

Observations on
Paper as Evidence

by
Henry
Allan Stevenson
Δ III

THE UNIVERSITY OF KANSAS LIBRARIES

LAWRENCE

1961

UNIVERSITY OF KANSAS PUBLICATIONS
LIBRARY SERIES NUMBER 11

Price: 85¢

© COPYRIGHT 1961 BY THE UNIVERSITY OF KANSAS LIBRARIES

Library of Congress
Catalog Card
Number 60-63356

THE UNIVERSITY OF KANSAS
THE ANNUAL PUBLIC LECTURES ON BOOKS AND
BIBLIOGRAPHY

First Lecture

An Informal Talk by Elmer Adler at the University of Kansas, April 17, 1953.

Second Lecture

Peter Murray Hill. *Two Augustan Booksellers: John Dunton and Edmund Curl.* October 6, 1954.

Third Lecture

William B. Todd. *New Adventures Among Old Books: An Essay in Eighteenth Century Bibliography.* December 9, 1955.

Fourth Lecture

Archer Taylor. *Catalogues of Rare Books: A Chapter in Bibliographical History.* November 30, 1956.

Fifth Lecture

Jacob Zeitlin. *What Kind of a Business is This? Reminiscences of the Book Trade and Book Collectors.* January 17, 1958.

Sixth Lecture

Fredson Bowers. *The Bibliographical Way.* November 14, 1958.

Seventh Lecture

Allan Stevenson. *Observations on Paper As Evidence.* November 6, 1959.

WHEN YOU OR I WANDER INTO THE BOOK SECTION of a department store and purchase a recent novel at the curiously standard price of \$3.95, and drop the package into a shopping bag, we may be less aware of a pound of extra weight upon the shoulder than of our anticipations of an absorbing tale set forth legibly in ten or eleven point type.* Not that we give the type as type any particular thought. It is merely one of the means to an end.

But when after some years of accumulation we change our place of abode and proceed to pack our books into twenty-seven cartons originally intended for canned dog food, we then become sorely aware of what weighty things books are, whether they have much 'matter' in them or not.

The heaviness of books (when we stop to think about it) arises hardly at all from the weight of the printer's ink splattered throughout them, or of the sewing thread or glue used in putting them together, or even much from the weight of the buckram or linen in which old-fashioned books have been bound. It consists, mainly and inevitably,

* The author, Dr. Allan Stevenson, has been Bibliographer of the Hunt Botanical Library, Pittsburgh, Pennsylvania. During 1960-1961 he is a Fulbright research scholar attached to the British Museum for the study of paper as bibliographical evidence.

in the dead weight of the many sheets of paper that form the printing surfaces and the thicker paper or paper boards in which the volumes are cased.

So it has always been, from Gutenberg to the present, except for the infinitesimal percentage of books printed on vellum or plastic rather than paper. Inasmuch as what one buys when one buys a book (new or old) is usually mainly paper, it is odd how little scientific attention has been given to this ingredient by bibliographers and other scholars in the description and discussion of books. To be sure, in a well designed book the paper, like the type, should be unobtrusive to the ordinary reader. Yet to the scholar, or at least to the descriptive and analytical bibliographer, the paper obviously should be, and is for a few, a source of information as to how the book was produced and has endured. As with type there are perplexing ambiguities of course, but knowledge and understanding should sweep some of these away.

The printer himself has always known the importance of paper, if not its ultimate significance. It has been said and repeated that the Elizabethan printer or publisher reckoned paper as approximately half his costs. It follows that such a printer was vitally interested in the sizes of paper, in the meaning of their characteristic marks, in the sources of supply and the paper trade, in the varying prices and qualities of paper from competing regions.¹ So, I think, should we be today—if we are ever likely to understand the paper in books well enough to describe it, or to find out its possible implications for unraveling the mysteries of books. When, ten years ago, I began to point out that nine-tenths of the paper used in English printed books of the sixteenth and seventeenth centuries was manufactured for them in Normandy and Brittany, I had a hope that others than my-

self would begin to interest themselves in the characteristics of that paper as a means whereby they might study individual books. Though as yet there have been no such studies, I now see rather more frequent mention of paper and watermarks in bibliographical articles. It is sometimes mere lip service; it is sometimes ill-informed, as when the paper in a play-quarto is described as 'probably German' when in fact it was made in Brittany; it sometimes amounts to no more than the vague assertion that 'some copies have a different watermark,' with no attempt to distinguish between Eagles and Unicorns, or the Arms of Amsterdam and Champagne. But all these I take as signs of a dawning recognition of the role that paper has played in book production and may yet play in the description and analysis of books.

As yet most bibliographers know little about handmade paper, the moulds on which it was formed, or the variation in sheets made over a period of time from such moulds. Sometimes they deceive themselves into supposing that an ability to spot a similar watermark within the four volumes of Briquet's *Les Filigranes* is quite enough to know about that watermark and the paper that it identifies. Scholars venture thus far. Meanwhile, book collectors, dealers, librarians go on for the most part taking paper for granted. Though there must be an exception somewhere, I have not heard of a collector who brought together a shelf or case of books to exemplify the fine papers of Venice or the Auvergne, or even a few volumes to illustrate the great variety of Fools whose profiles are mirrored in foolscap paper.

Matters of mere format trouble some of us. Though a child in the grades could be expected to learn the essential differences between folio, quarto, and octavo, such intelligence is not expected of people who consult Library of Congress cards, though they are expected to be able to

convert centimeters into inches. It seems unfortunate that a compromise system of measurement in inches and tenths of inches was not adopted by librarians, inasmuch as English paper sizes have always been computed in inches; but it is more unfortunate that librarians by and large cannot distinguish a royal quarto from a demy folio.

An example of a book published in both these formats is Griffith Hughes' *The Natural History of Barbados* (1750).² The work is described as a folio in the lists of Pritzel and Nissen, in the catalogues of the British Museum (Natural History) and the Arnold Arboretum. The list of Subscribers mentions large-paper copies. These prove to have been printed on fine demy in folio, with vertical chains, on paper made by Lucas van Gerrevink of Zaandijk, or by somebody imitating his mark. The small-paper copies, displaying horizontal chainlines, are on inferior sheets of royal size without mark, sheets apparently cut in two before imposition; they collate as quartos in twos. The plates inserted in both states of the book show vertical (folio) chains, royal Arms of Strasbourg paper by Van Gerrevink in the one, demy Crown-Shield-Fleur-de-lys by the same maker in the other. It is obvious that any mere bibliographical description should include these facts, and that any study of the book as a book must begin with them. Yet not even such advanced bibliographical catalogues as those of the Church, Pforzheimer, and Abbey collections have attempted to designate the paper formats. Actually this duality of 'issues' is simple to see, as the paper is *laid*. But I do wonder how many bibliographers could distinguish them if the letterpress in both formats had been printed a generation or so later on *wove* paper bearing only the J WHATMAN countermark. I find that few people have a clear idea of where the

