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POLICE SCIENCE

A HANDWRITING AND PEN-PRINTING CLASSIFICATION SYSTEM FOR IDENTIFYING LAW VIOLATORS

ORVILLE B. LIVINGSTON

Orville B. Livingston is the senior document examiner of the Milwaukee Police Department. Over the course of years in connection with his official duties Mr. Livingston has maintained various files of handwriting and has adapted and developed special techniques for the filing and classification of these specimens. The system described in this paper has been developed as a result of his experience and represents a new approach to the problem of handwriting and pen-printing classification. Mr. Livingston was first appointed to the Milwaukee department in 1925 as a civilian worker and during the ensuing years developed a special interest in handwriting identification. He first testified as a handwriting expert in 1938. An earlier paper of his dealing with a check file classification appeared in volume 39 of this Journal.—EDITOR.

In 1929 the Milwaukee Police Department adopted the Lee and Abbey system of handwriting classification¹ and began collecting 5 by 8-inch specimen cards filled out for the most part by the photographed prisoners. Very few identifications were made by classification and search in this collection since, but hundreds have been made from those valuable specimens by requested comparisons for investigating officers and others in forged and worthless check cases and many other types of law violations. Two murder-robbery cases were cleared in 1945 after detectives checked names of customers of a murdered pawnbroker and found that one of them had a specimen card on file, bearing striking resemblance to seven items of Milwaukee and Chicago pawnshop and second-hand store writings done by a man, previously unidentified, using various aliases in disposing of property of the two victims. The writer of the card was arrested, in possession of more of the stolen property, and given a life term for each of the murders. Usually, several identifications a year are made by memory during classification of cards, filing operations, or searches resulting in identifications in cases other than the ones being checked.

Not always, but many times one handwriting specimen card, examined as taken from the file, has provided basis enough to justify a definite opinion as to whether a given suspect did or did not do the handwriting or pen-printing of a certain criminal offense or series of offenses. Comparison

with known writing from other sources indicates that probably around 95% of the Milwaukee specimen cards are filled out in reliable, natural handwriting. If immature persons fill out cards and return later as "repeat" prisoners, after a lapse of time, it is well to have such prisoners, especially, fill out fresh specimen cards because of the changes in writing habits often occurring as young people reach maturity. "Repeat" cards from other prisoners are very desirable too, as years pass, and as some of the writers change methods of operation or handwriting habits or both.

Such a collection of handwriting by known offenders has great value in law enforcement. Because of the frequency with which pen-or-pencil-printing, sometimes called hand-printing, appears in current documents, such as driver licenses, applications of various kinds, holdup and kidnap notes, anonymous letters, and other items, provision for the printing of the alphabet is made on our latest handwriting specimen card forms, and attention has been given to classifying pen-printing as well as handwriting, for filing and file searching operations.

How can we realize the most possible results from such a collection? Handwriting specimen cards or sheets, if filed so they can be found by name of writer, or by number on the card, have definite value, and can be referred to conveniently when the names of suspects are checked in cases involving writing.

OFFENSE CLASSIFICATION GROUPING

Their value is increased if they are filed in groups according to offense classes often involving

¹ C. D. LEE AND R. A. ABBEY, CLASSIFICATION AND IDENTIFICATION OF HANDWRITING, D. Appleton & Co. 1922.

writing, and in order of color or race, sex, and full birth date of writer within those groups; or simply in color, sex, and birth date order regardless of offense. The latter plan might do in a small law enforcement agency not having thousands of specimens to file yearly. Offense classification filing can be used in this way: If the color and sex of a writer, say, of a forged indorsement on a check is supposedly known, and some estimate is available concerning his age or approximate year of birth, or even if there is no idea of the writer's age, search can be made in what seems a logical part of the handwriting collection to learn his identity. Searches of that kind among known writing specimens filed in a Mail Theft section have brought us steadily good results for years past.

In preparing new specimens by arrested persons for offense group filing in recent years, the writer has had some success toward clearing mail theft, stolen check, and fraudulent buying cases by systematically checking the known writings against unsolved handwriting entries under those offense headings, when it seemed that such searches might be justified. Searches against known specimen writing in offense classification groups in recent years have resulted in identifications in theft and fraudulent check cases, as well as in mail theft cases. Offense classification grouping has proved its value.

The fairly broad offense groups used here are mainly: Confidence Game, Embezzlement, Extortion, Fraudulent Buying, Fraudulent Check, Fraudulent Money Order (for forged orders, not those having only forged indorsements), Larceny (including Burglary, Robbery, Theft of Automobile, even Murder if robbery appears to have been the motive), Larceny—Check (mostly forged indorsements other than in mail theft cases), Mail Theft, Narcotic (forged prescription offenders), Raising (check, money order, etc.). In a new file arrangement it might be well to consider using "Fraud" instead of the "Confidence Game" heading, "Theft" instead of "Larceny" and "Check Theft Section" instead of Larceny Check Section.

To provide a better basis for identification in check cashing and other transactions, we have for many years encouraged business people to have the customer write his address in cashing checks, filling out applications, etc. This teaching, when accepted, has often made the difference between failure and success in clearing cases. Using offense groupings for filing unknown specimen copies also

allows better chances of linking unknown items as the work of one person or combination of persons than if handwriting classification is depended upon entirely, without considering the offense type.

NEEDLE SELECTOR SPEEDS SEARCHING

The objection to relying upon offense, color, sex, and birth date order alone in filing the known specimens, especially in a big enforcement organization, is that accumulations of known writing in the commoner offense groups, such as Fraudulent Check and Larceny, rapidly become large. Then searching becomes a slow and inefficient process, hardly justified in ordinary cases. Comparatively rapid search with the needle selector and notched or punched cards greatly increases efficiency in trying to identify unknown writings, both in offense groups and in general classification groupings. Use of such equipment means the searcher need look only at specimen cards containing the desired characteristics in handwriting, pen-printing, name and address writing habits, color or sex of writer, instead of looking over every card in a large group of specimens.

GENERAL CLASSIFICATION OF HANDWRITING

From 1929 until 1953 the Lee and Abbey system was used for classifying nearly all the specimen cards filed here. Since early 1953 preference was given to the use of offense classifications, though reference specimens had been filed under some offense headings for a few years previously. The larger proportion of the cards filed continued to receive the Lee and Abbey classifications, less the practically obsolete shading factor and the movement factor with its uncertainties in classifying, both of which we dropped some years earlier in efforts to get better results.

Successful use of a general classification system for handwriting and pen-printing, for realizing the most possible value from prisoner specimen writing and other writing, is a worthwhile goal in law enforcement work. It appears to be best to continue giving offense classification filing arrangements the preference; but we should not overlook what can be accomplished by general classification and search of the wealth of material collected by a department taking pains to have a good percentage of prisoners fill out handwriting specimen cards. The greatest hindrances to effective general classification of writing have been lack of consistency in writing habits of many people, difficulty in getting

reasonably uniform results from various classifiers, weaknesses in the general classification systems themselves, and some disguised writings.

Some years of experience with the Lee and Abbey system, and study of the Nottingham, England, Police system² (having cards with 18 holes in the top margin for punching out and needle sorting), and other systems, have been helpful. A few adaptations have been made from them and used with original ideas in the preparation of the system explained. Hilton's typewriting classification method³ and some knowledge of fingerprint classification were also helpful.

