## Studies in Bibliography

# Chain-Indentations in Paper as Evidence <br> by <br> ALLAN STEVENSON 

It is clear that any variation in the materials or manufacture of printed books may provide the analytical bibliographer with useful evidence. The kinds of evidence that prove especially useful are those whose variations are definite and measurable and whose manifestations are not overly ambiguous or complex. Within the past halfcentury a good many forms of bibliographical evidence have been noted and analyzed, and have proved their value, singly or together, in solving problems. Still, some forms of evidence remain for notice and trial.

One of these is the indentations left by the moulds (or roller) in all laid paper. Anyone who examines old handmade paper can see the ribs made by the fine laid wires and the troughs or grooves made by the chain wires, and thus can distinguish the "right" side or mould side from the "wrong" side or rough side of the paper. 1 Nevertheless, no general use appears to have been made of a characteristic so obvious and omnipresent. These wire and chain indentations are in effect watermarks; and in certain respects the chainmarks are easier to use than the designs called watermarks. Whereas watermarks and countermarks have a way of obscuring themselves within the folds of quartos and octavos, or behind layers of type in the folio page, chainlines can be seen in any margin, if the paper is "laid". Their regularity can be observed, their spaces measured, their sewing marks noted, their indentations studied for the information they may afford concerning the making of books. Though most characteristics of chains persist in machine-made laid, their evidential value is particularly clear in paper made at the vat.

Usually the indented side is immediately apparent, though not obtrusive: a thing to be determined in a moment's examination. $\underline{2}$ When the
paper has thickness or body and the chain wires are heavy, the sunken lines are easy to see. When the paper is thin and the wires are light, determination of the indented side may be less easy, may take half a minute for decision. Occasionally, indeed, the investigator may deceive himself, for portions of the indentations may appear to have fallen through. The smoothing and polishing which papers received in the mills before being folded into quires and packed in reams no doubt contributed to such an effect. Also, paper that has been washed and ironed by modern improvers of old books offers a problem -- particularly in title pages, where indentation evidence can be crucial. And a well-thumbed leaf of the Bay Psalm Book may not yield an answer so readily as a plate in the Philosophical Transactions of the Royal Society.
Ordinarily, however, when the indented side is not immediately discernible, one need merely hold the leaf below a good undiffused light -- God's sun or a 75-watt mazda bulb -- with the chains parallel with the eyes and the book or leaf tilted at an angle, so that a slight shadow marks the troughs. Then some or all of the grooves will appear, particularly in the upper and lower margins of folios and the fore-edges of quartos, where the chain wires in the mould approached the frame. At the same moment the pattern of the main watermark (if present) may become clear enough to decide the question. In uncertain cases it is well to examine the opposite leaf and other leaves apparently belonging to the sheet -- though this recourse may beg the question at issue. It sometimes helps to consider the relative smoothness of the two sides of the paper; for the unindented or "wrong" side may seem a bit rougher to the touch or even slightly darker of hue, because of the way the light strikes the fibers. But the grooves themselves are the more dependable evidence.

They are, indeed, as later paragraphs will show, among the simplest and most reliable forms of bibliographical evidence. To be sure, their testimony as regards a leaf-suspect in an individual copy of a book may prove decisive just fifty per cent of the time. This is because the grooves of an aberrant leaf will either agree or not agree with those of the sheet of which it pretends to be a part. The percentage improves when other copies become available for comparison. Three copies raise the probabilities (of usefulness or variation) to seventy-five; and four copies offer an efficiency approaching ninety. Thus, despite their half-ambiguous ways,

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indentations are likely to prove helpful in dealing with some types of problems.

These problems have largely to do with conjugacy; with cancels and other sorts of page-substitution. Such departures from the normal include resettings, mixed editions, sophistications, restorations. Beyond these lie more subtle possibilities, but
they must await a fuller understanding of paper.

So far as I am aware, there were no general rules or practices as to the side of the sheet which should receive the impress of the inner or the outer forme. Certain printers may have preferred the smooth side of fine paper for title pages and plates, in an endeavor to give a pleasing appearance to their books -- though surely any such intention was rare in Elizabethan and Stuart times. Other printers, when preparing engraved frontispieces, titles, plates, or maps, may have chosen instead the rougher side, as taking the ink more readily and avoiding the small hazards of the indentationtroughs. Similarly motivated selection of paper surfaces is common enough today, and was known in the eighteenth century. But few can have given it thought in the sixteenth and seventeenth centuries. For one thing, the French paper then imported into England, whether because of fine linen rags or the finishing process used, showed rather little difference in the two sides of the sheet, apart from the indentations, either to the eye or to the exploratory index finger. Further, paper came to the London printer variously made up into quires and reams, the order of the sheets and their orientation being due to the nature of the moulds or the habit or whim of the packer. Some mills are supposed to have made up quires with the right side consistently outside the fold. $\underline{3}$ But in other mills the variations in the moulds must have made consistency impracticable. As always, paper was made on a pair of moulds, and these moulds varied in the position of the main mark -- some pairs having their marks in opposite halves, some having them on the same side with one reversed or even inverted. Inscriptions in the watermarks sometimes read left to right with the indented side up, sometimes with it down. 4 Further study may

