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A SYSTEMATIC METHOD FOR IDENTIFYING THE MAKE AND AGE-MODEL OF A TYPEWRITER FROM ITS WORK

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Ordway Hilton has maintained a practice as an Examiner of Questioned Documents in New York City since 1946 and has served for a number of years as Editor and as a member of the Editorial Staff of this Journal. Prior to World War II he held the position of staff document examiner at the Chicago Police Scientific Crime Detection Laboratory and during the war was a handwriting identification specialist with the Naval Intelligence Service. The method of typewriting identification discussed in this article was one of a number of technical papers presented at the 1950 annual meeting of the American Society of Questioned Document Examiners, of which Mr. Hilton is a member. This article represents a very valuable contribution to scientific document examination.—MANAGING EDITOR.

The determination of the make and approximate date of manufacture of a typewriter from the design of its typefaces is an accurate process when dealing with domestic machines. Actually, all that is needed is a complete reference collection containing the various changes in typeface design by each manufacturer, but a random search for a particular specimen in this file may entail unnecessary loss of time. The purpose of this study has been to set up a systematic scheme for checking an unknown specimen so as to enter a reference collection knowing definitely the make and having only to determine within a narrow range the age-model. The entire time for an identification is thus reduced to the absolute minimum.

The ideal systematic scheme would allow checking of an unknown specimen in such a way as to identify not only the make but the exact age-group from which the machine originated. This procedure should be possible regardless of make or age. There is no reason why a system cannot be devised to fulfill these conditions, but the difficulty is that it could well become too cumbersome to make it worthy of constant use. Consequently, in devising this system it was necessary to make some compromises. These have been made solely in an effort to arrive at a system which remains simple and at the same time leads to the rapid identification of the greatest number of machines. Upon complete check the system assures that every machine covered has been considered. Thus, a positive conclusion gives the only possible answer, and a negative shows quickly that the machine is one of the rarer varieties not included.

SCOPE OF SYSTEM

The system as now published includes only standard pica and elite fonts of the principal U. S. machines which were currently being man-

ufactured in 1920 or were made during the period from then to the present. With most makes certain machines built prior to 1920 may be identified since many fonts in use then had been used for at least five years before. For example, Remington used the same pica font with only minor variations from 1906-31, and Underwood from 1902-24 The typewriters included in this tabulation are L. C. Smith-Corona, I. B. M., Noiseless and its successors, Remington and Underwood Noiseless, Oliver, Remington, Royal, Underwood, and Woodstock and the portable machines built by these companies. It is estimated that more than 90% of all machines encountered today in disputed document problems fall into this group.

Basis of Identification

This system of identification is based upon selected key letters. Each of these in turn is classified by means of various features of its design into one of several class-groups. In the accompanying tables the machines covered by this study are tabulated into sections which are designated by the class of key letters found on the machine. Identifying the make and age-model of an unknown machine simply requires that the key letters be properly classified, and with these data the table is entered and the identification made. Only at this point is it necessary to refer to a reference collection to verify the results and possibly to restrict the age-group to narrower limits.

In identifying any machine the same starting point is used as for all other machines. This is true for both pica and elite fonts. The three basic letters in the system in the order of their use are *w*, *g*, and *t*. The selection has been purely arbitrary but has been found to work effectively. Many machines are completely segregated with only the first two factors. However, it is necessary in some more crowded groups to introduce other key letters, and a different set and order has been found more effective in separating pica and elite machines. There are of course some machines which can be more rapidly designated if some other letter than the *w* were first employed, but the fundamental value of this system is in its orderly procedure. Assuming that one model of a machine could be designated by starting with the *y* instead of the *w* in only two steps instead of four, this method might seem superior. But, if the first hunch were incorrect, then two steps would have been consumed by the false start. Other false starts might be made in such a system before hitting on the right answer. While *w*, *g*, and *t* may not always positively identify the machine, these steps are not wasted as only two or three more letters are needed, even in the most crowded sections,

to complete the identification. The letters *r, y, m, i,* and *S* serve as supplementary factors in the pica system, and *a, r, y, i, m,* and the comma in the elite. Class definitions are discussed in the following pages.

