

station and engineering camp. The other gift was a set of designs by Mr. John Wynkoop, made in the École des Beaux Arts of Paris and awarded a medal.

THE inauguration of Dr. George Edgar Vincent as president of the University of Minnesota will take place October 18 or 19 next. The date has been fixed by the fact that the American Association of State Universities will meet at Minnesota on these days.

PROFESSOR JAMES R. ANGELL, head of the department of psychology and dean of the Senior Colleges, has been chosen by the board of trustees of the University of Chicago to succeed George E. Vincent, now president of the University of Minnesota, as dean of the faculties of arts, literature and science.

MR. GEORGE CHANDLER WHIPPLE, formerly in charge of the biological laboratory of the Boston water department and later of the sanitary work connected with the water supplies of New York City, since 1904 practising sanitary engineer, has been appointed professor of sanitary engineering in the Graduate School of Applied Science of Harvard University.

DR. ERNEST SACHS, of New York City, has been appointed associate in surgery at the Washington University Medical School, St. Louis.

IN Stanford University J. A. Koontz and E. G. McCann have been made instructors in electrical engineering.

DR. H. N. ALCOCK, London, has been appointed to the chair of physiology in McGill University.

DR. EMIL ABDERHALDEN, professor of physiology in the Berlin veterinary school, has been called to Halle, to succeed Professor Bernstein, who retires from active service at the close of the present semester.

#### DISCUSSION AND CORRESPONDENCE

##### THE COMPARATIVE VALUE OF METHODS FOR ESTIMATING FAME

IN a recent contribution upon "Historiometry as an Exact Science"<sup>1</sup> Dr. F. A. Woods

<sup>1</sup> SCIENCE, April 14, 1911.

calls attention to what appears to be a failure of the "space method," as compared with the "adjective method," in solving the problem which I proposed in SCIENCE, October 7, 1910, viz., to determine by purely objective methods the comparative fame of Sophocles and Euripides. This apparent failure might seem to support my statement that "historiometry so-called can never aspire to the name of an exact science" were it not for the fact that Dr. Woods has not established the superiority of the adjective method in this particular instance. For the purpose of illustrating the comparative value of methods for estimating fame I wish to examine the problem of the two Greek poets a little more closely.

Those who are familiar with Greek literature are well aware that Sophocles is superior to Euripides in majesty, grandeur and the various other qualities quoted by Dr. Woods from Mr. Jebb and the critics. But there was one quality, not named by Dr. Woods, in which Euripides excelled Sophocles and this one quality more than outweighs the sum of his deficiencies. Mrs. Browning alludes to this quality in her poem "Wine of Cyprus."

Our Euripides the human,  
With his droppings of warm tears,  
And his touches of things common  
Till they rose to touch the spheres.

The humanity of Euripides and "his touches of things common" have appealed to mankind far more than the majesty and ideal art of Sophocles. Aristotle states that Sophocles represented the men and women of his dramas as they ought to be, but that Euripides represented them as they actually were. It was because he was the first to portray upon the stage the motives and lessons of every-day life that philosophers, statesmen, poets and all other conditions of men have come to prefer the plays of Euripides to those of any other ancient writer.

In comparing Sophocles and Euripides it must be remembered that the latter inaugurated a new epoch and the changes which he

introduced into the drama found disfavor among the Athenians of the old conservative school. It was for this reason that Sophocles won five times as many prizes as his younger rival; yet Sophocles himself came to see the significance of the new movement and in his later years began to imitate Euripides.

As an influence in human history Sophocles almost sinks into insignificance when compared with Euripides. Historians dwell at great length upon this point. Curtius in speaking of "this importance of Euripides for the general history of the world" makes the following statement.

The real classics, such as Pindar, Æschylus and Sophocles, are only to be thoroughly understood and appreciated by contemporaries, or by those who by study accommodate to them their whole way of thinking. Euripides, on the other hand, by the very circumstance that he put an end to the severe style of earlier art, stepped forth from the narrower sphere of the merely popular; he asserted the purely human motives of feeling which find a response in every breast, hence his clearness and intelligibility; hence without presuming any special interest in the subjects derived from mythology or claiming a higher strain upon the intellectual powers, he satisfies the demands which men at all times and in all places make upon the drama. He is at once interesting and entertaining, terrific and affecting; he offers a wealth of thoughts and reflections, which come home and are of importance to every one, and is a poet for every educated man who understands the language in which he writes. For the same reason, too, he was able to affect the minds of the foremost among his contemporaries, such as Socrates; and the language of the Attic stage, as he developed it, became the standard for the drama. For the same reason he also pointed out its path to plastic art, and showed it how it could do new and important things after the age of Phidias; and therefore, though in his lifetime he had been unable to prevail against the still acknowledged tradition of earlier art, he filled the world with his fame after his death, and found numerous followers among the poets, who made use of the Greek myths in order to obtain dramatic effects of universal human significance.

