

Codex, *Pinax* and Writing Slat*

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I

A codex is, in its construction, a book: the component leaves are placed one on the other, folded down the middle, and joined along the fold so that the reader can open the "book" to whatever leaf he wishes. With slight improvements — such as folding the leaves more than once and cutting the folded edges to get separated, even-sized pages, such as joining several groups of leaves, the one under the other, along the one central axis — the codex eventually supplanted the written roll almost entirely, and its basic design has dominated book production down to our own time. It was the most important innovation in scribal and literary media until the invention of printing. Unlike other innovations, however, it did not appear on the scene suddenly, nor did it achieve its predominance at one stroke, but gradually, over a long period of time during which design and production were steadily advanced and improved.

The codex has its origin in the wax-coated tablets, mostly wooden, that served for ephemeral writing in ancient Greece, in biblical Israel, and over all the ancient Near East. Doubtless, in a number of places the notion arose occasionally of joining several tablets together, but only in Rome and Greece did such assemblages become known as durable articles. The Roman method was either to clasp or lace the tablets together along one edge, thus forming a common axis that enabled the reader to leaf to and fro through the tablet-pages. As the Romans wrote from left to right, the tablets were joined on their left side, the user would hold them with the joined side in his left hand, turning them or

* See figures 1-8 at end of volume.

The following abbreviations are used in the footnotes to this article:

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| Bowman-Thomas | = | A.K. Bowman and J.D. Thomas, <i>Vindolanda: The Latin Writing-Tablets</i> , 1983. |
| Birt | = | Th. Birt, <i>Kritik und Hermeneutik, nebst Abriss des Antiken Buchwesens</i> , 1913. |
| Lieberman | = | S. Lieberman, <i>Hellenism in Jewish Palestine</i> , 1950. |
| Roberts | = | C.H. Roberts, "The Codex", <i>Proceedings of the British Academy</i> 40, 1954, 169-204. |
| Roberts-Skeat | = | C.H. Roberts and T.C. Skeat, <i>The Birth of the Codex</i> , 1983. |
| Schubart | = | W. Schubart, <i>Das Buch bei den Griechen und Römern</i> ² , 1921. |

writing on them with his right (see Fig.1).¹ In this way the first essential feature of book construction as we know it today was fixed, though this basic idea still had a long path to travel before achieving its final form.

Essentially, the book in the form familiar to us is a Roman innovation, one of the signs that this is so being its very Latin name, *codex*, *caudex*, which, though originally meaning a tree-stump or block of wood, came commonly to signify a bundle of writing-tablets. It was the Romans, too, who made another stride in converting the set of writing-tablets into book form: according to the literary evidence, during the reign of Augustus the tablets began to be replaced by sheets of animal skin.² This created in effect a "book" of skins, except that it was not yet dignified with literary use, nor did it attract the name *codex*, or the appellation "book", *liber*, which was reserved for rolls. The new object was at first simply called *membranae*, "skins".³ Although in the course of time it, too, came to be called a *codex*, this title was curtailed and delimited by the adjectival addition *membraneus* or *chartaceus*, that is, "of skin" or "of papyrus". It was only at a relatively late stage that *codex* came unmistakably and familiarly to apply to the new form of book,⁴ apparently after it had gone out of use as signifying a bundle of wooden tablets and the name could be appropriated to what had developed from this. Single wooden writing-tablets, however, remained in occasional use down to, and even beyond, the Middle Ages.

II

Whereas the *codex* is a Roman invention, the *pinax*, *πίναξ* (Mishnaic Hebrew: *pinqas*), is of Greek origin. The *pinax*, too, was based on the writing-tablet and was in especial use for recording accounts, tables of numbers, lists of various sorts, as well as public announcements. The list of citizens having the right to

¹ This fresco, in all its splendid original colour, is reproduced in various works, including M. Brion, *Pompei and Herculaneum*, 1960, 47; cf. also the painting from the Rome catacombs of the Christian youth holding a *codex* in his left hand in Roberts, Plate XII; Roberts-Skeat, Plate VI.

² There are those who place the transition from wooden tablets to leaves of skin as early as the time of Cicero and Julius Caesar. See Schubart, 113-114; and particularly: H.A. Sanders, "Beginning of the Modern Book: The *Codex*", *Michigan Alumnus Quarterly Review* 44, 1938, 96-106; C.C. McCown, "Codex and Roll in the NT", *HTR* 34, 1941, 222, 239; idem, *The Biblical Archeologist Reader*, 1961, 254-255. But Roberts (171-172; Roberts-Skeat, 15-20) claims that the evidence for this is unreliable and in his opinion the transition began not before the time of Augustus.

³ See F.G. Kenyon, *Books and Readers in Ancient Greece and Rome*², 1951, 91-92; for a detailed discussion cf. Roberts, 170-175; Roberts-Skeat, 11-14, 20-23.