The selection of the letters is based on the effective breakdown of the whole, which is brought about by the use of the letter, and its frequency of occurrence in written matter. Not all letters are readily classified in easily distinguishable groups, and this was taken into consideration. Unless the classifications can be clearly described and understood, the system may break down when used by several workers. It is unfortunate that the five most frequently used letters are not the five letters on a typewriter which have the greatest variation in form and best lend themselves to classification, but of these letters only *t* and *a* are suitable. *w* and *g* standing 13th and 18th, respectively, in frequency of use are sufficiently common that they will be found in a moderate length text. Because of the recent changes in *w* it has the advantage of dividing the machines encountered today into four groups, two of which divide somewhat equally a large group of the machines and the other two representing smaller but still sizable groups. The other two letters, *g* and *t,* work effectively in combination with the *w* so that only one section of the pica table and two of the elite are badly crowded.

The system in use operates in the following manner. Assume an unknown pica specimen in which the *w* has a high central peak, as tall as the two side strokes, and no serif at the center; the *t* has a cross-bar which extends farther to the right of the vertical staff than the left; and the *g* has a small top connected to the bottom oval by a goose-neck connecting stroke. Each of these letters falls into a definite class, designated by the prominent features pointed out, as will be found in the subsequent classification. By reference to the class designations listed below and the table for pica machines it would be found that this specimen was the work of an Underwood Portable built during the period 1926-34. Comparison of the entire specimen with the reference collection would verify this finding.

In designing this system thought was given to its extension both with the inclusion of other machines, which through sales promotion might become popular, or the addition of future typeface changes or earlier models not now covered in this study. The system should be able to be expanded in these ways if needed with at most the introduction of an occasional supplementary factor.

The Basic Pica and Elite Factors

It has already been stated that identification of both pica and elite

machines start with the same three basic factors, the classifications of *w*, *g*, and *t*. In order to simplify the system and to facilitate its use one set of class definitions has been developed which can be applied with equal ease to a pica or elite typewriting. This can be done despite the different proportions used in pica and elite design brought about primarily by the narrower horizontal space in elite typewriting. The three factors are discussed in the order of their use, *w*, *g*, and *t*.

Factor 1. Small w. The small *w* is divided into four classes. These depend on the presence or absence of a center serif, the height of the central peak or joining, and the design of the two central diagonals. Each class is illustrated in the accompanying cut, Figure 1, and the significant portions described.

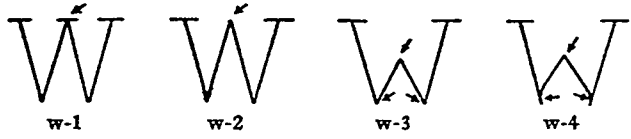


Figure 1

Diagrammatic sketches of letters, rather than actual specimens, have been used to illustrate typical class letters. In this way it is possible to emphasis the pertinent portions of the letter which control the class designation. The subclasses of *g*'s shown in Figure 3 are the only exceptions.

Class 1. (w-1). The central peak is the same height as the top of the outside strokes and is capped by a serif. This is the traditional *w* of early machines and is still found on Woodstock typewriters.

Class 2. (w-2). The central peak is the same height as the two outside strokes, but the letter has no central serif. The old Noiseless and later both Remington and Underwood used this class of *w*.

Class 3. (w-3). The central joining is below the top of the sides, i.e. this is the modern "low-w." The actual height of the center is not important as long as it is below the top of the outside strokes. The inside strokes join the outer ones at the base line. Thus, the current Remington and Underwood *w*'s, although easily distinguishable by the different height of the low center, both fall in this class.

Class 4. (w-4). The Noiseless *w*. This too is a low center *w*, but the two central diagonals join the sides well above the base of the letter. The manner of joining of these strokes introduces the effect of a slight curvature. This is the current *w* on all Noiseless machines and distinguishes them from all others. No other letter is actually needed in its identification.