"SPECIFIC LETTER" FACTORS OF NEW SYSTEM

Instead of using entirely what might be called general factors, it seemed best to depend most upon what can be called specific letter factors, employing seven longhand small letters, taking the ones chosen in about their order of frequency in English language use: "e," "r," "t," "o," intermediate or final "a," "d," "k;" and the capital letter "S." Small letters occur oftener than capitals in most questioned handwriting and therefore seem more useful for classification, though distinctive capitals can be watched for in searching. Small "d" and "k" do not occur as frequently as some other small letters ("n," "i," "s"), but seem better suited to the purpose. The letters used are arranged in classes according to type, somewhat as fingerprints or typewriter impressions are classified, 2 classes being used for all except "r," 3 classes, and "t," 5 classes, for the "visible" classification, which determines first the filing order of the general offender specimen cards and the reference cards by special offenders filed in the general group. Class code numbers were assigned according to the rarity or commonness of the letter formations included in the particular class, based on research work with representative handwriting specimen cards. The lower class numbers usually indicate less common letter types found in Milwaukee experience.

If this system is used in law enforcement units of very large size it may become advisable to work out additional specific letter factors, perhaps based

on such capital letters as "E," "N," "W," though these should be needed only for the commoner classifications, where large groupings occur.

USE OF "GENERAL" FACTORS IN NEW SYSTEM

The few general factors used, shown in the lower right part of the classification beginning just below the "o" factor, are: slant, 3 classes; capital connections, 2; color of writer, 1 unknown and 6 known groups possible, though 3 guides are usually set up here as needed for "known" groups—white, Negro, and colored other than Negro; sex of writer 2; and skill, 3 degrees. Skill was placed last in the classification order because it is a difficult factor for classifiers to agree on, and it is not important enough to be needed in filing the less common types of writing until accumulations of fair to large size occur. Full date of birth of the writer is the last determining item in the filing order of the known specimen cards. Color-sex guides should be inserted only about as needed. The commonest types of writing naturally accumulate the fastest and require sooner the full provisions of the system for convenient handling and efficient searching as time passes, especially in the color-sex groups found largest in the collection.

In classifying an unknown longhand item with few or none of the specific letters needed, we have several zeroes, or possibly all zeroes, in the top line of the classification; but we always expect to have some definite items in the general classes of the lower line. In filing unknown specimen copies in an offense classification group, such as Mail Theft Section, these general factors are used for the first filing order within the color-sex group, followed by what there is available in the specific letter portion of the classification. The "Unknown Color and Sex" grouping is used if there is nothing definite to indicate both color and sex of writer.

SEARCH AND IDENTIFICATION EXPERIENCE WITH NEW SYSTEM

The new general system was approved by the Honorable John W. Polcyn, then our Chief of Police, and put into operation November 5, 1953, about as outlined in the first portion of the rules given here. The first identification by classification and search in the new general classification group was made less than six months later from 2-line indorsements on copies of several unemployment checks mailed to the former address of one

² A. POPKASS AND J. MOORE, "Handwriting Classification", *THE POLICE JOURNAL* (England) Vol. 18, No. 1 (Jan.-March, 1945).

³ ORDWAY HILTON, "A Systematic Method for Identifying the Make and Age-Model of a Typewriter From its Work", *JOURNAL OF CRIMINAL LAW AND CRIMINOLOGY*, Vol. 41, No. 5, pp. 661-674 (Jan.-Feb. 1951).

payee. These checks are printed with a line for the payee to write his address when indorsing, a feature which other governmental units could well use, also private concerns which have any printing on the backs of their checks. The "r" and "t" present in the name and address writings were both minority types, and the fifth specimen card handled was that of the writer, who had also given visible fingerprints of his right index finger in cashing the stolen checks. Two arrests resulted, though only the passer was convicted.

The next classification-search identification was made in May, 1955, from the employment application card of a filling station attendant who disappeared from a suburban city with money of his employers. He had obtained the job under an alias not long before the embezzling but was identified from the sixth classified card handled in the search, as a check swindler then held in the County Jail, where questioning resulted in his confession to the suburban officer investigating. Two more identifications by classification and search were made from the 1953 general classification section since then, identifying the forger of checks passed by another man, and the seller of a stolen typewriter in a pawnshop. The fourth specimen card handled in the search was concluded that of the seller. A minority type "r" and some other distinctive features were present in the name and address writing identified, though two letters needed for a complete classification were missing.

PUNCH CARDS USED FOR NEW SYSTEM

Small amounts of questioned writing, such as forged indorsements and "signature only" items do not often lend themselves well to searching in such a general classification arrangement because of lack of one or more of the needed letters for the specific part of the classification. It is not well understood in many law enforcement and business circles that the smaller the basis for handwriting identification the less likely is the specialist in documents to be able to aid law enforcers in identifying the writer. Too much should not depend on too little. It should be a much more widespread practice for people signing documents of various kinds to write their addresses also.

After correspondence and a personal visit in 1954 with Daniel D. Boruchin of the Post Office Inspection Service in New York, N. Y., where he was experimenting with McBee¹ cards with holes

punched around the margin, his aim being to identify mail thieves and raisers of money orders, it seemed we could make our searches much more efficiently by using McBee 5 by 8-inch cards with 99 holes punched around the margin and having our prisoners and suspects fill these out instead of the ordinary printed cards used in the past. Blank cards were secured and printed by a police employee. Most of them were in a standard form for use by general prisoners photographed. A few hundred were made up in a special form emphasizing name and address writing on the front but using the same back as the general form. For the special cards we use for either dictation, which is best, or copying by the prisoner or suspect, a roughly alphabetical typewritten list of fictitious names of various national origins, and fictitious addresses on existing Milwaukee streets. These are intended to contain all the capitals and small letters of the alphabet, as well as all the numerals and a few titles, such as "Dr.," "Miss," "Mrs.," The list for this form is changed yearly.

While electronic machine tabulating systems could be used to classify handwriting and deal with offender descriptions and methods in a considerably more detailed way, our interest is in developing good methods which can be used by law enforcement organizations of any size using mainly the English language. McBee cards make it possible to inspect the specimens at once during hand search, with or without needle selector. The searcher would not have to take them out of file order and would not have to make a preliminary machine sorter run before he could examine cards bearing the desired types of writing or pen-printing.

The first McBee handwriting form cards were filled out here April 2, 1955. Because it was necessary to keep them separate from the earlier cards, a "5" was placed before each classification, both on offense and general classification cards. The coding for punching was completed and put into effect in May. Not only was it possible to punch pen-printing and longhand factors used in the original 1953 visible classification system, including finer and more selective sub-classifications for many of the letters used then, but additional pen-printing factors were added; also some punching for exceptional "i", "s"; "g", "y", or "z"; and other items, including 9 name and address writing habits. Provision was made for datings exceptional in U. S. A. writings—"military or foreign", and

¹The cards are available from the Royal-McBee Corp. with branch offices in the major U. S. cities.

numerical. These may help in identifying bad check writers.