⁴ The first example appears, according to Roberts (172 n.), in the Christian-Latin poet Commodianus, in one of his two surviving poems. The poem is entitled *Carmen Apologeticum adversus Iudeos et Gentes* and is believed by several scholars to have been written in the second half of the third century CE (others place the poet and his works in the fifth century CE).

vote in the public assembly was referred to as πίναξ ἐκκλησιαστικός, while the catalogue that Callimachos compiled for the Alexandria Library in 120 volumes was designated πίνακες.⁵ But writing was not the only way in which the *pinax* was employed. It also served for sketches and paintings and in Latin the name came to signify “a picture on a wooden tablet”, from which was derived *pinacotheca*, πινακοθήκη, the name for a special hall in a temple or mansion where pictures were placed on show.⁶ The wooden *pinax*-tablet was even used to serve food on, and it was with this meaning that it passed into Aramaic and Syriac as פִּינַח, פִּינְכָא, פִּינְכִיּוּ, פִּינְכִיּוּ, the name for a large, flat food platter (hence the expression פִּינְכִי מַלְחָךְ i.e. “lickspittle”, [lit. “dish licker”] in B.T. Pesahim, 49a). This means that, unlike the codex, the *pinax* neither possessed the singular function of a writing medium nor served exclusively the private needs of individuals. However, insofar as individuals did use it for ephemeral writing it was the direct counterpart of the codex. In private use the *pinax* tended to be rather small and this may well be the point of the feminine forms of the word found in Rabbinic terminology — פִּינְכִיּוּ, פִּינְכִיּוּ, פִּינְכִיּוּ (Kelim 24:7; J.T. Rosh Hashanah 1:3 [57a]; Nedarim 1:1 [36d] et al.) — which perhaps indicate a difference in the size of the tablet in contrast to the masculine forms פִּינְכִיּוּ, פִּינְכִיּוּ. Just as with the codex, so also were a number of *pinakes* joined together, the assemblage being called δίπτυχα, τρίπτυχα, and so on, according to the number of component tablets, or πολύπτυχα, a “multi-tablet” *pinax*. These terms passed into late Latin, denominating codices by the number of their component tablets, i.e. *diptycha*, *triptycha*, and so on, or *polyptycha*.

Yet, the question still remains: Did the multi-tabletted *pinax* and codex also possess a common overall form? In this matter, scholars either make no distinction between the two or assume unquestioningly that the component tablets of the *pinax*, like those of the codex, were joined on one side along a single common axis, so that the difference between codex and *pinax* was in name only.⁷ Those who make such an assumption must also conclude that the codex was born and developed not only in the context of Roman civilization but also in

⁵ See Liddell-Scott's *Greek-English Lexicon*, 1968, s.v. πίναξ; and cf. Birt, Register, under πίναξ; also L. Whibley, *A Companion to Greek Studies*⁴, 1931, 419, 448, 503, 601.

⁶ A.W. Van Buren, s.v. *Pinacotheca*, *PW* Supp. VIII, 500-502.

⁷ See, for example, Birt, 260; Schubart, 24-27 (cf. 175); Lieberman, 203-206 (frequently); Roberts, 188; Roberts-Skeat, 59. (It ought to be admitted that for Lieberman and Roberts the distinction between codex and *pinax* was of marginal importance: from their point of interest, it was sufficient that certain words were written on some sort of hollowed-out surface and not on a roll.) See also: E.M. Thompson, *An Introduction to Greek and Latin Palaeography*, 1912, New York, n.d., 14-15. One of the authors of the entry πίναξ in *PW* contributed a lengthy discussion, extending over many tens of pages (O. Regensbogen, *PW* XX, 2, 1408-1482), on one of the derived meanings of this term, namely, “list”, *Verzeichnis*, spilling over into a discussion of lists of various sorts and displaying obvious non-discrimination between codex and *pinax*. One of the proofs of his lack of discrimination is the explicit way he uses the term codex (e.g. on p. 1481).

the Greek and quite independently from its development among the Romans. They may also make the further postulate that the very origins of the codex lie not in Roman culture but in Greek, since the substantive *πίναξ*, found in Homeric epic (Iliad VI, 169; cf. also Odyssey XII, 67), is certainly earlier than *codex*. The truth is that the nominal distinction between *pinax* and *codex* also indicates a certain formal and functional distinction, a distinction that must have been originally, if not always so later, a marked one. Moreover, not one of our sources of evidence, literary or any other, gives expression to this supposed identity of *codex* and *pinax*. Archeological finds are of little help in this regard: the decomposition of the organic materials in question has obscured the differences between the two forms.⁸ Paintings, too, offer limited help. Talmudic literature, however, may provide a number of clues indicating that the *pinqas*, i.e. the *pinax*, was indeed perceived as different from the *codex*, as will presently be shown.