Factor 2. Small g. The *g* has been divided into five classes. The division is based upon the space between the top and bottom oval as related to the vertical dimension of the lower oval, and the position of

the left extreme of the two ovals and their connecting stroke in relation to one another. (See Figure 2.) Definitions are based upon carbon paper impressions of the letters, especially when discussing the space between ovals compared to the lower oval. Workers may find that some practice is necessary to classify heavier ribbon impressions, especially of elite specimens.

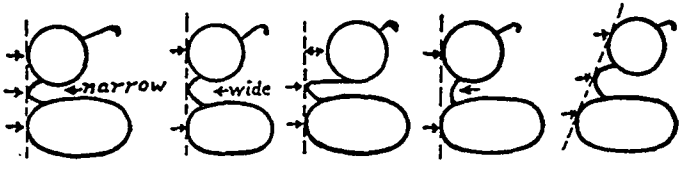


Figure 2

Subclasses are defined for two pica machines, L. S. Smith and Corona,[1] and one elite class, the Royal small elite. These are used because of their familiarity to document examiners and because of the clear variation from other letters of the class. They have been designated as classes 1A, 1B, and 2A (Figure 3).

Figure 3

The above cuts are made from line tracings of enlarged specimens of Corona and L. C. Smith pica and the Royal small elite.

Class 1. (g-1). The left extremity of the two ovals and connecting stroke fall in a straight line which is vertical or leans to the right less than 20°, and there is a narrow space between the top and bottom oval, less than half the vertical dimension of the lower oval. With the pica machines the lower oval tends to be considerably wider than the upper, but due to a narrower horizontal space on elite machines the difference is not as great. Thus, while this condition is helpful in classifying pica specimens, it is not part of the classification definition. *g*'s of this class are by far the most common. Comparison of this definition with classes 2 and 5 should be made to understand clearly the significant differences.

Class 1A. (g-1A). Corona pica *g*. This is one of the two subclasses

1. In this study the name L. C. Smith is used to designate the L. C. Smith standard typewriter and the office model of the L. C. Smith-Corona subsequent to the merger of the two companies. Corona denotes the Corona portable and later the L. C. Smith-Corona portable.

of pica *g*'s. The letter fulfills all of the specifications of class g-1, but the very large lower oval has been a prominent point of identification of the Corona typewriter since Hulse first started cutting the type. In ribbon impressions the large size of the lower oval often leaves no clear space between the top and bottom oval.

Class 1B. (g-1B). L. C. Smith pica *g*. This subclass of *g* is found on L. C. Smith machines between 1911 and 1951, except for the brief period when Corona letters were used on the machine, and is characterized by the flat strokes which form the top and bottom of the lower oval. Otherwise, the letter contains all specifications of class g-1.

Class 2. (g-2). The spacing between the top and bottom ovals is equal to or greater than one-half the vertical dimension of the lower oval. The left extremes, as in class g-1, are in a near vertical line, never leaning more than 20° to the right. It should be observed without making it formally part of the definition that with pica machines the lower oval has a smaller horizontal dimension than is common to class g-1.

Class 2A. (g-2A). Elite. The traditionally small topped *g* of the old Royal small elite font, which was also adopted and used for several years by Woodstock in 1935, forms this subclass. The letter fulfills all of the requirements of class g-2, but the top oval has a horizontal width which is approximately half the horizontal dimension of the lower oval.

Class 3. (g-3). Goose-neck-g. The top oval of this class is offset to the right by means of a goose-neck connecting stroke. Thus, the left extremes of the lower oval and the connecting stroke fall on a vertical line well to the left of the left edge of the top oval. This letter is found on the Underwood machine during its middle history.

Class 4. (g-4). The position of the connecting stroke in relation to the left edges of the two ovals establishes the classification. This stroke is set in to the right of the left extreme of the letter. Remington has used this design on its pica and elite machines and since 1915 the Corona elite *g* has been of this class.