In efforts to identify the writers of bad checks as good results are not to be expected in most cases from general classification or offense group cards as from special filing arrangements intended especially for this purpose, such as explained in the writer's "Bogus Check File Classified by Trademarks".⁵ In 12 years of use we have recorded 36 identifications in check cases resulting from searches in that part of our document filing system, based mainly on amount writing habits, which are not made use of in the general classification arrangements, intended mostly for identifying handwriting in cases other than typical worthless check offenses. However, in trying to identify indorser-passers in gang check operations, our chances should be better with the punch cards in offense groups. By using these cards instead of the visible classification only, it appears that a good deal more efficiency can be had, with quicker results for the searching time spent and encouragement to make more searches than would be justified with older methods.

We have been recording up to around 250 identifications in document cases in some years, the larger portion resulting from study requested by investigating officers or others, from name checking, or from memory, with relatively few being due to search of filing devices other than name index cards. It may be asked whether efforts are justified in setting up and maintaining the handwriting classification arrangements mentioned. Many of the identifications by study, memory, or name checking are based on prisoner handwriting specimen cards, or fingerprint card writing, or both. Investigative work in cases involving questioned writings can be done more efficiently with the aid of competent document examiners having access to good quantities of reliable handwriting done by suspects on present and previous occasions and filed so they are available for reference as well as reasonably efficient searching operations. Better results should be expected in the future by classification and search, because of using better principles and equipment than in many past years, though such searches are justified in only a percentage of cases.

A fingerprint bureau failing to maintain a 10-

finger classification file against which to check fingerprints of arrested persons and applicants is surely open to criticism for a lack of efficiency. We may be approaching the time when law enforcement agencies, at least those of considerable size, failing to maintain systematic arrangements of some kind for identification of questioned writings, may be considered below par, even though we do not expect from such filing the efficiency of 10-fingerprint file searches. The efficiency of single or "five-finger" filing of fingerprints should be approached, however.

CHOICE OF OFFENSE OR GENERAL CLASSIFICATION

When a specimen card being considered for classification does not need to be put in an offense classification group, it should be given a pen-printing classification if more than half of the card is pen-printed; otherwise it should be given a general longhand classification, if possible. In experience here the items most often classified are prisoner specimen cards. Some prisoners claim to be able to write no more than their signatures. In such cases full weight is given to the habits appearing in the signatures. If a signature collection is maintained on cards of the same size as the handwriting cards, it may be best to file the "signature only" cards in the signature section, especially if the surname and given names are both common.

If as in most cases there is other writing on the card in addition to the signatures, only the first signature ("full name" on our forms) is considered for specific letter and general characteristics. The "usual signature" at the lower rear of the card is practically left out in deciding the visible classification, but if a period or dash appears after the last signature, this is punched in the card. Undue weight should not be given to signature habits in the visible classification. The reason is that some people cultivate signatures different from their general writing. The general writing habits are more apt to be those needed to guide a search in a handwriting collection when trying to identify a given writer. Checking of alphabetical indexes and an alphabetical signature collection such as maintained in some bureaus should be helpful in trying to learn whether handwriting of a name in question can be linked with known writing of similar names.

When offense grouping is to be given preference, it is well to have the prisoner or suspect fill out an additional card, to be filed in the general classifi-

⁵ ORVILLE B. LIVINGSTON, "Bogus Check File Classified by Trademarks," *JOURNAL OF CRIMINAL LAW AND CRIMINOLOGY*, Vol. 39, No. 6, pp. 782-89, (March-April, 1949).

cation section. If it is noticed that a subject prints most of his card, it is a good thing to ask him to write another in longhand. The printed style card can be given a pen-printing classification and that in longhand or mostly longhand, a longhand classification.

FILING ORDER, RULES, INSTRUCTIONS, SUGGESTIONS

Eastern or Oriental writings are arranged in main groups alphabetically according to language, such as Arabic, Burmese, Chinese, Hebrew, India languages, Japanese, Turkish, etc. Color, sex, also month, day, and year of writer's birth, where possible, determine order within the group, not only in the Eastern writings section but throughout the other classified specimen cards, oldest writer cards placed in front, in known groups. Photographic or photostatic copies of unidentified writings, rather than originals, should be placed in front of corresponding known writer groups when file entries appear advisable.

MISCELLANEOUS

"O" is the symbol used for unclassifiable, "cannot write", and "will not write" specimen cards of prisoners.

"X" is the symbol used for cards of illiterates or professed illiterates signing only with X. (It is better to have the writer make several of these than just one.)

Pen-Printing Section

"Pen-printing" as used here means printed style lettering done with pen, pencil, crayon, brush, or other writing instrument (not type, typewriter, or rubber stamp impressions). This section is intended to include specimens with pen- or pencil-printing, sometimes called "handprinting", making up more than half of the specimen; or a reference card can be filed here when another is filed under a longhand or offense classification. Each classification for the Pen-printing section is preceded by "P-", followed by a row of numerals for the classes of the various factors used. If more than one class is represented in a given factor, a choice is made and only one numeral shown in the visible classification for that factor. If punch cards are used, each class represented should be punched.

The numbers following the factor headings (except those for color and sex) are class numbers.

PEN-PRINTING FACTOR 1—Form.

1. "Small letter" or lower case or manuscript printing forms in half or more of printed letters, not counting first letter of each capitalized word.
Example:

Lower case

As some letters can be taken for either capital or small letter forms (O, K, S, etc.), attention should be paid to proportions between letters when deciding which specimens should be put in Class 1. Dotted "i" if without special cross strokes (serifs) to indicate capital, and "t" with no serifs and with cross stroke clearly below top of downstroke, should be counted as small letters instead of capitals.

When form class is 1, use Pen-printing Factor 9 and following factors if possible for the rest of the classification after Slant, Factor 2.

2. Capital letter or upper case forms in more than half of letters. Also include any pen-printing specimens not falling into Class 1. Example:

UPPER CASE

PEN-PRINTING FACTOR 2—Slant.

For determining slant a transparent protractor is used, ruled with a red line at 65° for pen-printing and a black line at 55° for longhand. (See Figure 1) For longhand small "r" of one type punched on McBee cards, there are black lines at 10° and 170°, and for the "high hump small k" in longhand, five converging red lines are placed at 3-degree intervals on the left side, such as at 148, 151, 154, 157, and 160°.

1. Less than 65° slant in $\frac{3}{4}$ or more of the specimen.

2. Mixed slants, some less than 65°, other letters more, in specimen not falling clearly into Class 1 or 3. If in doubt whether to classify slant 1 or 3, use Class 2.

3. Slant of 65° or over in $\frac{3}{4}$ or more of the letters of the specimen. If the slant does not appear to be all, or nearly all, in Class 1 or 3, usually the specimen can be placed in Class 2 without having to make an accurate count. Putting the red 65° line along the axis or one of the straight sides of the letter being checked for slant will usually settle the slant class for that letter, the classifier noting whether the base line of the protractor dips below the base line of the writing, to the right for Class 1, or left for Class 3.

