CHAPTER 11: LEAD SEALS

J. David McMahan

Introduction

On February 28, 1818, RAC Chief Manager L. A. Hagemeister, seeking to establish more disciplined and businesslike practices in Russian America, presented the following proposal to the New Arkhangel office:

> I note from the accounts that there is often inaccuracy and confusion because of variations in terms denoting different receivers of furs. In order to avoid this, and to fulfill orders of the Main Office to my predecessor, the office will distinguish furs by stamping [them] as follows: The seal with the inscription "RAK" [i.e., RAC] must appear on all company furs. To indicate where they originate, depending on where the furs are collected, order to be cut on the seal under the brand [kleimo]: ...[Hagemeister, in Pierce 1984:39-40].

Hagemeister completed the above proposal by illustrating various symbols, along with their meaning, and stressed the need to keep the meanings of the symbols secret. The use of lead seals to close confidential communications, to authenticate documents, and to tamper-proof packages was well established prior to Hagemeister's communication. Specimens technologically similar to those of Russian America are known from the ancient Roman and Byzantine empires, where they were used to close confidential communications from leaders in government, church, military, and commerce. Modern day counterparts, generally made from less toxic substances such as aluminum or plastic, now are used to tamper-proof electrical meters and cargo containers – although lead is still used in some instances. The Castle Hill collection includes 30 lead seals (Figures 11.1-11.4). All but three are considered RAC fur bale seals. One of the non-inclusive specimens has been identified as a British wool packer's seal. Two others are incomplete, but are probably also cloth packer's seals based on the style of manufacture.

The use of lead seals in the fur trade was an industry standard during the 18th and 19th centuries. They have been documented on British and French sites in the eastern U.S. and on Hudson's Bay Company posts in the Pacific Northwest. Lead seals are known from other Russian-American Company posts, but are relatively rare. Shubin (1990:444) illustrates three lead seals from the RAC Kurilorossiia settlement in the Kurile Islands. Two examples are known from the Erskine House collection at the Baranof Museum, Kodiak, and four examples are known to be in the Sitka National Historical Park collection. Alice Ryser and Sue Thorsen, respectively, supplied photos of the specimens in these collections for comparison. The Castle Hill collection, which includes both blanks and finished examples, presents an opportunity to examine a sizable collection from recorded context. Attributes of the Castle Hill lead seals are presented in Table 11.1.

Methods

Prior to analysis, all seals were scanned at high resolution on a flat-bed scanner to provide images for inventory purposes. The seals were photographed individually and in groups under controlled cross-illumination with high intensity carbon arc lamps. The resulting images, on tungsten balanced slide film, were commercially digitized. During analysis, each seal was

Table 11.1. Attributes of the Castle Hill lead seals.

Accession	Cat. No.	Unit	Stratum	Diameter	Thickness	Wt.	Side 1	Side 2
UA97.094	35	N101/E132	I	2.62	0.45	14.9	"P.A.K.";	Imperial Eagle
UA97.094	2232	N103/E131	I	2.16	0.30	06.1	"P.A.K." in	Imperial Eagle
UA97.094	2249	N100/E134	I	1.85	0.70	10.9	unmarked	unmarked
UA97.094	3863	N100/E133	II a	2.25	0.50	12.0	"P.A.K.";	Imperial Eagle
UA97.094	6368	N94/E130	indeterminat	2.35	0.39	10.4	"P.A.K.";	Russian "b"
UA97.094	6369	N104/E131	I	3.10	0.30	12.1	1/2 seal;	unmarked
UA97.094	6371	N103/E132	I	1.93	0.70	10.8	"P.A.K.";	Russian "l"
UA97.094	6374	N101/E127	II a	1.98	0.52	11.0	"P.A.K.";	unmarked
UA97.094	6375	N102/E133	I	3.42	0.30	10.6	Incised	unmarked
UA97.094	7080	N101/E134	IIa	2.47	0.69	12.7	Illegible	Illegible
UA97.094	24875	N101/E131	I	2.10	0.31	05.6	"Kl"	Illegible
UA97.094	26940	N100/E131	I	2.23	0.38	08.1	"P.A.K."	Imperial Eagle
UA97.094	45820	N103/E132	I	1.79	0.35	07.7	unmarked	unmarked
UA98.052	64	N96/E130	I	1.70	0.41	05.9	"P.A.K."; "+"	Circled "M"
UA98.052	126	N97/E135	I	2.25	0.65	17.2	"P.A.K.", dot	Untranslated
UA98.052	127	N108/E134	I	1.93	0.48	12.1	Illegible	Illegible
UA98.052	128	N96/E137	I	2.78	0.41	15.0	Untranslated	unmarked
UA98.052	129	N97/E137	II e	1.88	0.36	05.6	"P.A.K."; "x"	Circled "M"
UA98.052	130	N106/E134	I	2.97	0.39	17.7	"PACKER";	"13925" over
UA98.052	1294	N100/E136	II b	2.39	0.50	13.4	Illegible,	Imperial Eagle
UA98.052	2520	N108/E136	I	2.18	0.22		Unmarked	Unmarked
UA98.052	4263	N95/E131	I	2.67	0.45	13.7	unmarked	unmarked
UA98.052	5119	N96/E136	I	3.00	0.64	31.5	unmarked	indeterminate
UA98.052	5718	N100/E141	II e	1.60	0.57	07.0	"P.A.K."	Illegible
UA98.052	7765	N103/E135	II	1.95	0.58	06.3	Illegible	Illegible
UA98.052	7825	N103/E134	II b	2.07	0.51	10.7	"P.A.K.";	unmarked
UA98.052	8778	N109/E135	I	1.90	0.41	03.5	untranslated	unmarked
UA98.052	8779	N109/E135	I	1.84	0.63	07.1	Illegible	Illegible
UA98.052	8780	N109/E135	I	2.07	1.17	24.9	unmarked	unmarked