Class 5. (g-5). The top oval is offset to the right as in class g-3, but the connecting stroke is not a goose-neck but is also set in slightly to the right. Thus, a line along the left extremes of the two ovals and the connecting stroke slants appreciably, more than 20° to the right of the vertical. In elite machines of this class a line along the right edge of the two ovals is almost vertical, slanting only slightly to the left. This letter is found on Underwood distinctive elite and Royal large elite in the late 1930's and current Underwood pica font.

Factor 3. Small t. Three classes of the small *t* are defined. The relative length of the crossing to the right and left of the vertical

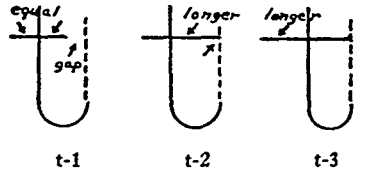


Figure 4

stem forms the basis of the class definitions. (See Figure 4.) Only the first two classes are found among the pica machines considered. Because of the narrower horizontal space in elite typewriting differences in right and left sections of the crossing are slight and care must be exercised in assigning elite *t*'s to the proper class.

Class. 1. (t-1). This is a balanced, and generally short, t-crossing. The cross-bar extends the same amount to right and left of the vertical staff, and the right edge of the cross-bar does not reach as far to the right as the bottom curve.

Class 2. (t-2). This is an unbalanced crossing, longer to the right, generally extending to either the inner or outer edge of the bottom curve. It should be noted in using this system that modern elite (current) Remington, Underwood, and Royal fonts have *t*'s of this classification with the right side just slightly longer than the left.

Class 3. (t-3). This class of *t* has a crossing which is longer to the left of the stem than the right. It has appeared on a number of Remington elite fonts. The right side of these letters extends out to the inner edge of the lower curve (projected).

Supplementary Factors

The three basic factors separate or identify better than 35% of the elite fonts and about 40% of the pica fonts, but other factors are needed to deal with the remainder. In setting up the system, it was found advantageous to abandon the parallel factors for pica and elite machines at this point and to select supplementary factors which would resolve the various fonts most readily. Thus, with pica machines the small *r* serves best as the fourth factor, but with elite it is the small *a*. Other factors were selected to resolve the remaining groups with greatest dispatch. In choosing supplementary factors and classifying them, there has been a continuous effort to keep classes simple and readily discernible. When the same letter appears in both the elite and pica scheme definitions have been designed to apply to both sizes of type, e.g. *r, y, i,* and *m*.

PICA

Factor 4. Small r. Among pica machines the small *r* serves as an effective fourth factor. Classification is based on the design of the right arm. (Figure 5.)

Figure 5

Class 1. (r-1). Pump-handle-r. This letter is distinguished by the long, somewhat straight arm with a very small curve at the end. Found on early Remington and Woodstock, it has been revived on current Underwoods.

Class 2. (r-2). This letter has a long right arm with a full curve at the end. The unusually large, full curve is the most outstanding characteristic. Royal was one of the first machines to use this class of *r*.

Class 3. (r-3). This is an intermediate form. The arm is shorter than r-2. The curve at the end is moderate to full. NOTE: All *r*'s not clearly in r-1 or r-2 classes should be placed in this group.

Small y. Classification of the small *y* is based upon the form and length of the tail. Three classes are used and illustrated in Figure 6.

Class 1. (y-1). This is the old Remington *y* with a broad turn at the bottom forming a very shallow trough.

Class 2. (y-2). This class of *y* has an exaggerated, full curving tail which clearly hooks back to the right. Early Underwoods were equipped with this letter.

Class 3. (y-3). This class has a shorter tail which turns sharply forming a narrow trough. All *y*'s not clearly of classes 1 and 2 should be placed in this group.