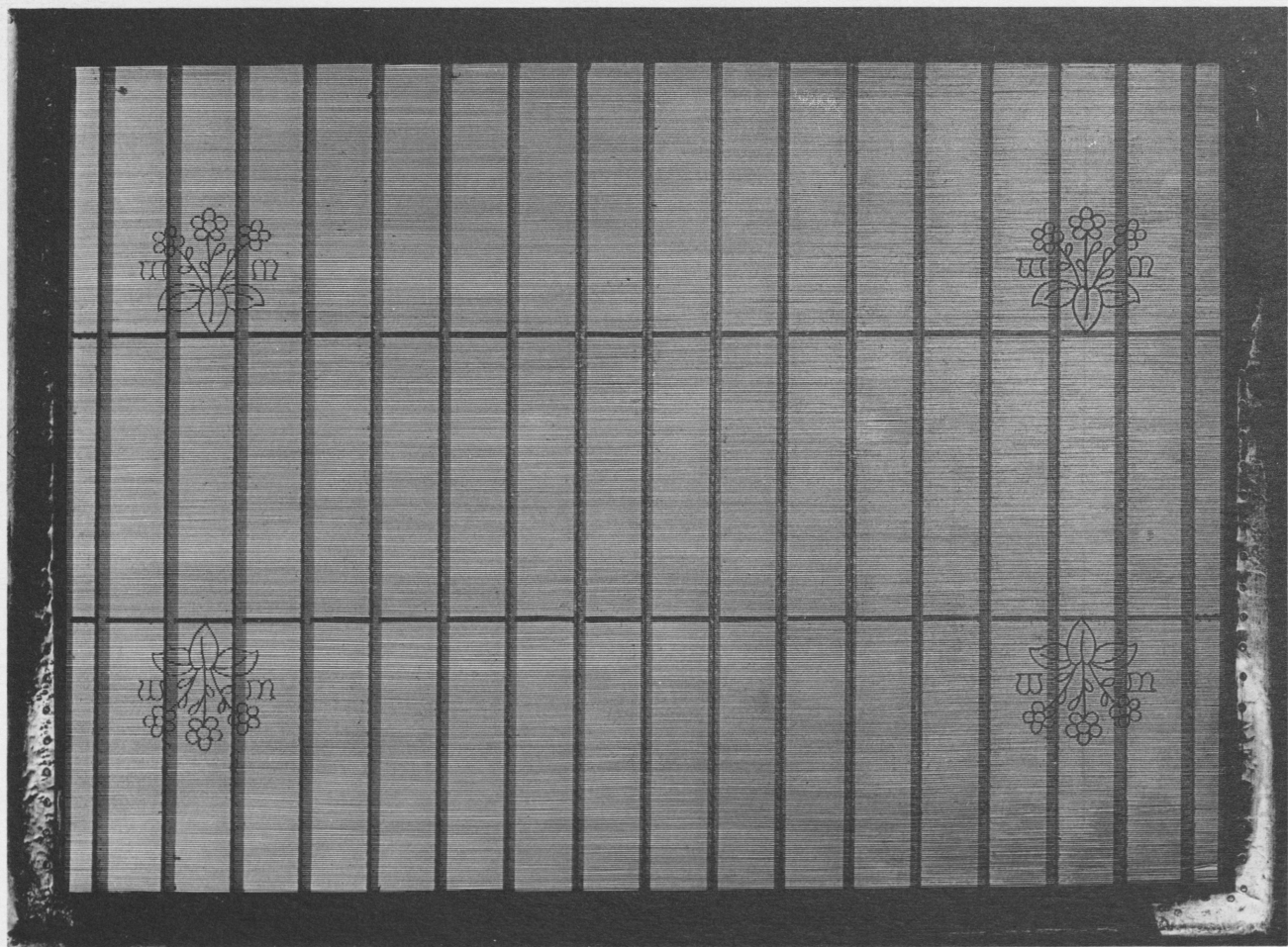


PLATE I: Papermould and deckle, with Primrose watermarks designed by William Morris. Medium size, about 18 x 23 in. Used at mill of Joseph Batchelor, Ashford, Kent, from 1902. In the author's collection. Photograph by Jun Fujita, Chicago.

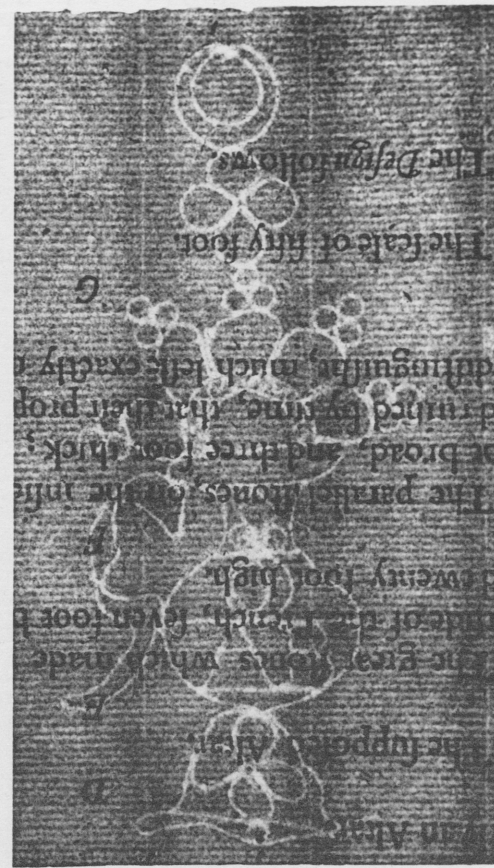
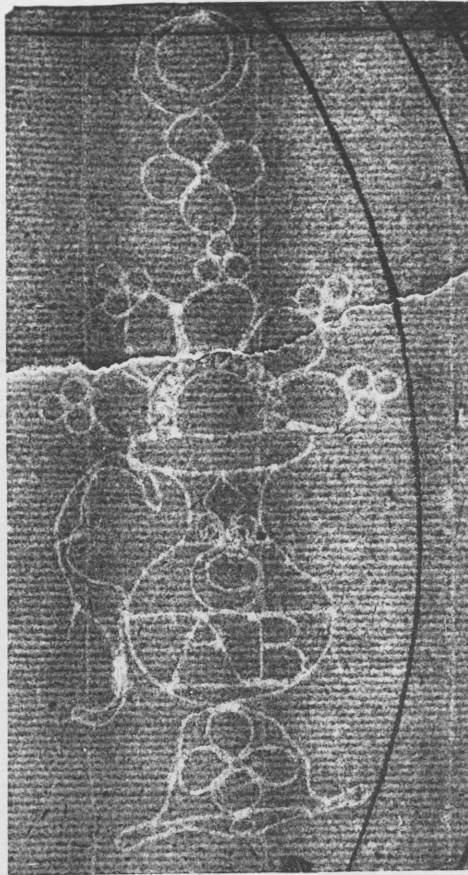
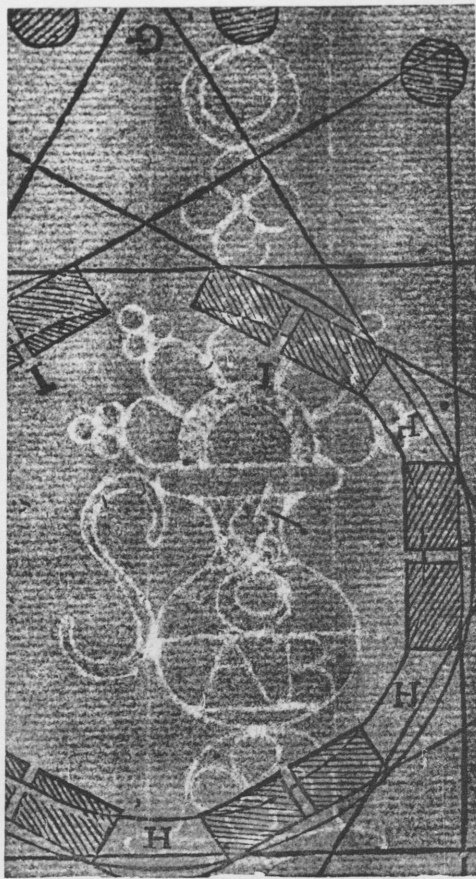


PLATE II: Norman Pot watermark in three states. Note reversed and resewn crescent on bowl of state 3. From copies of Inigo Jones, *Stone-heng* (J. Fleisher, 1655) F^o, owned by the University of Chicago and the author. Photographs by Cabot T. Stein.