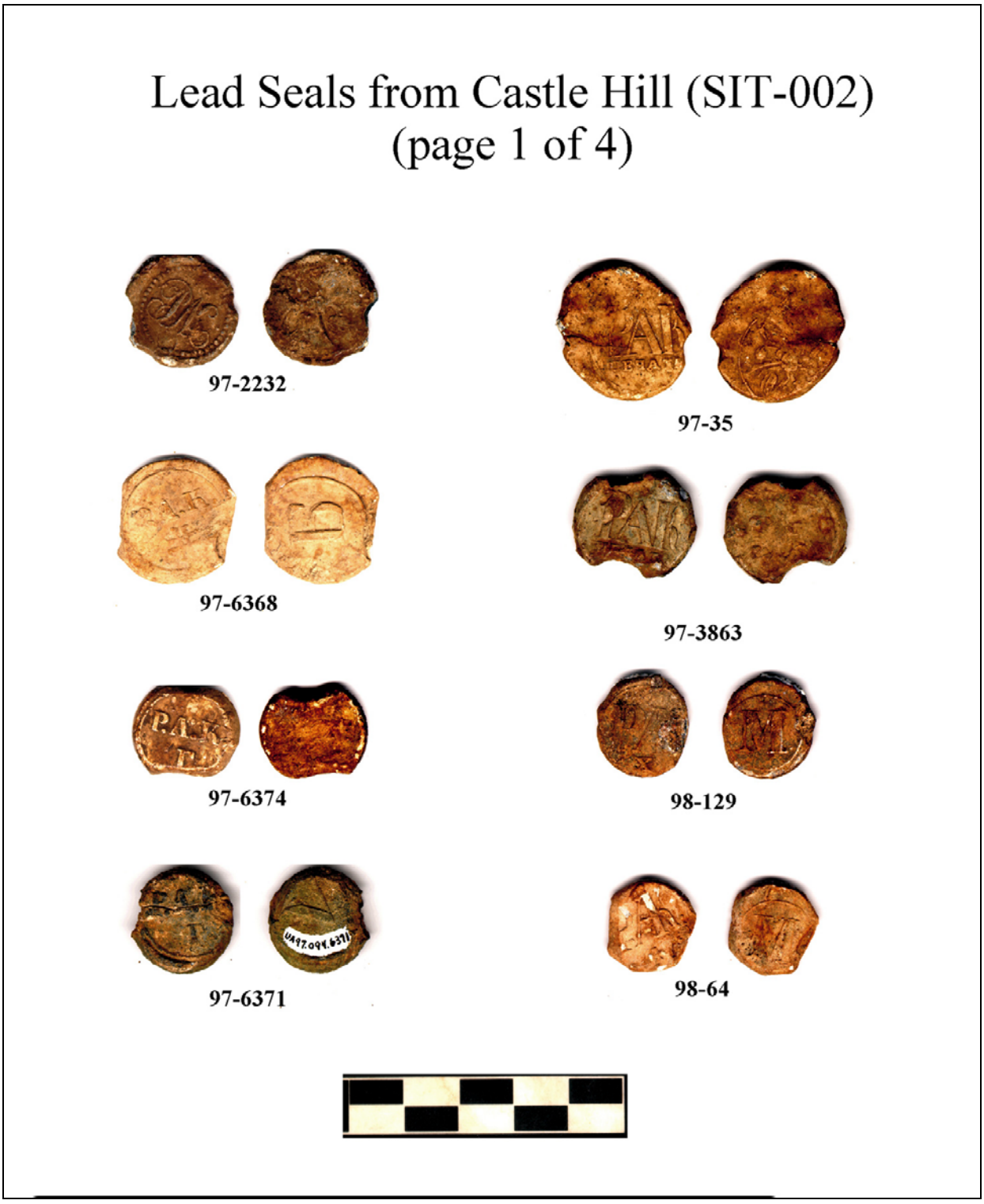

Figure 11.1. Lead seals from Castle Hill (1 of 4 plates).