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reveal a measure of consistency within a particular region or mill; but there is not much to count on yet. And there is no need to assume that the ordinary warehouse man or pressman gave any attention to sides as he laid out tokens for the press. $\underline{5}$

Bibliographers need to familiarize themselves with the way the pages fall into place in all the common formats. 6 For instance, if in a quarto or octavo the first page of a gathering shows indentations, so will the middle pages and the final page of the same sheet. Similarly, any normal opening within a folded sheet will show the presence or absence of indentations in both pages open to view: grooves opposite grooves. Exceptions naturally occur in gatherings made up of more than one sheet or partsheet or in formats with a cutoff, such as duodecimo. As the chances are perhaps against a duodecimo sheet receiving its own cutoff (in which case $\$ 4{ }^{\mathrm{v}}-5 \mathrm{r}$ and $8^{\mathrm{v}}-9 \mathrm{r}$ would match), mismatching indentations are hardly evidence at the openings where the cutoffs fit into the rest of the sheet.

All legitimate uses of indentations proceed from the basic fact that they can be found on just one side of the sheet, that of the inner or the outer forme.

Now as to cancels. It is apparent that if a leaf of a book has been canceled there is about an even chance that the cancellans will not agree with the cancellandum as to the side which shows grooves. In something like half the cases the cancellans will have an indented recto and the cancellandum an indented verso, or vice-versa. The cancel will betray itself by the fact that its grooves do not fit the pattern of the sheet.

The device is not necessarily one to use if other signs are clear. There is no need to doubt a stub, which can be seen afar off; though a cancel may use the wrong stub or no stub at all. Paste too may be indubitable;

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though it may be used also to join gatherings. Watermarks can be a sure test, if they appear in helpful positions. When a literary detective is inspecting a quarto and comes upon a fold with just half a watermark, he receives much the same shock as when he bites into a winesap and finds just half a carpocapsa pomonella. 7 But sometimes watermark evidence is not present, as in a quarto or octavo fold when the mark is elsewhere, or in paper with no mark at all -- as often enough in the eighteenth century. Then indeed any irregularities or sewing-marks found in the chains may be allowed to serve as distinguishing watermarks; though their use is made awkward by the presence of pairs of moulds and the fact that a sheet can be fed into the press four different ways. Or again, as Mr. R. W. Chapman has noted, the clue to a cancel may be faulty alinement, or a change of font, or a leaf specially signed, or (in the eighteenth century) a new press figure. $\underline{8}$ Such evidence may give warning more abruptly than indentations; yet none of it is more conclusive. For whenever the indentations in apparently conjugate leaves do not agree, one of the leaves must be a cancel -- or some other form of substitution. In rebinding, stubs may disappear, alinements may be improved, and paste may fail or deviate into ambiguity; but grooves that do not match cannot be made to match. 9

For purposes of illustration old and familiar examples may serve along with the new. I have found it instructive to check a number of recorded instances, such as those mentioned in Mr. Chapman's little volume on Cancels (1930). For thus one may test the usability of indentations and the manner in which they complement other kinds of evidence.

Among well known cancels are several in Matthew Prior's Poems on Several

Occasions (1709) $8^{\circ}$, and particularly the two at A5 and A7 of the Dedication. $\underline{10}$ The paper is Italian, with some sheets watermarked IT or the leg of Gambino, marks small enough to suffer from the binder's plow. 11 In the Newberry Library copy the cancels are inserted as usual on stubs; but it is worth seeing how the indentations work out.

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Their prevailing pattern here in sheet A is inner; that is, they coincide with the inner forme. The grooves on cancel A5 appear on its verso, opposite grooves on the recto of A6; thus those on the cancel match those of the sheet, and they furnish no evidence. Those on cancel A7, however, appear on its recto, opposite no others; thus these do not match those of the sheet; and in this instance the indentations are in themselves sufficient proof of leaf-substitution. In the University of Chicago copy the grooves in sheet A are likewise inner; but here the grooves on both A5 and A7 are recto and fail to match those of the sheet. In this manner do the two copies, indeed the Chicago copy by itself, conclusively prove the presence of a pair of cancels. The stubs, as it happens, are obvious; yet they might not show in a manicured or tightly bound copy.

