

The deposit has been noted by J. A. Udden, in the *American Geologist*, June, 1891.

I have examined the deposit at various points of exposure, the extreme points being about fifteen miles apart. The deposit where noted is from two to four feet in thickness. It rests on a bed of clay and is overlaid by a bed of yellow marl. The altitude of the exposures varies perhaps forty or fifty feet. At the lowest point the dust is well assorted and stratified; at the higher points it shows signs of having been deposited in shallow water.

During the past winter I had Mr. Jas. Gilbert, a candidate for a higher degree at the Kansas State University, and former pupil of mine, make an analysis of some samples of the volcanic dust. The following is the result :

Si O ₂ and insoluble residue	92.32—
Fe ₂ O ₃ , Al ₂ O ₃	2.66—
CaO60—
Mg O	2.88—
H ₂ O	1.22—
Traces of P, CO ₂ , Cl, Na, K.	

Under the microscope it is found to consist almost wholly of microscopic, transparent, silicious flakes of various irregular forms. The most common forms being curved and nearly triangular. How did so large a deposit of volcanic dust reach central Kansas?

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SCIENTIFIC LITERATURE.

Zur Psychologie des Schreibens mit besonderer Rücksicht auf individuelle Verschiedenheiten der Handschriften. Von W. PREYER. Mit mehr als 200 Schriftproben im Text nebst 8 Diagrammen und 9 Tafeln. Hamburg und Leipzig, Leopold Voss. 1895. 230 pp. with index.

The writer of the following lines approached the object of reviewing this book with German seriousness and with a deter-

mination to do justice. It is not always easy to do justice to a German book written with a serious purpose, because one is invariably entangled in a maze of details from which it is impossible to be free without incurring the reproval of neglecting some part of the argument. Yet the details are multiplied, like the testimony in the Roger Tichborne case, until one is simply drowned in them without being convinced of their relevancy. These remarks apply rather to those cases where German perseverance and German accuracy are enlisted in transcendental or speculative philosophy than to the discussions of exact science, where these Teutonic virtues evolve models of correct procedure. German 'Genauigkeit' applied to chimeras is like the application of the Lick telescope to the determination of the longitude of a cloud, or the application of the fine grinding mill, to which Huxley compared mathematics, to the reduction of worthless material. His apothegm, it will be remembered, was that however perfect the treatment, the value of what you got out depended upon the value of what you put in. Let us examine the book before us more attentively.

The work consists of 223 pages of text divided into five chapters and an appendix of three pages (of which more presently) on the relations of Goethe, Lavater and graphology reciprocally.

The subjects treated are as follows :

Chapter I. Wherein do handwritings differ from each other ?

Chapter II. How do differences of handwriting arise ?

Chapter III. Analysis and synthesis of handwriting.

Chapter IV. The significance of individual characteristics of writing.

Chapter V. Concerning the pathology of writing.

Appendix. The beginnings of graphology with Goethe and Lavater.

Alphabetical Index. Six pages.

Nine tables.

Besides these there is an introduction of four pages not enumerated. In this we became acquainted with 'Prof. Dr. W. Preyer,' written in three different styles, which we are asked to accept as typical English, French and Italian hands. We cannot do so. There are certain peculiarities of each writer manifest, but whether one considers each letter separately, or 'all together,' it is more than doubtful if a conscientious expert could assign the nationality of each writer without further help than the writing only. This national character, we are told, changes with the centuries. Another set of examples are given to show that the commercial differs from the scholarly handwriting. Again we acknowledge the differences between the specimens, but are compelled to reject the conclusions as to class, always conceding, however, that the specimen he calls typical is perfectly consistent with the popular idea of the character of the class in which he puts it.

Thus early in the book it begins to appear that our German author is committing the un-German fault of reaching conclusions through a defective second premise. This fault is the keynote to the entire treatise and it seems to us the keystone of the entire structure which Herr Preyer has built. In the first chapter he has richly illustrated platitudes such as 'the differences which belong to the standpoint of the observer,' 'Writings may be distinct and strong yet legible, etc.' In some cases the classification seems puerile; as, for instance, when it is proposed to count in 100 words how many curves occur where angles should be and *vice versa*, and to consider the percentage of both kinds of faults as an element of judging of the psychological condition of the writer (Chap. I., p. 8), or where it is proposed to draw the radii of a circle

on a sheet of glass ('or transparent paper, where great accuracy (!) is not necessary') in order to measure the slopes of letters (Chap. III., p. 47+). It would seem from this last ingenuous remark that the common horn protractor was unknown to Herr Preyer. He divides Chapter IV. into: (1) this form of the writers' characters; (2) the junction of the letters with each other; (3) the completeness of the copy (*i. e.*, the absence of gaps where letters, words or their abbreviations should be); (4) the size of characters; (5) the direction of the component character of the writing; (6) the direction of the lines; (7) the length of the lines; (8) the distance apart of the letters, words and lines; (9) the flourish under the name.

