		78.17	17.14	0.00	4.70	100.07	68.53	27.43	0.00	4.04	0.40
		83.95	15.75	0.00	0.27	100.04	74.31	25.45	0.00	0.23	0.34
		76.87	15.77	0.01	7.49	100.18	68.00	25.47	0.02	6.50	0.37
		74.41	15.49	0.00	10.10	100.15	66.08	25.12	0.00	8.81	0.38
		83.75	15.98	0.03	0.36	100.23	73.88	25.73	0.07	0.31	0.35
		84.12	15.62	0.02	0.41	100.24	74.37	25.22	0.06	0.35	0.34
		83.71	16.27	0.02	0.09	100.16	73.70	26.16	0.06	0.08	0.35
		83.79	15.84	0.01	0.01	99.73	74.32	25.66	0.01	0.01	0.35
		79.68	15.33	0.00	4.78	99.87	70.92	24.91	0.00	4.17	0.35
	2	82.27	16.95	0.00	0.01	99.32	72.66	27.33	0.00	0.01	0.38
		83.40	16.69	0.00	0.15	100.29	73.14	26.73	0.00	0.13	0.37
		82.79	16.71	0.00	0.21	99.83	72.94	26.88	0.00	0.18	0.37
		82.71	16.81	0.00	0.08	99.72	72.89	27.05	0.00	0.07	0.37
		81.75	17.15	0.00	0.54	99.55	71.97	27.56	0.00	0.47	0.38
		82.51	17.41	0.00	0.24	100.26	72.04	27.76	0.00	0.20	0.39
		82.02	17.79	0.04	0.47	100.41	71.28	28.23	0.10	0.40	0.40
		81.60	18.14	0.02	0.06	99.89	71.06	28.84	0.05	0.05	0.41
		82.90	16.64	0.00	0.09	99.75	73.13	26.80	0.00	0.08	0.37
		82.73	17.01	0.05	0.10	99.93	72.55	27.23	0.13	0.09	0.38
	3	83.17	17.10	0.02	0.07	100.45	72.63	27.26	0.05	0.06	0.38
		83.12	16.75	0.00	0.09	99.96	73.05	26.87	0.00	0.08	0.37
		82.98	16.20	0.02	0.12	99.43	73.61	26.23	0.05	0.11	0.36
		81.74	17.66	0.03	0.25	99.74	71.50	28.21	0.08	0.22	0.39
		82.53	17.33	0.02	0.22	100.21	72.10	27.65	0.06	0.19	0.38
		82.59	15.91	0.01	1.18	99.80	73.19	25.74	0.04	1.03	0.35
		82.63	17.24	0.01	0.38	100.32	72.16	27.48	0.03	0.32	0.38
		82.35	16.30	0.09	0.64	99.44	72.87	26.33	0.24	0.56	0.36
		81.92	16.96	0.00	0.47	99.42	72.28	27.31	0.00	0.41	0.38
		82.97	16.71	0.02	0.44	100.26	72.80	26.77	0.06	0.38	0.37
	4	83.93	15.06	0.03	0.38	99.44	75.01	24.58	0.08	0.33	0.33
		84.81	14.20	0.07	0.35	99.48	76.20	23.29	0.20	0.31	0.31
		83.89	14.85	0.00	0.33	99.11	75.36	24.35	0.00	0.29	0.32
		84.43	15.02	0.05	0.30	99.94	75.17	24.42	0.15	0.26	0.32
		84.25	15.17	0.01	0.38	99.90	74.98	24.64	0.04	0.34	0.33
		83.93	15.62	0.00	0.33	99.94	74.42	25.29	0.00	0.29	0.34
		83.62	14.96	0.02	0.50	99.25	75.00	24.50	0.05	0.44	0.33
		84.59	15.51	0.00	0.33	100.47	74.71	25.01	0.00	0.28	0.33
		84.43	15.35	0.00	0.30	100.16	74.89	24.85	0.00	0.26	0.33
		83.68	15.58	0.01	0.23	99.61	74.46	25.32	0.03	0.20	0.34
	5	89.19	10.26	0.05	0.43	99.99	82.21	17.26	0.14	0.39	0.21
		88.86	10.09	0.02	0.48	99.47	82.43	17.08	0.05	0.43	0.21
		88.48	10.52	0.03	0.31	99.43	81.87	17.77	0.09	0.28	0.22
		89.79	10.14	0.03	0.36	100.36	82.58	17.02	0.08	0.32	0.21
		89.89	10.13	0.06	0.43	100.57	82.47	16.97	0.17	0.39	0.21
		89.50	10.62	0.05	0.42	100.59	81.77	17.71	0.13	0.38	0.22
		89.86	10.17	0.01	0.46	100.59	82.52	17.04	0.02	0.41	0.21
		88.78	10.60	0.01	0.45	99.92	81.76	17.82	0.01	0.40	0.22
		89.09	10.79	0.03	0.62	100.60	81.36	18.00	0.08	0.55	0.22
		89.78	10.43	0.00	0.28	100.60	82.30	17.45	0.00	0.25	0.21