Whatmans, Balstons, and Hollingworths placed their countermarks on moulds for the making of wove sheets.

I do not say that these matters of format are always easy; only that they are seldom difficult when one has taken the trouble to learn the position of the marks in the full sheet, and the places where they fall when the sheet has been folded. Besides McKerrow's diagrams, a useful aid is Paul Dunkin's *How to Catalog a Rare Book* (Chicago, 1951), which is illustrated with printed folio, quarto, and octavo sheets opened out for study. It is necessary and easy to know the standard position of an octavo watermark, near the top inner margin of any of the first four (or last four) leaves of the sheet, the old marks having been placed regularly, though not inevitably, in the center of the halfsheet; but one should not be surprised to find deviations from the ancient positions in modern books.

Recently I had occasion to examine several copies of Edward Capell's edition of Shakespeare [1767-8]. It represents some early experiments in wove paper, about ten years after the first use in Baskerville's *Virgil* (1757). In 1760 had appeared Capell's *Prolusions*, printed by Dryden Leach for J. & R. Tonson. This was Tonson's first use of wove paper, and the paper was marked by a small, usually faint W in one corner. Though one prominent research library catalogue classifies the book as sextodecimo, the book is obviously an octavo in fours, printed presumably by halfsheet imposition. The ten-volume Shakespeare of a few years later (but begun around 1758) was printed by the same printer for the same publisher in a similar format, usually on full octavo sheets. Its paper is wove of a similar texture, though sometimes more yellowish and usually with clearer watermarks. Besides some runs of paper which seem not to bear marks, I find two different watermarks in three different positions.

Some volumes have a W in the lower outer corner of one of the first four leaves of the sheet;³ and this paper may be from the same pair of moulds as the *Prolusions* paper. Second, I find that the main stock is paper with the letters J W, in two-line form, showing in the normal octavo position, at the top of the gully on one of the first four leaves, that is, in a position catercorner to the position in sheets cornermarked W. Finally, I note in the uncut Harvard copy a small supply of paper with a similar J W at the fore edges of leaves 4 and 5, in the introduction in volume one. The initials are so placed that they must have been lost through trimming in most copies. The position of this watermark in the sheet must have been just below the exact center, a position long favored by the papermakers of Geneva but seldom elsewhere. The initials J W and even W can hardly stand for any other papermaker than James Whatman, senior and junior, the father dying in 1759 and the son taking over Turkey Mill three years later.⁴ Apparently the Whatmans were experimenting, during the first decade of wove paper, on the most advantageous position for their countermark. The center-sheet position was rejected, probably because there the mark tended to disappear at the binder's. But even the long used center-halfsheet position was given up in the Whatman mills as time went on, in favor of what may be called an edgemark, placed on the mould so that it usually falls along the lower edge of leaves of sheets folded in folio or octavo. In one or two places in the Morgan copy of Capell's Shakespeare I noted an initial in still a fourth position: a W in a lower inside corner rather than a lower outer corner; but this very likely is a clue to a cancel. At any rate, we can see at this point that Capell's Shakespeare, along with his *Prolusions*, forms an interesting document for the study of early wove paper, and that its three or four kinds of

Whatman paper provide clues to the manner in which the volumes were produced, the order in which they were issued. More copies need to be examined.⁵

Frequently booksellers, librarians, and bibliographers fall into an ignorant error when they describe a large volume as an Elephant Folio. Many, perhaps most, of those so called are neither elephants nor folios. The same with many books called Atlas Folio or 'grosse in-folio', as Brunet does. For some books of large page, certain fine large volumes of travel or sporting scenes, of representations of birds or flowering plants, are simply broadside volumes, made up of unfolded sheets of good paper, printed on one or both sides, and stabbed (or oversewn) along one long edge. In broadside books on laid paper the chains are horizontal, of course. And sometimes, in the eighteenth century, one sees a smoothed-out fold across the middle, due to the fact that paper was customarily delivered in quires folded in folio, as Moxon makes clear.⁶ But when Whatman and Honig and Blauw began making plate paper, they delivered it flat in the quire and ream, and before long part of their letterpress paper in the same manner.

At least one great flower book used for its letterpress both folio halfsheets (with vertical chains) and broadsheets (with horizontal chains). This is C. J. Trew's *Plantae selectae* (1750-9[2]), with magnificent handcolored flower plates by Georg Dionysius Ehret. The folio leaves, like the broadsheet leaves, were certainly printed separately (in the manner of an early incunabulum by Schöffer or Mentelin), for uncut or slightly cut copies show two pinholes halfway down the outer and inner margins. The book may be described as Imperial Folio and *Register* Broadsheet combined, *Register* being a German size much like our Crown. The book was issued in ten *decuriae* or parts, plus supplement,

over a period of forty-two years; and thus it is no wonder if there were shortages of imperial letterpress paper now and then. Six copies that I have seen all have a run of seven leaves (F2-I2) on broadsheets, and sometimes others. Again, here are clues for bibliographical study of 'number' books.

Among well known books entirely in broadsheet are Audubon's *Birds of America* (1827-38), described as 'elephant folio in size' (in the *Columbia Encyclopedia*, for example), and Thornton's *Temple of Flora* ([1799]-1807), described as 'Atlas fo.' by Dunthorne.⁷ The former is larger than Elephant Broadsheet, is actually about Columbian Broadsheet, and the latter is surely Royal Broadsheet in size.⁸ In both books the edgemarks fall along the fore edges, or else within the gullies, as is normal in broadsheet volumes on wove paper.

Only occasionally does one come upon a book in broadsheets that is not furnished with plates. A notable example is the first edition of Carolus Linnaeus' *Systema naturae* (Leyden, 1735).⁹ The two standard bibliographies of Linnaeus' works, by Johan Marcus Hulth (Uppsala, 1907) and Basil H. Soulsby (London, 1933), call this rare item a great folio. It is a giant broadsheet pamphlet printed on fine Dutch *mediaan* paper measuring about 21x16 inches and marked with the well known Crown-Shield-Fleur-de-lys watermark and I V countermark, standing for Jean Ville-dary of the Angoumois. There are just seven leaves (with two blank pages). The copy owned by the Harvard Museum of Comparative Zoology has turnovers half an inch or so wide along the inner side of each sheet, and the sheets are thus securely sewn within their original board binding. The reason for the broadsheet format for so thin a volume is the large spread needed for Linnaeus' immense tables, each occupying one opening of two broad pages, showing his

systems for minerals, plants, and animals. This splendid copy of an historic rarity among science books was exhibited at the Grolier Club not long ago. Its handsome typography and its beautiful paper contrast shockingly with those of later editions of the same book printed in fat octavo at Stockholm with worn type and small proofreading on paper bad in its time, yet far more enduring than the woodpulp papers of today.

