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different. Moreover, the combined error rate for the proposed oh and zero is less than half that for the prior oh and zero. We can conclude from these results that a more legible pair of symbols has been achieved with the proposed oh and zero.

VI. *Recommendation*

It is recommended that the convention for distinguishing between the oh and zero in environments where the legibility of symbols is critical be that the zero is narrow and unmarked and the oh has a loop at the top as in Figure 2. This convention has the desirable properties of avoiding the conflict of slashing either the oh or zero, of representing the oh in a familiar form, and of representing the oh without fundamentally altering its appearance.

1. For a sampling of opinion on this subject, see R. W. Bemer, "Towards Standards for Handwritten Zero and Oh," *Communications of the ACM*, VIII (August 1967), 513–518.

2. Revised Appendix D, *X3.6.5.4. Working Group Report* (New York: USA Standards Institute, 3 March 1967).

3. *Ibid.*

4. E. S. Pearson and H. O. Hartley, *Biometrica Tables for Statisticians*, I (Cambridge: University Press, 1958), 185.

5. A. F. Deuth, *Final Engineering Report on Informax*, No. 1176–FR–10 (New York: Hogan Labs., 30 November 1953), p. 22.

6. R. S. Easterby, "Perceptual Organization in Static Displays for Man/Machine Systems," *Ergonomics*, X (February 1967).

7. Dirk Wendt, "O or O?," *Journal of Typographic Research*, III (July 1969), 241–248.

8. Easterby, *op. cit.*

9. Pearson and Hartley, *op. cit.*

The Use of Type Damage as Evidence in Bibliographical Description

G. Thomas Tanselle

Accidental variations in the typography of books can furnish important clues about the regular processes of printing—both in compositorial analysis and in the classification and ordering of successive printings, issue, and states. The article considers the question: what degree of physical detail should be recorded in a descriptive bibliography? Examples of type-damage discovered in a collation of Herman Melville's works are illustrated.

It is an axiom of analysis in any field that accidental and unplanned features of the object under analysis may form the basis for useful analytical techniques. Bibliographers recognized early that accidental variations in books could furnish important clues about the regular processes of printing, and they saw that the aspect of the book most subject to such unplanned deviations is its typography—for there are thousands of type-impressions on every page which can vary as a result of improper inking, normal type wear, or type damage produced by careless handling. Examination of these irregularities may be helpful in different ways for books of different periods—in compositorial analysis of seventeenth-century books, for example, or in the classification and ordering of successive printings of later books. This kind of investigation has been employed so widely that many persons outside the field of bibliography have heard of it, and bibliographers are sometimes referred to, amusedly if not condescendingly, as people who study "broken types."

When an activity comes to symbolize, in the popular mind, a more complex process of which it is only a part, the result is often its misuse or abuse by those who do not understand (because they have never been introduced to) the larger process. For obvious reasons this situation has been particularly noticeable in the case of nineteenth- and twentieth-century books: by this period technological improve-

ments (especially plating) made possible numerous impressions over many years from one setting of type, impressions often not readily distinguishable from one another; these books have been available in large enough quantities to make comparison of copies generally easy; and the desire among collectors for early or scarce states has stimulated the search for points by which copies could be differentiated. The result is that bibliographies and dealers' catalogues often list points which have no significance whatever for distinguishing among copies. Some bibliographies record misprints, for instance, without indicating whether such errors occur in all copies of a given printing or persist through all printings; similarly, some dealers will say "with the broken *y* on p. 212" or "lacking the final punctuation on p. 57," simply because they have noticed these mistakes without knowing whether the faults may be present in every copy. In this way false "points" become established, implying states or printings which may never have existed; once announced, they tend to be self-perpetuating and difficult to eradicate, for each dealer and collector feels obliged to check the points in his copy and report the results. This is not to say that there is no legitimate use of such evidence but only that it is easily abused.

In recent years the use of the Hinman Collator has intensified the problem, for it is now possible to make complete collations of multiple copies in much less time than previously and to detect variations (in spacing, inking, or damage) which would not have been noticed by the unaided eye (at least without laborious comparison and measurement). Information of this kind is being accumulated in great quantities in connection with the editions being prepared under the auspices of the Modern Language Association's Center for Editions of American Authors. The data are essential for establishing the texts, but how much of the physical evidence turned up in these collations is significant enough to be reported in the descriptive bibliographies which are a natural by-product of the preparation of such editions?