Table 7. (Continued)

Locality	Grain No.	Weight %					Atomic %				
		Au	Ag	Cu	Hg	Total	Au	Ag	Cu	Hg	Ag/Au
Nakase	6	74.11	17.52	0.00	8.30	99.93	64.87	28.00	0.00	7.13	0.43
(Ki-A ①)		71.99	16.71	0.00	11.35	100.05	63.35	26.84	0.01	9.81	0.42
		73.73	17.07	0.00	9.13	99.93	64.76	27.36	0.01	7.87	0.42
		82.07	16.78	0.02	1.13	99.99	72.08	26.90	0.05	0.97	0.37
		76.28	15.93	0.01	7.78	99.99	67.49	25.73	0.02	6.76	0.38
		73.03	16.97	0.00	10.04	100.04	64.14	27.21	0.00	8.65	0.42
		81.26	16.28	0.00	2.38	99.92	71.71	26.23	0.00	2.06	0.37
		74.74	17.00	0.01	8.26	100.00	65.61	27.24	0.02	7.12	0.42
		73.17	16.87	0.07	9.90	100.01	64.23	27.03	0.20	8.54	0.42
		71.64	16.59	0.03	11.70	99.96	63.11	26.69	0.08	10.12	0.42
	7*	86.02	13.50	0.00	–	99.52	77.73	22.27	0.00	–	0.29
		85.07	13.59	0.00	–	98.66	77.43	22.57	0.00	–	0.29
		85.88	13.89	0.01	–	99.78	77.18	22.79	0.04	–	0.30
		85.52	14.41	0.01	–	99.94	76.45	23.51	0.04	–	0.31
		84.93	14.65	0.01	–	99.59	76.02	23.95	0.04	–	0.32
		84.92	14.78	0.00	–	99.70	75.88	24.12	0.00	–	0.32
		84.71	15.05	0.01	–	99.77	75.48	24.49	0.04	–	0.32
		84.40	15.37	0.03	–	99.80	74.99	24.93	0.09	–	0.33
		84.19	15.65	0.03	–	99.87	74.60	25.31	0.09	–	0.34
		83.60	15.73	0.00	–	99.33	74.43	25.57	0.00	–	0.34
Ikuno	1*	70.56	28.55	0.01	–	99.12	57.50	42.27	0.03	–	0.74
(Ki-A ②)		70.23	29.04	0.02	–	99.29	56.96	42.99	0.05	–	0.75
		70.06	29.56	0.03	–	99.65	56.44	43.49	0.08	–	0.77
		69.67	30.12	0.03	–	99.82	55.85	44.07	0.08	–	0.79
		68.79	30.44	0.04	–	99.27	55.26	44.64	0.09	–	0.81
		68.49	31.31	0.04	–	99.84	54.46	45.45	0.09	–	0.83
		67.47	31.74	0.01	–	99.22	53.78	46.19	0.03	–	0.86
		67.06	32.43	0.03	–	99.52	53.06	46.86	0.08	–	0.88
		66.24	32.82	0.03	–	99.09	52.46	47.46	0.08	–	0.90
		65.30	33.86	0.07	–	99.23	51.28	48.55	0.17	–	0.95
	2*	67.60	31.72	0.00	–	99.32	53.85	46.15	0.00	–	0.86
		67.34	31.84	0.01	–	99.19	53.65	46.32	0.03	–	0.86
		67.66	32.23	0.03	–	99.92	53.45	46.48	0.08	–	0.87
		67.24	32.18	0.02	–	99.44	53.34	46.61	0.05	–	0.87
		67.36	32.46	0.00	–	99.82	53.20	46.80	0.00	–	0.88
		67.26	32.60	0.02	–	99.88	53.03	46.92	0.05	–	0.88
		66.73	32.41	0.00	–	99.14	53.00	47.00	0.00	–	0.89
		66.75	32.79	0.02	–	99.56	52.69	47.26	0.05	–	0.90
		66.53	33.25	0.02	–	99.80	52.26	47.69	0.05	–	0.91
		66.29	33.23	0.01	–	99.53	53.19	47.77	0.03	–	0.90
Bajo	1	64.68	34.95	0.01	0.01	99.79	50.32	49.64	0.03	0.01	0.99
(Ky-A ①)		60.74	38.93	0.03	0.05	99.89	46.03	53.87	0.06	0.03	1.17
		62.96	37.09	0.00	0.00	100.20	48.18	51.82	0.00	0.00	1.08
		59.37	40.15	0.00	0.00	99.69	44.75	55.25	0.00	0.00	1.23
		59.70	40.42	0.01	0.00	100.36	44.71	55.27	0.02	0.00	1.24
		58.97	40.35	0.03	0.06	99.64	44.40	55.48	0.07	0.04	1.25
		56.54	42.80	0.06	0.02	99.61	41.91	57.93	0.14	0.01	1.38
		58.96	41.13	0.06	0.04	100.38	43.91	55.93	0.14	0.03	1.27
		57.50	41.97	0.04	0.08	99.76	42.81	57.05	0.09	0.06	1.33
		63.97	35.87	0.00	0.04	99.94	49.40	50.57	0.00	0.03	1.02
	2*	71.62	27.91	0.14	–	99.67	58.22	41.43	0.35	–	0.71
		69.37	30.05	0.19	–	99.61	55.57	43.96	0.47	–	0.79
		67.75	31.24	0.35	–	99.34	53.83	45.31	0.86	–	0.84
		66.41	32.72	0.61	–	99.74	51.87	46.65	1.48	–	0.90
		65.70	33.55	0.59	–	99.84	51.02	47.56	1.42	–	0.93
		65.34	33.53	0.48	–	99.35	51.02	47.81	1.17	–	0.94