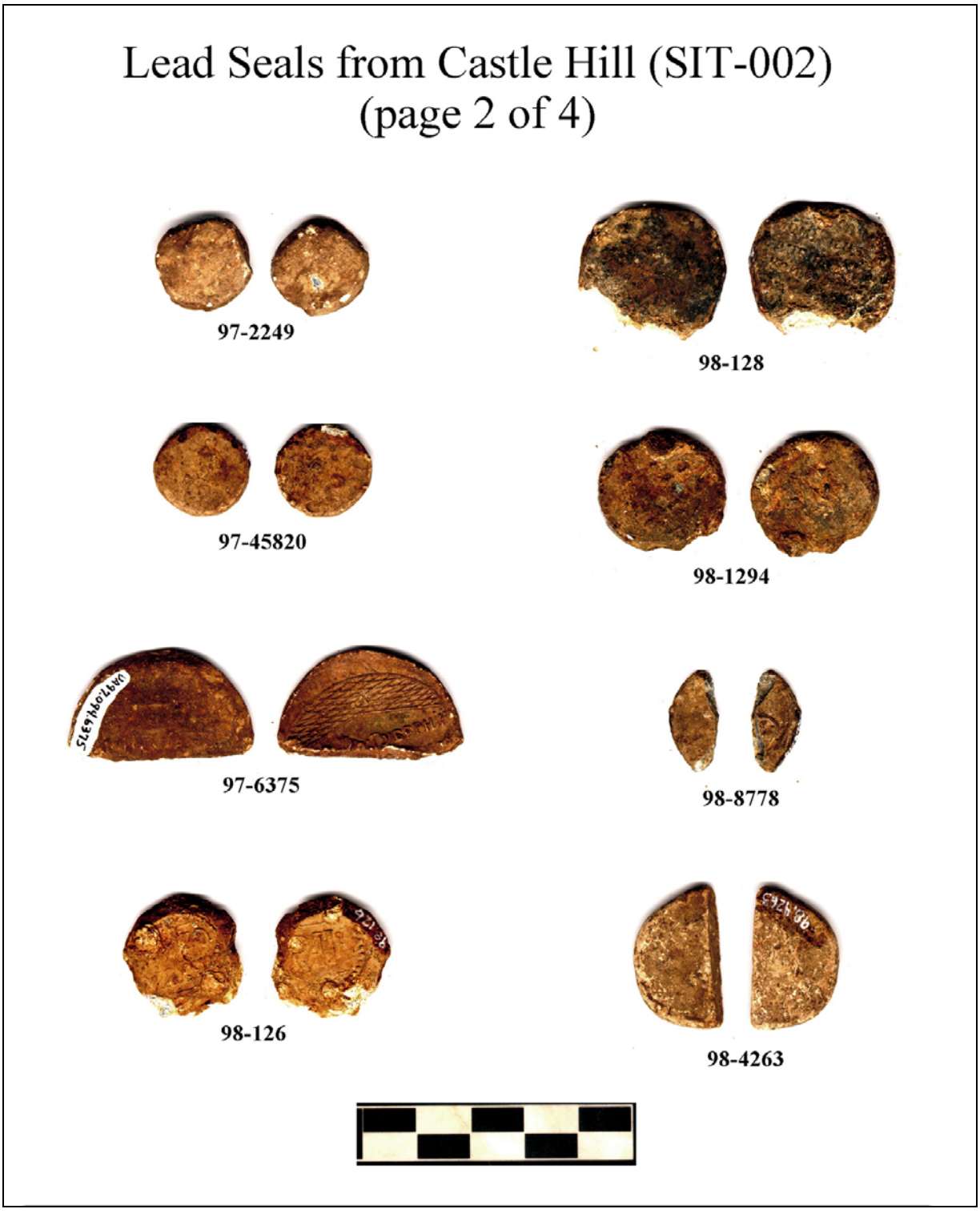

Figure 11.2. Lead seals from Castle Hill (2 of 4 plates).