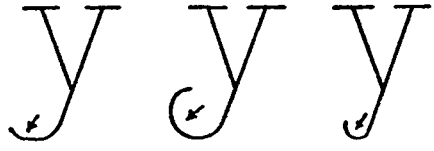


Figure 6

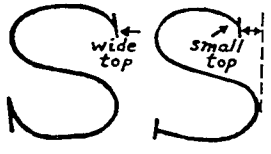


Figure 7

Capital S. The top of the capital *S* serves as an easy means of classifying this letter. Only two groups are needed. (Figure 7.)

Class 1. (S-1). The top is as broad as the bottom, i.e. it extends

as far as to the right. This style of letter is used by most manufacturers.

Class 2. (S-2). This is the small or narrow top *S*, which has been a distinguishing feature of the Royal machine for years. The top does not extend as far to the right as S-1. Standing along this letter almost identifies the Royal as only the I. B. M. uses a similar *S*.

Small i. Two classes are defined for this study based upon the position of the dot relative to the vertical staff. (Figure 8.)

Class 1. (i-1). The i-dot is centered above the vertical staff in this class. This arrangement is more common.

Class 2. (i-2). The dot is offset slightly to the left so that the center line of the vertical stroke, when extended, passes to the right of the center of the dot.

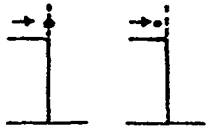


Figure 8

Figure 9

Small m. With the introduction in 1950 of a new pica and elite font of type on Royal typewriters a distinctive small *m* has been designed, which serves as an excellent supplementary factor for identifying current Royal machines. Two classes of *m*'s are defined based on whether the central downstroke contains a serif. (See Figure 9.)

Class 1. (m-1). This is the traditional form of *m* with a central serif at the base.

Class 2. (m-2). The new Royal *m* without a central serif is the only letter of any manufacturer which falls in this class. Thus, this letter alone identifies the current Royal type.

ELITE

Factor 4. Small a. The lower case *a*, rather than the *r*, serves as the best fourth factor among elite fonts. It has been separated into three classes based upon the point of intersection of the right side and the upper stroke of the enclosed area, and the height and design of the top. (See Figure 10.) Since the right hand tail is frequently damaged, it has not been considered in setting up these classifications.

Class 1. (a-1). The *a*'s of this class have a medium to small lower enclosure formed by the top stroke and the right side joining below a

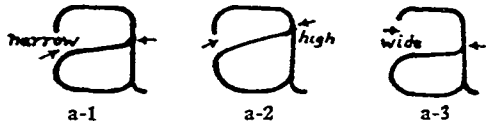


Figure 10

point two-thirds of the way up from the bottom. The top curves down appreciably at the left so as to leave a narrow gap. This is the most common class of *a*.

Class 2. (a-2). The lower enclosure is larger than that of a-1 since its top stroke strikes the right side high, above a point two-thirds of the height of the letter. The left side of the top also turns down appreciably to form a narrow gap. The Underwood *a* of the early 1930's is typical of this class.

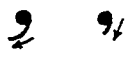
Class 3. (a-3). This is a high topped *a*. The top stroke is arched high above the lower enclosure. It does not curve down much on the left so that the left gap is wider than in the other two classes. The lower enclosure is small and follows the description of class a-1. Current Royal and Underwood *a*'s are samples of this class of letter.

Small r. The *r* is also used in the elite separation, but only two classes, r-1 and r-3, are found. Pica definitions apply.

Small y. In elite type identifications the small *y* is used as a supplementary factor. Two classes, y-1 and y-3, as defined for pica machines, are encountered. Class y-2 occurs among elite type fonts, but is not needed in the elimination scheme.

Small i. The same two classes as defined for pica are needed.

Comma. Final separation of the Woodstock (1935-38) and Royal small elite is most readily accomplished by means of the comma. This character has been used as it is commonly found in all kinds of typewriting—letters, legal papers, accounting forms, etc. The direction of the tail, its curvature, and the size or weight of the comma form the basis of the classification. (Figure 11.)