*after Shikazono and Shimizu (1988)

Table 7. Continued)

Locality	Grain No.	Weight %					Atomic %				
		Au	Ag	Cu	Hg	Total	Au	Ag	Cu	Hg	Ag/Au
Mizobe	1*	64.21	35.03	0.44	–	99.68	49.57	49.38	1.05	–	1.00
(Ky-A ②)		62.78	36.20	0.08	–	99.06	48.62	51.18	0.20	–	1.05
		62.95	36.44	0.05	–	99.44	48.56	51.32	0.12	–	1.06
		62.72	36.68	0.07	–	99.47	48.29	51.55	0.17	–	1.07
		62.31	36.90	0.02	–	99.23	48.03	51.93	0.05	–	1.08
		62.13	37.45	0.02	–	99.60	47.59	52.37	0.05	–	1.10
		62.05	37.43	0.00	–	99.48	47.59	52.41	0.00	–	1.10
		62.14	38.20	0.03	–	100.37	47.08	52.84	0.07	–	1.12
Hoshino	1	61.25	37.13	0.00	0.00	98.58	47.47	52.53	0.00	0.00	1.11
(Ky-A ③)		60.46	37.36	0.01	0.02	98.07	46.97	52.98	0.03	0.02	1.13
		60.85	37.16	0.00	0.00	98.23	47.29	52.71	0.00	0.00	1.11
		60.61	37.45	0.00	0.02	98.30	46.98	53.00	0.00	0.02	1.13
		60.98	36.79	0.03	0.00	98.02	47.55	52.38	0.07	0.00	1.10
		61.62	36.76	0.00	0.03	98.53	47.86	52.12	0.00	0.02	1.09
		60.68	36.49	0.00	0.15	97.48	47.61	52.28	0.00	0.11	1.10
		56.64	41.52	0.00	0.00	98.40	42.76	57.24	0.00	0.00	1.34
		60.16	37.42	0.00	0.00	97.79	46.82	53.17	0.01	0.00	1.14
	2*	65.50	34.31	0.02	–	99.83	51.08	48.92	0.05	–	0.96
		64.35	34.78	0.04	–	99.17	50.31	49.54	0.11	–	0.98
		64.73	35.02	0.04	–	99.79	50.23	49.62	0.11	–	0.99
		64.23	35.40	0.03	–	99.66	49.85	50.15	0.07	–	1.01
		64.24	35.57	0.00	–	99.81	49.73	50.27	0.00	–	1.01
		62.63	36.44	0.01	–	99.08	48.48	51.52	0.02	–	1.06
		62.91	36.58	0.02	–	99.51	48.48	51.52	0.05	–	1.06
		62.60	36.84	0.00	–	99.44	48.25	51.75	0.00	–	1.07
		62.07	37.23	0.00	–	99.30	47.74	52.26	0.00	–	1.09
		52.52	46.98	0.00	–	99.50	37.98	62.02	0.00	–	1.63
Okuchi	1*	79.71	19.56	0.10	–	99.37	68.87	30.86	0.27	–	0.45
(Ky-A ④)		79.19	19.89	0.04	–	99.12	67.35	32.55	0.10	–	0.48
		78.61	20.98	0.00	–	99.59	67.24	32.76	0.00	–	0.49
		78.14	20.96	0.02	–	99.12	67.08	32.87	0.05	–	0.49
		78.21	21.16	0.01	–	99.38	66.91	33.05	0.03	–	0.49
		78.50	21.39	0.02	–	99.91	66.75	33.20	0.05	–	0.50