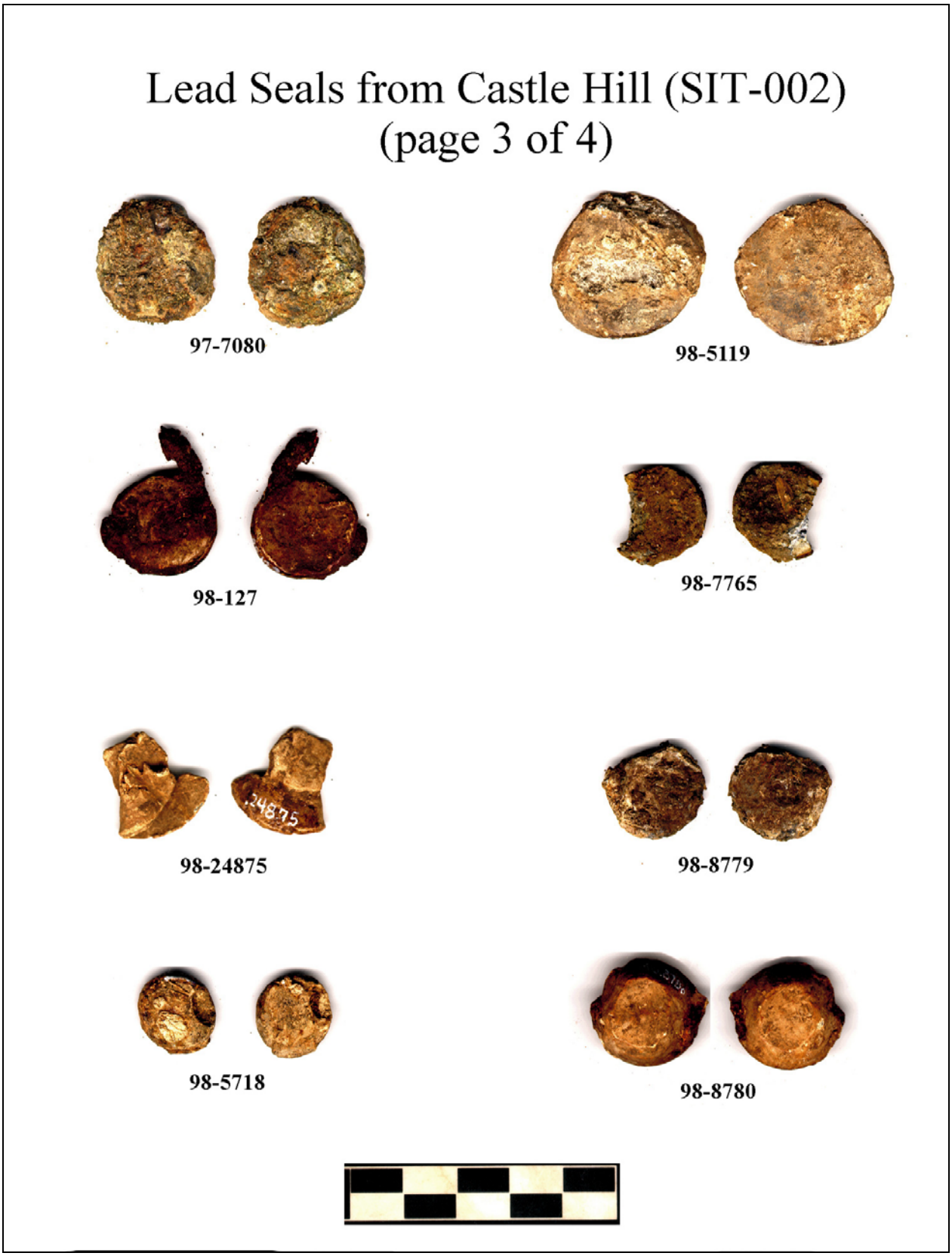

Figure 11.3. Lead seals from Castle Hill (3 of 4 plates).

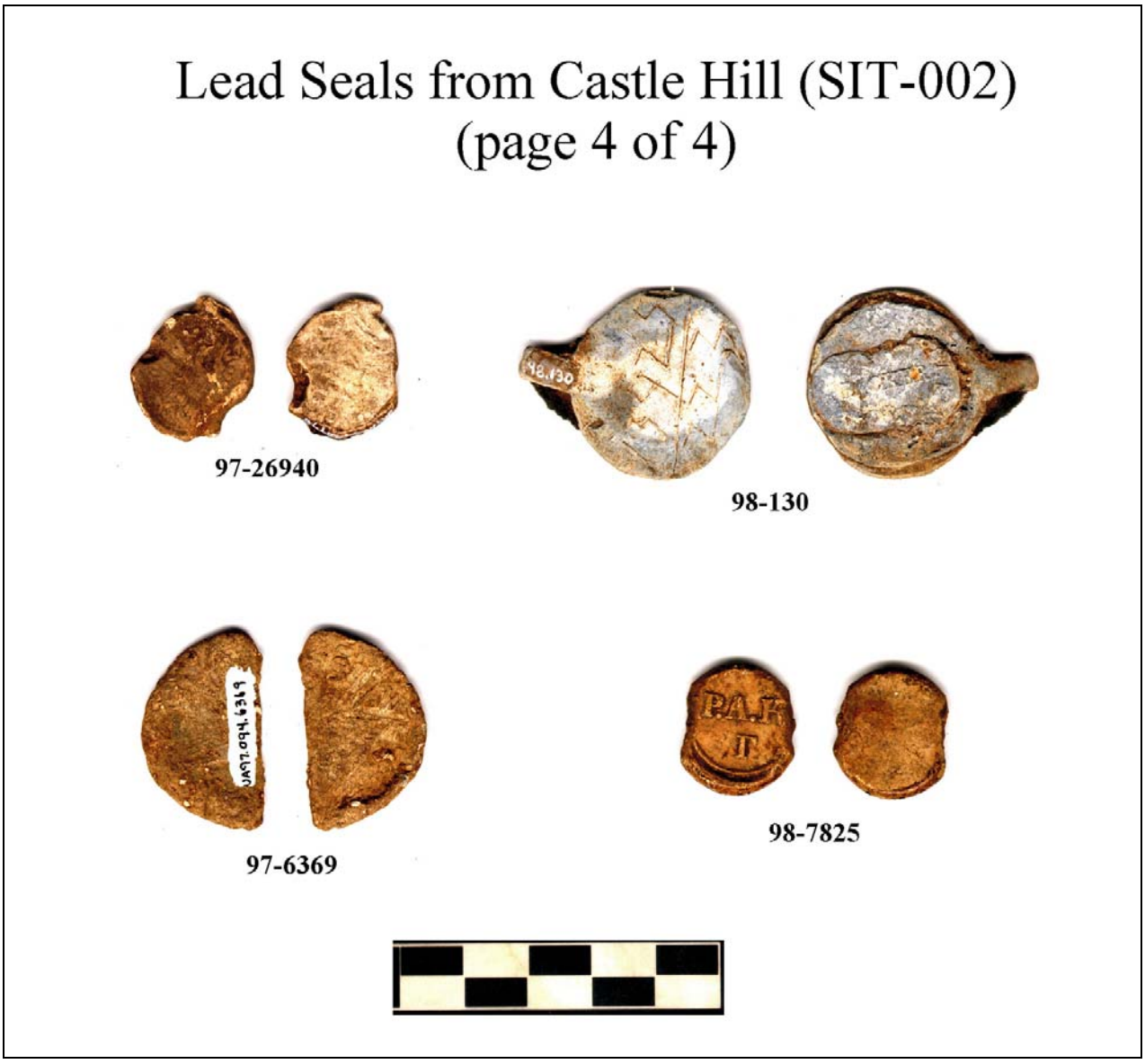

Figure 11.4. Lead seals from Castle Hill (4 of 4 plates).

examined under a low power dissecting microscope with direct and cross-lighting. Dimensions, weights, details of manufacture, and markings were recorded in a database that was distilled into Table 11.1 above. One of the seals was treated in multiple dilute acetic acid baths to reveal surface details. Before and between treatments, the specimen was photographed, rinsed in distilled water, dehydrated in isopropynol, and examined as described above. All other seals were cleaned by gently brushing in distilled water to remove adhering soil and loose lead oxide, but not the patina.

