the universities began to change the character of their work, and modern science was included in the curricula. The geometry taught in the secondary schools of Germany up to the seventeenth century was taught largely in connection with astronomy and surveying, copied after the work done in some of the medieval schools. The logical aim became more prominent by the beginning of the eighteenth century when science began to assume its more modern form.

In Russia, geometry was first taught from the practical standpoint. The logical aim was long in getting recognition. It was not until the end of the eighteenth century that geometry received any great attention as a science. In France, the early texts show that the practical in geometry was valued as well as the logical. In Holland, the beginning was practical, the eighteenth century marking a more logical trend, when the teaching was made systematic. In the United States, the first geometry taught was of a practical nature, but the English influence was soon felt, and it was not until the first quarter of the nineteenth century that the more practical geometry of the French began to replace the English Euclids.

Another aim has characterized the teaching of geometry, an aim different from the two already considered, but still not standing apart from them. It is associated with the study of geometry as a preparation for advanced work in mathematics. This aim is a recent one in the teaching of geometry. Before the latter part of the eighteenth century, in no strict sense could the secondary schools that have here been considered be called preparatory schools for the higher institutions.

It was not until 1788 that the Prussian government required an examination from all who entered the universities, and it seems that this was not at first rigidly enforced. One may safely judge that previous to 1788 the aim of preparing for advanced study was not a dominant one in the gymnasia. On the creation of the lycées in France by Napoleon in 1802, these schools began to assume the character of preparatory schools for the university and the various government schools. In England, the secondary schools did not begin to teach Euclid until the early part of the last century, and it was not required in general until about the middle of that century. It has been only within fifty years that these schools have in any strict sense prepared for the universities. In Russia, students at first passed from the seminaries and the ecclesiastical academies into the universities, but in 1759 the gymnasia began to act as preparatory schools. The secondary schools of Holland began to prepare for the university in 1815, but as far as geometry was concerned, the requirements were not strictly defined. In the United States the universities did not require geometry for entrance before 1844. Since that date the high schools have assumed more and more the function of preparing students for advanced work in the universities.

One of the results of this close relation between the university and the secondary school has been an improvement in the teaching of geometry from the scientific standpoint, but, in the United States at least, while the teaching of geometry has been better developed logically, its practical side has been correspondingly neglected in the high schools.

ALVA WALKER STAMPER

CHICO, CAL.

A NEW NAME FOR A NEW SCIENCE[1]

THE following list, though noticeably brief, attempts to include all books and memoirs in which the facts of history of a personal nature have been subjected to statistical analysis by some more or less objective method. Such researches may be made to contribute to the science of eugenics. They also stand upon the border line of the allied sciences, psychology, anthropology and sociology. Since investigations of this nature contribute to several sciences, and at the same time primarily

[1] "Some Desiderata in the Science of Eugenics and Bibliography of Historiometry," by Dr. Frederick Adams Woods. Reprinted from Vol. V. of the American Breeders' Association Report of the Meeting, held at Columbia, Mo., January 6, 7 and 8, 1909. Report of the Committee on Eugenics. Bibliography of Historiometry (Quantitative History) now printed for the first time.

to the philosophy of history itself, it seems necessary to have some special name to designate this class of work. The word "biometry," already in general use, does not meet the requirements. It fails to express the primary value of this class of research, namely, elucidation of the philosophy of history for its own sake, and also fails to suggest that the work should be carried forward by the historians themselves. I propose the word "historiometry," derived from the Greek *ἱστορία*, history, and *μέτρον*, measure. Historiometry bears the same relation to history that biometry does to biology. It may be noticed that these investigations treat only of groups of individuals. I am already convinced from the indications of several researches which I have now under way, that the quantitative method may be successfully applied to historical events of a more general character.

BIBLIOGRAPHY OF HISTORIOMETRY

de Candolle (Alphonse). "Histoire des sciences et des savants depuis deux siècles." Genève, etc. (H. Georg), 1873. Contains lists of scientific names objectively (impersonally) compiled.

Cattell (J. McKeen). "A Statistical Study of Eminent Men." *Popular Science Monthly*, February, 1903, pp. 359–377. [Abstract in *Psychological Review*, March, 1895.] The names of a thousand eminent men of all time are here arranged in the order of their eminence by the strictly objective, and valuable "space method." Attempt should be made to test the limits of the accuracy of this method by comparing these names with those selected by other methods.

Cattell (J. McKeen). "A Statistical Study of American Men of Science." *Science*, November 23, November 30, December 7, 1906. Although the facts are not drawn from history, they are useful as a check to compare with historical statistics. The names were selected by the "method of voting."

Ellis (Havelock). "A Study of British Genius." London (Hurst & Blackett), 1904. [First appeared in *Popular Science Monthly*, February–September, 1901.] A valuable study based upon the "Dictionary of National Biography." Contains lists of British men of genius and talent, objectively derived and useful for further study.

Galton (Francis). "Hereditary Genius. An Inquiry into Its Laws and Consequences." 2d edition. London (Macmillan), 1892. The earliest of biographical statistical studies, first published in 1869. Many of the lists of names are not compiled by any strictly objective method.

Galton (Francis). "English Men of Science, Their Nature and Nurture." London (Macmillan), 1874. Fellows of the Royal Society.

Galton (Francis) and Schuster (E.). "Noteworthy Families." London (Murry), 1906. Families of scientific men objectively studied.

Jacoby (Paul). "Études sur la sélection chez l'homme." Avant propos par Gabriel Tarde. 2d edition. Paris (Alcan), 1904. The last quarter of this work dealing with the origin of French men of talent has decided scientific value. The first portion of the book deals with royalty, *le pouvoir*, contains no statistical treatment, and is entirely misleading.

Lorenz (Ottokar). "Lehrbuch der gesammten wissenschaftlichen Genealogie." Stammbaum und Ahnentafel in ihrer geschichtlichen, sociologischen und naturwissenschaftlichen Bedeutung. Berlin (Hertz), 1898. Suggestive at the time it was written, but contains scarcely any statistical treatment.

Odin (A.). "Genèse des grands hommes gens de lettres français modernes." 2 vols. Paris (H. Welter), 1895. A study of 6,382 French men of letters. Valuable for its facts. The conclusions are often unwarranted.

Woods (Frederick Adams). "Mental and Moral Heredity in Royalty: a Statistical Study in History and Psychology, with 104 Portraits." New York (H. Holt), 1906. [Abstract in *Popular Science Monthly*, August, 1902–April, 1903. Brief abstract in *Psychological Review*, March, 1902.] The individuals are included in the study by a strictly objective plan. Attempt is made to reduce the subjective element to a minimum while grading them to a scale of ten, by averaging opinions of historians. Conclusion that heredity outweighs environment is arrived at by several statistical methods. The general method of "averaging opinions" is shown to be practical and to give orderly results, harmonious with other researches in heredity. Human heredity shown to be "alternative" (non-blending).

"The Great Men of France (XIXth Century)." From London *Times* in *Science*, January 11, 1907. Names were obtained by popular vote.

Frederick Adams Woods

Massachusetts Institute of Technology