		78.23	21.57	0.00	–	99.80	66.52	33.48	0.00	–	0.50
		77.59	21.49	0.05	–	99.13	66.32	33.54	0.13	–	0.51
		77.82	21.88	0.09	–	99.79	65.92	33.85	0.23	–	0.51
		77.34	22.11	0.07	–	99.52	65.59	34.23	0.18	–	0.52
Hishikari	1	68.99	28.19	0.08	0.00	97.40	57.16	42.65	0.20	0.00	0.75
(Ky-A ⑤)		68.90	27.94	0.05	0.00	97.02	57.38	42.48	0.14	0.00	0.74
		68.95	28.02	0.11	0.00	97.17	57.25	42.48	0.27	0.00	0.74
		69.50	28.07	0.05	0.00	97.78	57.48	42.39	0.13	0.00	0.74
		68.49	28.22	0.11	0.00	96.94	56.91	42.81	0.28	0.00	0.75
		67.62	28.67	0.06	0.00	96.51	56.27	43.56	0.17	0.00	0.77
		68.25	28.41	0.12	0.00	96.90	56.64	43.05	0.31	0.00	0.76
		68.87	27.59	0.12	0.00	96.73	57.58	42.11	0.31	0.00	0.73

*after Shikazono and Shimizu (1988)

Table 7. (Continued)

Locality	Grain No.	Weight %					Atomic %				
		Au	Ag	Cu	Hg	Total	Au	Ag	Cu	Hg	Ag/Au
Yamagano (Ky-A ⑥)	1	81.68	18.44	0.00	0.00	100.23	70.82	29.18	0.00	0.00	0.41
		76.40	23.35	0.00	0.03	99.95	64.16	35.80	0.01	0.03	0.56
		78.66	21.31	0.00	0.00	100.09	66.91	33.09	0.00	0.00	0.49
		78.57	21.48	0.00	0.00	100.11	66.71	33.29	0.00	0.00	0.50
		77.36	22.67	0.02	0.00	100.16	65.11	34.84	0.06	0.00	0.54
		78.64	21.28	0.00	0.00	100.07	66.93	33.07	0.00	0.00	0.49
		77.19	22.95	0.00	0.00	100.28	64.82	35.18	0.00	0.00	0.54
		77.33	22.55	0.06	0.00	100.07	65.15	34.68	0.17	0.00	0.53
		76.92	23.09	0.02	0.00	100.18	64.57	35.39	0.04	0.00	0.55
		75.59	24.16	0.02	0.00	99.88	63.12	36.83	0.04	0.00	0.58
	2*	67.76	31.44	0.01	–	99.21	54.12	45.85	0.03	–	0.85
		67.75	31.68	0.02	–	99.45	53.92	46.03	0.05	–	0.85
		67.41	31.92	0.00	–	99.33	53.64	46.36	0.00	–	0.86
		67.42	31.95	0.02	–	99.39	53.59	46.37	0.05	–	0.87
		67.38	31.94	0.00	–	99.32	53.61	46.39	0.00	–	0.87
		67.16	31.93	0.00	–	99.09	53.53	46.47	0.00	–	0.87
		67.53	32.13	0.02	–	99.68	53.49	46.47	0.05	–	0.87
		67.32	32.11	0.01	–	99.44	53.43	46.54	0.03	–	0.87
		67.13	32.43	0.02	–	99.58	53.11	46.84	0.05	–	0.88