Results of Analysis

Fur Bale Seals:

The Castle Hill bale seals range in diameter from 160mm to 342mm, and in thickness from 3.0mm to 11.7mm. The average bale seal is the approximate size of a U.S. nickel (22mm), although somewhat thicker (4.8mm) and considerably heavier (around 11.2 grams)(Figure 11.5). In most cases, ovoid or ellipsoid apertures on opposing edges provide evidence of a longitudinal channel through which cordage or wire was passed. Although, compression and occlusion has rendered many of the apertures barely visible. With the exception of two textile packer seals, the seals are believed to relate to the RAC fur trade. Divergent sizes and surface markings suggest that a few of the seals may be associated with specialized functions or shipments. Other seals, devoid of markings but technologically similar to embossed specimens, are believed to be blanks.

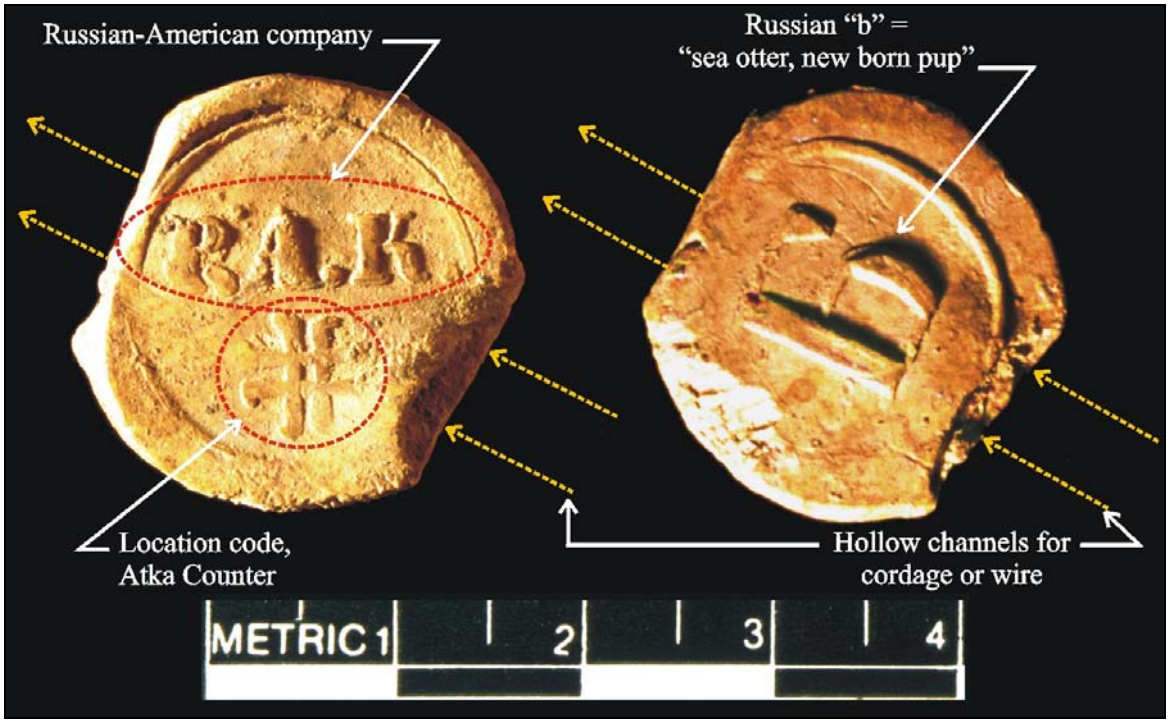

Figure 11.5. Representative fur bale seal from Castle Hill (97-6368).

All identifiable bale seals, regardless of size, were manufactured in the same manner. Like those of the ancient Roman and Byzantine empires, blanks were cast in a mold, leaving a hollow channel from edge to edge. The lead blanks varied in size, but were roughly equivalent to that of a coin. The cordage or string used to secure the parcel or bale was passed through the channel and then knotted. The lead blank was then placed between the jaws of a boulloterion, a pincer-like implement with disc-shaped jaws engraved with an inscription and/or image. The boulloterion had a projection above the jaws that was struck with a hammer to compress the lead blank, sealing the channel upon the string and stamping the inscription or image on the lead blank (Whitlow 1996). In developing a typology for the lead seals from Fort Michilimackinac, Stone (1974:281) used the term "series C" to describe seals of this style.

The most common marking on the Russian bale seals was the "PAK" [RAC, or Russian-American Company] described in Hagemeister's letter (Pierce 1984:39-40). Almost half of the bale seals in the collection exhibit this inscription on one surface (Figure 11.6). Five of the "PAK" seals were stamped with the imperial eagle on the opposing side, and nine of the "PAK" seals exhibited additional script on one or both surfaces. Two "PAK" seals (97.35 and 97.3863) included the Russian word meaning "seal" beneath the company logo, while another exhibited incomplete text that appears to translate "Yakut[sk]" (translations courtesy of Katya Solovjova Wessels, U.S. National Park Service). Two others included the apparent source codes "x" and "+" for Kodiak and Sitka, respectively (Pierce 1984:39-40). Two seals were inscribed with "M" to indicate "sea otter, 2nd grade," while three were inscribed with the Russian "g" to indicate "sea otter yearling, 2nd grade" in accordance with Hagemeister's scheme (Pierce 1984:39-40). One incomplete seal (97.6375) exhibits Russian text that translates "... region" and another (98.128) includes combinations of Russian letters that could not be translated.