I have been stressing matters of sheet-size and book-format because I have found them basic to any bibliographic study which approaches a book from the point of view of paper. I should also like to point out that down through the history of paper, at least from the early sixteenth century, there has usually been a relation between the watermark and the size and quality of the sheet. It is true that in the fifteenth century one sometimes finds the Gothic μ watermark or the Bull's head mark in large sheets as well as small sheets. Yet most makers already distinguished the two sizes by contrasting marks. For instance, Antonio Galliziani, the great papermaker of Basel, who operated a mill from 1453, seems to have used the Bull's-head-tau mark in his ordinary small sheets, whereas he employed a mark reproducing his family seal, in the form of a Cross and Lombardic C, in his large sheets,¹⁰ such as were used by Berthold Ruppel in the first Bible printed at Basel. As for me, I like to live in the seventeenth century. At that time in England I find that, in place of the two sizes, small and large, of Caxton's time, there have developed ten or a dozen sizes. Five or six of these are Anglo-Norman, three or four from the Angoumois in southwest France, others from Genoa and Venice, and perhaps even remote Auvergne. For, as most people now know, practically all the paper used in England before the

Glorious Revolution was imported. In the first half of the century around 95 per cent came from Norman mills.¹¹

What is particularly interesting about Norman paper sizes is that each size maintains a regular mark in its ordinary quality but uses other marks in its fine quality reams. In the common Norman sizes the system runs thus:

Pot-size	Ordinary mark: Pot	Fine quality mark: Pillars, Crozier-Horn, Cardinal's Hat
Foolscap	Ordinary mark: Fool, with coat of five points	Fine mark: Arms of Amsterdam, with crescent in crown
Crown	Ordinary mark: Small Crown	Fine mark: Crowned Shield, with various bearings
Demy	Ordinary mark: Fleur-de-lys	Fine mark: Arms of France and Navarre
Lumbard (Raisin)	Ordinary mark: Grapes	[Fine mark: Arms of Strasbour, from the Angoumois]

Not only the marks but the sizes were standard. Though I cannot now discuss the matter, let me point out a curious fact that shows that the system was indeed a system. If you will go to shelves in your rare book room bearing a series of English Restoration folios, which we may assume to have been trimmed just once in binding, you will find that volumes 11 inches tall are usually marked with Pots and Pillars and are pot-size; those 12 inches tall are marked with Fools and Amsterdams and are foolscap-size; those 13 inches tall are marked with Crowns and Shields and are crown-size; those 14 inches tall are marked with Fleur-de-lys or France-and-Navarre marks and are demy-size; and those 15 inches tall are marked with Grapes and are lumbard-size (printing-demy-size).

Ronald B. McKerrow and others have denied that there was in this period any such clear correspondency between sizes, qualities, and prevailing watermarks.¹² When it is demonstrated that there was a well worked out system (with enough exceptions to prove the rule), it becomes evident

that considerations of size, quality, and mark should figure more than they now do in bibliographical studies, and even in booksellers' catalogues.

Unfortunately, the bibliographical study of paper faces certain difficulties in our time. I make four points.

1) Among some bibliographers and scholars there is a belief that paper can be of little use in solving problems concerning manuscripts and printed books. In their opinion, paper and watermarks have been tried and found wanting. What these people seem not to realize is that as yet there has been very little scientific study of handmade paper. The books to which one must refer devote themselves to the history of papermaking in various regions and to collections of watermarks in the form of tracings, not to the application of such materials to the clarification of bibliographical mysteries. This is generally true, despite some modest attempts on the part of Briquet and Heawood to think bibliographically. A considerable number of scholars have looked into the pages of Briquet and found not quite what they sought or have found his multitude of similar designs frustrating; and some of these men have gone so far as to say in print that watermarks are 'no damn good' for proving anything, or at least for dating books. I am not aware that a single one of these self-made authorities has taken the trouble to study the nature of papermoulds, the life stories of the individual watermark designs as they deteriorate upon the moulds, the incidence of these marks in their varying states within a period of time, the relevance of chains, *tranchefiles*, and *macalatures* to such a study. Yet out of such empirical experience must come a righter idea of how to make effective use of Briquet and his fellow filigranists.

2) The tools now available are not so sharp as they might be. Practically all watermark collections have been

communicated to us by means of tracings, and sometimes tracings reduced in size. Now, tracings are something to be thankful for in the early stages of an investigation, but they seldom see the detective through to the end. In themselves they play the traitor to the original mark, since they usually reverse the effect, giving us bold black lines on white in place of translucent lines upon a white opaqueness. Many a design which is comely by nature looks but a vain and silly thing when transmogrified so.

If one is dealing with a problem involving the identity of papermarks, the relation of the stock of paper used in one book to that used in another, tracings will often furnish clues, and sometimes probabilities, but seldom absolute identifications. They may be lacking in subtle detail, in the reporting of sewing dots, in the relation of marks to attendant laid lines and chains; and error of line and contour readily creeps in. It may be that more intelligent tracing might remedy some of these drawbacks. But it has become clear that only some form of photography and photographic reproduction can present watermarks with sufficient precision for advanced bibliographical proof. Photographs show the exact form of the marks, their exact relation to the wires of the mould upon which they are sewn. Fine halftones serve to bring out these values; but good collotypes are better. Certain volumes that I have in preparation may be the first to use collotypes of watermarks throughout. The method may be too costly for the representation of large collections of papermarks; but it is nearly ideal for the presentation of selected groups of marks for scrutiny and comparison, as a series of states of the mark from a single mould as found in a series of books over a period of several years. A cheaper process uses photograms, that is, prints made without camera by means of slow sensi-

tive paper; and from these fairly good collotypes can be made, true to the size of the original mark.¹³ With such methods there is a great gain over such tracings as those in Edward Heawood's *Watermarks* (Hilversum, Paper Publications Society, 1950). Though we should be eternally grateful to Heawood, yet we should note that his tracings are sometimes so bad that he reports the same mark from the same mould two, three, or four times, apparently without realizing that it is the same. As, unlike Briquet, the genial Heawood traced mainly from printed books, we can discover the accuracy or inaccuracy of his reproductions through study of the marks in the books he refers us to.

What I am saying is that the many watermark books which we now use are inadequate for high bibliographic study because they use tracings; that many of the failures in the past to make watermark evidence work have been due to the weakness of tracings; that the scientific study of the various features of paper with a view to finding what value in them lies for advanced bibliographic method, for finally making paper evidence a worthy associate of evidence derived from typography and from documents, must avail itself not merely of tracings but of photographic reproduction, so that writers and readers may distinguish not merely between marks belonging to the same family, or marks from the pair of moulds used together at the vat, but even between the slightly variant stages in the life history of an identical mark. At birth a papermark is full grown and usually well formed and good to look upon. As the moulds are used day after day, in the making of four or six or eight reams a day, and cleaned and brushed each night after use, the watermark devices gradually lose their pristine purity. Their wires become bent and sometimes broken, so that after a time distortion sets in and parts drop out; and often

the marks, having become loose, get resewn on their moulds, usually in approximately the same position, but occasionally at the opposite end of the mould. You will agree that particulars of this sort can hardly be made clear except through photographic means or through examination of original materials. And, if the photographs are correctly made, in the dark with perhaps a hundred watts of distributed light in a box behind the mark, the resulting slide or print will frequently be clearer, because of its contrasts, for bibliographic study, for precise comparison, than the original mark itself.

3) The problem of identity is ever with us. I am afraid that many people have used the phrase 'the same watermark' without any clear idea of what it should mean. A common example which turns up in book descriptions is: "This book has just one watermark throughout.' If this sentence merely means that the marks are similar, that they belong to the same type, the description should say that. If it means that all the paper in the book was made on the same mould, then the writer of the sentence probably does not know what he is saying. For all handmade paper was made on *pairs* of moulds, used together at the vat; and sometimes several pairs used simultaneously at companion vats.¹⁴ Thus, unless a book is a pamphlet of a very few sheets, the chance that it will prove to have 'one watermark throughout' is once in a quintillion. Uncritical use of the term 'the same watermark' has led to many unhappy experiences in attempts to employ watermarks as bits of evidence.