*after Shikazono and Shimizu (1988)

Table 7-1. Chemical compositions of electrum grains in placer deposits from the Kinki, Shikokum Chugoku and Kyushu provinces

Locality	Grain No.	Weight %					Atomic %				
		Au	Ag	Cu	Hg	Total	Au	Ag	Cu	Hg	Ag/Au
Amasu	1	89.27	9.49	0.03	0.00	98.84	83.67	16.23	0.10	0.00	0.19
(Ki-P ①)		87.85	9.12	0.01	0.00	97.07	84.04	15.94	0.02	0.00	0.19
		88.58	9.43	0.03	0.00	98.07	83.65	16.25	0.10	0.00	0.19
		87.97	9.37	0.06	0.00	97.47	83.56	16.25	0.19	0.00	0.19
		89.50	9.68	0.03	0.00	99.31	83.43	16.48	0.09	0.00	0.20
		89.08	9.69	0.03	0.03	98.88	83.34	16.55	0.08	0.03	0.20
Kamo	1	76.07	21.45	0.00	0.04	97.58	65.99	33.97	0.00	0.04	0.51
(Ki-P ②)		75.64	21.25	0.00	0.00	97.03	66.09	33.91	0.00	0.00	0.51
		75.81	21.38	0.00	0.00	97.38	66.01	33.99	0.00	0.00	0.51
		75.59	21.69	0.00	0.00	97.35	65.62	34.38	0.01	0.00	0.52
		76.05	21.34	0.07	0.00	97.61	66.00	33.82	0.18	0.00	0.51
		76.96	21.00	0.00	0.00	98.01	66.75	33.25	0.00	0.00	0.50
		75.96	21.42	0.01	0.00	97.47	66.00	33.98	0.01	0.00	0.51
		75.74	21.74	0.00	0.00	97.60	65.61	34.39	0.01	0.00	0.52
		76.14	22.13	0.00	0.00	98.34	65.33	34.67	0.00	0.00	0.53
		76.83	21.87	0.00	0.00	98.85	65.80	34.20	0.00	0.00	0.52
Yagi	1	82.17	16.48	0.00	0.01	98.76	73.19	26.81	0.00	0.01	0.37
(Ki-P ③)		82.74	16.26	0.05	0.03	99.13	73.48	26.37	0.12	0.03	0.36
		82.04	16.38	0.00	0.10	98.55	73.23	26.68	0.00	0.09	0.36
		81.41	16.77	0.06	0.07	98.33	72.49	27.27	0.18	0.06	0.38
		81.43	16.92	0.00	0.09	98.52	72.44	27.47	0.00	0.08	0.38
		80.57	17.29	0.05	0.04	98.02	71.71	28.10	0.15	0.04	0.39
		80.95	16.78	0.05	0.12	98.05	72.36	27.39	0.14	0.10	0.38
	2	83.77	12.99	0.00	0.26	97.08	77.75	22.01	0.00	0.24	0.28
		82.83	13.87	0.00	0.63	97.35	76.15	23.28	0.00	0.57	0.31
		84.04	13.46	0.02	0.22	97.77	77.18	22.57	0.05	0.20	0.29
		83.99	13.48	0.00	0.00	97.58	77.33	22.67	0.00	0.00	0.29
		83.40	13.13	0.02	0.06	96.68	77.58	22.30	0.07	0.06	0.29
		83.49	12.90	0.03	0.09	96.55	77.87	21.96	0.09	0.09	0.28
		83.54	13.67	0.02	0.17	97.45	76.84	22.95	0.06	0.16	0.30
		83.70	13.33	0.02	0.06	97.15	77.40	22.50	0.05	0.05	0.29
Meidi	1	72.57	23.38	0.01	0.00	96.07	62.95	37.03	0.02	0.00	0.59
(Ki-P ④)		74.08	23.31	0.00	0.06	97.53	63.48	36.47	0.01	0.05	0.57
		75.02	22.70	0.01	0.00	97.85	64.40	35.57	0.03	0.00	0.55
		75.80	22.48	0.01	0.00	98.39	64.86	35.12	0.02	0.00	0.54
		75.58	22.50	0.01	0.00	98.16	64.78	35.21	0.02	0.00	0.54
		70.82	26.03	0.00	0.00	96.98	59.84	40.16	0.00	0.00	0.67
		72.21	25.22	0.00	0.00	97.59	61.07	38.93	0.00	0.00	0.64
		72.92	23.78	0.02	0.00	96.79	62.64	37.31	0.05	0.00	0.60
		74.51	23.13	0.00	0.02	97.76	63.81	36.17	0.00	0.02	0.57
	2	63.70	34.58	0.05	0.08	98.60	50.12	49.68	0.13	0.06	0.99
		62.56	35.00	0.00	0.00	97.76	49.47	50.53	0.00	0.00	1.02
		61.91	35.25	0.00	0.00	97.33	49.03	50.97	0.00	0.00	1.04
		62.77	35.16	0.01	0.04	98.20	49.41	50.53	0.03	0.03	1.02
		62.54	34.42	0.00	0.00	97.08	49.88	50.12	0.00	0.00	1.00
		63.50	34.68	0.00	0.00	98.33	50.08	49.92	0.00	0.00	1.00
		64.18	33.50	0.03	0.00	97.84	51.17	48.76	0.07	0.00	0.95