Stylistic differences in inscriptions and design are apparent in the Castle Hill bale seal collection, and not all markings can be interpreted on the basis of Hagemeister's scheme. We know from subsequent correspondence between Hagemeister and the New Arkhangel office that a prior system for marking bale seals was in place under Baranov:

> Supplementing my proposal of 28 February, No. 63, I request that the office ship old furs surrendered by [postupivshiia v zdachu] Mr. Baranov which already have the old stamp as is, while the newly acquired [furs] be stamped with the new ones which for this [purpose] are already made; in invoices the record should be, for example: sea otters, marked above by [PAK +], with N, M, and so forth below.
>
> If any of the old furs did not have a stamp and the place from which they came is unknown, leave the former marks. On receipt of fur wares from other districts which were acquired before I took office, but whose place of origin is known, they should be marked with the new [stamps]. Inform the Okhotsk and Irkutsk offices in secret about the meaning of the stamps. I will report to the Main Office and will ask for a supply of better stamps with these same symbols [Hagemeister, in Pierce 1984:49].

The Castle Hill seals offer few conclusions on the basis of stratigraphic context, as most (n = 21) are from the upper (mixed) level of the workshop complex (Stratum I). These only can be assigned to the circa 1805-1867 period. Three seals, from a trash deposit (Stratum IIa) associated with buildings in the workshop complex can be assigned to the 1805-1840 period. Four of the seals (two each) were recovered from deposits associated with Buildings 1 and 4, and can be seriated on the basis of mean ceramic (MCD) and *terminus post quem* (TPQ) dates for the buildings. This suggests with a high level of confidence that specimens 98-129 and 98-5718 (Bldg. 1, circa 1827) predate specimens 98-1294 and 98-7825 (Bldg. 4, circa 1839). Stylistic differences in design and the size/style of lettering are apparent. The sample size is too small, however, to establish whether or not differences are a result of change through time or within the range of diversity for boulloterions in use at any given time.

Eight seals revealed evidence of organic residue within the line holes when viewed under magnification. Residues from three of these seals (98-129, 98-8778, and 98-6374) were microscopically identified as coir (coconut husk fiber)(Figure 11.7). Another seal (98-127) has a section of ferrous wire in the line hole, and a second (98-8780) exhibits ferrous staining from a wire. It is not surprising that coir cordage was used, along with wire, as a binding for the fur