The basic issue turns on the distinctions between analysis and description, between research and the presentation of evidence. Should a descriptive bibliography report all the physical differences between the copies examined, or only those differences which can be shown to distinguish issues or impressions? If a large number of

variations always occur together in the copies examined, is it necessary to record them all, or can one stand for the group? Is a descriptive bibliography essentially a complete record of physical details or an abbreviated guide in which certain selected details are abstracted from the fuller data? If a rationale can be evolved to answer such questions, then a routine can be worked out for compiling, analyzing, and reporting the data.

A descriptive bibliographer is necessarily concerned with type, since inked type-impressions are one of the two principal physical elements which constitute a book (the other, of course, is the paper on which the impressions are made). But the description of the type design and typographic layout found in a particular book is quite a different matter from the analysis of its type damage: the first is concerned with the planned features of the book, the second with the unplanned. Since one aim of a bibliographical description is to record the characteristics of an "ideal copy"[1] of a book (eliminating those features which are unplanned abnormalities of individual copies), the section of a description on "Typography" takes up only the typographic elements intended to be present by the publisher, printer, or designer, and not those variations (such as defective inking) which obviously are not part of the consciously planned design. Even if every copy examined shows identical damage to a particular letter, it would be absurd to suppose that this damage was part of the design; the "ideal copy" is thus an abstraction to which, in some cases, no actual copy may conform.[2]

Although in practice there is generally no difficulty in distinguishing between the planned and unplanned features of a book's typography, theoretically this distinction emerges from a close examination of a large number of copies. The precise description of individual copies (including those features which may turn out to belong to only one copy) must precede the abstracted description of an ideal copy. Surveying damaged letters in individual copies is therefore part of the analysis which underlies the final description, part of the research which must precede—but not necessarily be fully recorded in—the final report. If a bibliographical description were not conceived as the description of an ideal copy it would not be a finished piece of research, for the purpose of a final report is to reveal order and

meaning in the assembled data: separate descriptions of individual copies, with all their peculiarities, would represent only the raw material. The bibliographer, understanding that his goal is the description of an ideal copy, will nevertheless record in his own notes typographic variations among copies, for he cannot know in advance what significance may attach to them; but these variations—except for the ones he concludes to be intentional—will not be included in the paragraph on "Typography" in his completed description.

If a report on type damage does not form part of an account of a book's typography, it may yet serve an important function in a descriptive bibliography. The three principal uses to which type-damage evidence has been put are (1) the analysis of the habits of individual compositors and the determination of the sequence of formes through the press; (2) the identification of printers and the establishment of the history of particular fonts of type, as they are passed from one printer to another; and (3) the classification of issues and impressions. Each of these impinges on bibliographical description in a different way, but all three tend to make the bibliographer include somewhere in his description more of the data relating to unplanned or accidental features of a book.

The analysis of the recurrence of particular pieces of damaged type in order to identify the shares of compositors and to ascertain the order of formes through the press has been used most extensively for English books of the sixteenth and seventeenth centuries. Such a procedure presupposes that each compositor was assigned to a specific case of type, so that the presence on a printed page of an impression made by an identifiable piece of type is an indication of the person who set (and later distributed) that type; it also presupposes that the supply of type was not large, so that damaged types would not be discarded and would in fact be reused frequently. The technique, therefore, is not useful in later periods, when fewer irregular type-impressions appear in books and when the ordinary resources of printers are greater; and it obviously has no relevance to those nineteenth- and twentieth-century books in which the damage is plate- rather than type-damage or to those which were not hand-set. In the case of Renaissance books, however, recognizably damaged types afford an opportunity for determining the maximum interval between the distribution of one forme and the composition of another

and, in conjunction with spelling analysis, for ascertaining the dividing lines between the work of various compositors; routine methods for this kind of analysis and the application of the resulting evidence to the solution of textual problems have been skilfully worked out by a number of bibliographers, notably Charlton Hinman and Robert K. Turner, Jr.[3]

Although this use of type-damage evidence is essential for the preparation of a critical edition, how much of it should be recorded in a descriptive bibliography? Is a descriptive bibliographer obliged to pursue this sort of extended analysis if he is not also preparing an edition? Granted that the damage is not part of the planned typography of a book, if it is a physical detail of which important use can be made, should a report of it be included in the description? Would the usefulness of this report warrant the time involved in its preparation, the space it would occupy in the published bibliography, and the decreased production of bibliographies which such a requirement would necessarily entail? If the bibliographer has examined all known copies of a book, is there less (or more) reason for including a report of type damage?