This passage from Curtius is of great interest, for it not only illustrates the greater historical importance of Euripides, but it also

shows that the ultimate significance of a man's work can not be measured by the prizes or honors which he may receive from contemporaries and that the forces which bring a man fame may go on with far greater intensity after his death than during his life time.

In order to illustrate what the historian means when he says that Euripides "satisfies the demands which men at all times and at all places make upon the drama" a few examples may be given.

Curtius states that the plays of Euripides accompanied the Athenian traveler by land and sea; so also in modern times when De Quincey started on his wanderings he took with him a pocket volume of Euripides. Even Mr. Roosevelt, when preparing for his African hunting trip, included in his famous "pigskin library" a copy of this same poet.

Lucretius in discussing the indestructibility of matter translates from Euripides, "Nothing that exists can perish; but everything on decomposing takes on a different form"; so also in modern times von Lippmann, in the introduction of his "*Abhandlungen und Vorträge*," hopes that the reader may imbibe the spirit of Euripides, who said, "Happy the man who has gained a knowledge of science."

The Greek poet Ion in his elegy to Euripides reminds him that his fame will endure as long as Homer's; and Dante in his "*Divine Comedy*" mentions among the shades of departed Greek poets Homer first and then Euripides. Dante does not speak of Sophocles in his whole poem, and we can see from this how slight the influence of Sophocles was upon the thought of the middle ages.

Seyffert in his "*Kulturgeschichte der Griechen und Römer*," when discussing the development of the drama, states that "the tragedians following Euripides made him their model and pattern without qualification and the Roman poets preferred paraphrasing his dramas to those of other tragedians." The Roman poet Ennius paraphrased the "*Andromeda*" and some twenty other tragedies of Euripides; so also we find in more modern times that Racine paraphrases the "*Andromache*" and other plays, Goethe paraphrases

the "Iphigenia," and Browning the "Alcestis." Racine, Goethe and Browning selected Euripides and not Sophocles for their special purposes, owing to the fact so well stated by Perrin that Euripides comes nearer to the modern heart than Sophocles or any other ancient poet. The best testimony upon this point, however, is that of Racine himself, who, writing in 1676 in the preface to his "Iphigenia," expresses his indebtedness to Euripides as follows:

As regards the portrayal of the passions I have endeavored to follow Euripides most exactly. I confess that I owe to him a large number of the passages which have been most praised in my tragedy. I have seen with pleasure, from the effect which my imitations of Homer and Euripides have produced upon our audiences, that good sense and judgment are the same in all ages. The taste of Paris conforms to that of Athens. My audiences have been moved by the same things which once moved to tears the most intelligent people of Greece and which made them say that among the poets Euripides was the most tragic of all; that is to say he knew how to excite to a marvellous degree the feelings of pity and fear, which are the true ends of tragedy.

It is probable that Euripides through his "Iphigenia" alone has exerted a greater influence upon modern thought and feeling than Sophocles with all his plays combined. Erasmus in 1524 translated the "Iphigenia" from Greek into Latin; Dolce gave an Italian rendering in 1560; Sibilet (1549), Rotrou (1640), Racine (1674), Leclerc and Coras (1675) gave different French imitations; many English versions were given in the eighteenth century; Goethe's "Iphigenia" was completed in 1787; Gluck's opera upon the "Iphigenia" was produced in 1774 and since his time over twenty other composers have set music to the same theme. The recent revival of interest in the "Iphigenia" through the choral dances of Miss Duncan is well shown by the increased demand for this and other plays of Euripides at book stores and libraries.

Many other examples might be given to illustrate the much greater historical importance of Euripides as compared with Sophocles, but enough has been produced to show

that as regards the special purposes for which mankind at large read, consult, quote, paraphrase or otherwise make use of a poet Euripides has always been preferred to Sophocles. And the approximate ratio of this preference, according to the five objective methods employed in my previous paper, is over 2:1.