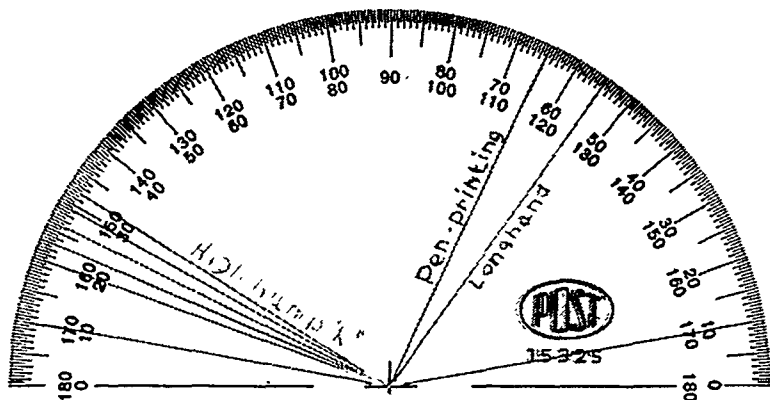


Figure 1

CAPITAL LETTER PEN-PRINTING

It is well to look over all of the capital A's for instance, in the specimen before deciding the A classification, which is simple if only one type is present. If the specimen is long, such as a letter or several pages of pen-printing, a portion of it can be used for deciding the classification, either in pen-printing or longhand. It may be found that in a lengthy specimen the middle or end part of the writing or pen-printing is more representative of the writer's habits than the beginning portion, where disguise may be present in greater degree.

PEN-PRINTING FACTOR 3—Capital A.

NOTE: If small "a" appears in more than half of the places where capital A should be, classify 3 or 4 under Pen-printing Factor 9—Small "a".

0. No pen-printed capital A or pen-printed small "a" present.

1. Other than angular or tent style of Class 2 in half or more of capital A's found. Examples:

A, A, A, A

2. Single-angle top or tent style A present in more than half of capital A's. Examples:

X, A, A, X

PEN-PRINTING FACTOR 4—Capital E.

0. No pen-printed capital E present.

1. *Long Midstroke E*. Half or more of pen-printed capital E's present having right end of midstroke even with or to right of imaginary line between right tips of top and bottom cross strokes. Examples:

E, E

2. *Short Midstroke E*. More than half of pen-printed capital E's present with midstroke ending to left of right tips of other cross strokes. Examples:

E, E, E

PEN-PRINTING FACTOR 5—Capital R.

NOTE: If small "r" is found in more than half of the places where capital R should be, classify 3 or 4 under Pen-printing Factor 12—Small "r".

0. No pen-printed capital R or pen-printed small "r" present.

1. *Closed R*. Half or more of pen-printed capital R's with upper or head portion closed against back or top. Examples:

R, R, R

2. *Open R*. More than half of pen-printed R's open below "head"; finishing stroke also not touching back of letter. Examples:

R, R

PEN-PRINTING FACTOR 6—Capital N.

NOTE: If pen-printed small "n" is found in more than half of the places where capital N should be, classify 3 or 4 under Pen-printing Factor 11—Small "n". Example:

UNDERNEATH

Classification: P-2321-1400

0. No pen-printed capital N or small "n" present.

1. "V" Finish N. Half or more of pen-printed

N's apparently ending upward without pen lift from start of V portion. Examples:

N, N

2. More than half of pen-printed N's of specimen made in ways other than those of Class 1. Examples:

N, N, N

PEN-PRINTING FACTOR 7—Capital M.

0. No pen-printed capital M in specimen.

1. M like inverted W, outside strokes not parallel, in $\frac{1}{3}$ or more of M's found in specimen. If any other type of M not found in Classes 2 or 3 is present in $\frac{1}{3}$ or more of the M's, classify No. 1. Examples:

M, M, M

2. M with low center, as low as or lower than end strokes, which are parallel or nearly so, in half or more of M's of specimen if it does not fall into Class 1. Examples:

M, M

3. High center M, end strokes parallel or nearly so, in more than half of M's of specimen if it does not belong in Class 1. Examples:

M, M

PEN-PRINTING FACTOR 8—Capital W.

0. No pen-printed capital W in specimen.

1. W with high center as high as or higher than end strokes, in half or more of W's of specimen. Examples:

W, W

2. W with low center in more than half of W's of specimen. Examples:

W, W

SMALL LETTER PEN-PRINTING

Use the following pen-printing factors only for specimens given Form Class 1 ordinarily, except for instances in which small letters "a", "r" or "n" are used in more than half of the places where capital letters A, R, N should have been used.

PEN-PRINTING FACTOR 9—Small a.

NOTE: If capital letter A is used in more than half of the places where small "a" should be,

classify 1 or 2 under Pen-printing Factor 3—Capital A.

0. No pen-printed small "a" or capital A present.

3. Half or more of small "a's" of specimen apparently begun with left movement. Examples:

a, a

4. More than half of small "a's" of specimen apparently begun with clockwise movement. Examples:

a, a

PEN-PRINTING FACTOR 10—Small t.

0. None present.

3. Half or more of small "t's" of specimen turning noticeably to right in lower part or ending horizontally to right or upward to right. Examples:

t, t, t

4. More than half of small "t's" of specimen with straight downstroke or downstroke turning to left. Examples:

t, t

PEN-PRINTING FACTOR 11—Small n.

NOTE: If capital letter N is used in more than half of the places where small "n" should be, classify 1 or 2 under Pen-printing Factor 6—Capital N.

0. No pen-printed small "n" or capital N present.

3. Half or more of small "n's" made with discoverable pen lift, rather than continuously. Examples:

n, n

4. More than half of small "n's" of specimen made apparently without pen lift. Examples:

n, n

PEN-PRINTING FACTOR 12—Small r.

NOTE: If capital R is used in more than half of the places where small "r" should be, classify 1 or 2 under Pen-printing Factor 5—Capital R.

0. No pen-printed small "r" or capital R present.

3. Half or more of small "r's" apparently made with pen lift. Examples:

r, r

4. More than half of small "r's" of specimen apparently made without pen lift. Examples:

r, r

Examples of complete pen-printing classifications:

**Milwaukee Police
Department**

Classification: P-134-334

**MILWAUKEE POLICE
DEPARTMENT**

Classification: P-2111-1132.

Longhand Section

WESTERN FOREIGN LONGHAND SECTION

Each specimen of writing recognizable to U. S. A. classifiers as definitely of western foreign style or strongly western foreign influence can well be classified with an "F-" prefix and included in a Western Foreign section. The advantage in this is that in an important case involving questioned foreign writing search could be made through the whole foreign section if advisable. Foreign writings represent a low percentage of the specimens filed here. If desired, the "F-" can simply be omitted or ignored in classifying and in filing order. Writings of people educated in other countries but not differing noticeably from U. S. A. writings should be included in the next section.

U. S. A. OR NON-FOREIGN LONGHAND SECTION

LONGHAND FACTOR 1—Small e.

0. No small "e's" present.

1. Greek or open small "e" present, at rate of at least $\frac{1}{2}$ of "e's". Examples:

river, tide

2. Looped or unlooped style "e's" only, or these types existing in more than $\frac{1}{2}$ of small "e's" of longhand writing. Examples:

earth, read, see

In classifying longhand, if foreign characteristics justifying an "F-" prefix are not observed, look first for open or Greek style "e". Put "0" in the classification for "e" or any specific letter factor if that letter cannot be found in the specimen. Classify "e" No. 1 if at least 1 open "e" is found to 4 Class 2 "e's"; otherwise classify No. 2, which is the "e" class number of over 90% of the specimen cards handled here. If both Class 1 and 2 "e's" are found, a choice should be made and one number or the other chosen for the classification, as in all specific letter factors except those for "r" and "t".

LONGHAND FACTOR 2—Small r.