A promising area of employment for indentations is books printed on unwatermarked paper, such as a good many demy quartos and octavos of the eighteenth century. The reader may find it worth while to check familiar examples of cancels in such books; as those in

Congreve's Amendments of Mr. Collier's . . . Citations (1698) $8^{\circ}$, D6 Milton's Paradise Lost (Baskerville 1758) $8^{\circ}$, G7 H5 P1 T5 T8 X6 Z3 Z5 2D2 Percy's Reliques (1765) $8^{\circ}$, II, N7 U2.7 X4 Gray's Poems, ed. Mason (1775) $4^{\circ}$, 2K2 2P2.3 h4 Johnson's Journey to the Western Islands (1775) $8^{\circ}$, D8 U4 Chatterton's Poems, ed. Tyrwhitt (1777) $8^{\circ}$, c4 (Advertisement)

Checking readily available copies, I have found that in three copies of the Congreve (one on large paper and watermarked) the grooves in the cancel perversely match those of the sheet. The cancels in the Baskerville Milton, on laid paper with close thin chains, are sufficiently numerous to provide instructive examples in almost any copy. Those in the Newberry copy show mismatches at G7, H5, T5, X6, Z5, and probably 2D2. $\underline{12}$ But some leaves are made difficult by the polishing or pressing which the paper has received, usually but not always on its nonindented side. $\underline{13}$ In Percy's Reliques cancels N7 and X4 have special signatures; but even where such signposts exist, mismatching indentations may give final assurance. Gray's Poems, being a quarto, with horizontal chains, provides two ways of using them in the
identification of substitute leaves. In the Chicago copy sheet 2 K shows grooves on the versos of its first three leaves, then grooves on the

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recto of the fourth; in which situation the indentation pattern is obviously inner, and the misfit in the pattern is 2 K 2 -- a leaf which is stubless in this copy. It is an easy rule that when three consecutive leaves within a sheet have their grooves on the same side (recto or verso) -- the middle one is usually wrong. (The Prior volume already discussed provides an interesting exception.) Leaf h4 in the Gray (the first two pages of "The Elegy in a Country Churchyard") shows, in the Chicago copy, verso indentations that break the inner-forme pattern of sheet $h$, and so must be the cancel that goes with the turnover between h1 and h2. Naturally, this being a quarto, one finds that the chainlines of the cancels are not prolongations of those in their pseudoconjugates; but one notes too that, whereas the break may appear abrupt and certain in the inner fold of a quarto gathering (as in 2K2.3 in the Gray), it may not seem so certain in an outer fold (as in h1.4 of the same). Going on to the Johnson volume, I have noted nothing special; but Allen Hazen reports that in his copy the indentations prove that U4 is a cancel. In this instance, though, the cancel-leaf contains a piece of watermark -- an intruder in an unwatermarked book. 14 As for the Chatterton, there are clues enough: the Newberry copy shows a special signature 'c4' on the Advertisement leaf, an irregular stub behind -- and indentations that do not match those of halfsheet c .

Books that have been badly bound or rebound often exhibit no stubs. Recently in examining a copy of a book of rates of the custom house, The Rates of Merchandizes (1642) $4^{\circ}$, printed on a mixture of pillar and pot papers, I came upon a complete pillar mark in the inner fold D2.3 -- and also half a pot (the lower half) in leaf D1. Obviously this leaf is an intruder. D1 ${ }^{\mathrm{v}}$, indeed, has one more line of type than D2 ${ }^{\mathrm{r}}$, and the two pages are a little out of alinement; but the half-watermark is certain evidence, along with a mismatch of the grooves in leaf and sheet. The copy, belonging to the University of Chicago, has at some time been carelessly trimmed (with damage to marginalia in an early hand), and barbarously stabbed and stapled -so that any stub that may exist cannot possibly show. 15 Another

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cancel turns up in sheet I; and this time the indentation evidence resolves an ambiguity. Here the outer fold shows no mark, but I2 has the crescent top of a

Norman pot and I3 the grape top of a Norman pillar mark. 16 Obviously one of these leaves of the inner fold is a cancel; but which? The two headlines of I2 furnish more than a clue, as they read "Rates Outwards." (with a capital O) instead of "Rates outwards." as on other pages of this section (I1-L1). 17 Along with them the indentations provide certainty: inasmuch as I1, I2, and I3 all have verso indentations (in this copy), I2 is clearly the cancel.

The most instructive and amusing group of cancels that I have encountered occur in a late seventeenth-century volume of Irish economics: Richard Lawrence, The Interest of Ireland in Its Trade and Wealth Stated (Dublin: Jos. Ray . . . 1682) $8^{\circ} . \underline{18}$ It is printed partly on foolscap, partly on shield paper. The apparent collation is *-**8 $\tau^{-}$ $3 \tau^{8} A-F^{8} G^{6} H^{6} 2 A-2 F^{8}(--2 F 8) 2 f^{8} 2 g^{2} 2 G-2 R^{8}$; but matters are not that simple. At $\mathrm{A} 8^{\mathrm{v}}$ the book has one of the most delightful errata pages that I have seen. It informs the reader that, due to the author's absence from town and the mislaying of some papers, certain regrettable mistakes have occurred in the printing, and gatherings ff and $g g$ have now been added, without pagination. Then, after a few lines of errata, comes this revealing