When we say that two watermarks are identical, the only thing we can properly mean is that the sheets containing those marks were made on the same individual mould. In the days when mould making was a handcraft, no two marks were ever precisely the same; and if it had been possible to

make them alike, it would never have been possible to sew them to different moulds in quite the same way. This means that the marks on companion moulds have always been distinguishable, even when the *formaire* tried to make them as alike as possible. I find that the most recent compilers of a collection of watermarks are with me in this definition of identity: V. Mosin and S. Traljic in the introduction to their *Filigranes des XIII^e et XIV^e ss.* (Zagreb, 1957). Curiously, Charles Moïse Briquet confused the issue. Throughout the notes in his *magnum opus* he uses the term *variété identique* to mean the marks from pairs of moulds or, in effect, marks supposedly congruent with them.¹⁵ Apparently very few users of Briquet have recognized that an 'identical variety' is not certainly an identical mark at all. Thus now we must learn to use Briquet's citations of *variétés identiques* not as meaning absolute identity or even the same mark after deterioration has set in but only a mark very similar. This means, for one thing, that we cannot quite trust Briquet's evidence that the same paper sometimes was used twenty years after its first dated appearance. Unquestionably, individual sheets were sometimes used many years after they came from the mill; but Briquet's evidence must have misled us into supposing that delayed use was more common than it was. Perhaps, too, we should remember that Briquet had to rely on his own tracings. How could he be sure, in the later stages of his work, as he proceeded from one archival deposit to another, that he was rediscovering a particular mark that he had not seen for many years? Briquet was perchance a genius; but we should not treat him as if he were infallible.

I suggest that from now on we use the term 'the same watermark' or 'identical watermark' only when we are dealing with marks from one and the same mould. I suggest,

further, that we recognize the possibility of variation in the appearance of these identical marks as they grow old, ugly, and distorted upon their moulds, and that we call such distinguishable variants 'states' of the mark.

4) I must confess that there is a silly side to watermarks. At times I have been taken for a dilettante. On the rebound I have been surprised that I was taken seriously when I talked of Unicorns, Pots, and chain grooves.¹⁶ I remember that the head of a great research library was inclined to think that I was merely wasting my time, or putting my neck out of joint, as I held the leaves of folios up to the light, until he learned that I had found in them evidence to support a hypothesis in economic history: that cheap paper, made in Normandy, has played a significant role in the making of English civilization.¹⁷ It is all too easy to class watermarks with tin soldiers and paper dolls, though I do not know that children have ever collected watermarks the way they do immies or pictures of the White Sox. Perhaps the slight nuance of contempt that the student of paper is aware of arises partly from a recognition that some collectors and publishers of watermarks seem not to have known clearly why they went through these motions. As E. J. Labarre has sometimes admonished me, only Briquet was a professional. At times I have suspected that certain bibliographers have looked on paper studies with a jealous eye out of some slight fear that they might lose part of the territory staked out for students of type and typography. At any rate, I submit that there is nothing sillier about the life history of a watermark than about the life history of a woodcut. Yet I have been solemnly told that there is little reason to study paper as long as most problems can be figured out, most dates can be arrived at through a study of woodcuts. Alas

and alack! there are no woodcuts in the 'Constance' Missal. But there is paper!

Two or three years ago at a scholars' meeting a British friend, clearly with some misgiving, asked me whether I was still fooling around with paper. I said Yes, I was trying to find out what aspects of paper might serve as solid evidence in bibliographical studies. 'Well,' he said grudgingly, 'I might be interested in watermarks too if only they weren't so damned dull!' I should have given him the answer which was near the end of my tongue: 'John, I do not find any form of bibliographical evidence DULL!' I wonder whether he considers foulcase, broken letters, or even running titles fountains of pure delight. Me, I prefer the world of Bull's heads and Heraldic Shields, of Basilisks, Mermaids, Dolphins, and Unicorns, especially when they are willing to go on the stand and testify for or against a bibliographic hypothesis. Students of paper and papermoulds may yet survive the silly stage and gain a measure of respect.

What I have tried to say, up to this point, is that the bibliographical study of paper has hardly more than begun; that most of the assumptions and most of the watermark books of the past are inadequate for going on with the study; that the scientific study of paper begins with sizes of paper and formats of books, with papermoulds and the lives of the marks which they make, with the manner in which stocks of paper were used in the production of early printed books, and later ones as well. Not until this serious study is well under way, not until it has led to some notable successes, will we know whether paper evidence is likely to help in the solution of notable book problems more than occasionally. For my part, I should be grateful to paper if it contributed useful evidence only now and then; but I am

inclined to think that it can make a more telling contribution than it has made thus far.

Only a few times in bibliographic history has paper evidence played a memorable part. Just fifty years ago, shortly after the publication of Briquet's *Les Filigranes*, Sir Walter Greg proved, through watermark evidence, that a group of nine Shakespearian quartos dated variously 1600, 1608, and 1619, were all printed at one press in the latter year.¹⁸ His method was to demonstrate that the quartos were printed on a mixed lot of twenty-seven papers, and that a number of these papers turn up in quartos bearing two or three of these dates. Actually, Greg's proof, although brilliant for its time, was not as neat as it might have been. A few years ago I had the honor to write a footnote to Greg in which I was able to show that his proof might have been more readily convincing if he had known that the paper was made on pairs of moulds, and if he had had my luck of discovering dated watermarks within copies of these quartos.¹⁹

About twenty-five years ago John Carter and Graham Pollard proved that someone had forged numerous pre-first editions of nineteenth-century pamphlets, partly through a demonstration that the forger's printer had used paper containing esparto or woodpulp in pamphlets bearing dates earlier than the times when these substitutes for linen and cotton rags first came into use.²⁰ There was no proof here through the study of watermarks, for Thomas J. Wise had been very careful to use papers containing no mark. But it was a proof made convincing through the association of paper evidence and typographical evidence.

Note that both Greg's proof and Carter and Pollard's proof had to do with problems of date. Yet I have been asked time and again whether paper evidence can establish, even approximately, the dates of manuscripts and printed

books. The question is loaded. The answer is not easy. I have sometimes answered (evasively) that it is easy to expect too much of paper evidence, that it may be more useful for solving other kinds of problems. But the question remains. The only answer I know is that paper evidence has contributed to the resolution of many minor questions of date and a few major questions of date, and that when we learn better how to use it, it should contribute more. I say 'contribute' because I see no virtue in trying to solve problems through one sort of evidence alone. My thought is that an understanding of paper and an understanding of type can be of mutual assistance. To be sure, paper evidence is often beclouded with ambiguities. But so is typographical evidence. That is why they need each other. In the intricate mysteries which surround the names of Gutenberg and some of his fellows, paper and type may perhaps work together towards better answers than we now have.

Out of the understanding of paper should come new techniques and better applications, a more adequate method. Let me discuss briefly two forms of paper evidence that I have been studying. I have high hopes for their usefulness.