0. No small "r's" present.

1. Longhand "r" with upward retrace present, at rate of at least 1 in 5 small "r's", or 1 of this type to no more than 4 of any other type or types. Examples:

her, run

2. Undotted "i" style "r", blunt top "r", miscellaneous small "r" forms other than those of Classes 1 or 3, present at rate of at least $\frac{1}{4}$ of the total number of small "r's". Include "r" with left bulge and angle at right. Examples:

rain, here, there

3. Conventional and allied forms with angle or downward retrace or loop at upper left, or angles at left and right, including angle at left and bulge to right, present at rate of at least $\frac{1}{4}$ of the total number of "r's". Examples:

rain, here, are, car

In classifying writing with only one type of "r", put the number of that class into the top classification line just to the right of the "e" classification. As some writers habitually use more than one type, and the "r" and "t" factors are very important in this system, more than one type is shown in the visible classification if justified. To avoid using more than two spaces up and down for the classification, three types of letter "r", or three or more of letter "t", should be indicated by a numeral and a single letter below it, or the "&" sign below the "X" for that type small "t" if more than 2 types of small "t" are to be included in the classification.

When arriving at the second number or combination of numbers, expressed by a letter, for a given "r" or "t" factor, put the lowest number to be used on the top line, and any single higher number, or a letter representing more than one number in position just below the lowest number of the classification, as indicated by the class rules and the filing order given. The aim is to translate writer habits into a largely numerical classification, to give the searcher the best chance of making identifications. Example showing two types of "r" in "er-" classification:

21-
3- *burner*

A premium is put on Class 1 "r" because of its minority use here. Any other type, to be shown in

the classification, should represent at least $\frac{1}{4}$ of the total number of small "r's" in the specimen considered. When there is doubt as to whether a given small "r" should be assigned Class 2 or 3, preference should be given to Class 2. When there is a mixture of types of "r", the proportional rules should be carefully followed in deciding what class number or numbers should be included in the visible classification.

The maximum filing order for the "r" factor follows:

0; 1; 1, 1 or 1, 1; 2, 2; 3.
 2 2 A 3 3
 3

At least for the present, 1, 1 and 1

2 A 3 are combined in our files, for practical reasons. The "r" parts of the guides read "1" "g".

LONGHAND FACTOR 3—Small t.

0. No small "t's" suitable for classification present.

X. Upward ending "t", interrupted "t", and miscellaneous forms not included in Classes 1 to 4, found in half or more of the opportunities in terminal positions, or found freely used elsewhere. Examples:

St., St., Beatrice

1. Special "t" found in half or more of the terminal opportunities, or freely used in other word or name positions. Examples:

St., St., St., other

2. Pen drag "t" found in half or more of the terminal opportunities or freely used in other word or name positions. Examples:

St., hit, eat, write

3. Small "t" begun with downstroke instead of upstroke found in at least half of the opportunities at beginnings of words or in the "th" combination; or frequently appearing in other word or name positions. Examples:

the, 20th St., Ruth

(Do not include what appears intended for pen-printed capital T or pen-printed small "t" if with pen-printed "h".)

4. Small "t" begun with upstroke, made without discoverable pen lift, continuously to common or

conventional ending, the pen being lifted for the cross stroke only. Examples:

the, eat, apt

Because of the variety of small "t's" which may occur in the writing of one person, though many use only one type, and because of early appearance in the classification order, small "t" is especially important in this system. Types X, 1, and 2 are most apt to be found in terminal positions and type 3 in positions in connection with numbered street names and dates, or at beginnings of groups of other small letters, in U. S. A. writings. Before settling on the numerals or numeral-letter combination of the "t" classification, it is well to look over all the "t's" of the specimen, noticing especially those in terminal positions and the "t's" beginning words, small letter parts of names, etc. If as many as half of the terminal "t's" are found to belong in Class X, for instance, then "X" should be put into the classification; similarly with the respective class number if Class 1, 2, or 3 takes precedence when requirements for using the rare "X" classification are not met.

When only Class 4 "t's" are found in the specimen otherwise, "4" should be put below the "1", if "1" takes precedence; but if other types with other class numbers are noticeably present a letter to express this should be used below the line, according to the filing order given. If Class 1 and 2 "t's" are not found but Class 3 appears at as many as half of the "first letter" opportunities, place "3" on the line in the classification, and "4" below it if that type is used in the writing being classified. In a few unusual cases, a writer filling out a specimen card may use a different class of "t" in each terminal position. In that case it would be as well to include in the classification a number and letter combination representing each type used, the numeral being for the lowest class number found. Class 4 "t's", which are the most common in U. S. A. writings, usually will be included in the classification. Frequently, they will be the only type showing in the classification.

If it is noticed that a writer of known specimen material uses a minority type (X, 1, 2, 3) "t" for his signature alone and not in other possible positions, the special signature type "t" should be omitted from the visible classification, though it should be punched according to code if punch cards are used. Likewise, any writing characteris-

tics which can be shown by the punching code, though kept by rule from the visible classification, should be punched.

Examples of more than one class in "rt-" factors:

very important

Classification: 211-
34-

*Robert Smith
698 North 20th St.*

Classification: 222 -
3D-

The filing order for "t" (not less than 17 maximum combinations, though 9 minimum combinations could be used quite well) follows:

0; X - X; 1; 1, 1 or 1,
& 2 2 A
3

1 or 1, 1 or 1, 1, 1 or 1, 1;
2 B 2 C 3 3 D 4
3 4 4
4

2; 2, 2 or 2, 2; 3; 3; 4.
3 3 D 4 4
4

LONGHAND FACTOR 4—Small o.

0. None present.

1. Half or more of small "o's" present having bottom finish or containing loop or eyelet formation sufficient to show background island of writing surface. Examples:

on (on), off (off), loops

2. More than half of small "o's" present without loop or eyelet or bottom finish formations of Class 1. Examples:

without loops

In experience here, quite a majority of writers do not use loops in their small "o's" often enough to justify inclusion in Class 1. Bearing this in mind, if a searcher is trying to identify some unknown writing lacking "o's", or any fair certainty that the "o" classification should be 1, it would be best to begin searching as if the factor should be "2" rather than "0" or "1". The same applies to most of the other specific letter factors, except that the "r" and "t" factors offer a much greater number of possibilities than do the others. Without these,

searching would not often be justified in a large group of specimens filed primarily by general classification rather than first by offense type.

LONGHAND FACTOR 5—Intermediate or Final Small a.

0. None present to classify.

1. Half or more of small "a's" in intermediate or final positions immediately preceded by pen lifts or disconnections. Examples:

labor, train, Ella

2. No discoverable pen lifts or disconnections just before more than half of intermediate or final small "a's" in specimen. Examples:

labor, Milwaukee, Ella

A minority of U. S. A. writers lift the writing instrument just before making intermediate or final small "a". Some do this only occasionally, others fairly often, while still others do it at every opportunity. In cases in which distinct separation of the preceding stroke from the oval or circle of the "a" in question is not seen, but the approaching stroke hits the oval or circle at an angle indicating a lift of the pen evidently occurred in making it, that letter should be considered as type 1. Example:

train

LONGHAND FACTOR 6—Small d.