## Advertisement to the Binder.

At the end of ${ }^{* *}$ in the Epi $\mathbf{I}^{*}$ tle Dedicatory there wants the Direction, viz. Plebeius, gg the Quarter $\mathbf{I}_{\text {heet in G Part 1. is to be }}$ placed after ff in Part 2. Ee the fir $\mathbf{I}_{\mathrm{t}}$ leaf to be cancelled, the la $\mathbf{I}_{\mathrm{t}}$ leaf of Ff to be cancelled, the laitt leaf of Mm to be the fir $\mathbf{I}_{t}$ of Ee, Nn fol. 195, 196, and 199, 200. to be cancelled; Oo fol. 213, 214, 217, 218, 221, 222. to be cancelled; the $\mathbf{I}^{+}$aid leaves of Nn and Oo being reprinted.

This does not merely show how such terms as 'direction', 'quarter sheet', and 'cancelled' were used; it shows how the printer handled his cancel problems. Most interesting is the transference of the last two leaves of $G$ to a point 122 pages later, and of 2 M 8 to a point 144 pages earlier, with implications as to the order of printing and the number of presses, worth looking into. It was the Newberry copy that I held in my hand, and I could check the manner in which the binder had done his assigned work. There are no stubs. As sig. G has six leaves and its cutoff 2 g the remaining two, which would presumably be printed as the innermost or outermost
fold, the binder may have used the same identical sheet for both gatherings, for the indentations of G are outer and those of 2 g are inner. $\underline{19}$ At 2 E 1 the binder has not done his work, for the cancellandum remains with a slash down two-thirds of its length, and [2M8] also holds its original place. The latter comes startlingly upon the eye, suddenly intruding lists of Irish lords divided into columns of Protestants and Papists between pages of regular prose. The leaf is paged 65-66 and bears the signature 'Ee'. Both sheets, 2 E and 2 M , show outer indentations; and that is most interesting for the present enquiry. For, obviously, if, in this particular copy, the binder (any binder) were to move the new Ee to the position of the slashed Ee, the grooves of the cancel would not match those of the pseudo-conjugate, though (or because) the two sheets as printed were grooved on the same side. Thus, if the cancellation had been carried through, the bibliographer might have known the fact, in the absence of a stub, by noting the indentations. In this instance he might have checked the substitution by observing the watermarks; but this is not easy in octavos. The prevailing mark in the sheets affected by the cancels is a crowned shield containing six fleurs-de-lis, a type of mark not shown in Heawood and not easy to make out here. $2 \underline{20}$ The paper is probably Morlaix fine crown. Now, commonly in octavos using French paper the watermark shows mainly (or at least partly) in the outer leaves of the sheet as printed, that is in $1: 4$ or $2: 3$. 21 But the shield marks in the Lawrence volume are closer to the center and show altogether in the inside folddowns 5:8 and 6:7. As it happens, the copy under analysis has the lower part of a shield in the cancellans 'Ee' (2M8), with no mark possible in the cancellandum. Thus, for one who has acquainted himself with the unusual watermark situation, the presence of the mark in the cancel (supposing the cancellation had been carried through) would sufficiently prove the substitution; but clearly the indentation evidence is just as telling, while simple and unconfusing.

The five cancels advertised as in 2 N and 2 O are of more ordinary import. "The said leaves . . . being reprinted" would fit -- four of them -- into a single forme, print-and-turn, with the fifth using 2F8 or one of the missing leaves of sheet H ; but the printer does not say this. In the copy at hand leaf 2N2 (pp. 195-196) matches the (outer) groove-pattern of the sheet, in an unwatermarked part of the sheet, and thus does not show whether it is cancellandum or cancellans. Leaf 2N4 (pp. 199-200) does not match, as it has recto grooves. It also shows the lower half of a shield within a leaf which normally has none; and it precedes a leaf, 2N5, which has the lower half of a shield, legitimately. In gathering 2 O [Oo], also with an outer groove-pattern, 2 O 3 (pp. 213-214) matches, but the type-page is misalined. Leaf 2 O 5 (pp. 217-218) fails
to match, and shows the lower part of a shield, as does the following leaf, 2 O 6. Finally, leaf 2 O 7 (pp. 221-222) has matching grooves -- but poor alinement. Interestingly enough, it shows the upper part of a shield which seems to have replaced an upper part in the cancellandum -- from the companion mould. As the two moulds are not easy to distinguish, at least in an octavo, one would prefer groove evidence or stub evidence were it present, the misalinement not being in itself quite convincing. Comparison with other copies may relieve this analysis of one or two ambiguities, and throw further light on the printing history of the book; but the volume is not common. 22 The study of one copy has served to emphasize the relative simplicity of indentation evidence over some other kinds.