It transpires that, contrary to the *codex*, the component tablets of the *pinax* were not joined on one side but on two, and in sequence. That is, each *pinax* tablet was hinged along one edge to the tablet before it and, on the opposite edge, to the tablet after it (except for the first and last tablets, of course, which were linked on one side only). Whereas in the *codex*, each individual tablet, all hingeing on the one common axis, could be turned to expose now one face, now the other, the *pinax* opened like the folds of a concertina to present to the reader-user a continuous surface made up of one face of each component tablet. Such a form could never have evolved into the book as we know it. But it did have the advantage over the *codex* that, by opening it to expose a number of tablet-faces, and even more so by opening it to its whole length, the user was presented with a continuous surface on which quite large drawings or plans could be laid out.⁹ Indeed, the Sages describe the master-builder of a palace as having "... parchments and *pinakes* to know how to make rooms, how to make wicket-doors" (Bereshit Rabba 1:2). It seems probable that the master-builder in question took advantage of the way the *pinax* was articulated to lay out room- and door-plans occupying more than one tablet-face.

Practically, a two-tablet *pinax* and a two-tablet *codex* were equal in the capacity offered the user, but even in this case the two devices were easily distinguishable in form and even more so in the way they were held. The paintings make it clear that the *codex* was held by its axis-side in the user's left hand, or resting on his hand and forearm, with the axis lying along the line of the user's hand and arm, and the user turned the "pages" to the left or right with his right hand. The *pinax*, in contrast, was held width-wise, supported on the user's

⁸ For the difference between a two-tablet *codex* and a two-tablet *pinax*, see below.

⁹ Concertina-form folding books of this type were widespread over many parts of Asia, including the Far East, at all times. See, for example, the astrological text from Thailand (Or. 4830,26/28) and the traders' accounts book from India (Or. 13343) in the British Museum, reproduced in Albertine Gaur, *Writing Materials of the East (The British Library)*, 1979, 20. For the tablets of wood and ivory found in Tel Nimrud, which were connected in concertina-form, see especially D.J. Wiseman, *Iraq* 17, 1955, 7-8; and the appended observations of M. Howard, p. 18.

left palm or forearm, and opened upwards in front of the user's face. The *pinax*-user could even rest an open *pinax* on his lap (see Fig. 2).¹⁰ One of the paintings that has come down to us, from a beaker-fragment in Tübingen Archaeological Institute, shows clearly enough that a *pinax* of more than two tablets was articulated on more than one axis. The *pinax* illustrated is a four-tablet one — two of the tablets are raised in front of the user's eyes while the other two rest on his open left palm and his right hand holds a stylus (see Fig. 3).¹¹ At first glance the tablets look to have been opened, two at a time, on a single axis, just as in a codex. However, closer study reveals that not only is the man holding the *pinax* width-wise (and only a *pinax* was held this way) but that the tablet facing him seems to be fixed at its upper edge and to hang from the fixing, since it is slightly shorter than the tablet behind it and does not touch the tablets below it on the man's palm. This requires us to assume that either the two outer tablets of the *pinax*, the first and the fourth, have been folded inwards, or that the first has been folded inwards and the fourth outwards. In either case, the two pairs of tablets have been slightly angled towards each other along the axis between the second and third tablets. All this is displayed schematically in Fig. 4.

III

That the *pinax* had a concertina-like form was apparently taken for granted by the Sages. Support for this view is found in the fact that they convey the closing of a *pinax* by the verb "to fold", *qippel*, as for instance: "What does the child in his mother's womb look like? לפיניקס שמקופל, Like a folded-up *pinqas* (*pinax*)" (Niddah 30b; cf. Wayyiqra Rabba 14:2; and below). This verb is applied to smooth, flexible materials, such as cloth, that can be doubled and redoubled into a layered pile.¹² By extension, it is applicable to the action of "folding" the

¹⁰ The painting is taken from an Attic bowl in the Berlin Museum. See: P. Hartwig, *Die griechischen Meisterschalen der Blütezeit des strengen rothfigurigen Stiles*, 1983, Pl. 46; E. Pottier, *Douris, et les peintres de vases grecs*³, 1924, 112, 117. The way the device opens and the way it is positioned plus the Greek context, show that this is not a codex but a *pinax*. For the way in which a *pinax* was typically held see: *Corpus Vasorum Antiquorum, Deutschland* Bd. 21, Berlin Bd. 2, 1962, Pl. 77, fig. 2. (The *pinax* in this painting, also reproduced in Schubart, p. 153, is composed of three tablets, two closed and the third and upper one open before the user's eyes; the articulation of the tablets cannot be made out — whether all three have a common axis or will open in concertina-form — but the manner in which the device is held shows that it is not a codex.) For more on the way a *pinax* was held see: F.A. Beck, *Album of Greek Education: The Greeks at School and at Play*, 1975, Pl. 8, figs. 41, 42, 44; see also below.