0. None to classify.

1. Narrow stem "d", lacking complete loop, present in at least half of the "d's". Examples:

do, red, had

2. Looped stems with plainly visible background island in more than half of small "d's". Examples:

do, red, had

LONGHAND FACTOR 7—Small k.

0. No small "k's" present.

1. At least half of small "k's" present made with one or more pen lifts (may be called "2-piece k"). Examples:

black, Milwaukee, work

2. One-piece or continuous type present in more than half of the small "k's". Examples:

kind, keep, work, lack

If one or more pen lifts or disconnections occur during the writing of a small "k", it should be considered of Class 1, even though it does not have

the usual capital K shape found fairly often in U. S. A. writings. A few writers use both "2-piece" and continuous type "k's" at random, but many will employ only one type.

LONGHAND FACTOR 8—Capital S.

0. No capital S in specimen.

1. At least half of capital S's in specimen lacking preliminary upstroke from line of writing or near it and continuous top loop. (Lack of either of these characteristics designates such an S Class 1.) Examples:

S, \$, S, S, L. S

2. Types of longhand capital S with upward beginning stroke from base line of writing or near it, and continuous top loop with background island, in more than half of capital S's of specimen. Examples:

S, S, S

The types of S considered as Class 1 include printed style S and longhand styles lacking the requirements of Class 2. When arriving at a longhand classification for a specimen, if a printed style S such as in "Street", or the abbreviation for it, is followed by definitely printed letters for the rest of the word or abbreviation, it is well to disregard the printing if longhand capital S's can be found beginning other words or abbreviations in the specimen. When printed style capital S is followed by a longhand letter or letters in the abbreviation or word, it should be used in the count of capital S's, determining whether the class number should be 1 or 2. Street address writings are very important in aiding the examiner to make identifications in questions of handwriting or pen-printing involved in law enforcement problems.

LONGHAND FACTOR 9—Slant.

This is usually determined by measuring, through the axes, capitals and upper loop or upper projection letters higher than one space. If these are not present the one-space letters and lower loop or lower projection letters can be used. Examples:

R, H, health

1. Less than 55° in $\frac{3}{4}$ or more of the high loop letters and capitals present. Example:

Less than fifty-five

2. Mixed slants, some less than 55°, other letters more than this, in specimen not falling clearly into Class 1 or 3. Example:

Mixed slants less..

3. Slant of 55° or over in $\frac{3}{4}$ or more of the high loop letters and capitals present. Example:

Fifty-five degrees or more

Deciding slant with the ruled protractor (See Pen-printing Factor 2) will seem difficult at first, but it will soon be found that some specimens will fall definitely into Class 1 or Class 3, while others not clearly belonging in either of these classes can usually be assigned Class 2. Instead of actually counting, in a doubtful case, the number of letters with slants of Class 1 and Class 3, to determine whether $\frac{3}{4}$ or more of them fall into one of those classes, we usually estimate this in deciding whether to compromise on Class 2. In searching, if the specific letter factors seem to indicate that one certain part of the file should be searched, and slant-capital connection guides are in use, we try first the most logical slant-capital group, then search in other possible groups.

LONGHAND FACTOR 10—Capital Connections.

0. Unclassifiable—no capital letters with small letters following them in names or words.

1. Half or more of capitals connected without pen lifts to following small letters in names or words.

2. More than half of capitals disconnected from following small letters in names or words.

Method of Counting. Each capital letter should be counted once, no matter how many times repeated. If it is sometimes connected to following small letters, sometimes disconnected, it should be disregarded in the totals unless it is the only capital used. Listing the various connected capitals at the left and the disconnected ones on the right side of a work sheet with vertical line down the middle allows an accurate count and choice of class number. Examples:

Class 1

Arnold John Adams

Class 2

William Fox

LONGHAND FACTOR 11—Color or Race of Writer.

This factor is indicated by a single letter as follows:

U Unknown

- W White
 N Of Negro or African appearance
 M Mexican, apparently of blood predominantly other than white
 R Red (American Indian)
 Y Yellow (Chinese, Japanese)
 C Other color or racial group than those believed white or passing for white, or taken for some other color or racial group than those listed above

Examples, with classification shown below each:

Mr. Harold Johnson
4396 S. 49th St.
Milwaukee 19, Wisc.

231-22-2 2 2

3-31-WM3

LONGHAND FACTOR 12—Sex of Writer.

This factor is indicated by a single letter as follows:

- U Unknown
 M Male
 F Female

LONGHAND FACTOR 13—Skill.

1. "Lower third" skill, including illiterate writings and those of skill less than average, or less than medium, in the estimation of the classifier.

2. "Middle third" skill. About medium or average quality, usually reasonably legible and without much irregularity in letter formation, but neither definitely poor nor skillful. Specimens not appearing to fall properly into Class 1 or Class 3 should be classified No. 2.

3. "Upper third" or good skill; above average ability shown in writing; usually legible and having regular or symmetrical letter formations. If classifiers set too high a standard, too few specimens will be given a No. 3 classification to get the needed subdivisions in the commonest types of writing, which accumulate more rapidly than the less common formations of the specific letter factors used.

John Barton
2846 E. Mankwitz
Cudahy, Wis.

034-22-120

22-WF3

Henry Davis
1896 N. 92nd St.
Wauwatosa 13, Wis.

132-12-2 0 2

4-22-UU2

Mrs. Mary Smith
1587 W. Kilbourn Av.
Milwaukee 3, Wis.

214-22-0 2 1

A 31-WF3

ARRANGEMENT OF VISIBLE CLASSIFICATION

The 8 specific letter factors are shown in the digit at the left for small "e", the next numeral and any numeral or letter below it showing classification of small "r's", the third top numeral and any numeral or letter beneath for small "t" classification, the remaining 5 digits on the top line being for the other specific letters. The general factors are shown below these 5 digits, beginning below the "o" factor, in this order: slant, capital connections, color, sex, skill. This arrangement gives compactness, somewhat like a fingerprint classification of the Henry system.

GUIDE ARRANGEMENT

In our file, the offense sections come first, in alphabetical order: Confidence Game, Embezzlement, Extortion, Fraudulent Buying, Fraudulent Check, etc. Within each group can be placed first an "Unknown Color-Sex" guide before entries in which color or sex or both are unknown, visible

classification of handwriting to determine the filing order. Next come specimens by males—white, Negro, and colored other than Negro, being the present order used here. Next are the female specimens, similar guides being used, blue label for white female, salmon for Negro female, buff for colored female other than Negro. When it is believed that the writer of an unidentified specimen is a white male, classification order is used in placing this behind a guide with white label lettered in red, "Unknown W.M.," within the proper offense grouping, in front of the corresponding known white male specimens. Classification order is used for known specimens when no exact or estimated birth date of the writer is available. When identified or cleared, items considered unknown at first should be shifted to appropriate known groups and index cards marked accordingly. Birth date order is used for the rest of the known offense classification cards. Guides with right hand tabs for month and year of birth are placed as needed, white labels used for white male writings, yellow for Negro male, buff for colored male other than Negro.

If punch cards, with their aid in rapid searching, are not used, it might be well that known specimen cards in offense groupings all be filed under visible classification, within color-sex subdivisions.