The most familiar cancel-position is the title-page. Many titles (in publishing history) have been second guesses, on the part of author, printer, or publisher. And various old titles have given way to new, when the publishing situation changed or a need was felt to pass off an old edition as new. Sir Walter Greg has recorded a number of instances among seventeenth-century play-quartos; $\underline{23}^{2}$ and Fredson Bowers will record a good many more in his continuation of Greg's Bibliography. 24 Yet it is possible that an occasional title-cancel has escaped notice -- and that, indeed, reissues have been accepted as original editions.

Thus it is wise (over the years) to watch the indentations in titles and their apparently conjugate leaves. Unfortunately, many of the conjugates

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were blanks preceding the title, and now the title is a single leaf pasted to the dedication or first page of text. But wherever (as commonly) the title was the first leaf of a whole sheet or halfsheet, indentations may in time bring to light cancels and the manipulations of booksellers. And this despite the fact that titles may have become soiled and the sides of the paper difficult to distinguish. I have made no important discoveries myself, but some one else may. $\underline{25}$

Some cancels of course are not single leaves. They may be entire sheets. Or they may be made up of a single fold, a pair of conjugate leaves. At times such a fold replaces two similar leaves, and at other times only one. It may be difficult, though, to decide just which leaves are the cancel.

An edifying example occurs in John Hopkins' Milton's Paradise Lost Imitated in Rhyme (1699) $8^{\circ}$ in fours. Sheet B contains a parody of Book IV, on the love-life of Adam and Eve, written in heroic couplets and doubles entendres. Perchance the poetaster had an afterthought, for the gathering is made up of five leaves and a stub,
after this order: 'B' 'B2', unsigned, stub, 'B3', unsigned. (\$3 is not ordinarily signed.) The pagination proceeds regularly up to 10 ; then 9 and 10 are repeated on C 1 . One suspects that 'B3' and the following leaf are a cancel replacing the excised final leaf of an octavo halfsheet, represented now by the unattached stub. The paper is probably English, of poor quality, and apparently unwatermarked. 26 The indentations are not easy to see, for the mould-maker has used the same thin wire for both laid lines and chains. Still, they can be made out, and they show that the grooves on 'B3' and [B5] match. In the University of Chicago copy both [B3] and 'B3' have verso indentations. Thus the ambiguity is dispelled, and one may describe the gathering as $\mathrm{B}^{4}$ ( -- $\mathrm{B} 4+$ 'B3'.[B5]).

If, on the other hand, the two-leaf cancel replaces two original leaves, several instructive situations arise. The simplest occurs in the replacement of the inner fold of a quarto sheet, where the continuity of the matter may have made the double cancel both "necessary" and feasible. This situation is illustrated in Gray's Poems (1775) $4^{\circ}$, where the cancel at 2 P 2.3 may

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be determined by a mismatch of its grooves with those of the outer fold. In instances of this sort, however, it may be necessary to examine a number of copies to learn which of the two folds is the cancel. 27

A more interesting situation arises when two conjugate leaves replace two nonconjugates. Mr. Chapman cites an unusual instance in his copy of Sir John Hawkins's Life of Johnson (1787) $8^{\circ}$, where a pair of conjugate leaves replace canceled F3 and F5. 28 As one of the two new leaves must have grooves that do not match the pattern of the sheet, the groove evidence in this situation will prove infallible, with the two unused stubs (if still present) calling attention to the substitution.

A different sort of instance occurs in William Killigrew's Imperial Tragedy (1669) $\mathrm{F}^{\circ}$ in twos. It is printed on pot-size paper with a small grape watermark, characteristic of the Morlaix papermakers. When Fredson Bowers called my attention to the possibility that M2 and N1 might be not merely a pair of cancels but conjugate leaves, I examined the Newberry copy and found this state of affairs:

| Sig. | Mark | Indentations | Pages | Conjugacy |
| :--- | :--- | :--- | :--- | :--- |
| L1 | None | recto | 37,38 | L1.2: fold clear |


| L2 | Grapes | verso | 39,40 |  |
| :--- | :--- | :--- | :--- | :--- |
| M1 | Grapes | verso | 41,42 | Probably M1.stub |
| M2 | None | verso | 44,44 |  |
| N1 | Grapes | recto | 45,47 | Probably M2.N1 |
| N2 | None | recto | 47,48 |  |
| Stub |  | recto? |  |  |
| O1 | None | recto | 49,50 |  |
| [O2 missing $]$ |  |  |  |  |

It will be noticed that the watermarks seem to show nothing amiss: it is the mispagination that makes M2 and N1 suspect. Actually, the watermarks, were they unobscured by type, would tell the same tale the indentations do; and the latter plainly show that, in this copy, M1 and M2 are not conjugate, and N1 and N2 are not conjugate either. As the stub appears to have a recto (vertical) groove, it would seem to be the remains of canceled M2; but only the one stub shows. It is obvious, at any rate, that M2 and N1 are cancels -- and probably conjugate. The spacing of the chains

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suggests as much; but some prying finger (it seems) has cracked the paper along the fold top and bottom. It will be necessary to consider other copies to make certain. But the grooves, even vertical grooves, have brought us close to the answer.

