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~~A~~ Comparison of Handwriting Characteristics

Part II

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**ACQUISITIONS**

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## SUMMARY

The analysis of handwriting specimens using objective measurements has already been reported (Allan, Pearson and Brown, 1978). Further work has now been carried out using a subjective classification of a particular characteristic followed by a computer assessment of the classified handwriting specimens. The characteristic chosen was the form of the letter 'D'. The results are presented.

INTRODUCTION

Part I of this work (Allan, Pearson and Brown, 1978) showed that when comparing handwriting specimens using objective measurements, it was often possible to retrieve specimens of a same person's handwriting from a collection of 280 handwriting specimens from 52 people. Possible ways of increasing the efficiency of retrieval by introducing additional parameters have been considered. One of these involves a subjective classification of a particular characteristic. The characteristic chosen was the form of the upper case letter 'D'.

THE INVESTIGATION

The handwriting specimens used were those described in the report by Allan, Pearson and Brown (1978). The specimen identification codes used are summarised in Table 1. Specimens f from passage 3 contained no upper case letter D's and so were not taken into consideration for this work. There remained 230 specimens for examination.

TABLE 1  
SUMMARY OF HANDWRITING SPECIMEN DETAILS

Specimen	Passage	Disguise	Time (months)
a	1	NO	0
b	1	NO	0
c	1	NO	12
d	1	YES	12
e	2	NO	0
(f)	(3)	(NO)	(0)

A table was constructed encompassing all the various styles of the letter D encountered in the 230 specimens obtained (Table 2). This table was then used to classify and index the letter D in each specimen. The columns were designed to provide a gradation of width, a higher value denoting a thicker body of the letter, while the formation of the D was indexed along the rows. For example, a D encountered in a specimen of a similar shape to the last D in row 4 would be allocated the value 4,14. A value (consisting of

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TABLE 2

## CODING MATRIX FOR THE LETTER D

1																
2																
3																
4																
5																
	1	2	3	4			5	6	7	8	9	10	11	12	13	14

two numbers) was thus obtained for each of the 230 handwriting specimens on the file. Examples of the values obtained are shown in Table 3.

TABLE 3  
SAMPLE OF THE VALUES ASCRIBED TO SOME OF THE  
SPECIMENS USED IN THE INVESTIGATION

Person number and specimen identification	Value	
10a	13	4
10b	13	4
10c	13	4
10d	7	4
10e	13	4
11a	5	4
11b	5	4
11c	7	3
11d	4	3
11e	7	3
12a	5	3

Comparison of the 'D' values

A computer program was used for the comparison of the values obtained for the letter D. The method of comparison was that described in the paper by Allan, Pearson and Brown (1978). A histogram (Figure 1) of the percentage of the file nearer to the 'crime' than the 'questioned' specimens based on these two 'D' values was constructed from the comparison data produced by the computer. There were 760 non-identical comparisons made using specimens from the 38 persons who provided all five specimens, (a-e), as crime and questioned specimens in turn. The comparisons were carried out on the file of 230 specimens from 52 people. This showed that for 20% of the specimen comparisons less than 5% of the file was nearer to the crime than the questioned specimen. This figure included the disguised sample 'd'. In the work reported previously (Allan, Pearson and Brown, 1978) the figure for eight other parameters was 48.7%. The two D values can be combined with the other eight parameters if desired.

CONCLUSION

In these comparisons, the subjectively assessed 'D' values produced almost 20% of the crime specimens as having less than 5% (less than 12 specimens) of the file being closer to the crime than the questioned specimen. This figure included disguised specimens. With objective comp-