These basic questions can also be asked in connection with the other uses of type-damage evidence. It is sometimes possible, for example, to identify the printer of a particular book by matching the damaged or defective types used in it with those found in other books of which the printer is known. Similarly, if a number of identically abnormal types turn up in the work of two printers several years apart, a partial history of this specific font can be established, furnishing a clue for further investigation into the relationship between the printers. A technique of "fingerprinting" type to detect such peculiarities or defects resulting from the casting process has been developed by John Cook Wyllie, who described his scheme in the Rosenbach lectures of 1960.[4] The method is analogous to one long used by bibliographers for dating books by analyzing the imperfections in woodcut illustrations (as evidence of the gradual deterioration of the blocks through wear). This use of type-damage evidence —like the preceding one—is, for obvious reasons, more applicable to books of earlier periods. Once a printer is established by this means, how much of the evidence need be presented in a descriptive bibliography? Is it enough to name him, or should a few easily

recognizable types be mentioned to show how the identification was made, or should all the evidence be recorded? Even for books in which the printer signed his work, should all identifiable imperfections in the types be listed in order to establish a body of evidence which would be potentially useful in the investigation of books by unknown printers?

The most widespread use of type-damage evidence is in distinguishing printings, issues, or states—not otherwise identifiable—of nineteenth- and twentieth-century books. The method was popularized in the 1920s by Merle Johnson in his influential guides for book collectors. In his *High Spots of American Literature*, he noted that he had been thought a "crank as to 'broken type' "; but the system he said, was "only modern scientific methods getting into the determination of first editions." He then proceeded to outline the theory:

> Up to a certain period books were printed from the actual type. Then came the "plates," and in the later books of huge editions, many plates on many presses. But in the handling of type or plates for a second edition [i.e., impression] something *must* happen. A corner of a plate is dented when it is put in or taken out of storage; if the damage is very obvious, it is patched with new type, and, to a trained eye, that patch is also obvious.
>
> The "rule of thumb" as to first edition, when more than one edition appears in the first year of printing, is to compare the variorum copies in the first year with an acknowledged reprint and whichever agrees with the reprint is a second edition.[5]

His *American First Editions*, which appeared in the same year, occasionally recorded instances of damaged type which helped to differentiate impressions or issues of particular books; and its second edition, three years later, contained a somewhat more sophisticated statement of the method:

> The great majority of the books herein listed were not printed from the original types but from stereotyped or electrotyped plates. The study of the effect of wear caused by repeated printings from such plates has entered largely into the determination of the various states of these books; a scientific study based on physical evidence, a more reliable source than the fallible memories of publishers, authors, or printers. The physical evidence of continued printings is always observable in later printings; comparison of differing states of early printings with an admitted later printing will

always determine the first state. Printing from the original types, as before the forties, with occasional printings from type thereafter, and printing on multiple presses from duplicate electroplates from one master-mold are matters concerning but few of the books in these lists.[6]

After another three years, Johnson issued a revised version of his bibliography of Mark Twain (originally published in 1910). In the preface he explained that errors were sometimes corrected in plates after a number of copies had been printed, and he remarked that the "study of progressive wear on stereotype or electroplates"[7] was useful in this connection. His chief illustration in the bibliography was the elaborate discussion of *Huckleberry Finn* (pp. 44–50), which included an analysis of the various states of the page number "155." Since he was working in the days before Hinman Collators, he had to use a magnifying glass and calipers in order to measure defective letters or variations in spacing; and he realized (as some of his followers did not) that the presence of the earlier state of any particular variation did not necessarily signify the earlier state of the entire book but only of the gathering involved (p. 47).