Cm-1 Cm-2

Figure 11

Class 1. (Cm-1). This is a medium to large comma with a long curving tail which ends pointing off to the left between an 8 and 9 o'clock direction. Royal elite fonts all employ this style.

Class 2. (Cm-2). This is a medium weight comma with a very short tail that ends pointing downward (between 6 and 7 o'clock).

Small m. As with the pica type faces the *m* is used to separate current Royal elite from similar fonts. The same two classes are used exactly as defined for the pica specimens.

Comments on Numerals

No attempt has been made to set up classification for numerals. These are useful in determining the make of machine, and in fact at two points in the accompanying tables reference is made to final separation by means of the numerals. However, with all manufacturers more than one font of numerals can be obtained with standard pica and elite typefaces. For this and other reasons it was decided advisable to use numerals only in places where no other means of separation is available, and here without any classification.

Each worker using this system will find it to his advantage to have accurate knowledge of numeral styles which commonly appear with different machines. During the last decade, especially, there have appeared several distinctive styles which help to separate the make of machine rapidly. This knowledge serves as a quick check on identifications made by this system, especially with machines which have rather similar type styles.

Use of Tables

Table I and II classify the pica and elite machines, respectively, by means of the various letter classes discussed above. To make the preliminary identification of make and age-model of an unknown machine three letters are classified, *w*, *g*, and *t*. Only details of design necessary for classification are considered at this point. The appropriate table is entered with the *w* and *g* factor, using the *t* factor to establish the proper section of the row and column indicated. With many machines a preliminary identification is made with these factors, but in some of the more crowded sections of the tables additional letters of the unknown specimen must be classified. Thus, for example, if a pica classification shows factors, w-1, g-1, t-2, the *r*, *y*, and *S* must be assigned class designations. Assuming these factors to be r-3, y-3, S-1, the machine is an Underwood standard typewriter of the 1927-33 period. The final identification should rest, however, on a comparison of the unknown specimen with key reference specimens from the indicated age-group, comparing the letters in detail. Foreign and unusual type faces, not included in this study, may fall into a section occupied by only one machine of this system and must be eliminated by the final check.

Table I

PICA SEPARATIONS

	W-1	W-2	W-3	W-4
g 1	t-1 { r-1 Woodstock 1915-38; r-2 { S-1 Oliver 1907-26; S-2 Royal 1912-20 } }	t-1 None	t-1 None	None
	t-2 { r-2 { S-1 Woodstock 1938-; S-2 { Royal std. 1920-50; Royal port. 1934-50 } }; r-3 { y-1 { Rem. std. 1906-31; Rem. port. 1920-46 }; y-2 Underwood std. 1902-24; y-3 { S-1 Underwood std. 1927-33; S-2 Royal port. 1927-34 } } }	t-2 { Underwood std. 1933-46; Underwood port. 1934-46; Underwood nls. 1936-46 }	t-2 { r-2 { m-1 { i-1 I.B.M. 1930-; i-2 L. C. Smith 1951- }; m-2 { Royal std. 1950-; Royal port. 1950- } }; r-3 Remington port. 1946-49 }	
g-1A	t-1 { Corona 1915-38#; L. C. Smith 1933-34# }	None	t-1 Corona 1938-	None
g-1B	t-2 L. C. Smith 1911-33; 1934-38	None	t-2 L. C. Smith 1938-51	None
g-2	t-2 { Remington std. 1936-45; Remington nls. 1925-47; Remington nls. port. 1931-47; Underwood nls. 1929-36; 1946-47; Underwood nls. port. 1931-47 }	None	t-2 { Remington std. 1945-; Remington port. 1949- }	t-2 { Remington nls. 1947-; Underwood nls. 1947-; Remington nls. port. 1947- }
g-3	t-2 { Underwood std. 1924-27; Underwood port. 1921-26 }	t-2 Underwood port. 1926-34	None	None
g-4	None	t-1 { r-2 { Rem. std. '27-38; Rem. port. '27-39 }; r-3 Noiseless 1917-25 }; t-2 Remington std. 1931-32	None	None
g-5	None	None	t-2 { Underwood std. 1946-; Underwood port. 1946- }	None

Std.—Standard office model including electric; port.—portable model; and nls.—noiseless model.
#—Indicates final separation is based on numeral styles regularly supplied.