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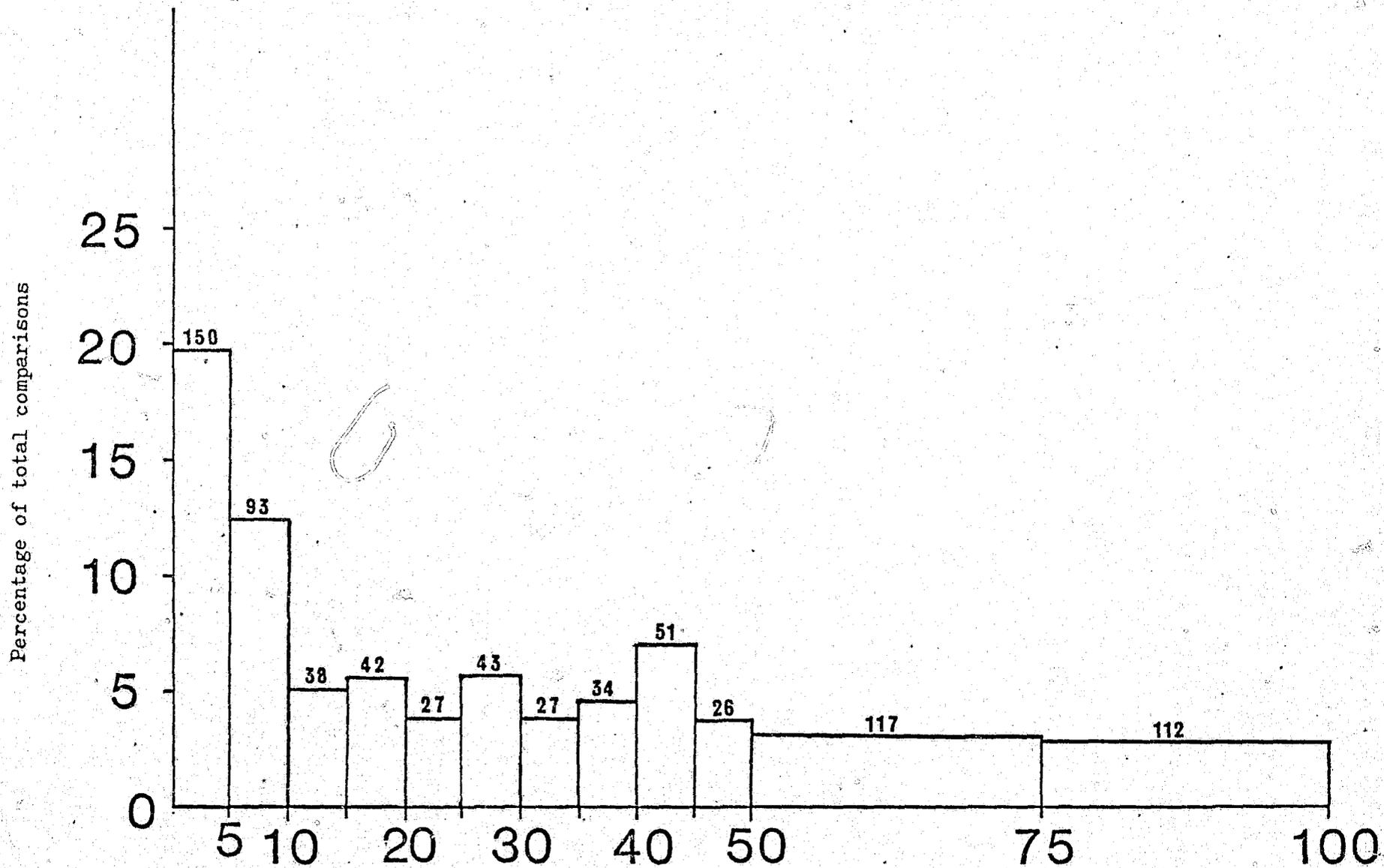


Figure 1 Percentage of file of specimens closer to crime than questioned specimen recovered in comparisons of all an individual's own specimens. (760 comparisons)

Percentage of file closer

arisons using eight measurement the corresponding figure was found to lie between 45 and 49% including disguised specimens (Allan, Pearson and Brown, 1978).

Arbitrary figures were used for the coding of the letter D's and the assessment must be subjective. However, objective measurements could be made on letters and the values thus found incorporated into all or some of the measurements used in the objective comparisons (Part 1).

#### REFERENCES

Allan, A.R., Pearson, E.F., Brown, C., (1978), Home Office Central Research Establishment Report No 283.

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