¹¹ This sketch is based on a painting reproduced in Beck, *op. cit.*, Pl. 8, No. 42. The picture is obscured somewhat by white stains but the space at the bottom of the first tablet (folded-over inwards) is clear and unmistakable (see below). The site of the axis between the second and third tablets is obscured by a white stain.

¹² For example: "They fold the articles [i.e. the clothes], מקפלין אה הכלים, even four or five times" (Mishna Shabbat 15:3); "He spread out his tallit, וקיפל, and folded [it]"

mutually jointed sections of a *pinax* over each other when closing it. The same verb would not correspond to a codex whose leaves are folded once only — when it is first assembled — and thereafter are not folded again, not even when the codex is closed and its pages are laid one on the other.¹³

An even clearer pointer to the design of a *pinax*, as the Sages understood it, is found in the midrash on Gen. 28:13, “The ground on which you are lying I will assign to you”: “He folded it up like a *pinax* and placed it under Jacob’s head” (Bereshit Rabba 69:3). The land is likened to an open *pinax* — a large surface made up of interconnected tablets which can be “folded up” to the size of a single tablet. The drastic contraction of the earth’s dimensions to fit under one man’s head implies that the midrash refers here to a multi-tablet *pinax* (cf. the parallel in B.T. Hullin 91b: “The Holy One Blessed Be He folded up the whole Land of Israel and placed it under our father Jacob”). Such imagery could not possibly be applied to a codex, which, opening to not more than twice its closed area, could hardly be likened to a whole land. Nor is its closing to be conveyed by an expression such as “folding up”. Further evidence of the way in which the Sages perceived the *pinax* is the story of the man who dreamed that he saw himself “dressed in a *pinax* of twelve tablets” (J.T. Maaßer Sheni 4:10 [55b]; in another version: “I was carrying a *pinax* containing twenty-four tablets...” [Ekha Rabbati 1:15]). A multi-tablet *pinax* opened to its full extent can stretch the full height of a man and even more easily around his trunk, something which by no means can be said for a codex.¹⁴

An apparent contradiction to our thesis may be found in Mishna Kelim 24:7, where three types of *pinax* are enumerated, the first of which is a *pinax* of אפיפורין, *apiporin*. Those who have construed this word in the sense of “papyrus”¹⁵ follow the customary notion that a *pinax* had the same form as a

(B.T. Shabbat 120b); “Six months he was occupied with [the construction of] the Tabernacle ... and for three months קיפלורו, they folded it up” (Shemot Rabba 52:2). Likewise, the doors of the Temple are spoken of as נקפלות לאחוריהן, “folding back” (Mishna Middot 4:1).

- ¹³ It must not be forgotten that when the Sages were speaking of a *pinax* being “folded”, the leaves of a codex were already of skin. As stated earlier, these leaves were folded once only — at the time the codex was put together — after which there was no occasion to fold them again. The component tablets of a *pinax*, on the other hand, were always of wood: when they were spread out the *pinax* was “opened” (Aboth 3:16; J.T. Nedarim 1:1 [36d]) and when they were “folded” the *pinax* was closed.
- ¹⁴ The drawing in Schubart, p. 24, reconstructs a nine-tablet codex and not a *pinax* (pace Lieberman, 203 n. 6), though Schubart makes no distinction between the two. For the use of a *pinax* as a covering, note also: “They handle ... a *pinax*, a rattle, a looking-glass, to cover utensils ...” (J.T. Beṣah 1:12 [61a]; Tosephta Shabbat 13:16). It is doubtful that a codex could have served even this purpose.
- ¹⁵ Ch. Albeck, in his Hebrew commentary on the Mishna, *ad loc.* (also in his *Introduction to the Mishna* [Hebrew], 1959, 205: *apiporin* — *apipyar* [Kelim 17:3; Kilayim 6:3 *et al.*] — *papyrus*); likewise, Lieberman, 203 (cf. the Hebrew edition, Jerusalem 1962, 301: “The Mishna explicitly mentions a *pinax* of *apiporin* [*papyar*,