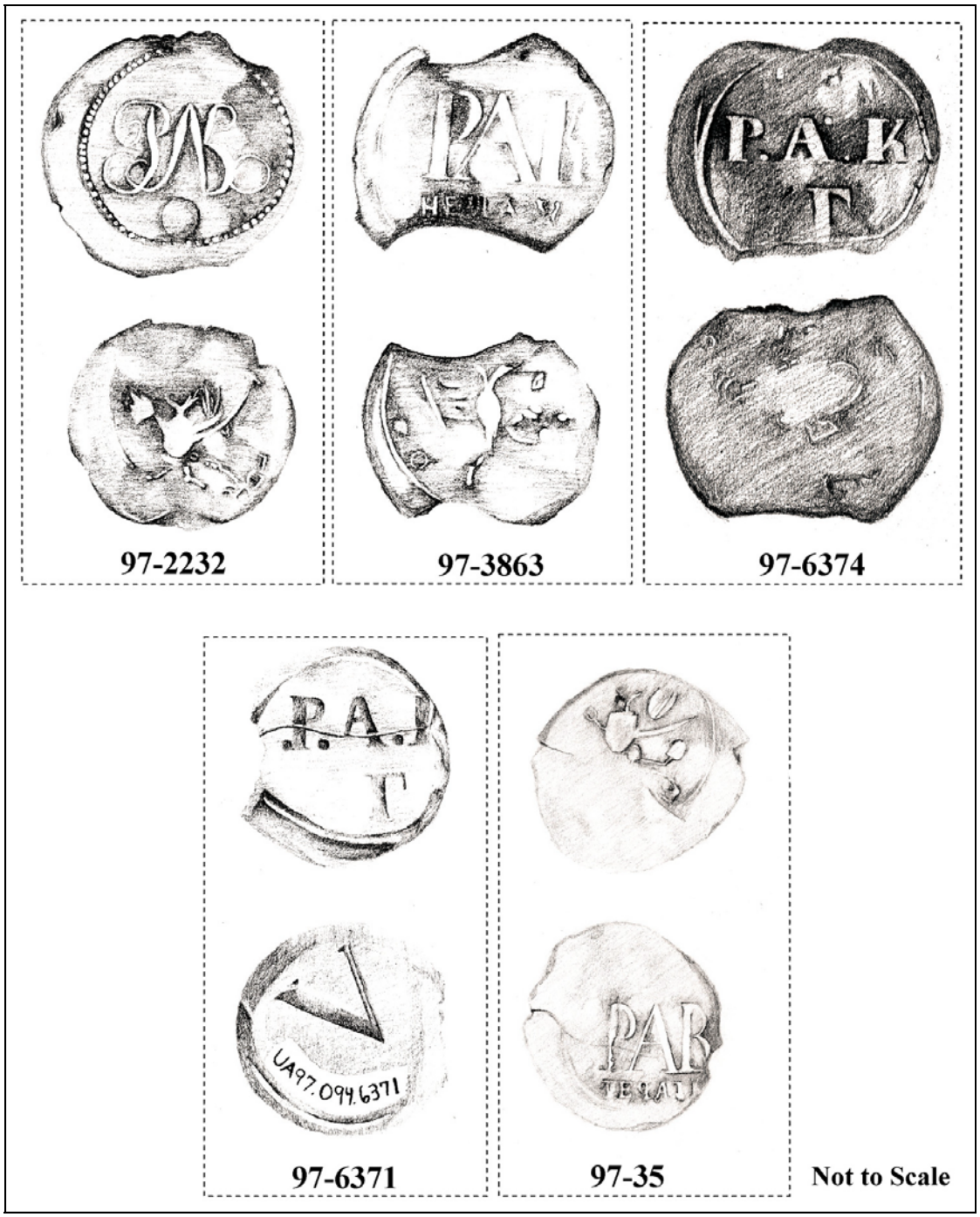

Figure 11.6. Drawings of select lead seals from Castle Hill (drawings by Margan Grover).

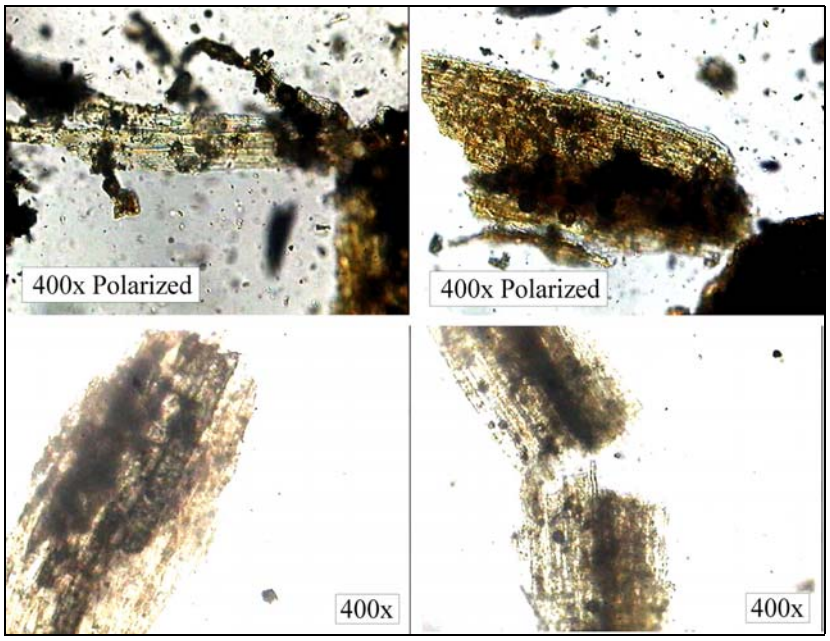

Figure 11.7. Photomicrographs of coir *(Cocos nucifera)* fibers in lead seal channels.

bales. Coir is more resistant to saltwater than jute, cotton, or hemp. It was readily available, as evidenced by coconuts and husk fibers in the Castle Hill deposits. Litke (1827:58) lists "cord made from coconut husks" as a product obtainable from the Sandwich Island trade.

Cloth Seals:

One seal (98-130) has been identified as a cloth packers' seal (Figure 11.8). One side is embossed centrally with the word "PACKER." Around the top edge of the seal is the embossed, block-lettered inscription "THOMAS GAN[?]ELL" and around the bottom edge is an embossed inscription that begins "RO…" but is otherwise illegible (alternatively, see Egan's translation, below). The opposite side of the seal bears the hand-scratched inscription "12935" above "22.3." Two other specimens (98-24875 and 98-2520), are fragmentary and devoid of legible markings. They are believed to also be cloth seals on the basis of style. The latter specimen (not in photo plates) is the outer washer-shaped disc of a two-part or four-part seal. Both seals were recovered from disturbed deposits (Level I) which contained materials dating from 1805-present.

Images of the packers' seal were examined by Geoff Egan (British Museum, Department of Medieval and Later Antiquities) and Wiard Krook (Archaeological Department, City of Amsterdam), who have researched European lead seals. Both Egan (e-mail, 4/5/01) and Krook (e-mail, 1/25/01) agree that the seal is British, but neither can identify specimens in their collections with similar markings. From a high-resolution photo, Egan provided the following:

> Thanks for the photos – I can now see what is going on. 13925 may well be a consignment number; 22.3 is probably 22 yards and three quarters length; I read (with some certainty) Thomas Daniell, Packer, London - - this individual could as likely as not be listed in contemporary trade directories for London, several of which from the early C19th survive in the Guildhall Library here in the City. Regret I do not at present have the time to sit down and search this source for you, but in the absence of documentation at your end, it is a possible lead to bear in mind [Geoff Egan, e-mail, 4/5/01].

Figure 11.8. Cloth packer seal (98-130) from Castle Hill.

In the U.S., packers' seals are known from the 18th and early 19th centuries. Packers' seals have been reported from Fort Michilimackinac in Michigan (Stone 1974:286-289; Adams 1989:28), as well as a British fort on the Niagara River in New York (Calver and Bolton 1950:268). Egan (1995:91-92; Fig. 185, #266), in his discussion of lead cloth seals in the British Museum, describes packer's seals as follows:

> Packers were those who, in the present context, made sure cloths were 'packed into proper parcels fit for exportation,' and some became international traders in their own right… A number of packers' seals are known, with a full personal name, as on the one below [Fig. 185, #266]. They appear mostly to be (and may all be) of eighteenth/early nineteenth-century date. Several include 'London' in the stamp (no other placename has so far been recorded on this category of seal).