Further cautions about the use of such evidence were issued in the 1930s by Percy Muir, in his two volumes of *Points*. In 1931 he emphasized the fact that "it may well be impossible to find any legitimate copy of the book in the first state throughout";[8] his chapter on "The Need for Caution," after showing the usefulness of the evidence offered by "the gradual degeneration of condition in the type-face," asserted:

> If it is realized that imperfections of type are signs of age or weakness, and that consequently their significance is limited to an indication that copies betraying the imperfection were probably printed later than the perfect ones, less will be seen in catalogues of the wild-cat descriptions now so frequent. [p. 39]

Three years later he made a stronger attack on the abuse of this technique:

> This breaking down, to a greater or less degree, of portions of the type-face is the commonest form of variant, and one which occurs in almost every book printed in our time. An imperfectly cast letter, a weakness in the metal, or failure completely to lock the forme results in irregularities of printing as between the earlier and the later printed sheets. Certainly this is a chronological distinction, but it is, nevertheless, devoid of biblio-

graphical significance. Curiously enough, those who magnify the importance of these minor accidents of the printer's shop seem incapable of arguing otherwise than perversely. For although it would appear clear to the simplest intelligence that imperfections in type arise as a result of its having been used, these ridiculous persons always assume that the typeface starts in a state of imperfection and then, by some curious process which they never condescend to explain, approaches nearer and nearer to perfection the more it is used.[9]

After reciting some examples, he concluded:

It is therefore clear that in some cases these typographical peculiarities will be legitimate evidence, while in others they will not. They are evidence where, as in the illustrations to *Light Freights*, their breaking down progresses chronologically with other changes in the make-up of the book, or even, possibly, where they are themselves chronological and are the only evidence of secondariness. They are not evidence where they occur in haphazard fashion and independently of other changes, as in *The Painted Veil*. [pp. 29–30]

If Muir's strictures had been heeded, much of the later confusion about type damage would have been avoided.[10]

In 1936 Jacob Blanck brought out a revised edition of Johnson's *American First Editions*; his preface paid tribute to Johnson as the "chief advocate" of "the much discussed (and much misunderstood) 'broken type theory' " and made an important restatement of it:

Briefly the theory is this: that as type or plates are used certain evidences of wear occur. In the case of a book suspected of existing in two or more states, it is obvious that those copies showing the least wear or lacking damaged type (always assuming until otherwise proved that the damage occurred during printing and not before) preceded copies with the defects under observation. The presence of the defects does not indicate a later issue—but it is an *indication* of *when* the sheet was printed. Thus, by following the progression of the wear or damage, it is possible to determine the earliest printed copies which almost invariably are those containing the typographical errors, usually points positive of the first state.[11]

Later bibliographers, though they often used this kind of evidence, rarely made general observations about it. In 1957, however, Matthew J. Bruccoli, in his bibliography of Cabell (for which the Hinman Collator had been employed), commented on type damage as evidence of separate impressions:

Broken letters and dented rules do not often result from the actual process of printing, but rather from handling between impressions; accordingly, the appearance of type damage in a setting may generally be taken to indicate that an impression showing damage is subsequent to an impression showing relatively less damage.[12]

If these statements can be taken to represent the theory, they do not answer some of the questions which come up in practice. Although typographical errors are different from type damage, such damage can create what appear to be errors, and the two kinds of "points" are often listed together in bibliographies. Are they "points," however, simply because they have been noted? Jacob Schwartz, in *1100 Obscure Points* (London, 1931), sometimes introduces a list by saying (as he does for Melville's *Mardi* on p. 74), "The following typographical errors are noted." The fact that errors exist is no guarantee that they will later be corrected; if they are found in all examined copies of a book, is a bibliographer wasting his readers' time when he implies that these errors are points to be checked in each copy? Similarly, Jack Potter's *A Bibliography of John Dos Passos* (Chicago, 1950) lists "Errata" for some of the books without saying whether the errors were corrected in some copies or whether they are given only as textual information. Barton Currie, in *Booth Tarkington: A Bibliography* (New York, 1932), decides to draw attention to such errors even when, in his terms, they are not significant for distinguishing first impressions; in connection with *The Plutocrat* (1927), he says, "Correction ordered March 22, 1927, page 438, line 2, *upon his hed* to *head*; presumably ran through earlier editions [impressions], hence no point" (p. 85). If this alteration is a "correction" rather than a "point," is the reader to conclude that there are no other corrections or errors? An example of a sensible use of this kind of evidence is Donald Gallup's comment on the first impression of *The Waste Land* (1922): "The first copies printed have the word 'mountain' correctly spelled in line 339 (p. 41); in later copies the 'a' has dropped out."[13] But are there other imperfections which, if reported, would enable someone else to discover previously unnoted variations? In other words, should a description contain a long list of typographical defects on the grounds that such a list offers a more detailed description than a short selective one and that it facilitates the detection of variations? Or are the benefits to be derived from these lists insuffi-

cient to justify the effort involved in their preparation and the difficulty of using them? Can a bibliographer ever examine enough copies to feel confident that a particular point may be eliminated as definitely invariant?