The first I call Runs and Remnants. It has to do with printed books and sometimes manuscript books as opposed to separate sheets of manuscript paper such as are found among archives and documents. I do not think it has been realized that the use of paper in the production of individual letters and records is usually a very different sort of thing from its use in the production of printed books. When, say around 1450, a scrivener purchased a half ream of large paper, he might use these royal sheets now and then over a period of years, drawing up indentures and other legal instruments, each dated in the year of use; and still there might be a remnant of the purchase twenty years after, on which

his son perchance might figure out his inheritance tax. It is clear that paper of unusual size and quality, the expensive sorts, was saved mainly for special occasions and might well be used sheet by sheet over a decade or more of time. It is also clear that a supply of ordinary small sheets, having multifarious uses, usually would last a much shorter time before it had to be renewed; though on occasion it might not get used up for several years. Such individually used sheets have mainly a *post-quem* value as evidence, though it must be stressed that the greater probabilities lie with early use. Modern parallels and illustrations are not far to seek. Those who have studied the supplies of paper used by Emily Dickinson in the making of her poems have noted the intervention of new supplies before early supplies were used up and that odd pieces of early paper turn up years after their first appearance.²¹

Many people seem to think that something analogous happens in the production of a printed book. This is a gross error. They have not stopped to consider the inherent difference between sheets or folio leaves of manuscript separately written and the series of sheets that go to make up a book, a book printed in numerous copies; and they have not taken the trouble to examine the paper in books sufficiently to see how supplies of paper were used. All the while they have mistakenly applied the evidence in Briquet, derived mainly from manuscript materials, to printed books.

Down through the history of printing, when a printer or publisher or author has laid in a supply of paper for printing a book, he has generally arranged for paper sufficient for that book only and paper homogeneous in size and quality—that is, preferably, paper made at one mill or paper of equal quality made at several mills. When we examine the book today, produced in the fifteenth century or the

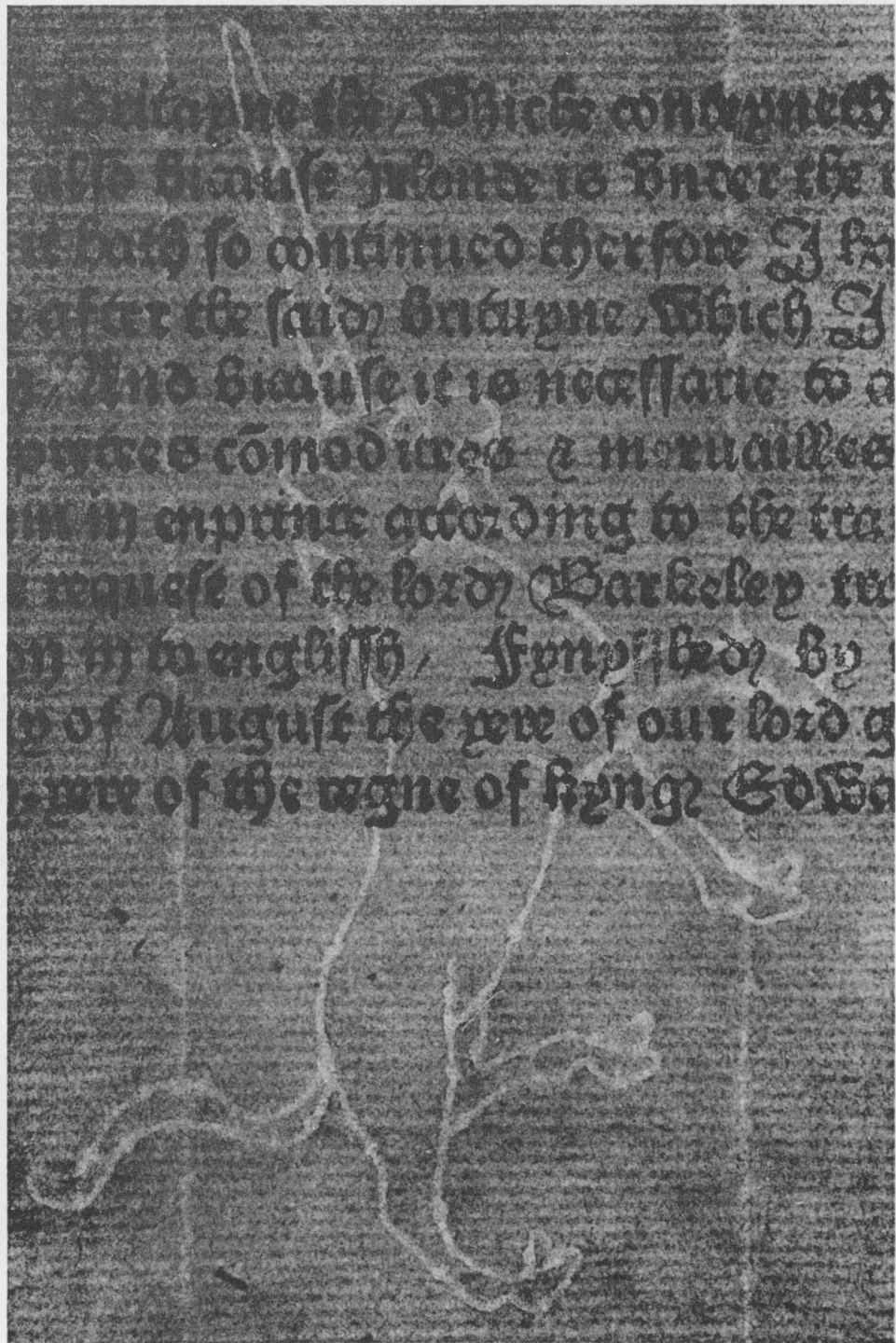


PLATE III: Unicorn, Norman or from Champagne (4 x natural size). Note Sewing Dots on tail and legs. From *Description of Britain* (Caxton, 1480) F^o, Huntington Library copy. Photograph by Erwin Morkisch.