This chapter takes up 149 pages, or much more than half the book, which latter may be considered to have been constructed around it, as the Atlanta has been said by her constructor, Charles Cramp, to be a hull constructed around a pair of boilers.

The last chapter on the Pathology of Handwriting is rather on the indications of the moods of the writer, and has the fault of the rest of the book, superficiality.

But, as if it were not possible for a German in earnest (as Herr Preyer evidently is) to completely belie the system and scrupulousness which have made the German scientific literature absolutely indispensable to any worker, he displays his faults of method completely in his appendix. The questions here are: Did Goethe believe in graphology? Did he invent it and suggest it to Lavater or not?

Out of a large mass of erudite citations showing commendable industry and intelligence, the reader who strips the verbiage from the idea conveyed discovers that there is not a scintilla of proof that Goethe ever seriously maintained that one's character could be discovered by his handwriting. Suphan thinks that Goethe probably was

much interested in the expression (*i. e.*, the formation) of the hand in Lavater's 'Physionomische Fragmente.' In a mass of literature Herr Preyer fails to find either what would affirm or deny that Goethe had originally conceived the idea and written to Lavater of it. After all, he thinks Goethe might have imparted this orally to Lavater, and he still clings to the belief that the tradition is true which ascribes to Goethe the belief that actually men could be judged by their handwriting.

This lame and nonsequitur logic is unfortunately applied throughout the book, and mars its value to an earnest student, in spite of the exceedingly good and faithfully executed illustrations. In fact, these latter not infrequently produce the effect on the reader which a series of splendid stereopticon views of Paris would exercise on an audience listening to a lecture on chiromancy.

Professor Preyer's treatment of his subject is infinitely more serious and heavy, but not nearly as amusing and plausible as that of Don Felix de Salamanca (Chatto & Windus, Piccadilly, London, 1879, The Mayfair Library) in 'The Philosophy of Handwriting,' or, in other words, graphology. (Don Felix, for some reason, insists on calling this chiromancy, which is generally understood to be palmistry.) It is probable that Preyer was familiar with this work from the similarity of expressions which occur in the two, thus Don Felix says (p. 7): "A strong resemblance is oftentimes discernible between the handwritings of various members of a family," etc. Preyer says: "Dasselbe gilt von der Aehnlichkeit der Eltern und Kinder, der Geschwister untereinander. Ein Familientypus der Schrift, wie ein solcher des Ganges oder der Mimik und Sprechweise tritt, oft deutlich zu Tage" (p. 3). Salamanca observes: "Indeed, it is not overstraining the limits of this theme to assert that not only are the idiosyncrasies of individual scribes proclaimed by their

penmanship, but even the peculiarities of whole nations" (p. 7). Preyer puts it: "Denn so wie es Nationalphysiognomien, Nationaltrachten, nationale Geberden giebt, giebt es auch Nationalhandschriften" (Eingleitung, p. 1).

In spite of the fact that the earlier author betrays (quite unconsciously) as thorough a knowledge of the bibliography of the subject, and maintains equally with his German follower a belief in his ability to reach some traits of a man's character through his handwriting, yet he does not push this airy fancy to the extreme limits of absurdity by pretending it can take the place of the ordinary and slower methods of observation and experience.

To sum up Professor Preyer's claims to merit in his book: He has industry, accurate illustrations and truthfulness in statement to his credit; but on the other side of the ledger are lack of logical method, discursiveness, and predominance of the unscientific imagination.

There is some truth in his main contention, *i. e.*, that a handwriting is influenced by the character of its author. It is equally true that the appearance of the creases and worn parts of a pair of old shoes is also indicative of the character of the wearer; but neither is able, in this matter-of-fact world of ours, apart from the dream land of Sherlock Holmes et id omne genus, to give a truth-loving student the means of attaining to more than the vaguest knowledge of the character of the individual to whom it owes its existence.

It is unfortunate at this time, when an honest effort is being made to extract from handwriting certain legitimate information of value to the courts of law, that these fanciful productions should appear, with the result of confusing the layman as to their respective objects very much as astrology and astronomy were once confounded by laymen of yore. PERSIFOR FRAZER.