All these questions, for any of the uses of type-damage evidence, are similar and spring from a basic issue: what degree of physical detail should be recorded in a descriptive bibliography?[14] Whether one is reporting imperfections in the type of a sixteenth-century book to analyze the order of formes through the press, or peculiarly cast types in a seventeenth-century book to identify the printer, or plate damage in a nineteenth-century book to distinguish impressions, one must decide whether to present a carefully selected sample of the evidence as a guide to others in examining further copies or to furnish a complete list as documentation for the conclusions reached. It may be that certain kinds of analysis—such as a detailed compositorial study with full evidence—are more appropriately placed in separate articles or monographs; but since the evidence is internal—physical evidence found in the books themselves—it must be taken into account, to some degree, in a descriptive bibliography.

The nature of the problem may be clarified by looking at the two extreme possibilities. At one end of the scale would be the simple statement of conclusions, without any listing of evidence: "Inner C was distributed before inner B"; or "The printer was . . ."; or "There were three impressions during the first year." (In the third instance, however, one is forced to mention at least a single piece of evidence, if the reader is to have any means of distinguishing the impressions.) Such a procedure is indefensible, if a descriptive bibliography is to be anything more than a shorthand guide for collectors. Eliminating the evidence is not only unscholarly; it also deprives the reader of historical data which might be of use to him in another connection. By definition a descriptive bibliographer must describe; and description entails more than the notation of the minimum number of apparently "significant" features for the bibliographical analysis of one work. The bibliographer is further obliged to contribute to a larger body of information, and any descriptive bibliography should be, in effect, a partial history of printing. Details which may turn out to be unimportant in analyzing the printing of a particular book or determining the number of impressions it went

through may nevertheless furnish important corroborative evidence to another bibliographer dealing with a different book of the same period. A descriptive bibliography is a history, and the history of the printing and publication of one book, or of one author's books, will eventually be consolidated with other such histories to form a more general history of printing or of publishing in a given period or country.

If the elimination of detailed evidence in a descriptive bibliography cannot be defended, the opposite extreme of recording the evidence in its entirety is neither possible nor desirable. It is not possible because the precise physical characteristics of any material object, being infinite, can never be completely recorded; and it is not desirable because attention to this degree of detail would reveal differences in every copy of a book and thus defeat the purpose of a bibliography. Although every copy of an edition or impression, like every item in any other group of supposedly identical objects, is in fact different, the bibliographical concept of *state* loses its significance if each copy of a book can be said to constitute a separate state. The bibliographer's job, like that of any other historian, is to find meaningful patterns which consolidate, rather than separate, individual examples. Just as the basic description of a book must represent a generalized "ideal copy," so the account of defects or unplanned variations must emphasize relationships among copies, not unique deviations of single copies. Any list of physical evidence, therefore, must be a selective one, carefully formed according to a guiding principle.

Between the two extremes, the exact point at which any bibliographer should operate cannot be prescribed in advance, since it depends on the nature of the material to be described. The only way in which the bibliographer can put himself in a position to judge the appropriate amount of detail is to examine as many copies as possible —preferably all extant copies, though this goal is obviously less feasible for many books of the nineteenth and twentieth centuries. Even when all known copies are examined, there is always the possibility that another copy will eventually come to light which overthrows a theory based on the details observed in those copies; strictly speaking, a bibliographer cannot rule out any detail on the grounds that it will never be of use to anyone at any time. But a selection of

details is inevitable and desirable, and the only basis for making an intelligent selection is the most thorough knowledge possible of the characteristics of the known copies and the variations among them.