Table 7-1. (Continued)

Locality	Grain No.	Weight %					Atomic %				
		Au	Ag	Cu	Hg	Total	Au	Ag	Cu	Hg	Ag/Au
Yamashirodani	1	91.60	7.09	0.00	0.00	98.77	87.61	12.38	0.01	0.00	0.14
(Sh-P ①)		91.46	6.72	0.07	0.00	98.25	88.00	11.81	0.19	0.00	0.13
		92.22	6.92	0.00	0.03	99.24	87.93	12.04	0.00	0.03	0.14
		90.82	6.96	0.01	0.00	97.82	87.69	12.27	0.03	0.00	0.14
		89.50	8.22	0.05	0.00	97.81	85.52	14.34	0.14	0.00	0.17
		92.45	6.58	0.02	0.00	99.09	88.46	11.50	0.04	0.00	0.13
		90.81	7.46	0.04	0.00	98.34	86.86	13.02	0.11	0.00	0.15
		90.15	7.56	0.04	0.00	97.76	86.63	13.26	0.11	0.00	0.15
		91.23	6.28	0.00	0.00	97.63	88.84	11.16	0.00	0.00	0.13
		91.45	6.47	0.03	0.00	97.97	88.49	11.43	0.08	0.00	0.13
Yamashiro	1	81.82	15.75	0.00	0.00	97.63	74.00	26.00	0.00	0.00	0.35
(Sh-P ②)		83.10	14.25	0.00	0.00	97.42	76.15	23.85	0.00	0.00	0.31
		81.25	15.59	0.02	0.02	96.99	74.01	25.93	0.04	0.01	0.35
		81.68	15.44	0.04	0.00	97.28	74.25	25.63	0.12	0.00	0.35
		83.05	14.63	0.00	0.00	97.71	75.66	24.34	0.00	0.00	0.32
		82.67	15.39	0.03	0.00	98.21	74.56	25.34	0.09	0.00	0.34
		81.29	16.43	0.00	0.00	97.79	73.05	26.95	0.00	0.00	0.37
		79.94	17.55	0.00	0.00	97.57	71.38	28.62	0.00	0.00	0.40
		77.62	19.58	0.03	0.00	97.30	68.43	31.51	0.07	0.00	0.46
		77.86	19.00	0.04	0.00	97.07	69.09	30.79	0.12	0.00	0.45
Sendai	1	66.50	31.77	0.03	0.54	98.96	53.15	46.36	0.08	0.42	0.87
(Ky-P ①)		65.05	31.83	0.01	0.70	97.76	52.52	46.91	0.02	0.55	0.89
		64.87	32.65	0.00	0.00	97.70	52.11	47.88	0.01	0.00	0.92
		64.60	32.75	0.00	0.00	97.53	51.93	48.07	0.00	0.00	0.93
		64.51	32.98	0.00	0.00	97.64	51.72	48.28	0.00	0.00	0.93