After this extended discussion of cancels it seems supererogatory to discuss other types of substitution. For they may be detected in much the same way -- except that such signposts as stubs and special signatures will not be present. If the inner fold of a quarto gathering is drawn from a page-for-page resetting, either the headlines or the indentations may call attention to the mixture of settings. If the repairman or forger has cleverly used paper with similar chainspaces, he will hardly have found paper from the same individual moulds, and he may have missed matching groove-sides. If the sophisticator manages to avoid leaving just half a pot as unobtrusive evidence of how he made a defective gathering "perfect",, 2 or even if he has luckily brought together the top and base of a pot from the same mould, he may yet have got the grooves wrong. The improver of old books can scarcely get everything right, such are the variations in paper and print.

Other uses for indentations will be found, such as will ease the life of the descriptive bibliographer. Sometimes, say in a folio, he needs to decide whether a portrait or engraved title is printed on the same sheet as the printed title. Sometimes
his question is whether a blank leaf at the front (or back) of a book is a contemporary endpaper or an integral part of the first (or last) gathering. In a folio in fours, if a leaf has been deleted from a certain gathering, he may be uncertain which two of the remaining leaves are conjugate. 30 When he is dealing with a thin quarto in which he surmises that preliminary and final halfsheets have been printed together, he will want to say whether they are "outset", that is, wrapped around the other sheets, or cut apart before gathering and binding. At least this seems to be a question in dealing with eighteenth-century books. 31 In such situations, and others that will arise, where the question is partly or wholly

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one of conjugacy, indentations should prove a useful tool towards settling it.

One frequently notices, in descriptive bibliographies or in dealers' catalogs, open questions or guarded statements that might have been resolved by this device, particularly where several copies may have been available for examination. A good and sufficient example occurs in Sir Walter Greg's Bibliography in the description of John Fletcher's play Monsieur Thomas (1639) $4^{\circ}$, which collates ${ }^{\mathrm{i}} 1 \mathrm{~A}^{2} \mathrm{~B}-\mathrm{M}^{4} \mathrm{~N} 1$. Greg remarks: "It is almost certain that the title is really printed on N2, either detached or folded round the back (i1)." $\underline{32}$ In this and similar instances the question whether the leaf was detached is one worth investigating, as it involves a point of authenticity as well as one of book-production. In the Newberry copy of Monsieur Thomas the situation is clear. The grooves on ${ }^{\mathrm{i}} 1^{\mathrm{v}}$ and $\mathrm{N} 1{ }^{\mathrm{r}}$ match, and the chainextensions tally. And there is more significant evidence: the title page has a very wide inner margin, and the last leaf has almost none. Curiously, the watermark, which shows in both leaves, is mainly in N1. It looks less like a case of slippage than of offcenter printing. But it can hardly be doubted that, in this copy at least, ${ }^{\mathrm{i}} 1$ and N 1 are conjugate, and that the fold is "outset". It will be well to examine other quartos in which a leaf appears to be wrapped around the rest. 33

Beyond these uses of indentations in problems of conjugacy lie possible applications to further questions of method in the printing-house. When the pressman opened out the quires, did he make up the tokens and the whole heap with the fold or crease consistently below? Moxon seems to imply that he did. 34 At what date (if ever) did he sort out sheets of fine paper so that the title page might be printed on the "right" side of the sheet? In printing halfsheets together, in "twin" imposition, was it the custom to print rectos beside rectos and versos beside versos? Early nineteenthcentury printers' manuals seem to indicate that the contrary method was used. $\underline{35}$ That procedure would be necessary for outsets; but when were halfsheet outsets first
employed? Was there a paper advantage (as well as a saving of type) for those eighteenth-century printers who favored halfsheet octavo and duodecimo? When the print-and-turn method was used, be it noted, the presses produced equal numbers of halfsheets grooved on inner and outer sides; and certainly at such times the printer was expressing

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no preference for the right side or the wrong. Such matters may be reserved for further study.

In the meantime bibliographers will test indentations as a tool for settling problems of conjugacy.
"In hand-made paper the right side is that which touches the wire cover of the mould . . . The 'wire' side . . . is, therefore, the right side . . ." E. J. Labarre, Dictionary and Encyclopaedia of Paper and Paper-Making (Amsterdam, 1952), p. 227.

It is difficult to generalize about seven hundred years of paper history. Some early paper has indistinct chains but clear wire marks; now and then both chains and laid lines are thin; but the grooves in some royal paper of the eighteenth century are irritatingly obvious; and this lush effect has sometimes been achieved in machine-made papers.