The number of points which a bibliographer must check will naturally be much greater than the number he finally reports, because he cannot predict in advance which will be worth checking and reporting. After he has completed his checking, he will know what typographical variations exist in the copies he has examined, and he will have the specialized information necessary to judge which may reasonably be said to constitute "states," which are essential to report (for a printing analysis or the differentiating of impressions, issues, or states), which are desirable to report (for what they reveal of the printing practice of the period or for their potential usefulness in distinguishing still further impressions, issues, or states), and which can be eliminated (with a minimum of risk that valuable evidence is thereby concealed). No rigid rules can be formulated for making these distinctions, because they must vary with the material and must rest in every case on an informed (though still necessarily subjective) judgment. If the bibliographer understands that he is contributing to the historical study of publishing as well as producing a guide to one author's books, that judgment will emerge, in the case of each detail of type damage, from a process of weighing its potential value for future research against its importance now. Such decisions can never be simple or clear-cut, but they need not be aimless; that they have a subjective element need not mean that there is no rationale behind them.

1. Fredson Bowers, *Principles of Bibliographical Description* (Princeton, 1949), pp. 113–123, 404–406; the bibliographical description of typography is taken up on pp. 300–306, 344–347, 444–446. See also my essay on "The Identification of Type Faces in Bibliographical Description," *Papers of the Bibliographical Society of America*, LX (1966), 185–202; also in *JTR*, I (October 1967), 427–447.

2. Bowers's basic definition of "ideal copy" (p. 113) refers only to the physical construction of a book and thus affects only the collational formula and the contents note. It seems useful, however, to extend the concept to other sections of the description as well, in order to emphasize the important distinction between a description of an individual copy and a standard of reference based on the examination of many copies. Just as the collational formula attempts to represent what the printer considered "the final and most perfect state of the book" (excluding the imperfections of individual copies), so the description of typography provides an account (using "typical" pages, as Bowers points out on p. 302) of the basic typographic design of the book (excluding peculiarities or abnormalities). If the idiosyncrasies (whether in typography or in collation) of particular copies have value as bibliographical evidence, they can be discussed elsewhere in the description. Bowers suggests this extension of the concept in his comments on the relation of press-correction to "ideal copy": "*ideal copy* in its true sense of physical make-up is not affected; nevertheless, one would certainly choose the details of the corrected form to transcribe or note in one's description as the 'ideal' form, listing the other form as a variant" (p. 114). "Ideal copy," in this extended sense, is a convenient way of referring to the hypothetical copy represented by the basic description in all its details; in some instances, no one surviving copy may exhibit all the characteristics of the "ideal copy" (cf. Bowers, pp. 117–118).

3. For example, Hinman, *The Printing and Proof-reading of the First Folio of Shakespeare* (Oxford, 1963), and Turner, "Reappearing Types as Bibliographical Evidence," *Studies in Bibliography*, XIX (1966), 198–209.

4. Summarized by Jesse C. Mills, "Detective in the Book World," *Graphic Arts Review*, XXIII (May 1960), 7–8, 46–48.

5. *High Spots of American Literature* (New York, 1929), p. 109.

6. *American First Editions*, 2nd ed. (New York, 1932), p. viii.

7. *A Bibliography of the Works of Mark Twain* (New York, 1935), p. x.

8. *Points, 1874–1930* (London, 1931), p. 14.

9. *Points: Second Series, 1866–1934* (London, 1934), pp. 27–28.

10. Also in 1934 Willard E. Martin attempted to work out some rules of procedure for checking plate damage, in "The Establishment of the Order of Printings in Books Printed from Plates: Illustrated in Frank Norris's *The Octopus*, with full collations," *American Literature*, V (1934–1935), 17–28. Although he recognized that damage does not necessarily distinguish separate impressions, he made a false distinction between plate alterations of interest "only to the collector" (corrections of plate damage) and those of interest to the scholar ("critical"—that is, textual—changes). His system did not require complete collations and did not therefore recognize such possible complications as copies with mixed sheets.

11. *American First Editions*, 3rd ed. (New York, 1936), p. viii.

12. *James Branch Cabell: A Bibliography—Part II: Notes on the Cabell Collections at the University of Virginia* (Charlottesville, 1957), p. 10.

13. *T. S. Eliot: A Bibliography* (London, 1952), p. 7.

14. The general problem of accuracy and detail in descriptive bibliography is discussed in my "Tolerances in Bibliographical Description," *The Library*, 5th, ser., XXIII (1968), 1–12. The subject is also touched upon by Fredson Bowers in "Bibliography and Restoration Drama," in *Bibliography: Papers Read at a Clark Library Seminar, May 7, 1966* (Los Angeles, 1966), pp. 4–5, 8–9.