codex. If this interpretation is correct then this is the one and only piece of evidence in the whole of early literature that a *pinax* was composed from papyrus leaves. However, it appears that such an interpretation stems merely from the homophony between *apiporin* and papyrus and is a sort of folk etymology. The interpretation is dubious in itself¹⁶ and the elucidation of its Mishna context does not require it. It is far more reasonable to assume that אפיפורין is no more than a corruption of אפיפודין, ὑποπόδιον, i.e. a footstool that, inasmuch as it was assembled from two pairs of hinged boards, resembled a *pinax*.¹⁷ It is no surprise that such a *pinax*, made to have the soles of the feet rest on it, was deemed “susceptible to *midras*-uncleanness”, as the Mishna affirms. Furthermore, the *apiporin* is explicitly mentioned in the same tractate (Kelim 16:1) among a group of articles made from wood. It is also explicitly mentioned in several places, sometimes with slight corruptions, as the name for a footstool, or in a context that bears clear witness to the connection of *apiporin* to chair, e.g.: “This is to be compared to the king who made a throne; after he had made it he made its אפיפורין, *apiporin*” (J.T. Hagigah 2:1 [77c]; Bereshit Rabba 1:21; Wayyiqra Rabba 36:1); “כרסוֹן, ‘throne’ [Dan. 7:9] — this is the chair with its אפופרין, *apoprin*.” (Tanhuma, Qedoshim 1); the biblical expression “under His feet...” (Exodus 24:10) has been translated by Pseudo-Jonathan as “under the אפיפורין, *apiporin* of His feet, placed under His chair”. All these examples, it seems to me, suffice to make it clear enough that between *apiporin* and papyrus there is no common ground.

We may safely draw the conclusion, then, that the *pinax* and the codex paralleled each other rather closely in their usage but diverged in their design. The one emerged from a Greek-Hellenistic background, the other from Roman material culture. The one served for writing but for other purposes too, the other particularly for writing. It is by no means impossible that later on each gained

papyrus]); and H. Danby’s English translation. We must exclude from this discussion — as indeed is incontestable — the occasional tendency in the classical world (pointed out in Birt, 286) to employ the term *tabula*, *tabella*, or πίναξ for the papyrus roll itself. This secondary use of the term is understandable in the historical context. The Mishna, however, is not talking about a papyrus roll but about three types of *pinax*.

¹⁶ It is hardly imaginable, for example, that users of a *pinax* “of papyrus” would “lean on it while writing in it” (as Albeck has it) and that this was what made it “susceptible to *midras*-uncleanness” (see Mishna Kelim 24:7; for the meaning of the latter term see H. Danby, *The Mishnah*, 1954, 795, no. 26). After all, the same could happen when using a “smooth” or “polished” *pinax* (i.e. one without wax, that was written on in ink) and yet this device was deemed “completely clean”, “not susceptible to any uncleanness” (Kelim, *loc. cit.*).

¹⁷ See A. Kohut, *Arukh Completum*, I 226 (s.v. אפיפודין, where the author remarks that the upper surface was also used for accounts); VI, 371-372 (s.v. פנקס). This interpretation was adopted by R. Samson of Sens, R. Obadiah of Bertinoro, and others; Maimonides, too, was of a similar opinion (all in their commentaries on the Mishna). See also, in particular, the dictionaries of S. Krauss and M. Jastrow, under אפיפודין (א).

some currency outside its native region, since there were periods of interchange between the Greek and Roman worlds, when ideas and objects crossed frontiers. In the Land of Israel, however, during the Talmudic period, it was, of the two, the *pinax* which came into widespread use and which by force of conservatism and long use prevailed over the codex, which the Talmud does not mention at all. Still later, when the codex's wooden tablets had long been replaced by leaves of skin (or papyrus), the superiority of the codex steadily became manifest in the civilized world until it utterly supplanted both *pinax* and roll.

IV

To round off our argument and forestall confusion, we must consider a third sort of writing-tablet which was different again from both *pinax* and codex. This was the slat — a thin, smoothed strip of wood, grooved vertically down the middle so that it could be folded in two, on the two inner halves of which the writer wrote in ink. It seems most unlikely that such a medium could be used more than once and much more probable that the slats were thrown away after the first use.

It was on such a slat that one of the Bar Kochba letters was written, the only instance of such a writing-surface in the archeological record in Israel. This slat is 17.4 cm. long and 6.5-7.5 cm. wide, i.e. high (see Fig. 5), and the letter from "Shimon Bar Kosiba, Prince of Israel", is written on the two inner faces in two columns, one column to each face.¹⁸ The central groove, which was scored from the "outer" side, in places penetrating the whole thickness of the slat, suffices to create two hinged half-slates, but the hinge is so weak that a few foldings and unfoldings would have unhinged the two halves altogether. That the slat is a single-use device is also proven by the writing being in ink, some of which is absorbed into the wood: the lightest scraping of the inner surfaces would have left very little of them for subsequent use. The slat must also have been too cheap to justify any effort to prepare it for reuse: it would have been simpler to procure another slat. In this respect the Bar Kochba slat differed from both *pinax* and codex, whose component tablets turned or folded on permanent axes and which could be used time after time with no fear of breakage. Both *pinax*-user (cf. Kelim 17:17; 24:7; Shemot Rabba 35:1) and codex-user inscribed their words in wax contained in a hollow "receptacle", i.e. on a rectangular surface cut into the thickness of the tablet (with a narrow outer strip on all four sides left to its full thickness to form a raised frame around the wax). To reuse a written tablet, one simply smoothed out the wax with the lower part of the stylus. It is true that occasionally the wax would be dispensed with in favour of writing in ink directly onto the wood.¹⁹ This was, however, a display of slackness, which in

¹⁸ See Y. Yadin, *IEJ* 11, 1961, 41. When the slat was found, Yadin reports, it had cracked along its length and split into four pieces, but two of them, apparently the two lower pieces below the crack, were still "joined to each other". Yadin perceived the similarity between the slat and a *pinax* but was careful to qualify the likeness, stating that the slat was "a kind of *pinax*". See also below.