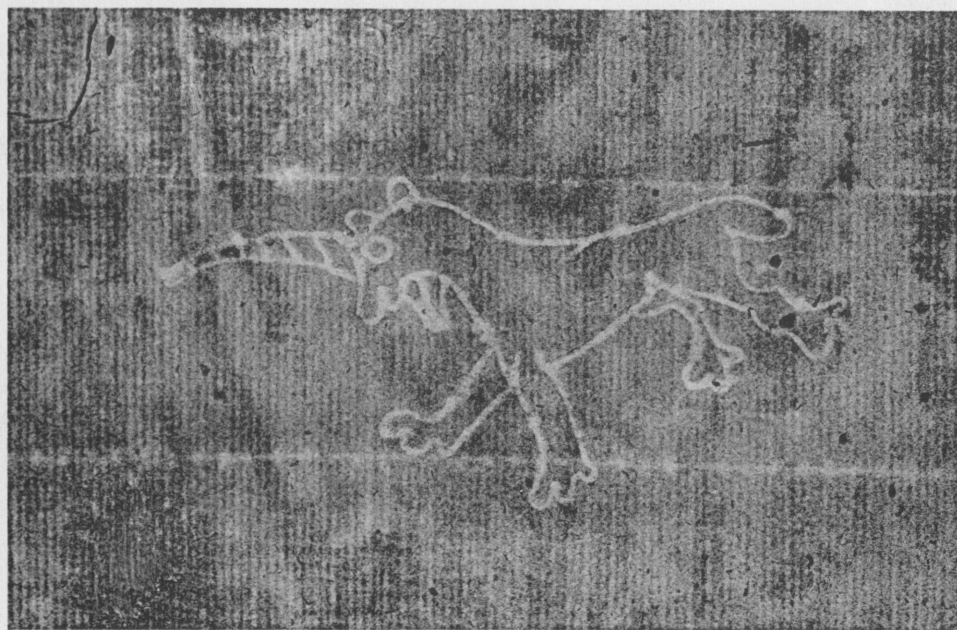
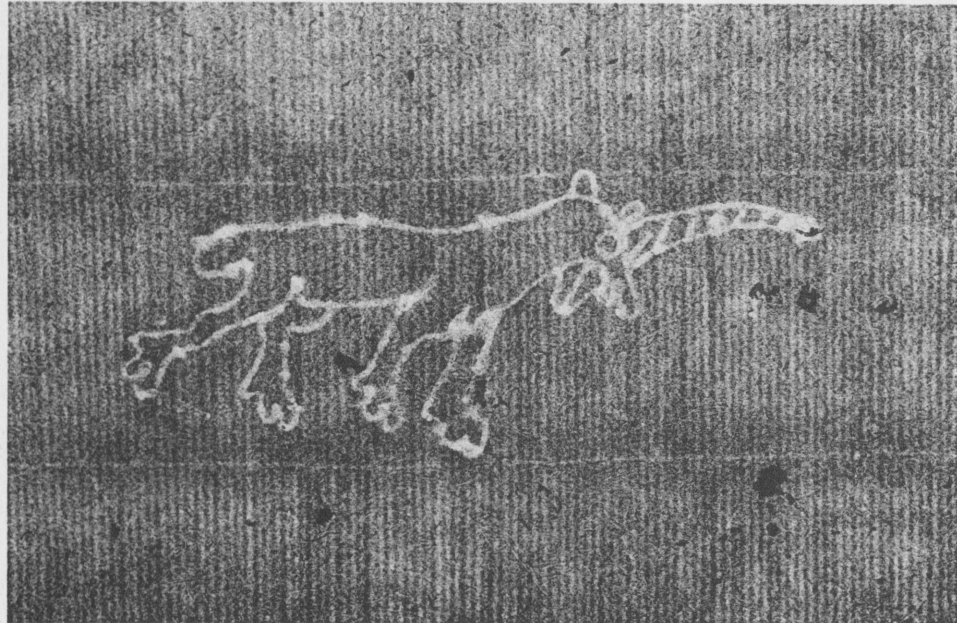


PLATE IV: Pair of Unicorns, from Lorraine, with bobtails. Note Sewing Dots. From endpapers, *c.* 1480, Pierpont Morgan Library. Photograph by Mark Brewer.

eighteenth century, we sometimes find just one paper throughout the book, made on one pair or two pairs of moulds, with very similar but not identical watermarks. At the other extreme we sometimes find a considerable diversity of papers, mixtures arising from certain practices of gathering and distribution within the paper trade. But often, particularly in the most self-respecting books, we find a limited number of sorts, say two to six sorts, the number depending partly on the thickness of the volume and the size of the edition. In such books we see runs of paper, sequences of sheets made on the same moulds or at the same mill. The printer uses one stock more or less continuously until he has run out of the sort, and then he begins another.

I do not think it has been observed before that these runs of paper, these sequences of the same pairs of marks, are evidence that the paper was bought expressly for the production of that book and probably not long after its manufacture. For, unless the edition was quite small or the run rather short, it always took a number of reams of paper to produce each run. Often it looks as if the unit of paper behind a run was the bale, commonly of ten reams, 5000 sheets, of which five percent or so was expendable as waste. Of course, in a book printed in fewer than two hundred copies, such as the 42-line Bible, the evidence must be interpreted a little differently than in a book of possibly 1200 copies, such as the Shakespeare First Folio or a colorplate volume of the eighteenth century. And in estimating the length of runs one must sometimes allow for alternation of stocks due to work at more than a single press. Yet always there is the inference that a distinguishable run of paper means paper manufactured not long before and procured for the printing of the book in hand. Paper was too expensive a commodity,

too space consuming, to make any other system really practicable.

The Gutenberg Bible was printed on four kinds of paper, as Kazmeier has shown, paper made on eight pairs of moulds.²² The main stock was Bull's-head- \times paper, made on four pairs of moulds and producing very long runs. As Kazmeier suggests, this stock probably represents a number of bales (he thinks seven) secured at the outset of the press-work. I judge that it was made at a large mill of several vats, possibly the Heilman mill at Strasbourg (owned by an early associate of Gutenberg), and that so large a stock cannot have been manufactured any great length of time before it began to be used. The other three stocks, marked with Bullocks (two pairs of moulds) and two sorts of Grapes (one perhaps from a mill near Fribourg in Switzerland), look to have been purchased later, when it was decided to increase the size of the edition and when it became necessary to re-print certain early sheets, now set in 42 lines rather than 40 or 41 lines to the page. The shorter runs of these three sorts (though they amounted to a third more paper) may represent reams rather than bales, and the four sorts are sufficiently homogeneous in quality. Presumably they were produced at four different mills.

The book commonly known as the Constance Missal but calling itself *Missale speciale* was printed on three sorts of paper, each appearing in the form of long runs. A folio of 192 leaves on small paper, issued possibly in fifty copies, it took much less paper than the 42-line Bible. Again the printer, whoever he was, similarly laid in a stock of Bull's-head-tau paper, amounting perhaps to a bale, and it proved sufficient for printing about half the sheets for the *Missale speciale* and the shorter *Missale abbreviatum*. When he began, he appears to have had on hand a ream, say, of similar

paper, Bull's-head-tau with pinched noses, and the short run of this sort in the Canon of the Mass and the Trinity gathering seems to support typographic evidence, noted by Otto Hupp,²³ that the Canon was printed ahead of all the rest. The regular Bull's-head-tau paper, as the Morgan and Munich copies and the differently arranged Zurich copy all show, was used in two long runs at the press. To extend this main paper the printer fell back on a poorer quality of paper, with No Mark, which he used in a sizable run. Ultimately, and apparently after the *Abbreviatum* was finished, the printer secured a small stock of Cross-on-mounts paper, on which he printed the last five gatherings (50 edition-sheets), though these now appear as shorter, well-separated runs of 20 and 30 sheets in the complete Missal. These observations and conclusions arise from study of the makeup of the three copies along with that of the single copy of the *Missale abbreviatum*, at St. Paul's monastery in Carinthia. Again the runs of paper, along with the freshness or apparent youth of the watermarks themselves, lead one to think that the paper was made not long before its use. The two watermarked sorts are very similar in quality and contrast with the softer, thinner paper with No Mark. Study of such runs leads to further inferences and probabilities. For instance, it now looks as if the two watermarked sorts in the Missal must have been made by two brothers, Antonio and Michael Galliziani (Tony and Mike), papermakers in the St. Albental, Basel. Antonio Galliziani operated the Klingenthalmühle there from 1453, and Michael left his brother's employ to operate the neighboring Rychmühle from 1467. In each case the mark used, Bull's-head-tau and Cross-on-mounts, can be shown to have a symbolic value which points to the brothers.²⁴

It is evident that watermarks which appear in the form of runs may afford clues or probabilities as to the time of manufacture. What then of those watermarks which turn up but once or twice in a book? My experience suggests that they often represent paper stocks used in previous books, mere odds and ends, perhaps cassie quires that were pressed into service when printer or publisher had not furnished quite enough paper to finish out a volume and recourse must have been had to remnants. Whatever their source or reason, these random marks obviously do not imply recent manufacture or purchase, in the way runs of paper do. One example may serve. In the Huntington copy of that estimable quarto, the second one of *Hamlet* (1604), you will find a Pot watermark dated 1598, one lone sheet with this mark. This dated remnant, this time-lag of six years, suggests the unreliability of a random mark in reaching a conclusion as to date. On the other hand, certain other pot marks dated 1613 which turn up in runs of paper early in Ben Jonson's *Works* (1616) fit expectations very well, for time must be allowed for importation of the paper from Normandy and for the year and more that Jonson's plays were in press.²⁵