		64.52	33.39	0.00	0.00	98.07	51.42	48.58	0.00	0.00	0.94
		63.92	33.89	0.04	0.00	98.00	50.77	49.14	0.09	0.00	0.97
		64.75	34.43	0.02	0.00	99.35	50.72	49.24	0.04	0.00	0.97
		64.61	34.35	0.04	0.00	99.18	50.70	49.20	0.10	0.00	0.97
		67.98	29.52	0.04	0.02	97.70	55.72	44.18	0.09	0.01	0.79
Kago	1	74.82	22.66	0.00	0.00	97.60	61.16	38.84	0.00	0.00	0.63
(Ky-P ②)		70.02	26.43	0.04	0.00	96.64	92.24	7.07	0.16	0.52	0.08
		69.70	28.33	0.01	0.00	98.20	60.91	39.09	0.00	0.00	0.64
		70.48	26.42	0.03	0.00	97.09	65.36	34.53	0.00	0.00	0.53
	2	80.50	17.01	0.01	0.00	97.58	68.24	31.76	0.00	0.00	0.47
		80.22	17.02	0.02	0.00	97.29	91.12	8.78	0.00	0.00	0.10
		80.99	17.43	0.01	0.00	98.54	73.89	25.99	0.12	0.00	0.35
		80.62	15.83	0.05	0.10	96.66	75.28	24.51	0.21	0.00	0.33
		82.46	16.09	0.00	0.00	98.64	74.47	25.37	0.16	0.00	0.34
		80.06	17.05	0.02	0.00	97.20	74.40	25.56	0.00	0.00	0.34
		80.97	17.01	0.00	0.00	98.10	71.57	28.43	0.00	0.00	0.40
Oshima	1	91.36	7.44	0.00	0.00	98.82	87.06	12.94	0.00	0.00	0.15
(Ky-P ③)		90.67	7.30	0.08	0.00	98.07	86.99	12.78	0.23	0.00	0.15
		90.94	7.37	0.11	0.00	98.47	86.82	12.85	0.33	0.00	0.15
		91.17	7.54	0.06	0.00	98.85	86.74	13.09	0.16	0.00	0.15
		91.72	7.47	0.06	0.00	99.33	86.89	12.93	0.19	0.00	0.15
		91.60	7.57	0.02	0.00	99.20	86.83	13.11	0.06	0.00	0.15
	2	95.74	3.07	0.01	0.09	98.93	94.35	5.52	0.04	0.09	0.06
		95.43	2.98	0.00	0.09	98.52	94.52	5.39	0.00	0.08	0.06
		95.62	2.90	0.02	0.13	98.66	94.58	5.24	0.05	0.12	0.06
		95.27	3.15	0.00	0.03	98.48	94.28	5.69	0.00	0.03	0.06
		96.59	2.88	0.06	0.00	99.56	94.68	5.15	0.17	0.00	0.05
		94.94	3.03	0.02	0.00	98.01	94.43	5.50	0.07	0.00	0.06

Table 7-1. (Continued)