The failure of the adjective method to give a verdict agreeing with that so unmistakably expressed by history and by mankind at large is very evident. The adjective method—by which is meant the ratio of the number of adjectives of praise against those of dispraise—neglects to give the specific value of the terms, human, sublime, artistic, etc., the summation of which is supposed to constitute fame. The ratio of mere numbers gives each qualifying adjective the same value, when perhaps the number of adjectives expressing humanity and feeling should be raised to the tenth power and those expressing majesty and art only to the second power.

The mathematical formula for expressing fame ( $F$ ) in the terms of its components  $a$ ,  $b$ ,  $c$ , etc., is not  $F = a + b + c \dots$ , but  $F = x \cdot a + y \cdot b + z \cdot c \dots$ , in which  $x$ ,  $y$ ,  $z$ , etc., are unknown and indeterminate functions. That historiometry can never become an exact science is evident from the fact that the values which men give these unknown historiometric functions are different in different ages, races and individuals. The twentieth-century mind would lay more stress upon the scientific, the medieval mind upon the mystical; the Roman would lay more stress upon the legal, the Greek upon the beautiful; the clergyman would lay more stress upon the ideal, the business man upon the practical. Until historiometry can develop a set of functions whose values shall be constant for all men in all ages it must remain among the most inexact of sciences.

Another objection to the adjective method is that fame is not a mere summation of eulogistic attributes. Napoleon, for example, heads Professor Cattell's well-known list<sup>2</sup> of 1,000 eminent men, in connection with which list its author makes the following statement:

<sup>2</sup> *Pop. Science Monthly*, February, 1903, p. 362.

"There is no doubt but that Napoleon is the most eminent man who has ever lived, yet it should give us pause to think that this Titan of Anarchy stands first in the thoughts of most men." In the passage just quoted we have one extremely eulogistic phrase "most eminent man" counterbalanced by another phrase of extreme disparagement "Titan of Anarchy." A similar array of favorable and unfavorable expressions can be found in any impartial biography of Napoleon. It is this peculiar blending in one man of different extremes which has given Napoleon and many other men a great share of their celebrity; in such cases the ratio of the numbers of adjectives of praise against those of dispraise fails to give a true answer to the question, which man of a given group of men is the most eminent or historically most important.

The space method and reference frequency methods of estimating fame are not open to the objections which have been raised against the adjective method. The historian in discussing, for example, the respective influence of Euripides and Sophocles upon human affairs must necessarily devote more space and make more references to Euripides since his influence in this respect was much the greater, yet in doing this he need not necessarily employ any adjectives of direct praise or dispraise.

The space method and reference frequency methods are also more free from the errors of personal equation than the adjective method. In the sentence "Cæsar was ambitious" one person might regard ambitious as a term of praise and another of dispraise, yet these two persons would agree perfectly as to the number of lines in a biographical sketch of Cæsar or as to the number of times Cæsar was referred to in an index.

In the selection of a method for estimating historical values it would seem then necessary first of all to dissociate the question of merit from that of fame, and the questions of excellence in particular directions from the broader questions of historical importance. For estimating merit and excellence in particular qualities, which is perhaps the chief concern

of the critic, the adjective method proposed by Dr. Woods may possess certain advantages. But for estimating fame and historical importance, which is the chief concern of the "historiometrician," the adjective method would seem far inferior to the space and reference frequency methods.

As to the exactness of historiometry as a science, may we not say what Huxley once said of another science, the most exact of all. It "grinds your stuff of any degree of fineness, but nevertheless what you get out depends on what you put in."

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#### DR. WOODS'S APPLICATION OF THE HISTOMETRIC METHOD

THE paper by Dr. F. A. Woods, published in *SCIENCE*, April 14, giving the results of his metrical investigation of the biographies of eminent Americans is one of great interest. Both in method and results it opens fields of investigation of the highest sociological value. He has proved the reliability of his figures by reaching approximately the same results, for the state of Massachusetts and the other thirteen original states, when using different sets of data; and while the variation in the results indicate what would be considered in physics as a large probable error, yet they are really small considering the method used and the number of observations.

If the wide range shown thus by the different states in their production of eminent persons per thousand of their white population can not be explained by environment it is evident that the arguments for the dominance of hereditary ability will be strongly supported. On the other hand, if it can be explained by a high coefficient of skew correlation with one or more series of quantities expressing any antecedent social condition it leaves just so much less for heredity to explain. Thanks to the work of Galton and others, heredity is already mathematically expressed by the correlation of the characters of individuals in successive generations. And perhaps for that reason the tendency now is to exaggerate the