2a McKerrow remarks: "If one leaf has the smooth surface on the inner side and the other on the outer side, one is a cancel." To this he adds a curious note: "In the case of many kinds of paper it is, however, almost impossible to detect any difference between the two sides."
Introduction to Bibliography (1927), p. 225.
"Flat papers are usually packed with the right side uppermost; if folded . . . the right side is outwards." Labarre, p. 227. That is, the quires are folded so that the grooves are outside the fold. But this rule may not have held general acceptance before the period of the machine. It is unlikely that any unopened reams of old paper exist, whose quires might serve as evidence. Yet more than occasionally a seventeenthcentury book shows such a sequence of grooves in its outer formes (say) as to suggest the agreement is no accident; though other volumes show no consistency from sheet to sheet or within several copies of the same sheet.

In the sixteenth century the paper used in English books frequently has the initials of the papermaker reading normally from the unindented side (the inscription having read from left to right on the mould); whereas often in the seventeenth century a pair of moulds are so made that in one the inscription reads correctly from the unindented side, and in the other from the indented side (the letters or words having been reversed on the mould). See Allan H. Stevenson, "Watermarks Are Twins", SB, IV (1951), 65-66 et passim. These and other variations suggest that the "right" side was not regularly distinguished from the "wrong" side at the time.

Moxon's description of how quires were set out, opened, and wet for the press shows that the job was done in an orderly manner, and that homogeneity was possible or probable if the sheets and quires had been packed consistently at the mill. "Then taking the first Quire of the Heap . . ., he lays the Quire down upon the Waste Sheet, so, as that the back of the Quire lye upon the middle crease of the Waste Sheet . . . To place [the second] Quire in an even position, he lays the back of the Quire exactly upon the opening crease of the former Quire . . . In the same manner he wets [and lays down] all the Quires of his Dry Heap." Joseph Moxon, Mechanick Exercises, ed. De Vinne (1896), II, 303306; and note 353-356.

Besides the useful diagrams in McKerrow and in various printers' manuals, there are now some handy ones in Paul S. Dunkin, How to Catalog a Rare Book (1951). Mr. Dunkin uses photographs of openedout printed sheets in showing the folio, quarto, and octavo formats (plates IV-IX) and clear diagrams in describing twelvemo by cutting and without cutting (plates X-XIII).

However, he must not be deceived by the smallness of the watermark or the tightness of the binding. A small grape mark, especially one off center in its half of the mould, may appear wholly or mainly in one quarto leaf; and the greater part of a small pot may be lost in the fold.
R. W. Chapman, Cancels (1930), ch. VIII, "The Detection of Cancels". This book grew out of several articles on eighteenthcentury cancels published in the Library. McKerrow also lists the signs of cancels, pp. 223-224.

Unless -- fantastic thought! -- the rebinder substitutes a cancel from another copy.
10. Chapman, p. 61.

The initials are fairly small and appear (as ordinarily in octavos) at the top edge of the fold; and the leg appears (as often in paper made by Gambino of Genoa) in the lower outer corner of a leaf. For an illustration of legs used as corner marks see W. A. Churchill, Watermarks in Paper (Amsterdam, 1935), no. 551.

That is, six of the nine cancels checked violate the groove-pattern: an efficiency of $66 \%$ for one copy.

It is evident that Baskerville's workmen consciously selected "wrong" sides for hotpressing, missing a few; and equally evident that they paid little attention to sides while printing off cancels. But, indeed, a number of cancels would be printed off on one sheet.

Sometimes the watermark in a cancel appears in an unnatural position, as in the fore-edge of a quarto or the lower edge of an octavo. A curious example of such a quarto is a tract at the Newberry, The Necessity of Parliaments . . By a True Protestant, and English Man (1689), from the fore-edge of the title page of which an exceedingly long-nosed fool looks mockingly upon the twentieth century. The title, if not certainly a cancel, is at least a leaf printed separately. Similarly, a University of Chicago octavo, Horace's Odes, Satyres, and Epistles (1684), printed on Norman demy (carré), has a title page with a piece of the Arms of France \& Navarre in its lower inside corner. As the grooves in this title leaf do not match those of its pseudo-conjugate, the paper here furnishes two proofs of the cancel.

This quarto is not listed in Wing, though there is said to be a copy in the British Museum. Wing does list, E 920, an octavo edition of the same year, of which I have seen the copy at Columbia University. Both quarto and octavo were printed for Lawrence Blaiklock.

The pillar mark is a common type with single balls atop the posts and the letters IDB between them, as can be seen in sheets A, B, E. Cf. Heawood 3492 and 3532, which are larger. The pot top has a small crescent of a sort not found elsewhere in this book. As the pillar mark with its mate is the common mark in the volume, the pot top is suspect, though in itself insufficient as evidence.
$\mathrm{I} 1^{\mathrm{r}}$, however, has a head title, and $\mathrm{L1}^{\mathrm{v}}$ is blank.