My second new form of evidence I call Sewing Dots. When watermark wires had been formed by the mould-maker into a design, he sewed it to the laid wires and the chain wires of the mould with finer copper wire. And at each point of sewing he left a tiny mound of sewing wire. Now, these points of sewing leave their impress in the paper along with that of the watermark wires. Such sewing dots are frequently easy to see, especially in the leaves of incunabula, for the sewing wire of the fifteenth century was commonly less fine than that of later periods. As many as two dozen sewing dots distinguish many a Gothic *p*, many a Unicorn. Their use to us is immediately apparent. Al-

though it is possible to mistake one Bull's head for another, there being thousands of marks with somewhat similar conformations, the pattern of the sewing dots can hardly be duplicated. Their number and their position, along with the details peculiar to the mark itself, form *incontrovertible evidence of identity*. When we find the same mark in two books, each with the same system of sewing dots, we can be sure that the marks are identical, even if, between lots of paper, the wire design has deteriorated or has been resewn to the mould. There may be added dots in that case, but most of the rest will be the same, except that they may be oversewn and intensified.

Occasionally, but only occasionally, Briquet records sewing dots in his tracings. In some of these cases I have come upon the same papermarks, in Champagne paper, in Norman paper, in printed books, and known them beyond any shadow of doubt by the sewing dots, sometimes subtle, sometimes pronounced. It is thus with the Bull's-head-tau marks and the Cross-on-mounts marks in the *Missale speciale* of Constance or (as some men now think) of Basel or the upper Rhine. I have found the main pair of Missal Bull's heads in several early books printed at Strasbourg and Basel.²⁶ And I have found the single pair of Cross marks in very early books printed at Basel and Strasbourg. I know the marks are the same marks from the same moulds because the sewing dots are in precisely the same places, except that here and there new dots appear as the watermarks wither and grow old, as they come loose or distorted from wear at the vat, and need to be sewn back neatly in place.

I would not deceive you. I am not at this moment marshalling evidence whereby I might fix the date of the 'Constance' Missal. But I am suggesting that in a problem of this significance such forms of paper evidence as Runs and Sew-

ing Dots may help point the way to a proper conclusion. And I am thinking that those who come after me, other serious students of paper, may well find in it further useful forms of evidence. We do not yet know that paper evidence will prove of frequent assistance, along with typographical and other evidence, in solving problems concerning books. But these new forms of evidence have given me a new confidence that it can achieve significant results, despite its vagaries, its ambiguities, and the unwillingness of some to examine paper moulds and the varying impressions left by moulds some centuries ago in the matted fibres derived from hempen cordage and linen rags.

Pittsburgh, 1 November 1959

NOTES

1. My remarks on sizes and qualities receive fuller discussion in a forthcoming volume entitled *The Unicorns of Normandy*.
2. This book I describe in *The Hunt Botanical Catalogue*, II (Pittsburgh, Hunt Botanical Library, 1961) no. 536, discussing the two formats and giving a list of copies.
3. Cf. A[llen] T. Hazen, 'Baskerville and James Whatman', *Studies in Bibliography*, V (1952-3) 188, and Thomas Balston, *James Whatman Father & Son* (London, Methuen, 1957), p. 159.
4. Balston, pp. 15, 17.
5. This investigation was suggested by Dr. Alice Walker. She points out that Capell himself notes, in I 18n, that the printer, Dryden Leach, began the edition of Shakespeare with the first sheet of Vol. II in September 1760 and that Vols. II, VIII, IV, IX, I, VI, VII had been printed by August 1765, except apparently for the preliminaries for Vol. I. I find that the watermarks in the Morgan, Harvard, and Newberry copies fit well with the indicated order.
6. Joseph Moxon, *Mechanick Exercises on the Whole Art of Printing* (1683-4), ed. Herbert Davis & Harry Carter (New York, Oxford University Press, 1958), pp. 320-1.
7. Gordon Dunthorne, *Flower and Fruit Prints of the 18th and Early 19th Centuries* (Washington, D.C., Published by the author, 1938), no. 301.
8. Elephant = 23" x 28", Columbian 24" x 34.5", Royal 19" x 24".
9. *Hunt Botanical Catalogue*, II no. 594, notes.
10. W[alther] Fr[iedrich] Tschudin, in *The Ancient Paper-mills of Basle and Their Marks*, ed. E. J. Labarre (Hilversum, Paper Publications Society, 1958), pt. 3, identifies the Galliziani seal marks, but does not realize that the seal marks were used mainly in large paper and that the Bull's-head-tau marks must be those used by Antonio Galliziani in the much commoner small paper.
11. The evidence will be set forth in *The Unicorns of Normandy*.
12. Ronald B. McKerrow, *An Introduction to Bibliography* (Oxford, Clarendon Press, 1927), p. 103.
13. Acceptable prints can be made also with a Contoura machine. Through such means it may be possible to publish selected collections of watermarks in colotype or offset rather cheaply.
14. See my 'Watermarks Are Twins', *Studies in Bibliography*, IV (1951-2) 57-91, 235.
15. Note Charles Moise Briquet's definitions in *Les Filigranes* (Geneva, 1907, Leipzig, 1923), I 17.
16. The English have an adjective for those overconcerned with Pots.
17. This hypothesis has the support of such scholars as Sir George N. Clark and William Haller. It is discussed in *The Unicorns of Normandy*.
18. W. W. Greg, 'On Certain False Dates in Shakespearian Quartos', *The Library*, 2d ser., IX (1908) 113-31, 381-409.
19. See my 'Shakespearian Dated Watermarks', *Studies in Bibliography*, IV (1951-2) 159-64.

20. John Carter & Graham Pollard, *An Enquiry into the Nature of Certain Nineteenth Century Pamphlets* (London, Constable, 1934).
21. Thomas H. Johnson, *Emily Dickinson: An Interpretive Biography* (Cambridge, Mass., Belknap Press, 1955).
22. August Wilhelm Kazmeier, 'Wasserzeichen und Papier der 42zeiligen Bibel', *Gutenberg-Jahrbuch 1952*, pp. 21-9.
23. Otto Hupp, *Gutenbergs erste Drucke* (Munich, 1902), p. 78; cf. [Sir] Irvine Masson, 'The Dating of the *Missale speciale Constantiense*', *The Library*, 5th ser., XIII (1958) 87. For the paper evidence see my *The Paper in the Missale speciale* (1961), ch. 5.
24. *The Paper in the Missale speciale*, ch. 7.
25. Jan Gerritsen, in an unpublished monograph, shows that the Jonson folio was around a year and a half in the printing.
26. Since this lecture was written the other pair of Bull's heads (with pinched muzzles) have likewise turned up in early books printed at Basel and Strasbourg. See *The Paper in the Missale speciale*, ch. 6.

Pittsburgh, 25 June 1960

The text of this book was set in Linotype Baskerville and printed on Beckett laid text by the University of Kansas Press, Lawrence, Kansas. The collotype plates are by the Meriden Gravure Company, Meriden, Connecticut. That of the papermould appears through arrangement with Encyclopaedia Britannica Inc., Chicago, Illinois.