Locality	Grain No.	Weight %					Atomic %				
		Au	Ag	Cu	Hg	Total	Au	Ag	Cu	Hg	Ag/Au
Hoshino-river (Ky-P ④)	1	63.45	34.89	0.00	0.00	98.34	49.90	50.10	0.00	0.00	1.00
		62.62	35.47	0.02	0.00	98.12	49.12	50.82	0.05	0.00	1.03
		58.59	39.19	0.03	0.00	97.80	44.98	54.95	0.07	0.00	1.22
		57.09	42.19	0.06	0.00	99.33	42.51	57.36	0.13	0.00	1.35
		55.74	43.76	0.06	0.00	99.55	41.03	58.84	0.13	0.00	1.43
	2	99.50	1.44	0.00	0.00	100.94	97.43	2.57	0.00	0.00	0.03
	rim	98.46	1.36	0.00	0.00	99.82	97.54	2.46	0.00	0.00	0.03
		66.27	32.70	0.02	0.00	98.99	52.57	47.37	0.06	0.00	0.90
		65.58	32.67	0.00	0.00	98.25	52.36	47.64	0.00	0.00	0.91
		64.60	33.51	0.00	0.00	98.11	51.36	48.64	0.00	0.00	0.95
		95.27	4.42	0.00	0.00	99.69	92.18	7.82	0.00	0.00	0.08
		66.94	30.97	0.01	0.00	97.93	54.18	45.78	0.04	0.00	0.84
		66.92	31.54	0.00	0.00	98.46	53.74	46.25	0.01	0.00	0.86
		66.75	32.28	0.02	0.00	99.05	53.08	46.88	0.04	0.00	0.88
	rim	97.63	1.70	0.03	0.00	99.36	96.83	3.08	0.09	0.00	0.03
	3	99.78	0.97	0.00	0.00	100.75	98.26	1.74	0.00	0.00	0.02
		90.90	7.72	0.01	0.00	98.62	86.57	13.42	0.01	0.00	0.16
		87.42	11.37	0.04	0.01	98.84	80.71	19.17	0.11	0.01	0.24
		87.93	10.26	0.04	0.00	98.23	82.34	17.55	0.11	0.00	0.21
		87.45	11.23	0.01	0.00	98.69	80.98	18.99	0.03	0.00	0.23
		98.27	1.54	0.04	0.00	99.85	97.10	2.78	0.12	0.00	0.03
		98.70	1.31	0.00	0.00	100.01	97.64	2.36	0.00	0.00	0.02
		98.28	1.36	0.00	0.00	99.64	97.54	2.46	0.00	0.00	0.03
		87.73	10.57	0.04	0.00	98.34	81.87	18.02	0.10	0.00	0.22
	4	100.25	0.75	0.02	0.00	101.01	98.61	1.34	0.05	0.00	0.01
		98.77	0.95	0.00	0.00	99.72	98.27	1.73	0.00	0.00	0.02
		98.45	1.14	0.02	0.00	99.60	97.87	2.06	0.07	0.00	0.02
		100.02	0.65	0.01	0.00	100.68	98.78	1.18	0.04	0.00	0.01
		99.88	0.61	0.01	0.00	100.50	98.86	1.10	0.04	0.00	0.01
		98.96	0.53	0.00	0.00	99.49	99.03	0.97	0.00	0.00	0.01
		98.30	0.42	0.00	0.00	98.72	99.23	0.77	0.00	0.00	0.01
		99.49	0.62	0.00	0.00	100.12	98.87	1.13	0.00	0.00	0.01
		94.69	5.38	0.00	0.08	100.15	90.53	9.39	0.01	0.08	0.10
	5	97.61	0.96	0.03	0.00	98.60	98.16	1.75	0.09	0.00	0.02
		91.51	7.26	0.14	0.00	98.92	86.98	12.61	0.41	0.00	0.14
	rim	99.44	0.72	0.01	0.00	100.18	98.65	1.31	0.04	0.00	0.01
		90.12	9.05	0.02	0.00	99.18	84.46	15.49	0.05	0.00	0.18
		91.81	7.51	0.04	0.00	99.36	86.90	12.97	0.13	0.00	0.15
		89.43	9.30	0.04	0.00	98.77	83.94	15.95	0.11	0.00	0.19
		91.70	6.26	0.08	0.00	98.04	88.69	11.07	0.24	0.00	0.12
		89.79	7.99	0.11	0.05	97.94	85.71	13.93	0.32	0.05	0.16
		89.94	8.95	0.04	0.00	98.92	84.54	15.35	0.10	0.00	0.18
		89.62	9.02	0.03	0.00	98.66	84.40	15.51	0.10	0.00	0.18
		90.03	8.81	0.06	0.00	98.89	84.71	15.13	0.16	0.00	0.18
		91.24	6.93	0.09	0.00	98.25	87.60	12.14	0.26	0.00	0.14
		97.95	2.12	0.00	0.00	100.07	96.19	3.81	0.00	0.00	0.04
		90.16	7.92	0.19	0.00	98.27	85.69	13.75	0.56	0.00	0.16
		97.43	0.69	0.00	0.00	98.13	98.72	1.28	0.00	0.00	0.01
	rim	99.58	1.01	0.03	0.00	100.63	98.08	1.82	0.09	0.00	0.02