NOTE

This article consists of the introduction and first section of an essay originally published in *The Library*, 5th series, XXIII (December 1968), 328–351. The second section of the original goes on to suggest the details of a practical routine for discovering and recording type damage—a procedure involving four stages: the multiple collation of copies on the Hinman Collator, the preparation of a collation record for use in checking other copies, the examination of many (if not all) of the existing copies, and the reporting of the resulting data in a descriptive bibliography. Examples of type damage are cited from the collations of Herman Melville's works performed by the staff of the Northwestern-Newberry Edition of *The Writings of Herman Melville* (1968–). Although the original essay does not include actual illustrations of type damage, several are provided here. Drawn from five of Melville's books, they show damage to a rule (Fig. 1), to page numbers (Fig. 5), and to letters along a margin (Figs. 3 and 6) and in the middle of a page (Fig. 2), as well as damage which completely obliterates a mark of punctuation (Fig. 4); all these kinds of damage furnish useful evidence in bibliographical analysis.

G.T.T.

OPPOSITE

Figure 1. In the 1846 English edition of Herman Melville's *Typee*, the second state of page 19 has a damaged rule beneath the running title. This kind of damage, suggesting that some alteration may have taken place, could provide the clue which would cause the bibliographer to examine this point in each copy and would thus result in the discovery of the first state. After a copy of the first state is located, one can see that the rule was damaged in the course of removing the final "a" from "Pomarea."

Figure 2. Copies of the American edition of Melville's *Omoo* with the earliest title page (dated 1847 and not bearing an indication of a later impression) exist in two states, which can be distinguished by three instances of damage on page 269: the words "long," "of," and "*him*" (in the third, fourth, and thirteenth lines of the illustration).

nate queen, Pomarea, incapable of averting the impending calamity, terrified at the arrogance of the insolent Frenchman,

CHAP. III.] SPIRITED CONDUCT OF MRS. PRITCHARD. 19

nate queen, Pomare, incapable of averting the impending calamity, terrified at the arrogance of the insolent Frenchman,

sharks with the talons of hawks clawing a knot left projecting from the wood.

The canoe was at least forty feet long, about two wide, and four deep. The upper part—consisting of narrow planks laced together with cords of sinnate—had in many places fallen off, and lay decaying upon the ground. Still, there were ample accommodations left for sleeping; and in we sprang—the doctor into the bow, and I, into the stern. I soon fell asleep; but waking suddenly, cramped in every joint from my constrained posture, I thought, for an instant, that I must have been prematurely screwed down in my coffin.

Presenting my compliments to Long Ghost, I asked how it fared with *him*.

" Bad enough," he replied, as he tossed about in the outland-

sharks with the talons of hawks clawing a knot left projecting from the wood.

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against the state, might be tried by twelve good men and true. These twelve to be unobnoxious to the party or parties concerned; their peers; and previously unbiased touching the matter at issue. Furthermore, that unanimity in these twelve should be indispensable to a verdict; and no dinner be vouchsafed till unanimity came.

Loud and long laughed King Media in scorn.

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Loud and long laughed King Media in scorn

VOL. I.—K

Figure 3. Variation within a single impression is illustrated by the damage to the word "scorn" in the last line of page 217 (and "and" two lines above) in the first volume of the 1864 American impression of Melville's *Mardi* (1849).

condition of the great bulk of sailors to the rest of mankind, seems to remain pretty much where it was, a century ago.

It is too much the custom, perhaps, to regard as a special advance, that unavoidable, and merely participative progress, which any one class makes in sharing the general movement of the race. Thus, because the sailor, who to-day steers the

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Figure 4. A reader of the 1875 American impression (the second illustration) of Melville's *Redburn* (1849) would not realize that a comma originally followed the word "Thus" in the last line of page 177. The comma (as well as the period after "race") is still visible in the immediately preceding impression, that of 1863 (the first illustration). In this way type damage often creates a textual variant.

Such are the lamentable effects of suddenly and completely releasing "*the people*" of a man-of-war from arbitrary discipline. It shows that, to such, "liberty," at first, must be administered in small and moderate quantities, increasing with the patient's capacity to make a good use of it.

them drank a good deal too much; and when they came on board, the Captain ordered them to be sewed up in their hammocks, to cut short their obstreperous capers till sober.