¹⁹ See, for example, Birt, p. 260; Thompson, *op. cit.* (n. 7), 19; Bowman-Thomas, 36, 40.

no way impaired the durability of the *pinax* or *codex*, which could always revert to their proper mode of use. Thus, contrary to a *pinax* or *codex*, the slat on which Bar Kochba wrote was clearly intended for one-time use only.

Some dozen slats of the type used by Bar Kochba and his followers have been found at scattered locations within the Roman Empire — in the province of Dacia, in Switzerland, and especially at various sites in Britain. A few of them were already known when the Bar Kochba letter was discovered, but the majority were heard about only later.²⁰ The greatest surprise, however, was the find in Vindolanda, a Roman frontier-post close to Hadrian's Wall in Britain. Over several excavation seasons, a large accumulation of wooden tablet-fragments was unearthed, a sizable number of them bearing traces of writing, the remainder also either belonging to letters or intended for letter writing. By far the larger part of this find is thin slats, folded along a central groove to form two "wings" and inscribed directly in ink — exactly as in the Bar Kochba letter. Even their measurements closely match those of the Bar Kochba letter — the largest is 20 cm. long by 9 cm. high, the smallest 16.5 cm. by 6 cm. Relatively few of the Vindolanda tablets are wax-coated for inscribing by stylus.²¹

V

We may be certain that the wax-coated writing-tablets, both *pinax* and *codex*, enjoyed more prestige, and bestowed more dignity on what was written in them, than the flimsy ink-slats. At Vindolanda even the botanical tests demonstrated this, for they showed that, whereas the ink-slats were of a common local wood, the wax-coated tablets were of larch or spruce wood — two conifers of the pine family that do not grow in Britain. In other words, the tablets had been imported from other parts of the Empire. If this is not enough to make the point, we may add that most of the slats found during the 1973-75 excavation seasons came from three strata (strata 8-10, dating to ca.95-105 CE) and were concentrated in one limited area, which had apparently been the site of a waste tip, as is evidenced by traces of urine and excrement in the deposit and signs of burning on some of the slats (the tip was associated perhaps with an adjacent workshop). In all, this deposit contained 77 ink slats (59 of them in Stratum 8 alone) and only a single wax-coated tablet. Against this, most of the wax-coated tablets were found in two later strata (Strata 6 and 5A/B, dated to 105-125 CE), 8 of them concentrated in Stratum 6 and, it seems, the remnants of everyday use in a building, a barracks apparently.²² All this reconfirms that, in complete contrast

²⁰ See the survey in Bowman-Thomas, 36.

²¹ The additional material from Vindolanda can be found in A.K. Bowman and J. David Thomas, *The Vindolanda Writing-tablets (Tabulae Vindolandenses II)*, 1994. Further material continues to appear.

²² For the measurements of the Vindolanda slats, the results of the botanic tests, and the exact locations of the finds, see Bowman-Thomas, 20, 26-31. The two authors clarify very well the difference in mode of use between the rigid, durable, wax-coated writing-tablet and the cheap ink-slat (pp. 36-37, 44). However, they do not seem to have perceived that the latter was for one-time use only. They also hold the

to wax-coated tablets that might well eventually be joined to form a codex (or *pinax*) and that were imported from afar into Britain, the ink-slats were intended for one-time use only and, once used, would be discarded as refuse.

An additional point worthy of attention is the triangular notches cut into the left and right edges of some of the Vindolanda letter-slats (see Fig. 6). It seems that a number of written and folded letter-slats would be tied for despatch into a small bundle, passing the string through the notches so that it could not slip off. Once the bundle had arrived at its destination, the string would be untied and the individual letters distributed to the addressees.²³ Letter-slats despatched singly would not, necessarily, need to be notched in this way and so it is no surprise that the Bar Kochba letter shows no trace of them. It transpires that classical literature contains several incidental references to these letter-slats although not all the references are of the same weight.²⁴