After the offense groups come the general classification cards, in the order shown after the heading "Filing Order, Rules," etc. Middle cut guides are used for section headings—Eastern Foreign Section, "O", "X", Pen-printing Section, etc. In the Western Foreign and U. S. A. Longhand sections, guides showing the first three factors on the left side will be enough for some time to care for less common types of writing, the five other specific letter factors and birth date of writer deciding the individual card order. In the U. S. A. longhand section, middle tab guides with yellow labels such as -01-, -12-, -20-, etc., show the next two factors. The last specific letter factors are shown on yellow labels in right hand guides such as -100, -200, etc.

In dealing with the small "r" and "t" factors, the "r" is considered first, the guides being placed in numerical order, with "t" and other factors subdividing each "r" factor group, as "r" classifications subdivide the "e" factor groups. The order of filing when "r" and "t" factors are properly considered is illustrated briefly, the "e" class being 2 in each instance:

213-; 214-; 224-; 221-; 232-; 232-
4- A 3D- 4-

Common classification guides, without the specific letter factors, are placed at the left, with buff color labels, about like this:

222-21-122; 221-22-221;
&- 3&-
234-21-222; 234-22-111.

When accumulations behind individual main guides justify it, slant-capital connection guides with white labels are inserted, in numerical order, thus: -12-, -21-, -22-, -31-, -32-. The "-11-" guide need not be inserted, as it should be understood that this group is just in front of the "-12-" guide. When needed, color-sex guides can be used in the larger accumulations. The skill factor can be used when needed, as in the White Male groups of common classifications, with guides having right hand white labels reading *WM-1, *WM-2, *WM-3, the asterisk indicating that skill is being considered.

Copies of anonymous communications are filed primarily in Anonymous folders, 8½ x 11 inches. Apparent motive headings such as Anonymous Extortion, Anonymous Informer or Spite, Anonymous Obscene, are arranged alphabetically. A "Mental Section" is useful, mainly for copies of letters and cards by people signing their supposed names but apparently not of sound mind. "Unknown" and "Known" folders are used within each group. Typewritten specimens are placed first, then pen-printed and longhand items, filed in visible classification order, within the respective folders. When justified in an anonymous letter case, an additional entry of a pen-printed or longhand item is made in the general classification section, sometimes using only a copy of an envelope address on a plain McBee punch card, to allow a better chance of identification by checking known specimens against unknown filed items of similar classification before new cards are placed in general classification groups.

Sub-classifications of offense types can be arranged, perhaps especially in connection with unclear or cleared complaints, by typing 3 x 5-inch index cards, under headings such as LARCENY from Auto (THEFT from Auto may be a better heading), CONFIDENCE GAME—"renting swindle", etc. We use white cards for known offender cases, yellow for unknown. We copy by hand some of the writing involved, such as name and address, on about the middle portion of the card, before any file number and classification of specimen card are shown. Mounting clippings from photographic or photostatic copies may be preferred.

211-34-222		MILWAUKEE POLICE DEPARTMENT P-H 2	
H.W.C. 34-21-WF3		Date Born 8-3-1915	
Color W.	Sex F.	Offense	
B. of	Witnessed	Date 2:30 P.M.	
I. No. 00000	By OBL	2-6-1958	
Full Name Mrs. Jane Eleanor Doe		Date Feb. 6, 1958	
Address 2697 S. Shore Drive		Living With Husband	
City, Zone Number, State Milwaukee 7 Wisconsin		Date Born Aug. 3, 1915	
Birthplace St. Louis, Mo.		Date Born Aug. 3, 1915	
WRITE all the capital letters of the alphabet (ABC, etc.)		A B C D E F G H I J K L M N O P Q R S T U V W X Y Z	
WRITE all the small letters of the alphabet (abc, etc.)		a b c d e f g h i j k l m n o p q r s t u v w x y z	
Numbers 1 to 10		1 2 3 4 5 6 7 8 9 10	
(Over)		Security No. 693-48-0217	

Figure 2

The face of a specimen McBee card as used by the Milwaukee Police Department. The open notches along the edge represent classification factors which have been punched out in accordance with the suggested coding described in the following pages.

PUNCHING CLASSIFICATION

We are using hand punches, metal alignment block, needle selector for rapid sorting, and a supply of "card savers" to use for correcting errors in punching or mending damaged cards. A mechanical device can be had for using several selector needles at a time, but if too many are used at once there is a greater risk of the desired card not dropping during the search. Machine punching equipment can be had also.

In the coding that follows, not every possible example fitting the explanatory headings has been shown, but those present should give the classifier a fair idea of what to punch, and what to expect in sorting. The more exceptional the coded item, the more satisfactory and quick may be the searching. However, it is better to sort for two or three of the least common characteristics, preferably including any exceptional letters covered in the coding, rather than using only address writing habits in an indorsement case including a street address, for instance. Speed in punching is gained with practice and memorizing the code.

One identification of pawnshop writing in a theft case during search has been credited to the

larceny offense McBee card group. The stolen radio had been disposed of by a brother of the woman reporting it stolen. A "probable" identification by needle search in the Larceny Check Section concerning a check stolen from a desk in a printing company and cashed in a nearby tavern resulted in the arrest of a young man previously arrested for stealing checks in a burglary and placed on probation. He lived near the printing company and on the morning after his arrest admitted entering through an unlocked window and taking the check in question. During a Fraudulent Check Section search the writer of a forged indorsement in a mail theft case was identified, though the case actually being checked stayed unsolved.

File operators depending on classification searches alone, and lacking good memories, can expect results in detecting consistent writers more easily than those who are inconsistent in their habits. An enthusiastic searcher with a cultivated memory can make occasional valuable "incidental" identifications while looking mainly for the solutions to other cases.

To give benefit of our experience and avoid the need for punching corner holes more than neces-

SUGGESTED CODING FOR CLASSIFYING HANDWRITING, ETC., ON MC BEE 5 X 8-INCH, 99-HOLE CARDS

(Reading from bottom left of card upward and around to right.)

Examples Hole No.

LEFT SIDE

J. John 17 "Two-piece" longhand capital J, sometimes called "split top" J; or J with top loop made last

Pen-printing

Milwaukee 16 Small letter (lower case) printing present

WISCONSIN 15 Capital or upper case printing present

MILWAUKEE 14 Longhand letters mixed into printing; or upper and lower case printing mixed improperly

13 Slant less than 65° in 3/4 or more of printing

12 Noticeably mixed slants in printing; or pen-printing not falling clearly into designation 13 or 11

11 65° or greater slant in 3/4 or more of printing

10 A with top of more than one angle

A, A, A 9 A with blunt or rounded top, or downward beginning and upward retrace

A, A, A 8 A with single angle top

E, E, E 7 E with long midstroke, as long as or longer than top and bottom strokes

E, E, E 6 E with short midstroke

R, R, R 5 R with upper or head portion closed against back or top

R, R, R 4 Open R

N, N, N 3 N with "V" finish, no pen lift apparent in V portion

N, N, N 2 N of other type or types

M, M, M 1 M like inverted W, end strokes not parallel; any other printed M's not fitting in other classes

M, M, M 0 M with high center, end strokes parallel or nearly so

M, M, M - M with center as low as or lower than end strokes, which are parallel or nearly so