This shows how unwise it is to allow children yet in their teens to wander so far from home. It more especially illus-

WHITE-JACKET; OR,

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THE WORLD IN A MAN-OF-WAR. 26

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Figure 5. Copies of the American edition of Melville's *White-Jacket* (1850) exist both with and without damaged page numbers on pages 268 and 269. Since the sheet with the damaged numbers is generally found in copies which have later states of type damage in eleven other formes, there is strong evidence that two 1850 impressions exist.

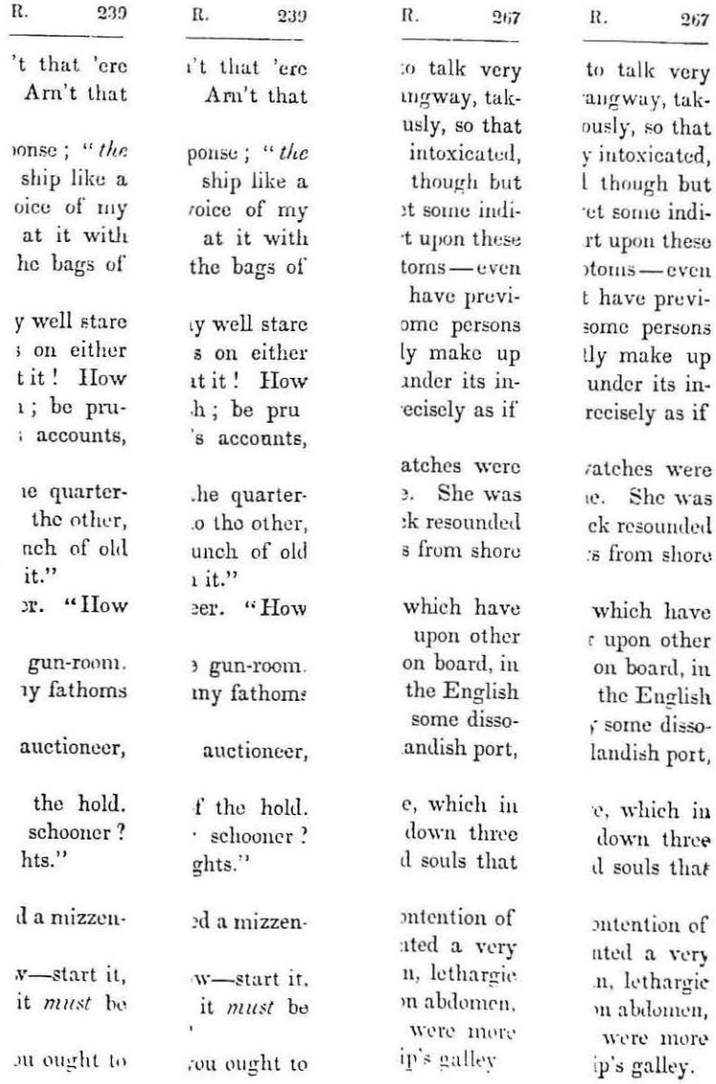
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Figure 6. Two of the other instances of type damage which distinguish between the two 1850 impressions of the American edition of *White-Jacket* occur along the right margins of pages 239 and 267.

A Report Generator Approach to Automated Page Composition

J. R. Burns

Because of restrictions in the practical production of multiple copies of computer output by a line printer, a high-speed photocomposition system—the Master Typography System—was developed to work in conjunction with the Linotron 1010 at the US Government Printing Office. The system composes pages of repetitive, computer-based information using the report generator approach dedicated to a limited area of concern. The system is described and some typical output is illustrated.

The Federal Government is the largest user of computer equipment in the United States and frequently senses needs and deficiencies which hamper effective utilization of this equipment long before other users. As early as 1962 the Government had become aware of the inability of existing computer equipment to produce economically output when the number of copies exceeded some small amount.

The line printer is still the primary computer output device. Line-printer listings can be used in three different ways, the manner in which they are utilized being a function of the type and volume of distribution required.

When the number of copies is very small (less than 10), either a Multilith master or multi-part paper is used in the line printer; sometimes multiple passes through the computer are taken. The second method is to produce one copy of the listing and use photoreduction techniques for offset printing. The third method is to produce a source document; that is, to use the computer output to direct printing technicians who utilize classic graphic arts composition methods.

The line printer operates at a relatively high rate of speed. Its output, however, is crude from a graphic arts standpoint. A lot of space is wasted on the printed form; so much, in fact, that many publications consisting of totally computer-based data could not