One of the Vindolanda documents (Fig. 7) is especially important for our purpose. It comprises a chronologically ordered list of food deliveries that extends over a number of slats and that was written not in lines parallel to the long side of the slat (as is the letter in Fig. 6), but, the slat having been turned through 90°, in a series of short lines parallel to the short edge. The list takes up two full slats and half of a third (the second half of this third slat having been deliberately cut away from its first half): in all, five complete slat “wings” or five half-slats. The unbroken continuity of the list from slat to slat and the pairs of little holes pierced in both short edges of each slat (this in addition to the triangular notches in the same edges) give grounds to conjecture that one slat was laced to another by a fine leather thong and, if this is indeed the case, then all three were laced end to end to form a linked sequence enabling the reader to

view that ink-slats served as a kind of substitute for papyrus, especially at the extremities of the Roman Empire, such as the north-west corner of Britain, which would hardly ever see papyrus (pp. 37, 44). The notion is quite plausible, though the Bar Kochba letter-slat was found in Naḥal Ḥever along with, and, indeed, tucked into, a bundle of fourteen papyrus letters (which is good evidence for the two materials having been considered equivalent).

²³ Bowman-Thomas, pp. 37, 40. They also refer to Cicero's letters (*ad Familiares*, XVI, 5:1; *ad Atticum*, VIII, 5:1) that mention *fasciculi* in the sense of bundles of letters (cf. the entry for *fasciculus* in the Lewis-Short Latin dictionary).

²⁴ See Bowman-Thomas, 41. The most relevant of these references is that of Herodianus (I.17:1) who writes that when the emperor Commodus wanted to have his concubine Marcia put to death, along with his father's advisors, he wrote their names on a writing-tablet (γραμματοπίου) of the type made from a thin, flattened sliver of lime-wood (φιλύρη) that was folded in towards the centre from either side (ἀνακλάσει ἀμφοτέρωθεν ἐπτυγμένων). Cassius Dio (LXVII, 15:3) cites a similar story about the emperor Domitian and, it has been remarked, Herodianus may have borrowed the gist of his story from Cassius Dio, refurbishing it with a few details of his own. Cassius Dio mentions these writing-tablets on another occasion (LXXII, 8:4) in speaking of Ulpius Marcalus, the governor of Britain, but in neither instance does he say any more than that they were made of lime-wood. He may be referring to tablets that were a little more solid than thin ink-slats.

scan the whole list together (see Fig. 8).²⁵ Although this reconstruction hypothesizes the same concertina-form linkage as in a *pinax*, it does not identify the slat sequence as a *pinax*, since a *pinax* was constructed of wax-coated tablets joined by permanent axes. Even less does the reconstruction approach the codex design, in which the tablets would turn on one common axis.²⁶ But if the reconstruction is correct, then at least it demonstrates that this end-to-end linking of individual tablets was to be found in Roman practice.

The trouble with this hypothesis is that it is undermined by the fact that pairs of edge-holes have also been found in other slats, which there is no reason to assume were ever linked together in a concertina-form sequence.²⁷ It is further undermined by the simple possibility that twine was passed through the holes to tie the folded wings together to preserve the privacy of the message within, when this need arose. Such a requirement is a real one and cannot be ignored.²⁸ After all, in our day as well we seal most of our letters in envelopes before entrusting them to the mail.

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²⁵ See Bowman-Thomas, 39-40, 84. In this, Turner agreed with them, with one small reservation that they accepted; cf. E.G. Turner, "The Terms Recto and Verso, the Anatomy of the Papyrus Roll", *Actes du XVe congrès internationale de papyrologie*, I = *Papyrologica Bruxellensia* 16, 1978, 51-53 (§4.16). According to Turner (pp. 26-51), turning the writing medium through 90° and writing parallel to its short side was established practice for documents written on papyrus rolls and is occasionally referred to in literary sources. In such cases, the roll was called *charta transversa*, and Turner designates it *rotulus*, or vertical roll. Yet, apart from the hypothetical parallel between such a vertical roll and a concertina-like chain of linked ink-slats, neither Turner nor Bowman and Thomas have any proof that ink-slats were in fact arranged in this manner.

²⁶ Turner (*ibid.* p. 53) entirely discounts all comparison of a slat-chain to a codex and Bowman and Thomas agree with him. Nevertheless, they still make the statement that the concertina-form "may have influenced in some way" the development of the codex (pp. 40-41).

²⁷ See, for example, Bowman-Thomas, 139 (no. 42) and pl. XI, 5-7.

²⁸ Both Turner and Bowman-Thomas (39-40) mention the possibility that the pairs of holes were for tying shut single-folded slats, but consider this only from the point of view of the slat's shape and construction. The simple need to protect the privacy of the letter's contents did not enter their considerations.

FIGURES

Menahem Haran, Codex, *Pinax* And Writing Slat



Fig. 1. Young girl with a codex in her left hand and stylus in her right.



Fig. 2. A teacher with an open *pinax* on his left thigh and a stylus in his right hand (Berlin Museum).