Wing L 680A-681.

The center fold, G4.5, would seem the natural pair of leaves to print for removal and transference. Fredson Bowers, Principles of Bibliographical Description (1949), p. 233, cites aberrant copies of Sir William Killigrew's Three Plays (1665) $8^{\circ}$ in which a cancel fold printed as ${ }^{3} \mathrm{G} 4.5$ and intended to replace leaf ${ }^{1} \mathrm{D} 7$ remains in place, untransfered. On the other hand, Chapman cites a different treatment in Dodsley's Collection of Poems, IV (1755) $8^{\circ}$, in which it is an outermost fold that is removed. For at the foot of $\mathrm{Z6}^{\mathrm{v}}$ is printed: "Directions to the Binder. The first and last leaves of this sheet are to supply the cancels in sheets H and K." R. W. Chapman, "Notes on Cancel Leaves", Library, 4th ser., V (1924-25), 258. It will be noted that whichever fold becomes the transferred leaves the effect is the same. In Lawrence's Interest of Ireland, Newberry copy, 2 g is compatible with G whether it was printed as the innermost or the outermost fold, for the grooves fit the sheet-pattern either way.
20. Except for the six fleurs-de-lis it has the general form of Heawood 644. It is not like Briquet 1860, an Italian mark with six lilies but no crown above the shield.

Cf. McKerrow, p. 169, fig. 18. I am using the colon as a sign of vertical conjugacy.

Allen Hazen has kindly examined the Columbia University copy and reports that in it all the indicated cancels have been carried out. I am grateful to Mr. Hazen for this and other helpful information on particular cancels.

In his Bibliography of the English Printed Drama (1939 -- -). See e.g. nos. $78,116,148,172,210,224,231,232,245,246,260$, and so on. Of these, no. 246, Chapman's Bussy D'Ambois (1641) is notable in having had its title twice canceled $(1641,1646)$.

Mr. Bowers notes these title-page cancels from work-in-progress: Woodward \& McManaway nos. 90, 173, 195, 278, 458, 477, 484, 493, $537,656,724,805,1079$; and he has kindly listed other cancels for my investigation.

The most interesting title-page cancel that I have examined recently occurs in the Newberry copy of James Shirley's Honoria and Mammon (n.d.) $8^{\circ}$. (Greg 473b1, W \& M 1145, Wing S 3475.) The imprint reads merely "LONDON, Printed for the $u \mathbf{1}$ e of the Author." The leaf is a cancel, with the stub not visible but with its indentations not matching those of halfsheet A. The special interest of this cancel arises from the fact that, as Greg points out, it seems to represent the first issue of the edition of 1658-59, and the further fact that this copy contains a few alterations of speeches and directions, apparently in the hand of the author, which suggest production in the summer of 1658 . The only other recorded copy is at the Bodleian.

English paper was being made at this time by a considerable number of mills. This is of a poorer quality than much of that made by the Company of White Paper Makers from 1691 on.

Any slight discrepancy in paper or print may serve as a clue: an intrusive watermark, wider chains, weaker tranchefiles (end-chains), heavier sewing marks, thicker paper, off-color paper, foxing; new headlines, type including new sorts, peculiarities of composition, a wider printer's measure: anything that bibliographical ingenuity can hit upon. For the want of such clues or such ingenuity, no doubt numerous cancel-folds remain undetected.

Chapman, Cancels, p. 14.

28a These establish the conjugacy of the leaves. F.B.
T. J. Wise shows no concern over matching paper, when, for instance, he makes up "perfect" copies of Dryden's Marriage a-la-mode, and Nash's Have With You to Saffron Walden. That is, he uses the leaves, as they come, from whatever other copy he has at hand or can procure. See Letters of Thomas J. Wise to John Henry Wrenn, ed. Fannie E. Ratchford (1944), pp. 396, 458.
30. If two moulds and countermarks are present, there should be little difficulty.

See Philip Gaskell, The First Editions of William Mason (Cambridge Bibliographical Society, 1951), p. viii. He says: "'Outset' is a bookbinder's term meaning a gathering, usually of two or four conjugate leaves, folded round the one or more sections that make up
the body of a book, just as the wrapper encloses a pamphlet."

Greg no. 558.

Consider e.g Greg nos. 563 (Fletcher's Wit without Money), 527 (Luminalia), 568b11 (Mayne's City Match), 584 (Goffe's Strange Discovery), 761 (Goffe's Careless Shepherdess). In the Newberry copy of each of these, except perhaps The Strange Discovery, there seems to be evidence that a leaf was folded around and not detached.

Moxon, II, 303-305.
E.g. C. H. Timperley, The Printers' Manual (1838), p. 24.
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