TOP

W, W, W 29 W with high center, as high as or higher than end strokes

W, W, W 28 W with low center

a, a, a 27 Small "a" begun with left movement

a, a, a 26 Small "a" begun clockwise

t, t, t 25 Small "t" with finishing portion turning noticeably to right

t, t, t 24 Small "t" finishing straight down or to left

- n, n 23 Small "n" made with discoverable pen lift
n, n 22 Small "n" made without apparent pen lift
r, r 21 Small "r" made with discoverable pen lift
r, r 20 Small "r" made without apparent pen lift
Western 19 Western foreign style or western foreign influence present
e, e 18 Open or Greek small "e"
e. earn 17 Foreign "e", "e" without upward beginning stroke, and any other styles not included in other classes
e. e. ear 16 Ordinary small "e", looped or unlooped
r, r 15 Small "r" with upward retrace design
r, r, r 14 Small "r" of undotted "i" style; small "r" with rounded or blunt top, lacking definite angle; "r" with left bulge and angle at right; any other type not included in other classes
r, r, r, r 13 Small "r" with angle or downward retrace or loop at left, or angles at left and right, including angle at left and bulge to right; except 2-angle types of hole 12
r, r, r 12 Small "r" with 2 angles at top, that at right not more than 10° below left angle--usually giving "flat top" or "dished top" effect
St, t, eat 11 Small "t" with upward ending, or pen lift before finishing stroke; uncrossed "t" of other than special "t" types; forms not belonging in other classes
the, that 10 Special "t", found in terminal positions more often than intermediate or beginning positions
k, k, k, k 9 Small "t" with drag crossing to left ending
X, D, Otto 8 Small "t" with drag crossing to left, finishing to right
X, X, X 7 Small "t" begun with downstroke
the, the 6 Small "t" with upstroke beginning, looped stem showing background island of writing surface
t, t 5 Small "t" unlooped, upstroke beginning
t, t 4 Small "o" with loop beginning, finishing, or both, including ring type with bottom finish
e, e, o, o 3 Foreign small "o"; clockwise "o"; any uncommon types not belonging in other classes
o, dog (dog) 2 Open small "o"
o, o, o 1 Pen lift before intermediate or final small letter other than "a"
rug 0 Pen lift before intermediate or final small "a"
labor

RIGHT SIDE

- a, a X Foreign small "a"; any uncommon types not shown in other classes

- a, a, a, a 16 Small "a" with loop beginning, finishing, or both, including type with beginning stroke below oval or circle, continued without apparent lift to end of letter
- a, a, a 15 Small "a" open at top or right side
- d, and, d 14 Foreign small "d"; "d" finished with upward stroke or incomplete loop, or begun with unretraced downstroke
- down (down) 13 Small "d" with apparently retraced, unlooped stem
- d, d 12 Small "d" with looped stem showing background island
- k, k, Ark. 11 Small "k" with one or more pen lifts
- R, R 10 High hump "k", with hump $\frac{3}{4}$ or more height of stem
- k, k 9 Continuous small "k" with unlooped stem
- k, k 8 Continuous small "k" with looped stem
- S, S 7 Foreign S, any other capital S styles not belonging in other classes
- S, S, S 6 Printed style capital S
- S, S 5 S beginning at or below line of writing, continuous, without top loop
- S, S, d 4 S beginning at or below line of writing, continuous, with top loop
- i, write 3 Undotted "i" present
- in, line 2 Small "i" begun with downstroke; any rare types
- i, i, i 1 Ring, partly circular, angle dottings of small "i"
- rose, s, s, s 0 Small "s" of printed style in longhand word or name; loop top small "s"; reverse curve downstroke "s"
- g, y, z - Abbreviated small "g", "y", "z" (or any of them)

BOTTOM

- g, g, y, z 29 Incomplete plain loop, without angle, in "g", "y", or "z"
- g, g, y, y, z 28 One or more angles in lower projection or lower loop of "g", "y", or "z". Include backward loop
- 27 Longhand slant less than 55° in specimen
- 26 Noticeably mixed longhand slants and those not falling clearly into designation 27 or 25
- 25 Longhand slant of 55° or upward in specimen. If most of letters are in one slant group, it is advised to punch the hole for that slant and 26, rather than all 3 holes.
- 24 Half or more of capitals connected to small letters following. If count is nearly equal, also punch 23.
- 23 More than half of capitals disconnected from small letters following. If count is close, also punch 24.

henry
labor

- 22 Beginning name with small letter; or using capital letter in small letter position within word or name; or both

Color of Writer, Sex, Skill

- 21 Unknown color of writer
20 White
19 Negro
18 Mexican
17 Red (American Indian)
16 Yellow
15 Colored other than Negro and other than 18, 17, 16
14 Male. In Unknown Sex cases also punch Female.
13 Female
12 "Lower third" skill. If in doubt also punch "Middle third" skill, hole 11.
11 "Middle third" skill. If choice is in doubt between medium and lower, also punch 12. If skill seems in question between medium and good, also punch 10.
10 "Upper third" or good skill. If in doubt also punch 11.

Signature, Address Habits

- Mary Brown 9 Period or dash after signature, unless ending in abbreviation for title, or "Jr.", "Sr.", etc., where period is customary
J. J. Smith —
14th St. 8 Underlining signature or address, any portion of it, or indorsement
John Doe (Doe)
H. Jones, So. 11th St. 7 Pen-printing in name or address
1898 221st St 6 No punctuation in address
781 W. North Av. 5 Comma punctuation in street address
1905 - E. Knapp St. 4 Hyphen or dash punctuation in address
1864 N. 12th 3 Omitting "street" or other designation such as "avenue", etc., or abbreviation for it, from street address
796 N. 2nd St. 2 Using small letter to begin "street", etc., or its abbreviation, in address
978 N. 1st Street 1 Spelling out "street", "avenue", etc., in address; spelling out "North", "East", etc., in full instead of abbreviating for prefix to rest of street name
1093 West Rogers St.

Datings in Minority Use in U. S. A.

- 4/19/58. 19-4-1958 0 Numerical
19 April, 1958 - "Military or foreign" (day first, then month, year)

sary, the following coding is suggested for general U. S. A. law enforcement use. A few changes from our own coding are included. A law enforcement organization wanting to use the same principles for only one special type of offense might wish to use an entirely different code, specially worked out in the light of experience with that kind of offense. The "military or foreign dating", assigned to the lower left hole, would not likely be suitable for some other countries, where the "month name first", prevailing dating style of our country, might be a minority custom and therefore be assigned a punching hole, though we do not provide for punching it here. A specimen punched card is illustrated in Figure 2.

In punching we start at left hole 17 and work toward the top and around the card. When slant is uncertain it is punched more than one way.

When a letter or characteristic is in doubt it should be punched for whatever classes it might well fit. Punching more holes than seem to apply to the specimens will mean that in sorting operations too many cards will fall and will need to be looked over, perhaps unnecessarily.

DEAD FILE

When it is known that a writer of material in the file has died, all specimens by him should be marked accordingly and moved to "dead" groupings. There should be at least one of these "dead" guides for each offense group, though only one dead grouping for the general classification section. The dead writer material, if kept in about the order observed in live sections, should help in searches of cases reported late or old unsolved cases.

Additional reprints of this article, with covers, can be had at \$4.00 each postpaid, and special handwriting classification protractors at \$1.00 each postpaid, by writing Orville B. Livingston, 4634 W. Keefe Ave., Milwaukee 16, Wisconsin.