Cloth seals easily are distinguished from fur bale seals based on the manner in which they were made. Whereas fur bale seals were cast as a single disc-shaped blank with line channels extending from edge-to-edge, cloth seals were cast in stone molds as either two-disc or four-disc blanks which were joined by narrow strips (Figure 11.9). This allowed the discs to be folded over on each side of the cloth before being stamped with one or between two dies. One of the discs was cast with a rivet that could be pushed through the fabric and into a corresponding hole in the other disc, apparently a system that was devised specifically for marking commercial

textiles (Egan 1995:4). The use of lead seals to mark textiles destined for commercial sale was a widespread practice in the cloth-producing countries of Europe between the 13th and 19th centuries (Egan 1995:1). They were used within the framework of industrial regulation as evidence of quality control and/or payment of taxes.

In developing a typology for the lead seals from Fort Michilimackinac, Stone (1974:281) used the term "series A" to describe seals of this style. Adams (1989) conducted a detailed analysis of 25 lead seals from Fort Michilimackinac, 18 of which were series A, and concluded that most of the Michilimackinac specimens were cloth seals. It should be cautioned, however, that this does not hold true for all series A seals. Some researchers have long held that the lead seals commonly referred to in the archaeological literature as "bale seals" were used to seal and identify the contents of packaged goods (Stone 1974:281; Steer 1977:122). For example, an intact series A lead seal was attached to a bundle of files recovered from the Winnipeg River during an underwater archaeological project (Wheeler et al. 1975:62). The Winnipeg seal is stylistically similar to the Castle Hill specimen (98-130), with a stamped logo ("WA") on one side, hand-inscribed numbers on the opposing side, and intact textile fibers sandwiched between the discs. The hand-inscribed numbers ("5339" over "21 ½") undoubtedly refer to a lot number and 21 ½ yards of cloth, following Egan's understanding of lead seals (described in the e-mail cited above). It is conceivable that the use of the Winnipeg seal to secure files was a secondary use of the seal, or perhaps the files were wrapped in trade cloth for transport.

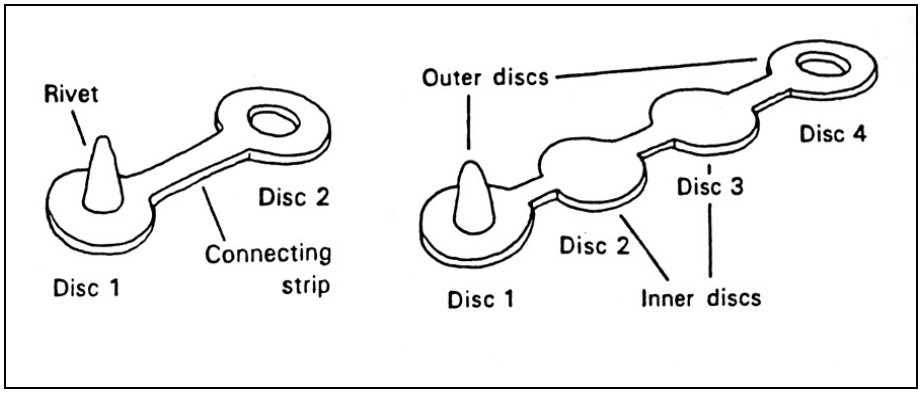

Figure 11.9. Schematic drawing of two- and four-part cloth seals, adapted from a drawing by Nick Griffiths (in Egan 1995:viii).

The packers' seal from Castle Hill is important in that a small quantity of wool cloth is preserved in the fold of the lead strip. The identification of the cloth as wool was confirmed by microscopic examination of fiber samples from the specimen (Figure 11.9). This has provided evidence for the origin (i.e., the packing location) of some of the wool supplied to the Russian-American Company, although not the route or series of suppliers through which it passed. Intensive analyses of wool samples from the Castle Hill textile collection, including the characterization of fibers based on scale patterns, diameter, and other attributes may potentially produce insights on varieties and sources of the raw wool supplied to Russian America.

Conclusions

Of 30 lead seals recovered at Castle Hill, all but three are fur bale seals comparable to other examples from Russian America (i.e., from the Kurilorossiia settlement in the Kurile Islands; from the Erskine House in Kodiak; and from the Bishop's House, and a burial in the lawn of St. Peters-by-the-Sea church in Sitka). Common design elements include the imperial eagle and "PAK" on opposite sides. Other markings include Russian letters that symbolized the type, quality, and source of the furs in the bale. Some of these are consistent with instructions given by Hagemeister in 1818 (Pierce 1984:39-40, 49). Others cannot be matched with Hagemeister's symbols, and may relate to marking practices under Baranov's administration. Because stratigraphic associations are tenuous for most of the seals, their design elements cannot be seriated on the basis of age. Four of the seals (two each), however, can be firmly associated with Building 1 (circa 1827) and Building 4 (circa 1839 or later).

The lead seals constitute an interesting and important part of the overall assemblage. Their analysis has contributed to our understanding of daily work activities and trade relations at Castle Hill, such as the use of coir bindings, along with wire, to secure the bales. The manner in which the seals were manufactured, like the colonial architecture of the workshop buildings, suggest a continuation of traditional material culture in combination with the more cosmopolitan aspects of a seaport settlement.