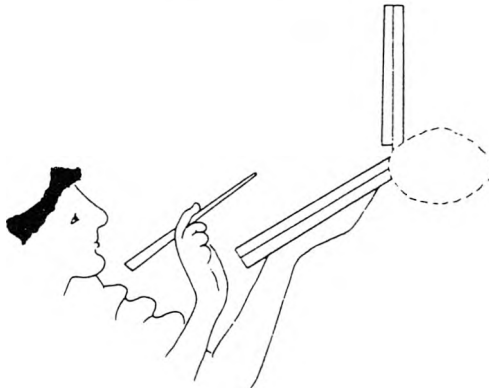


Fig. 3. Sketch of a youth with an open *pinax* on his left palm and a stylus in his right hand (from a painted beaker-fragment in Tübingen Archaeological Institute).

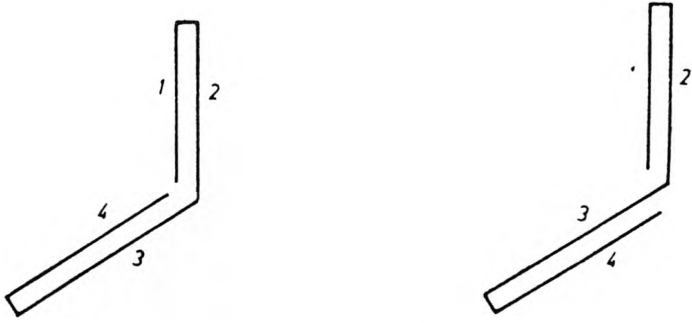


Fig. 4. The two ways in which the *pinax* in fig. 3 may be folded.



Fig. 5. The reverse of the Bar Kochba letter-slat. Note the central groove and the way the slat has cracked along its length.

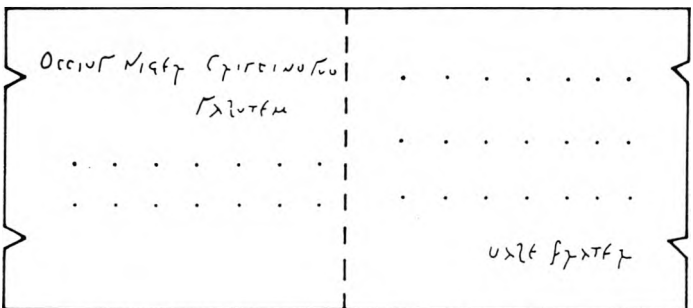


Fig. 6. Form and lay-out of a Vindolanda letter-slat. Note the notches in both left and right edges.

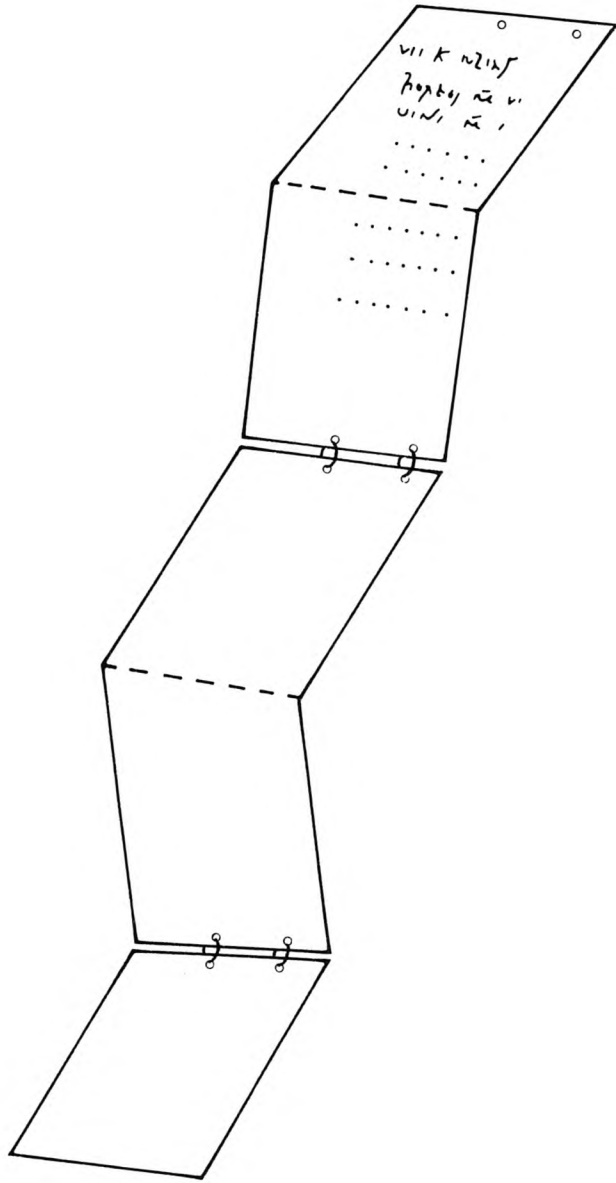


Fig. 8. Hypothesized concertina-form reconstruction of Vindolanda document no. 4.