

of probabilities has been used in any rigid way. The author's experience leads him to adopt a difference of 15% between the average and the disputed signature as ground for suspicion. Differences of 5 or even 10% are not uncommon in genuine specimens. But differences of 15% are uncommon, and, especially if repeated, are suspicious. The expert's decision must often rest on rather weak foundation as judged from a scientific standpoint, and the more so since he often has but half a dozen specimens from which to determine his average. The work of Mr. Frazer is very suggestive of what might be done in the study of handwriting. An extensive study of the variability of the individual, and of the differences between different individuals, as regards these ratios, angles, and other details, would show how sharply individualized they are, and furnish a scientific basis for the expert.

Another method of the author is the microscopic examination of the margins of the strokes. Under a magnification of 120 diameters, or even much less, a pen or pencil stroke is seen to have irregular edges; it is full of serrations of different sizes, the smaller superposed on the larger. There are usually more of them in one margin than in the other, depending on the position of the pen and other peculiarities of the writer. Whether they are completely individual, it would be premature to say, but they can at least be often used to distinguish between the writing of two persons. With the cooperation of Professor Witmer, the author has made micro-photographs and camera lucida tracings of these wavy margins, and inclines to regard some of them as records of the minute, normal tremor of the hands, produced by fluctuation in the nerve currents that control the muscles. Machine-ruled lines, though not free from irregular margins, showed fewer serrations than lines made by hand. The reviewer is much inclined to doubt this interpretation of the wavy margins, since he finds the serrations more marked on rough than on smooth paper, whereas the friction of the rough paper would tend to conceal the tremor. The rate, too, at which the serrations are produced is not approximately constant, as that of the tremor is, namely, at 8-15 pulses per second; a fast stroke and a slow show about

the same number of serrations per millimeter and those in the fast stroke must have been made, in one line measured, at about the rate of 480 per second. Many of the irregularities are probably due to the texture of the paper, and others to vibrations of the pen. Yet one's manner of holding the pen might give rise to characteristic forms of margin.

Still other chapters of the book treat of the chemical and physical tests for inks, of tests for erasure and other tampering, of tests for 'guided hands,' and of other problems incidental to the detection of forgery. There are several excellent plates.

R. S. WOODWORTH.

*Taxidermy, Comprising the Skinning, Stuffing and Mounting of Birds, Mammals and Fish.* With numerous engravings and diagrams. Edited by PAUL N. HASLUCK. London, Paris, New York and Melbourne, Cassell & Company. 1901. 16mo. Pp. 160.

Within the last ten years at least three admirable books on taxidermy have been brought out in the United States, and any new work on the subject should either bring forward some new and improved process of preserving animals, or at least present the most approved methods in a clear and detailed manner. The little book under consideration does neither; the methods described in its pages are the old ones, and not always the best of those, while the amount of space given to each group of animals is so limited that the descriptions are necessarily brief, while there is nothing whatever on the mounting of large mammals, although this is seldom acquired from books alone.

However, the book is intended for the amateur who wishes to preserve some trophy of the chase rather than for any one who really intends to master the art of taxidermy, and there are directions for making screens, polishing horns, tanning skins, and doing various bits of taxidermic fancy work. The small size of the book enables it to be readily put in the pocket, and, as it takes but little room, it might readily be carried to seashore or country on the chance that it might be desired to save some bird, mammal or fish, or make a pair of wings into a screen.

F. A. L.