ELITE SEPARATION

	W-1	W-2	W-3	W-4
	t-1 None t-2 a-1 r-1 Woodstock, 1915-25 r-3 L. C. Smith 1914-22 a-2 y-1 Woodstock 1938- y-3 Undw. std. 1927-36 Undw. port. 1934-36 t-3 Remington port. 1946-50	t-1 None t-2 Underwood std. 1936-39 Underwood nls. 1936-39 Underwood port. 1936-46 t-3 None	t-1 None t-2 I.B.M. 1930- t-1 None	None
	t-1 a-1 Oliver 1904-26 a-2 Woodstock 1926-35 t-2 a-1 Remington std. 1936-46 Remington nls. 1925-46 Remington nls. port. 1931-46 Underwood nls. port. 1931-46 Underwood nls. 1929-36; 1939-46 a-2 Woodstock 1925-26 a-3 Royal std. 1945-50 Royal port. 1945-50	t-1 None t-2 Underwood std. 1940-46 Underwood port. 1946-47	t-1 None t-2 a-1 Remington port. 1950- Remington std. 1946- a-3 m-1 Underwood std. 1946- Underwood port. 1947- m-2 Royal std. 1950- Royal port. 1950-	t-1 None t-2 Remington nls. 1946- Remington nls. port. 1946- Underwood nls. 1946-
	t-1 Royal std. 1913-22 t-2 Cm-1 Royal std. 1922-45 Royal port 1926-45 Cm-2 Woodstock 1935-38	None	None	None
	t-2 i-1 Underwood std. 1902-27 Underwood port. 1920-26 i-2 L. C. Smith 1922-38	t-2 Underwood port 1926-34	t-2 L. C. Smith 1938-	None
	t-1 Corona 1912-38 t-2 None t-3 Remington std. 1905-38 Remington port. 1920-46	None	t-1 Corona 1938- t-2 None t-3 None	None
	t-2 Underwood std. 1937-39# Royal large elite 1936-46#	t-2 a-1 Noiseless 1915-25 a-3 Undw. std. 1939-40	None	None

Std.—Standard office model, including electric models; nls.—noiseless model; port.—portable.
#—Indicates final separation is based on numeral style regularly supplied.

The dates indicated in the tables are approximate periods in which the typefont was used. These have been derived from the writer's records and those of his associate, Elbridge W. Stein. The writer is also indebted to two privately circulated studies on typeface changes, prepared by members of the American Society of Questioned Document Examiners, as additional source material. These were developed by A. D. Osborn and H. S. Broadbent in 1944 and Clark Sellers and David A. Black in 1948.

Should a classification of an unknown specimen strike a blank section of the table, as for example an elite machine with factors, w-2, g-4, t-2, it is immediately established that this is not a regular font of type used on the models of machines listed in this paper. Specimens outside the system can then be consulted.

Tables I and II do not separate each change of typeface in the machine's history or even in the periods indicated. As many as three and four rather similar fonts may be included in some sections. However, the advantages gained by entering a very restricted section of the reference files should be appreciated. When more than one make of machine is listed in a group, or in many instances both standard and portable models, the same typefaces, except possibly the numerals, are used on these machines.

Conclusion

The system proposed sets up an orderly method of rapidly identifying the make and age-model of a typewriter used to prepare a questioned document. The definitions have been simplified as far as possible so that several workers can simultaneously use the system, as is necessary in larger police laboratories and private offices. Only a limited group of machines have been included, but these represent the vast majority of typewriters encountered in this country today. Nevertheless, the system has flexibility so that personal modifications can be incorporated, if desired, and the system can be expanded to include newly designed fonts or other machines outside the present study. Constant use of this method of machine identification should lead to appreciable saving in time by all workers.